



Insidious causes for outrageous utility bills

“Smart” meter flaws, funding, and folly

By D.K. Niwa • 12 August 2019

Introduction

There are many under-recognized reasons why utility bills may suddenly double, triple, or worse. *Unexplainable* spikes often share one thing in common: changeover to costly, unproven, and dangerous “smart” meters that are needed to build a global “smart grid”^{[1][2]}:

“Smart meters or advanced metering infrastructure (AMI) are being deployed in many countries around the world. Smart meters are the basic building block of the smart grid and governments have invested vast amounts in smart meter deployment . . .” (D. Alahakoon & X. Yu, 2013)^[3]

Some under-recognized causes for “smart” technology billing follies include^[4]:

- Equipment design and manufacturing flaws
- Installation and software programming errors
- Meter sensitivity to heat/cold, moisture, and contaminants
- Power surges leading to arcing inside meters (triggering meter meltdown, explosion, and/or fire)
- Data transmission instability and external interferences
- Wildly inaccurate estimates, fake calculations, etc.

Plus, there are also serious and often under-acknowledged consequences of “smart” meter use^[5]:

- Uninsurable damages to health and property
- Death by disconnect
- EMF, RF radiation, and dirty electricity hazards
- Personal data theft and exploitation
- Appliance/electronics interference and damage

Global plans need *all* homes and businesses connected to the smart grid. Enter: unnecessary and punitive opt-out fees for saying “no!” to smart meters. Fact: those who opt-out still pay for a costly “smart” meter – through rate increases and whatever other schemes are embedded in bills to fund the technology. If utilities need to pay for a meter reader,

they can use the extra monthly revenue that becomes available from a customer who no longer requires the pricey extras.

In some locations, opt-out is not a choice: the bully pulpit prevails. An Idaho Power customer found out first-hand that her utility company calls on public-funded local armed law enforcement to escort meter installers when a customer doesn’t want the device on his/her home. Later she visited the Sheriff’s office where, upon speaking with a Lieutenant, she learned that “Anytime Idaho Power calls for armed escort, the Sheriff’s office accommodates with no questions asked and no paperwork filed.”^[7]

Similar incidents involving *armed escorts* (not necessarily law enforcement) have also been reported in other states: Arizona, Colorado, Illinois, Nevada, Ohio, and South Carolina.^[8]

High cost of ‘smart’ technology and insidious funding schemes

Utility companies need more revenue to support the excessive costs to adopt and *maintain* “smart” technology, including computerized/digital/communicating “smart” meters and computer hardware/software, etc., that require more frequent replacement (due to technology obsolescence); specialized management/operations; computer specialists (at a higher salary versus human meter readers); and consulting, marketing/PR, and lobbying services.^[9] Plus, *ongoing* workforce training^[10] to accommodate new and ever-changing technologies.

In the United States multi-billions of taxpayer dollars – estimated at \$105 billion by 2019 for ARRA Clean Energy Initial Allocations which includes \$10.5 billion for “Grid Modernization”^[11] – have been used to kick-start a wellspring of financially *unsustainable* projects:

“The Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) are among federal heavyweights behind the thundering AMI rollout. Several universities and corporations stand to profit hugely by providing AMI equip-



U.S. Department of Energy’s SmartGrid.gov web page that shows aspects of the smart grid system: The Smart Grid, The Smart Home, Renewable Energy, Consumer Engagement, Operation Centers, Distribution Intelligence, and Plug-in Electric Vehicles. https://web.archive.org/web/20190329184410/https://www.smartgrid.gov/the_smart_grid/index.html

ment, software and expertise. . . .” (A. Worthington, 2015)^[12]

Taxpayer dollars jump-started “smart” meter installations nationwide, courtesy of federal Smart Grid Investment Grants (SGIG). Criteria for receiving SGIG money involved *cost sharing* or *matching*. This means “at least 50% if the total allowable costs of the project . . . must come from non-Federal sources”.^[13]

What are non-Federal sources? Hint: look in a mirror. Look at your utility bills. Notice the ever-increasing utility rates, delivery service charges, surcharges, and adjustments, to name a few. Plus there are strategies employed such as “demand” rates, time-of-use (TOU), and tiered pricing.^[14]

Bonds and/or loans may also be involved – burdening customers with debt service. (And don’t forget about the taxes that allow various levels of government – local, county, regional, state, federal – to get their cut.)

A look at the 191 federally subsidized Smart Grid Investment Grant projects^[15] makes it clear that utilities need far more revenue to meet the goal of placing “smart” meters (for water, gas, and electricity) on *every* residence and business, as well as fund many other smart grid projects. For example: merging water, gas, and electricity utilities into a “single smart grid platform”.^[16]

Integral to ‘smart’ technology is the access to and collection of *your* personal data and the profiteering thereof:

“With meter data analytics, utilities are recognizing the **true value of their Smart Grid investment: Data**. The business world today is undergoing a swirl of change. However, amid all the uncertainty, there is one matter, on which nearly everyone can agree: **Data has become the lifeblood** of any successful business venture. Going forward, all industry sectors, especially the energy industry, will look to **harness the volumes of data stored in their corporate coffers and turn it into strategic and profitable business insights**.” (BK Gupta, 2012)^[6]

Captive cash cow: the utility customer

After researching many issues surrounding utility bills, it is clear that – under a smart grid system – charges are not about billing customers for the use amount of water, gas, and electricity; or the basic maintenance and repair thereof. Instead, utility services are morphing into a cash cow that serves narrow political and financial interests (of governments, corporations, associations, and certain non-profits, etc. – at local, county, regional, state, national and international levels)^[17] that have found a way to fleece a captive and misinformed or uninformed public.

As the use of “smart” technology has grown, so too has criticism of utility bills, equipment, and services. The problems exist with the complicity of those who promote and/or approve policies and laws, as well as control funding.

Not only are corporate lobbyists involved, but also *certain* elected officials – e.g. U.S. Congressional and state legislators, governors, county commissioners/supervisors, utility commissioners, and city council members. I refer to those who climb on the smart grid bandwagon instead of doing due diligence to thoroughly research the issues and work on behalf of broader public interests.

When customers and public service take a back seat to self-interest politics and/or profit, this is what can happen:

“My mother had APS^[18] . . . My mother was on a fixed income and struggled during the summer months to pay . . . When she wasn’t answering her phone or e-mails we sent out the sheriff to her home. . . . [He] found her deceased. The coroner told us that there was no power in her house.”

“Upon further research they [APS] had shut off her electricity on September 7 [2018], the last time any contact was made. She wasn’t able to pay the whole bill and for 51 dollars my mother lost her life. The coroner brought her in as a heat related death. . . . It was 107 degrees the day they shut off her electric and ended her life. We are heartbroken and there is not much we can do about this. . . . No one should lose their life over \$51.”^[19]

Other “death by disconnect” reports have come from California, Georgia, Maryland, Michigan, New Jersey, New York, Ohio and Texas.^[20] Plus, hundreds of thousands of utility customers across the U.S. have had service shut off – sometimes accidentally and sometimes wrongfully.^[21]

Another issue: “uninsurable damages” to health and property. Lawsuits have ensued after homes go up in flames and/or life is lost. Yes, lawsuits. Because that is the recourse left when insurance policies – for utilities, homeowners, and health coverage – won’t cover damages caused by the use of smart meters.^[22]

What can you do?

1. Get informed – if for no other reason than to be able to discern between marketing/PR/political spin vs. the facts.
2. File an *informed* complaint with the appropriate regulatory authority;^[23] send copies to your elected officials, media outlets, taxpayer groups and any other interested groups.^[24]
3. Share information – talk with others and meet with like-minded people and decide on courses of action.

(Note: *Utilities within a state can be under different regulatory authority*. In Arizona, for example: The Arizona Corporation Commission says it “is the regulatory authority with jurisdiction over private and investor owned utilities. Municipal systems (“City of”) are regulated by the city or town council . . . The Salt River Project [SRP] is also outside our jurisdiction.”^{[25][26]})

References for all the above issues and much more are found in the “RESOURCES” that follow. Information is from the United States, as well as other countries. After all, this is part of a global agenda for monitoring and controlling resources – which includes you, your family, property, community, state, and country.

– D.K. Niwa • 12 August 2019, Tucson, Arizona

ENDNOTES

- 1 Xu Liu, Chris Marnay, Wei Feng, Nan Zhou, & Nihan Karali. *A Review of the American Recovery and Reinvestment Act Smart Grid Projects and Their Implications for China*. Energy Analysis and Environmental Impacts Division, Lawrence Berkeley National Laboratory, China Energy Group, January 2017. This work was supported by the Energy Foundation China under Lawrence Berkeley National Laboratory Contract No. DE-AC02-05CH11231. [Excerpt p.1] 1.1 Smart Grid Definitions
While smart grid (SG) is a relatively new term, which was developed by the Euro-

pean Technology Platform for Smart Grids and formed during the **International Conference on Integration of Renewable and Distributed Energy Resources in Brussels in 2004**, most of the technologies it involves had been proposed or under development for some time (Smartgrids 2016). The SG usage emerged in response to increasingly apparent severe modern challenges facing the power grid, including: the **urgent drive to decarbonization** and its implied high renewables penetration, security threats, constraints on infrastructure expansion, increasing loads from transportation electrification, high demands for power quality, and others (U.S. DOE 2008).

[Excerpt p.2-3] Definitions of smart grid from the United States, China, and other jurisdictions typically have three key elements: (1) improved operation of the legacy **centralized power supply system**, e.g., synchrophasor systems; (2) improved grid-customer interaction, e.g., **smart meters and real-time pricing**; and (3) local control dispersed around the system, e.g., **microgrids** and related technologies. While the United States has clearly defined and started to **promote SG in national law** over about the last decade, China has only more recently brought up the concept in some policies.

– Posted on the U.S. Department of Energy’s OSTI.gov website
<https://www.osti.gov/servlets/purl/1364594>

2 “Energy Independence and Security Act of 2007” (Public Law 110–140, 110th U.S. Congress, Approved 12/19/07) – excerpts from “TITLE XIII—Smart Grid”: SEC. 1301. STATEMENT OF POLICY ON MODERNIZATION OF ELECTRICITY GRID.

It is the policy of the United States to support the modernization of the Nation’s electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth and to achieve each of the following, which together characterize a Smart Grid:

- (1) Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid.
- (2) Dynamic optimization of grid operations and resources, with full cyber-security.
- (3) Deployment and integration of distributed resources and generation, including renewable resources.
- (4) Development and incorporation of demand response, demand-side resources, and energy-efficiency resources.
- (5) Deployment of “smart” technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications concerning grid operations and status, and distribution automation.
- (6) Integration of “smart” appliances and consumer devices.
- (7) Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.
- (8) Provision to consumers of timely information and control options.
- (9) Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid.
- (10) **Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.**
<https://www.govinfo.gov/content/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf>

3 Alahakoon, Daminda & Yu, Xinghuo. (2013). *Advanced analytics for harnessing the power of smart meter big data*. *Proceedings – 2013 IEEE International Workshop on Intelligent Energy Systems, IWIES 2013*. 40-45.
<https://ieeexplore.ieee.org/abstract/document/6698559/authors#authors>

4 See RESOURCES: “Under-recognized causes for ‘smart’ technology billing problems”

5 See RESOURCES: “Under-acknowledged consequences of ‘smart’ meter use”

6 BK Gupta, “Dive into Data Analytics: Unlocking the Value of Smart Meter Data,” *EE Online*, March/April 2012. <https://electricenergyonline.com/energy/magazine/629/article/Dive-into-Data-Analytics-Unlocking-the-Value-of-Smart-Meter-Data.htm>

7 “Media Blackout on Idaho Power Smart Meter Incidents Involving Guns,” OK-SAFE, Inc. Blog, 12/17/11. From “No news is suppressed news” by Vicky Davis. <https://oksafe.wordpress.com/2011/12/17/media-blackout-on-idaho-power-smart-meter-idents-involving-guns/>

8 See RESOURCES: “Harassing customers (includes misuse of public law enforcement)”

9 See RESOURCES: “Drivers of ‘smart’ meter/grid policy, funding, & regulation”

10 See RESOURCES: “49 Workforce Training projects”

11 *A Retrospective Assessment of Clean Energy investments in the Recovery Act*, Executive Office of the President of the United States, Feb. 2016 – p.14: “Table 1 shows the breakdown of ARRA spending across the categories of clean energy-

related investment. The second column shows the initial allocation of funding across categories based on the 2009 allocations. These sum up to the total of \$90 billion, which is the standard number used to describe the ARRA clean energy investments. . . . CEA [Council of Economic Advisers] estimates that the final allocation out to 2019 will add roughly \$15 billion to the total sum, bringing it to roughly \$105 billion. . . .” https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160225_cea_final_clean_energy_report.pdf

12 Amy Worthington. “How Dangerous and Expensive Became ‘smart,’” The Weston A. Price Foundation, 1/19/15
<https://www.westonprice.org/health-topics/environmental-toxins/smart-meters-not-so-smart/>

13 “Recovery Act Financial Assistance Funding Opportunity Announcement,” U.S. Dept. of Energy, Office of Electricity Delivery and Energy Reliability, Smart Grid Investment Grant Program, Funding Opportunity Number DE-FOA-0000058, Issue Date 6/25/09, p.16. https://www.wired.com/images_blogs/threat-level/2009/10/proposal-requirements-for-smart-grid-grants.pdf

14 See “High cost of ‘smart’ technology & insidious funding schemes” in Resources.

15 Project Information – “The American Recovery and Reinvestment Act of 2009 provided funding for smart grid projects across the United States. This section contains information, locations and data for each project...”, U.S. Dept. of Energy’s Office of Electricity Delivery and Energy Reliability, SmartGrid.gov website. Accessed April 2019. https://www.smartgrid.gov/recovery_act/project_information.html (Archived copy here: https://web.archive.org/web/20190416114224/https://www.smartgrid.gov/recovery_act/project_information.html) Also see SGIG Awardees in the RESOURCES: “191 federal smart grid related projects” and “Abstracts for recipients of federal ‘Recovery Act’ grant awards”

16 Brian Holcomb, Honeywell. “Combining Utility Efforts for a Single Smart Grid Platform,” *Electric Light & Power*, 7/17/13 – excerpts:

The city of Tallahassee in northwestern Florida combined its electric, water and gas metering into a single technological platform as part of its smart metering project. . . .The city is completing its smart metering project to roll out a single smart grid platform for its electric, water and gas utilities. . . . The project involved developing and installing utility metering infrastructure and computer systems to automate the metering function of all three of the city’s utilities. . . . The project was budgeted for some \$40 million and initially launched in 2007. Much of the cost was for the metering system’s infrastructure, but the overall project included selecting the smart metering system, training city employees, installing the system infrastructure and installing software, including in-home messaging for customers. . . . There are two main parts of the system: advanced metering infrastructure (AMI) and the meter data management system (MDMS). . . . The AMI includes utility meters provided by Elster Electricity, a backhaul network to transmit the meter data and a central head-end system that collects the data. . . . The program involves installing some 213,000 new Elster meters. Each home or business has separate water, gas and electric meters. The **gas and water meters communicate wirelessly to the electric meters. Each water and gas meter is identified with a unique serial number. . . .**
https://www.elp.com/articles/powergrid_international/print/volume-18/issue-7/features/combining-utility-efforts-for-a-single-smart-grid-platform.html

17 See RESOURCES: “Drivers of ‘smart’ meter/grid policy, funding, & regulation”

18 Arizona Public Service is “Arizona’s largest and longest-serving electric company”

19 Jeanine of Akron, Ohio, Original review 10/11/2018, Arizona Public Service (APS) – “Consumer Reviews and Complaints,” Consumer Affairs website. As of 5/6/19, there were 116 reviews/complaints about APS.
https://www.consumeraffairs.com/utilities/arizona_public_service.html

20 See RESOURCES: “Death by disconnect”

21 See RESOURCES: “Death by disconnect”

22 See RESOURCES: “Uninsurable damages to health and property”

23 See RESOURCES: “Filing complaints” .

24 The Stop Smart Meters! web site has a “Local Group Directory” containing “a list of individuals and organizations working to oppose ‘smart’ meters and raise awareness of wireless health impacts around the world. . . .”
<https://stopsmartmeters.org/frequently-asked-questions/contacts-database/>

25 “Frequently Asked Questions,” Arizona Corporation Commission, Utilities Division web site. Accessed 4/19. <https://www.azcc.gov/utilities/electric/electric-faqs>

26 The Salt River Project (SRP) is “a community-based not-for-profit water and energy company” and is governed by officials elected to the Association’s Board of Governors and the District’s Board of Directors. Source: “Facts about SRP,” SRP. Accessed 4/19. <https://www.srpnnet.com/about/facts.aspx>

RESOURCES

This independent research is a work in progress. The information is compiled for educational purposes. – D.K. Niwa

CONTENTS

- 5 At-a-glance: About “smart” meters**
- 6 Under-recognized causes for “smart” technology billing follies**
 - 6 Equipment design and manufacturing flaws
 - 16 Installation and software programming errors
 - 22 Meter sensitivity to heat/cold, moisture, and contaminants
 - 24 Power surges leading to arcing inside meters (triggering meter meltdown, explosion, and/or fire)
 - 35 Communication transmission instability and external interferences
 - 38 Wildly inaccurate estimates, fake calculations, etc.
- 53 Under-acknowledged consequences of “smart” meter use**
 - 53 Uninsurable damages to health and property
 - 58 Death by disconnect
 - 63 EMF, RF radiation, and dirty electricity hazards
 - 71 Personal data theft and exploitation
 - 79 Appliance/electronics interference and damage
- 83 Saying “NO!” to “smart” meters**
 - 82 Harassing customers (includes misuse of public law enforcement)
 - 88 Opting-out
 - 94 Filing complaints
- 99 High cost of “smart” technology & insidious funding schemes**
 - 99 Eye-popping dollar figures
 - 120 Utility surcharges, fees, taxes, assessments – PPFAC, LFCR, franchise fees . . .
 - 128 Weather Normalization Adjustments (WNA)
 - 132 Devious “demand” charge (aka “efficiency rate”)
 - 135 Water tax liens
 - 136 Sewer fees for smart meters and other stuff
 - 142 Drainage fees – to fill revenue gaps?
- 145 Drivers of “smart” meter/grid policy, funding, & regulation**
 - 145 Federal, regional, and state governments
 - 149 Utility industry lobbying
 - 152 “Smart grid” lobbying
 - 153 Electric utilities – 2018 Campaign contributions
 - 154 Privatization – selling U.S. public-funded infrastructure assets
 - 163 U.S. Congressional Legislation
 - 169 Dangling U.S. taxpayer-funded federal dollars
 - 169 191 federal smart grid related projects
 - 173 Abstracts for recipients of federal “Recovery Act” grant awards
 - 173 AMI/smart meter and smart grid projects
 - 181 49 “Workforce Training” projects
 - 184 41 “Renewable & Distributed Systems Integration” projects

Note: Throughout this document: clarifying information has been inserted in brackets (“[]”) and bold emphasis added to excerpts. I endeavored to add some semblance of organization to the information, but note that there may be information in one section may also apply to another section. Entries within sections are usually organized with the most recent information at the beginning of each section. Readers are encourage to refer to the full version of sources.

“Today, when concerned customers contact utility providers about meters, the companies insist that their digital meters are not ‘smart’ meters. This name game must stop. ‘Smart’ is the word the industry chose to sell digital meters. Because so many problems were reported after the installation of ‘smart’ meters, the word ‘smart’ became synonymous with the dangers of this technology. Instead of changing out their ill-conceived meters, the utilities simply changed the names of these digital meters to ‘AMR,’ ‘ERT,’ ‘non-transmitting digital opt-out,’ etc. These are all ‘smart’ meters, regardless of the labels with which the utilities attempt to mask them.”

– Michele Hertz and Toby Stover, *An Overview of “smart” meter hazards*, p.4
<http://stopsmartmetersny.org/images/OverviewSSSNY.pdf>

“Smart grid” technologies are made possible by two-way communication technologies, control systems, and computer processing. These advanced technologies include advanced sensors known as Phasor Measurement Units (PMUs)..., advanced digital meters..., relays..., automated feeder switches that re-route power..., and batteries that store excess energy and make it available later to the grid . . .

– *Grid Modernization and the Smart Grid*, U.S. Dept. of Energy, Office of Electricity
<https://www.energy.gov/oe/activities/technology-development/grid-modernization-and-smart-grid>

AT-A-GLANCE About “smart” meters

A ‘smart’ meter is basically a **mini-computer** with a **digital numeric display** and **data transmission ability** – as such, this device:

- **Uses software** and can be **reprogrammed**.
- **Collects/stores data** specific to a property (home/business) – e.g. detailed energy use and time-of-use recorded at intervals (e.g. every 5 seconds, or 15 minutes, or hourly, etc.).
- **Communicates** with rf-enabled appliances, electronics, and vehicles that are designed to work with the technology.
- **Transmits data** – options*: one-way (bubble-up, awake-sleep); semi-two-way; or true-two way.
Data transfer methods*: radio technologies (wi-fi), or non-radio technologies (power line, cable (e.g. fiber optics), cellular, satellite, telephone). *Note: When wireless smart meters (with two transmitters – one operating at 900MHz and the other 2.4GHz) are used, the signals can interfere with electronics (e.g., routers, fire alarms, security systems, electric garage doors, motion detectors, baby monitors, electric pet fences, etc).*
- **Allows remote control of utility service** (turn on or disconnect) as well as remote on/off of rf-enabled appliances (e.g. air conditioner/heater) when two-way communication is fully operational.
- **Has a 5-7 yr. life expectancy** due to technology obsolescence (vs. 20-30 yrs. for a non-computerized analog meter).
- **Needs power to operate** (electricity or batteries).
- **Can malfunction** when subjected to extreme heat/cold, moisture, and contaminants.
- **Is sensitive to power surges** that may lead to arcing inside meter (resulting in overheating, explosion, and fire).
- **Allows for pricing/payment schemes** (e.g. “time-of-use” and “demand” charges/rates, and “prepayment programs” that are not possible with non-computerized analog meters). Consequently, utility billing has less to do with the actual amount of electricity/gas/water that is used.
- Are building blocks for a *global* smart grid (often marketed under “grid modernization”).

References to all the above are in this compilation of resources.

* See *Considerations for adopting AMI and AMR – A comprehensive guide for water utilities*, Oct. 2015, p.9-10 <http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=9674>

“Smart meters are one of the three key elements of advanced metering infrastructure [AMI].”

“A smart meter is an electronic energy meter that records energy consumption and transmits data to and from the utility company frequently, thereby, allowing direct meter reading and data analysis. . . . Smart meters are broadly of three types i.e. **smart electricity meters**, **smart gas meters** and **smart hot/cold meters**.”

– “Global Smart Metering Market (Electricity Gas & Water): Industry Analysis & Outlook (2017-2021),” *Business Wire* | 11/24/17 <https://www.businesswire.com/news/home/20171124005204/en/Global-Smart-Metering->

REMOTE METER PROGRAMMING OF SMART METER

– excerpt:

Once a need to change the programming within the meter arises; one or all of the meters within the AMI network can be programmed automatically thru the AMI network. GE MeterMate software is used to develop meter programs. These programs are developed by meter technicians. Once a program is developed it is manually loaded into the Silver Springs’s Utility IQ (UIQ), which is the head end for Silver Spring Network’s AMI system. Meter Programs can be selected in the AMI Head-End which automatically distributes the new program to the targeted smart meters. The process for remote programming the meters is proprietary. This process can be completed in hours or sometime days depending on the number of meters.

– Electric Power Research Institute, Version 3.0, 4/21/10, p.1. U.S. Department of Energy’s SmartGrid.gov website. Note: document also says “Remote Meter Programming of Smart Meter V3.2.doc 11 8/17/2010 https://www.smartgrid.gov/files/Remote_Meter_Programming_Smart_Meter_V30.pdf

EXAMPLE OF METERS THAT MEASURE ELECTRICITY USE



Smart meter
(Digital, computerized)



Analog meter
(mechanical)

“THE SMART METERS: WHAT ARE THE DIFFERENT TYPES, HOW DO THEY WORK AND WHAT ARE THE HEALTH ISSUES?”

– excerpt:

The mechanical meters for electricity, gas and water are being replaced with new digital meters in much of the industrialized world. The more advanced models are called smart meters, while the simple models are called AMR meters. They are all causing health concerns . . . This article describes the different types of meters, what the problems with them are and why the utilities promote them.

– The EI Wellspring | Jan. 2012
Download The EI Wellspring’s pdf:
http://www.eiwellspring.org/smartmeter/Smart_Meter_overview.pdf

UNDER-RECOGNIZED CAUSES FOR “SMART” TECHNOLOGY BILLING FOLLIES

Equipment design and manufacturing flaws

[Illinois] “Smart meters blamed by Blue Ridge Electric customers for soaring monthly power bills” – excerpts:

A 2015 investigation by the *Chicago Tribune* uncovered widespread problems with digital water meters in Tinley Park, a suburb of Chicago. The newspaper’s investigation found hundreds of cases of over-billing and thousands of unexplained meter failures. The village’s public works director resigned amid questions over his handling of the issue, and elected leaders sought an outside review.

— Kirk Brown | *The Greenville News* | 3/11/19
<https://www.greenvilleonline.com/story/news/local/2019/03/11/smart-meters-blamed-higher-bills-blue-ridge-electric-customers-upstate-south-carolina/3026647002/>

[Florida] “Smart meter issue could mean big bill for 26K Fort Myers customers” – excerpts:

If you’re one of the 26,000 customers on Fort Myers city water that recently got a new smart meter installed, you will want to check your bill this month. You could have charges double or triple what you’re used to paying.

— • —
This summer, the city of Fort Myers started upgrading 26,000 water meters to smart meters.

Customer service supervisors with the city said that thousands of the newly installed smart meters stopped reporting customer’s water and sewer usage during July and August. Now customers are paying for those months usage all in one lump-sum bill.

— Delia D’Ambra | NBC2 News | 10/2/18 <https://www.nbc-2.com/story/39217365/smart-meter-issue-could-mean-big-bill-for-26k-fort-myers-customers>

[California] “City Water Department Knew of Smart Meter Problems Despite Public Denials” – excerpts:

For more than a year, hundreds of San Diego residents complained about unexpected, and unexplainable, increases in their bi-monthly water bills.

During that time the Public Utilities Department repeatedly insisted that there were no significant problems with the smart water meter program. The city instead blamed the billing irregularities on water leaks, over-watering of landscaping, houseguests visiting for the holidays, and a water meter reader who allegedly misread more than 340 meters.

— • —
[A] joint investigation . . . found one of the city’s vendors, Mueller Systems – the manufacturer of Hersey Smart Meters – had, in fact, notified the city of product defects more than two years ago.

— • —
. . . smart water meter product defects, . . . , affected Hersey smart meter registers manufactured from 2011 to 2013, which coincided with the Public Utilities Department’s rollout of its smart water meter program.

— • —
“About 24,000 smart meters made from April to November 2015 . . . were found to have condenser defects, . . .”

— • —
“Resistors and substrates appeared to have been partially damaged in 16 smart meters, . . .”

— *The Asahi Shimbun* | 11/19/18

— • —
Mueller Systems’ smart meter technology has run into problems for cities across the country, . . .

— Tom Jones, Dorian Hargrove & Consumer Bob | NBC San Diego | 7/12/18, updated 7/23/18 <https://www.nbcsandiego.com/news/local/City-Water-Department-Knew-of-Smart-Meter-Problems-Despite-Public-Denials-488033331.html>

[JAPAN] “TEPCO failed to report fire incidents caused by smart meters” – excerpts:

— • —
Tokyo Electric Power Co. (TEPCO) failed to disclose more than a dozen fire incidents involving its electric power meters over a one-year period until August 2017, . . .

— • —
About 24,000 smart meters made from April to November 2015 by Saitama Prefecture-based Toshiba Toko Meter Systems Co. were found to have condenser defects, . . .

Resistors and substrates appeared to have been partially damaged in 16 smart meters, but TEPCO did not say when and where the accidents occurred, the source added.

“There is no risk of flames spreading from (the smart meter incidents) to surrounding structures,” a person in charge of public relations at TEPCO said. . . .

At least 10 such accidents were identified in Tokyo from January to July 2017 in smart meters . . . All were categorized as fire trouble.

Among these, cases in Higashi-Yamato and Hachioji were the result of a short-circuit in control board condensers, according to reports by the Tokyo Fire Department.

In the 10 cases, the meter caught fire, but the flames did not spread to buildings or other structures.

— *The Asahi Shimbun* | 11/19/18
<http://www.asahi.com/ajw/articles/AJ201811190014.html>

[California] “San Diego City Water Department Resisted Oversight, Downplayed Smart Meter Problems” – excerpts:

Over 1,000 water customers have complained about bill spikes and other billing problems so far this year. Two sets of auditors are now looking for deeper problems . . .

— • —
[T]he department has tried to downplay problems, resist public records requests and mislead the public, *VOSD* and *NBC 7* found.

— • —
[D]epartment officials have known of a “glitch” with the new meters since at least 2016. The program is also relying, in part, on technology from a meter company that has admitted to making products that prematurely fail. Those problems may not be related to billing spikes, but could cause other billing problems and be a costly mistake in their own right.

— Ry Rivard | *PUBLICCCEO* | 7/18/18
<http://www.publicceo.com/2018/07/san-diego-city-water-department-resisted-oversight-downplayed-smart-meter-problems/>

[CANADA] “Smart meters not so smart” – excerpts:

Avista wants to install smart meters (they also want to merge with HydroOne). HydroOne installed smart meters in Ontario under a governmental mandate at the cost of \$2 billion. So far HydroOne has removed 36,000 meters because they didn't work. They removed 5,400 meters due to risk of fire. Their customers were told these meters would be cost-saving. Yet the company received over 9,700 complaints in one year from overbilling or malfunctioning meters, etc.

To quote the Canadian press, “In Ontario, concerns over irregular billing related to the new meters have prompted an investigation by the province's ombudsman.”

“... HydroOne installed smart meters in Ontario under a governmental mandate at the cost of \$2 billion. So far HydroOne has removed 36,000 meters because they didn't work. They removed 5,400 meters due to risk of fire. Their customers were told these meters would be cost-saving. Yet the company received over 9,700 complaints in one year from overbilling or malfunctioning meters, etc.”

– Margaret Herzog, *The Spokesman-Review*, 6/4/18

– Margaret Herzog | *The Spokesman-Review* | 6/4/18
<http://www.spokesman.com/stories/2018/jun/04/smart-meters-not-so-smart/>

[Note: Avista is “an energy company involved in the production, transmission and distribution of energy as well as other energy-related businesses. Avista Utilities is our operating division that provides electric service to more than 600,000 electric and natural gas customers across 30,000 square miles in eastern Washington, northern Idaho and parts of southern and eastern Oregon. Alaska Energy and Resources Company, an Avista subsidiary, provides retail electric service in the city and borough of Juneau through its subsidiary Alaska Electric Light and Power Company.” – Avista website, accessed 4/13/19 <https://www.myavista.com/about-us/our-company>]

[New Jersey] “River Edge Residents Say Newly Installed Meters To Blame For Spike In Water Bills” – excerpts:

Last week, CBS2 reported on a group of residents in Fair Lawn, New Jersey who were shocked to see their higher-than-expected water bills.

This week, residents in River Edge have similar complaints following the recent installation of new water meters.

One family's bill from SUEZ Water was for a whopping \$601, a far cry from their normal \$30 a month.

The resident says her home...had a new meter installed in December. CBS2's cameras were there when a Suez crew showed up to investigate a possible leak. The serviceman determined the new digital meter was indeed defective.

– Jessica Borg | Local TV, New Jersey, River Edge | 1/2/18
<https://newyork.cbslocal.com/2018/01/02/river-edge-water-bills/>

[USA] “Smart’ Meters: Recalls, Replacements, Fires, Explosions, General Failure, Measurement Errors, Privacy Concerns, Cybersecurity Risks, and Sick People” – excerpts:

In 2011, *Consumers Digest* predicted that “Smart” Meters

“represents little more than a boondoggle that is being foisted on consumers by the politically influential companies”: “**Why Smart Meters Might Be a Dumb Idea.**”*

So it's not all that surprising that so far – hundreds of thousands of “Smart” Meters have been recalled and/or replaced throughout North America due to various reasons including fires, explosions, general failure, and measurement errors. There are utility companies who are already making plans to replace hundreds of thousands more.

– Phil Coffers | *Activist Post* | 12/5/17
<https://www.activistpost.com/2017/12/smart-meters-recalls-replacements-fires-explosions-general-failure-measurement-errors-privacy-concerns-cybersecurity-risks-sick-people.html>

*Consumer Digest's “Why Smart Meters Might Be a Dumb Idea”:
<http://www.consumersdigest.com/print/article/why-smart-meters-might-be-a-dumb-idea>

Archived here: <https://web.archive.org/web/20130405101311/http://www.consumersdigest.com/print/article/why-smart-meters-might-be-a-dumb-idea>

[Colorado] “Denver woman shocked after getting \$800 electric bill for small apartment” – excerpts:

Katie Jarrett isn't living large. The 23-year-old is hardly home, and when she is away, she tries to be energy efficient. That's why she is puzzled by her latest Xcel Energy bill showing she owes \$800 for electricity-usage for her small, one-bedroom apartment.

Her problems started when she moved into her current apartment three months ago. Her first bill was just a little over \$300, which she thought was a little high. So she called Xcel, and a representative told her that her meter might be malfunctioning and the company would look into the issue.

The next month, her bill once again jumped, this time it showed she owed \$380. Then in September, she received a bill from Xcel for \$400, and she says her meter was still not examined as promised. Even more puzzling to Jarrett, her Xcel bills were showing she was using four times as much electricity as her neighbors.

– Sally Mamdooh | *The Denver Channel* | 10/24/17
<https://www.thedenverchannel.com/news/local-news/denver-woman-shocked-after-getting-800-electric-bill-for-small-apartment>

[CANADA] “City auditors cite lack of confidence in water billing, meters in wake of complaints” – excerpts:

In the wake of Calgarians' complaints over drastic over-billing for water services, city auditors have expressed a lack of confidence in the process.

And a report to be delivered to the city's auditing committee Thursday also states malfunctioning water meters and a lack of internal communication have contributed to the inaccuracies.

– Bill Kaufmann | *Calgary Herald* | Updated 9/10/17
<https://calgaryherald.com/news/local-news/city-auditors-cite-lack-of-confidence-in-water-billing-meters-in-wake-of-bill-complaints>

[California] “Audit finds errors in hundreds of water bills” – “City of Palo Alto Utilities did not accurately record sizes of water meters in bills, prompting more than 500 errors” – excerpts:

The audit, . . . , specifically focused on 577 errors that city officials attributed to mistakes involving water meters. The size of the water meters determines the flat monthly fee customers are charged: Those with 5/8-inch mains pay a fee of \$16.77, while those with 1-inch mains are charged \$34.26. The errors involved 2.8 percent of the 20,633 meters that the utilities department had installed citywide.

Altogether, the billing discrepancies resulted in \$227,900 in errors, which includes \$184,000 in underbilling and \$44,000 in overbilling, according to the audit.

The underbilling occurred when the city replaced customers’ smaller meters with larger ones but did not register the change in its billing system, said Senior Performance Auditor Mimi Nguyen, who physically inspected the meters.

In February 2014, utilities workers discovered that they had been charging 115 customers for the smaller meters even though they had the larger ones and back-billed customers a total of \$45,000, according to the audit.

. . . the auditor’s office also scrutinized the city’s decision in 2013 to install 1,178 water e-meters, which rely on **ultra-sonic signals** to gauge the amount of water passing through a meter. In a separate finding, the audit stated that there are currently “no testing standards, and the accuracy, performance and reliability of these meters are uncertain.”

The audit noted that when the new meters were tested for low, medium and high flow, 83 of the 100 e-meters failed one or more of the three required flow tests. . . .

[General Manager Ed Shikada] agreed that the city’s transition to e-meters was not executed appropriately. The audit found that the city’s purchase of the water e-meters was made through what’s known as the **“sole source” process, which bypasses the typical competitive solicitation process.** Normally, when a department wants to request sole sourcing, it has to “demonstrate that the product is necessary for the health, safety or welfare of the city or that a significant cost savings can be realized.”

Normally, the purchasing division in the Administrative Services Department reviews and approves such requests, particularly if they refer to “standardized” products that the city had used in the past and that have been shown to be effective. **The new e-meters had not been approved as a standardized product,** the audit states, and “did not undergo the typical new product review and scrutiny.”

– Gennady Sheyner | *Palo Alto Weekly* | 8/23/17
<https://www.paloaltoonline.com/news/2017/08/23/audit-finds-errors-in-hundreds-of-water-bills>

[California] Accuracy of Water Meter Billing – excerpts from the Executive Summary:

CPAU utility customers are charged monthly for water service based on water consumption and meter size. Finding 1 compiles **577 billing errors**, 2.8 percent of 20,633 installed meters, for customers who received adjusted bills because their monthly **water meter size charge was billed incorrectly.** CPAU previously identified errors for two sets of customers, in December 2014 (Set 1) and June 2015 (Set 2), and adjusted 115 and 126 bills, respectively. We identified 11 additional adjustments that need to be made in Set 1 and corrections to 5 adjustments that need to be made in Set 2. We identified and verified **another 213 billing errors and an additional 123 potential errors** that we did not verify (Set 3). The verified errors for all three sets total \$227,900, which includes \$184,000 in underbillings and \$44,000 in overbillings. The 123 unverified potential errors include up to \$77,000 of underbillings and \$46,000 of overbillings. . . .

CPAU did not adequately evaluate, test, and transition the new eMeters into the City’s Water infrastructure. The American Water Works Association (AWWA), the water industry’s authoritative resource, **has not established eMeter standards or testing requirements for electronic meters.** CPAU batch testing of the eMeters resulted in an **83 percent failure for one or more of the three flow tests.** The results also show that many of the eMeters failed at ranges much greater than the accepted +/-1.5 percent.

– Office of the City Auditor, City of Palo Alto | 8/16/17
(See “Attachment B”) <https://algaonline.org/DocumentCenter/View/6280>

[Louisiana] “Parish accused of withholding information about failing water meters” – excerpts:

Residents argue St. John the Baptist Parish officials and employees are purposely withholding information about its failing water meter registers and overcharging them, but the parish president denies that claim and said residents are being under charged more often than not.

Ten years ago the parish purchased a water meter system that **uses radio frequencies to read consumption.**

The system had a ten year warranty and now more than 6000 of those smart meters no longer give out a signal. The parish CFO Ross Gonzales estimates by the end of the year more than half of the registers will no longer transmit a signal.

Hornsby recently moved to Laplace and said his water bills were as high as \$200 a month. He believed it was just the average cost in his new home but when his bill jumped to more than \$750 one month, he contacted the parish.

– FOX 8 | 6/7/17, updated 8/12/17
<http://www.fox8live.com/story/35605806/parish-accused-of-withholding-information-about-failing-water-meters/>

“In a separate finding, the audit stated that there are currently ‘no testing standards, and the accuracy, performance and reliability of these meters are uncertain.’ The audit noted that when the new meters were tested for low, medium and high flow, 83 of the 100 e-meters failed one or more of the three required flow tests. . . .”

– Gennady Sheyner, *Palo Alto Weekly*, 8/23/17

[Michigan] Michigan House of Representative, The House Energy Policy Committee – hearing re: HB4220 (Provides for certain requirements and prohibitions pertaining to utilities’ use of advanced meters) – W. Bathgate testified:

[TIME 1:20:02] In my role as program manager for Emerson Electric and similar products like the smart meter, very frankly, if I had brought this to market with the **defects that are inherent in the design**, I’d have gotten fired. It’s that simple.

[TIME 1:20:39] The first thing I want to talk about is “meter accuracy and your bill” – . . . that’s questionable, and I’ll tell you why: the testing is done to the American National Standards Institute [ANSI] section C12.1. In that standard, **there is no ‘gold standard baseline’ for testing**. In other words, there is no benchmark – there’s no standards of weights and measure characteristics . . . In addition, there is no timing sequencing standard. In other words: **this is now a computer**, and a computer is very reliant on the time and what it is doing with time. . . .

These tests that have been done, have not been done with a variety of loads. . . .

[TIME 1:22:50]...**I have reason to suspect that the meters – because of the increases in the bills – are doing something different than a totalizing meter would provide. This may explain why when people go from an analog meter to a smart meter, suddenly their bills go up. This is not measured to a gold standard. This is a computational analysis by the computer.**” . . .

– William Bathgate | from video posted under “Must Hear: Experts Testify On Dangers Of Smart Meters, & FIRES! And More,” <https://www.youtube.com/watch?v=iv2MPHr71UM>

[NETHERLANDS] “When Certified Smart Meters Still Give Wildly Inaccurate Readings – excerpts:

How can you trust a smart meter when you know that it gives wrong readings – even though it has passed the certification tests?”

It’s often been a mantra of energy efficiency that “what gets measured gets saved”. But what if the meters used for measuring energy give faulty readings? Two recent market studies have found that such meters are relatively common.

One study by scientists at the Dutch University of Twente found that smart meters can provide electricity readings that are up to six times higher than actual levels.

This unreliability is especially prevalent when monitoring the outputs of **LED lighting** when they are combined with dimmers.

At the other end of the market, in industry, meters can also

be inaccurate due to the temptation to cut costs by purchasing a cheap metering solution.

– David Thorpe | *Energy Central* | 5/19/17 <https://www.energycentral.com/c/when-certified-smart-meters-still-give-wildly-inaccurate-readings> Another version of this article: “EU smart meter standards leading to wildly inaccurate readings” | The Fifth Estate | 4/18/17 <https://www.thefifthestate.com.au/energy-lead/energy/eu-smart-meter-standards-leading-to-wildly-inaccurate-readings/90692/>

[Oklahoma] “PSO smart meter recall won’t cost customers” – excerpts:

Officials at the Public Service Company of Oklahoma say they will replace around 25,000 smart meters in the Tulsa metro area.

Recently the manufacturer of these smart meters notified PSO there is a malfunction that could cause the meter’s screen to go blank.

– Lauren Partain | ABC Tulsa | 12/10/15 <https://ktul.com/news/local/ps0-smart-meter-recall-wont-cost-customers>

[New York] “City of Ithaca replaces faulty water meters” – excerpts:

Roughly a fifth of water meters in the City of Ithaca have **faulty batteries** and will need to be replaced, . . .

The meters, which were installed in 2008, operate using radio-transmitted signals that send water usage information electronically. Approximately 1,200 receivers on meters labeled with serial numbers beginning “45” have batteries that are dying earlier than expected; the batteries on the units were expected to last 10-15 years.

– Nick Reynolds | *Ithaca Journal* | 7/20/15 <https://www.ithacajournal.com/story/news/local/2015/07/20/ithaca-faulty-water-meters/30419959/>

[CANADA] “Smart Meter Fires Proofs – Sharon Noble to the Electrical Safety Authority of Ontario” – excerpts:

In 2012 Armen Kassabian, Ontario Fire Marshal, wrote a report that expressed serious concerns about the safety of smart meters, regardless of the brand. They fail. They melt. They burn. <http://bit.ly/1dYetaB>

He was right. I’ve been tracking smart meter problems across North America for the past two years and those problems still exist. I know. Smart meters still fail. They still melt. They still burn. And, with the help of input from experts including electricians, electrical engineers and utility insiders, I can prove it.

You’re reviewing the **Sensus meter that exploded and caused a fire** in Collingwood, but I can tell you that **smart meters, regardless of the brand, have the same basic design flaws** that have caused many who are far more knowledgeable than to conclude that smart meters are **fire hazards**. They should not be allowed to put the lives of Canadians at risk

– Sharon Nobel | Correspondence addressed to Steve Smith, General Manager, Electrical Safety Authority, Toronto, Ontario | 6/11/15 <https://www.scribd.com/document/269323047/Smart-Meter-Fires-Proofs-Sharon-Noble-to-the-Electrical-Safety-Authority-of-Ontario>

STATE OF MICHIGAN, BEFORE THE MICHIGAN PUBLIC SERVICE COMMISSION

In the matter of the application of DTE ENERGY COMPANY for authority to increase its rates amend its rate schedules and rules governing the distribution and supply of electric energy, and for miscellaneous accounting authority. Case No. U-18255

[Note: William S. Bathgate's "Specific Technology Expertise" includes: "High tech power management systems, UPS and power distribution; Switched Mode Power Supplies; Electrical and Electronic hardware engineering; Computer systems engineering; Radio Systems design and testing; High Current and High Voltage switches; Internet communications using both wired and wireless technologies; UL, CE (Europe), Africa, Japan, Australia and China product safety certifications Cyber encryption and protection of Radio Communications using digital signals RFI/EMI mitigation" (see p.2 of testimony)]

DIRECT TESTIMONY AND EXHIBITS OF WILLIAM S. BATHGATE

On Behalf of Residential Customer Group

August 29, 2017

Excerpts:

II. DIRECT TESTIMONY

Q. Please describe the cost impact to residential customers as a result of an AMI smart meter being installed at the homes of residential customers.

A. In contrast to an analog meter, an AMI smart meter itself utilizes significant electric energy, see Exhibit RCG-02 (WSB-02). Specifically, on average, a smart meter will consume approximately 2.37 kWh per day which equates to approximately 865 kWh per year, at a varying dollar cost depending upon the existence of higher per kWh tariff charges during peak times of the day. The specific costs can range from approximately \$0.12135 per kWh inclusive of distribution and fuel optimization charges relative to meter operations during off-peak hours, and approximately \$0.19835 for meter consumption occurring during peak hours. For standard flat rates inclusive of distribution and energy optimization charges of approximately \$0.13950 @ 2.37 Average kWh per day amounts to approximately \$120.674 annual cost borne by the consumer depending on rate tariffs, distribution charges and fuel recovery. These costs were never disclosed in advance to consumers as an outcome of the installation of an AMI Meter on their home. In fact, the consumer was informed this would help them save money. The evidence is to the contrary. If all the consumers in Michigan were told the new AMI would cost them over \$120.00 a year in energy costs there would be a large public outcry. The promotional material provisioned by the utilities represented that the AMI would lead to consumer energy savings. This clearly is not the case. The sad part of this story is that this is hitting every low income person and senior citizens the hardest of all. This represents an added \$ 253.42 Million in annual revenue from DTE Energy's 2.1 Million customers and 3.924 Billion Tons of CO₂ introduced into the atmosphere just to run the AMI meters.

“Just by replacing the Analog Meter with an AMI meter, DTE Energy has obtained a windfall in revenue without a truthful petition to the Commission and is creating more greenhouse CO₂ without obvious notice or disclosure to the public or the FERC.”

— William S. Bathgate, 8/29/17

The Analog meters in prior use cost no party any energy either for DTE Energy or the end customer. Just by replacing the Analog Meter with an AMI meter, DTE Energy has obtained a windfall in revenue without a truthful petition to the Commission and is creating more greenhouse CO₂ without obvious notice or disclosure to the public or the FERC.

Q. Please explain why the AMI smart meters consume this amount of energy.

A. The AMI Meter operates continuously measuring voltages and current consumed by the household and EMI/RFI by products from the meter Switched Mode Power Supply (SMPS) which converts the 240 VAC to the various DC voltages. There are current losses in the SMPS operation and there is a 100 ohm resistor shorted across the two 240 VAC line coming into the SMPS. See Exhibit RCG-04 (WSB-04). This resistor at 240 VAC on its own consumes power in addition to the losses in the SMPS board. There is also the current consumed by the two other circuit boards, the Metrology and RF board which includes a full computer system in the AMI meter. The RF signals transmit throughout the day to pulsate through the surrounding air and the wires of a household to gather specific energy consumption and consumes power constantly. As you can see in the DTE Energy Insight Application it is displaying frequent communications, contrary to all public testimony by DTE. So, it is

not unreasonable to conclude that an average of 2.37 kWh per day consumption is a typical average. Actual VOM readings of current draw at the meter in isolation and no other load results in between 90-105 Watts current draw. This current draw increased or decreased based in the measured input voltage and RF pulse quantities and durations which varied in a very unpredictable manner. In tests conducted in contrast, an analog meter incurs no such energy consumption as it is a current measuring meter which records overall energy consumption without utilizing the two-way pulsating capturing of data concerning specific energy consumption throughout the household.

Q. Do you have recommendations concerning how residential customers that want to keep or to have an analog meter should be treated in view of the increased energy consumption caused by smart meters?

A. First, I recommend that the company and the Commission provide customers who want an analog meter to be given that option, whether it involves retaining an existing analog meter, or involves a requirement that the company replace an AMI meter and install an analog meter. Analog Meters are still available in large quantities.

Second, I recommend that the Commission eliminate initial and monthly surcharges for opt-out customers that retain or have analog meters, since the opt-out customers pay for all costs via the electric tariffs of the AMI system whether they opt or not, and because the Analog opt-out customers who have not consented to an AMI meter are not causing the costs on a per-unit basis for the AMI infrastructure and installation and operation of the system. In fact, meter reading can be done without dispatch of a meter reader to customers who choose to retain or have an analog meter by simply taking a photo of their reading each month and communicate their readings to the utility with an annual or semiannual audit by the utility. This was done for many years by the utility with customers and existing phone dial-in meter readings are still available with all the utilities.

Third, **I recommend that the increased energy usage that AMI opt-out customers are being charged as I have discussed above be credited against any opt-out surcharges if said surcharges are retained by the Commission. It appears likely that the amount being charged for increased energy consumption caused by the AMI Meters may involve costs which exceed the monthly opt-out surcharges.**

Fourth, there should be a full disclosure to the public via an information letter sent via US Mail explaining to consumers that their new AMI Meter is increasing their electric bill to pay for the energy required to run the meter. Otherwise the utility is taking unfair advantage of customers. What I have discovered in AMI meter power consumption is a real condition that can be easily replicated by going to any home, turning off the power breakers off and reading the digital readout on the meter after 24 hours. This is very repeatable.

Q. Are customers with AMI Meters incurring any other costs or risks that should be considered by the Commission?

A. Yes. The customers with smart meters have increased risk of fires, electrical medical equipment damage and appliance damage occurring due to the AMI Meters design creating EMI/RFI effects commonly called conducted emissions and also called EMC. See Exhibit RCG-05 (WSB-05) A portion of the customers have concerns relating to the operation of the AMI Meters and the resulting electromagnetic infiltration of their homes from Electro-Magnetic and Radio Frequency Interference generated within the unfiltered AMI Meter Switched Mode Power Supply (SMPS), to which some persons also suffer negative health effects from early medical equipment failures. Analog meters

“If all the consumers in Michigan were told the new AMI would cost them over \$120.00 a year in energy costs there would be a large public outcry. The promotional material provisioned by the utilities represented that the AMI would lead to consumer energy savings. This clearly is not the case.”

— William S. Bathgate, 8/29/17

have no such EMI/RFI artifacts imposed on the electric wires and only the low frequency sinusoidal wave form shown in the Exhibit RCG-05 (WSB-05) should be present. The large osculating wave-form shown in Exhibit RCG-06 (WSB-06) is not present with an analog meter.

The Commission should fully consider this information for at least two reasons: (1) these costs and risks should be an additional basis for the Commission to rule that customers should have the option to opt out of having the AMI meter at their home and to have instead an Analog Meter, and without incurring surcharges for exercising this option; and (2) the Commission should utilize its review

power on a continuous on-going basis over time regarding health and safety issues relating to electric utility service, including this time.

The fire hazard referenced above can result from the operation of the AMI Meters from several sources:

1. The SMPS circuit board has very limited surge protection resulting from incoming voltage transients. The main component on the SMPS that is vulnerable is called a Varistor, which looks like a small black square on the SMPS board. See Exhibit RCG-06 (WSB-06). This small electronic part cannot withstand more than a 300 Volts AC surge. The part will explode when a line voltage surge exceeds this limit, such as when a tree branch touches the high voltage lines or lightning strike occurs nearby. Once this Varistor explosion has occurred it permits high voltage transfer to the other circuit board components and the circuit board substrate. This results in the AMI meter literally exploding from the meter socket or in a severe melting of the plastic components, likely leading to a fire and/or severe home damage. Most customers that comment when this occurs say they hear a load pop or a boom, followed by lights flickering, and followed by arcing at the meter housing. This is not how a circuit board should be protected. In series with the Varistor should be a small fuse that would stop voltage progression to the remaining circuit components and interconnections. Every SMPS in the home from a vast array of electronic appliances has a Varistor, such as TV's, PC power supplies, electronically controlled refrigerators, washers, dryers and heating/cooling systems but also has a fuse or fuse-able link that will break the circuit before catastrophic damage progressively results from a surge. There is no sound electronic engineering firm that would permit 240 volts AC to short circuit across the circuit boards due to a component failure such as a Varistor. This is extremely dangerous. Once the progression of the subsequent short cir-

“The customers with smart meters have increased risk of fires, electrical medical equipment damage and appliance damage occurring due to the AMI Meters design creating EMI/RFI effects commonly called conducted emissions and also called EMC.”

— William S. Bathgate, 8/29/17

circuit begins the line transformer will apply up to 2,000 Amps to the meter housing until either the feed lines to the home disintegrate and vaporize or the transformer line breaker/fuse trips out after 50 seconds. By this time the damage is so extensive it is jeopardizing human and animal life. No such condition is possible from an Analog Meter. In fact the occurrence of an Analog Meter fire is almost unheard of.

2. There are also unseen dangers from the meter to meter box contacts. At my own home which was built in 2015, the Analog Meter was replaced with an AMI meter installed in October of 2015. In the winter of 2017, I could not get remote electronic readings from my meter to the utility. The result was that I could only get estimated readings for Feb, March, April and May. Numerous attempts to resolve this issue were unsuccessful. Since I have the instrumentation at home I knew that the meter was transmitting. I was told by the utility that the deployment of AMI meters would eliminate estimated readings. This was not true based on my observations. I decided to ask for an Opt-Out meter to be installed so I could get a meter manually read and end the frustration of estimated bills.

When the AMI meter was removed. I discovered that the one set of contacts had all burned up from excessive heat. See Exhibit RCG-07 (WSB-07). This was a new meter box in 2015 and in use for about 2 years. It could have easily led to a meter fire without warning. If I had not changed my meter, I would never have known there was a problem. How many other meter boxes are at risk with the same conditions today? The only way we will know is when we begin to see more meter fires. Unfortunately once a fire begins at the meter contacts all evidence of the root cause are near impossible to determine. The utility concludes without any evidence that the meter fire occurred due to customer wiring. Had I known that placing an AMI meter on my home would lead to burned contacts on my home, I would never have permitted its installation. There are supposed to be sensors of high heat within the meter, but it did not detect the condition at my home.

3. There are also a serious issue presented in the RF emitting mesh network used by DTE. The use of the unlicensed spectrum of the 33cm frequency band (901 to 928 MHz) is a violation of my FCC privileges as an Amateur

Radio operator. Amateur operations is a primary user of this spectrum and cannot be interfered with by unlicensed user equipment. Such as the AMI meter. I run satellite communications and Fast Scan Amateur TV (ATV) on this band. The FCC license used by the AMI is for only one meter, not thousands. Today because of all the AMI meters my ATV transmissions are frequently interrupted suffering from disconnections and poor signal reception.

The bandwidth of the ATV signal in use in my station is 6 MHz, the other receiving station also uses 6 MHz so together we use 12 MHz of the 27 MHz spectrum. The AMI meters have caused so much interference that it is making my ATV operation nearly impossible.

In addition my communications with government satellites in this section of the frequency band is severely impacted. I frequently have dropped message streams

With all the AMI meters in use my communications is severely affected. This is a direct violation of FCC rules as specified by law. DTE never did the due diligence about the deployment of AMI meters, they never understood what they were doing with complete saturation of the 33 cm band. It is not a first come first served frequency allocation. It is not the Amateur operator that needs to halt operations it is the unlicensed stations that must not interfere with the licensed operators. With almost a 1,000 AMI meters transmitters near my home these are interfering with my operations and it against the federal law. Please see the following laws that apply. I can make a complaint to the FCC and cause DTE to cease operations of the AMI mesh network.

[. . .]

Prior to AMI meters I had no difficulties with communications for any other station on the 33cm band, now it is near impossible.

“The SMPS [Switch-Mode Power Supply] circuit board has very limited surge protection resulting from incoming voltage transients. The main component on the SMPS that is vulnerable is called a Varistor,... This small electronic part cannot withstand more than a 300 Volts AC surge. The part will explode when a line voltage surge exceeds this limit, such as when a tree branch touches the high voltage lines or lightning strike occurs nearby. Once this Varistor explosion has occurred it permits high voltage transfer to the other circuit board components and the circuit board substrate. This results in the AMI meter literally exploding from the meter socket or in a severe melting of the plastic components, likely leading to a fire and/or severe home damage.”

– William S. Bathgate, 8/29/17

Q. Does DTE Energy’s failure to independently test AMI meters put customers at risk? If so, how?

- A. The AMI Meter Switched Mode Power Supply (SMPS) design is lacking what is called a differential voltage and common mode current filter circuit to keep it from back-feeding high frequency voltage transients and magnetic currents as an electrical by-product onto the home primary wiring circuits. See Exhibit RCG-03 (WSB-03) and Exhibit RCG-05 (WSB-05). The result is magnetic fields and high frequency radio emissions surrounding every room. This class of emissions is called EMI/RFI (commonly called EMC) and is viewed by the FCC as Conducted Emissions. The FCC has limits

for Conducted Emissions (please note not the mesh network RF meter reading emissions) and any electronic device that has Conducted Emissions in excess of 9 KHz switching oscillators must comply with FCC conducted emissions specifications. See Exhibit RCG-08 (WSB-08). There are two classes of devices, Class A for industrial application and Class B which is more stringent for computer based applications. The AMI meter has a computer CPU and Memory just like any PC has, and therefore FCC Class B regulations apply. No AMI meter used by DTE Energy has been independently tested to ensure compliance with the FCC recommended line impedance stabilization network (“LISN”) test equipment. LISN tests are done by third parties on behalf of manufacturers and provide manufacturers public documented assurance their products comply with FCC Conducted Emissions standards. Nor has DTE Energy published any LISN test results for Conducted Emissions from an independent third party. This would be very difficult to achieve because an LISN test setup requires a ground reference. There is no ground connection to the SMPS so it would likely not be able to be tested per FCC Specifications for conducted emissions. It is important to note that these tests must be performed under varying loads and with typical home appliances, not by some backroom lab at idle current, because when current demand is applied the variations in Conducted Emissions are exacerbated.

My testing has shown that Conducted Emissions far exceed FCC limits with typical peak to peak voltages of 14-19 Volts and at frequencies ranging from 2 KHz to 36 MHz In addition, I have found through testing a home under load that measured in excess of 27 Volts peak-to-peak at frequencies exceeding 40 MHz max. See Exhibit RCG-08 (WSB-08). The oscilloscope trace I have provided is a typical home with no branch circuits active and only measuring the Conducted Omissions from only the AMI meter. As noted in the oscilloscope trace, the frequency of the emissions varies dramatically in phase with the 60 Cycle AC. This makes it very problematic to state that the emissions are of a certain fixed frequency, because they are constantly varying. This makes mitigating these emissions downstream from the AMI meter (with high amperages in the home requiring multiple low pass limits to allow only the 60 cycle frequency to be present) extremely expensive to procure, exceeding \$7,000. All medical facilities and data centers used by the US DoD place these filters in line with the main electric service classified in Mil Spec MIL-STD-461F NCE02 for 10 KHz to 10 MHz (see attached Exhibit RCG-09 (WSB-09) <http://incompliancemag.com/article/design-practices-for-military-emc-and-environmental-compliance/>). Based on these standards no

“All this essential medical equipment will either unexpectedly fail operation in an unpredictable manner or be unpredictably compromised from normal operation when subjected to the level of Conducted Emissions present in the AMI meter in use by DTE Energy, or any other utility. A person with a sensitive condition could die or suffer a serious degraded health from a critical device failure.”

– William S. Bathgate, 8/29/17

AMI meter could ever be directly connected to the primary building wiring of sensitive facilities such as a senior health center, doctors office, hospital or emergency center without an EMC mitigating high voltage and high amperage low pass filter between the utility source and the buildings load panels. Every medical office has many highly sensitive electronic equipment such as EKG and X-ray equipment that are subject to the deleterious effects of these high conducted emissions which can degrade equipment or affect the reading and operational life of this type of equipment. Yet the utility has proceeded to install AMI meters in these facilities and not notified the owners of these businesses of the conducted emissions risks they now are subject to as the result of installing an AMI or Opt-Out meter. Unfortunately the only fix for

the conducted emissions from the SMPS is a complete redesign with a connected wire ground reference. This would effectively cause a redesign of the AMI meter. The other option is an Analog Meter.

Q. Are DTE Energy’s residential customers similarly at risk, particularly those operating medical equipment?

A. Yes, the same is true for households for residents with life sustaining electronic equipment such as the following:

- Tank type Respirator (Iron Lung)
- Cuirasses Respirator (Chest Respirator)
- Rocking Bed
- Electrically operated Respirator
- Suction Machine (Pump)
- Hemodialysis Equipment (Kidney Machine)
- Intermittent Positive Pressure Respirator
- Special Air Conditioning (specific humidity control)
- Heart Rate Monitor
- PD APENA Monitor (Parkinson’s disease control)
- Diaphragm Stimulator
- Oxygen Concentrator
- Medical Pump
- Press Respirator (for Hypertension treatment)
- CP Drum ventilator (for particulate filtering for persons with Cystic Fibrosis lung diseases)

All this essential medical equipment will either unexpectedly fail operation in an unpredictable manner or be unpredictably compromised from normal operation when subjected to the level of Conducted Emissions present in the AMI meter in use by DTE Energy, or any other utility. A person with a sensitive condition could die or suffer a serious degraded health from a critical device failure.

Download William Bathgate’s full testimony from The Michigan Public Service Commission’s Electronic Docket Filings System: <https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000001UX3MAAW>

[Pennsylvania] “Meters inflated water bills up to 6 times, lawsuit claims” – excerpts:

Faulty radio-controlled water meters multiplied some customers’ bills by as much as six times, leading the Pittsburgh Water and Sewer Authority to cut off service or threaten to do so, according to a lawsuit.

The lawsuit contends the authority knows there are problems with the meters, but that customer complaints are not being dealt with fairly or promptly.

The water meter interface units, or MIUs, “are radio controlled and purportedly read the exact amount of water used by a customer.” Their purpose is to eliminate bills based on water usage estimates determined by a customer’s past use, the lawsuit said.

“Instead, these MIU systems have catastrophically failed and customers have received grossly inaccurate and at times outrageously high bills,” the lawsuit said. **One customer was billed for using 132,000 gallons in one month on a vacant property**, for example.

An authority news release in February says some of 83,000 customers who received the new meters in September 2013 have had problems, . . .

The lawsuit seeks unspecified damages, attorneys’ fees and a court order ending the use of the new meters, among other remedies.

It also names the city of Pittsburgh, Veolia Water North America – which provides the water that is billed for along with the sewage service provided by the authority – and Jordan Tax Service, which administers the authority’s billing. But the lawsuit lays the blame for the billing problems squarely with the authority’s decision to use the radio-controlled meters and its allegedly draconian methods to collect from overbilled customers.

“Even more shocking, PWSA is acutely aware that the billings are wrong but do not hesitate for a moment to issue ‘shut off’ notices and then arbitrarily turn off water service,” the lawsuit states. “Customer complaints are ignored and in some instances water bills have increased almost 600 percent.”

“The PWSA is telling people, if you get this outrageous water bill and you don’t pay it, they’ll shut your water off,” Corcoran said.

– Joe Mandak | *Associated Press* | 5/26/15
<https://www.washingtonpost.com/news/2015/may/26/pittsburgh-authority-sued-over-radio-controlled-wa/>

[Mississippi] “Water meter problems uncovered” – excerpts:

[TIME 0:20] Officials say the malfunction in meters can cause your water bill to shoot up more than 600%

– Ross Adams | WAPT 16 News Jackson | 2/13/15
<https://www.youtube.com/watch?v=dwxBOJG0GwU>

[Alabama] “Sensus whistleblower warned about defective meters and fire hazard in 2009; US attorney general refused to investigate” – excerpts:

In Alabama in 2009, a Sensus engineering employee named Don Baker was fired for repeatedly alerting his management to the presence of a **multitude of dangerous defects** in the smart meter they were manufacturing (model iConA). As he states in the complaint he filed, this whistleblower reported **serious flaws in design and functioning** that could lead to **electrical danger, overheating, and/or fire**. In fact, the failure rate of the meters was twenty times higher than it was supposed to be, and the engineer contends that at least two house fires were the result. Sensus meters are used by utilities across the U.S. and in Canada, such as PECO, Alliant Energy, Alabama Power, and NVE.

... In May 2010, Mr. Baker filed a complaint. The type of suit is called “qui tam”, where an individual alleges harm to his government. This complaint alleges that the manufacturer and the utility companies received federal monies but provided a defective product. The U.S. Attorney’s office in Alabama declined to pursue the case, because the utility said they had not received federal money for the metering project; but the allegations about the dangerous defects in the smart meters made in the complaint have not been refuted or even addressed.

In the complaint Baker relates in detail what makes the meters dangerous, and the allegations are damning – and alarming. A few highlights:

[Meters] may fail dangerously when subjected to a sudden surge of electricity ... Meters found to contain ‘flux’ or loose solder residue ... Calibration equipment not properly designed ... Electric resistor component defective ... Internal temperatures up to 200° Fahrenheit. ... Hot socket alarm. ... Drastic overheating to the point of catastrophic failure, melting, and burning. ...

The suit states: “Mr. Baker has direct personal knowledge that Sensus and Southern Company have installed approximately one million iConA meters in Alabama homes with knowledge that the meters are seriously defective and pose a substantial fire hazard and that at least two Alabama homes have burned as a result. ... [They] were well aware

“You’re reviewing the Sensus meter that exploded and caused a fire in Collingwood, but I can tell you that smart meters, regardless of the brand, have the same basic design flaws that have caused many who are far more knowledgeable than to conclude that smart meters are fire hazards. They should not be allowed to put the lives of Canadians at risk ”

– Sharon Nobel, Correspondence to Steve Smith, General Manager, Electrical Safety Authority, Toronto, Ontario | 6/11/15

“Faulty radio-controlled water meters multiplied some customers’ bills by as much as six times, leading the Pittsburgh Water and Sewer Authority to cut off service or threaten to do so, . . . ”

– Joe Mandak, *Associated Press*, 5/26/15

that the iConA was defective and the entire project flawed.”

– Smart Meter Harm website | Posted 8/12/14 by admin
<https://smartmeterharm.org/2014/08/12/sensus-whistleblower-warned-about-defective-smart-meters-and-fire-hazard/>

[Maryland] “Sample of 19 Maryland PSC Smart Meter Complaints from 2014” – excerpts:

Case 227—Delmarva customer complains that family’s utility bill increased after a smart meter was installed. A technician was sent out to the house and confirmed that the meter was spinning too fast. Customer had read about the potential for fires and “phantom readings” from smart meters and was concerned about the possibility of the meter overheating as it is located in the sun. So customer asked to have the smart meter removed. After a “regular meter” was reinstalled, customer’s readings went back to normal.

– Maryland Smart Meter Awareness | 2/10/15
<https://marylandsmartmeterawareness.org/smart-meter-news/sample-of-maryland-psc-smart-meter-complaints-2014>

[New York] An Overview of “smart” meter hazards – excerpt:

Thousands of “smart” meters have been recalled for various failures, at consumer expense, through tax dollars and raised utility rates. These failures include over-billing, faulty operation, unreliable signals, overheating, melting circuit boards, fires, explosions and other safety concerns. (p.3)

– Michele Hertz & Toby Stover | Stop Smart Meters NY | no date. Download pdf:
<http://stopsmartmetersny.org/images/OverviewSSSNY.pdf>

[California] “Higher Numbers of Inaccurate Smart Meters Than Reported”

– excerpts:

... a list of Smart Meters that weren’t working out of the Napa/Solano PG&E office back in December shows close to 300 meters in that area that resulted in estimated bills and a number of the meters needing to be replaced. According to the PG&E meter reader who provided the documents, that list given to Patch was just one-third of the total list of non-working Smart Meters for that region. ...

The list was provided as part of a policy to meter readers daily out of the Napa/Solano PG&E office, said the source. Meter readers rely on hand-held devices as they go on their routes that show them information about the meters and into which they must input the meter data. When a meter reader came upon a meter that was not entered into their hand-held device, they went through a process known as “lost and found” to flag the meter. However, said the PG&E employee, meter readers were told that when they went through the lost and found process for a Smart Meter that was known to be defective it disrupted the estimated billing process. So, meter readers were provided with these lists of known non-working Smart Meters and were told to check the list for meters on

their routes and to skip those meters that appeared on the list.

On the list of known defective meters, one route shows nine meters listed, another shows six. On average, a route consists of a few hundred meters and a reader reads approximately 500 meters in a day, though with the decrease of meter readers some employees will read two routes or combined routes in a day now.

PG&E internal records for the individual addresses on the list show that a number of the Smart Meters that were installed in early 2010 had to be replaced with different Smart Meters in the middle of last year.

Meter readers in Marin are asked to fill out a Daily Missed Meter report when they return to the office for any meters they were unable to read. (The employee who provided the information said they were told by PG&E to no longer enter

defective meters into their handheld devices, but to submit these paper forms, so as not to disrupt the billing system.) Daily Missed Meter reports can cover a wide variety of problems – inability to find the meter, gate locked, meter missing, or defective meters with blank screens, incorrect programming or the same numbers flashing on the screen. On the missed meter reports provided to Patch, it shows that a number of those defective meters were Smart Meters that later resulted in estimated usage and bills for the customers.

In one meter reader’s daily report, there are five Smart Meters that had to be estimated instead of read; in another there are four, throughout Marin. The employee who provided the documents said he once had four defective Smart Meters out of 100 that he read on a route.

“[Meters] may fail dangerously when subjected to a sudden surge of electricity Meters found to contain ‘flux’ or loose solder residue Calibration equipment not properly designed Electric resistor component defective Internal temperatures up to 200° Fahrenheit. . . . Hot socket alarm. . . . Drastic overheating to the point of catastrophic failure, melting, and burning. . . .”

– Smart Meter Harm website, 8/12/14

Typically, customers are unaware that their bills are being estimated.

– Kelly Dunleavy O’Mara, Patch Staff | 5/23/11
<https://patch.com/california/sanrafael/higher-numbers-of-inaccurate-smart-meters-than-reported-2>

[Georgia] “City’s Faulty Water Meters Make Monthly Bills Skyrocket” – excerpts:

Five years ago the city [Atlanta] hired a company to replace its aging water meters with automatic meter reading devices. All city workers have to do is drive by and electronically collect the data. But it hasn’t gone as smoothly as it looks. As early as 2007 problems arise when city auditors found they were unable to verify electronic reads for 13% of the meters that were tested.

Then in 2009 another audit found a high number of accounts that **don’t get actual meter readings** because of **meter read errors, equipment failures, or human error.**

– Transcribed from a news clip posted 3/2/11
<https://www.youtube.com/watch?v=16gI4pCeQxw>

UNDER-RECOGNIZED CAUSES FOR “SMART” TECHNOLOGY BILLING FOLLIES

Installation and software programming errors

[Maryland] “Faulty BGE smart meter overcharged Hamden woman \$4,700” – excerpts:

A Baltimore woman says she has been notified by BGE that a faulty smart meter in her home resulted in her being overcharged more than \$4,700 over four years.

Elaine Wilson, who lives in Hamden, said she always suspected she was being overcharged for energy, particularly for gas. But when she contacted BGE to complain, utility officials urged her to have an energy audit conducted on her home which she did.

As a result, Wilson says she spent nearly \$3,000 to improve energy efficiency, which included new insulation and new weather-stripping. Wilson says BGE assured her that “you’re going to see a big difference in your utility bills.” That didn’t happen, not at all.”

In a statement, BGE said: “Through an internal review, we discovered a programming error which resulted in the customer being overbilled. As soon as this was identified, we corrected the programming issue, mailed a letter of apology to the customer and processed a refund to the customer. The customer is currently receiving bills that reflect actual usage.”

— John Rydell | FOX | 12/17/18
<https://foxbaltimore.com/news/local/bge-says-faulty-smart-meter-caused-4700-in-overcharging-in-hampden>

[Missouri] “Why are utility bills soaring in Independence? An audit could provide answers” – excerpts:

Utility costs continue to soar in Independence, leaving furious customers scrambling to pay their escalating bills. An external audit could provide insight into billing issues, but questions remain about **software provided by a third-party vendor**.

The city’s \$2.1 million agreement with Advanced Utility Systems to administer its water, sewer and electric bills is under scrutiny. A private Facebook group focused on the high cost of utilities in Independence now has about 1,900 members. Most are outraged about their bills.

The page details story after story about rising costs and electric bills doubling and tripling since May. Residents have also denounced elected officials – including Mayor Eileen Weir – for not addressing their concerns sooner.

Officials at Advanced Utility Systems say they are working with Indepen-

dence to rectify the situation. The company stands by its billing software, despite a growing number of lawsuits involving its parent company, N. Harris Computer Company of Canada. Several other cities have sued N. Harris Computer over its services.

There are talks of a class action lawsuit being filed against city-owned Independence Power & Light.

Independence Power & Light initially attributed the soaring costs to excessive summer heat. That’s similar to the explanation offered by Kansas City Power & Light after price hikes caused financial hardship for its customers in recent months.

A hot summer could explain the spiking power bills in Independence, but what about the water and sewer charges that ballooned as well? . . .

— The Kansas City Star Editorial Board | 9/8/18
<https://www.kansascity.com/opinion/editorials/article218014165.html>

[Mississippi] “Delta residents heated over high utility bills, question coming rate hikes” – excerpts:

Clarksdale resident holds up her co-worker’s \$2,000 utility bill.

. . . all summer Clarksdale residents have been filling the Clarksdale Public Utilities Commission board meetings to complain about higher than normal bills. . . .

The public utility plans a rate increase after it completes a study which is being conducted by BKD, LLP in Jackson at a cost of \$15,900.

There are **five different billing cycles** depending on where a person lives, according to CPU statement policy. Customers pay their bills within a week after their due date or their utilities will be shut off, and they have to pay late fees.

CPU offers multiples services – water, electric, sewer, mosquito, and refuse. But when water meters, which are separate from electric meters, are not read on time, this increases the customers billing cycle, forcing them to pay the extra charges.

Could the new smart meters be the problem?

Customer complaints swirl around the recent installation of new electric meters, . . .

The utility bought 6,556 Advanced Metering Infrastructure, or AMI smart meters, from Eaton Corporation, a power management company based in Minnesota, for \$1.3 million at a July 15, 2017 meeting. **The utility company used excess revenue the company saved over**

“[T]he New Jersey Board of Public Utilities and the state’s ratepayer advocate haven’t supported the technology, whose system-wide installation would run into the hundreds of millions of dollars, a cost that would get passed on to customers.”

“The state Division of Rate Counsel, which represents consumers in utility rate cases, maintains that human meter readers are still cheaper and more effective than their high-tech counterparts.”

— Alexi Friedman, “Low-tech but highly reliable: NJ meter readers still make the rounds,”
The Star-Ledger, 5/18/14

https://www.nj.com/business/2014/05/neither_bee_nor_bark_of_dog_keep_nj_meter_readers_from_completing_appointed_rounds.html

the years in order to buy the smart meters, said Hemphill.

The AMI system provides a two-way communication between the ratepayer and the utility company. . . .

In addition, CPU also purchased **MultiSpeak Specification** which makes it easier to collect the data and send it to the software billing system the company uses.

In Jackson, over 20,000 residents have to pay months worth of water bills because they haven't received those bills in months – costing the city a \$20 million loss in revenue, the *Clarion Ledger* reported.

At a September 11 board meeting, the commission members approved their 2019 budget. The **utility projected a \$2 million dollar increase in revenue** for electric, water, and sewer services. Fuel adjustments rates are being revisited which will also have an effect on revenues. These rates are calculated based on the fluctuations of the natural gas prices that CPU's energy provider, Cleco Power LLC, charge the utility for the power they purchase.

In turn, this rate is passed on to customers.

— Aallyah Wright | *Mississippi Today* | 8/14/18
<https://mississippitoday.org/2018/09/14/delta-residents-see-spike-in-utility-bills-but-can-expect-to-pay-even-more-next-year/>

[California] “San Diego City Water Department Resisted Oversight, Downplayed Smart Meter Problems” – excerpts:

Over 1,000 water customers have complained about bill spikes and other billing problems so far this year. Two sets of auditors are now looking for deeper problems with the department . . . Nevertheless, the department has tried to downplay problems, resist public records requests and mislead the public, VOSD and NBC 7 found.

...department officials have known of a “glitch” with the new meters since at least 2016. The program is also relying, in part, on technology from a meter company that has admitted to making **products that prematurely fail**. . . .

The department didn't admit any specific problems until February, when it said a single employee had screwed up 343 water bills by misreading meters. City officials only admitted this week that they'd suspected since December that the employee had been falsifying readings.

“Several smart water meters that were not properly installed in one East Coast city led to much higher bills because the meter was reading more water than what was actually being used.

In another city, a meter that was not even hooked up was showing water use. . . .”

— Steve Price, CBS 8, 2/5/18, updated 2/6/18

“Digital and wireless utility (so-called) ‘Smart’ Meters have been known to cause all kinds of problems everywhere they have been installed. One of them is unusually high bills. This is not at all surprising since a 2017 Dutch study confirmed that 9 of the most commonly installed ‘Smart’ meters caused measurement errors between 30%-582%.”

— Katie McKenzie,
Stop “Smart” Meters, Florida!, 5/25/18

... In addition to the hundreds of water customers affected by the staffer's misreads, hundreds more customers have complained to the department about other billing problems. Separately, data analyzed by VOSD and NBC 7 show over 2,500 water customers have seen bill spikes in 2017 and early 2018. Some spikes could be justifiable, but some customers maintain they are being charged for water they never used.

— Ry Rivard | *PUBLICCCEO* | 7/18/18
<http://www.publicceo.com/2018/07/san-diego-city-water-department-resisted-oversight-downplayed-smart-meter-problems/>

[California] “Water Bill Investigation: Are smart meters to blame for skyrocketing rates” – excerpts:

Susan Brinchman lives a few blocks from Jim. She has been researching smart meters for years, and has come to realize, they are not so smart.

“The meter fails because it's out in the weather. It's worked for a while, then it fails because of heat, the cold or water gets inside,” she said.

Susan is definitely on to something. Several smart water meters that were not properly installed in one East Coast city led to much higher bills because the meter was reading more water than what was actually being used.

In another city, a meter that was not even hooked up was showing water use. . . .

— Steve Price | CBS 8 | 2/5/18, updated 2/6/18
<https://www.cbs8.com/article/news/water-bill-investigation-are-smart-meters-to-blame-for-skyrocketing-rates/509-3ac436c8-e822-4b0d-931a-1929ebfbc184>

[Florida, Indiana, Kentucky, Ohio, N. Carolina, S. Carolina] “Duke Energy Billing Complaints: 13 TV News Stories in 6 States Where Customers Reported Unusually High Bills After (so-called) ‘Smart’ Meters Were Installed” – excerpts:

Digital and wireless utility (so-called) “Smart” Meters have been known to cause all kinds of problems everywhere they have been installed. One of them is unusually high bills. This is not at all surprising since a 2017 Dutch study confirmed that 9 of the most commonly installed “Smart” meters caused measurement errors between 30%-582%.

There have been at least 13 news stories in 6 states where Duke Energy customers have reported unusually high bills after AMI so-called “Smart” Meters were installed. Duke Energy has only taken responsibility once when customers complained. They didn't blame the meters though:

1. Orlando, FL 2014:
“Did your Duke Energy bill go up recently? Then read this story.”
<http://www.orlandoweekly.com/Blogs/archives/2014/08/25/did-your-duke-energy-bill-go-up-recently-then-read-this-story>
2. Tampa, FL, 2014:
“One-month spike in electric bill angers Duke Energy customer”
<http://www.tampabay.com/news/business/energy/one-month-spike-in-electric-bill-angers-duke-energy-customer/2206226>
3. South Carolina, 2016:
“Duke Energy plans to install ‘smart meters’ in all homes”
<http://wspa.com/2016/10/28/duke-energy-plans-to-install-smart-meters-in-all-homes/>
4. Ohio and Kentucky, 2017:
“Why Your Duke Bill’s So High Despite Warm Month”
<http://www.wcpo.com/money/consumer/dont-waste-your-money/why-your-duke-bills-so-high-despite-warm-month>

(Reporter John Matarese posted a link for the story on his Facebook page. There were over 500 comments posted and over 700 shares.
<https://www.facebook.com/JohnMatareseMoney>
5. Indiana, 2017:
“Early 2017 was ‘perfect storm’ for Duke Energy. President says several issues led to blizzard of complaints”
http://www.tribstar.com/news/local_news/early-was-perfect-storm-for-duke-energy/article_8c4a0f85-e04b-5ebc-b81f-aaeeb0f702e.html
6. North Carolina & Indiana, 2017:
“Duke Reports Errors, Weather Lead to Billing Complaints”
<https://www.usnews.com/news/best-states/indiana/articles/2017-04-20/duke-energy-reports-errors-weather-led-to-bill-complaints>
7. “Unhappy Duke Energy Customers in Ohio, Kentucky, and Indiana. Are You One of Them?”
<http://stopsmartmeters.org/2017/05/04/unhappy-duke-energy-customers-in-ohio-kentucky-and-indiana-are-you-one-of-them/>
8. “A Growing Resistance to Smart Meters in The Bluegrass State”
<http://stopsmartmeters.org/2017/04/27/a-growing-smart-meter-resistance-in-kentucky/>
9. South Carolina, June 29, 2017:
“Spartanburg Co. grandmother hit with \$62K power bill”
<https://www.wspa.com/news/spartanburg-co-grandmother-hit-with-62k-power-bill/>
10. Ohio/Kentucky – September 7, 2017:
“Hate Smart Meters? What It Will Cost to Opt-Out”
<http://www.wcpo.com/money/consumer/dont-waste-your-money/hate-smart-meters-what-it-will-cost-to-opt-out>
11. Florida – September 17, 2017:
“Duke Energy bills with massive increases panic Florida customers:”
<http://wncn.com/2017/09/17/duke-energy-bills-with-massive-increases-panic-florida-customers/>
12. North Carolina: February 20, 2018:
“Duke customer says his bills are way up after installation of smart meter”
<http://wlos.com/news/local/duke-customer-says-his-bills-are-way-up-after-installation-of-smart-meter>
13. May 8, 2018:
IN Duke Energy customers question newly installed smart meters
<http://cbs4indy.com/2018/05/08/duke-energy-customers-question-newly-installed-smart-meters/>

There have been problems associated with these AMI meters in addition to unusually high bills. Duke is already replacing the ones they installed within the last 5-7 years with new AMI “Smart” Meters. Adding insult to injury, they have also proposed rate increases to pay for the replacements.

– Katie McKenzie | Stop “Smart” Meters, Florida! | 5/25/18
<http://microwavechasm.org/2018/05/25/duke-energy-billing-complaints-13-tv-news-stories-in-6-states-where-customers-reported-unusually-high-bills-after-so-called-smart-meters-were-installed/>

[UK] “SSE glitch: ‘Smart meter said I owed thousands’” – excerpts:

A woman has spoken of her surprise when her smart meter quoted thousands of pounds for a day’s usage of gas and electricity, due to a system error.

Jane Allen was one of many confused customers who posted the strange readings from their SSE smart meters on social media. One customer’s display showed more than £30,000 for a single day.

SSE apologised and said no customers would be charged “the extra amounts resulting from errors”.

– Laura Lea | BBC | 3/5/17
<https://www.bbc.com/news/uk-39169313>

[California] “Audit Finds Thousands of Bad Water Bills, Hints at Other Problems” – excerpts:

San Diego’s water department sent out at least 2,750 incorrect bills last year, according to an audit . . .

Auditors blamed most of the billing problems they found on 36 or so city employees responsible for reading the city’s quarter million water meters every two months. About 1,970 of the bad bills were blamed on just 10 city employees.

The audit – which is one of several being done of the water department – may do little to end questions about the water department’s credibility. That’s because, even though auditors brushed aside concerns of systemic billing problems, their findings hint at other problems.

Auditors, for instance, found issues with the city’s \$60 million “smart meter” program but don’t go into them. . .

It found those issues were not a large factor in the billing errors, but it did find that some of the new meters were causing problems. The meters are supposed to improve meter accuracy, provide real-time data on water use and eliminate the need for human meter readers, but San Diego and other cities appear to be having problems with them. . .

There are other problems the auditors couldn’t fully explore. For instance, when auditors asked for records that would show how well water department supervisors were monitoring the quality of meter readings, the water department said it could not find the records.

Likewise, auditors found problems with a new computer system the department is using.

Auditors decided to review 455 meters that showed big spikes. From that sample, auditors concluded that the water department “appears to identify and correct most meter reading and billing error” so well that “a relatively small number of errors likely go unnoticed and uncorrected.” For instance, the department flagged over 57,000 potentially erroneous meter readings and corrected early 19,000 errors before customers received a bad bill.

– Ry Rivard | *Voice of San Diego* | 7/26/18
<https://www.voiceofsandiego.org/topics/government/audit-finds-thousands-of-bad-water-bills-hints-at-other-problems/>

[Ohio] “Cleveland Water customers could face higher bills due to critical meter installation error” – excerpts:

Incorrect meter programming leads to billing error

An exclusive News 5 Investigation reveals a critical installation error can lead nearly 400,000 recently installed “smart meters” to provide inaccurate bills affecting Cleveland Division of Water customers in 79 surrounding communities.

In addition, Cleveland water officials have been aware of potential billing errors associated with “smart meters” but routinely failed to inform customers who have complained about skyrocketing water bills.

Water customer bills can be sent inaccurate bills when new “smart meters”, that electronically record water usage data that is translated into bills, are incorrectly programmed when first installed. The programming error can occur when installers fail to properly locate a critical decimal point used to calculate water usage.

A Cleveland area water customer discovered his water meter was programmed inaccurately after complaining to the Cleveland Division of Water about increased bills for more than two years. The water department assured him there was no problem, never mentioned possible programming errors, and threatened him with disconnection.

The customer independently located the installer who verified that his meter was not programmed correctly and the excessive charges were removed from his bill—with no explanation from the Cleveland Division of Water.

The Cleveland Division of Water relies on a number of sub-contractors who have performed the “smart meter” installations since 2012.

Our News 5 Investigation found problems associated with proper meter installation are well documented – including in a report by Itron – a well-respected global technology company that supports 8,000 utilities around the world.

Itron is also the company Cleveland hired to oversee deployment of its “smart meter” program and has relied on sub-contractors to actually perform the installation.

In its report, “Factors for Water Billing Accuracy”, Itron warns that “many errors can occur during installation that can cause an inaccurate meter read”.

“[A] critical installation error can lead nearly 400,000 recently installed “smart meters” to provide inaccurate bills affecting Cleveland Division of Water customers in 79 surrounding communities.”

“The programming error can occur when installers fail to properly locate a critical decimal point used to calculate water usage.”

– Ron Regan, News 5 Cleveland, 2/15/17

Plus, a highly respected water industry expert has found “if it happens on a widespread basis, the utility is going to be inundated with extraordinarily high bills”.

Records obtained by News 5 reveal the Cleveland Division of Water has repaired or replaced at least 3,469 “smart meters” over the last four years since the program began.

Additional records show more than 72,000 water customer billing complaints for the same time period.

– Ron Regan | News 5 Cleveland | 2/15/17, updated 2/16/17

<https://www.news5cleveland.com/news/local-news/investigations/cleveland-water-customers-could-face-higher-bills-due-to-critical-meter-installation-error>

[Georgia] “DeKalb halts installation of so-called “smart” water meters” – excerpts:

So-called “smart” water meters are malfunctioning across DeKalb County, leading to the high utility bills...

Wet meters aren’t the only reason bills are skyrocketing.

The meters may not be connected, calibrated or read correctly, said DeKalb Commissioner Nancy Jester. Further, the computerized water billing system itself can introduce mistakes.

Hope Lusignan, who held a sign saying “Lee May pay my water bill,” said her bill was about \$40 monthly for two people in her house, but then it rose to \$194. “This seems like extortion,” she said. “There are people receiving bills of \$1,000, \$1,500 or \$3,500.”

– Mark Neisse | *The Atlanta Journal-Constitution* | 10/11/16
<https://www.ajc.com/news/local-govt-politics/dekalb-halts-installation-called-smart-water-meters/8GcYCgqgXDBihb9KEcOhpl/>

[Oklahoma] “Residents claim water bills are rising after new water meters are installed” – excerpts:

The city changed out those old water meters and replaced them with smart meters.

City manager Alan Guard said this transition caused multiple billing issues.

“When you change a meter out, the old meter may have had a reading of say 10,000 gallons. The new meter says zero and, when you put those two numbers into the computer, the computer thinks, well, they’ve just used 90,000 gallons and, in fact, they hadn’t used any,” Guard said.

Those customers received bills as high as \$60,000.

– Jessica Bruno | Oklahoma’s News 4 | 8/3/16
<https://kfor.com/2016/08/03/residents-claim-water-bills-are-rising-after-new-water-meters-are-installed/>

“The [‘smart’ water] meters may not be connected, calibrated or read correctly, said DeKalb Commissioner Nancy Jester. Further, the computerized water billing system itself can introduce mistakes.”

– Mark Neisse,
The Atlanta Journal-Constitution, 10/11/16

[Maryland] “City schools overcharged on water bills” – excerpts:

City public works officials say they are adjusting water bills for Baltimore public schools after several were over-billed this year by thousands of dollars – including one school whose bill rose nearly \$200,000.

According to city records, at least six school water bills shot up noticeably this year – to a total of about \$350,000 more than they had paid months earlier. For instance, Walter P. Carter Elementary and Middle’s bill more than tripled from \$6,300 to \$20,600 in April and then jumped to more than \$42,300 in July. A month later, Eutaw-Marshburn Elementary’s bill skyrocketed from \$976 to \$198,000.

Average quarterly bills for schools generally do not exceed \$10,000, De la Paz said. Yet some schools, such as Western High, are routinely charged more, city records show. The all-girls school has been charged between \$63,000 and \$77,000 three times this year. In 2009 and 2010, most of its bills were less than \$20,000.

News of the dispute over school water bills comes days after Baltimore Circuit Court Clerk Frank M. Conway formally notified the city of his plans to file a class action lawsuit over erroneous charges to residents by the municipal water billing system.

It also comes as the water system grapples to resolve problems identified in a city audit released in February. City officials acknowledged that they overcharged 38,000 mostly residential customers by at least \$4.2 million and issued refunds. The auditor called for another \$5 million in refunds.

Baltimore finance director Harry E. Black attributed the inaccurate information to a programming error and said the departments of finance and public works are working with the IT department to fix the problem. . . .

– Luke Broadwater & Erica L. Green |
The Baltimore Sun | 10/18/12
<https://www.baltimoresun.com/news/maryland/education/bs-xpm-2012-10-18-bs-md-ci-schools-water-bills-20121018-story.html>

“According to city records, at least six school water bills shot up noticeably this year – to a total of about \$350,000 more than they had paid months earlier. For instance, Walter P. Carter Elementary and Middle’s bill more than tripled from \$6,300 to \$20,600 in April and then jumped to more than \$42,300 in July. A month later, Eutaw-Marshburn Elementary’s bill skyrocketed from \$976 to \$198,000.”

“News of the dispute over school water bills comes days after Baltimore Circuit Court Clerk Frank M. Conway formally notified the city of his plans to file a class action lawsuit over erroneous charges to residents by the municipal water billing system.”

– Luke Broadwater & Erica L. Green,
The Baltimore Sun, 10/18/12

“City officials acknowledged that they overcharged 38,000 mostly residential customers by at least \$4.2 million and issued refunds. The auditor called for another \$5 million in refunds.”

– Luke Broadwater & Erica L. Green,
The Baltimore Sun, 10/18/12

[Georgia] “City’s Faulty Water Meters Make Monthly Water Bills Skyrocket” – excerpts:

[TIME 0:20] For more than three years, Atlanta – a city of more than a half million residents – has been bombarded with complaints of outrageous water bills. Similar complaints are popping up around the country in places like Cleveland, Charlotte, Tampa and Brockton, Massachusetts. But the water bill war is nothing like in Atlanta. ...

[TIME 0:50] Cobb lives by herself in this 1,800 sq. ft. home. Her water bill averages \$30 to \$40 a month – until it began going up: more than \$1,200 in November. Her December bill nearly \$6,900. Cobb now owes more than \$10,000 and city inspectors found no leaks.

[TIME 1:20] And then there is Debbie Scarborough: her water bill shot up more than \$3,000 after two months of huge spikes last summer. . . . She even hired two plumbers to prove there was no leak.

[TIME 1:38] Five years ago the city hired a company to replace its aging water meters with automatic meter reading [AMR] devices. All city workers have to do is drive by and electronically collect the data. But it hasn’t gone as smoothly as it looks. As early as 2007 problems arise when city auditors found they were unable to verify electronic reads for 13% of the meters that were tested.

Then in 2009 another audit found a high number of accounts that don’t get actual meter readings because of meter read errors, equipment failures, or human error.

[TIME 2:45] Peter Aman [City of Atlanta, Chief Operating Officer] tells us 1% of the meters sampled were not properly installed – a mistake that could cause a water bill to double.

[TIME 3:20] We repeatedly tried to interview executives of both Neptune Technologies – which manufactured the meters – and Systems & Software which provided the billing system; but they refused to comment. Man says there is no evidence those companies are at fault but he says the company that installed the meters should be held accountable. That company is Khafra – based in Atlanta – which teamed up with another firm in Pennsylvania to carry out the forty million dollar installation contract.

– Transcribed from a news clip posted 3/2/11
<https://www.youtube.com/watch?v=16gI4pCeQxw>

Video is linked to “Skyrocketing water bills mystify, anger residents” by Scott Zamost & Kyra Phillips, CNN Special Investigations Unit, 3/2/11. The contents of the video news clip vs. published text is similar but not exact. <http://www.cnn.com/2011/US/03/01/water.bills.war/index.html>

[California] “Smart Meters: PG&E Lost What Little Credibility They Still Had” – excerpts:

This one sentence sums it up:

“After months of denying any technical problems with its SmartMeter program, PG&E publicly detailed a range of glitches Monday affecting tens of thousands of the digital meters.”

[From PG&E details technical problems with SmartMeters – *San Jose Mercury News*]*

This is the first time that PG&E has publicly acknowledged technical problems with the meters, and I’m wondering why it took 43,376 confirmed problems for them to admit this program has problems. Given the willful obstruction by PG&E in acknowledging the problems with smart meters, it’s outright laughable that PG&E can be trusted with auditing and reporting smart meter reliability testing and problem resolution.

– Jeff Nolan | *Enterprise Irregulars* | 4/27/10

<https://www.enterpriseirregulars.com/17062/smart-meters-pge-lost-what-little-credibility-they-still-had/>

* “PG&E details technical problems with SmartMeters” |

Dana Hull | *San Jose Mercury News* | 4/26/2010

<https://www.mercurynews.com/2010/04/26/pge-details-technical-problems-with-smartmeters/>

[California] “CBS 5 Investigates Smart Meter Complaints”

– excerpts:

[TIME 0:07] Do you have one of those new PG&E ‘smart meters’? They’re suppose to help you understand your energy use, but we’ve heard from many viewers who think smart meters are anything but. CBS 5 investigative reporter Anna Werner looked into them . . .

[TIME 0:22] If you don’t have smart meters yet, you will have no choice. They’ll be installed in all Bay Area homes by 2012, but some viewers are asking us to investigate this: if the meters are so great, why do their bills seem to be going up?” Tonight we put the questions to PG&E and get some surprising answers.

[TIME 0:45] They’re the new electronic meters PG&E is installing on every home in the Bay Area – called smart meters. . . . “Now we don’t need to send people to go to individual homes and to read meters every time.” Instead PG&E will be able to read these meters remotely, and not just by the month but by the hour. And they

“[T]he city hired a company to replace its aging water meters with automatic meter reading [AMR] devices. All city workers have to do is drive by and electronically collect the data. But it hasn’t gone as smoothly as it looks. As early as 2007 problems arise when city auditors found they were unable to verify electronic reads for 13% of the meters that were tested.”

– Transcribed from a news clip posted 3/2/11

say they’ll be able to control your usage remotely, too. . . .

[TIME 1:25] In the long run, PG&E even promises smart meters will help customers know when to conserve energy so they can save money. . . . [Tang says:] “I do believe bills will go down.” But so far, many customers say the results has been just the opposite. When PG&E rolled out the meters in the Central Valley last summer, “what we saw is an outcry from folks from Bakersfield to Fresno.”

[TIME 1:50] After listening to those complaints [California’s] Senate Majority Leader Dean Flores told us, “I think PG&E has been less than truthful.” What about?: the explanations Flores says the company gave some of those customers – like telling them their old meters just weren’t as accurate as the smart meters.

[Flores:] “There’s no doubt that PG&E

has lied to it’s customers when it comes to replacing the old meters with the new meters, somehow saying that the old meters were defective.” Something Tang now admits isn’t true.

[TIME 2:30] Tang blames the Central Valley’s higher bills primarily on a hotter than normal summer, but if that’s the case why have there been complaints all over the Bay Area, like in Pittsburgh where Jennifer Kravonix’s (sp?) bill jumped from \$80 to \$329 . . . or in Brentwood where homeowner Steve Moon says, “I got a bill in December for \$1,107. There’s got to be a mistake.” “No mistake,” says PG&E.

[TIME 2:30] After reviewing their accounts, the company says their meters were working correctly, just like those of the 1,500 other Californians who complained. . .

[TIME 3:11] . . . customer advocate Mindy Spats says . . . “Customers with the smart meters claim that their energy usage has inexplicably risen since the meters were put in.” . . . Like Concord’s Bill Galvin. He doesn’t use his gas furnace much and his thermostat stays at 62 degrees – and his bill used to run about \$100 bucks.

But after he [Galvin] got a gas smart meter, “The last bill I received is \$384. . .” But when Galvin called PG&E to tell them something was clearly wrong, “All they would tell me is we are using too much power. . . .”

But after we asked PG&E, a crew went out to his house to check and found that smart meter was incorrectly installed. [Tang says:] “We’re incredibly sorry that this happened. . . .”

– Anna Werner | CBS 5 San Francisco | 3/11/10

| 5:52 min video

<https://www.youtube.com/watch?v=csvmw2frBws>

“. . . PG&E will be able to read these meters remotely, and not just by the month but by the hour. And they say they’ll be able to control your usage remotely, too.”

– Anna Werner, CBS 5 San Francisco, 3/11/10

UNDER-RECOGNIZED CAUSES FOR “SMART” TECHNOLOGY BILLING FOLLIES

Meter sensitivity to heat/cold, moisture and contaminants

[Michigan] *Evaluation of the ITRON Open Way AMI Meter* report by William Bathgate, E.E., M.E. – excerpts p.39-41: (“Note: This report has been written in terms that a common person with limited knowledge of electricity and engineering can understand”):

ITRON AMI Meter Life Expectancy

- New to the home consumer is the deployment of an electronic power meter on the exterior of the home. There is no realistic expectation that these new meters will last 20 years of more.
- The miniaturization of electronics constantly leaps forward in reducing the size of an electronic design. This causes the industry to obsolete certain logic chips sets within one or two years from the date of the original start of manufacturing.
- With obsolescence comes the risk that direct replacement of a meter after 2 years with the same components is unlikely or the required software compatibility will be restrained.
- **Electronic circuits do fail under the extremes of temperature and humidity. The meters are not hermetically sealed to keep out dust and moisture.** There are conformal coatings on the circuit boards which indicates they had issues with moisture on the chip sets in the past, the whole board is not covered with a conformal coating but only on special areas.
- The number of incoming power surges hitting the Varistor on the power supply board will degrade this component over time to where it no longer protects the circuit and increasingly permits power line quality issues to enter the circuit boards. This can cause an exacerbation of the “Dirty Electricity” issues already present or circuit board failures.
- The LCD will be hard to read after exposure to temperature extremes and humidity in less than 5 years. LCD’s are very sensitive to low temperatures, and they dim considerably below 0° F
- The fact that there is a set of circuit boards in a power meter at all is a large risk, the circuit boards would not be able to withstand a lightning strike or a power surge without an explosive reaction and likely melting of the circuits. This would lead to total destruction of the unit and lead to a possible fire.
- The power required to run the AMI meter is borne by the homeowner, this was never disclosed to the public that their bill will go up by over ~\$115.00 per year just to power the meter. Also the added load on generating capacity was never used in the justification for the investment required for the deployment of AMI. This gives a false impression on the AMI program reducing energy consumption. It does not save any energy for the consumer or the utility. The current Analog meter does not cost the consumer or the utility any energy to power it.

– William Bathgate, EE, ME | 12/2/16 & 2/16/17
<http://www.jeffpud.org/wp-content/uploads/Evaluation-of-the-ITRON.pdf>

[CANADA] “When Water Gets Inside Smart Meters ‘All Bets Are Off’” – excerpts:

Tom Kelly, head of the industry’s committee on meter standards, told the *Tribune* that water is a key danger to electronic meters: “Once you get water inside the electronics of these meters, all bets are off. It can do just about anything.”

The fact that about anything can happen when water gets inside a smart meter was best exemplified in Saskatchewan when it was reported last October that moisture and contaminants getting inside Sensus smart electric meters were a major factor in catastrophic meter failures and ensuing fires.

– K.T. Weaver, SkyVision Solutions | 7/28/15
<https://smartgridawareness.org/2015/07/28/when-water-gets-inside-smart-meters-all-bets-are-off/>

[Texas] “Austin Energy customer service fail: The tale of a \$12,000 water bill” – excerpts:

For nearly a year, the monthly bills for water on Paul Saustrup’s **vacant agricultural lot** in Southeast Austin were predictable: \$7 here, \$6 there. Then came one that made him look twice: \$12,111.68.

— • —
Austin Energy is amid a reckoning of its customer service policies, after initially dismissing accounts of meter reading problems that spiked the September bills of thousands of residents citywide. Since then, the utility has acknowledged it was too slow to see the billing problems, . . .

Saustrup’s case, while an isolated incident, provides insight into a system that, even facing the most unbelievable of charges, is structured to insist that the customer is on the hook for unexplained water use spikes. For months, customer service agents failed to return Saustrup’s phone calls, even as the utility added late fees to the bill in question and **withdrew hundreds of dollars from his bank account.**

— • —
. . . Austin Energy took a second look at the Saustrup case. By the next month, staff members told the commission they had discovered that a **water main break on an Austin Water Utility line had caused the Saustrups’ meter to malfunction.**

The utility credited them \$12,121.76. . . . Paul Saustrup is continuing to negotiate over a subsequent unexplained \$300 charge. But other than that, his bills have returned to their normal \$6 a month.

. . . Saustrup’s case . . . represented failures by multiple people. . . . The drafts from his bank account should have stopped at \$100, but multiple drafts were created to cover skipped bills from March to October, allowing the utility to withdraw \$800 in one swoop.

– Elizabeth Findell | *Statesman* | 4/10/18, updated 8/25/18
<https://www.statesman.com/news/20180410/austin-energy-customer-service-fail-the-tale-of-a-12000-water-bill>

— • —
“Tom Kelly, head of the industry’s committee on meter standards, told the *Tribune* that water is a key danger to electronic meters: ‘Once you get water inside the electronics of these meters, all bets are off. It can do just about anything.’”

– K.T. Weaver, SkyVision Solutions, 7/28/15

[S. Carolina] ‘Shocking’ electricity bills spark concern about smart meters in the Upstate, but Duke says they’re accurate – excerpts:

When Gena Marshbanks opened her February power bill, . . . Her charges from Duke Energy had more than doubled, she said. . . . Another Berea resident said her recent bill also more than doubled. . . . A man in Pickens County, meanwhile, said his electricity charges had almost tripled.

They’re among local residents blaming higher power bills on their new smart meters, the digital meters that transfer information about electricity usage through wireless technology to utility providers.

Leon McCoig, a Pickens County resident, said Duke Energy installed his smart meter in late October, and his power bill immediately shot up. “A month later my bill had more than doubled, almost tripled,” McCoig said. . . .

“There are some cases where there is hundreds of dollars of increase, widely inflated bills, and people dispute them often to no avail,” Hart said. “There’s some evidence that the meters can be affected by high temperatures, sunlight and nearby cell towers.”

– Paul Hyde | *Greenville News* | 5/1/18
<https://www.greenvilleonline.com/story/news/2018/04/30/shocking-electricity-bills-spark-concern-smart-meters-upstate-but-duke-says-theyre-accurate/554708002/>

[Michigan] “Consumers Energy to man with \$2,100 electric bill: Time to pay up” – excerpts:

Consumers Energy says it cannot find any problems with a Sanford family’s smart meter, so they are on the hook for about \$2,100 in electric usage. . . . Iafrate believes he knows why Consumers won’t admit the **smart meter was malfunctioning in the cold weather**. “I think they are afraid to admit there was something wrong with the meter because its going to cost a lot of money,” he said. Iafrate’s most recent monthly Consumers bill was \$300, which is a normal bill for him.

– Terry Camp | ABC 12 | 3/23/18
<https://www.abc12.com/content/news/Consumers-Energy-to-man-with-2100-electric-bill-Time-to-pay-up-477794313.html>

[California] “Higher Numbers of Inaccurate Smart Meters Than Reported” – excerpts:

PG&E recently reported that 1,544 of its Smart Meters were experiencing a **defect that caused the meters to run fast in hot weather**. The defective meters were primarily in the Central Valley around Fresno and would all be replaced. Affected customers will be issued a refund where necessary. The average refund is \$40, said PG&E, and customers affected would also get a \$25 credit.

A California Public Utilities Commission (CPUC) judge also ruled earlier this month in favor of a Mountain View couple that was able to prove their PG&E **Smart Meter had been drastically overbilling them, was triggering their motion detector light**, and ordered PG&E to issue a \$1,400 refund.

“PG&E recently reported that 1,544 of its Smart Meters were experiencing a defect that caused the meters to run fast in hot weather.”

– Kelly Dunleavy O’Mara, Patch Staff, 5/23/11

The couple, Vera Sokolova and Alexei Kacharovsky, filed a formal complaint with the CPUC in March 2010. PG&E tested their meter, found it to be working accurately, but replaced it in June 2010 after it stopped transmitting data. The couple’s new meter was actually part of a program PG&E runs to install a traditional meter next to a Smart Meter and show the results weekly online in a side-by-side test.

In September, the second Smart Meter had also stopped transmitting data and PG&E wanted to replace it with another, but the couple refused and took the case to the CPUC.

– Kelly Dunleavy O’Mara, Patch Staff | 5/23/11
<https://patch.com/california/sanrafael/higher-numbers-of-inaccurate-smart-meters-than-reported-2>

[California] “Structure Report: Smart meter conflict of interest and cover up of skyrocketing bills” – excerpts:

Emails between PG&E and the California Public Utilities Commission (CPUC) expose conflict of interest and cover up of skyrocketing smart meter bills. The consultant the CPUC hired to investigate the complaints, Structure, had worked for PG&E for the previous five years, and was not “independent” as they claim. CPUC President Peevey told PG&E the results of Structure’s investigation two months before it was complete.

The coordinated propaganda campaign between the CPUC, PG&E and marketing firms couldn’t tolerate news such as **500,000 smart meters were at risk for overcharging in hot weather**. Peeves knew smart meters were overcharging, as his own bill doubled when a smart meter was installed on his vacation home, . . .

– Sandi Maurer, EMF Safety Network | 3/16/15
<http://emfsafetynetwork.org/structure-report-smart-meter-conflict-of-interest-and-cover-up/>
Download pdf: <http://emfsafetynetwork.org/wp-content/uploads/2011/01/Structure-Report-Smart-meter-conflict-of-interest-and-cover-up-Press-release.pdf>

[California] “PG&E finds some SmartMeters erred when too hot” – excerpts:

Almost 1,600 Pacific Gas and Electric Co. SmartMeters harbor a defect that can overcharge customers when the devices get too hot, the utility reported Monday.

The flawed meters sometimes **misread electricity usage when their internal temperature tops 100 degrees**. . . .

– David R. Baker | *SF Gate* | 5/2/11
<https://www.sfgate.com/business/article/PG-E-finds-some-SmartMeters-erred-when-too-hot-2373009.php>

[California] “Not-so-smart meters overbilling Californians” – excerpts:

The utility, Pacific Gas and Electric Company, admitted yesterday that about 1,600 so-called “smart meters” had charged customers for phantom power. The meters, manufactured by Landis+Gyr, **malfunctioned when they get too hot**.

In particular, PG&E’s “smart meter” snafu suggests that the regulatory process used to approve advanced metering technologies in the state of California is, to put it mildly, “ineffective.”

– William Peatland | *Forbes* | 5/3/11 <https://www.forbes.com/sites/williampeatland/2011/05/03/not-so-smart-meters-overbilling-californians/#4ab0b2ae5348>

UNDER-RECOGNIZED CAUSES FOR “SMART” TECHNOLOGY BILLING FOLLIES

Power surges leading to arcing inside meters (triggering meter meltdown, explosion, and/or fire)

[California] “Edison and PG&E Are About to Face Lawsuits Over California Wildfires” – excerpts:

Edison International and PG&E Corp. may face lawsuits as soon as this week blaming them for the fires raging through communities in southern and northern California

– Edvard Pettersson & Joel Rosenblatt | *Bloomberg* | 11/12/18
<https://www.bloomberg.com/news/articles/2018-11-12/edison-pg-e-are-targets-as-wildfires-press-lawyers-into-action>

[Oregon] “Smart meter fears persist” – excerpts:

This summer, Pacific Power will swap out existing meters for its 88,000 customers in Jackson County with new ones that relay information through a cellular connection, but some residents are skeptical about the safety claims of the digital meters. “Fire is our concern,” said Becker, 58, who lives in a remote wooded area. “We just don’t want it here.” Becker is one of many customers in Jackson County concerned about fire dangers from the new meters, . . .

“CERTIFICATION LABORATORY SAYS SMART METER ‘DESIGN FLAWS . . . KNOWN TO CAUSE SERIOUS FIRE HAZARDS’”

– excerpts:

On February 16, 2015, [MET Laboratories] posted this information to their news blog *Compliance Today*:

“In the past, design flaws in smart meter units have been known to cause serious fire hazards and spotty performance. This has caused a lot of concern for utilities and manufacturers of smart meters. To prevent problems like this, a new voluntary safety standard – UL 2735 – has been created for electric utility meters...”

New UL 2735 Electric Utility Meter Standard Ensures Safety and Performance <http://www.metlabs.com/blog/meters/new-ul-2735-electric-utility-meter-standard-ensures-safety-and-performance/>

This declaration from an international electrical testing and certification lab says what knowledgeable members of the public, whistleblowers, and electrical workers unions have been saying for years.

And yet, these companies repeatedly deny any problems with their meters, blaming fires and electrical problems on “hot sockets” and poor installation. . . .

All the while, these flawed Smart Meters are installed on the walls of millions of homes, schools, hospitals, nursing homes and other buildings across the world.

Another note: **Sensus went through UL certification for one of its fire-prone Smart Meter models – and passed.**

– Smart Meter Harm website | Posted on 1/5/16
<https://smartmeterharm.org/2016/01/05/international-lab-says-smart-meter-design-flaws-known-to-cause-serious-fire-hazards/>

In 2014, Portland General Electric replaced 70,000 residential smart meters after three small meter fires were reported, with minor property damage in one case. . .

–Damian Mann | *Mail Tribune* | 6/18/18
<https://mailtribune.com/news/top-stories/smart-meter-fears-persist>

[Missouri] “Clay County woman warning others after new digital energy meter explodes, starts small house fire” – excerpts:

Cherise Edwards was asleep inside her home when a small explosion woke her children, who then woke her up.

A new digital meter installed by Platte-Clay Electric Cooperative **combusted and started a small fire** at her home, she said.

Once the fire and smoke cleared, she found her newly installed energy meter had melted.

“I did a little research, and I’ve seen we are not the first people in the KC area to have experienced this kind of thing,” Edwards said. “KCP&L had problems last year with them.”

– Shayla Patrick | *Fox4kc* | 1/3/18
<https://fox4kc.com/2018/01/03/clay-county-woman-warning-others-after-new-digital-energy-meter-explodes-starts-small-house-fire/>

[CANADA] Video: GTA homeowner liable for damage after smart meter catches fire:

A GTA [Greater Toronto Area] resident recently came home to find his hydro smart meter fully engulfed in flames. Kevin Zeller soon found out he was responsible for most of the hardware used by Hydro One and was slapped with a bill for \$5,000.

[TIME 0:38] . . . concerns come from the recall of more than 5,000 smart meters in Ontario in 2015 by electrical safety authorities after several fires in Saskatchewan were thought to have been caused by a specific model of meter.

– *CityNews* | 1/12/17
<https://toronto.citynews.ca/video/2017/01/12/video-gta-homeowner-liable-for-damage-after-smart-meter-catches-fire/>

[Indiana] “OUCC Submission of Public Comments” – excerpts:

Smart Meters should be renamed Dangerous Meters. They are a health and fire threat to every home they are installed in. They emit dangerous amounts of radiation. There are many on record cases of Smart Meters exploding from over heating. The original analog meters do not emit this kind of radiation at this level. That is a fact. The Smart Meter is a transmitter. The analog meters are not. Duke Energy and other power companies claim they are safe. They are not safe. They have no totally independent research study on this.... I have already been told untruths by Duke’s representatives in their special department to handle customers like myself who resist having a Smart Meter installed in their home. Duke will say they are only on short times during the day. They are not, they are on all the time transmitting radioactive frequencies. While I am not an expert by any means on Smart Meters. I do have a FCC First Class Radiotelephone Licence. This allows me to operate/engineer any Radio of Television in the United States.

It is a lifetime license. I am a former Program Director in Commercial Radio Broadcast. I mention this so you know I have some understanding of transmitters. The only place these Smart Meters belong in my opinion is **in the military as a weapon**. They radiate harmful levels of radiation into the home they are attached too. And other homes if they are within say 30 feet. And it could be more further. When you have an apartment complex they are usually clustered in one spot. If one blows up. . . other have a high probability to do the same. . . like dominoes falling. Because these fire explosions are from overheating of the Smart Meters.

– James Janulis | Formstack Submission For: OUCC_Contact_2361 | Submitted 8/31/17 7:26 PM https://iure.portal.in.gov/entity/sharepoint-documentlocation/f5a4c5db-8dae-e711-81d4-1458d04e1b18/bb9c6bba-fd52-45ad-8e64-a444aef13c39?file=44963_OUCC_Submission%20of%20Consumer%20Comments_101017.pdf

[California] “Lawsuits claim faulty PG&E Smart Meters started house fires” – excerpt:

Friday, November 17, 2017 12:28AM FRESNO, Calif. (KFSN)

Valdez and his family ran out and firefighters had already started pouring water on the house.

He noticed several PG&E employees got there almost as quickly, and he says one of them **removed the smart meter** while the firefighters worked. Firebaugh’s fire chief saw it too.

He says he is never seen that before, but he thinks he knows why they may have wanted the device. “Investigation after the fire was put out revealed that in all probability the fire was caused by a problem in the electrical panel and the problem in the electrical panel, in my belief, was the Smart Meter that was installed in the panel by PG&E,” said John Borboa.

Dozens of people have blamed smart meters for fires over the last several years and the issue has been a topic of discussion for the California Public Utilities Commission.

Jose Valdez[’s] . . . insurance company is suing PG&E over the fire at his house and they not alone.

“Active arcing going on, electrical activity happening with flames going up the side of the house,” said Don Macalpine.

Fresno firefighters put out the fire at the Sandoval home. Deputy Fire Marshal Don Macalpine says there’s no clear evidence it started with a smart meter malfunction, but their investigation doesn’t rule it out.

A second lawsuit filed on behalf of the Sandoval’s’ insurance company blames PG&E and the smart meter.

In fact, at least five lawsuits in California make the same claim about smart meters.

– EMR Health Alliance of BC <http://emrabc.ca/?p=12175>

[BRITAIN] “BBC Watchdog: ‘Smart meters installations cause 18 fires’” – excerpts:

Investigations are underway into the safety of smart meters after the BBC this week broadcast details of 18 house fires occurring since energy companies started to rollout the Government-led national smart meter programme.

– Dean Stewart | Aura Gas Limited | 8/3/17 <https://auragas.co.uk/bbc-watchdog-smart-meters-installations-cause-18-fires/>

“SUBMISSION TO THE MICHIGAN HOUSE ENERGY POLICY COMMITTEE”

– excerpts:

I am writing in support of House Bill 4220, as it addresses the concerns that may of us utility customers have about the new smart meters that are being installed upon Michigan homes and businesses.

Besides the meters’ assault on utility users’ health, privacy and affordability, the new meters are unsafe and prone to exploding, sparking and causing hundreds, if not thousands of fires.

The meters that are used by both **Consumers Energy** and **DTE** are the **Itron OpenWay** meter.

Features that make these meters unsafe are:

1. Flammable (polycarbonate/plastic) outer shell and flammable internal circuit-boards.
2. Small, weak contact points for wireless remote controlled on/off switch, subject to pitting and arcing.
3. Contact between the meter prongs and the spring clamps in the box are weak due to smaller dimensions of the connectors on the new meters which could cause reported arcing. Also, the clamps could be pitted due to the age of the box.
4. Switch mode power supply where 240 volts AC are converted to lower DC voltage to operate the delicate circuitry of the meter and the power is then sent into the building as 240 volts AC at a much higher frequency than the 60Hz that was received causing what is known as ‘dirty electricity’.
5. The meters are not properly grounded causing surges or lightning strikes to cause circuit burn-outs on the wiring and appliances in the building.
6. Very cheaply constructed components are made in China. If the meters were constructed according to electrical safety standards, the cost would be greatly increased.
7. For obvious reasons the meters are not approved as safe by UL or any other certifying agency.

– David Lonier| 2/21/17. Note: the document with Lonier’s letter also includes submissions from others – download pdf: <https://house.mi.gov/sessiondocs/2017-2018/testimony/Committee420-2-21-2017-1.pdf> <http://house.michigan.gov/sessiondocs/2017-2018/testimony/Committee420-3-7-2017-5.pdf>

[California] “Big rig crash into pole leads to power surge in Discovery Bay” – excerpts:

PG&E is investigating after a big rig accident caused a power surge, which led to the explosion of some SmartMeters at homes in the surrounding neighborhoods.

“It was a pretty good explosion,” said one resident on Worthing Court in Discovery Bay. “We heard it from inside the house and the pieces, they look like they went 8 to 10 feet.”

According to the CHP, a big rig crashed into a power pole

around 10:30 a.m., knocking down power lines and shearing the pole in half on Highway 4, between Marsh Creek Road and the Byron Highway. The driver of the rig was not seriously hurt. According to PG&E, the high power transmission lines at the top of the pole carry 60,000 volts. They crossed with the lower residential lines, charged with 21,000 volts.

“Those two lines hit, caused a surge in the system, which caused issues down the line,” ex-

“Taylor claims power surges occur several times a day, causing reboots to occur, which in turn, creates more electrical usage.”

– Tim Farley, “City has highest electric bills in Oklahoma, meter critic says” *Red Dirt News*, 10/19/15 <https://www.reddirtreport.com/red-dirt-news/claremore-smart-meters-create-substantial-increases-bills-residents-claim>

plained Captain Craig Auzenne with the East Contra Costa County Fire District.

. . . Besides the exploding SmartMeters, one resident told us smoke and some flame was shooting out of the outlets inside her home. “All of a sudden, all the electrical outlets started popping and fire was shooting out of one of them,” said the resident, . . .

– ABC 7 | 10/26/17
<https://abc7news.com/big-rig-crash-into-pole-leads-to-discovery-bay-power-surge/2571617/>

[BRITAIN] “It’s been a bad day for Smart Meters in Britain” – excerpts:

. . . BBC’s Watchdog Live programme did a follow up to its previous investigation on fires that have potentially been caused by poorly executed installations of smart meters. Since the original investigation they’ve been contacted by more people affected and tonight showed the devastating consequences for two families, whose homes had been gutted by fire – one from a **faulty gas meter installation**, and the second attributed to a **faulty electricity meter installation**.

– Smart Energy | 7/27/17
<https://www.nickhunn.com/its-been-a-bad-day-for-smart-meters-in-britain/>

[BRITAIN] “Electricity problems at Grenfell Tower ‘never resolved’ – excerpts:

Dozens of residents of Grenfell Tower suffered electricity power surges so strong their appliances malfunctioned, overheated and emitted smoke a few years before the fire, it has emerged.

Documents seen by the BBC reveal how 25 residents claimed compensation from the council following the surges in 2013. Some say electricity problems persisted into the months before June’s fire.

Police say the blaze, in which at least 80 are thought to have died, started in a fridge freezer on the fourth floor. One fire expert told the BBC the electricity spikes could have been an issue which led to the fire starting in the first place.

One document indicates that the **surges caused some appliances to explode and smoke**.

Mr. Jamalvatan said the newly installed electrical meter often made a strange buzzing sound at night and constantly had to be topped up with money.

– Andrew Hosken | *BBC News* | 7/18/17 <https://www.bbc.com/news/uk-40632705>

[Michigan] “No injuries reported in blaze” – excerpts:

An elderly man escaped his home unharmed Thursday night after a fire broke out at his residence . . .

The gentleman claimed that sparks coming from his newly installed electric meter caused the blaze.

– Corey Murray | *Hillsdale Daily News* | 10/27/16
<https://www.hillsdale.net/news/20161027/no-injuries-reported-in-blaze>

“DID BURNED OUT CALIFORNIA HOMES ALL HAVE SMART-METERS IN COMMON?”

“Veteran California radio host, Paul Preston visited Paradise, CA after the fires and noticed that houses without Smart-Meters were not burned down. . . .” *Excerpts from the interview:*

[TIME 2:38] People are starting to speculate about the temperatures that were actually in play that morning: anywhere from between 2,000 to 4,000 degrees. Now that’s a hot fire. Most forest fires – my understanding as the forest people told me – burn around 1,700 max. So to have something burned so very, very hot and intense is certainly out of the norm. . . . This was not a normal forest fire – as are the California fires in general. . . .

[TIME 9:40] What we did notice about the homes that survived seemed to be spec homes – homes that were just being built. And these spec homes didn’t have power to them.

[TIME 10:00] They [the surviving homes] had smart meters but they didn’t have power to the smart meters.

There’s one home that doesn’t have anything but the plywood siding on it and it’s open to the elements and the fire burned right up to it [but] didn’t touch it, but didn’t have any power to it either.

We found one home that we investigated standing tall. And it looked like whoever lived in the home disconnected the smart meter. . . . Homes that did have the regular analog meter seemed to survive. We noticed that phenomena in the Santa Rosa fire: that you had these homes that didn’t have smart meters and they survived. A friend of mine, her home survived. In fact it’s the weirdest thing: you go driving up to her house – which is in the foothills here in Santa Rosa – and all these homes are burned down except hers. And she’s the only one of all those homes – dozens of homes – that didn’t have a smart meter. She survived. . . . The home right next to her burned down . . . all [the homes around her] burned down . . . Besides the meters’ assault on utility users’ health, privacy and affordability, the new meters are unsafe and prone to exploding, sparking and causing hundreds, if not thousands of fires.

– NorthWestLiberty News | 12/2/18
<https://www.youtube.com/watch?v=WEJngWLotD0>

[Kansas, Missouri] “KCMO smart meter fire sparks investigation”— excerpts:

Kansas City Power & Light is at the tail end of a two and a half year project to install more than 700,000 smart meters across the metro. It’s a small part of the billions of dollars utilities have invested in smart meters across the U.S.

But there are serious concerns Waverly Galbreath experienced firsthand. The burn marks are visible on his KCMO home. A burned-out circuit board is the only remaining part of the smart meter at Galbreath’s home where the July fire started.

“I got a call from my neighbor and he said my house was on fire. But when I arrived, I found out the meter had exploded,” he said.

Despite few problems in the metro, hundreds of thousands of smart meters have been recalled in the last several years across North America.

And hundreds of fires have broken out in **California, Texas, Florida, Nevada, Illinois** and across **Canada**.

“It really is a very dangerous issue and should be treated as a real unprecedented emergency in your area,” said Canadian electrician Professor Curtis Bennett. Bennett is in an ongoing Canadian legal battle over smart meters.

Bennett sent the 41 Action News Investigators **thermal images showing a dangerous smart meter connection running too hot** and a normal one. “Now you’ve got this plastic piece of junk on their property and **that’s actually what’s burning inside that meter base with the wires**,” he said.

California insurance adjuster Norman Lambe currently has seven open smart meter fire claims on his desk.

Of the dozens of smart meter fires he’s investigated, he said overheating is the major issue.

“They are sparking, they are manufacturing too much heat,” he said. “In any given situation when you have too much heat and you have material to burn, meaning unfortunately wiring in the individual’s home or business, you’re going to have a fire.”

— Andy Alcock | KSHB 41 Kansas City | 8/29/16
<https://www.kshb.com/news/local-news/investigations/kcmo-smart-meter-fire-sparks-investigation>

[Michigan] “An electrical engineer’s testimony on Smart Meters” — excerpts:

The MPSC [Michigan Public Service Commission] has been asked to grant the Utilities the ability to **turn off**

“Besides the exploding Smart-Meters, one resident told us smoke and some flame was shooting out of the outlets inside her home. ‘All of a sudden, all the electrical outlets started popping and fire was shooting out of one of them,’ . . .”

— ABC 7, 10/26/17

“. . . hundreds of thousands of smart meters have been recalled in the last several years across North America. And hundreds of fires have broken out in California, Texas, Florida, Nevada, Illinois and across Canada.”

— Andy Alcock | KSHB 41 Kansas City | 8/29/16

power to people and businesses without notice for “Dangerous or Hazardous” conditions.

Based on my professional examination of the metering technology deployed with AMI meters, the meters themselves are “Dangerous or Hazardous” due to their **Lightning vulnerabilities**, EMI and RF emissions.

There has been a disregard for the health and safety effects of these AMI meters on the general population by the utilities and their AMI supplier.

So by their own lack of definition of “Dangerous or Hazardous” all AMI meters deployed at present need to be subject to shut off of service without notice due to “Dangerous or Hazardous” conditions. This may be silly logic on my part

but the logic of the proposed rule is equally silly logic and the rule change request should be denied due to lack of definition of what is “Dangerous or Hazardous”.

Based on my analysis of the AMI meter and the Analog meter the AMI meter is far more dangerous to the general population than the Analog meter.

— Posted on 10/14/16 by admin |

Stop Smart Meters Michigan | 10/12/16, rev.10/13/16

<https://smartmeterharm.org/2016/10/14/an-electrical-engineers-testimony-on-smart-meters/>

Smart Meter Fires and Explosions

<http://emfsafetynetwork.org/smart-meters/smart-meter-fires-and-explosions/>

This EMF Safety Network webpage contains “a compilation of reports from the US, Australia and Canada about fires, explosions, electrical problems or burned out appliances due to Smart Meter installations. For a summary of the problems, read this: <http://emfsafetynetwork.org/wp-content/uploads/2016/01/Summary-of-Evidence-on-Smart-Meter-Fires.pdf>”

[USA, CANADA] Smart Meter Fires – youtube video:

[Description:] Smart Meter fires across the United States and Canada have been in the media for several years. Electricity companies often remove the smart meters before the fire inspector can review the evidence, which in many fire inspectors minds is against the law.

2012: “In a compilation made by the EMF Safety Network, which specializes in EMF and RF precaution, there are at least a couple of dozen smart meter fire reports from Australia to Canada and virtually all regions of the United States, and some of those reports concern a couple of dozen fire incidents.”

— Published 11/8/15

<https://www.youtube.com/watch?v=szj9pmwawwE>

[California] “Smart Meters are a known fire hazard – new evidence revealed by electrical workers union” — excerpts:

In a proceeding before the National La-

bor Relations Board, evidence was submitted that Smart Meter fires, burned Smart Meters, burned meter sockets, and malfunctioning Smart Meters are regularly occurring and are known to Oncor and CenterPoint, two Texas utility companies. The meter manufacturers cited are Itron and Landis & Gyr.

In California, Itron Smart Meters are used by Southern California Edison, San Diego Gas and Electric, and Los Angeles Department of Water and Power; Landis & Gyr Smart Meters are used by PG&E and Sacramento Municipal Utility District.

After testifying to the Texas Senate on this issue, Oncor employee and union representative Bobby Reed was fired by Oncor.

— Smart Meter Harm website | Posted 7/19/15 <https://smartmeterharm.org/2015/07/19/smart-meters-are-a-known-fire-hazard-new-evidence-revealed-by-electrical-workers-union/>

[USA] “Sensus Smart Meters Pass UL Safety Tests, but Fire Concerns Remain” – excerpts:

Smart meter vendor Sensus has had bad luck when it comes to having a handful of its smart meters – or something connected to or nearby those smart meters – catching on fire. And even an all-clear from Underwriters Laboratories hasn’t been enough for Sensus to win some of its utility customers back – at least not yet.

That’s the news from Canada’s Saskatchewan province, where Sensus won a small victory this week with the municipal utility of Medicine Hat. The 31,483-customer utility announced last week that it’s going to keep installing the rest of its Sensus Gen 3 iConA electric meters, after a series of UL tests showed they met all safety standards.

That’s a lower-cost alternative than the one Sensus faces with much larger utility SaskPower, which in August decided to pull 105,000 of the same meters after eight reports of fires. SaskPower got its own UL test results in December, showing the Sensus meters passed all safety tests under the UL 2735 Standard for Safety for Electric Utility Meters, which test resistance to flame, water, temperature swings and exposure to various voltages and other extreme operating conditions.

Even so, SaskPower is still asking Sensus to spend about \$5 million to develop a new smart meter that meets more stringent safety standards – although just how they’ll differ from UL’s standards, the utility has yet to say.

Even so, the solution that Sensus has reached with SaskPower will at least allow it to keep the utility as a customer. That’s better than the outcome with Pennsylvania-based utility PECO, which halted installation of Sensus meters in 2012 after reports of about two dozen fires. PECO’s investigation did not find that Sensus’ technology was at fault. Still, PECO re-

placed Sensus with Landis+Gyr meters for rest of its rollout.

Sensus isn’t the only smart meter vendor that’s dealing with the issue of fires. Canadian utility BC Hydro, which uses Itron smart meters, came under scrutiny after a few meter fires were reported in its territory in 2012. California utility Pacific Gas & Electric, which uses General Electric and Landis+Gyr meters, was spotlighted after an electrical short in a Santa Rosa shopping mall caused three smart meters to “melt down,” and electrical malfunctions have caused reported smart meter fires for Florida utility FPL, which uses GE meters.

Even so, Sensus seems to have gotten the worst of the issue, in terms of being forced to replace meters due to fire concerns. It saw 10,500 meters replaced by Lakeland, Fla.’s municipal utility after six reported meter fires, and Oregon utility Portland General Electric replaced 70,000 meters after three reports of fires last year.

— Jeff St. John | *GreenTech Media* | 1/15/15 <https://www.greentechmedia.com/articles/read/sensus-smart-meters-pass-ul-safety-tests-but-fire-concerns-remain>

[Texas] “Family Blames Smart Meter For Fatal Fire” – excerpt:

A man died late Monday night after flames swept through his home near the Fair Park area of Dallas. It happened at around 10:30 p.m. . . . , and family members said that his recently upgraded electric meter might be to blame.

The family actually owns three homes in a row on this street. It was the home in the middle that caught on fire, killing a beloved elderly man. Flames and smoke were shooting out of the front of the structure when firefighters first arrived on the scene.

Emergency crews quickly extinguished the flames and found the body of 74-year-old James Humphrey Jr. inside of the burned single-story home. Fire investigators are now working to determine the cause of the blaze.

Alfreda Johnson is the victim’s cousin, and she believes that she already knows the cause of the fire. Workers upgraded the electric meter on the home just three

weeks ago. “These people keep coming out here, doing what they want to do to these old houses,” she said.

Dallas Fire-Rescue investigators are taking Johnson’s claims seriously. The new smart meter was located on the outside of the house by a front bedroom, where the heaviest damage occurred and where the man was found dead.

And this is not the first time that such an incident has happened to this family. There was a fire at Johnson’s own home back in 2011. “Caught on fire due to a smart meter,” she added. “They told me it caught on fire from the meter. Nothing was ever done about it.”

— Elizabeth Dinh | CBS DFW | 2/3/15 <https://dfw.cbslocal.com/2015/02/03/family-blames-smart-meter-for-fatal-fire/>

[Michigan] “Couple escapes house fire, dogs killed: smart meter blamed” – excerpts:

A couple barely escaped a house fire with their lives in Detroit, Michigan, early Sunday morning, October 5th, 2014. Sadly, their two dogs were killed in the blaze. The homeowner blames the recently installed “smart” meter for the fire. “It was DTE... why my dogs are dead, why my family is ruined, why I have no house, why I have nothing.”

Investigators from Detroit’s Fire Department say two circuit boxes were connected to the “smart” meter outside the house and one of them blew, but it wasn’t immediately clear to investigators whether the smart meter was the cause of the fire.

However, investigators confirmed on October 7th that the “smart” meter “may have played a role in the fire.”

– K. T. Weaver | Take Back Your Power | 10/14/14
<https://takebackyourpower.net/couple-escapes-house-fire-dogs-killed-smart-meter-blamed/>

[CANADA] “1000’s of smart meter fires: New whistleblower & court evidence (video)” – excerpts:

In studying, doing presentations and making videos on ‘smart’ meters for nearly 5 years now, personally I had my doubts I would learn anything new when I first connected with a utility worker whistleblower through *Take Back Your Power*.

I was completely wrong and they are right. It is worse than I thought – than we all thought. A major and critical error has been brought forth.

Why are meters exploding off houses by the 100’s at a time? Why are fires happening no matter where smart/digital meters are being installed?

This new video [*] . . . explains in simple terms these new revelations from the insiders, as well as new court documentation and other insights.

* “**The Truth About Smart Meters**” by Brian Thiessen, Vernon Schubert Centre, Vernon, BC, Canada 8/15/12. Video: <https://www.youtube.com/watch?v=iljgBirKWhc>

Video topics include: • Court documents • Whistle-blower evidence • High voltage surges (the removal of the surge arrestors designed to protect your home) • Lower voltage surges • Thinner blades on “smart” meters • Remote disconnect issues • Bad installations • Installing under load

The whistleblowers...who contacted us have serviced and repaired over 200,000 meters in the field. They have been warning their supervisors about ‘smart’ meter problems for nearly a decade now. They have had enough of the lies and want you to know what they know.

“The whistleblowers...who contacted us have serviced and repaired over 200,000 meters in the field. They have been warning their supervisors about ‘smart’ meter problems for nearly a decade now. They have had enough of the lies and want you to know what they know.”

“On top of the explosive new details, the meters have at least four major sources of arcing.”

“Arcing in ‘smart’ meters causes extreme heat, which causes fires.”

– Take Back Your Power, 7/14/15

On top of the explosive new details, the meters have at least four major sources of arcing. That’s right – FOUR.

Arcing in ‘smart’ meters causes extreme heat, which causes fires. As we now see, it is beyond any shadow of a doubt that meter manufacturers know, utilities know, and regulators know. They have known the whole time, but they didn’t want to tell you.

– Take Back Your Power | 7/14/15
<https://takebackyourpower.net/1000s-of-smart-meter-fires-new-whistleblower-court-evidence-video/>

[Maryland] “Sample of 19 Maryland PSC Smart Meter Complaints from 2014” – excerpt:

Case #155—“During a power outage in 2012, I was standing 25 yards from a smart meter when power was restored. The **meter literally exploded**. I have pictures of the remnants to substantiate this claim. Based on this experience I opted out of the PEPCO smart meter

program...I can provide pictures of the burned out smart meter.” **Customer also asks why he should pay fees to opt out (which according to PEPCO are for meter readers) when 70% of his bills last year were estimated.**

– Maryland Smart Meter Awareness | 2/10/15 <https://marylandsmartmeter-awareness.org/smart-meter-news/sample-of-maryland-psc-smart-meter-complaints-2014/>

[California] “Stockton Smart Meters Explode After Truck Causes Power Surge” – excerpts:

A power surge left thousands without power in Stockton on Monday after smart meters on their homes exploded.

The explosions started at around 8:30 a.m. after a truck crashed into a utility pole, causing a surge.

When the customers in more than 5,000 homes get their power back on will depend on how badly damaged their meters are.

Neighbors in the South Stockton area described it as a large pop, a bomb going off, and strong enough to shake a house.

– Leigh Martinez | CBS Sacramento | 3/30/15 <https://sacramento.cbslocal.com/2015/03/30/stockton-smart-meters-explode-after-truck-causes-power-surge/>

[CANADA] “Smart meter catches fire at home in east Regina” – excerpts:

Homeowner Joan Riemer said she was woken by the sound of loud bangs coming from the back wall of the house around 1:30 a.m. “I thought it was somebody hitting it with a bat,” Riemer said. “I looked out my bedroom and I saw flames, and then I knew what happened.” Roemer says she went outside and found that the smart meter had melted and the cover on a nearby barbecue was on fire. She pulled the burning barbecue away from the home and called 911.

SaskPower replaced the melted meter with a traditional unit and restored power to the home about an hour later. Spokesperson Tyler Hopson said it’s concerning whenever there is

a malfunction, and the company is working to remove smart meters as quickly as possible.

Earlier this year, the province ordered SaskPower to remove the more than 100,000 smart meters that had already been installed, following at least eight fires linked to the devices.

— CTV News Regina | 11/7/14
<https://regina.ctvnews.ca/smart-meter-catches-fire-at-home-in-east-regina-1.2091955#ixzz3J7GHgZOR>

“SMART METERS FIRE, LIVING HELL AND BUREAUCRATIC MESSES”

— excerpts:

This is the real life story about what a Smart Meter can do to your home and your life, especially when a public utility company, a state regulatory agency and insurance company are involved. Colleen, of Yardley, Pennsylvania, has been living a Faustian nightmare and feels she has been pressed to all reasonable limits all because of PECO, an Exelon company, installing a SMART METER on her house. All surnames have been deleted because there is a lawsuit involved.

Colleen contacted me with her story, asking if I could write an article about it. However, after reading it, I thought I would submit it in her trauma-stricken words, since I never could do it the justice her Smart Meter odyssey needs in every manner: morally, legally and financially.

No utility customer should have to go through with the devastatingly unknown problems Smart Meters cause: fires, explosions, problems with insurance companies, housing displacement, etc.—even some deaths due to Smart Meter fires. Nonetheless, it seems Pennsylvania state officials are turning totally deaf ears to consumer complaints about Smart Meters. One state legislator, Representative Robert Godshall, who chairs the Consumer Affairs Committee where Smart Meter Opt-out bills have been referred to, refuses to bring HB 394, HB395 and HB396 up for a vote. Apparently, too many state legislators want legal opt-outs from Smart Meters for Pennsylvanians—as other states provide.

Furthermore, when Pennsylvania legislators originally voted and approved HB2200, which became Act 129 of 2008, Smart Meters would NOT be mandatory, but the PA Public Utility Commission has misinterpreted and overreached in implementation regulations making Smart Meters mandatory for every household and building in Pennsylvania. That’s illegal and has to be addressed by the Governor and the state court system.

What follows is a story every utility company customer EVERYWHERE should read to know what happens when a Smart Meter is retrofitted on a home’s metering panel and then malfunctions. Please take the time and learn from one family’s excruciating and unbelievable Smart Meter nightmare. Now, I defer to Colleen. Read more:

<https://www.activistpost.com/2015/06/smart-meters-fire-living-hell-and.html>

— Catherine Frompovich | *The Activist Post* | 6/25/15

[CANADA] “UPDATED: Smart meter testing used Hanley residents as ‘guinea pigs’: NDP” – excerpts:

Critics argue that Bill Boyd, the minister responsible for SaskPower, was aware the meter being tested in Hanley, Sask., in 2012 was the same model as one that overheated 14 times in Philadelphia.

“(Boyd) knew his test run in Hanley put those people at risk, using Hanley as guinea pigs,” said NDP deputy leader Trent Witherspoon.

An investigation showed it took one month for SaskPower to actually send employees to Hanley to replace the meters – a process that took only two days.

A spokeswoman for Philadelphia Electric Co. told The Canadian Press the company reached out to a number of utilities, including SaskPower, to alert them of overheating incidents.

— • —

Boyd . . . said he was advised that a newer Sensus meter corrected the issue. . . . Boyd said, in hindsight, the advice was wrong because the newer model still caused eight fires in Saskatchewan.

— *Global News* | 10/30/14 https://globalnews.ca/news/1645744/smart-meter-testing-used-hanley-residents-as-guinea-pigs-ndp/?fb_action_ids=821049284612481&fb_action_types=og.comments

[Nevada] “Analog Meters Withstand ‘Hot Sockets’ Better Than Smart Meters” – excerpts:

Even if electric utility companies are able to “blame” a hot socket or customer wiring for many smart meter-related fires, the meters themselves likely contributed to the fires, the severity of the fire damage, or the speed at which the fires spread.

— • —

When a smart meter and associated meter box are the origin of a fire, many times the evidence is burned or “consumed” to the extent that a full cause determination is difficult to make with certainty. This is exemplified by examining the above photo for a smart meter-related fire in Reno, Nevada, still under investigation. For some smart meter fires, the fire may simply be documented as “accidental” and where the cause was “electrical” in nature. In other instances, a complete forensics investigation is not completed due to a lack of training, time, or other needed resources for the assigned investigators.

Utility companies are able to take advantage of the above situation where it is usually difficult for fire investigators to “definitively” establish the cause of smart meter-related fires. Utility companies (and particularly meter manufacturers) thus always blame the customer’s wiring or a “hot socket” issue for smart meter-related fires even when contrary evidence exists. **A hot socket is where there is a loss of tension in at least one of the meter socket jaws for the meter receptacle. This loss of tension contributes to micro-arc-ing that can lead to eventual catastrophic failure of the smart meter with a subsequent explosion and/or fire.**

— Smart Grid Awareness | 10/16/14 <http://smartgridawareness.org/2014/10/16/analog-meters-withstand-hot-sockets-better-than-smart-meters/>

[Nevada, Oregon, Pennsylvania]

“Reno smart meter fires more widespread than first feared” – excerpts:

A *Reno Gazette-Journal* review of the investigation reports on the nine fires Reno and Sparks investigators say started in smart meters indicate the blazes occurred in old and new homes, in urban and suburban neighborhoods, to low-income homeowners and those who are more well-off.

The fires generally caused very little damage, destroying the meter itself and charring the outside wall of the home. Two fires, however, consumed much of the homes. One **burned a man’s face**. One **killed a woman**.

The investigation files also offer evidence that the meter blazes could be more widespread than even fire investigators know. In the reports, NV Energy employees on the scenes of two of the fires told investigators that such blazes happened regularly.

. . . an electrician who helps NV Energy replace the meters told the *Reno Gazette-Journal* that often meters would be fixed before the fire department could even be called. The RGJ has withheld his name because he continues to do work for NV Energy and didn’t want to put his employment at risk.

“NV Energy was so quick in having me or one of the other guys out there that the fire department never knew about them,” he said. “We’d have the panel changed out and power turned on within five hours and a guy painting the wall right behind us.”

He said that he’s fixed 15 or 16 burned-out meters in the past two years in Reno, Sparks and Gardnerville. “The fire department was never called on most of them. I only saw the fire department on two or three of them,” he said.

One NV Energy employee told firefighters at Ponder’s house in November 2012 that hers was the “third meter they have had similar problems with this month alone.”

At a fire in June 2013, an NV Energy trouble technician told firefighters that exploding smart meters were a “big problem,” and that trouble technicians and meter technicians have opted out of having them installed on their own homes – which they did out of safety concerns as well as in protest to NV Energy’s decision to lay off meter readers once the smart meters were installed.

Another worker on scene at that fire told Sparks investigators he “has

“Boyd...said he was advised that a newer Sensus meter corrected the [overheating] issue....[He] said, in hindsight, the advice was wrong because the newer model still caused eight fires in Saskatchewan.”

– *Global News*, 10/30/14

“At a fire in June 2013, an NV Energy trouble technician told firefighters that exploding smart meters were a ‘big problem,’ and that trouble technicians and meter technicians have opted out of having them installed on their own homes – which they did out of safety concerns as well as in protest to NV Energy’s decision to lay off meter readers once the smart meters were installed.”

– Anjeanette Damon, *Reno Gazette Journal*, 9/21/14

been replacing about two smart meters a month that have failed and caused damage to the residential or commercial buildings.”

Most of the meters installed in Nevada were manufactured by North Carolina-based Sensus, which has had hundreds of thousands of its meters removed from homes in **Portland, Saskatchewan and Philadelphia**. Portland officials began removing the meters after reports of just three fires.

NV Energy had been required to provide semi-annual reports on the meters to the Public Utilities Commission, but stopped filing the reports in June 2012.

Those reports contain somewhat haphazard data on meter malfunctions, using different terminology to describe meters that appear to have been damaged or destroyed by some sort of overheating.

In short, the company reported 45 “burned” or “smoked” meters between Jan. 1, 2011 and June 30, 2012. A total of 3,767 malfunctioning meters that succumbed to a variety of problems.

– Anjeanette Damon | *Reno Gazette Journal* | 9/21/14 <https://www.rgj.com/story/news/2014/09/21/reno-smart-meter-fires-widespread-first-feared/15897355/>

[Nevada] “Fire chiefs call for smart meter probe after blazes” – excerpts:

The Reno and Sparks fire chiefs are asking the Public Utilities Commission to investigate the safety of smart meters installed by NV Energy on homes throughout the state in the wake of a troubling spate of blazes they believe are associated with the meters, including one recent fire that killed a 61-year-old woman.

Since 2012, four fires have occurred in Reno and five fires have occurred in Sparks that city investigators say are linked to the smart meters manufactured by North Carolina-based Sensus. . . .

Of the nine fires in Reno and Sparks that appear to be linked to the smart meters, seven resulted in very little damage. Only the meter itself was destroyed and the surrounding wall was partially blackened. But one of the fires in Reno burned a man’s face. The meter burst into flames when he flipped a breaker switch, scorching him. He put out the flames with a fire extinguisher and was treated at a local hospital.

Garrison said meter fires are particularly concerning because they start on the outside of the house, won’t be picked up by indoor smoke detectors and can escape immediate notice. “It can burn a long

time and enter the attic or the walls,” Garrison said. “The occupants inside may not even be aware the house is on fire. This is very alarming to me.”

Consumed meters can be caused by a voltage overload in the home or a “hot socket,” where there is too much “electrical resistance” in the smart meter’s connection to the box and it becomes overheated, Egan said.

Portland General Electric replaced 70,000 Sensus smart meters in July after three “small fires” started by the meters, according to the *Oregonian*. In 2012, **Peco Energy in Philadelphia** switched out 186,000 Sensus smart meters after fire concerns, according to news accounts. And **SaskPower in Saskatchewan, Canada** is in the process of replacing more than 100,000 Sensus smart meters, according to news accounts.

— Anjeanette Damon | Reno (Nevada) *Gazette-Journal* | 9/16/14
<https://www.usatoday.com/story/news/nation/2014/09/16/fire-chiefs-call-for-smart-meter-probe-after-blazes/15751373/>

[CANADA] “SaskPower says smart meter company will pay back \$24M in cash” — excerpts:

A deal has been struck between SaskPower and the company that sold it thousands of smart meters. Some 105,000 smart meters – which are digital and can be read from a remote location – are being pulled after fires in a number of units.

SaskPower says it has reached a deal with the Sensus company to recover part of the \$47-million cost of removing those meters.

— CBC News | 9/9/14 <https://www.cbc.ca/news/canada/saskatchewan/saskpower-says-smart-meter-company-will-pay-back-24m-in-cash-1.2760793>

[Florida] “Smart meter fires: Lakeland Electric recalls 10.5k Sensus meters” — excerpts:

Sensus smart meters are again at the centre of a product recall due to overheating safety concerns, the second such incident in the US since Canada’s SaskPower halted its rollout due to meter-related fires.

Florida utility Lakeland Electric has announced it will replace more than 10,500 residential smart meters following fires related to six of the meters in the past year, general manager Joel Ivy said earlier this week.

In an emailed statement, Mr Ivy said: “While this is a small percentage [of meters], the integrity, safety and performance of our equipment is paramount, so we are replacing the remote-disconnect meters.”

— Smart Energy International | 8/29/14 <https://www.smart-energy.com/regional-news/north-america/smart-meter-fires-lakeland-electric-recalls-10-5k-sensus-meters/>

[CANADA, Oregon] “More Fires, More Smart Meter Recalls for Sensus” — “Utilities pull 105,000 meters in Canada, 70,000 in Oregon; . . .” — excerpts:

Smart meter maker Sensus is back in the news for a problem it would rather believe is not its fault: smart meters that overheat and catch fire.

Late last month, utility Portland General Electric announced it was replacing 70,000 Sensus meters – specifically, its 2S Gen3 RD models – after three reports of fires caused by overheating of the meter-home interconnection.

That blow was followed by the Saskatchewan government’s Wednesday decision to remove 105,000 Sensus smart meters deployed by utility SaskPower, after finding eight reports of overheating, some resulting in fires on the outside of the home. SaskPower is expecting the replacement to take six to nine months and cost about \$15 million, compared to the \$37 million it has spent so far on its entire smart meter rollout.

Sensus announced Monday that it had tested the eight meters in question, out of an installed base of 175,000 meters for the utility. The results indicated “long-standing industry issues: one was caused by an issue with a meter base attached to a home, three were caused by utility over-voltage, two were caused by water intrusion through the meter base, and one remains under investigation,” it wrote.

Fires are far from unknown in other smart meter deployments, and can usually be traced back to improper installation, water leakage or other mundane causes. They’re also part of a broader set of fire risks and dangers associated with connecting buildings to the grid, as the *Vancouver Sun* reported in 2012 after utility BC Hydro saw backlash for two reported smart-meter-caused house fires.

— Jeff St. John | *Greenwich Media* | 8/4/14
<https://www.greentechmedia.com/articles/read/more-fires-more-smart-meter-recalls-for-sensus>

[Indiana] “Smart Meters Safety Questioned After Fires” — excerpts:

While smart meters are still relatively new in Kosciusko County, a fire in Leesburg early Monday morning is a reason to have concern. (See story)

North Webster Fire Department Chief Jeremy Likens said the fire at 36 EMS T14 Lane, Leesburg, “definitely started in the new meter. We’ll do more investigating on it today, but it definitely was in the meter.”

Likens said the KREMC smart meter at the home was the first he had seen and the first fire locally that he has seen start in the meter, which resulted in \$5,000 to \$10,000 worth of damages.

Likens plans to spend some time over the next couple days looking more closely at the smart meters and working with Squad 70, Kosciusko County’s fire investigation team.

“In some cases fires appear to have originated in the meters themselves, in other cases in appliances like microwave ovens or refrigerators . . . , because of power surges.”

— Bill Sweet, *IEEE Spectrum*, 9/5/12

Across the country, over 900 fires have been linked to smart meters since 2008, according to Jonathan Libber, a former attorney for the Environmental Protection Agency. Libber heads Maryland Smart Meter Awareness, a group opposed to the meters.

Gordon Baker is a fire investigator with Squad 70. While he was made aware of Monday’s fire and the possibility that smart meters may have been responsible, he said, “We have not yet investigated

“ELECTRICAL OVERHEATING: HOW IT HAPPENS”

– excerpts:

When using a toaster oven, space heater or other “heavy” appliance you might notice the plug getting hot during use. Overheating can cause the tines or prongs and also the jaws that grasp the tines inside the socket to corrode and worsen the problem. To forestall a fire you will either clean the prongs or replace the plug and/or cord. Well, the same thing can happen to the mounting contacts inside the box housing your electric meter – except that you don’t notice this until it’s too late.

Local licensed electricians were not employed to install the 15,000 smart meters for **National Grid’s** two year Worcester Pilot Program, according to one source. Using licensed workers might not be mandatory for the task of changing meters – anymore than one needs to be licensed to simply plug in an appliance in their home. Evenso, independent contractors might either not have been trained to inspect electrical contacts for corrosion – or take the time to check as they are on piecework. In a hurry, they will remove and then replace the meter while it is UNDER LOAD; while refrigerators, circulators, heaters and everything else are drawing current! Such installation is illegal: It causes **sparking, heating & corrosion of contacts** during the instant they are not fully engaged!*

Electrician James Dreyer of Westsyde, BC is well aware of the arcing that occurs when meters are removed or installed while under load. There have been 40 fires in BC Hydro’s territory because of the new meters or the faulty manner in which most were installed. The **newer meters also lack surge arresters**. One of 14,000 holdouts against a change out, he was arrested just before Christmas but the charges were dropped – for now.^[170] The meters in British Columbia are made by Itron®, the same manufacturer of those being used by National Grid here in Worcester.

Smart Meters have exploded or burned up under surge conditions because they lack a high voltage flashover bypass to ground present on older, analog meters. 5000 meters in Stockton, CA,^[182] where 5000 meters blew off houses and many appliances were damaged after an electrical surge in March, 2015 also 100 meters in Capitola, CA,^[182a] succumbed to high voltage surges in June, 2015 ... despite Capitola having been one of 15 local governments in California to pass an ordinance banning the meters back in 2010. Two California fire captains have reported overvoltage conditions in their own homes they attribute to the changeover to smart meters. They experienced brighter lights and motors speeding up randomly and suddenly.^[183]

***Avoiding arcing and corrosion is most critical in a meter box as an owner or tenant can’t tell if connections are compromised until lights flicker or it’s too late!** AC Switches are designed to make and break their connections within the 1/120th of a second that the voltage crosses zero as it reverses polarity. Arcing can cause microscopic hot points on a switch’s contacts but this is lessened with the use of alternating current, which goes to zero volts 120 times a second. The contacts in DC vehicle switches must have larger contact areas for a given power rating than an equivalent AC switch and be able to make and break contact as fast as possible.

– Worcester Opts Out | No date <http://www.worcesteroptsout.org/safety22.html>

any (smart meter) fires in our area, but the meters are pretty new to this area ... they are very concerning to the (fire) departments,” based on fire reports from across the country.

KREMC and NIPSCO are both using versions of smart meters. KREMC is using an Advanced Metering Infrastructure which uses smart meters to send usage information wirelessly, directly to the KREMC offices. NIPSCO is using an Automated Meter Reading System. The AMR information is gathered wirelessly by a monitor inside a NIPSCO vehicle.

— Stacey Staley | *Ink Free News* | 8/13/13
<http://www.inkfreeneews.com/2013/08/13/smart-meters-safety-questioned-after-fires/>

[California] California Public Utilities Commission hearing (Santa Rosa, CA; 12/18/12) – former meter reader Pat Wrigley testifies – excerpts:

I was a meter reader for nine and a half years with PG&E in the Marin office before I was illegally fired because I was not intimidated into being quiet because of the problems I saw first-hand regarding smart meters’ inaccuracy. . . .

. . . PG&E knows they [smart meters] do catch on fire when they are remotely turned back on when a customer – who is

delinquent in their bill, finally pays their bill – these meters catch fire. They know it and they are covering it up.

– Transcribed from “PG&E knows ‘smart meters’ catch fire” ... published 3/7/13 <https://www.youtube.com/watch?v=EnxIoltNUek&feature=youtu.be>

[USA, CANADA, AUSTRALIA] “Smart Meter Fires” – excerpts:

We are seeing a spate of report from around the United States – and indeed around the world – of fires believed to have been caused by smart meters that were faulty, incorrectly installed, or connected to circuits where there were unfortunate and unforeseen effects. This appears to be not just a matter of freak incidents that may or may not have taken place here or there. In a compilation made by the EMF Safety Network, which specializes in EMF and RF precaution, there are at least a couple of dozen smart meter fire reports from **Australia** to **Canada** and virtually all regions of the **United States**, and some of those reports concern a couple of dozen fire incidents. In some cases fires appear to have originated in the meters themselves, in other cases in appliances like microwave ovens or refrigerators . . . , because of power surges.

– Bill Sweet | *IEEE Spectrum* | 9/5/12
<https://spectrum.ieee.org/energywise/energy/the-smarter-grid/smart-meter-fire-reports>

[Illinois] “ComEd: Smart Meter Installation Causes Three Area House Fires” – excerpts:

The installation of smart meters, . . . , has caused three small fires in area homes, ComEd has confirmed.

The utility giant in a statement said the small residential fires, two in River Forest and one in Berwyn, weren’t caused by faulty meters. The problem “was related to fitting and connection issues with an older-model socket that had a poor connection at the point where the customer’s wires and ComEd’s wires meet.”

And it’s not the first time the devices have been linked with troubling malfunctions. According to the Philadelphia Inquirer, Peco Energy Co., which like ComEd is owned by the Exelon Corp. stopped its smart meter installation in suburban Philadelphia after 15 of some 186,000 devices overheated, including one that set fire to a home.

Here in Chicagoland, ComEd has installed about 130,000 smart meters. Oak Park has been the test ground for ComEd’s multi-billion dollar smart grid system, beginning with the creation of the company’s first intelligent substation, profiled in this Jan. 2012 Chicago News Cooperative story.

– Casey Cora | Patch, Oak Park-River Forest | 8/5/12
<https://patch.com/illinois/oakpark/comed-smart-meter-river-forest-berwyn-house-fires>

[California] “Power surge raises questions about SmartMeters” – excerpts:

When 80 PG&E SmartMeters caught on fire and burned out after a power surge in East Palo Alto on Aug. 25, the incident raised questions for some residents and utilities officials about the safety of the new digital devices.

The sustained electrical surge to more than 200 East Palo Alto homes and businesses lasted for about one hour and 20 minutes, until a PG&E crew shut off the power, according to a Menlo Park Fire Protection District incident report.

Some Palo Alto Utilities engineers said what happened in East Palo Alto illustrates why Palo Alto is moving cautiously before installing similar devices. Palo Alto utilities spokeswoman Debbie Katz said that surges have not burned out the city’s analog meters.

Katz said the advantage of the **analog meter** is that it **doesn’t have internal electronics**. When a power surge hits a digital meter, the extra jolt of electricity can disrupt the flow of data or even shut down the meter, she said.

“When 80 PG&E SmartMeters caught on fire and burned out after a power surge in East Palo Alto on Aug. 25 [2011], the incident raised questions for some residents and utilities officials about the safety of the new digital devices.

“The sustained electrical surge to more than 200 East Palo Alto homes and businesses lasted for about one hour and 20 minutes, until a PG&E crew shut off the power, . . .

“. . . Palo Alto utilities spokeswoman Debbie Katz said that surges have not burned out the city’s analog meters.”

– Sue Dremann, *Palo Alto Weekly*, 8/6/11

But “the analog says, ‘OK, whatever,’ and keeps going. The SmartMeter says, ‘Oh I’ve got a headache and I can’t think,’” she said.

Currently most meters in Palo Alto are analog, but about 3,000 to 4,000 are fitted with electronic receiver transmitters. Meter readers can read the data from a hand-held device at a distance . . . she said.

The city’s gas and water meters run on their own batteries, eliminating the need for electricity, and are not vulnerable to power surges, she said.

Mindy Spatt, communications director for The Utility Reform Network (TURN), said the utility-consumer advocacy group **received many complaints about surges damaging appliances when the SmartMeters were first installed**. In the best-case scenario, the event in East Palo Alto is an additional cause for concern, she said.

– Sue Dremann | *Palo Alto Weekly* | 8/6/11
<https://www.paloaltoonline.com/news/2011/09/04/power-surge-raises-questions-about-smartmeters>

[California] “Summary of Evidence on Smart Meter Fires” – excerpts:

In California and around world, smart meters have been linked to fires, explosions, and damaged appliances. For every fire started at the meter, in an appliance, or on wiring, smart meter causality should be suspected.

Matt Beckett, a California fire department captain stated, “Two years ago PG&E replaced that meter with a “Smart Meter”. Immediately following we noticed power surges in the form of our refrigerator motor intermittently speeding up simultaneously with our lights becoming brighter. As a seventeen year veteran and current Fire Captain this caused me to become very concerned.” The Smart meter on his house was replaced with an analog, and there were no problems, until a new Smart Meter was reinstalled. This time he had two surge protectors burn out.

Download 7-pg pdf: <http://emfsafetynetwork.org/wp-content/uploads/2016/01/Summary-of-Evidence-on-Smart-Meter-Fires.pdf>

[California] “Arcing Meter Hazards” – excerpts:

[A] letter . . . [was] sent to the EMF Safety Network from a California fire department captain (Ross) who saved his home from a potential Smart Meter fire in 2009. PG&E has admitted that Smart Meters have interfered with GFI’s and AFCI’s, but they have not admitted to any connection with a Smart Meter fire.

[Read letter: <http://emfsafetynetwork.org/smart-meter-arcing/>]
– EMF Safety Network | 6/28/11 | Note: Be sure to read comments.

UNDER-RECOGNIZED CAUSES FOR “SMART” TECHNOLOGY BILLING FOLLIES

Communication transmission instability and external interferences

[N. Carolina] “News 13 Investigates: Duke Energy’s smart utility meters not without problems” – excerpts:

Connectivity. In the mountains, it can disrupt phone calls, needed emergency help and, maybe now, your power bill. A News 13 investigation has uncovered a change that’s causing some customers to do a doubletake with their power bills. It involves a notice many will be getting in the mail from Duke Energy.

Duke is replacing old utility meters with what the company calls smart meters. But **bad cellular service** spelled trouble for one customer whose service was threatened to be turned off before News 13 got his bill fixed. And it could happen to you.

Baker said, before the contractor left, he asked how the new meter works. “They said, ‘Well, it works on a cell signal.’ I said, ‘Well, we don’t really have a cell signal up here.’ They said, ‘Well, that’s OK, because if any of your neighbors do, it will daisy chain and everyone will be connected,” Baker said.

What does **daisy chaining** mean? Essentially that means your smart meter will **relay your energy usage using an RF signal to a hub in your neighborhood**. If you can’t connect directly, it could **send your usage next door or to the next neighbor or next one until it can get a signal to Duke’s hub, placed in your neighborhood**. If you have a cell phone, you know that doesn’t always work. Duke knows that, too.

— Jennifer Emert | WLOS abc | 7/25/18
<https://wlos.com/news/local/news-13-investigates-duke-energys-smart-utility-meters-not-without-problems>

[California] “San Diego City Water Department Resisted Oversight, Downplayed Smart Meter Problems” – excerpts:

He [spokesman Jerry McCormick] failed to mention an April 2016 meeting where a sales representative for one of the vendors, Atlanta-based Mueller Water Products, told water department officials about a “glitch” with some of the new meters that San Diego bought. The city only recently revealed that meeting took place. . . .

Separately, Mueller has told its shareholders that it needs to set aside over \$9 million to fulfill customer warranties because some of the smart meter technology it made between 2011 and 2014 were failing at a “higher-than-expected rate.” The city spent about \$5 million on Mueller products during that period, including the company’s “Hersey” brand smart meters.

[S]ome of the problems with Mueller’s products only show up when the smart meters are hooked up to a data

network. Right now, most of the smart meters the city has installed are not fully activated because they lack the complete radio equipment needed to allow them to send real-time water use data. That means only about 15,000 meters are actually “smart” and that the city could be sitting on technology that doesn’t work but not even know it yet.

Padre Dam Municipal Water District, which serves a swath of East County around Santee, has its own smart meter program, which it started working on in 2009. After several years, it realized its meters, also made by Mueller, had problems. They kept failing to send radio signals.

— Ry Rivard | PUBLICCEO | 7/18/18 <http://www.publicceo.com/2018/07/san-diego-city-water-department-resisted-oversight-downplayed-smart-meter-problems/>

[California] “Meter Reader Woes: Are ‘smart meters’ behind water bill increases in La Jolla?” – excerpts:

Although an audit of the San Diego Public Utilities’ Department (PUD) is ongoing to find the source of a recent spike in water bills, one question is raising eyebrows: Are the City’s Advanced Metering Infrastructure (AMI) and its “smart meters” part of the problem?

Over the last two months, La Jolla residents have been meeting to discuss unexplained increases in their water bills. . . . At previous meetings, one resident said he was told by a PUD employee that the former (analog) meters were “more reliable.”

Muirlands-area resident Tom Pastore said he questions whether the digital readings could be influenced by WiFi interference, Bluetooth technology and/or hackers. “My belief is that there could be a problem with remote reading, using WiFi to read the meters at a central location,” he said. Pastore has a master’s degree in physics and electronic

engineering, and spent 15 years at General Dynamics. “I think there is the possibility of Electro Magnetic Interference (EMI), also called Radio Frequency Interference (RFI), and because it is a small meter, I assume it may not have been thoroughly tested to reject (outside) signals. I’d like someone to tell me how exhaustive the testing was against this happening.”

Features that emit possible interference include Internet hotspots, television towers, cell phone signal towers, cell phone use and more, Pastore explained. “I know there’s a lot of RFI that surrounds us here and all over town,” he said. “What’s to prevent these devices from causing interference and influencing the meter readings?”

— Ashley Mackin-Solomon | La Jolla Light | 2/14/18
<https://www.lajollalight.com/news/sd-are-smart-meters-behind-water-bill-increase-20180213-story.html>

“Smart meters often fail to measure or transmit the data they record when measuring energy consumption, known as meter readings, owing to faulty measuring equipment or unreliable communication modules. Existing studies do not address successive and non-periodical missing meter readings.”

— Excerpt from the Abstract for “Topology-Based Estimation of Missing Smart Meter Readings,” by Daisuke Kodaira & Sekyung Han, 1/17/18
https://www.researchgate.net/publication/322564055_Topology-Based_Estimation_of_Missing_Smart_Meter_Readings

[USA] “Static energy meter errors caused by conducted electromagnetic interference” – excerpts from the Abstract:

Static, or electronic, energy meters are replacing the conventional electromechanical meters. Consumers are sometimes complaining about higher energy readings and billing after the change to a static meter, but there is not a clear common or root cause at present. **Electromagnetic interference has been observed between active infeed converters as used in photo-voltaic systems and static meters.** Reducing the interference levels eliminated inaccurate reading in static meters. Several field investigations failed to identify a clear root cause of inaccurate readings of static energy meters. . . .

– Frank Leferink, Cees Keyer, Anton Melentjev | *IEEE Electromagnetic Compatibility Magazine* | Vol. 5, Issue 4, 4th Quarter 2016 <https://ieeexplore.ieee.org/document/7866234>

[California, Texas] “PG&E Details Smart Meter Problems” – excerpts:

Pacific Gas and Electric admitted that there are problems with some smart meters, . . .

The California utility was taken to task by state lawmakers on Monday over smart meter complaints. Regulators have received nearly 1,000 complaints that smart meter installations have caused spikes in billing prices, . . .

Although only a handful have been inaccurate, about 43,000 smart meters installed since 2007 have had other problems, including installation errors or transmission failures, Helen Burt, PG&E’s vice president and chief customer officer, told the senators during the hearing.

Burt said about 5,500 meters had networking problems; these units were replaced as they were identified and thus did not impact meter accuracy. Approximately 11,000 of the 5.5 million meters needed to be replaced or upgraded when data was measured but stored. She noted that in both of these cases customers were charged less and were not retroactively charged.

The third issue, meters that were installed incorrectly, is similar to an issue **Onco** encountered in their smart meter rollout in Texas. While Burt did not specify in the hearing if the PG&E calibrations during installation created higher than usual bills, she did note that fewer than 27,000 meters had this issue and that they have been repaired or replaced as they are identified.

– Katherine Tweed | *Greenwich Media* | 4/27/10 <https://www.greentechmedia.com/articles/read/pg-e-details-smart-meter-problems>

[USA] Advanced Metering Infrastructure and Customer Systems – excerpts:

Table 1.

Examples of AMI Communications Technologies

<u>Wired</u>	<u>Wireless</u>
• Fiber optic cable	• Radio Frequency (RF)
• Power-line communications (PLC)	– mesh network
• Telephone dial-up modem	• RF – Point to multipoint
• Digital subscriber line (DSL)	• RF – Cellular

– U.S. Department of Energy, September 2016, p.13 https://www.energy.gov/sites/prod/files/2016/12/f34/AMI%20Summary%20Report_09-26-16.pdf

HOW AMI/SMART METER DATA IS TRANSMITTED

[USA] Considerations for adopting AMI and AMR – A comprehensive guide for water utilities” – excerpts p.9-10:

B. TRANSMITTING OPTIONS FOR AMI SYSTEMS

Data is transmitted in AMI systems in a few ways: **one-way, two-way, and quasi two-way** AMI systems. It is useful to think of these systems types as system directions; in other words, what directions can information be shared in a system. The most appropriate option will largely depend on **how much data is collected and what special features the utility wants.**

One-Way

A one-way system has four points in its communication line. Data first goes from the meter’s register to an interface unit, then goes from the interface unit to a fixed-base data collector. From the collector, data is sent to the server and the server is the last point where information is pulled for billing and analysis. The server is also where the data is continually stored. The result is that data flows in only one direction. There are two types of one-way systems:

Bubble-Up – In a bubble-up system, the transmitter relays readings continuously every few seconds. The data travels from the meter transmitter to the meter-reading receiver.

Awake-Sleep – In an awake-sleep system, a radio transceiver relays the data by sending a signal to a particular transmitter serial number. When the signal is sent, the transmitter is “woken” from a resting state and the data is transmitted. One-way systems are the most basic AMI systems and provide the most basic AMI benefits such as more accurate billing and reduced meter-reading expenses.

Semi-Two-Way

Data can flow bi-directionally between the data collectors and the server, but the interface unit is fitted only with a receiver and communicates in one direction. This is done so that the server can poll the data collectors, but the server cannot communicate with the interface unit.

A utility that is motivated by factors other than billing or safety/reallocation of its meter-reading staff may want to pursue more advanced AMI systems. A quasi two-way enables the server to poll data from collectors at more frequent intervals. The increased volume of data can be used for billing, conservation, or customer-service goals.

True-Two-Way

A two-way system differs from a one-way system only in that the interface unit has both a transmitter and a receiver. A full two-way system offers additional abilities beyond those of the quasi two-way and makes it easier to achieve system and utility goals. Some examples of features supported by a two-way system are remote shut-off valves and meter-tampering alarms. Although two-way systems are the most expensive, they have the most potential for maximizing system benefits. Additionally, while the utility may only require a one-way system at present, it may be important to consider using a two-way system because it can affect the implementation of future upgrades and system changes.

C. METHODS OF DATA TRANSMISSION

Radio Technologies

Because of its reliability and cost-effectiveness, radio frequency (RF) is the most common communication technology for AMI/AMR systems. Antennas or transmitters are attached to the meter or register, and data is transmitted from the meters and the data collectors by RF. Although this is the most common transmitting technology, there are a few challenges to be aware of.

Both the RF of the system and physical terrain and obstructions will affect the type of equipment needed. AMI/AMR frequencies are generally 30 MHz or greater. These are referred to as “line-of-sight” systems because the radio signal moves in a straight line. Line-of-sight signals can be blocked by a variety of structural elements such as trees, buildings with lathe and plaster construction materials, telephone poles, and chain link fences. In addition, some system elements can be barriers, including cast iron meter tiles and lids, steel vault lids, reinforced concrete meter box lids, and flooded meter boxes, tiles, and vaults. This can sometimes necessitate additional equipment, such as stronger transmitters that can push a signal through obstructions or repeaters to get the signal around the obstruction. Additionally, when signals have to cover long distance, points between the meter and the collector require additional equipment, such as repeaters to ensure the signal gets to the data collector.

Environmental factors, such as shifting soils, can also change the direction of the transmitter or otherwise prevent the signal from reaching the data collector. Environmental factors are generally unique to the utility and are often dealt with as they arise. There are some basic approaches to avoid the impact of potential influence from environmental factors. First, talk to nearby utilities that have AMI or AMR systems to see if they have encountered anything to be aware of. Second, installing a system that has some redundancy can help ensure there is more than one way for signals to reach data collector units. Third, implementing a system with bi-directional signals is useful so utilities can perform diagnostic tests from the office and more quickly locate where there may be a problem.

Non-radio technologies

Power Lines

Data can be sent over existing power lines, which is why electric utilities frequently pair AMI systems to them instead of installing additional transmission equipment. This may be an option for a water utility converting to AMI if the utility is able to work with an electric utility planning to convert its system (also known as **piggybacking**). If piggybacking is not an option, it is unlikely to be an efficient method of data conveyance because of issues related to maintenance and access to the lines.

Cable

Using existing cable television lines to communicate data is only an option for utilities or municipalities that own their

own lines; otherwise, it may be financially prohibitive to lay a large system of new cable lines. Even when cable lines are owned outright by utilities or municipalities, upgrading the line to support an AMI system may not be cost-effective. Some municipal electric utilities that own local cable companies have upgraded the cables in a way that would support an AMI system (they include bi-directional digital signal transmission and ultimately much wider bandwidth using fiber optics). An important consideration here is that utilities using host-service to house the data may run into problems since the lines are local and the servers are likely to be in another city.

Cellular

Cellular endpoints are a new option for water utilities. They are ideal because they can drastically reduce the cost of the physical network, since antennas, repeaters, and other parts aren't needed. Additionally, cellular networks are very safe, secure, and resilient, which is useful in emergencies, such as floods, that might damage a large physical network. However, the cellular data needed can be very large and expensive on its own depending on the volume of data collected.

Satellite

The satellite option has become much more affordable for utilities. In fact, some systems come with satellite data transmission. Like cellular endpoints, fewer infrastructure pieces are needed for satellite service. This option is increasingly popular for rural areas where there is low meter density and the meters are far apart but may also be very practical in big cities that would necessitate a large amount of endpoints and other infrastructure. Satellite systems are often two-way and have the same benefits as a two-way radio system. Sometimes, additional software is required to make a satellite system viable. However, many vendors that provide hosting services already have this software, which helps utilities avoid the expense.

Telephone

This is a less popular option because of the difficulty in establishing it and because fewer people have landlines. However, there are several benefits, such as not requiring batteries and being largely compatible with AMI systems. There are two types of telephone-based remote metering devices: inbound and outbound. An inbound system operates by having the interface unit use a telephone line to call a data collector at prescheduled times to provide consumption data. In an outbound system, the utility's master station calls the interface unit and collects the data. An outbound system is more useful for being able to make on-demand reads; for example if there is an indication that an event is a major leak or could become a major leak, the utility can call the interface unit for increased reads to assess whether the event is worsening or stopped. On-demand reads can be made without any involvement of the customer and without interference to their phone service.

– Chelsea Hawkins & Allen Berthold | *Considerations for adopting AMI and AMR* | College Station, Texas | October 2015
<http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=9674>

UNDER-RECOGNIZED CAUSES FOR “SMART” TECHNOLOGY BILLING FOLLIES Wildly inaccurate estimates, fake calculations, etc.

[S. Carolina] “Smart meters blamed by Blue Ridge Electric customers for soaring monthly power bills” – excerpts:

Tabitha Riley said her power bills have nearly doubled since Blue Ridge Electric Cooperative installed a smart meter at the mobile home in Dacusville that she shares with her fiancé.

Her two most recent monthly bills were \$330 and \$370, she said. Before the new meter was installed, her bills were between \$150 and \$200 per month, she said.

Yuli Angel said she saw a steep increase in her monthly bills after Blue Ridge Electric replaced the meter at her mobile home in Easley. She said her bills have risen from \$205 to \$500 and \$632 during the past three months.

Stephanie Seigle said her most recent Blue Ridge bill was \$371. That is significantly higher than the monthly charges of between \$160 to \$270 that she said she was paying before for Blue Ridge installed a new meter at the Dacusville mobile home where she lives with her husband and their 7-year-old son and 4-year-old daughter.

– Kirk Brown | *The Greenville News* | 3/11/19 <https://www.greenvilleonline.com/story/news/local/2019/03/11/smart-meters-blamed-higher-bills-blue-ridge-electric-customers-upstate-south-carolina/3026647002>

[N. Carolina] “Dozens complain about high water, sewer bills in south Charlotte” – excerpts:

Carlos Paz, who lives in the Danby neighborhood, recently received water and sewage bills from Carolina Water Services in the amount of \$100, \$104, \$107 and \$100.

Jim Long and his wife, of Woodside Falls, paid \$101 and \$110 for water recently. “A lot of retired people out here,” Long said. “A lot of people (are) on (a) fixed income and \$100 a month is quite expensive.” Other customers in the unincorporated area of Mecklenburg County between Ballantyne and Pineville have paid \$100 bills as well.

Customers who are upset should always complain to the Utilities Commission, Stoogenke said. . . . they should get their objections on the record.

– Jason Stoogenke | WSOC TV | 2/28/19 <https://www.wsocv.com/news/local/dozens-complain-about-high-water-sewer-bills-in-south-charlotte/925888631>

[California, Texas] “Smart Meter Consumers Anger Grows Over Higher Utility Bills” – excerpts:

Higher than normal utility bills and overbilling due “inaccurate” smart meters have led to lawsuits, including two class-action lawsuits in Bakersfield, CA, and Texas.

[Marana’s water district manager] “admits there have been people getting over charged for water they may not have used and says billing has been an issue.”

– Jason Stoogenke, WSOC TV, 2/28/19

As you read the news reports and complaints..., you’ll be alarmed to learn that even though consumers are shifting their energy use, reducing energy consumption and making their homes more energy efficient, their utility bills have suddenly doubled or tripled. . . . Read more: Burbank ACTION website: <https://sites.google.com/site/nocelltowerinourneighborhood/home/wireless-smart-meter-concerns/smart-meter-consumers-anger-grows-over-higher-utility-bills>

[Arizona] “Several customers in Marana say they’ve been getting overcharged” – excerpts:

Dozens of people in Marana have been receiving inaccurate water bills and say they want answers from the water company.

More than half a year has gone by since Jed Baker was appointed Marana’s new water district manager. . . . “When I came out here on May 22, the entire staff of the district had quit.”

Baker says former employees left him with financial issues, infrastructure management issues and HR issues. “[When] you talk about the financial condition of the place we had accounting system issues, we had fraud issues, we had records, issues, we had off-books transactions from the credit cards, we had documentation issues and we also had revenue issues.”

Baker admits there have been people getting over charged for water they may not have used and says billing has been an issue.

– Ivan Rodriguez | KGUN 9 | 1/31/19 <https://www.kgun9.com/several-customers-in-marana-say-theyve-been-getting-overcharged>

[Arizona] “Marana homeowners outraged as water bills skyrocket” – excerpts:

. . . Nellis’ January bill was more than \$656, ten times higher than the bill she received in December.

“What the heck’s going on, my bill is normally \$60,” she questioned. “And my first instinct as soon as I opened it was to call them and the guy I spoke to said ‘did you get a new water meter?’ and I said not that I’m aware of but wouldn’t you know that?”

– Eric Fink | KVOA News4Tucson | 1/25/19 <https://kvoa.com/news/2019/01/25/marana-homeowners-outraged-as-water-bills-skyrocket/>

[Arizona] “Tucson Water error overcharges homeowner \$2,000” – excerpts:

“I’m reading and I can’t believe it,” she said. “It’s a water bill for \$2,000 . . .

In a statement, Tucson Water spokesman Fernando Molina said: “The unfortunate incident involving Mrs. Fleck was due to an error on the part of Tucson Water. . . .”

– Eric Fink | KVOA News4Tucson | 11/28/18 <https://kvoa.com/news/2018/11/28/tucson-water-error-overcharges-homeowner-2000/>

“Customers who are upset should always complain to the Utilities Commission, Stoogenke said. . . . they should get their objections on the record.”

– Jason Stoogenke, WSOC TV, 2/28/19

[Texas] “City nears settlement on fraudulent water billing”

– excerpts:

Austin is closing the book on an investigation of fraudulent water meter readings that caused bills to spike last year. The utility completed a review of the incident this month, and a legal settlement with the former meter reading company is close to completion.

The settlement with Corix, the company formerly **contracted to read city water meters**, should be finalized next week, Monica Joyner, an Austin Energy process manager for quality, told members of the Electric Utility Commission on Monday. However, it won’t recoup the **city’s costs of the investigation and the refunds made to customers**.

Thousands of Austinites saw their water bills spike into expensive **billing tiers** in September 2017 after having abnormally low August 2017 water usage. Ultimately, the city found that two meter readers had **obtained supervisor passwords**, allowing them to **fake meter readings** on 135 routes around the city, affecting more than 17,800 people.

The revelation came after months of denials from representatives of Austin Energy, which handles billing for both electric and water utilities. Even as complaints rose and the media pushed for answers, Austin Energy officials insisted the billing was normal and that the systems were so heavily audited it was impossible for meter reading errors to exist.

— Elizabeth Findell | *Statesman* | 11/23/18

<https://www.statesman.com/news/20181123/city-nears-settlement-on-fraudulent-water-billing>

Note: The fake meter readings in 2017 came after Austin Water received a loan award to switch to smart meters. See: “Austin to Spend \$165 Million for Smart Utility Upgrade” by Asher Price, *Austin American-Statesman*, 7/22/16 – excerpt: “Following hundreds of complaints about unexpected water bill spikes last summer, Austin Water had applied to the state agency for an \$80.2 million loan to switch all customers to smart meters that electronically transmit data about water usage.”

<https://www.govtech.com/fs/Austin-to-Spend-165-Million-for-Smart-Utility-Upgrade.html>

[Texas] “FERRIS: Average billing causes uproar” – excerpts:

[I]n a press release last week by the city it was noted the city has been struggling with complaints about inaccurate water bills for several months. “We were receiving complaints every month, could see why our customers were complaining, and would adjust their bills, but we couldn’t figure out how the problem occurred in the first place,” said Ferris City Manager Bill Jordan.

Jordan said the problem was finally figured out – but he blamed an employee.

In this case it was an employee, Brooke Meistrell, who it appeared was just doing what she was instructed.

When Jordan asked Ferris Finance Director Melissa Gonzalez the question, it was said she “discovered” best guess

meter readings were being entered into the utility billing system for missed reads and for reads that were incorrect.

It was then Meistrell took the hit and was forced to resign Wednesday, Oct. 31 with a resignation letter she didn’t even write. Instead it was reportedly written by her supervisor, Gonzalez. Gonzalez also allegedly told Meistrell to sign it – or face possible criminal charges for averaging water bills.

— Rita Cook | *Ellis County Press* | 11/15/18

<https://www.elliscountypress.com/2018/news/ferris-average-billing-causes-uproar/>

[New Jersey, Louisiana] “The Crisis of Complicated Water Bills” – excerpts:

In March, Mark Van Burik received a quarterly water bill of \$8,117 for a four-unit rental building in New Brunswick, New Jersey. His previous bill was only \$404. A city spokeswoman claimed the bill was accurate, read by a **Sensus iPERL “smart” meter** that employs magnetic technology to gauge water flow.

Another New Brunswick property owner received three bills in 2017 for more than \$3,000 each, triple the size of the typical bill. Another said his bill was \$2,238—six times the previous one.

In New Orleans [Louisiana], thousands of customers were **double billed** after a **new billing system** was implemented. Many charges were based on **estimates**, rather than readings. “Bill estimation is an art form,” Marcie Edwards, then-director of the New Orleans Sewerage & Water Board, told the *Times-Picayune*. “And there is, frankly, no utility that likes to do it, so we need to get to a point where we’re not.” She added that the Los Angeles system where she previously worked dealt with similar problems.

It’s not just residents being overcharged. Electronics giant Samsung paid some \$568,000 more annually in water fees than it should have, according to a recent rate study by the city of Austin.

But in this age of **third-party billing that seems designed to further cloud the truth and raise costs**, we can demand to know simple information, such as how many gallons of water are used, so we can try to determine if the bill is wildly inaccurate, or just the usual who-knows variety.

— Kevin James Shay | *Medium* | 9/19/18

<https://medium.com/s/story/high-water-bills-low-trust-eda31fe5c137>

[Washington] “City Light could face class action suit over billing troubles” – excerpts:

A high-profile Seattle law firm . . . is investigating a class action lawsuit against Seattle City Light on behalf of customers who feel they’ve received erroneously high bills.

“It is alleged that Seattle City Light overcharges its customers for electricity by billing customers for incorrect estimates of their electricity usage rather than billing customers

for their actual electricity usage,” says a call for customers on the website of McNaul Ebel Nawrot and Hellgren.

Specifically, the firm points to reports in *Crosscut* and the *Seattle Times* laying out issues the department has experienced with its new (and over budget) billing system, which has occasionally created high bills based on estimated meter reads.

— David Kroman | *Crosscut* | 9/12/18
<https://crosscut.com/2018/09/city-light-could-face-class-action-suit-over-billing-troubles>

Note: Seattle City Light webpage: “City Light is excited to announce that advanced meters are the new meter standard for City Light’s service territory. In October 2016, City Light started the installation of advanced meters on new residential and small commercial construction projects under normal business operations. The majority of residential and commercial customers will begin receiving new meters in the summer of 2017. This is an incremental approach, with benefits realized once the entire system is installed by 2019. Customers ... can choose to opt out. . . .” <https://www.seattle.gov/light/ami/>

[California] “Head of troubled San Diego city water agency resigns” – excerpts:

The director of San Diego’s Public Utilities Department has resigned, after less than a year as head of the city’s troubled water agency. The resignation of Vic Bienes from the department was disclosed in a memo dated Wednesday from Kris Michell, the city’s chief operating officer.

— • —
Bienes became director late last year. Shortly thereafter, complaints of huge water bill overcharges sparked public outrage.

Michell also listed several reassignments of key city officials to the department, and the temporary hiring of an experienced water official to help reform the agency.

— • —
The report found numerous inaccuracies in water bills, with 71 percent of errors committed by 10 of 36 meter readers. The department also didn’t have any method of measuring the performance of meter readers.

A subsequent analysis by the *San Diego Union-Tribune* showed that single-family homes serviced by the city’s water department were collectively overcharged by more than \$2 million last year – with some residents receiving bills for tens of thousands of dollars.

The findings were based on data obtained from the city, following a Public Utilities Department audit that found customers received at least 2,750 incorrect water bills in 2017.

In addition, meter readers improperly used “supervisor codes” to bypass controls on reporting abnormal meter readings.

— Bradley J. Fikes | *San Diego Union-Tribune* | 8/30/18
<https://www.sandiegouniontribune.com/news/environment/sd-me-water-bienes-retirement-20180830-story.html>

[Arizona] “Water meter mayhem for customers in Avra Valley” – excerpts:

Hundreds of customers have received bills higher than usual, in some cases more than three times as much.

Eric Cramer, a disabled veteran on a fixed income, said he was promised a prorated and no late fees for his most recent bills. He’s willing to pay for any water he uses but he cannot understand why he received two bills in one month or another bill that was almost \$300.

— • —
District Manager Jed Baker provided an explanation for everyone that mirrored what he told *Tucson News Now*. Baker, new to the position since late May, said the utility’s workforce quit before he started. Not only did he have to handle the turnover, Baker realized that many meters had not been properly read for months.

— Craig Reck | KOLD 13 News | 8/27/18
<http://www.kold.com/story/38924052/water-meter-mayhem-for-customers-in-avra-valley/>

[Texas] “Rio Hondo residents seeing higher water bills following new water meter installation” – excerpts:

The city of Rio Hondo continues to install new water meters throughout the city. Some people like them, but others are feeling the impact of higher bills.

— • —
“Before this bill, it said it was less than \$100. Now it’s coming at \$200 more,” Rio Hondo resident, Veronica Vazquez. ...Vazquez, who’s a local resident, says in the course of her 30 years living in the city, this is the first time she’s seen such a huge increase in her water bill. “I have all my bills here throughout the years and there’s a huge difference because I have one of \$98, \$66, \$78, \$82 and this one came in at \$397,” she said as she showed us each water bill.

— Abril Preciado | CBS 4 News | 8/25/18
<https://valleycentral.com/news/local/rio-hondo-residents-seeing-higher-water-bills-following-new-water-meter-installations>

[Louisiana] “Cantrell ousts top officials at Sewerage and Water Board” – excerpts:

Three top employees at the embattled New Orleans Sewerage and Water Board have resigned at the urging of Mayor LaToya Cantrell, . . .

— • —
The resignations come shortly after it was reported that, in the midst of a financial crisis at the utility, Doucette, Judkins and Rivers – all top officials earning six-figure salaries – were given substantial raises this summer. . . .

— • —
The personnel shakeup comes about a year after large parts of the city flooded during summer rainstorms. Sewerage and Water Board officials initially claimed that the utility’s drainage pumps were fully operational during the floods, but that was not true. The scandal led to the resignations of

several top employees . . .

Meanwhile, the utility has been plagued by ongoing billing problems, leading to thousands of complaints from customers who have said that their bills were wrongly inflated, some by hundreds or even thousands of dollars. Even as those problems continue, according to customers, the Sewerage and Water Board this month began cutting water service for customers with unpaid bills.

— • —

But even as many customers say the billing problems persist, the Sewerage and Water Board resumed shutoffs this month, citing its depleting cash reserves. Some of the customers whose names appeared on a disconnection list spoke to *The Lens* last week, complaining of unexplained high bills and poor customer service and recordkeeping.

— Charles Maldonado | *The Lens* | 8/20/18
<https://thelensnola.org/2018/08/20/cantrell-ousts-top-officials-at-sewerage-and-water-board/>

[Texas] “First, it was [Hurricane] Harvey. Then, we were drowning in high water bills” – excerpts:

In the weeks that followed the receding water, as homeowners were tossing all our worldly possessions on the front lawn, the monthly bills began to roll in. . . . It was at this point that people in flooded neighborhoods began to receive bills from the City of Houston Water Department. Except, something was off – \$2,000 off, to be exact.

. . . During the next few weeks, more and more flooded communities were coming to the same conclusion: Something was not right. September water bills were showing thousands and tens of thousands of gallons of water usage. Then it happened again in October. And again in November and December.

. . . Speculation surfaced among residents that the meters had been affected somehow – they were underwater for more than two weeks. Had that caused them to malfunction? Or maybe it had something to do with the toilets being underwater?

Because the unusual usage was coming at a time when all the houses were empty. No one was home. Demolition was taking place at most; eager early rebuilding at only a few. . . .

— • —

A number of my neighbors shared their information with me. I saw their correspondence with customer service, their high bill amounts and usage numbers. To say I was shocked is an understatement. My fight against the water department for a bill in excess of \$300 seemed paltry compared with theirs. One neighbor showed me his

October bill with 122,000 gallons of usage. Yes, you read that correctly. Their current bill is in excess of \$2,200. The histogram on his bill showed past regular usage of around 10,000 gallons per month . . .

Another neighbor is fighting an outstanding balance of more than \$900, after usage rocketed to 11,000 gallons for November and 33,000 more for January. After a brief investigation, the water department informed him that they were granting a reprieve based on average water usage from the past year – calculated as though he had been living in the house the last nine months. The new amount he owes? Still \$545.

A third neighbor showed me a bill with more than 32,000 gallons of usage for September, racking up more than a \$500 bill.

— Dan Phelps | *Houston Chronicle* | 8/17/18 <https://www.houstonchronicle.com/local/gray-matters/article/hurricane-harvey-west-houston-high-water-bills-13163903.php>

[Oklahoma] “Claremore City Council approves financial audit amid resident petition drive” – excerpts:

The City Council unanimously approved a resolution Monday evening requesting the state auditor’s office review potential financial issues brought forth in a citizen petition.

The agenda item stated “certain records of the City of Claremore” would be looked at by State Auditor Gary Jones.

City Manager Jim Thomas, during a news conference, said the audit would cover all issues referenced in the citizen petition.

The latest iteration of the petition . . . includes:

- “Possible misappropriation of utility revenue” and “purported excessive residential rates”;
- “Possible misuse, mismanagement and/or waste of” funds in constructing a new water treatment plant;
- Review the city manager’s contract, compensation and benefits to verify “appropriate use as legitimate city expenditure.”

— Corey Jones | *Tulsa World* | 8/6/18 https://www.tulsaworld.com/communities/claremore/news/claremore-city-council-approves-financial-audit-amid-resident-petition-drive/article_e6c3118e-2983-5142-ac8e-9e975ccb3e83.html

[California] “Novato water meter reader fakes data, customers’ bills spike” – excerpts:

After the complaints came in about high bills, water district officials conducted an audit. They noticed July and August meter readings were abnormally low for summer, a time when water consumption typically increases as the days grow warmer. Initially, water officials were perplexed at the low readings.

Eventually staffers discovered the employee “had been recording a significant

“One woman told WWL-TV about how S&WB had tried to auto-withdraw \$31,679 from her bank account to pay for what the utility said was her use of nearly 26 million gallons of water that month. . . . In some ways that woman was lucky; she didn’t have \$31,000 in her bank account. The Sewerage & Water Board, however, was able to snatch \$950 from another family’s account, charging them for using 68,100 gallons of water, more than 20 times what an average American household uses in a month. The family also noted that they had been away on vacation for half of that month.”

— Tim Morris, *NOLA*, 5/10/18

number of meter reads in quick succession,” wrote David Bentley, the water district’s auditor controller, in a report on the investigation. “The hand-held computer into which the (employee) enters meter reads time stamps each read. Staff discovered that an (employee) hired in May of 2015 was reading meters at a speed that defied reason.”

– Mark Prado | *Marin Independent Journal* | 11/17/16, updated 7/19/18
<https://www.marinij.com/2016/11/17/novato-water-meter-reader-fakes-data-customers-bills-spike/>

[Louisiana] “The Water Boarding of New Orleans continues” – excerpts:

Not content with providing a subpar service that leaves life, limb and property vulnerable to floods and pestilence, the New Orleans Sewerage & Water Board has now taken to erroneously billing its customers in spectacularly random and original ways.

The agency revealed this week that it has received about 26,000 complaints of irregular billing in the 19 months since it rolled out a new payment system in October 2016. That’s about 1,370 complaints a month from about 1 in 5 of its 136,000 customers. The utility says it has resolved about 16,000 of those, but it doesn’t say how many patrons left satisfied.

Buried in those numbers are real people on fixed incomes suddenly jolted by a balloon payment, workers forced to take time from the job to negotiate the process and residents and businesses pressed into hiring a plumber to check for non-existent leaks.

One woman told WWL-TV about how **S&WB had tried to auto-withdraw \$31,679 from her bank account** to pay for what the utility said was her use of nearly 26 million gallons of water that month. The report helpfully points out that is more water than the fountains hold at the Bellagio hotel in Las Vegas, which is appropriately featured in “Oceans 11,” a movie about an outrageous heist by a gang of scoundrels.

In some ways that woman was lucky; she didn’t have \$31,000 in her bank account. The Sewerage & Water Board, however, was able to **snatch \$950 from another family’s account**, charging them for using 68,100 gallons of water, more than 20 times what an average American household uses in a month. The family also noted that they had been away on vacation for half of that month.

You might think that the S&WB would blame its problems on an accounting department powered by steam-powered, 25-cycle power turbines, but instead the agency points to “a new, improved billing and payment system” that somehow combines the charm of **computer algorithms** with the efficiency of ... well, the Sewerage & Water Board.

Because the new system made things more convenient – for the Sewerage & Water Board, anyway – by combining real-life meter readers and **computer estimates**, the first glitch hit when more than 4,500 customers got **two bills in one month** – one for the actual reading and one for the estimate.

– Tim Morris, Columnist | *NOLA* | 5/10/18
https://www.nola.com/opinions/article_25ee8cda-64a7-5d2c-a0aa-04a6de69e21c.html

Note: On February 2014, *Mid-City Messenger* reported: “Online monitoring to replace meter readers, among major systems upgrades planned by Sewerage and Water Board.” So it appears that the over-billing fiascos in New Orleans had followed on the heels of changes advocated for by the Sewerage and Water Board of New Orleans. Read article: <http://midcitymessenger.com/2014/02/20/online-monitoring-to-replace-meter-readers-among-major-system-upgrades-planned-by-sewerage-and-water-board/>

[Louisiana] “Sewerage & Water Board bears down on billing complaints” – excerpts:

The Sewerage & Water Board has investigated about 26,000 complaints of irregular billing since the October 2016 roll-out of a **new customer billing system**, according to the utility’s interim executive director, Marcie Edwards.

On top of **hiring more meter readers**, Edwards said Tuesday (May 8) the utility has recently tweaked its billing estimation formula to ensure more predictability, and has tapped an outside nonprofit consultant and additional new **complaint-management software** to help reduce the backlog of complaints.

High water bills have been an inveterate source of concern for New Orleans residents and business owners over the past year, compounding public distrust of the Sewerage & Water Board following widespread flooding last summer. Officials have attributed instances of **double-billing** in large part to the new system sending customers an estimated bill as well as another bill derived from an accurate meter reading.

Much of the backlash has stemmed from estimated billing formulas that “were creating great unpredictability for customers,” Edwards said. In recent weeks, Edwards said the utility had tweaked the formula to set a flat rate, charging for 100 gallons of water use per day once a customer’s bill shows a spike of 125 percent or more from the previous bill.

“Much of the backlash has stemmed from estimated billing formulas that ‘were creating great unpredictability for customers,’ Edwards said. In recent weeks, Edwards said the utility had tweaked the formula to set a flat rate, charging for 100 gallons of water use per day once a customer’s bill shows a spike of 125 percent or more from the previous bill.”

– Tim Morris, *NOLA*, 5/10/18

The goal, Edwards said, is to **hire enough meter readers to eliminate the need to estimate bills**. She said each customer’s meter is currently checked about once every other month, with an estimated bill in between that is tried up once the meter is read. Edwards said the utility has recently hired 20 new meter readers, up from fewer than 25 she said were on staff last year.

“**Bill estimation is an art form**,” Edwards said. “And there is, frankly, no utility that likes to do it, so we need to get to a point where we’re not.”

Speaking at a utility board committee meeting Tuesday, Edwards said the bill-

ing staff had resolved around 16,000 complaints out of the 26,000 through the end of April. That leaves another 10,000 complaints “in the queue,” Edwards said, which she’s hoping to have hacked in half within the next six weeks.

Edwards, a career water-utilities professional hailing from the Los Angeles area, said New Orleans marks the third troubled billing system she’s had to tackle over the years. She recalled her tenure as a **former manager of the Los Angeles Department of Water and Power**, where she had been tapped to shore up a similar billing disaster.

Edwards also listed a host of other circumstances that contributed to the billing issues, including **inadequate training for employees in the new billing software, a shortage of meter readers, inaccurate meter readings, meter tampering** and some meters blocked by cars or landscaping.

Aside from boosting staff and tweaking estimations, Edwards said billing system’s manufacturer, Cogsdale Corp., is “on board to help make further adjustments to software, to procedures (and) to supply more training.”

Additionally, Edwards said the utility is bringing on **two outside consultant groups** and a **software company** to address the billing irregularity backlog and track down customers who have not been paying their bills.

A nonprofit, **Blue Drop**, has been **hired to evaluate and bolster the Sewerage & Water Board’s customer service department**, Edwards said. Officials said the Business Council of New Orleans is fronting all the costs for Blue Drop.

Edwards also said the Sewerage & Water Board has launched a **“complaint-management software package”** from the New York-based company Verint Systems. Its software should be able to track the status of billing complaints and investigations, Edwards said, “to communicate more rapidly to the customer.”

Records from the utility’s board meeting last October indicate Verint provides customer-management software to the city’s 311 hotline and would cost the Sewerage & Water Board just less than \$700,000.

Edwards said the utility has hired the Houston-based Water Company of America to find customers who are not receiving bills and to determine why that’s happening, be it an issue with the system or a concealed meter. The intent, Edwards said, is to locate “lost revenue,” and the Water Company would take home a cut of the any money recouped through its efforts.

— Beau Evans | *The Times-Picayune* | 5/8/18
https://www.nola.com/politics/2018/05/billing_sewerage_water_board_p.html

[Texas] “Austin offers to pay up \$138K after Defenders investigation into water meter issues” – excerpts:

The City of Austin has announced that they will provide bill credits to 7,400 customers who suffered from high water bills due to water meter reading problems.

The bill credits will average approximately \$20 but will not exceed \$80 in most cases and the total credit to customers will be around \$138,000, according to a statement from the City of Austin. The city also plans to change the way meter readings are recorded. From now on, technicians will take a picture of the water meter as it is read, as a way to provide further documentation of the usage.

— Rebecca Flores | KVUE ABC | 1/31/18
<https://www.kvue.com/article/news/investigations/defenders/austin-offers-to-pay-up-138k-after-defenders-investigation-into-water-meter-issues/269-513211577>

[California] “San Jose Water Customers Voice Frustrations over Billing Spikes” – excerpts:

... Brian Jones ... who typically pays around \$200 per bi-monthly cycle, was charged nearly \$1,700 for a reported use of 3,000 gallons a day in his Almaden Valley home – and with no conceivable cause.

... Bill Sherman began noticing several hundreds of posts on the social network ... about people with unusually high water bills. About 40 of the 377 posts Sherman tracked down in the Almaden Valley group recount a near identical story to Jones’, wherein households that typically use 20 to 30 ccfs per billing period were being charged for using well over 100 ccfs within the same time frame.

Malcolm Bordelon – a San Jose Water customer, former publisher of the *Silicon Valley Business Journal* and former San Jose Sharks exec – lives a mile away from Jones in the Gravestone neighborhood in Almaden. In January 2016, Bordelon was billed \$1,219.13 for a water usage of 107 ccfs. That’s nearly a 500 percent increase from the 18 ccfs that he and his wife used during the same period a year prior.

William Carlson, another San Jose Water customer ... , also filed a formal complaint with the CPUC after receiving a \$4,711.20 bill for using 366 ccfs in September 2016. “The prior billing was \$313.72 for 38 ccfs, ...

— Camille Miller | *San Jose Inside* | 1/24/18
<https://www.sanjoseinside.com/2018/01/24/san-jose-water-customers-voice-frustrations-over-billing-spikes/>

Note: In 2015, *Bay City News* reported that “The water system is in the process of replacing all of its residential water meters to allow for faster meter readings and that opens the utility to more technology including WaterSmart, ...” Source: “San Jose Unveils Software for Residents to Track Water Usage,” NBC Bay Area, 8/5/15 <https://www.nbcbayarea.com/news/local/San-Jose-Unveils-Software-for-Residents-to-Track-Water-Usage-320857911.html>

[Washington D.C.] “Meter mayhem: Petworth residents get hosed with high water charges, DC Water says bills are accurate” – excerpts:

Jonathan Nobil, . . . whose monthly water bill usually hovers between \$60 and \$80, says he was shocked to receive a bill last week for \$449.84.

. . . Joshua Fleitman, spokesman for Councilmember Brandon Todd, said Ward 4 residents have been complaining about the high water bills for a few months now. . . .

“I just received my water bill for the period 5/12-6/12/17, the bill is triple the highest bill I’ve ever received in the 10 years I’ve been in this house,” complained one resident. “Moreover, I was overseas 17 of the 30 days of this time frame, so NO water was used.”

“It’s not only that there’s this random surge in water use, but that it also **corresponds to the month that the meters were switched,**” wrote another resident. “Our bill in the **month of the switch was 300% larger** than the same month a year earlier, and by far the costliest month I’ve had in my 16 years of living in Petworth. Something happened when those meters were switched, and the affected residents are owed a valid explanation and likely owed refunds.”

Indeed, Nobil said he began noticing a change in water bills after his own meter was switched out in June. His June bill jumped to \$250, causing him to complain to DC Water. He says the utility promised to do an audit, but never followed up. Nobil’s **next bill went down to \$100 before skyrocketing back up to \$450 this month.**

. . . Last month, Popville published a letter from a Shaw area reader describing an even more absurd scenario: a \$15,611.19 water bill earlier this year, claiming usage of more than one million gallons of water. “This is not humanly or scientifically possible,” concluded the distraught resident, adding that repeated requests to contact DC Water were met with silence and stonewalling. Instead, after a few months passed, DC Water slapped the resident with a **\$5,000 late charge.**

— Yulia Panfil | *Petworth News* | 8/5/17
<https://www.petworthnews.org/blog/dc-water-high-bills>

[Missouri] “As water/sewer bills skyrocket, Kansas City searches for solutions – excerpts:

All over Kansas City, residents cringe as they pay their household water bills, which average \$102 per month – some \$1,200 a year – and are slated to go even higher.

That’s more than double what they were just nine years ago, forcing some low-income people to choose between water and other life essentials. Thousands of residents have appealed for help with their water bills, far more than assistance funds can accommodate.

For some low-income residents, said Doug Langner, manager at Bishop Sullivan Center’s St. James Place, water “is becoming a luxury instead of a utility.”

Pat Clarke, president of the Oak Park Neighborhood Asso-

ciation in Kansas City’s urban core, said his neighborhood includes some low-income residents for whom rising water bills make it hard to afford their diabetes medicine.

“They’re having to make a choice,” Clarke said. “Whether you pay that water bill or get that health-related medication. That’s a hell of a situation.”

Sharon Clement, a south Kansas City resident, remembers back to 1994, when the water bill came every other month and averaged about \$35. In February, her monthly bill, for a single person with a water-saver toilet and shower, was \$96. She’s so disgusted that she’s supporting a petition drive for a **state audit of Kansas City Water Services.**

The mounting cost of Kansas City water and sewer services has been building since 2010. That’s when the **Environmental Protection Agency** and **U.S. Justice Department** reached a **consent decree** with the city **requiring a 25-year sewer overhaul plan, costing up to \$5 billion,** to address frequent sewage overflows and environmental contamination to rivers and streams.

Water charges also have increased as the city starts fixing thousands of decrepit, leak-riddled water mains.

All the work has pushed Kansas City’s water bills higher than in many comparable cities. In one recent comparison, Kansas City’s combined water/sewer charges ranked higher than those in St. Louis, Baltimore, Cincinnati, Cleveland, Indianapolis, Minneapolis and Nashville, Tenn.

When Kansas City and the EPA signed a sewer overflow control plan in 2010, city leaders heralded the agreement for giving them 25 years to address the problem. That was more time than other U.S. cities were getting.

Yes, it would be **hugely expensive** and the **cost would be borne by ratepayers; the federal government was not providing any funding.** But the costs could be spread out over more than two decades.

At the height of the negotiations with the EPA in 2008, the average household bill, including both water and sewer, was about \$48 per month. The City Council knew the **plan called for double-digit sewer rate increases for more than eight years,** but that was still deemed affordable because incomes in Kansas City historically had risen by nearly 3 percent per year.

But that income projection was grossly optimistic. The Great Recession hit hard, and median income actually dropped in 2010. Since 2010, Wagner said, incomes in Kansas City have risen by only one-half percent per year.

Bottom line: the EPA and city planners expected the average median income to rise from \$44,400 in 2009 to \$56,000 by 2017. Instead, it’s about \$46,000, according to U.S. Census data. And many households make less than the median income.

The **overflow control plan has indirectly affected the entire region,** not just Kansas City. As sewer charges mounted, both Johnson County in Kansas and Liberty in

the Northland have opted to build their own multimillion-dollar sewage treatment plants instead of relying on Kansas City as they had in the past. That's affecting their ratepayers as well. Their sewer bills won't rise as rapidly as in Kansas City, but people in those communities will pay for those new facilities.

In the past 12 months, the department has had about 18,000 shutoffs for delinquent payments. That's actually down from a peak of 22,000 during the 2010 recession, but still reflects a big struggle.

The department has a fund for the truly needy, helping about 700 to 800 customers per year. The fund has grown from \$250,000 in 2009 to \$400,000 this year. The department this year has lowered the maximum amount a ratepayer can get from \$500 to \$350, in hopes of helping more than 1,000 customers. But it still covers just a fraction of the need.

John Rich is a task force member and also executive director of the Mid-America Assistance Coalition, which oversees the water assistance fund. He says the program received 5,778 calls for water assistance in 2015 and 6,688 calls in 2016. Water has risen to fourth on the list of appeals, behind electricity, rent and gas.

— Lynn Horsley | *The Kansas City Star* | 5/8/17
<https://www.kansascity.com/news/politics-government/article149321554.html>

[Louisiana] “New twist in water billing mess: class action lawsuit” – excerpts:

A class action suit filed Wednesday against the City of Shreveport alleges the city has **overcharged a “significant number” of water and sewer customers for at least a decade.**

Among requests in the suit is that the First Judicial District court prohibit the city from shutting off the water of those who refuse, or are unable, to pay their water bills until it can prove the billing problems have been corrected.

The 31-page lawsuit contains 149 pages of attached exhibits, including water bills from several Shreveport residents.

The lawsuit alleges the **city has failed to properly calculate the monthly bills** for a “significant number” of the city’s estimated 65,000 water customers and instead has **charged amounts higher than those outlined in the ordinance governing water and sewerage services.**

As of January 1, those overcharges

“The lawsuit [against the City of Shreveport] alleges the city has failed to properly calculate the monthly bills for a ‘significant number’ of the city’s estimated 65,000 water customers and instead has charged amounts higher than those outlined in the ordinance governing water and sewerage services.”

— Lex Talamo, *Shreveport Times*, 4/3/17

residential water customers were underbilled for nearly 18 months in 2015 and 2016 after the **city introduced new, tiered water rates** charging heavy water users higher rates. Last week’s lawsuit represents another front in his conflict with city government over water billing.

The overcharging originated in several routine procedures of the city, including using information from incorrect months to determine the winter consumption calculation or quantity charge for residential customers, using an excessive number of days when calculating a “billing month,” and rounding meter reader counts to the nearest 1,000 gallons instead of reading meters to the individual gallon or cubic foot, according to the lawsuit.

The “natural monopoly” on water services by the city forced residents to pay the overcharges, according to the lawsuit.

“Laws imposing taxes or fees must be strictly construed,” Wainwright wrote in an emailed statement to the *Times*. “The City has been on notice since last April that its water/sewer billings are not accurate. This matter is well overdue for correction. It’s troubling that every day citizens are being disconnected for failure to pay a bill that no one can assure is accurate.” Wainwright also noted that Tyler acknowledged in a recent deposition that the city cannot assure customers their bills are correct. . . .”

— Lex Talamo, *Shreveport Times*, 4/3/17

have ranged from \$3.94 to \$31.48 per month for in-city residential sewerage customers and from \$7.87 to \$62.94 per month for out-of-city sewerage customers, according to the lawsuit. At those monthly amounts, the alleged over-payments would total up to \$378 annually for in-city residential customers and up to \$755 annually for out-of-city customers.

The amount that residents are overcharged varies depending on which of the city’s **19 billing cycles** they fall under, according to the lawsuit.

Pernici has been engaged in a public spat with city government over his finding – acknowledged by the city – that some

residential water customers were underbilled for nearly 18 months in 2015 and 2016 after the **city introduced new, tiered water rates** charging heavy water users higher rates. Last week’s lawsuit represents another front in his conflict with city government over water billing.

The overcharging originated in several routine procedures of the city, including using information from incorrect months to determine the winter consumption calculation or quantity charge for residential customers, using an excessive number of days when calculating a “billing month,” and rounding meter reader counts to the nearest 1,000 gallons instead of reading meters to the individual gallon or cubic foot, according to the lawsuit.

The “natural monopoly” on water services by the city forced residents to pay the overcharges, according to the lawsuit.

“Laws imposing taxes or fees must be strictly construed,” Wainwright wrote in an emailed statement to the *Times*. “The City has been on notice since last April that its water/sewer **billings are not accurate.** This matter is well overdue for correction. It’s troubling that **every day citizens are being disconnected for failure to pay a bill that no one can assure is accurate.**” Wainwright also noted that Tyler acknowledged in a recent deposition that the **city cannot assure customers their bills are correct.** . . .

The March 29 lawsuit is the first class action suit brought against the city in the water billing situation. . . .

The lawsuit asks that the city produce a detailed account-by-account report of amounts overcharged to residents and that the city be prohibited from terminating water and sewerage services to residents until it can prove the bills are

correct, as well as damages for the individuals in the suit.

– Lex Talamo | *Shreveport Times* | 4/3/17
<https://www.shreveporttimes.com/story/news/2017/04/03/new-twist-water-billing-mess-class-action-lawsuit/99833588/>

[NETHERLANDS] “Electronic energy meters’ false readings almost six times higher than actual energy consumption” – excerpts:

Some electronic energy meters can give false readings that are up to 582% higher than actual energy consumption. The author of a new report estimates that potentially inaccurate meters have been installed in the meter cabinets of at least 750,000 Dutch households.

– *Science Daily* | 3/3/17
<https://www.sciencedaily.com/releases/2017/03/170303180139.htm>

[Arizona] “Buckeye community upset over high water bills, want mayor out” – excerpts:

The Buckeye community isn’t backing down on their water woes after months of complaints over abnormally high water bills. Now, a group has an effort underway to recall Mayor Jackie Meck, who they say has known about issues over high water bills for far too long.

Saturday, dozens of frustrated community members met at the Buckeye Aquatic Center with more complaints and unanswered questions over their water bills.

“This is not a new problem. It’s been going on for 12 years, but they were letting us believe that this is a brand new problem,” said Jeff Hancock, who is leading the recall effort.

“I want something done,” said Buckeye resident Robert Aceves. “I’m just tired of getting the runaround. Every time we call them with a (water bill) complaint, we just get a, ‘We’ll get back to you,’ and nothing ever gets done.”

He’s refusing to pay his water bill because he says **his family isn’t even living in the home to use the water. “I shut the house down to do repairs. No one’s actually living there right now, and the bill is still climbing,”** Aceves said.

– Raquel Cervantes | ABC 15 Arizona | 2/11/17, updated 2/12/17
<https://www.abc15.com/news/buckeye-community-upset-over-high-water-bills-want-mayor-out>

[Florida] “Lyons: More weird water bills, but where is the water?” – excerpts:

“I was away for the summer and my water was turned off at the back flow valve,” [Van Nortwick] said.

He usually gets a \$30 bill for each month he is gone. Not this August. “I got a bill for about \$950,” he said. “Interestingly, the **meter had been replaced and the entire ‘usage’ occurred in the first week of the new meter.”**

Nortwick’s invisible leak could have filled five typical in-ground swimming pools. No one saw so much as a puddle, including the neighbor who keeps an eye on his place.

– Tom Lyons | *Herald-Tribune* | 12/5/16
<https://www.heraldtribune.com/news/20161205/lyons-more-weird-water-bills-but-where-is-water>

[CANADA] “Huge, unexplained water bills are not unusual” – “Kitchener couple who saw their water bill jump 3,600 per cent aren’t alone” – excerpts:

After *The Record* ran a story about George and Gertrude Rendas’ water bill jumping from \$31 to \$1173, several other people contacted the paper with similar stories:

- Jordan Zinken of Kitchener saw her water bill jump from \$140 to more than \$800. Current usage suggests her next bill will be down to normal levels, even though she’s carried out no repairs.
- Thomas Ranville of Waterloo recently got a \$400 water bill, for a house that isn’t occupied, and where no one is using any water. His water bills in the months before and after the unusual bill were zero.
- Steve Hornett of the Guelph area had a water bill of more than \$1,000, bracketed by bills with normal consumption.
- Andrew Nightingale in Waterloo saw his water bill jump in the space of a few days this spring. After contacting his city councillor and MP, and several emails back and forth with the city, the city agreed to cut the bill in half.

In all these cases, the **customers were told they had no choice but to pay up.**

... **switching regular water meters with smart meters . . . would cost millions.** . . . The city is partnering with Alert Labs of Kitchener, which has developed a water flow sensor that straps onto a home water meter like a watch and provides minute-by-minute data.

– Catherine Thompson | *Waterloo Region Record* | 11/23/16
<https://www.therecord.com/news-story/6983620-huge-unexplained-water-bills-are-not-unusual/>

[Arizona] “Buckeye resident blames water meter failure for spike in bill” – excerpts:

For weeks, and in some cases, months, many Buckeye residents have been growing increasingly frustrated over what to do about mysterious usage increases on their water bills.

One homeowner saw his bill increase from \$160 to nearly \$900 for a single month, then return to normal. Another woman’s bill showed she used over 77,000 gallons in a single month, enough to fill several large backyard swimming pools.

Last week, the Buckeye City Council approved just over a **million dollars to upgrade all of its customers’ water meters.** It says the added technology will let residents log onto their account several times a day to check on their home’s water usage patterns. That project is expected to be completed in June of 2017.

– Lauren Reimer | *azfamily.com* | 10/28/16
https://www.azfamily.com/archives/buckeye-resident-blames-water-meter-failure-for-spike-in-bill/article_ac725454-7f03-55b7-93f2-d3ed120b5da7.html

[Texas] “Viewers complain of unusually high water bills” – excerpts:

In February of last year [Smith’s] normal bill of \$25 jumped to \$222. The worst was yet to come for the 72-year-old.

The following November, the city sent her a water bill for \$820. The very next month they sent her one for \$1,100. All together, Ms. Smith owed the city \$2100.

Ten people work at [Brad Hance's] northeast Houston business where they analyze water samples. He said they don't use a lot of water to do this. Records show that for years his normal monthly water bill was about \$100 a month. Then he said the city sent him water bills totaling, "over \$19,000 for three months water."

Hance said he "was shocked. We immediately called them." The city told Hance the same thing it told Ms. Smith - they must have a leak somewhere. Both Hance and Smith insisted they did not. They called plumbers who backed them up.

— Sherry Williams | KHOU 11 | 12/27/16 <https://www.khou.com/article/news/local/viewers-complain-of-unusually-high-water-bills/377104240>

[Arizona] "City of Buckeye official: Customer doesn't have to pay \$440,000 water bill" – excerpts:

Jerry Bryant of Buckeye received a bill in the mail this month for about \$440,000.

Bryant said he has no idea why he was sent the expensive bill, especially since **no one lives in the Buckeye home**, and Bryant **shut off the water a few months ago**.

Buckeye Communications Manager Annie DeChance said they're looking into it. "It absolutely is outrageous," said DeChance. "The city is working on it. He got the bill from one of our **contractors that does billing** for us, so we are working with them to try and figure out what happened and what is going on."

— Jason Barry | azfamily.com | 12/12/16 https://www.azfamily.com/archives/city-of-buckeye-official-customer-doesn-t-have-to-pay/article_558060a8-107c-552a-8f6d-8585e3506358.html

[Maryland] "Maryland Man Fights \$189,000 Water Bill" – excerpts:

In April, Ricardo Torres received a quarterly water bill for a 1,500-square-foot home charging him **\$180,918.68**, plus more than **\$9,000 in late fees**. The utility company claimed he consumed **1.5 million gallons of water** – the equivalent of three Olympic-sized swimming pools – in three months.

... WSSC spokesperson Lyn Riggins said. "It was a wrong amount. It was a meter reader error."

— Susan Hogan & Patti Petite | NBC Washington | Updated 5/19/16 <https://www.nbcwashington.com/news/local/Maryland-Man-Fights-189000-Water-Bill-380179361.html>

[New Mexico] "Santa Fe utility billing director resigns amid flood of customer complaints" – excerpts:

The director of the city's Utility Billing Division, which has been inundated with customer complaints in recent months, stepped down from her \$95,472-a-year job Tuesday.

Diana Catanach, who had been in the job less than two years, resigned immediately after a meeting with Nick Schiavo, public utilities director.

— Daniel J. Chacón | The New Mexican | 2/4/16 https://www.santafenewmexican.com/news/blogs/local_news/santa-fe-utility-billing-director-resigns-amid-flood-of-customer/article_7d7d7498-cb77-11e5-99d5-ef5cc5c4ad7d.html

[New Mexico] "Consumer Complaints Soar As Santa Fe Installs Smart Meters" – excerpts:

The city has logged more than two dozen written complaints at its Utility Billing Division over the last six months, beginning "about the **same time the city started to replace**

defective meters with a new 'smart' meter-reading system," the *Santa Fe New Mexican* reported.

The New Mexican first reported a rise in complaints over water bills in November.

"Nick Schiavo, the city's public utilities director, said the Water Division was dealing with a spike in complaints, many of which were tied to the installation of the new water meters. The influx of complaints, plus a staffing shortage, created longer wait times on the phone, a problem that persists," the report said.

Stanley Gairey is among the residents who filed a complaint. He received a \$400 water bill, suggesting he used 2,700 gallons of water in a single day.

Santa Fe launched a smart meter overhaul last year, according to the *Santa Fe Reporter*:

The City of Santa Fe's decision to replace its Firefly water-meter readers, installed just under 10 years ago and now largely known for their failings, aims to do more than provide the billing basics for how much water was used in a month. The [upgrade] is expected to cost **\$6 million for the equipment and installation of**

36,000 meters, and an **additional \$2 million for service, software maintenance and cell tower space for signal transmission** over the 10-year contract.

— Sara Jerome | *Water Online* | 1/26/16 <https://www.wateronline.com/doc/consumer-complaints-soar-installs-smart-meters-0001>

[New Mexico] "Water bills rise, releasing a flood of complaints" – excerpts:

The saga of Santa Fe's water meter woes is continuing, even as about 36,000 new meters are being installed.

As part of the installation process, Water Division crews are removing the infamously problematic Firefly **data-transmitting devices that were attached to meters** about a decade ago. Some of the Fireflies stopped working altogether, but others kept going while under-reading residents' actual water usage.

The Firefly devices have created a mess for the Water Division for years. Intended to allow meter-readers to get water use information by radio transmission without leaving their trucks, a huge percentage of the **devices failed within a few years**.

In 2012, the city sued to recoup its \$5 million investment in the Firefly device produced by Datamatic Ltd., a Texas company, and also sought three times the cost in monetary damages. But late last year, Datamatic filed for bankruptcy. Schiavo said the city so far hasn't recouped anything.

Now, the Fireflies are **costing the Water Division more, even beyond the millions of dollars in replacement costs**.

Going forward, customers will pay for water based on what the new meters reflect. Schiavo said about 20,000 new meters have been installed so far and 300 to 350 people have been found to have had an under-reading Firefly, either via complaints or discovery by the Water Division.

The Firefly devices were not actual meters. They were supposed to record the sweep of the meter's hand, with each passing representing 100 gallons of water use, and then transmit the information to a meter-reader in a vehicle out on the street. "**What's incorrect is the electronic information,**" Schiavo said.

The new meters – for most residential customers, actual meters, not just a recording/transmitting device like Firefly – are being installed under an \$8.3 million, 10-year contract with Badger Meter Inc. They will use **cellphone technology** to provide the city with readings without roving meter-readers.

— Mark Oswald | *Albuquerque Journal* | 11/27/15
<https://www.abqjournal.com/682167/water-bills-rise-releasing-a-flood-of-complaints.html>

[New Mexico] "New city water meters spur billing complaints from customers" – excerpts:

... after going to the Santa Fe Water Division offices on West San Mateo Road last week and hearing what other customers were experiencing, [Wendy] McEahern said she walked out feeling fortunate that her bill wasn't higher.

"My bill compared to most people's was relatively modest. There were people in there with \$1,200 water bills, \$800 water bills, \$300 water bills, \$500 water bills," she said. "This one woman lives in her house by herself, which she had lived in forever, has no yard, is just there by herself. She said she does laundry

"FOUR RED FLAGS THAT YOUR BILL COULD BE INFLATED" – excerpts:

- Look for the word "estimated" on your bill;
- Look for a surge in "tier levels" on the graph on your bill;
- Look for big increases in months you're using less water and power (winter?) or when you've been on vacation;
- Look to see if your usage from year to year is vastly different.

Ask your utility company explain why your charges are high, and if you think the charges are wrong, insist they investigate.

— Joel Grover & Matt Schrader, "DWP Overcharges Customers With 'Secret' Formula", NBC 4, 2/9/15, updated 2/10/15

every other week, and her water bill was \$800.

Catanach said some customers have complained about getting a bill that covers 60 days of water usage over the regular 30-day period. That's because the city contractor is installing the new meters faster than the Water Division can manually enter the information into its computer system, creating a billing delay. As a result, she said, some customers are getting charged more per gallon under the **city's tiered pricing system in which high water users pay more**.

— Daniel J. Chacón | *The New Mexican* | 11/18/15
https://www.santafenewmexican.com/news/local_news/new-city-water-meters-spur-billing-complaints-from-customers/article_a4e4d0af-6884-5ed3-af9f-7a455bd12a5d.html

[Alabama] "Jefferson County addresses complaints of high water, sewer bills" – excerpts:

If your water bill seems a lot higher this year, you are not alone. We have heard from many of you about high water bills. Dozens of homeowners in Mountain Brook, Avondale and Crestwood have raised questions about their bills and have taken to social media to express their displeasure.

The Sewer Office at the Jefferson County Courthouse said some homeowners may be due to receive credits. Credits are available for customers who have leaks or have their sprinkler systems on the same bill. You need to inform the Sewer Office to receive a possible credit. The credit is about 15%. If you go to the environmental services page of the Jefferson County website you will find a form to apply for the credit.

"Normally during the summer time people are watering their lawn on a much more regular basis. Their water usage goes up. Their **sewer bills are tied in to their water bills.**" Jefferson County Commission President Jimmie Stephens.

County leaders also say it's important to remember that water rates and sewer rates did increase last fall by 7.8 percent as the county recovers from bankruptcy.

— Alan Collins | *WBRC* | 8/24/15
<https://www.wbrc.com/story/29867844/jefferson-county-addresses-complaints-of-high-water-sewer-bills/>

Consumer attorney Tim Blood said he believes DWP estimates bills using computer software it rolled out in 2013. "The formula for estimating is baked into the software," says Blood, adding that he believes people at DWP "don't even understand the formula."

— Joel Grover & Matt Schrader, NBC 4, 2/9/15, updated 2/10/15

[California] “DWP Overcharges Customers With ‘Secret Formula’” – “NBC4 I-Team discovers customers have had their utility bills inflated” – excerpts:

[Nathan] Wells, a mathematician, says he quickly discovered that the [LA] Department of Water and Power was socking him with a bill three times what it should have been. But when he contacted the agency – 11 times – they wouldn’t correct his bill or disclose their secret formula for calculating his bill.

“I think the LADWP is worse than the mafia,” Wells told the NBC4 I-Team. “It’s impossible to deal with them.”

After hearing numerous stories like Wells’, the NBC4 I-Team investigated and found the utility company appears to be **routinely overcharging** customers. DWP does it by “**estimating**” their water and power use, **instead billing them for how much water and electricity they actually use.**

Consumer attorney Tim Blood said he believes DWP estimates bills using computer software it rolled out in 2013. “The formula for estimating is baked into the software,” says Blood, adding that he believes people at DWP “don’t even understand the formula.”

“Clearly the computer is estimating bills incorrectly and overbilling as a result,” Blood told NBC4.

Blood believes DWP’s billing system is so flawed, he’s suing the city of LA, trying to get refunds for overcharged customers.

– Joel Grover & Matt Schrader | NBC 4 | 2/9/15, updated 2/10/15
<https://www.nbclausangeles.com/news/local/DWP-Overcharges-Customers-With-Secret-Formula-291335271.html>

[Arizona] “Tucson woman shocked by high water bill” – excerpts:

... Vargas said she was shocked last month to find that her Tucson Water bill was \$1,447.29 for one month.

Tucson Water officials said the charges was a mistake, and the water meter had been misread. Vargas had not checked her bill when she initially got it, so she didn’t notice the charge until Tucson Water had **taken the money out of her bank account using their auto-pay system.**

– KOLD News 13 | 7/9/15
<http://www.kold.com/story/29516260/tucson-woman-gets-shockingly-high-water-bill/>

[CANADA] “Smart meter overbilling complaints investigated by Hydro-Québec” – excerpts:

Hydro-Québec is looking into complaints that its new **smart meters** are **overbilling homeowners**, following a CBC investigation.

The provincially owned power utility is in the process of installing close to 4 million next-generation meters across Quebec – a switch the utility had claimed would save it,

and by proxy its customers, millions of dollars. But there is growing concern among homeowners that the new meters are doing exactly the opposite.

– CBC News | 8/11/14 <https://www.cbc.ca/news/canada/montreal/smart-meter-overbilling-complaints-investigated-by-hydro-quebec-1.2732940>

[Massachusetts] “Lowell water chief told to resign or be fired” – excerpts:

Embattled Lowell Regional Water Utility Executive Director Dan Lahiff has been asked by City Manager Kevin Murphy to resign or face termination, . . .

The close to Lahiff’s time as the head of the Water Utility comes in the midst of a city investigation into some residents receiving exorbitant water bills because years of underestimated bills.

Murphy’s announcement to councilors also comes one day after he was notified by The Sun that Lahiff had sent a memo to Utility employees last week warning them that **they could be fired for sharing or discussing billing information.**

– Lyle Moran | *Lowell Sun* | 6/5/14
http://www.lowellsun.com/breakingnews/ci_25903797/lowell-water-chief-told-told-resign-or-get

[Louisiana] “Online monitoring to replace meter readers, among major systems upgrades planned by Sewerage and Water Board.” – excerpts:

The Sewerage and Water Board of New Orleans will soon start replacing all of the city’s water meters and pipelines as part of several projects that are now underway, . . .

The changes come as the board increases efforts to improve response times, manage better customer service and use **money that was provided by FEMA to fix infrastructure** damaged by hurricanes, . . .

At a Greater Mid-City Business Association meeting this week, [Joe] Becker spoke to local residents about the work the Sewerage and Water Board does on a daily basis, and how these new projects will soon change the way New Orleansians get water service.

Water meter replacement

The Sewerage and Water Board has used the same water meter company for nearly 50 years, but those meters don’t lend themselves to remote reading. Instead, the board relies on people to come out and read meters for every bill.

And that method isn’t efficient, Becker said. So, in 2012, the board decided to put out an open bid for a new company.

Sensus, the company that the city has used, has been “reliable,” Becker said, but with new meters the Sewerage and Water Board will be able to act more quickly and use less manpower.

With new software, residents will be able to check the Sewerage and Water Board website to see exactly how much water

was used at any given time.

In order to implement all the changes, the Sewerage and Water Board will have to change the **customer accounting software**. It will take about a year or year and half to transfer that software over, Becker said, at which point the company will be able to do more customer service monitoring. . . .

— *Mid-City Messenger* | 2/20/14
<http://midcitymessenger.com/2014/02/20/online-monitoring-to-replace-meter-readers-among-major-system-upgrades-planned-by-sewerage-and-water-board/>

[Pennsylvania] “Harrisburg water meter woes – dead batteries, estimated bills and no quick fix: #HBGNext” – excerpts:

. . . Harrisburg water customers . . . keep getting estimated bills each month because their whiz-bang, supposedly super-efficient electronic water meters no longer work. If you’re among them, you’re **stuck paying estimated bills, which may or may not be anywhere close to your actual water use**.

When the water wizards finally obtain an actual, accurate reading of your water use, you may get a big refund, or (OUCH!) find that you owe hundreds of dollars. . . .

— Matt Zency | *Penn Live* | 12/6/13 https://www.pennlive.com/opinion/2013/12/harrisburg_water_meter_problems_batteries_estimated_bills_no_quick_fix.html

[Mass.] “Woman shocked by \$1,593 water bill” – excerpts:

The city’s Water Department couldn’t find a leak at a Haverhill woman’s home, and neither could a privately hired plumber. Now the woman is being asked to pay a whopper of a water bill, nearly \$1,600 for three months usage instead of her normal \$100.

Anne Proctor and the city appear to be at an impasse. She said it must have been a mistake, possibly a faulty meter reading, while city water officials say the meter was operating properly and that the big bill likely resulted from an undetected leak that somehow was eventually resolved.

— Mike LaBella | *The Eagle Tribune* | 8/20/13
https://www.eagletribune.com/news/local_news/woman-shocked-by-water-bill/article_f8e8654-f867-5fe2-9465-faeb67565c08.html

[Arizona] “Tucson man gets \$5,000 water bill” – excerpts:

Imagine getting a \$5,000 water bill in the mail! That’s what happened to one Tucson man. He was shocked . . . He is now fighting this bill with the city water department. Michael Liddell says his average bill is usually about \$12-13 a month.

Officials at Tucson Water say, that is what Liddell’s water meter reading showed. Fernando Molina, a public information officer for Tucson Water said the meters only measure water that has passed through them. Molina said they do thousands of bill adjustments every year, and [only] about one third of them end up being people who have had leaks on their property.

“The city of Inkster put in smart meters about a year ago. Thousands of them. And people say their bills started to spiral out of control. They were so upset so they came to a meeting tonight. Some brought their bills. Here’s one bill for \$1,900 . . .”

— Cheryl Chodum | ABC 7 | “Residents angry about big water bills,” WXYZ-TV Detroit, 11/27/1
<https://www.youtube.com/watch?v=XRcNJfTlQdY>

Liddell said he had turned off the water valves on the property. According to Tucson Water officials, technicians were sent out to the property and did detect a leak. Molina said a technician found a lot of water in the front yard. Liddell disputed that saying he drove out there himself, an hour after he got the call about the leak and found his front yard to be dry. He showed us video and photos of the property, and the meter.

Molina said Liddell’s **meter had appeared to be stuck** and technicians had replaced it a few days before he got the hefty bill.

According to the meter reading, more than 330,000 gallons of water leaked on the property in just 2 days. . . .

— KOLD News 13 | 8/28/12
<http://www.kold.com/story/19345471/tucson-man-gets-5000-water-bill/>

[Arizona] “Oversized water bills hit local users hard” – excerpts:

Margie Machado, with her \$1,638 water bill, . . .

Last March, Joseph Kane opened his water bill to see that he owed Tucson Water \$3,364 and some cents. He had used, the water department said, some 222,904 gallons of water. His normal usage is somewhere around 8,000 gallons.

— Bennie Sanders | *Arizona Daily Star* | 3/4/12
https://tucson.com/news/local/govt-and-politics/outsizedwater-bills-hit-local-users-hard/image_1e8613b1-bb70-5495-a835-791debd2842a.html

[Georgia] “City’s faulty water meters make monthly water bills skyrocket” – excerpts:

[TIME 00:22] For more than three years, Atlanta . . . has been bombarded with complaints of outrageous water bills. Similar complaints are popping up around the country in places like Cleveland, Charlotte, Tampa and Brockton, Massachusetts. But the water bill war is nothing like in Atlanta. . . .

[TIME 00:49] Cobb lives by herself in this 1,800 sq. ft. home. Her water bill averages \$30 to \$40 a month – until it began going up: more than \$1,200 in November. Her December bill nearly \$6,900. Cobb now owes more than \$10,000 and city inspectors found no leaks.

[TIME 01:22] Debbie Scarborough: her water bill shot up more than \$3,000 after two months of huge spikes last summer. . . . She even hired two plumbers to prove there was no leak.

— Transcribed from news clip posted 3/2/11
<https://www.youtube.com/watch?v=16gI4pCeQxw>

[Maryland] “Sample of 19 Maryland PSC Smart Meter Complaints from 2014” – excerpts:

Through a Maryland Public Information Act (MPIA) request, Maryland Smart Meter Awareness was able to obtain a list of complaints submitted to the Maryland Public Service Commission (PSC) about **wireless smart electric and gas meters**. The list of 301 complaints represents only the amount that the PSC was able to redact in two hours. Below

is a small sampling taken from these 301 smart meter complaints. Out of respect for customers' privacy, we have altered the wording slightly while trying to represent, as accurately as possible, the original complaint.

Case

38 – After a smart meter was installed on home, customer began to receive unusual electric bills. Customer decided to “monitor” the household utility bills. Every month the bill was unusual showing a **two, three or four fold increase** over previous years. Home has efficient new windows, new doors, new roof, new appliances, new heat pump and furnace with programmable thermostat. . . .

39 – Following smart meter installation, customer’s **electric bill was 10 times higher** than the year before during the same month. Customer says this is nearly impossible in a 990 square foot unit that is mostly unoccupied.

47 – Smart meter installed and the **electric bill tripled**. Smart meter was checked and “tested accurate.”

98 – Customer spent five months trying to get BGE to remove a smart meter that had been installed despite numerous communications from customer requesting an opt out. **After a smart meter was installed, the customer’s first bill was \$1,200**. The customer received a Home Energy Report from BGE that said he was using 450% more energy than his neighbors. When the utility rep finally came to investigate and remove the smart meter, he told the customer there was no way he could be using that much power even though the meter appeared to be working properly. The house doesn’t even have a furnace. Customer did not pay for overbilling and when another **BGE rep came to cut his/her service, instead of doing so, the rep advised the home owner to contact the PSC. Customer is still disputing a \$2,100 overcharge**.

129 – Following the installation of a smart meter, the **average monthly electric bill for 2014 increased 4 times** the average usage from the same period in 2013. The home is heated by propane and there have been no additions to the home excepting newly installed energy efficient windows and doors. During the past three months, since the smart meter was installed, the average usage has been 1925 kwh as compared to 503 kwh in 2013. Twenty-four days after the smart meter was installed, there was a reading that showed a **581% increase in energy usage**. . . .

139 – Without any prior notification, BGE installed a smart meter on home. Customer’s bills jumped from an average of \$141.40 to \$872.71 a month – the highest bill being \$1,272.65. According to BGE, bill (post smart meter) was 681% higher than comparable energy efficient homes. Customer has new water heater, energy efficient HVAC system, and new heat pump for oil heating. Following first complaint, BGE technician came out to house and confirmed that the **smart meter was counting at a rate he considered to be very high for the size of the house and the equipment installed**. Customer then sent certified letter to PSC and BGE requesting the smart meter be removed. Two months later, the case was closed; the customer was told that the meter was accurate and that the increase was due to change of temperature and customer’s old heating equipment. Smart meter has still not been removed.

168 – Customer reports that their new smart meter was **recording a 1,500% increase in average usage** over the average for the previous two years. The condo is unoccupied except for the summer months. The “subject bill” was for a reading when the condo was **unoccupied and the heat turned down**. The electric company will not admit there is an error and is threatening to turn off the power.

171 – Customer lives in a 14 x 70 mobile home and was used to paying under \$100 a month for electricity. After a smart meter was installed, customer’s bill jumped to \$300 a month. . . .

189 – Customer gives details of a situation that shows the \$886.37 utility bill is an inexplicable increase over the prior two months. The most noteworthy detail of this complaint is that there were **daily spikes in usage at 6:00 am** when the family is still sleeping and the thermostat was not set to change temperature until 7:00 am. The family kept the thermostat at 65 degrees during the day and had to wear very heavy clothing to tolerate the indoor temperature.

207 – Customer reports bills tripling since installation of smart meter. Customer can also trace health issues back to when the smart meter was installed. Customer has requested that the smart meter be replaced with an old style analog meter. . . .

235 – After smart meter installation, customer’s usage jumped from 3400 KWH (\$500) to 4200 to 5300 and bills increased accordingly. . . . Customer had “energy pro” come out and give them advice which they followed. They changed light bulbs, the shower head, kept the thermostat to 68/69, wrapped their water heater and had their heating and AC checked out. Instead of a decrease, their next bill was \$621. They asked their neighbor, who still had an analog meter, if their bills had increased as well during this same time period. The neighbor’s bills had not increased. . . .

239 – Customer received a smart meter and **bills increased from roughly \$300-\$400 to \$1100-\$1400**. Customer says the family’s energy usage did not change except “perhaps a bit more heat on some days.” Customer had energy efficient heating both before and after new meter was installed. Delmarva technician came out to home not long after the new smart meter was installed to “fix something”. While there, the technician noted that there was no reason for the customer’s bills to be so high. . . .

242 – **Vacant house**, up for sale, went from 41-58 kwh in the past year to 266 kwh the month after a smart meter was installed. Customer is extremely upset and questions accuracy of the smart meter.

284 – Customer’s bill increased with smart meter. After smart meter was removed the usage returned to normal. Customer would like to be reimbursed for the overcharges.

285 – Customer’s **bill went from \$200 to \$685 per month** without a change in usage behavior. Last Dec. 12 the customer’s bill was 1021 kwh and this year, Dec. 13, it was 3022 kwh.

287 – Customer experienced increases in electric bills and so checked with neighbors to see if they had similar experiences. According to customer, all of their utility bills had increased 2 to 2.5 percent since installation of a smart meter.

- Maryland Smart Meter Awareness | 2/10/15
<https://marylandsmartmeterawareness.org/smart-meter-news/sample-of-maryland-psc-smart-meter-complaints-2014>

[Arizona] “Consumer Reviews and Complaints” about Arizona Public Service – examples from 116 submissions:

Anthony of Phoenix, AZ | Original review: June 27, 2018

Power shut off . . . I have had APS for about 5 years now. Payments always made on time, never requested a security deposit upon starting service. One month I receive my bill and opened it up to a \$650 due payment! Looking into the bill I was charged on random a \$450 security deposit for “2 late payments”. After reviewing all of my bills for the past 12 months I have never been late once and never assessed a “late payment” and then they randomly add an additional \$450 deposit right before the summer time. Let me say today is 108 degrees outside and I have a 3 year old and a 5 month old at home so now my poor family has to sit in a non air conditioned house with no electricity . . .

Angela of Phoenix, AZ | Original review: March 2, 2018
My issue with APS, is that no matter how little electricity I use and how much my kilowatts go down from month to month, my freaking bill is outrageous and just keeps getting higher. . .

Lynn of Anthem, AZ | Original review: Sept. 27, 2017
I have lived in Arizona going on a year now. Never in my 45 years of living in NY have I been ripped off by my utility company. I had called APS well over 2 months ago complaining about my broken meter. They lied to me and said that day someone would be at my residence to fix my meter. My bills are out of control. Every month my bill keeps going up which I had also questioned them. **“How are you coming up with any reading if my meter is broken.”** They answered me very rudely and said “that’s what we have read” and to pay my bill immediately or they will shut off my electric. . .

barbara of Chandler, AZ | Original review: Sept. 6, 2017
So I am a new APS customer. I tried to do Autopay and thought it would be taken care of without me writing a check. Ha Ha. They didn’t debit the account so sent me a bill saying they would debit TWO months next time. OK. Fine. Only they didn’t. They shut off the power instead. And said they put a “door hanger” warning me of shutoff. NEVER GOT IT. So, power went off while workmen were putting in a floor. Had to go to Walmart, pay APS because there is NO office here. Nasty customer service. Said I wanted to appeal the shutoff fee. Well guess what? The fee, \$27.70, appears on the next bill. Not my fault. It’s theirs, but I have to pay or they charge a late fee, or a shutoff fee, or some other dumb charge. So I canceled Autopay. Guess what? This month’s bill says, “We will debit your account”. I am certain if I write a check they will also debit the bank anyway. You cannot win with APS.

Russell of Cave Creek, AZ | Original review: July 15, 2017
Over the years, as a homeowner in the same residence for 22

According to an APS whistle blower whose complaint is listed in the AZCC Docket, “The smart meter runs on the high side, in other words high and in APS’ favor. Smart Meters have been found to be inaccurate as well.”

– “APS Whistle Blower Tells Smart Meter Truths”, Sedona Eye, 12/12/12
<https://sedonaeye.com/aps-whistle-blower-tells-smart-meter-truths/>

years and the owner of several commercial buildings, I’ve had the misfortune of having to use APS as my utility provider. My latest encounter with the monopoly was with my personal utility bill. I have been on the equalizer program for several years. I recently installed two new super-efficient AC heat pumps, which dramatically lowered my bills. I asked APS to adjust my equalizer payment but they only do that after many months of experience, so they refused to do it in advance. Over the period of 4 or 5 months, I built up a credit of nearly \$2,000 at which point I called and asked for an adjustment to the payment, which, of course, they refused to do. I asked them to apply the credit to the current month so I didn’t have to pay and was told they would do so. I asked my bank to suspend that month’s payment. I did the same the next month at which point I received a disconnect warning.

Remember, at this point, they still have over \$1,000 of my money and I’ve never paid late in at least a decade. They refused to use the credit, saying it was needed for the equalizer. They refused to change the equalizer payment. So, in order to use the credit, I had to cancel the equalizer. **They charged my account a \$25.00 late fee for having over \$1,000 in credit.** I’m not making this up. Now, I can’t go on equalizer for 12 months, since I cancelled it. . . .

Debbie of Phoenix, AZ | Original review: June 27, 2017
I sit and use candles, hardly EVER any lights. I have a 3-level condominium and have my air set at 85-86 degrees and sit and suffer in this heat, only to find out that over **HALF of my bill is in FEES!!!** Delivery service charge GOES UP every month, and in fact, there are 14 FEES, not including the Taxes and Fees for state, county, city, franchise, regulatory assessment. In June 2016, over \$100 was FEES ONLY. . . I am sitting in a HOT house because I can’t afford to pay APS’ fees. I’m looking at my bill for Jan 2017, my USAGE is only \$52.39 but my bill is \$121.60. . . .

Julie of San Tan Valley, AZ | Original review: May 4, 2017
Being new to APS we were astounded by our bill for electricity usage, we tried to figure out where we could conserve more to lower our monthly usage/cost. Looking closer at the bill we realized that we’d only used 338kwh which equaled \$19.94 in usage, the remaining \$32.17 are fees & taxes. APS said, “When you buy milk you don’t just pay the cow.” What?? So I called the Utility Commissioner & she said, “What do you want me to do, write a complaint that you don’t like seeing all those listed fees?” I said, “No, I appreciate the transparency but in seeing it I cannot believe the taxes and fees far outweigh the cost of the actual utility usage! I understand there are fees & taxes but nowhere else do I see them to this degree!” Who is holding them accountable because the Utility Commissioner I spoke with 100% defends this practice! SHAME APS & the AZ Utility Commission!

– Consumer Affairs website. Accessed April 2019.
https://www.consumeraffairs.com/utilities/arizona_public_service.htm

UNDER-ACKNOWLEDGED CONSEQUENCES OF “SMART” METER USE

Uninsurable damages to health and property

[UK] “Lloyds Insurers Refuse To Cover 5G Wi-Fi Illnesses”
– excerpts:

Lloyds of London, one of the world’s premier insurance groups, is refusing to insure health claims made against 5G wireless (“wi-fi”) technologies.

The FCC and other government regulatory bodies, in collusion with the big telecom industries, are ferociously pushing smart meters, 5G and the Internet of Things.

This roll-out is not only happening in the US, but all over the world. The giant telecoms gush enthusiastically about how EVERYTHING will be connected.

Lloyds of London, one of the world’s premier insurance groups, is refusing to insure health claims made against wireless technologies. And, other insurance companies are following Lloyd’s lead in this.

... Lloyd’s November 2010 Risk Assessment Team’s Report gives us a solid clue: the report compares these wireless technologies with asbestos, in that the early research on asbestos was “inconclusive” and only later did it become obvious to anyone paying attention that asbestos causes cancer.

Keep in mind that Lloyd’s Risk Assessment study of wi-fi was published over 8 years ago. Even back then, however, their Risk Assessment Team was smart enough to realize that new evidence just might emerge showing that the various wi-fi frequencies do cause illness. The result? Lloyds opted to exclude coverage for wi-fi related illnesses.

And then, PG&E followed close on, slipping in its own legal clauses (just as it was rolling out smart meters) that claim no liability for wi-fi related health damage. **The schools who opt to put in wi-fi are responsible, according to PG&E, and any other organizations that opt to have PG&E put wi-fi in their buildings are the responsible parties.**

– phibetaiota.net | *Principia Scientific International* | 2/12/19
<https://principia-scientific.org/lloyds-insurers-refuse-to-cover-5g-wi-fi-illnesses/>

[CANADA] Video: GTA homeowner liable for damage after smart meter catches fire:

A GTA [Greater Toronto Area] resident recently came home to find his hydro smart meter fully engulfed in flames. Kevin Zeller soon found out he was responsible for most of the hardware used by Hydro One and was slapped with a bill for \$5,000.

[TIME 0:38] ... concerns come from the recall of more than 5,000 smart meters in Ontario in 2015 by electrical safety authorities after several fires in Saskatchewan were thought

to have been caused by a specific model of meter.

– *CityNews* | 1/12/17 <https://toronto.citynews.ca/video/2017/01/12/video-gta-homeowner-liable-for-damage-after-smart-meter-catches-fire/>

[UK] “Insurance Underwriters Refuses to Cover Wireless Industry” – excerpts:

... *The Observer* published an article in 1999 that stated: **“Lloyd’s underwriters refuse to insure mobile phone manufacturers against the risk of damage to users’ health.”**

That article was unequivocally clear. The insurers had: “fears mobile phones will be linked to illnesses such as **cancer** and **Alzheimer’s disease**.” Twenty years ago, the industry already knew their business models were a risk to the general public, especially because **insurers were already refusing to cover their biggest liabilities**. . . .

As for the insurers themselves, they had learned hard lessons before. If you go back to asbestos, it wasn’t a problem either – until it became one. Asbestos claims helped bring the Lloyd’s insurance market to its knees in the early 1990s, where US claims alone accounted for an estimated \$250 billion in losses.

After years of **contradictory industry-led evidence**, in February 2015, Lloyds of London, one of the largest insurers in the world, finally made its position absolutely clear with regards to exposure to **non-ionizing radiation**.

In acknowledgement to clarification, this response was received on Feb. 18 2015, from CFC Underwriting LTD, London, UK agent for Lloyd’s – published in an article by RFSafe:

Lloyd’s of London Insurance won’t cover smartphones – Wi-Fi – Smart Meters – Cell Phone Towers by excluding ALL wireless radiation hazards

<https://www.rfsafe.com/lloyds-of-london-insurance-wont-cover-smartphones-wifi-smart-meters-cell-phone-towers-by-excluding-all-wireless-radiation-hazards/>
– Graham Vanbergen | *True Publica* | 7/21/18
<https://truepublica.org.uk/united-kingdom/mobile-phones-insurance-underwriters-refuse-industry-cover-legal-cases-underway/>

[USA] “The inconvenient truth about cancer and mobile phones” – excerpts:

... When Henry Lai, a professor of bioengineering at the University of Washington, analysed 326 safety-related studies completed between 1990 and 2006, he discovered that 44% of them found no biological effect from mobile phone radiation and 56% did; scientists apparently were split. But when Lai **recategorised the studies according to their funding sources**, a different picture emerged: 67% of the independently funded studies found a biological effect, while a mere 28% of the industry-funded studies did. Lai’s findings were replicated by a 2007 analysis in *Environmental*

Health Perspectives, which concluded that industry-funded studies were two and a half times less likely than independent studies to find health effects.

One key player has not been swayed by all this wireless-friendly research: the insurance industry. In our reporting for this story, we found not a single insurance company that would sell a product-liability policy that covered mobile phone radiation. “Why would we want to do that?” one executive asked with a chuckle before pointing to more than two dozen lawsuits outstanding against wireless companies, demanding a total of \$1.9bn in damages.

The industry’s neutralisation of the safety issue has opened the door to the biggest prize of all: the proposed transformation of society dubbed the **Internet of Things**. Lauded as a gigantic engine of economic growth, the Internet of Things will not only connect people through their smartphones and computers but will also connect those devices to a customer’s vehicles and appliances, even their baby’s nappies – all at speeds much faster than can currently be achieved.

There is a catch, though: the Internet of Things will require augmenting today’s 4G technology with 5G technology, thus “massively increasing” the general population’s exposure to radiation, according to a petition signed by 236 scientists worldwide who have published more than 2,000 peer-reviewed studies and represent “a significant portion of the credentialled scientists in the radiation research field”, according to Joel Moskowitz, the director of the Center for Family and Community Health at the University of California, Berkeley, who helped circulate the petition. . . .

– Mark Hertsgaard & Mark Dowie | *The Guardian* | 7/14/18
https://www.theguardian.com/technology/2018/jul/14/mobile-phones-cancer-inconvenient-truths?CMP=Share_AndroidApp_Gmail

[UK] “Mobile Phones – Insurance underwriters refuse industry cover, legal cases underway” – excerpts:

A recent *Guardian* article entitled “The inconvenient truth about cancer and mobile phones” stated that “On 28 March this year, the scientific peer review of a **landmark United States government study** concluded that there is “clear evidence” that **radiation from mobile phones causes cancer.**”

The article went on to say that “For a quarter of a century now, the indus-

“[W]e found not a single insurance company that would sell a product-liability policy that covered mobile phone radiation. ‘Why would we want to do that?’ one executive asked with a chuckle before pointing to more than two dozen lawsuits outstanding against wireless companies, demanding a total of \$1.9bn in damages.”

– Mark Hertsgaard & Mark Dowie,
The Guardian, 7/14/18

“. . . the Internet of Things will require augmenting today’s 4G technology with 5G technology, thus ‘massively increasing’ the general population’s exposure to radiation, according to a petition signed by 236 scientists worldwide who have published more than 2,000 peer-reviewed studies and represent ‘a significant portion of the credentialled scientists in the radiation research field’, according to Joel Moskowitz . . .”

– Mark Hertsgaard & Mark Dowie,
The Guardian, 7/14/18

try has been orchestrating a global PR campaign aimed at **misleading not only journalists but also consumers and policymakers** about the actual science concerning mobile phone radiation. . . . And like their tobacco and oil counterparts, wireless industry CEOs lied to the public even after **their own scientists privately warned that their products could be dangerous, especially to children.**”

In 2015, over 200 scientists from 41 countries, all specialists in the effects of electromagnetic fields (EMFs) on biological systems, signed an appeal to the UN and the WHO calling for more protective exposure limits and for the public to be advised to reduce its exposure to anthropogenic RFR.

In September 2017 over 180 scientists from 35 countries addressed an appeal to the EU calling for a moratorium on the roll-out of 5G technology until potential hazards for human health and the environment were thoroughly investigated by scientists independent from the mobile industry. They pointed out that **5G “will substantially increase exposure to radiofrequency electromagnetic fields (RF-EMF) on top of the 2G, 3G, 4G, Wi-Fi, etc. for telecommunications already in place.”**

This appeal sits uneasily with the current massive roll-out of gas and electricity smart meters in the UK and the projected deployment of 5G. No-one at the industry level or policymakers in the British government has taken much notice of the ever-increasing warnings. However, it may surprise you to know that **since 2005, UK Chief Medical Officers have recommended anyone under 16 should use mobile phones for essential purposes only and keep all calls short. That advice has still not changed.**

– Graham Vanbergen | *True Publica* | 7/21/18
<https://truepublica.org.uk/united-kingdom/mobile-phones-insurance-underwriters-refuse-industry-cover-legal-cases-underway/>

[USA] “Changes are coming to your insurance policy” – excerpts:

Due to the accumulation of fire related damage to homes and businesses from Smart Meter related malfunctions, Insurance Underwriting Offices across the country are contemplating new rules that will reduce the coverage available to you due to fire damage from a Smart Meter failure.

In the past, only two reasons existed for an insurance company to consider not paying for fire damage to your home or

business, they were arson, and the fact the home or business sat vacant for at least 60 days or more before the fire.

Now a possible third reason can be added to that list, is the **malfunction of a Smart Meter**. What will most likely take place is that you will receive a notification from your Insurance Company telling you that a new limitation of coverage is now in force on your policy. When fire damage occurs to your home or business and the cause of the fire can be traced to a malfunction of your Smart Meter, then your company would not be held responsible for the financial loss.

... It appears that as the Smart Meters age, more problems are developing with them. When you couple this with the continued lack of co-operation from the Utility Companies, a reduction in the amount of coverage for an insurance policy is the only remaining answer.

The Utilities lack of co-operation can be reduced to two specific items. Number one would be the utilities continued action of removing the Meters from the loss site without giving the Insurance Company the chance to examine the Meter to determine the cause of the fire. It seems that as long as the Utility Companies continue in this practice, a cancellation in coverage from a Smart Meter fire is the end result. The reason that utility companies give for removal of the Meters is that the meters belong to the Utility Company which is a true statement, however, in the spirit of co-operation and concern for their customers, the Utility Companies should leave the Meters at the loss site until a complete examination of them can be done.

A second and perhaps more compelling reason for removal of the Smart Meters from the loss site is that the Utility Company does not want the Insurance Company to discover that most Meters have been operating at a higher temperature than usual. The normal ambient operating temperature for a new Smart Meter is 89 Degrees, the average operating temperature for the Analog Meters, which the Smart Meters replaced, is 85 degrees. The way in which the Utility Companies dealt with this problem was to drill two holes in the top of the Meter casings to let the heat out. Well, they let the heat out, but also let water and dust inside which made the malfunction of the Smart Meter almost a certainty.

If you have the opportunity, consult your state's Public Utility Commission and refuse to have the new Smart Meter installed, it may just save you money.

— Norman Lambe | Examiner.com | 2/7/16

Archived here: <https://web.archive.org/web/20160317065413/http://www.examiner.com/article/changes-are-coming-to-your-insurance-policy>

[New Mexico] Direct Testimony of Norman W. Lambe – NMPRC [New Mexico Public Regulation Commission] CASE NO. 15-00312-UT – excerpts:

Q. Please state your name, job title and business address.

A. My name is Norman Lambe. I am a Senior Property Claims Examiner at Precision Risk Management, . . . , Cypress, CA 90630.

Q. Please describe your professional background and experience.

A. I have worked in property claims approximately 30 years. I have been involved in the investigation, evaluation, and adjustment of insurance claims for property damage. This encompasses the investigation of the destruction to the named insured's buildings, structures and business or personal property. Since June 1, 2010, I have served as a Senior Property Claims Examiner at Precision Risk Management, Inc., in Cypress, California.

Prior to my current employment, I served as a Senior Property Claims Examiner for First American Property and Casualty in Santa Ana, California, from 2003-2010. My work with this insurance carrier also involved the investigation, evaluation, and adjustment of Homeowner and Commercial First Party Claims. I have been involved in the investigation of fire losses to homes and businesses as well as the adjustment of the building claims and the adjustment of personal property loss. I have experience in adjusting losses that range from a destroyed sofa or the theft of a television set to claims

from 9/11 attacks to claims for damages and losses that resulted from fires caused by "smart" meters. For further relevant work experience please see Exhibit CFRE NL 1.

I have had first-hand experience in the following "smart" meter-caused fires cases:

- 2015-1369-77A — shopping center fire
- 2015-2031-77A — condominium complex fire
- 2013-9656-77A — apartment complex fire
- 2015-2156-77A — restaurant fire
- 2016-2692-77A — hotel power surge

Q. What is the purpose of your testimony?

A. I am concerned for the well-being of homeowners and business owners who purchase or rent their facilities and then buy insurance policies to protect themselves from damage and loss in the event of a catastrophe. I see submission of this testimony as part of my job, to do what I can to spare people from pain and suffering. If there is something that I can do to keep that from happening, to help prevent a home or business from burning, then I want to do it.

I will testify to some of the challenges that have arisen from "smart" meter deployments. Additionally, I am submitting evidence that "smart" meters have caused fires and that these meters are sometimes removed by utility companies before a proper investigation can be conducted. On this subject I am submitting 4 reports, Exhibits CFRE NL 2, CFRE NL 3 a and b, and CFRE NL 4.

I am also submitting Exhibit CFRE NL 5. This document includes an exclusion that indicates that an insurance company that has Lloyds of London as its reinsurer, will not pay for any physical illness that is directly related to the insured's exposure to radio frequency radi-

“Installing ‘smart’ meters is not a prudent investment. It is not fair for PNM to put unnecessary risk onto the shoulders of its customers including the risk of ‘smart’ meters caused fires or health risks. Furthermore, how these AMI meters affect the electrical wiring systems of old homes and customer’s appliances must be thoroughly studied. Finally, the absolute safety of any and all meters should be proven before they are installed, if ever they are installed.”

— Norman Lambe, NMPRC CASE NO. 15-00312-UT

tion (“RFR”). “Smart” meters are one of the major appliances that produce RFR.

I also submit CFRE NL 6, an article detailing the growing threat of cyber-attach, this is a serious threat and problem associated with AMI deployment; It should not be taken lightly.

Q. What challenges do you face as a claims examiner?

A. In the event of damage or loss to property, and usually after the insured person(s) are reimbursed for damages, Claims Examiners are obligated to pursue the responsible party for the recovery of the named insured’s deductible, and for the money that the insurance company dispersed for repair of the damage.

My job can be very unpopular at times, especially when the insured believes that they are entitled to more than what the policy can provide. Although property claims reimbursement is limited to the actual valuation of the property loss, I can see that in many cases the losses cause severe mental and emotional strain and hardship for the claimant.

Q. What are some of the issues that have arisen from “smart” meter-caused fires?

A. In cases of fire involving “smart” meters, by the time a representative from the insurance company arrives at the scene, the utility has already responded, usually during the course of the local fire department’s fire suppression efforts. Utility companies commonly remove the “smart” meter that had malfunctioned and/or ignited prior to completion of the necessary investigation into the cause of the fire. This hampers my ability to see that a proper investigation is performed for insurance purposes. This also complicates the job of Fire Marshals and/or fire department investigators. This may potentially also lead to a misdiagnosis by fire departments and insurance agencies and an undercounting of the total number of “smart” meter caused fires.

Utility companies have kept the “smart” meters, claiming that they are the company’s property, and they can do with them as they please. It can take me several months, if not 17 years, to obtain the “smart” meter that is believed to be the same one involved in, and the primary cause of a particular fire. Thus, the timeframe required to perform the requisite analysis is substantially extended; consequently, fires caused by “smart” meters can be extremely challenging to investigate and resolve.

Q. Please describe the significance of Exhibit CFRE NL 2.

A. CFRE NL 2. Is a Report from Vincent Panko of Protocol Insurance Services, dated December 3, 2015 to me, Norman Lambe, RE: Claim number 2015-2031-77A. This case exemplifies the difficulty that we encounter when trying to obtain access to “smart” meters in order to perform a proper investigation. We still have not been permitted the opportunity to inspect the meter by Nevada Energy. Residents stated that the “smart” meter exploded. The inability to access the meters in “smart” meter fire cases is a consistent problem.

Q. Please describe the significance of Exhibit CFRE NL 3 b.

“Most ‘smart’ meters have not been certified by any independent certification body, such as Underwriters Laboratory (‘UL’) or Canadian Standards Association (‘CSA’). Instead ‘smart’ meters are routinely certified by industry groups such as ANSI and IEEE. All of the models of meters that have burned, and many have, have been certified by these industry groups. UL has a new certification standard that is said to have been developed to insure the safety of ‘smart’ meters, UL Standard 2735. But, even this certification is not sufficient. The very meters that have received this certification, Sensus and Landis & Gyr, have caused fires.”

– Norman Lambe, NMPRC [New Mexico Public Regulation Commission] CASE NO. 15-00312-UT

A. Exhibit CFRE NL 3 b is a forensic electric engineering investigation report for a loss at 5600 Spring Mountain Road; Las Vegas, Nevada in 2015. The business is 100 Degrees Hot Pot LLC, claim number 77A5001263-00 (2015-1618-77A).

Exhibit CFRE NL 3 b is a follow-up report. CFRE NL 3 b details new findings on the referenced loss that were revealed during the course of the joint destructive inspection of the “smart” meters. These meters were the subject of an earlier report by this author, dated September 18, 2015 which have also submitted, as CFRE NL 3 a. The joint destructive inspection was conducted at NV Energy; 6226 W. Sahara Blvd.; Las Vegas, NV, on April 21, 2016.

CFRE NL 3 b reveals that the “smart” meters were removed from the scene prior to completion of the fire investigation. This report indicates that the remote switching mechanism in a “smart” meter was determined to be the cause of the fire.

Unlike analog meters, “smart” meters can turn power “on” or “off” remotely. Sometimes, during activation of this remote switch, a tremendous burst of power can cause arcing in the meter and result in fire. As noted in the report by EFI Global (CFRE NL 3 b p.4), “All observed damage to the electrical panel and the meter itself is consistent with a fire triggered by extreme heat at the defective switch contacts inside the meter. The heat transferred to the metal clips, which were held in position by a resin-based insulator. The extreme heat ignited the insulator. The ensuing fire burned upward inside the panel, explaining the damage to the circuit breaker located directly above it. Open flame conducts electricity, so the flame drew an arc between the two energized power rails in the panel, explaining the unusual arc patterns in the center circuit on the panel, which was not part of the ‘HP’ meter circuit.”

This fire occurred solely and directly as a result of the installation of a defective meter into an existing and serviceable electrical panel by the utility company, NV Energy. The fire originated in a locked and concealed area that is accessible only to employees of NV Energy. The owners and occupants of the subject building did nothing wrong and were powerless to prevent this fire. The employee(s) of NV Energy who installed the meter were the last persons having the opportunity to inspect the subject meter and associated panel. The responsibility to identify and prevent electrical fires of this nature rests with the utility provider and, by inference, the manufacturer of the defective meter.

This fire occurred solely and directly as a result of the installation of a defective meter into an existing and serviceable electrical panel by the utility company, NV Energy. The fire originated in a locked and concealed area that is accessible only to employees of NV Energy. The owners and occupants of the subject building did nothing wrong and were powerless to prevent this fire. The employee(s) of NV Energy who installed the meter were the last persons having the opportunity to inspect the subject meter and associated panel. The responsibility to identify and prevent electrical fires of this nature rests with the utility provider and, by inference, the manufacturer of the defective meter.

Q. Please describe the significance of your Exhibit CFRE NL 4.

A. CFRE NL 4 is a San Diego Fire Department Incident Report, number FS 14023257. On February 26, 2014, a fire broke out at Friars Village, a shopping mall located at 10450 Friars Road in San Diego, California, at Troy’s Greek Restaurant.

Many entries from this report provide important independent accounts of what took place at the Friars Village Shopping Mall.

SDGE refers to San Diego Gas and Electric:

- At 18:21:14, the report states “have SDGE expedite, 2 elect boxes on fire.”
- This is repeated at 18:21:42 “/ SDG expedite 2 elect boxes on fire”
- At 18:34:47 the report states that “...2 high voltage elec boxes smoldering at the elec shut off for the strip mall... units standing by until SDGE arrives...”
- Another entry at 19:42:09: “2 SDGE meters on fire. 15 businesses evacuated and w/o power.”

Please note that as of the date of this testimony, more than two years later, we have not yet been able to gain access to our insured’s “smart” meter in order to perform the requisite investigation.

Q. Why have you not been able to gain access to the meter in this incident?

A. If the meter caused the fire, the utility would be responsible for the damages caused by the fire, not my insurance company; therefore, I believe that the utility does not want my company to inspect the meter.

Q. How does not gaining access to the “smart” meter affect the insurance business?

A. To meet our obligations, insurance providers must determine the cause of damage that we insure. If another party is determined to be responsible for damage, then they would be responsible for paying for damages. “Smart” meters cause fires. When utilities do not let insurance companies investigate these meters, the cause of those fires, our companies are left to pay for the damages inflicted upon our customers.

Q. What do you believe to be the likely outcome of the threats posed by radio frequency radiation and “smart” meter caused fires?

A. I believe some of the problems associated with “smart” meters are coming to a crescendo. Soon enough, one or more large property insurance companies will decide to exclude any damage to a building, business or personal property directly related to the malfunction of a “smart” meter, or more specifically, “smart” meter-caused fires. There is already one significant development whereby Lloyd’s of London has issued an exclusion; by this I mean that they have incorporated an exclusion into their policies to exempt the company from paying for any “smart” meter or other radio frequency radiation (“RFR”) related illnesses. Electric “smart” meters, or more specifically, an AMI system in whole is a particularly dangerous source because of the quantity, frequency, and pulsing nature of the output of this sort of radiation.

Q. Please be specific, how has Lloyds of London reacted to health damages caused by exposure to electromagnetic or radio frequency radiation, including those from “smart” meters?

A. Lloyds of London, perhaps the world’s largest reinsurance carrier, issued “Exclusion 32.” This exclusion indicates to other insurance companies that has Lloyds of London as its reinsurer (underwriter) will not pay for any physical illness that is directly related to the insured’s exposure to radiofrequencies (RFs). I am submitting a copy of Lloyds of London’s Exclusion 32 as contained within an A & E Insurance for Architects & Engineers policy, Exhibit CFRE NL 5.

Q. Would UL certification ensure that a meter is safe?

A. Most “smart” meters have not been certified by any independent certification body, such as Underwriters Laboratory (“UL”) or Canadian Standards Association (“CSA”). Instead “smart” meters are routinely certified by industry groups such as ANSI and IEEE. All of the models of meters that have burned, and many have, have been certified by these industry groups. UL has a new certification standard that is said to have been developed to insure the safety of “smart” meters, UL Standard 2735. But, even this certification is not sufficient. The very meters that have received

this certification, Sensus and Landis & Gyr, have caused fires.

Q. What other concerns do you have about “smart” meters?

“Smart” meters also pose a security risk. On May 3, 2016, Nick Hunn of WiForce Consulting, Ltd. testified at the UK House of Commons’ Science and Technology’s “evidence check” and inquiry into the country’s “smart” metering initiative. Mr. Hunn stated: “The concern I have is that every smart meter has an isolation switch so it can be remotely connected from the supply . . . If somebody could hack into that or just by mistake turn off very large numbers of meters, that sudden shock of taking them off the grid, and even worse, be able to turn back on at the same time, would cause significant damage. And to me that’s an unnecessary risk.” CFRE NL 6 is an article by Nick Hunn that notes some recent cyber-attacks. This threat should not be trivialized.

Q. What are your recommendations about PNM’s AMI Project Proposal?

Installing “smart” meters is not a prudent investment. It is not fair for PNM to put unnecessary risk onto the shoulders of its customers including the risk of “smart” meters caused fires or health risks. Furthermore, how these AMI meters affect the electrical wiring systems of old homes and customer’s appliances must be thoroughly studied. Finally, the absolute safety of any and all meters should be proven before they are installed, if ever they are installed.

— SUMA-NW, Safe Utility Meters Alliance Northwest
http://safemeters.org/wp-content/uploads/2017/02/Norman_Lambe_testimony.pdf
<http://safemeters.org/issues/house-fires/norman-lambe-articles/>

“Articles by Norman Lambe, Insurance Adjuster – Smart meters & fires” – excerpts from information posted on the Coalition to Stop Smart Meters in BC website

<http://www.stopsmartmetersbc.com/z/articles-by-norman-lambe-insurance-adjuster-smart-meters-fires/>
In the past two decades California has sustained a series of natural disasters, everything from earthquakes to several horrific wildfires, and with the changes in the weather and resulting lack of water, additional large-scale wildfires are sure to come. The insured’s awareness of and participation in the investigation, evaluation and adjustment of their insurance claims is the foundation of Norman’s place as an Examiner.

— • —
Changes are coming to your insurance policy – Feb. 07, 2016:
<https://web.archive.org/web/20160317065413/http://www.examiner.com/article/changes-are-coming-to-your-insurance-policy>

Exploding and melting smart meters in Stockton, California – Aug. 02, 2015:
<https://web.archive.org/web/20150814200135/http://www.examiner.com/article/exploding-and-melting-smart-meters-stockton-california>

Are insurance companies avoiding the smart meter problem? – July 26, 2015:
<https://web.archive.org/web/20150823051735/http://smartmeterharm.org/2015/07/28/are-insurance-companies-avoiding-the-smart-meter-problem/>

In defense of your civil liberty – June 15, 2014:
<https://web.archive.org/web/20160711092603/http://www.examiner.com/article/in-defense-of-your-civil-liberty>

Smart meter fire woes continue – Mar. 30, 2014:
<https://web.archive.org/web/20160902063302/http://www.stopsmartmetersbc.com/z/smart-meter-fire-woes-continue-by-norman-lambe-examiner-march-30-2014/>

Smart meter fires are an international problem – Mar. 09, 2014:
<https://web.archive.org/web/20160902070206/http://www.stopsmartmetersbc.com/z/smart-meter-fires-are-an-international-issue-by-norman-lambe-examiner-march-09-2014/>

Smart meter fires, what your insurance company should do – Feb. 02, 2014:
<https://web.archive.org/web/20160902071128/http://www.stopsmartmetersbc.com/z/smart-meter-fires-what-your-insurance-company-should-do-by-norman-lambe-examiner-february-02-2014/>

Smart meter and advanced meter greed – Jan. 26, 2014:
<https://web.archive.org/web/20160902072004/http://www.stopsmartmetersbc.com/z/smart-meter-and-advanced-meter-greed-by-norman-lambe-examiner-january-26-2014/>

The Southern California Gas Company’s Advanced Meter – Jan. 19, 2014:
<https://web.archive.org/web/20160123143300/http://www.examiner.com/article/the-southern-california-gas-company-s-advanced-meter>

Assault of the smart meters – Jan. 12, 2014:
<https://web.archive.org/web/20160902072517/http://www.stopsmartmetersbc.com/z/assault-of-the-smart-meters-by-norman-lambe-examiner-january-12-2014/>

Something is still wrong with the smart meters – Nov. 25, 2012:
<https://web.archive.org/web/20160420231520/http://www.examiner.com/article/something-is-still-wrong-with-the-smart-meters>

The results of refusing the smart meter – June 24, 2012:
<https://web.archive.org/web/20120926025519/http://www.examiner.com/article/the-results-of-refusing-the-smart-meter>

The not so smart meter – Nov. 13, 2011:
<https://web.archive.org/web/20150415224720/http://www.examiner.com/article/the-not-so-smart-meter>

UNDER-ACKNOWLEDGED CONSEQUENCES OF “SMART” METER USE

Death by disconnect

Remember that utility bill increases – having less to do with actual consumption – make it difficult for growing numbers of people to pay their bills. This then leads to utility shut-off. Utility companies need substantially higher revenue to cover the high costs of smart grid-supporting schemes and/or to increase profits. And for these, growing numbers are living in intolerable conditions and at worst, losing their lives.

[Arizona] “APS settled claims for 2 customers who died after their power was shut off” – excerpt:

The new disclosures show that two people died — Pullman and the woman found in July — in the first full year after APS raised rates in August 2017, which prompted complaints from thousands of customers and raised the company’s disconnections to 110,029 for 2018.

That compared with about 56,000 disconnections in 2017, when the company paused those shutoffs for two months and enacted a rate increase more than halfway into the year, and about 88,000 in 2016 before the rate hike.

– Ryan Randazzo and Kyra Haas | *Arizona Republic* | 7/3/19
<https://www.azcentral.com/story/money/business/energy/2019/07/03/2-more-arizona-public-service-co-customers-died-after-power-shutoffs/1636288001/>

[Arizona] “On 107-Degree Day, APS Cut Power to Stephanie Pullman’s Home. She Didn’t Live” – excerpts:

On August 23, 2018, the utility mailed a warning letter to the 72-year-old’s home in Sun City West, where she [Stephanie Pullman] lived with her cat, Cocoa. Pullman owed APS \$176.84, it said. She had five days to pay in full. Otherwise, APS would disconnect the electricity. Outside, temperatures were in the triple digits.

Pullman lived on less than \$1,000 a month in Social Security, according to one of her daughters, Jeanine Smith. Her children regularly chipped in to help with expenses. When their mother’s air conditioner broke in April 2018, they made sure it was fixed. Smith, who lives in Ohio, paid her mother’s phone bill; her sister, Chris Hotes, covered the internet.

APS didn’t cut off Pullman’s electricity on August 28. Pullman’s final electric bills show that on September 5, 2018, the day after her Social Security check normally arrived, she paid APS \$125.

It wasn’t enough. Two days later, on September 7, APS disconnected her electricity. That day, temperatures hit at least 105 degrees Fahrenheit, instruments recorded in nearby Youngtown showed. Smith recalled it was 107 degrees.

– Elizabeth Whitman | *Phoenix New Times* | 6/12/19
<https://www.phoenixnewtimes.com/news/aps-cut-power-heat-customer-dead-phoenix-summer-shutoff-11310515>

[Arizona] “AZ Corporation Commission adopts moratorium on electric utility disconnections” – excerpts:

Many states have regulations or state laws that prohibit public utilities from shutting off the electricity during extreme temperatures, either below freezing or hot temperatures, or a date-based time frame. See generally, **State Disconnection Policies | The LIHEAP Clearinghouse**. According to this website, Arizona supposedly had a temperature based disconnection policy:

Utilities advised not to terminate residential service when the customer has an inability to pay and where weather will be especially dangerous to health (usually 32° F or below for winter and triple digits for summer) as determined by the Commission. There are also rules prohibiting disconnection of service for certain medical reasons. Several of Arizona’s energy vendors enforce moratoriums with varying criteria.

Stephanie Pullman had a medical reason, i.e., significant cardiovascular disease, and APS cut off her electricity during triple-digit heat. So if this is the policy in Arizona, why did this happen to Stephanie Pullman?

– AZ BlueMeanie | Blog for Arizona | 6/22/19
<https://blogforarizona.net/az-corporation-commission-adopts-moratorium-on-electric-utility-disconnections/>

[Arizona] “After heat-related death, Attorney General Mark Brnovich says Arizona needs power shutoff law” – excerpts:

Last year, 182 people died in the Phoenix area from heat-related causes, and while it’s unclear exactly how many might have been like [Stephanie] Pullman and had their power shut off, a county report shows 28% were indoors.

That could indicate they either didn’t have air-conditioning or electricity, or that they had their thermostats turned high to save money on summer bills.

– Ryan Randazzo | *Arizona Republic* | 6/14/19
<https://wlna-webservice.gannettdigital.com/articleservice/view/1459624001/michigan-state-spartans/20.1.55/beyondthemirage.org?apiKey=57646bc6bca4811fea0000126a000bb69414f2a44f75039173cf104>

“Six years ago this November, relatives found 85-year-old Dorothy Easterling and her 48-year-old son . . . dead in their beds in their home . . .”

“The pair reportedly died of hypothermia after Duke Energy disconnected electricity to the house, where widowed Easterling was caring for her son, who had severe Down syndrome.”

– Carrie Blackmore Smith, Cincinnati.com, 9/10/17, updated 9/11/17

[Georgia] “Lawsuit claims Georgia Power negligent in death of Henry resident” – excerpts:

Cressie Mae Curry woke up to no power in her Henry County home on May 10, 2016. She was recovering from cancer treatments when she started “gasping for air, suffocating and fighting for every breath . . .”

Paramedics rushed her to Piedmont Henry Hospital where doctors confirmed she had suffered acute respiratory failure and low oxygen in her blood and tissues and determined “she could not recover from her condition,” said her daughter Darlene Sumerlin. Curry, 64, died 2 days later.

SMART METERS & REMOTE DISCONNECTION

[California] “PG&E’s, utilities’ rising customer disconnections trigger statewide quest for solutions” – excerpts:

PG&E and other investor-owned utilities in California cut off service to a record 886,000 households last year, leaving an estimated 2.5 million Californians without electricity, natural gas or both.

That’s a head-spinning 62 percent higher than the 547,000 disconnections in 2010, one of the worst years of the Great Recession that led to widespread foreclosures and other economic pain across the state.

The 2.5 million people who lost service from PG&E, Southern California Edison, San Diego Gas & Electric and SoCalGas were nearly equivalent to the combined population of San Jose at 1.05 million, San Diego at 1.37 million and Oakland at 391,000.

_____ • _____

For some, the disconnections may come with little warning. That’s because the advent of **new technologies such as smart meters appears to have reduced the frequency of warnings customers receive from their power providers in California**, the TURN report stated.

Previously, utility companies were obliged to dispatch a crew to manually disconnect and reconnect the services. However, smart meters have made it possible for utility giants to replace in-person disconnections with remotely operated disconnections.

“Ironically, as shutoffs have increased, the number of disconnection notices sent to customers has decreased,” TURN stated. “The data from all four utilities suggest that shutoffs are increasingly used by utility companies as a collection strategy and that they rely far less on disconnection notices.”

– George Avalos, Bay Area News Group | *Mercury News* | 7/12/18
<https://www.mercurynews.com/2018/07/12/pges-utilities-rising-customer-disconnections-trigger-statewide-quest-for-solutions/>

A day before power was cut off, Curry had received notice that her service would be disconnected, her daughter said. Her son pleaded to have an extension on medical grounds. Georgia Power asked for a letter from her doctor, which the family said was sent.

– Anastacia Ondieki | *The Atlanta Journal-Constitution* | 6/8/18
<https://www.ajc.com/news/local-govt-politics/lawsuit-claims-georgia-power-negligent-death-henry-resident/pet4bsNS6KFh2c65WlhyGL/>

[Ohio] “They died in their beds from hypothermia. Was Duke Energy responsible?” – excerpts:

Six years ago this November, relatives found 85-year-old Dorothy Easterling and her 48-year-old son Estill Easterling III dead in their beds in their home on Orchard Street in Sharonville.

The pair reportedly died of hypothermia after Duke Energy disconnected electricity to the house, where widowed Easterling was caring for her son, who had severe Down syndrome.

The Easterlings were behind \$103.18 on their bill.

It’s taken until now for the Public Utilities Commission of Ohio to determine that Duke “prematurely” disconnected the household based on the state’s winter season heating requirements. The commission regulates investor-owned utilities such as electricity, natural gas and telephone service that Ohioans depend on.

_____ • _____

The Easterlings were found dead on Nov. 20 by relatives. The house was neat and orderly, despite being without heat or running water, according to police reports.

. . . the Easterlings had been seen alive on Nov. 17. The following night, temperatures fell into the mid-20s.

_____ • _____

In the past, Duke has had some of the most aggressive disconnection rates in the state, along with the highest number of delinquent customers. From June 2016 to May 2017 Duke Energy’s disconnection rate was nearly 10 percent, with the average bill at disconnection costing \$317.

– Carrie Blackmore Smith | *Cincinnati.com* | 9/10/17, updated 9/11/17
<https://www.cincinnati.com/story/news/2017/09/10/cincinnati-hypothermia-duke-energy-puco/642509001/>

[Maryland, Michigan, New York, California, Texas] Lights out in the cold – excerpts p.vii:

- A Maryland man in dire straits after having his electricity disconnected, resorted to using a generator to power the home where he was raising his seven children. Carbon monoxide released by the generator killed the entire family as they slept. Also in MD, a fire swept through a row house killing 10 people, including 7 children aged 7 months, 5, 7, 11 and 12 years, and two 3 year olds, as well as 3 adults, after the termination of the electricity caused residents to begin using candles and a kerosene lamp for electricity.
- In Michigan, John Skelley, a 69-year-old man, passed away in his home from hypothermia and other causes, several days after his gas service was disconnected. Also in Michigan, a fire sparked by a space heater being used to heat the home after utilities had been shut off took the lives of three people.
- In New York, three young boys, ages 4 months, 2 years, and 5 years died in a fire caused by a candle used for light after the utility company disconnected service for non-payment. In another New York incident, a child died in a fire started by a candle, in a home where service was scheduled to be reconnected 24 hours after the desperate measures took his life.

- In California, five children, ages 4, 1 and two 2 year olds, lost their lives when their electricity had been disconnected and their mothers, who were sisters living together, used candlelight to light their home, resulting in a fire.

[p.5:] **Lester Berry – Dayton, Texas**

Although Lester Berry, a 70-year-old resident of Liberty County, TX, was only \$129.62 behind on his electricity bill, his utility company cut off his power, resulting in his death. Mr. Berry had congestive heart failure and COPD, which meant that he needed constant power to his oxygen concentrator to survive. When Sam Houston Electric Cooperative disconnected his electricity, Mr. Berry very painfully suffocated to death.

Mr. Berry was found with his hand inches away from his phone, which needed electricity to work, leading his son to believe that he tried to call for help just before he died. Mr. Berry’s family said the electric power provider was well informed about his need for electricity to power his life-sustaining medical equipment, so they had no reason to assume his power would be disconnected for nonpayment of a mere \$129.62.³⁶

– NAACP | *Lights Out in the Cold: Reforming Utility Shut-Off Policies as If Human Rights Matter* | March 2017
https://www.naacp.org/wp-content/uploads/2017/04/Lights-Out-in-the-Cold_NAACP-ECIP-4.pdf

[New Jersey] “New Jersey Woman on Oxygen Dies After Electric Company Shuts Off Her Power” – excerpt:

New Jersey officials said on Monday they were investigating why a utility company shut off power last week at the Newark home of a woman in hospice care who then died after her electric-powered oxygen tank stopped operating.

Family members of the woman, Linda Daniels, said she gasped for air for hours on Thursday until she died of congestive heart failure. The company, Public Service Electric and Gas Company, had cut off power to her home that morning because of overdue bills.

Ms. Washington said her mother’s home lost power around 10 a.m. on Thursday. When she arrived later that morning, the heat was suffocating.

“Mr. Berry was found with his hand inches away from his phone, which needed electricity to work, leading his son to believe that he tried to call for help just before he died. Mr. Berry’s family said the electric power provider was well informed about his need for electricity to power his life-sustaining medical equipment, so they had no reason to assume his power would be disconnected for nonpayment of a mere \$129.62.”

– NAACP, March 2017

ergy cut power to her house.

[Georgia] “Boy, 14, dies of heat in house with no power” – excerpt:

A 14-year-old boy confined to a bed and requiring a ventilator died of heat stroke Sunday in a home where the electricity had been turned off by the local utility company, officials said.

– Associated Press | 8/2/99
http://onlineathens.com/stories/080299/new_0802990018.shtml#WiWiNDdrxhF
 Archived:
https://web.archive.org/web/20001003161313/https://www.onlineathens.com/stories/080299/new_0802990018.shtml

The high temperature on Thursday in Newark was 91 degrees. Family members repeatedly called the utility company, she said.

“We kept calling, and they said to stop calling,” Ms. Washington said. “What kind of customer service is that?”

– Matthew Haag | *The New York Times* | 7/9/16
<https://www.nytimes.com/2018/07/09/nyregion/woman-dies-oxygen-tank-electricity.html>

[NEW ZEALAND] “Woman on life support dies after power cut off” – excerpt:

A New Zealand mother who needed an electric oxygen pump to breathe died after a utility company cut the power to her home because she owed them NZ\$168.40 (£62), her family said today.

Police said they launched an investigation into the death of Folole Muliaga, 44, yesterday in the northern city of Auckland, which occurred less than two hours after state-owned company Mercury Energy

– Associated Press | 5/30/07
<https://www.theguardian.com/world/2007/may/30/1>

WRONGFUL DISCONNECTIONS

[Pennsylvania] “Peco to pay penalty for shutting off electricity to customers during winter” – excerpts:

Peco Energy will pay a \$10,000 penalty and contribute \$20,000 to a low-income energy assistance fund to settle a complaint that it improperly shut off the electricity of some low-income customers during a winter moratorium, due to a computer error.

The utility also terminated “various other customers” whose income verification information had expired.

– Andrew Maykuth | *Philly.com* | 2/7/19
<https://www.philly.com/business/energy/puc-fines-peco-wrongful-winter-shutoffs-low-income-customers-20190207.html>

“Mr. Schur froze to death in his home after the municipal power company restricted his electricity because of an unpaid bill.”

“According to one local news account, a neighbor says a utility bill was found on Mr. Schur’s kitchen table with a large amount of money attached, indicating that he wanted to pay the bill.”

– Editorial Board, *The New York Times*, 1/27/09

[Michigan] “DTE admits it improperly shut off gas or electric to thousands of customers” – excerpts:

In a sharply worded jab, state regulators ordered DTE Energy on Monday to explain why thousands of Michiganders may have had their gas or electric service shut off without what the state considers to be full notification.

The Michigan Public Service Commission ordered the utility’s gas and electric providers “to prove they did not violate the Commission’s billing rules” when they switched to a new billing system in April.

... the new billing system is used by about 140 other utilities nationwide, ...

“Errors in the new C360 billing platform did disrupt our normal billing processes, resulting in approximately 5,300 incidents of wrongful disconnections,” Pizzuti testified last week.

Of those, “99% of these wrongful disconnections were customers whose accounts were in arrears and subject to disconnection for non-payment. These customers did receive some notification, but not the duplication of notice required by the MPSC,” Pizzuti testified.

“In abundance of caution, on Jan. 13, DTE restored all 9,000 customers” whose service may have been shut off because of the defective notification procedure, DTE Energy’s General Counsel David Maquera said in a Jan. 29 letter to the MPSC.

In previous exchanges between the MPSC and DTE Energy, state regulators said there had been three categories of improper shutoffs in 2017. Besides those due to improper notification triggered by a customer’s failure to pay for service, a second group of fewer than 20 cases had “pending complaints” against DTE Energy, yet they had service “wrongfully shut off” while trying to resolve the disputes.

A third group of customers who suffered wrongful shutoffs, according to the MPSC, were **those who initially denied access for DTE Energy to install so-called “smart meters,”** ...

In some cases, some smart-meter skeptics who decided to comply with

“Xcel has so far identified 280 meters providing the wrong information. The majority resulted in over-billing. Of those, Xcel says ten percent or 28 accounts had their service disconnected for not paying their bill.”

– Bill Catlin, Minnesota Public Radio, 7/19/04

In previous exchanges between the MPSC and DTE Energy, state regulators said there had been three categories of improper shutoffs in 2017. Besides those due to improper notification triggered by a customer’s failure to pay for service, a second group of fewer than 20 cases had “pending complaints” against DTE Energy, yet they had service “wrongfully shut off” while trying to resolve the disputes.

– Bill Laitner, *Detroit Free Press*, 2/5/18, updated 2/6/18

an installation request by the utility “either contacted DTE and set up an appointment date, or were unable to reach DTE by phone, and were still disconnected despite their efforts to comply with DTE’s request,” according to a Dec. 20 order of the MPSC.

Michigan’s utilities are failing to accommodate those consumers who don’t trust the new technology, said State Rep. Jim Runestad, R-White Lake. “I signed on to the deal for people to opt out of those smart meters, and I’ve just heard horror stories about it,” Runestad said Monday.

– Bill Laitner | *Detroit Free Press* | 2/5/18, updated 2/6/18
<https://www.wzzm13.com/article/news/local/michigan/dte-admits-it-imp-erly-shut-off-gas-or-electric-to-thousands-of-customers/69-515103192>

[Minnesota, N. Dakota] “Some wrongly-billed Xcel customers were also disconnected” – excerpts:

Xcel Energy shut off service to at least 28 customers who were mistakenly over-billed because of faulty gas meter reporting devices. Xcel revealed last week that at least 164 customers were billed double what they owed because of problems with wireless meter reading devices. The utility has apologized to affected customers, is issuing refunds, and says it continues to investigate the problem.

St. Paul, Minn. – The problem traces to wireless devices used to transmit meter information from hard-to-reach meters, such as those in basements. In some cases people were billed half what they owed. But in most cases identified so far, the devices reported gas consumption was twice the amount actually used. That resulted in twice the gas bill.

About 3,400 meters are potentially affected. Some are in North Dakota. The majority are in the eastern Twin Cities metro area. Inspection of those meters is about one third complete.

Xcel has so far identified 280 meters providing the wrong information. The majority resulted in over-billing. Of those, Xcel says ten percent or 28 accounts had their service disconnected for not paying their bill. That’s above average, but with most of the review still to be done, Xcel says it’s too early to make any projections. Four of the 28 were identified as low-income customers, a rate slightly below average.

– Bill Catlin | Minnesota Public Radio | 7/19/04
http://news.minnesota.publicradio.org/features/2004/07/19_catlinb_cutoffs/

PREPAID UTILITY SERVICES AND SMART METERS; DISCONNECTIONS, AND DEATH

[Arizona] “AZ Corporation Commission adopts moratorium on electric utility disconnections” – excerpts:

SRP has a prepaid program called M-Power. Two years ago, *The Arizona Republic* reported that an M-Power customer ran out of credit, lost power, and subsequently was found dead in his home.

– AZ BlueMeanie | Blog for Arizona | 6/22/19
<https://blogforarizona.net/az-corporation-commission-adopts-moratorium-on-electric-utility-disconnections/>

[Arizona] “After heat-related death, Attorney General Mark Brnovich says Arizona needs power shutoff law” – excerpts:

... *The Arizona Republic* in 2017 documented the death of Henry Venzor Magos, 61, in south Phoenix. His medical report also indicated heat as a contributing factor in his death. His power from Salt River Project had been cut off.

– Ryan Randazzo | *Arizona Republic* | 6/14/19
<https://wnla-webservice.gannettdigital.com/articleservice/view/1459624001/michigan-state-spartans/20.1.55/beyondthemirage.org?apiKey=57646bc6bca4811fea00000126a000b69414f2a44f75039173cf104>

[Michigan] About That 93-Year-Old Man Who Froze to Death” – excerpt:

Outrage is growing in Michigan – and nationally – over the death of Marvin Schur, 93. Mr. Schur froze to death in his home after the municipal power company restricted his electricity because of an unpaid bill.

The *Associated Press* reported that Mr. Schur died of hypothermia – and that the medical examiner called it a slow, painful death. The company that cut the power is owned by Bay City, Michigan.

Mr. Schur reportedly owed more than \$1,000. The **power company had installed a “limiter” to restrict his use of power**, and Mr. Schur had apparently reached the limit.

According to one local news account, a neighbor says a utility bill was found on Mr. Schur’s kitchen table with a large amount of money attached, indicating that he wanted to pay the bill.

– Editorial Board | *The New York Times* | 1/27/09
<https://theboard.blogs.nytimes.com/2009/01/27/about-that-93-year-old-man-who-froze-to-death/>

Rethinking Prepaid Utility Service – Customers at risk – excerpts from the Executive Summary p.2-3:

Experience in the United Kingdom and the United States demonstrates that prepaid metering and billing is targeted toward and concentrated

among low- or moderate- income consumers, particularly those who are facing unaffordable security deposit requirements or disconnection for nonpayment under traditional service. In the **largest prepayment program operating in the United States (Arizona’s Salt River Project’s M-Power program)**, prepaid electric service is increasingly concentrated among racial minorities. Additionally, prepayment results in more frequent service disconnections or interruptions (a 1997 customer service survey conducted by Centre for Sustainable Energy National Right to Fuel Campaign found that 28 percent of prepayment customers in Great Britain were disconnected from service over the past year). Also, customers sometimes pay higher rates than they would under traditional credit-based service. Low-income customers using prepaid utility service tend to make numerous, small payments on a monthly basis to retain electricity or natural gas service, often incurring transaction fees that add to the customer’s total cost for basic service.

Households with the least means are trapped under prepayment, often paying higher costs and transaction fees while experiencing more frequent, disruptive, and dangerous loss of service. such a system creates a two-tiered system, favoring wealthier, credit-paying households.

Increased disconnections of gas and electric service that come with prepayment threaten the health and safety of customers, particularly the elderly, disabled, and low-income families with children. Disconnecting natural gas or electric service has caused house fires and extreme indoor temperatures, which can result in illness and death. Implementing prepaid utility service, with the increased rates of service disconnection that result, increases the risk that such tragedies will occur.

The advent of advanced metering infrastructure (AMI) and digital meters, commonly called “smart meters,” dramatically increases the potential for new utility prepayment programs. Advanced meters – which include remote disconnection and real-time communication capabilities – obviate the need for utility companies to invest in “standalone” prepayment meters, and reduce the related upfront capital investment required to implement a new prepayment program. . . .

– National Consumer Law Center | 2012
https://www.nclc.org/images/pdf/energy_utility_telecom/consumer_protection_and_regulatory_issues/report_prepaid_utility.pdf

“The advent of advanced metering infrastructure (AMI) and digital meters, commonly called ‘smart meters,’ dramatically increases the potential for new utility prepayment programs.

Advanced meters – which include remote disconnection and real-time communication capabilities – obviate the need for utility companies to invest in ‘standalone’ prepayment meters, and reduce the related upfront capital investment required to implement a new prepayment program. . . .”

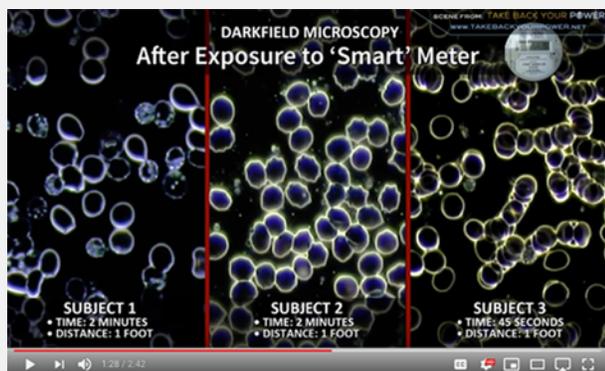
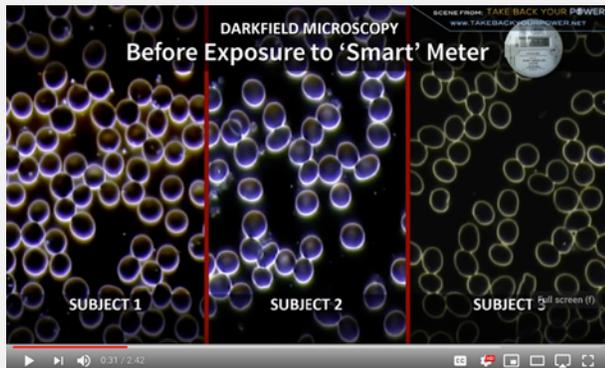
– National Consumer Law Center, 2012

UNDER-ACKNOWLEDGED CONSEQUENCES OF “SMART” METER USE EMF, RF radiation, and dirty electricity hazards

“LIVE BLOOD ANALYSIS-OBSERVABLE EFFECTS OF SMART METER RADIATION”

– partial transcription of the 2:42 min video:

In our second set of tests we're using the smart meter. Before the exposure we see the same thing as we saw in the first samples: Normal cell walls fairly separated and looking healthy.



So, after two minutes of exposure in front of the smart meter – at about one foot away – We see a totally different story. Sample 1 [subject #1] you can see a lot of degradation in the cells; the cells walls have been broken and you see changes in the cells which are called mycoplasma. It shows a mutation to the cell.

In the second sample [subject #2] we see a different type of degradation to the cell membranes. You can see a corrugation here – this is called bottle cap formation and it's known that this occurs due to oxidation or exposure to free-radicals. So, this third subject [subject #3], when we did her sample, she had to pulled away from the meter after 45 seconds because she complained about an increasingly severe headache. And here you see a phenomenon called rouleaux where the red blood cells are stacking up, which makes it very difficult for the blood to deliver oxygen to the tissues as they would be their normal function.

Every single one of these is a degradation. Every single one of these shows a trauma to the blood cells and that came from something. The only variable was the smart meter.

– <http://www.youtube.com/watch?v=y4JDEspdx58>

“Objet: TR : ICD.cm code for 2019 for EMF injury” – excerpt:

Great news! ICD (International Classification of Diseases) now has codes for health effects caused by non-ionizing radiation!

<https://icd.codes/icd10cm/W90>

This was a request from the 2015 EHS Resolution adopted in Belgium.

Doctors can now use this code to characterize health effects associated with RFR, ELF, dirty electricity, ground current and other types of NIR! Finally the medical community can now attribute health effects to NIR!

A major victory for the scientists and activists who attended this conference and for the doctors, lawyers, and EHS/Cancer survivors.

W90.0 Exposure to radiofrequency

W90.1 Exposure to infrared radiation

W90.2 Exposure to laser radiation

W90.8 Exposure to other nonionizing radiation

– Source: email from Magda Havas | Date: 27 juillet 2019

Note: website for Dr. Magda Havas, PhD. <https://magdahavas.com>

[N. Carolina] “Order Approving Manually Read Meter Rider Modifications and Requesting Meter-related Information” – excerpts, p.11:

The Commission received a statement from David Carpenter, MD, who is Director of the Institute for Health and the Environment at the University at Albany in Rensselaer, New York. The letter was co-signed by four other scientists and doctors, and was cited by many public commenters as providing proof that smart meters are a risk to human health. Among other things, Dr. Carpenter’s letter stated:

The majority of the scientific literature related to RFR [radio frequency radiation] stems from cell phone studies. . . .

Smart meters and cell phones occupy similar frequency bands of the electromagnetic spectrum, meaning that cell phone research can apply to smart meter RFR.

While the strongest evidence for hazards coming from RFR is for cancer, there is a growing body of evidence that some people develop a condition called electrohypersensitivity (EHS). These individuals respond to being in the presence of RFR with a variety of symptoms, including headache, fatigue, memory loss, ringing in the ears.... Some reports indicate that up to three percent of the population may develop these symptoms, and that exposure to smart meters is a trigger for development of EHS.

Docket No. E-7, SUB 1115 Docket No. E-100, SUB 147 Docket No. E-100, SUB 153 | 11/13/12, State of North Carolina Utilities Commission Raleigh | 6/22/18 <https://www.ehs.group/PDF/North%20Carolina/NC%20Ruling%20-%20SM%20medical%20opt-out%20june%202018.pdf>

– State of North Carolina Utilities Commission, Raleigh, 6/22/19, p.11. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?id=412f8225-7c72-4917-9364-25a8a4da9e12>

“Must-See Documentary Reveals Dangers of Smart Meters”:

While largely unknown and rarely discussed, there’s evidence to suggest a significant percentage of the diseases we now face is related to electromagnetic interference (EMI), so-called “dirty electricity,” and microwave radiation from cell-phones, routers, portable phones, smart meters and more. In a nutshell, these kinds of exposures impact your biology, specifically your mitochondrial function, which we’ve now come to appreciate is at the heart of virtually all chronic disease.

Sunlight is a natural or native form of electromagnetic frequency (EMF), and this type of EMF exposure is not only healthy but a vital part of maintaining healthy biology. Non-native or artificial EMF exposures, on the other hand, do quite a bit of harm. This includes:

- **EMI**, which is generated in the converter between AC and DC electricity
- **Artificial light, such as fluorescent light bulbs, compact fluorescent lights and light emitting diodes (LEDs).** Dr. Alexander Wunsch, a world class expert on photobiology, details many of the health hazards associated with LED lights, but the dirty electricity component is yet another reason to avoid these types of light bulbs in your home and office
- **Microwaves**, which includes not only your microwave oven but also cellphones, routers, portable phones, smart meters and more. These are particularly pernicious as they are **pulsating fields**

– Dr. Joseph M. Mercola, MERCOLA website | 8/5/17
<https://articles.mercola.com/sites/articles/archive/2017/08/05/smart-meter-dangers.aspx>

“Smart Meters Radiation Exposure Up to 160 Times More Than Cell Phones (Hirsch)”

Daniel Hirsch, California radiation expert and UCSD instructor, criticizes the industry-influenced CCST report that incorrectly minimized smart meter risks, based on the widely distributed industry-generated Tell Associates report. **CCST is a partner with US DOE (US Dept. of Energy), funder and promoter of smart meters.** In the following analysis, Hirsch informs us that **one smart meter can provide up to the full body radiation exposure of 160 cell phones;** in an interview (video), Hirsch provides the average exposure, equivalent to the full body exposure from 100 cell phones. This completely debunks the Tell Associates report, which was paid for by Pacific Gas & Electric.

Abstract: The draft report by the California Council on Science and Technology (CCST) does not appear to answer the questions asked of it by the requesting elected officials. Furthermore, rather than being an independent, science-based study, the CCST largely cuts and pastes estimates from a brochure by the Electric Power Re-

search Institute, an industry group, issued some weeks earlier. The EPRI estimates appear incorrect in a number of regards. When two of the most central errors are corrected – the failure to take into account duty cycles of cell phones and microwave ovens and the failure to utilize the same units (they should compare everything in terms of average whole body exposure) the cumulative whole body exposure from a Smart Meter at 3 feet appears to be approximately two orders of magnitude higher than that of a cell phone, rather than two orders of magnitude lower. (Hirsch, California radiation expert, radiation policy instructor at UCSC). Read the entire report here:

http://www.committeetobridgethegap.org/pdf/110212_RFrad_comments.pdf
– Center for Electrosmog Prevention
<https://www.electrosmogprevention.org/public-health-alert/smart-meters-radiation-exposure-up-to-160-times-more-than-cell-phones-hirsch/>

Evidence of RF radiation-ill populations | 6/13/19
<https://www.electrosmogprevention.org/ada-accommodations-for-rf-exposures/evidence-of-rf-radiation-ill-populations/>

Legal recognition sources for ES (Electrosensitivity) | 6/7/19
<https://www.electrosmogprevention.org/ada-accommodations-for-rf-exposures/legal-recognition-sources-for-electrosensitivity/>

ADA Accommodations Request Next Steps if Denied | 6/7/19
<https://www.electrosmogprevention.org/ada-accommodations-for-rf-exposures/ada-accommodations-request-next-steps-if-denied/>

How to File an ADA Accommodations Request for Electrosensitivity to Avoid Small Cells and Wifi | 6/1/19
<https://www.electrosmogprevention.org/ada-accommodations-for-rf-exposures/ada-for-es-to-avoid-small-cells-and-wifi/>

[USA] “Harvard Medical Doctor Warns Against Smart Meters” – excerpts:

Dr. David Carpenter MD, a graduate of Harvard Medical School and a physician who has worked in the area of electromagnetic fields (EMFs) and public health for over 18 years, has a few choice words for power companies that are forcing smart meters down the throats of their customers all over the United States.

Dr. Carpenter adamantly insists that there is no evidence whatsoever that smart meters are in any way safe for human beings. He goes on to say that there is, in fact, ample evidence that demonstrates “convincingly and consistently” that **exposure to radio frequency radiation (RFR) at elevated levels for long periods of time increases the risk of cancer, damages the nervous system, and adversely affects the reproductive organs.**

– Sarah Pope MGA | no date <https://www.thehealthyhomeeconomist.com/harvard-medical-doctor-warns-against-smart-meters/>

“Based on their [AAEM] literature reviews and clinical experience, they advised no smart meters should be located in or next to the homes of those with cardiac or neurological conditions, including Parkinson’s or dementia; or electrosensitivity; or cancer.”

– Lynne Wycherley, *Ecologist*, 6/6/17

[USA] “Smart meter radiation and health - why are we neglecting non-toxic alternatives?” – excerpts:

It is striking that the American Academy of Environmental Medicine (AAEM) called for a moratorium on smart meters (2012) and continues to veto them today.

Based on their literature reviews and clinical experience, they advised no smart meters should be located in or next to the homes of those with cardiac or neurological conditions, including Parkinson’s or dementia; or electrosensitivity; or cancer.

DIFFERENCE BETWEEN EMF AND RF

“Do You Know The Difference Between EMF and RF?”

– excerpts:

Electromagnetic fields or EMF’s usually refer to AC low frequency magnetic fields. Magnetic fields are created by electricity flowing through wires. Common EMF sources are power and transmission lines, internal building wiring system, electrical panels, transformers, motors and appliances. Elevated EMF fields are often caused from wiring problems, stray current or bad grounding.

Radio Frequency Radiation or RF’s usually are high frequency electromagnetic radiation due to the use of wireless equipment, devices and data transmission. Common RF sources are radio and television transmissions, cell towers and antennas, portable phones, cell phones, wireless computer networks (WLAN) and radar equipment. In-house wireless network installations have become a significant source of RF radiation in our homes and offices.

– Peter Sierck | ET&T Indoor Environmental Surveys | 11/26/14
<http://www.etandt.com/news/do-you-know-the-difference-between-emf-and-rf/>

“What Is EMF | What Is RF & Microwave Radiation” – Excerpt:

Electromagnetic radiation (EMR) occurs naturally on this planet, but it is the man-made EMR that we should be aware of. Technological advances have significantly altered our electromagnetic environment. The Electromagnetic Spectrum or Frequency Spectrum ranges from the natural earth magnetic field to ionizing radiation. The spectrum includes electric power transmission to operate motors and appliances, wireless systems for radio and TV transmission, cellular and wireless networks and infrared, visible and ultraviolet light. We generally differentiate EMR into these basic categories:

Alternating Currents (AC)
Direct Currents (DC)
Magnetic Fields
Electric Fields
Low Frequencies Fields
High Frequencies Fields
Ionizing Radiation

The electromagnetic spectrum or frequency spectrum is determined by their corresponding frequency and wavelength. The frequency is expressed in how many times the wave cycles per second and is referred to as Hertz (Hz). Alternating currents (AC) change their polarity cyclically and the polarity changes are also expressed in Hertz.

The lowest frequencies (longest wave length) are referred to as Extremely Low Frequency or ELF. Higher frequencies (shorter wave length) are referred to as Radio Frequency (RF) or Microwaves. The highest frequencies (extremely short waves) are called ionizing radiation.

– EMF & RF Solutions <http://www.emfrf.com/emf-overview/>

“Electromagnetic (EMF), Radio Frequency (RF) Fields and Dirty Electricity”

The information below on EMF and RF fields is simplified, added to, edited and adapted from the World Health Organization’s (WHO) website. You can read the unedited, full descriptions here:

<http://www.who.int/peh-emf/about/WhatisEMF/en/>

Guidelines are from The International Institute for Building-Biology® & Ecology

– Lucy Sanford (Lucy is a certified Electromagnetic Radiation Specialist (EMRS) through The International Institute for Building-Biology® & Ecology.)
<https://lucysanford.com/electromagnetic-emf-radio-frequency-rf-fields-dirty-electricity/>

Their board wrote to California’s Public Utilities Commission: “guidelines for RF exposure used to justify installation of ‘smart meters’ are based only on thermal effects and are obsolete” . . .

The AAEM continues: “Wireless RF radiation ... effects accumulate over time which is an important consideration given the chronic nature of exposure to ‘smart meters’. The current medical literature raises credible questions about genetic and cellular effects, hormonal effects ... blood/brain barrier damage, and increased risks of certain types of cancers from RF and ELF levels similar to those emitted by ‘smart meters’. Children are placed at particular risk.”

Footage has been published of smart meter transmissions disrupting the human heartbeat. Blind electrocardiogram field tests (16 May 2017), verified by Dr Gilberto Leon MD, an American GP, reveal smart meter heartbeat disruption in an apparently healthy adult male.

Repeated disruption was found at 1m from a smart meter

in blind tests on a healthy adult male. Dr Leon warned this effect “silently makes our hearts work too hard”, a chronic stress. He had to halt a later blind test (1.5m) on a woman due to the meter’s apparent, rapid impact. If such risks are confirmed by double-blind studies (if funded), or found at greater distances, should smart-meters be re-sited or withdrawn?

Electro-siege ... RF-sensitive medical implants

Pacemakers, insulin pumps, deep-brain stimulators, cochlear implants, internal defibrillators (ICDs), spinal stimulators and other RF-sensitive implants are in growing use worldwide. Many of us have loved ones with such implants, and may face personal use in later life.

Geophysics professor Gary Olhoeft has a Parkinson’s deep-brain-stimulator that can be affected unpredictably around wireless technologies, even shutting off. He has given talks on the EMF cacophony we are creating – and its breathtaking short-sightedness.

Louis Donovan (California) testifies to four hospitalizations from pacemaker shut-downs, plus EMI that continually overrode his pacemaker, that coincided with smart-metering and ceased only on meter removal many months later. Baffled surgeons found no fault with his mint-condition device. Jerry Kozak (Canada) had chronic palpitations that overrode his pacemaker, relieved only by blocking his smart-meter. ...

– Lynne Wycherly | *Ecologist* | 6/6/17 <https://theecologist.org/2017/jun/06/smart-meter-radiation-and-health-why-are-we-neglecting-non-toxic-alternatives>

IRRADIATED: A comprehensive compilation and analysis of the literature on radio frequency fields and the negative biological impacts of non-ionizing electromagnetic fields (particularly radio frequency fields) on biological organisms | American English version | Edition 1.1 | 4/28/17 <https://wirelessaction.wordpress.com/irradiated/>

Download 416 page pdf from Wireless Action: <https://wirelessaction.files.wordpress.com/2017/04/irradiated.pdf> Or from the Maine Coalition to Stop Smart Meters: <https://www.mainecoalitiontostopsmartmeters.org/wp-content/uploads/2017/04/irradiated-2017-Reduced.pdf>

[USA] “Dirty Electricity – It’s Not Just Wireless That’s Causing Health Problems” – excerpt:

DTE’s so-called opt-out meter is just a smart meter with the wireless turned off. It will hurt you nearly as much as the smart meter because of the “dirty electricity” generated by the meter. If you wish to avoid the health (and privacy) problems associated with smart meters, then you must keep your analog meter.

– Smart Meter Education Network <http://www.smartmetereducationnetwork.com/dirty-electricity-and-smart-meters.php>

[Pennsylvania] “Man Chains Electric Meter to Prevent Utility from Installing Smart Meter?” – excerpts:

... Norbert Sliwinski of Monroeville does not want Duquesne Light to install a so-called smart meter on his property. A lock and chain secures his old analog meter with a clear notice: “Attention Do Not Install Smart Meter.” The retired mechanical engineer says smart meters are dangerous.

“The smart meter is not safe for the following reasons. It emits high frequency radio waves. You don’t feel them. You don’t know about them, but they can penetrate your body and they can cause health problems later on.” ... Sliwinski says the radio waves go through concrete walls. “My bedroom is right next door, and it will emit high frequency waves. I worry about my health and my children’s health.”

– John Delano | KDKA 2 CBS Pittsburgh | 9/1/16 <https://pittsburgh.cbslocal.com/2016/09/01/man-chains-electric-meter-to-prevent-utility-from-installing-smart-meter/>

[New York] Submission to the New York State Public Service Commission – excerpt:

The Report [*An Overview of Smart Meter Hazards* by Hertz and Stover] particularly raises issues related to public health risks from exposure to microwave radiation. This topic is particularly timely due to the recent release of preliminary findings of a U.S. Government-funded, multi-year, peer reviewed study by the National Toxicology Program that found positive evidence of cancer tumors in animals exposed to microwave radiation of the type found in cellular phones and smart meters (Patel, 2016; Knutson, 2016). There are growing concerns about the potential risks to public health created by exposure to pervasive microwave radiation, especially by young children, and about potential learning, and other possible mental impairments or poorly understood influences by electronic media devices on children and adults.

– Timothy D. Schoechle, PhD, Smarthome Laboratories, Ltd, Secretary ISO/IEC JTC1 SC25/WG1 – Home Electronic System | Re: NYSPSC Matter Master: 14:01027 / 14-M-0196 | 6/22/16 <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B6D096E07-6EA3-421C-AB98-32CA2D5247BA%7D>

[Oklahoma] Part 1 of 2 - Dangers of Smart Meters [20:17 min.] – The Meter Man | 10/9/15 <https://www.youtube.com/watch?v=AtUJoumBLcE&frags=wn>

[AUSTRALIA] “Self-reporting of symptom development from exposure to radio frequency fields of wireless smart meters in Victoria, Australia: a case series” – Abstract excerpts:

CONTEXT: In 2006, the government in the state of Victoria, Australia, mandated the rollout of smart meters in Victoria, which effectively removed a whole population’s ability to avoid exposure to human-made high-frequency nonionizing radiation. This issue appears to constitute an unprecedented public health challenge for Victoria. By August 2013, 142 people had reported adverse health effects from wireless smart meters by submitting information on an Australian public Web site using its health and legal registers.

... The study included 92 residents of Victoria, Australia.

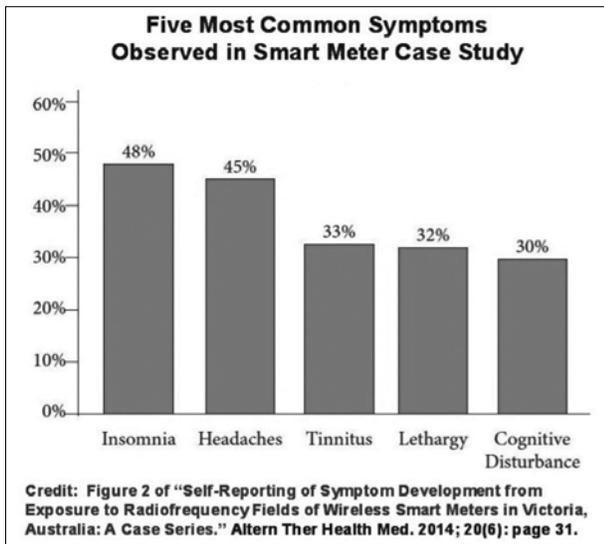
OUTCOME MEASURES: The author used her medical experience and judgment to group symptoms into clinically relevant clusters (eg, pain in the head was grouped with headache, tinnitus was grouped with ringing in the ears). The author stayed quite close to the wording used in the original entries. She then calculated total numbers and percentages for each symptom cluster. Percentages were rounded to the nearest whole number.

Rich Farver, Virginia’s son, passed away in 2008 and Virginia believes that the kind of cancer he died of was partially the result of **living near a cell pole carrying Smart Meter information connected to the grid.**

“There were three men in the same room in the same building (teachers) who were diagnosed with brain cancer in 2008.”

“My son graduated from Colorado State University and he went to San Diego State to receive his Masters degree. It was there that he became sick. He passed away at home in Colorado. He was 28 when he was diagnosed, and passed away at 29.” ...

– Land and Water USA website | 8/28/14 <https://landandwaterusa.com/BreakingNews/2014BreakingNews/8-28Smart-Meters-Part-1.html>



RESULTS: The most frequently reported symptoms from exposure to smart meters were (1) insomnia, (2) headaches, (3) tinnitus, (4) fatigue, (5) cognitive disturbances, (6) dysesthesias (abnormal sensation), and (7) dizziness. The effects of these symptoms on people's lives were significant.

– Lamech F., *Altern Ther Health Med.* 2014 Nov-Dec;20 (6):28-39. <https://www.ncbi.nlm.nih.gov/pubmed/25478801>

“Risk of Interference with Medical Devices!” – excerpts:

We have heard many reports of interference with people's heart pacemakers, with implanted devices designed to improve symptoms for Parkinson's patients, and with other medical devices. Smart meters can interfere with medical devices in three ways.

First there is a 900 Mhz radio transmitter designed to transmit not only your own electric usage but also act as a relay for all your neighbors meters.

Next a 2.4 Ghz radio transmitter which is designed to communicate through a 'Zigbee network' with the new 'smart appliances' you will soon be forced to buy.

Lastly the new meters, even if the first two radios are 'turned off', contain something called a "switched mode power supply" which puts pulses on the wiring all through your house – what is known as "dirty electricity". Here is link to a story about the switched mode power supply. <http://www.stopsmartmetersgeorgia.org/dangerouspowersupply.html>

– Michigan Stop Smart Meters | no date <https://michiganstopsmartmeters.com/risk-of-interference-with-medical-devices/>

[Arizona] “State settles ‘smart’ meter debate” – excerpts:

[M]eter opponents brought in an expert, Martin Blank, a retired associate professor from the Columbia University Department of Physiology and Cellular Biophysics, who has written a book on the subject.

Blank suggested the possible health effects from the meters were not worth the benefits. “We know a lot about the way these radio frequencies and power signals can activate the DNA,” he said. “The very earliest biological materials activated (during tests) were the linings of the cavity that protect our brain.”

He said national safety standards that regulate the frequencies such devices can use are focused on avoiding high levels of radio frequencies that can heat and damage cells. But he said **much lower levels of exposure can trigger physical changes**. “(It is possible to) get an effect long before you get a temperature change,” he said.

– Ryan Randazzo | *The Republic* | 12/12/14, updated 12/19/14 <https://www.azcentral.com/story/money/business/2014/12/12/state-settles-smart-meter-debate/20343257/>

“Critical Problem with ‘Smart’ Meters: The Switching-Mode Power Supply (SMPS)” – excerpts:

DE (dirty electricity) is the low frequency (1 Hz to 60 kHz) electrical noise in the wiring of a house that radiates throughout the house. DE has been found to have health impacts on people exposed to it and there are devices that some purchase to decrease this damage.

Smart Meters and other modern devices create DE when they change the high voltage to lower voltage. Great technology but it has a very sinister downside.

– Coalition to Stop Smart Meters in BC | 11/07/14 <http://www.stopsmartmetersbc.com/critical-problem-with-smart-meters-the-switching-mode-power-supply-smps/>

“The Standard of Unyielding Integrity” – excerpts:

Evidence of harm emerged already when smart meter installation began in other states. A portion of the population, predominantly women, experienced such immediate adverse effects due to pulsed radiation and dirty electricity caused by meter installation that they were driven from their homes.

Now, darkfield microscopy from independent research makes visible one mechanism of destruction: trauma to blood cells in the presence of smart meter pulsed RF radiation.

Staggering the installation and activation of meters and neighborhood repeaters, installing new meters without consent, updating AMR meters to transmit 24/7, and withholding or providing false information causes individuals with resulting health challenges to be misdiagnosed and subjected to invasive, ineffective testing and treatment. Health care providers are not aware of the cause; the home electromagnetic environment has been altered by 24/7 exposure to pulsed RF radiation. Scientists speculate that damage occurs especially at night, when parasympathetic nervous system function dominates.

– Patricia Burke, HaltMAsmartmeters.org | *Worcester Magazine* | 8/29/13 <https://www.worcestermag.com/2013/08/29/letters-aug-29-2013>

[Oklahoma] “Smart Meter: heros and bullies in Oklahoma”

– excerpts:

Joe Esposito lives in Tulsa County on the fence line next to the City of Owasso, Oklahoma, which was a pilot for the State of Oklahoma's Smart Meter program. Joe called the Public Service Company of Oklahoma (PSO) and told them he did not want a Smart Meter. He came home one day from work and discovered that PSO had installed a Smart Meter on his home without his consent.

Joe and his wife watched Dr. Dietrich Klinghardt's video “Smart Meter and EMR: The Health Crisis Of Our Time”. After watching the video Joe took Dr. Klinghardt's advice and

nailed a sheet of lead (30"x30") between the smart meter and his house and later that night he woke up to discover the two major health problems he had been having were gone. He then built a faraday cage to sleep in which helped him even more.

Joe says, "The important issue to understand is that I did not need any pharmaceuticals, I just needed to get the radiation stopped."

— EMF Safety Network | 7/24/13
<http://emfsafetynetwork.org/smart-meter-heros-and-bullies-in-oklahoma/>

[Arizona] "Smart meters raise health, cost issues" – excerpts:

In his letter to the commission, Dr. Bob Kaplan, a board-certified radiologist, said he advises people with underlying malignancy, neurological disorders or chemical sensitivity to avoid exposure to radio waves emitted by smart meters.

— Howard Fischer | *Capitol Media Services* | 5/23/13
<http://www.azcentral.com/business/abg/free/20130523smart-meters-raise-health-cost-issues.html>

[CANADA] "First Nation blocks smart meter installation"

– excerpts:

The Lower Nicola Indian Band, near Merritt, B.C., wants to stop BC Hydro from installing smart meters on buildings on its reserve. Many of its members are concerned the smart meters will make them sick.

— • —

The band's public works manager Hyrum Peterson says his home was one of the first on the reserve to get a smart meter, and his family started getting headaches right around the same time. "It seems fairly obvious to myself and my family that we have been subjected to the smart meter on our house and I believe strongly that our health has been affected," said Peterson. "Cold flu-like symptoms that just don't seem to abate. Severe migraine headaches when they wake up in the morning."

— CBC News | 2/8/12 <https://www.cbc.ca/news/canada/british-columbia/first-nation-blocks-smart-meter-installation-1.1192102>

[USA] "New Critical Problem with 'Smart' Meters: The Switching-Mode Power Supply (SMPS)" – excerpts:

Ironically, now that PG&E is offering to disable the wireless RF function (for a hefty price) in their smart meters, we find that there's another extremely critical problem with the meters.

Just when you thought you had mastered all the esoteric acronyms, and all the problems with 'smart' meters, here's one more: **Switching-Mode Power Supply** or **SMPS**. This new element in the 'smart' meter controversy deserves immediate full official and public attention.

In our on-going investigation into why so-called 'smart' meters being installed by PG&E against rising public opposition are causing so many people to be sick, and so many problems with other electric and electronic equipment, we have been fortunate to obtain the advice of electrical engineers.

On examination of typical meters, including ABB, GE, and Landis Gyr, they report that, in addition to its RF transmitter, each wireless digital meter also has a component called the 'switching-mode power supply' (SMPS) – switching power supply for short. Its function is to 'step down' the 240v alternating current (AC) coming in from the utility pole power lines to the 2 to 10 volts of direct current (DC)

"FORTISBC SMART METER PROGRAM NOT COMPLIANT WITH BUILDING CODES"

December 19, 2014, 15:39:29 PM Eastern Time

Dear Mayor and Council,

Please find attached [*] critically important information missing in the FortisBC application of smart meters.

The technologies as used are dangerous and bring unrealized liability the city is not aware of.

As per the attached letter, it is important this be addressed as the unprecedented health and environmental emergency it is. There are many vulnerable people in Kelowna and a liability for hurting or killing them. The damage is measurable by the second and the peer reviewed science is electricity.

Sincerely,

Curtis Bennett
Chief Science Officer
Interprovincial Journeyman Electrician (Red Seal)
Building Engineering Technologist
Adjunct Professor for Integrative Health Forum & Global Education Development Institute Thermal Radiation Consultant for 35 Years
<http://www.thermoguy.com/>

— Curtis Bennett | Letter to City of Kelowna, BC, Canada | 12/19/14 | posted at the Stay on the truth website
<http://www.stayonthetruth.com/fortisbc-smart-meter-program-not-compliant-code.php>
*Download 3 page pdf: http://www.stayonthetruth.com/resources/FortisBC_not_compliant_building_codes/City%20of%20Kelowna%20on%20FortisBC%20Smart%20Meters.pdf

required to run the meter's digital electronics which record the electricity usage data.

The SMPS function emits sharp spikes of millisecond bursts constantly, 24/7. The SMPS on the OWS 514 NIC model, for instance, which is the smart meter model widely installed by PG&E throughout its territory, has been measured to emit spikes of up to 50,000 hz and higher. This constant pulsing of high frequencies, in addition to the RF function, is causing not only interference with other electric and electronic equipment in many homes with smart meters installed, but also is causing havoc with biological systems in its field of exposure. . . .

Dirty Electricity

When current flows through the wiring of a building it generates a surrounding electro-magnetic field that radiates outward all around the wires at right angles to the direction of the current's flow and reaches out into the room.

It is well known that switching power supplies can generate spikes of so-called electromagnetic interference (EMI), or high frequency transients, which then travel along the wiring in the walls, radiating outward in the wiring's electromagnetic field.

— Mary Beth Brangan & James Heddle | Stop Smart Meters Georgia | Posted 3/30/11 <http://www.stopsmartmetersgeorgia.org/dangerouspowersupply.html>

[NOVA SCOTIA] No Smart Meters in Nova Scotia website:

In October 2017 NS Power quietly announced that they would be installing Smart Meters in all homes and businesses in Nova Scotia in 2019. Maybe you didn't hear about it. Not many did. Since then I have been trying to learn as much as I can about them. What I have learned is disturbing and needs to be understood by all Nova Scotians. Read on and get informed, then you can decide what you want to do about it. NS Power contacted me and sent 2 representatives to change my mind about smart meters. They almost did until I discovered what they were hiding from me. ...

— No Smart Meters in Nova Scotia website <http://nosmartmetersinns.ca>

[USA] Dirty Electricity – It's Not Just Wireless That's Causing Health Problems – excerpts:

DTE's so-called opt-out meter is just a smart meter with the wireless turned off. It will hurt you nearly as much as the smart meter because of the "dirty electricity" generated by the meter. If you wish to avoid the health (and privacy) problems associated with smart meters, then you must keep your analog meter.

Turning off the radiofrequency will not solve the health (or the privacy) problems associated with DTE and Consumers Energy smart meters. Digital meters – whether or not "smart" – cause dirty electricity to flow through your home's wiring. The problem is what is called the "switched mode power supply." Switched mode power supplies are used to run the digital meter (whether a smart meter or DTE's radio-off opt-out meter). In order for a smart meter to be powered, the 240 volts coming off the power line to the meter must be stepped down to 4–10 volts. A switched mode power supply is the device used to step down the voltage from 240 volts to 4-10 volts. This generates an enormous amount of what is commonly known as "dirty electricity" and referred to by electricians and electrical engineers as "voltage transients," "voltage harmonics," "line noise," and "power quality issues."

Dirty electricity is a spiky, pulsed, highly variable electrical current that rides through all the circuitry of a building. It has devastating health effects. Many people are already experiencing those effects, which include high blood pressure, tinnitus, insomnia, and cognitive difficulties. The Nevada Consumer Protection Bureau reached an agreement with the Nevada Public Utilities Commission to allow individuals to keep their analog meters in part because of health problems associated with the switched mode power supplies. Prevention Magazine reports on the hazards of dirty electricity.

People who have had their smart meter's wireless turned off are experiencing the same health problems as people with smart meters, just to a slightly lesser degree Our cells

“DTE's so-called opt-out meter is just a smart meter with the wireless turned off. It will hurt you nearly as much as the smart meter because of the 'dirty electricity' generated by the meter. If you wish to avoid the health (and privacy) problems associated with smart meters, then you must keep your analog meter.”

— Smart Meter Education Network

cannot handle a highly variable current, and build up a sugar coating around themselves, which means it's harder for nutrients to get in and wastes to get out. In addition, these electromagnetic currents cause the bonds holding DNA together to break, increasing the risk of cancer. Think of a jackhammer going off and on every day, 24/7. That is what the cells in your body experience. Even though you can't feel it, it's still hurting you. Brain cancers take 10 years to develop, and few people feel the cancer. In addition to all that, the electromagnetic frequencies knock calcium ions off the cell membrane, causing a host of effects.

Your privacy is still invaded. The radio-off opt-out meter still collects the same fine-grained usage data as a smart meter. The only thing that has been turned off is the radio-transmitter. None of the data-collection software has been turned off.

— Smart Meter Education Network
<http://www.smartmetereducationnetwork.com/dirty-electricity-and-smart-meters.php>

[California] “La Mesa Council holds hearing Nov. 5 on proposal to erect cell phone tower in Lake Murray area” – excerpts:

Harvard-trained Dr. Andrew Weil at the University of Arizona's medical center recently observed, “In January 2008, the National Research Council (NRC), an arm of the National Academy of Sciences and the National Academy of Engineering, issued a report saying that we simply don't know enough about the potential health risks of long-term exposure to RF energy from cell phones themselves, cell towers, television towers, and other components of our communications system. The scientists who prepared the report emphasized, in particular, the unknown risks to the health of children, pregnant women, and fetuses as well as of workers whose jobs entail high exposure to RF (radiofrequency) energy....Because so much of cell phone technology is new and evolving, we don't have data on the consequences of 10, 20 or 30 years worth of exposure to the RF energy they emit,” Weil concluded. The report called for long-term safety studies on all wireless devices including cell phones, computers, and cell phone towers.

. . . [A]n Australian study found that children living near TV and FM broadcast towers, which emit similar radiation to cell towers, developed leukemia at three times the rate of children living over seven miles away.

If you live within a quarter mile of a cell phone antenna or tower, you may be at risk of serious harm to your health, according to a German study cited at www.EMF-Health.com, a site devoted to exposing hazards associated with electromagnetic frequencies from cell phone towers and other sources.

Cancer rates more than tripled among people living within 400 meters of cell phone towers or antennas, a German

study found. Those within 100 meters were exposed to radiation at 100 times normal levels. An Israeli study found risk of cancer quadrupled among people living within 350 meters (1,148 feet) of a cell phone transmitter – and seven out of eight cancer victims were women. Both studies focused only on people who had lived at the same address for many years.

Other studies have found that levels of radiation emitted from cell phone towers can damage cell tissues and DNA, causing miscarriage, suppressing immune function, and causing other health problems.

How many cell phone towers and antennas are in your neighborhood? Find out at www.antennasearch.com. I plugged in my address on Mt. Helix . . . and was astounded to discover that there are 96 cell phone towers, 286 antennas and 2 proposals for new towers within four miles of my home!

So how about Mom’s neighborhood, where an Evangelical church insists a new tower is needed? Mom gets perfectly fine cell phone reception, and so do the neighbors she’s spoken with – not surprising since there are already 113 towers and 335 antennas within a four-mile radius.

Churches, schools, fire stations, and other buildings are increasingly erecting cell phone towers or antennas because cell phone companies are willing to pay rental fees of hundreds or even thousands of dollars a month – welcome infusions for cash-strapped budgets. . . .

In Sweden, the government requires interventions to protect the public from electromagnetic frequencies. . . .

– Miriam Raftery | *East County Magazine* | November 2008
https://www.eastcountymagazine.org/cell_phone_towers_238

Physicians for Safe Technology website – excerpt:

Smart Meter placement seems to be a wonderful convenience, however, these meters use 2.4 GHz microwave (and 900 MHz) radiation for communications which is what our microwave ovens, Wi-Fi routers and other wireless devices use. The Smart Meters are also on 24/7. Although consultants average the electromagnetic radiation emitted, they do not take into account research showing that **pulsed radio frequency radiation is harmful even at lower power**. It is the **spikes of pulsed energy** and not the average power density that **causes the harm to cellular structures**. In addition the long term cumulative exposures have been found to be harmful and are not taken into consideration in the roll-out of these devices. Smart Meters can **pulse up to 190,000 times a day. The 2.4 GHz wireless technology frequencies pulse at 2.4 billion cycles per second**. We evolved in the earth’s natural low magnetic field resonance of 7.83 Hz (7.83 cycles per second) and are now exposed in almost every environment – home, work, school and businesses – to continuous mix of manmade microwave frequencies.

– Physicians for Safe Technology
<https://mdsafetech.org/smart-meters>

“LETTERS FROM DOCTORS ON WiFi IN SCHOOLS AND CELL TOWERS ON SCHOOLS”

Letters by Medical Doctors/Public Health Experts to Schools on Wireless Health Risks in Schools

Download PDF: Doctors Letters on Children and the Health Risks of Wireless
<https://ehtrust.org/wp-content/uploads/Doctor-Letters-on-Wi-Fi-In-School-Full-Compilation.pdf>

[Information included in document from:

- **Hugh Scully, BA, MD, MSc, FRSC[C], FACS**, (Past-President of: Ontario Medical Assn., Canadian Medical Assn., and Canadian Cardiovascular Society)
- **Martha R. Herbert, PhD, MD** (Assistant Professor, Neurology; Director, TRANSCEND Research Program), 12/12/15
- **David O. Carpenter, MD** (Director, Institute for Health and the Environment (IHE), University at Albany), 3/8/16
- **Lennart Hardell, MD, PhD** and **Michael Carlberg, MSc** (both with the Dept. of Oncology, Örebro Univ. Hospital), & **Lena Hedendahl, MD**, 8/4/2016
- **Anthony B. Miller, MD, FRCP(C), FRCP, FACE**, 8/4/16
- **Olle Johansson**, Dept. of Neuroscience, Karolinska Institute, 12/8/15
- **Martin L. Pall**, Professor Emeritus, Biochemistry and Basic Medical Sciences, Washington State University, 1/3/16
- **Martin Blank, PhD** (Assoc. Professor of Physiology and Cellular Biophysics, Columbia Univ., College of Physicians and Surgeons)
- **Cris Rowan, BScBi, BScOT, SIPT**, AOTA Approved Provider, 12/13/15
- **Devra Davis, PhD MPH** (President/founder of Environmental Health Trust; Visiting Prof. of Medicine, The Hebrew University; Assoc. Editor, *Frontiers in Radiation and Health*), 1/20/16
- **David O. Carpenter, MD** (Director, IHE, Univ. at Albany), 7/28/14
- **Martin Blank, PhD** (Columbia University), 7/25/14
- **Cindy Russell, MD** (VP of Community Health, SCCMA), “Are We Playing It Safe With Our Kids?,” *The Bulletin*, March/April 2015
- **Stephen T. Sinatra, MD, FACC, FACN, CNS**, 7/16/14
- **Olle Johansson** (Dept. of Neuroscience, Karolinska Institute), 7/24/14
- **Joel M. Moskowitz, PhD** (Director, Center for Family and Community Health School of Public Health, Univ. of California, Berkeley) 2/8/13
- **Cindy Sage, MA** (Sage Associates), and **Trevor Marshall, PhD** (Dir., Autoimmunity Research Foundation; Senior Member IEEE; Founding chair (retired) IEEE EMBS (Buenaventura Ch.); Fellow, European Assn., for Predictive, Preventive and Personalised Medicine (Brussels); Int’l Expert Council, Community of Practice: Preventative Medicine (Moscow)) 12/1/15
- **Cindy Sage, MA**, and **David O. Carpenter, MD** (Co-Editors, *BioInitiative 2012 Report* for the BioInitiative Working Group), 9/22/14
- **American Academy of Environmental Medicine**, 5/13/13
- **Ronald M. Powell, PhD**, Applied Physics, Harvard University, 1975 (retired U.S. Government scientist), 11/24/15
- **Irish Doctors’ Environmental Association**, 1/7/13
- **Frank Clegg** (CEO, Canadians for Safe Technology, C4ST), 4/8/14
- **David O. Carpenter, MD** (Director, IHE, Univ. at Albany), 2/28/11
- **Mikko Ahonen, PhD** (Research manager of Finland, Institute of Environmental Health and Safety), **Lena Hedendahl, MD** (General Practitioner), and **Tarmo Koppel, MSc., PhD Candidate** (Dept. of Work Environment and Safety, Tallinn University of Technology), 12/13/15
- **Open letter by British medical doctors**: Health and safety of Wi-Fi and mobile phones, 3/24/13
- **Magda Havas, B.Sc., PhD** (Environmental & Resource Studies, Trent University, Peterborough, ON, Canada), 7/10/09
- **Cindy Lee Russell, MD** (VP, Community Health, Santa Clara County Medical Assn.), “Shallow Minds: How the Internet and Wi-Fi in Schools Can Affect Learning,” [n.d.]
- **Adrienne Markowitz** and **Eileen Senn**, “Minimize health risks from electronic devices,” *NJEA Review*, Sept. 2016
- **Council of Europe, Resolution 1815, Final version, 2011**

Doctors Letters on Health Risks of Cell Towers Near Schools [PDF]
<https://ehtrust.org/wp-content/uploads/Doctors-Letters-on-Cell-Towers-and-Cell-Towers-at-Schools.pdf>

Environmental Health Trust website
<https://ehtrust.org/resources-to-share/letters-doctors-wifi-schools/>

UNDER-ACKNOWLEDGED CONSEQUENCES OF “SMART” METER USE

Personal data theft and exploitation

[Arizona] “What You Should Know About APS Smart Meters” – excerpts:

APS [Arizona Public Service] has stated that the Smart Meter Wireless Network has sufficient safeguards built into the network to prevent hackers from compromising the network. This is absurd, the **Smart Meter Wireless Network, like any other wireless technology, is highly vulnerable to being hacked.** Not only could hackers penetrate the APS Smart Meter Wireless Network to obtain the Smart Meter identification numbers, codes, and usage data, they could also steal **individual personal identity information, or anything else the hackers choose to steal,** let me elaborate.

I’ve been writing engineering software since 1980, I’ve also wrote numerous algorithmic protection and software registration schemes. I was an engineer involved with electro-mechanical devices for a major corporation, and also ran my own licensed electrical contracting business for 20 years. I wish to bring to your attention the fact that there isn’t a single protection scheme in existence that can’t be penetrated by hackers’ intent on stealing identity information, regardless of how sophisticated a wireless network is, they’ve even hacked into and penetrated the Pentagon, Department of Defense, and Home Land Security networks. It’s an ongoing war between hackers and those attempting to keep their identity and personal information protected from prying eyes.

Any wireless network is like a spider web, once you hack into the wireless network, **a hacker can go anywhere within the network,** including the APS Smart Meter Wireless Network, right up to, and into the APS office **data center.** Once into the network, it’s open season for hackers to steal any information they choose. Everything is connected in one way or another. Any wireless protection scheme, that is designed and built, can be hacked, it’s just a matter time, effort, desire, who, and when it will happen.

The more wireless access points that exist provide hackers with more opportunities to hack the APS the network, or **individual Smart Meters.**

Smart Meters are **sending data to transponder devices mounted on utility poles, or other structures using a radio frequency.** The transponder sends the data back to APS using what they believe to be a secure network. So, the number of transponders mounted on utility poles in the community, and the Smart Meters themselves, all **become potential access points for hackers to penetrate, or disrupt the network. Radio(s) in the meter then send the data back into the house.** The communication modules are two-way, this means APS has the ability to turn off the meters remotely if they choose, and a knowledgeable hacker that wanted to disrupt services to subscribers could

do so. In addition, knowledgeable hackers could not only **negatively affect a subscriber’s utility bill; they could also tamper with their own. A knowledgeable hacker can penetrate any wireless network.**

Cyber attack targets have primarily been **focused on energy companies and the attacks appear to be probes, looking for ways to seize control of their processing systems.** Refer to the link shown below published by *The New York Times*. It doesn’t matter whether the cyber attack comes from China, some other country, from a hacker in the United States, or someone living next door to you, the intent is generally been to **steal identity information, trade secrets, or seize control of processing systems.** Here are a few informational links that discuss just how vulnerable Smarts Meters and the Smart Meter network are to hacking. . . .

– Robert W. Krueger | *The Tombstone News* | 7/6/13
<http://thetombstonenews.com/what-you-should-know-about-aps-smart-meters-p3992-80.htm>

[USA] “Smart Meter Data: Privacy and Cybersecurity” – excerpts:

Residential smart meters present privacy and cybersecurity issues that are likely to evolve with the technology. In 2010, the National Institute of Standards and Technology (NIST) published a report identifying some of these issues, which fall into two main categories:

- (1) privacy concerns that smart meters will reveal the activities of people inside of a home by measuring their electricity usage frequently over time; and
- (2) fears that inadequate cybersecurity measures surrounding the digital transmission of smart meter data will expose it to misuse by authorized and unauthorized users of the data.

Detailed Information on Household Activities

Smart meters offer a significantly more detailed illustration of a consumer’s energy usage than regular meters. Traditional meters display data on a consumer’s total electricity usage and are typically read manually once per month. In contrast, smart meters can provide near real-time usage data by measuring usage electronically at a much greater frequency, such as once every 15 minutes. Current smart meter technology allows utilities to measure usage as frequently as once every minute. By examining smart meter data, it is possible to identify which appliances a consumer is using and at what times of the day, because each type of appliance generates a unique electric load “signature.” NIST wrote in 2010 that “research shows that analyzing 15-minute interval aggregate household energy consumption data can by itself pinpoint the use of most major home appliances.” A report for the Colorado Public Utilities Commission discussed an Italian study that used “ar-

“[T]here isn’t a single protection scheme in existence that can’t be penetrated by hackers’ intent on stealing identity information, regardless of how sophisticated a wireless network is . . .”

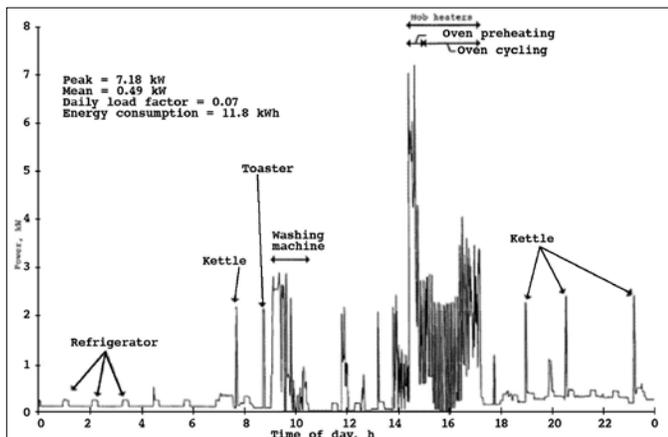
– Robert W. Krueger, *The Tombstone News*, 7/6/13

tificial neural networks” to identify individual “heavy-load appliance uses” with 90% accuracy using 15-minute interval data from a smart meter. Similarly, software-based algorithms would likely allow a person to extract the unique signatures of individual appliances from meter data that has been collected less frequently and is therefore less detailed.

By combining appliance usage patterns, an observer could discern the behavior of occupants in a home over a period of time. For example, the data could show whether a residence is occupied, how many people live in it, and whether it is “occupied by more people than usual.” According to the Department of Energy, smart meters may be able to reveal occupants’ “daily schedules (including times when they are at or away from home or asleep), whether their homes are equipped with alarm systems, whether they own expensive electronic equipment such as plasma TVs, and whether they use certain types of medical equipment.” Figure 1, which appears in NIST’s report on smart grid cybersecurity, shows how smart meter data could be used to decipher the activities of a home’s occupants by matching data on their electricity usage with known appliance load signatures.

Figure 1. Identification of Household Activities from Electricity Usage Data

Unique Electric Load Signatures of Common Household Appliances



Source: National Institute of Standards and Technology (NIST), Guidelines for Smart Grid Cyber Security: VOL. 2, PRIVACY AND THE SMART GRID 13 (2010), available at http://csrc.nist.gov/publications/nistir/ir7628/nistir-7628_vol2.pdf

Note: Researchers constructed this picture from electricity usage data collected at one-minute intervals using a non-intrusive appliance load monitoring (NALM) device, which is similar to a smart meter in the way that it records usage data. . . .

Smart meter data that reveals which appliances a consumer is using has potential value for third parties, including the government. . . . If law enforcement officers obtained near-real time data on a consumer’s electricity usage from the utility company, their ability to monitor household activities would be amplified significantly. For example, by observing when occupants use the most electricity, it may be possible to discern their daily schedules.

– Brandon J. Murrill, Edward C. Liu, Richard M. Thompson II | Congressional Research Service | 2/3/12 | p.3-5 <https://fas.org/sgp/crs/misc/R42338.pdf>

[SPAIN] “Popular electricity smart meters in Spain can be hacked, researchers say” – excerpts:

Network-connected electricity meters installed in millions of homes across Spain lack essential security controls, according to two researchers who say the vulnerabilities leave room for hackers to carry out billing fraud or even cause blackouts.

Security experts Javier Vazquez Vidal and Alberto Garcia Illera said in an interview on Monday that so-called smart meters installed by a Spanish utility to meet government energy efficiency goals lack basic safeguards to thwart hackers.

The researchers said flawed code in reprogrammable memory chips enable them to remotely shut down power to individual households, switch meter readings to other customers and insert network “worms” that could cause widespread blackouts.

“You can just take over the hardware and inject your own stuff,” Vazquez Vidal said, referring to the threat that hackers could insert malicious code into one box and use it to control nearby meters, and thereby cascade an attack across the network.

The Spanish researchers said they hacked the meters by bypassing encryption that was designed to secure their communications. Vazquez Vidal and Garcia Illera said the meters use relatively easy to crack symmetric AES-128 encryption. The limited security appeared to be designed largely to prevent tampering with billing systems by fraudsters, they said.

Once through this first level of security, they said they could take full control of the box, switching its unique ID to impersonate other customer boxes or turning the meter itself into a weapon for launching attacks against the power network.

“Oh wait? We can do this? We were really scared,” Vazquez Vidal said. “We started thinking about the impact this could have. What happens if someone wants to attack an entire country?” he said.

The same researchers last year uncovered weaknesses in computer chips found in many automobiles, which they said could boost performance or be used to hotwire a car or cause crashes.

– Eric Auchard | Reuters | 10/7/14 <https://www.reuters.com/article/us-cybersecurity-spain/popular-electricity-smart-meters-in-spain-can-be-hacked-researchers-say-idUSKCN0HW15E20141007>

[USA] “Ruling in smart meter case highlights privacy concerns” – excerpts:

A ruling from the 7th Circuit Court of Appeals about smart meters inspired contradictory reactions as the appellate panel held that data collected through the devices by a public utility is protected by the Fourth Amendment, but then, in the next breath, found the search by the Naperville, Illinois, power company was reasonable.

For utility lawyers, the ruling provides a lesson to all power and water companies regardless of whether they are public or private: be careful about the data you collect with smart meters.

Utility attorney Christine Crull Altman of Altman Poindex-

ter & Watt LLC in Carmel also sees this opinion extending beyond public utilities, believing private power companies could face Fourth Amendment challenges as Naperville did.

Altman reasoned because investor-owned utilities have statutory powers enabling them to do things such as condemn property and install power lines on private rights-of-way, they can be considered as “quasi-governmental” entities. Therefore, they could be subject to the prohibitions against unreasonable searches and seizures, she said.

In addition, Altman said the pseudo-public nature of private utilities could put them crosswise with the Fifth Amendment’s ban on takings. This hinges on what the companies do with data, but Altman sees the potential for a constitutional problem if information is sold to a private industry. ...

– Marilyn Odendahl |

The Indiana Lawyer | 3/6/19

<https://www.theindianalawyer.com/articles/49605-ruling-in-smart-meter-case-highlights-privacy-concerns>

[USA] “Win! Landmark Seventh Circuit Decision Says Fourth Amendment Applies to Smart Meter Data” – excerpts:

The Seventh Circuit just handed down a landmark opinion, ruling 3-0 that the Fourth Amendment protects energy-consumption data collected by smart meters. **Smart meters collect energy usage data at high frequencies** – typically every 5, 15, or 30 minutes – and therefore know exactly how much electricity is being used, and when, in any given household. The court recognized that data from these devices reveals intimate details about what’s going on inside the home that would otherwise be unavailable to the government without a physical search. The court held that residents have a reasonable expectation of privacy in this data and that the government’s access of it constitutes a “search.”

This case, *Naperville Smart Meter Awareness v. City of Naperville*, is the first case addressing whether the Fourth Amendment protects smart meter data. Courts have in the past held that the Fourth Amendment does not protect monthly energy usage readings from traditional, analog energy meters, the predecessors to smart meters. The lower court in this case applied that precedent to conclude that smart meter data, too, was unprotected as a matter of law. On appeal, EFF and Privacy International filed an amicus brief urging the Seventh Circuit to reconsider this dangerous ruling. And in its decision, released last week, the Seventh Circuit wisely recognized that smart meters and analog meters are different:

“Using traditional energy meters, utilities typically collect monthly energy consumption in a single lump figure once per month. By contrast, smart meters record consumption much more frequently, often collecting thousands of readings every month. Due to this frequency,

The Seventh Circuit recognized that . . . energy usage data “reveals information about the happenings inside a home.”

Individual appliances, the court explained, have distinct energy-consumption patterns or “load signatures.” These load signatures allow you to tell not only when people are home, but what they are doing. The court held that the “ever-accelerating pace of technological development carries serious privacy implications” and that smart meters ‘are no exception.’

– Jamie Williams, EFF, 8/21/18

smart meters show both the amount of electricity being used inside a home and when that energy is used.”

The Seventh Circuit recognized that this energy usage data “reveals information about the happenings inside a home.” Individual appliances, the court explained, have distinct energy-consumption patterns or “load signatures.” These load signatures allow you to tell not only when people are home, but what they are doing. The court held that the “ever-accelerating pace of technological development carries serious privacy implications” and that smart meters “are no exception.”

– Jamie Williams | EFF | 8/21/18

<https://www.eff.org/deeplinks/2018/08/win-landmark-seventh-circuit-decision-says-fourth-amendment-applies-smart-meter>

[USA] “What Does Your Smart Meter Know About You?” – “It may be more than you’d like” – excerpt:

An ordinary smart meter gives your local utility useful information about how much energy you are using—every hour,

or even as often as every minute. . . .

But machine learning systems, looking at that data, can tell something else about your home besides its energy use—they can tell if you are home, or if you are not. That’s what University of California at Berkeley researchers Ming Jin, Ruoxi Jia, and Costas Spanos found out. That information, Jin says, is also useful for utilities – they can call or show up to perform necessary maintenance when you are home, and not waste personnel time trying to reach you.

But they aren’t the only ones who can access this information, given the **data is transmitted wirelessly, and isn’t necessarily encrypted at every stage of its journey.**

“If you know a person is home, as an advertiser, you can make a phone call. If you know a person isn’t home, that information could be used for home intrusion or other bad activities,” Jin says.

In a recent paper, Jin and his colleagues demonstrated that machine learning systems can be trained to detect occupancy without any initial information from a home owner. “You just need a smart meter that listens over time,” he says, “as well as the basic assumption that different types of buildings have different occupancy patterns, for example, commercial buildings are typically occupied during the day and not the night and homes are the opposite.” Using this assumption, the machine learning algorithms were able to tease out more detailed characteristics about power consumption when a home is occupied; they then are able to tell when someone is home or not, even when that person’s patterns are outside the norm.

– Tekla S. Perry | *IEEE Spectrum* | 6/23/17

<https://spectrum.ieee.org/view-from-the-valley/energy/the-smarter-grid/what-does-your-smart-meter-know-about-you>

[USA] “Virtual Occupancy Sensing: Using Smart Meters to Indicate Your Presence” – excerpt from the Abstract:

Occupancy detection for buildings is crucial to improving energy efficiency, user comfort, and space utility. However, existing methods require dedicated system setup, continuous calibration, and frequent maintenance. With the instrumentation of electricity meters in millions of homes and offices, however, power measurement presents a unique opportunity for a **non-intrusive and cost-effective way to detect occupant presence**. This study develops solutions to the problems when no data or limited data is available for training, as motivated by difficulties in ground truth collection. Experimental evaluations on data from both residential and commercial buildings indicate that the proposed methods for binary occupancy detection are nearly as accurate as models learned with sufficient data, with accuracies of approximately 78 to 93 percent for residences and 90 percent for offices. This study shows that power usage contains valuable and sensitive user information, demonstrating a virtual occupancy sensing approach with minimal system calibration and setup.

– *IEEE Transactions on Mobile Computing* (Vol.: 16, Issue: 11, 11/1/17); Page(s): 3264 - 3277; Date of Publication: 3/20/17
<https://ieeexplore.ieee.org/abstract/document/7882676>

[Michigan] 3/7/17 hearing before the **Michigan House of Representatives, The House Energy Policy Committee** (Agenda: HB4220 which “Provides for certain requirements and prohibitions pertaining to utilities’ use of advanced meters”), Michigan State Senator Patrick Colbeck (Aerospace Engineer) says:

[TIME 16:30 to 23:15] ...when it comes to reliability discussions, it is a much broader discussion than just simply the capacity of our power generation in the state. And when I look at what happens with smart meters in particular, I’m concerned that it is actually putting our homes, our nation, and frankly even some of our power suppliers at significant risk.” . . . “One key thing I want to make sure people understand is the fact that the smart meter itself is the foundational component of what they call a smart grid.” . . . [The smart meter] “connects essentially every home to a digital communications network. Unlike an analog meter – which is just simply reading the current coming into the home – these smart meters both take information from the home and they actually . . . have the ability to put control signals to shut off power as well.” . . .

– Testimony in video posted under “Must Hear: Experts Testify On Dangers Of Smart Meters, & FIRES! And More.”
<https://www.youtube.com/watch?v=iv2MPHr7t1M>

[AUSTRALIA] “Aussies at Higher Risk of Having Their Homes Hacked after Mandatory Smart Meter Rollout” – excerpts:

They hack smartphones, smart TVs, smart cars and most every other connected thing in the service of crime. But will cybercrooks actually bother hacking a smart meter?

“In a recent paper, Jin and his colleagues demonstrated that machine learning systems can be trained to detect occupancy without any initial information from a home owner. ‘You just need a smart meter that listens over time,’ he says, . . . ”

– Tekla S. Perry, *IEEE Spectrum*, 6/23/17

According to one prominent Australian researcher, yes. And they’re not just looking to read your meter.

Two-way electricity meters, now mandatory in Australia, pose a number of security risks to customers and providers alike, according to Nigel Phair from the University of Canberra’s Centre for Internet Safety, who wrote a paper on the subject.

With the Internet of Things projected to have an economic impact of more than \$11 trillion per year by 2025, hackers are fighting to breach what may become their

most lucrative market yet. The mandatory smart meter rollout in Australia might be just the opportunity they are looking for, Phair says.

“Most of the devices are being built without any inbuilt security around them – and by that I mean password protection and no ability to update what we call the firmware as time goes on so they become safe devices,” Mr. Phair told the ABC.

Hacking into a smart meter is easy, Mr. Phair elaborates in

“Itron defines smart meters as **devices that are like mini computers** on houses and businesses. They **communicate back and forth with the utility to automatically transmit meter information**, such as energy consumption, spikes in power usage, and power outage and restoration messages to support various applications beyond monthly billings. Our smart metering solutions have substantially more features and functions than our advanced metering systems and technology. Smart meters are able to collect and store interval data, perform remote service connect/disconnect, send detailed information, receive commands, and interface with other devices, such as in-home displays, smart thermostats and appliances, home area networks, advanced control systems, and more.

“In North America, Itron’s OpenWay CENTRON meter and OpenWay CENTRON Polyphase meter are smart electric meters.

“Alternately, advanced metering involves one-way communication of meter data. Advanced metering uses a communication module embedded in the meter to collect and store detailed meter data, which is transmitted to handheld computers, mobile units, and/or fixed networks, allowing utilities to collect the data for billing systems and analyze the meter data for more efficient resource management and operations. Itron’s advanced meters and RF-based technologies include non-OpenWay CENTRON meters; SENTINEL meters; METRIS meters; and electric, gas and water ERT communication modules.”

– Itron | Radio Frequency Resource Center. Accessed July 2019
<https://www.itron.com/na/resources-page/consumer-resource-center/radio-frequency-resource-center>

his paper. By monitoring power usage in a home, burglars can learn when it's safe to rob the place. With a bit more tinkering, they can spread the hack to other appliances in the house, allowing bad actors to control things like the refrigerator, the heater and even the garage door.

– Bitdefender BOX | 2017 <https://www.bitdefender.com/box/blog/smart-home/aussies-higher-risk-homes-hacked-mandatory-smart-meter-rollout/>

[USA] “Smart Meters Pose Security Risks to Consumers, Utilities: Researcher” – excerpts:

Between 2010 and 2012, several experts detailed the security and privacy implications of using smart meters, and SecureState even released an open source framework designed for finding vulnerabilities in such devices.

However, according to Netanel Rubin, who recently founded Vultra, a company that develops security solutions for the smart industry, smart meters continue to lack proper security mechanism, allowing malicious actors to use these devices to target both consumers and utilities.

– Eduard Kovacs | *Security Week* | 1/4/17
<https://www.securityweek.com/smart-meters-pose-security-risks-consumers-utilities-researcher>

[USA] “As US court bans smart meter blueprints from public, sysadmin tells of fight for security info” – excerpts:

The sysadmin-activist at the center of a bizarre legal battle over a smart meter network in Seattle, Washington, says he never expected a simple records request to turn into a lawsuit.

Phil Mocek told *The Register* that when he asked Seattle City Light, a public power utility, to provide details on the designs and rollout of its smart power meter grid, he was simply hoping to find out what security safeguards the city and hardware providers Landis+Gyr and Sensus USA planned to use. “We all assume these meters simply monitor the amount of energy usage in the home,” Mocek explained. “But they monitor it in real time in ways that other meters did not.”

The worry, Mocek said, is that the city may have been convinced by the suppliers to **install a network with poor security protections or insecure protocols** that could place citizens at risk of having their energy-use remotely spied on or their personal information stolen.

“... I do want to know what kind of security they have on this system,” Mocek explains. “I’m worried that we as a city are going to **pay a lot for a system whose security relies on people not knowing how it works.**”

– Shaun Nichols in San Francisco | *The Register* [UK] | 5/27/16
https://www.theregister.co.uk/2016/05/27/phil_mocck_seattle_smart_meters/

[USA] “Your Smart Electricity Meter Can Easily Spy On You, Court Ruling Warns” – excerpts:

Some [smart meter] models have been found to **interfere with some home routers, and, like so many internet-connected devices, other variants are easily hacked.**

But these devices also collect an ocean of private customer data, including detailed information that can be used to infer when you wake, when you sleep, and when you're at home or away. In the past, electricity meters delivered a lump monthly figure to utilities, but smart meters transmit data in granular detail, often in increments ranging from fifteen minutes to every few hours.

... In their lawsuit, they [Naperville citizens] argued that the city's smart meter data collection violated their Fourth Amendment rights against unreasonable searches and seizures.

... the Seventh Circuit Court of Appeals ruled that the Fourth Amendment does in fact protect energy-consumption data collected by smart meters. The ruling leans heavily on the *Kyllo v. United States* precedent that declared the use of thermal imaging tech to monitor citizens without a warrant also violates the Fourth Amendment.

The court was quick to point out smart meter data collection often provides much deeper insight than could be obtained via the thermal imaging tech that was at issue in the *Kyllo* ruling. In large part because modern appliances often have distinct energy-consumption patterns or “load signatures” that not only tell the utility when you're home, but precisely what you're doing.

“A refrigerator, for instance, draws power differently than a television, respirator, or indoor grow light,” the ruling notes. “By comparing longitudinal energy-consumption data against a growing library of appliance load signatures, researchers can predict the appliances that are present in a home and when those appliances are used.”

The ruling could prove to be important for the growing number of homes that have smart meters installed. This is especially true given the **growing interest among law enforcement and intelligence agencies in gaining access to this data without a warrant**, and the apparent lack of interest in meaningful federal or state privacy protections for consumers.

While this ruling generally only applies to government access to this smart electricity data, Williams noted that state regulators can also play a sizable role in **preventing corporate utilities from collecting and potentially selling this data without your permission.** Said data could prove invaluable to data brokers that also traffic in cellular location data.

In 2011, the California Public Utilities Commission passed regulations protecting the privacy and security of consumers' electrical usage data. In 2014, the CPUC also passed rules that let users **pay a fee to opt out of such data collection**. California's Pacific Gas and Electric wasn't a fan; and was **busted for spying on activists in a bid to undermine smart meter opposition**.

– Karl Bode | *Electric Spy* | 8/15/15
https://motherboard.vice.com/en_us/article/j5n3pb/your-smart-electricity-meter-can-easily-spy-on-you-court-ruling-warns

[USA] “Power company forces Detroit family to rely on generator” – excerpts:

As former CIA Director David Petraeus stated in 2012, homes connected into the smart grid will be easily surveilled by intelligence agencies.

“Items of interest will be located, identified, monitored, and remotely controlled through technologies such as **radio-frequency identification, sensor networks, tiny embedded servers, and energy harvesters** – all connected to the next-generation internet using abundant, low-cost, and high-power computing,” Petraeus said.

– Mikael Thalen | *Infowars* | 1/30/15
<https://www.infowars.com/judge-power-company-can-refuse-electricity-to-family-that-removed-smart-meter/>

[UK] “Smart Meters Pose New Risks for Energy Industry” – excerpts:

“Smart metering system security uses international standards and common industry good practices, e.g. encryption of sensitive data, protection from viruses and malware, access control, tamper alerts on meters, two-party authorisation of important messages to the meters and system monitoring,” he [the British Department of Energy and Climate Change spokesman] added.

But officials acknowledge that such connected systems will have new vulnerabilities.

“We can identify **three risks: outright sabotage; external, illegal control; and criminals that want to earn money with it**,” said Udo Helmbrecht, executive director of the European Union Agency for Network and Information Security (ENISA).

The University of Cambridge said in a report that smart meters raised “several serious security issues” such as **fraud through manipulated meter readings, misuse of private customer data and a threat of power out-**

... Felix Lindner came very close to shutting down the power supply of Ettlingen, a town of almost 40,000 people in the south of Germany.

“We could have switched off everything: power, water, gas,” Lindner, head of Berlin-based Recurity Labs, an IT security company, said.

Fortunately for residents, Lindner's cyber attack on its energy utility, Stadtwerke Ettlingen, was simulated. But he revealed how easy it was to hack into the utility's network through its IT grid, which gave him access to its control room.

– Christoph Steitz, Harro Ten Wolde,
Reuters, 7/15/14

company, said.

Fortunately for residents, Lindner's cyber attack on its energy utility, Stadtwerke Ettlingen, was simulated. But he revealed how easy it was to hack into the utility's network through its IT grid, which gave him access to its control room.

“The experiment has shown that sensitive, critical infrastructure is not sufficiently protected,” said Eberhard Oehler, managing director of the utility, Stadtwerke Ettlingen.

Cyber attacks on infrastructure have become a major worry for utilities following the 2010 Stuxnet computer virus, which experts believe was used by **Israel and the United States** to make some of Iran's nuclear centrifuges tear themselves apart.

ages through a large cyber attack.

Data-hubs which collect information coming from smart meters and transmit it to the utilities, including via mobile connections, could be especially vulnerable.

One weak spot could be the encryption of data sent from meters to utilities, which could be cracked, said Eireann Leverett, of IT security firm IOActive . . .

– Christoph Steitz & Harro Ten Wolde | *Insurance Journal* | 7/18/14
<https://www.insurancejournal.com/news-international/2014/07/18/335214.htm>

[Germany] “‘Smart’ technology could make utilities more vulnerable to hackers” – excerpts:

Last November, Felix Lindner came very close to shutting down the power supply of Ettlingen, a town of almost 40,000 people in the south of Germany. “We could have switched off everything: power, water, gas,” Lindner, head of Berlin-based Recurity Labs, an IT security

“As with any release of a hacking tool, there are two sides of the same coin (see Power Pwn: This DARPA-funded power strip will hack your network). On the one hand, Termineter should help companies find vulnerabilities and test their products. On the other hand, Termineter can also be used maliciously to modify consumer data, inflicting financial loss on one or multiple victims.”

– Emil Protalinski, “Smart meter hacking tool released,” *ZDNet*, 7/22/12
<https://www.zdnet.com/article/smart-meter-hacking-tool-released/>

The threat has been reinforced in recent months by the appearance of a computer virus known as the Havex Trojan, which hackers appear to have used to attack oil and gas firms.

Traditionally, energy utilities have kept infrastructure like power plants safe from cyber attack by keeping it separate from the open Internet.

But that is rapidly changing as a new generation of “smart” power meters hooks up customers to their utilities through the web, and new forms of solar and wind microgeneration supplement traditional centralized power stations.

– Christoph Steitz, Harro Ten Wolde | *Reuters* | 7/15/14
<https://www.reuters.com/article/us-utilities-cybersecurity/smart-technology-could-make-utilities-more-vulnerable-to-hackers-idUSKBN0FK1SZ20140716>

[GERMANY] Multimedia Content Identification Through Smart Meter Power Usage Profiles (2012) – Abstract:

Advanced metering devices (smart-meters) are being installed throughout electric networks in Germany (as well as in other parts of Europe and in the United States). Unfortunately, smart meters are able to become surveillance devices that monitor the behavior of the customers. This leads to unprecedented invasions of consumer privacy. The high-resolution energy consumption data which are transmitted to the utility company allow intrusive identification and monitoring of equipment within consumers' homes (e. g., TV set, refrigerator, toaster, and oven). Our research shows that the analysis of the household's electricity usage profile at a 0.5s⁻¹ sample rate does reveal what channel the TV set in the household was displaying. It is also possible to identify (copyright-protected) audiovisual content in the power profile that is displayed on a CRT¹, a Plasma display TV or a LCD² television set with dynamic backlighting. Our test results indicate that a 5 minutes-chunk of consecutive viewing without major interference by other appliances is sufficient to identify the content.

Our investigation also reveals that the data transmitted via the Internet by the smart meter are unsigned and unencrypted.

– Ulrich Greveler, Benjamin Justus, & Dennis Loehr | IKE | Jan. 2012
https://epic.org/privacy/smartgrid/smart_meter.pdf & https://www.researchgate.net/publication/266461208_Multimedia_Content_Identification_Through_Smart_Meter_Power_Usage_Profiles

[PUERTO RICO] "FBI: Smart Meter Hacks Likely to Spread" – excerpts:

A series of hacks perpetrated against so-called "smart meter" installations over the past several years may have cost a single U.S. electric utility hundreds of millions of dollars annually, the FBI said in a cyber intelligence bulletin obtained by KrebsOnSecurity. The law enforcement agency said this is the first known report of criminals compromising the hi-tech meters, and that it expects this type of fraud to spread across the country as more utilities deploy smart grid technology.

... The FBI warns that insiders and individuals with only a moderate level of computer knowledge are likely able to compromise meters with low-cost tools and software readily available on the Internet.

Sometime in 2009, an electric utility in Puerto Rico asked the FBI to help it investigate widespread incidents of power thefts that it believed was related to its smart meter deployment. In May 2010, the bureau distributed an intelligence alert about its findings to select industry personnel and law enforcement officials.

Citing confidential sources, the FBI said it believes former employees of the meter manufacturer and employees of the utility were altering the meters in exchange for cash and training oth-

“Our research shows that the analysis of the household’s electricity usage profile at a 0.5s– sample rate does reveal what channel the TV set in the household was displaying. It is also possible to identify (copyright-protected) audiovisual content in the power profile that is displayed on a CRT, a Plasma display TV or a LCD television set with dynamic backlighting.”

– U. Greveler, B. Justus, & D. Loehr, Jan. 2012

ers to do so. “These individuals are charging \$300 to \$1,000 to reprogram residential meters, and about \$3,000 to reprogram commercial meters,” the alert states.

The FBI believes that miscreants hacked into the smart meters using an optical converter device – such as an infrared light – connected to a laptop that allows the smart meter to communicate with the computer. After making that connection, the thieves changed the settings for recording power consumption using software that can be downloaded from the Internet.

The bureau also said another method of attacking the meters involves placing a strong magnet on the devices, which causes it to stop measuring usage, while still providing electricity to the customer.

The feds estimate that the Puerto Rican utility’s losses from the smart meter fraud could reach \$400 million annually. . . .

The hacks described by the FBI do not work remotely, and require miscreants to have physical access to the devices. They succeed because many smart meter devices deployed today do little to obfuscate the credentials needed to change their settings, said according to Tom Liston and Don Weber, analysts with InGuardians Inc., a security consultancy based in Washington, D.C.

– Krebs on Security | 4/12

<https://krebsonsecurity.com/2012/04/fbi-smart-meter-hacks-likely-to-spread/comment-page-1/>

“Hacking water meters is easier than it should be” – excerpts:

The smarter water meters become, the easier they’re getting to hack. Like many things in electronics, water meters become easier for hackers to break into and misuse when they are upgraded to include wireless and computer technology.

If people want to reduce their water bills, they could hack the sensors. They could also increase the bill paid by a neighbor they don’t like, or evade restrictions on the amount of water used. And since the usage of water indicates the presence or absence of the homeowner, the hacked water meters can be used for surveillance purposes.

... McNabb said that the concern about Big Brother is also a big one. He said that the water department’s staff could learn what time of day you take a shower, when you are at home, and when you’re on vacation.

McNabb said his research showed that vendors don’t use frequency hopping spread spectrum (FHSS), which could stop eavesdropping on wireless signals, or encryption with their smart meters. One utility used a default password system which used a generic password on its web site (where users would log in and view their water usage) that was easily hacked. Transceivers for sending commands to the water meters can be purchased on eBay.

– Dean Takahashi | VentureBeat | 8/6/11

<https://venturebeat.com/2011/08/06/hacking-water-meters-is-easier-than-it-should-be/>

UTILITIES INCLUDED IN THE NATIONAL INFORMATION GATHERING/SHARING SYSTEM

[NOTE: Utilities are listed with the Emergency Operation Centers.]

[USA] Information-sharing Guidebook for Transportation Management Centers, Emergency Operation Centers, and Fusion Centers – excerpts:

Abstract: This guidebook provides an overview of the mission and functions of transportation management centers, emergency operations centers, and fusion centers. The guidebook focuses on the types of information these centers produce and manage and how the sharing of such information among the centers can be beneficial to both the day-to-day and emergency operations of all the centers. Challenges exist to the ability to share information, and the guidebook addresses these challenges and options for handling them. The guidebook also provides some lessons learned and best practices identified from a literature search and interviews/site visits with center operators.

[Excerpts p.3-4:]

1.1 The Information-Sharing Situation Today

TMCs, EOCs, and FCs have established information-gathering and communications channels that tap into external sources, as well as “owned” equipment and operations systems. They interconnect with partner agencies and with deployed assets (e.g., cameras, sensors, and control systems) via landline, wireless, and Internet links. Key external communications links for TMCs and EOCs also include weather services, 911 centers, law enforcement dispatch systems (e.g., computer-aided dispatch [CAD] and similar systems), and the traffic reporting media.

Communications links for the many variations of FCs are more difficult to characterize because they are very specific to the particular criminal, safety, or hazard focus of each center. FCs employ landline, wireless, and Internet links, and, where practical, integrated data systems. Often, the data and communication connections include law-enforcement- sensitive or classified information, so equipment for relaying information is specialized.

Figure 1-1 characterizes the centers’ respective information sources, using linkages that are representative of the various centers researched.

Each EOC maintains seats and terminals dedicated for any local or re-

gional agency that might be engaged in particular emergencies (e.g., police, re, public works, transit, and intelligence agencies; EMS; TMCs; departments of transportation; and bridge, tunnel, and toll road authorities) and represents a functional area (e.g., transportation and mass care). Principal agencies involved in the specific FC missions jointly staff the FCs.

The trend in and importance of information sharing is on the rise today, as more resources have been invested in sophisticated intelligent transportation systems (ITS) and surveillance technologies, as major terrorist and natural emergencies have overstressed real-time communications, and as increasingly congested roadways lead to incidents that impede traffic flows and threaten lives and property. These incidents have clearly shown the high public costs of information gaps, preparedness deficiencies, and insufficient situational awareness by decision-makers.

While many kinds of information sharing can be logical and useful for TMC, EOC, and FC missions, achieving the sharing of information can require significant dedication and investment in the proposition. Legitimate and significant technical and policy barriers to information exchange can come into play and must be resolved. This guidebook explores the following hurdles:

- Legal and privacy concerns related to surveillance and traveler information
- Control and security of criminal and potentially litigious information
- Prudent and appropriate release of information to the public domain
- Varying levels of concern between centers over security, reliability, and sustainability of specific information flows
- “Language” complexities, including data and message standards, georeferencing systems, usage conventions
- Technical barriers in linking together legacy media, hardware, and systems (e.g., digital video feeds and multiple wireless standards and frequencies)
- Specific policies and mandates of participating agencies – regarding ownership of resources, mission priorities, and logical and physical access restrictions.

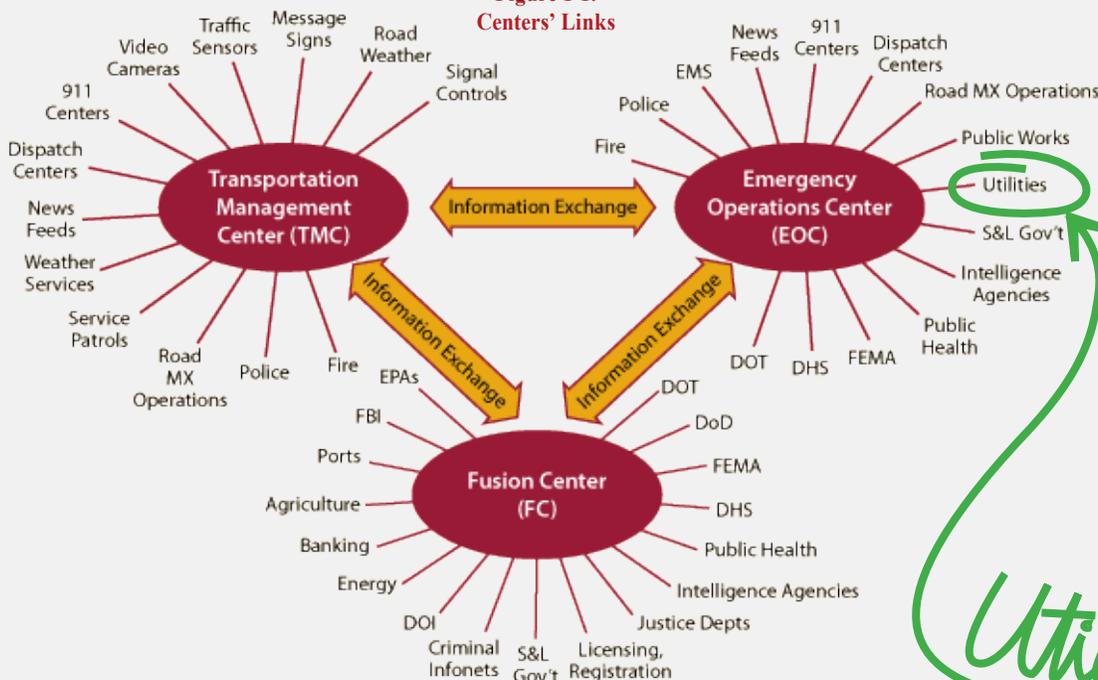
The communication and information-sharing barriers are classic problems – both complicated and frequently addressed by policy-makers and practitioners with irony and resignation. As the challenges that TMCs, EOCs, and FCs face continue to grow more complex, policy practices are becoming more sophisticated and **improved technologies are facilitating better ways to gather, process, properly synthesize, and share information.**

– U.S. Department of Transportation, FHA, June 2010.

Download pdf: https://ops.fhwa.dot.gov/publications/fwahop09003/tmc_eoc_guidebook.pdf
 Similar info online: https://ops.fhwa.dot.gov/publications/fwahop09003/tmc_0.htm

Utilities

Figure 1-1: Centers’ Links



[Oklahoma] “City has highest electric bills in Oklahoma, meter critic says”— excerpts:

Smart Meters are causing electrical bills in Claremore to jump as high as 500 percent, according to one resident who claims she paid more than \$1,500 in one month.

“They (meters) are 99.9 percent accurate,” he [Jim Thomas, Claremore City Manager] said. Taylor doesn’t believe that and neither do her neighbors, some who use candles and flashlights at night to avoid electrical use. Other Claremore residents like Kathleen Bratton-Batts and Charlie Abbott have been vocal on social media about their problems.

“What a joke!!! I know we are not the only ones that had a bill over \$1,000 and the other two were not as bad but \$597 and \$547 is still crazy,” Bratton-Batts wrote on the Facebook page Claremore Electric Petition. “Our electric was blinking or going out up to 5 to 10 times a day and the **transformer finally went out**. They just replaced it a few days ago.”

Abbott posted on the same Facebook page, “I’ve been quiet and not rude but I am starting to get really pissed. Just last week a **power surge took out my alarm system** and during my meeting they promised me they would help. Took my phone number and not one damn word from them.”

Taylor claims power surges occur several times a day, causing reboots to occur, which in turn, creates more electrical usage.

— Tim Farley | *Red Dirt News* | 10/19/15 <https://www.reddirtreport.com/red-dirt-news/claremore-smart-meters-create-substantial-increases-bills-residents-claim>

[Maine] “Smart Meters Interfering With Home Electronics”

— excerpts:

About 200 customers of the Central Maine Power Company recently noticed something odd after the utility installed smart meters in their homes: in some cases other **wireless devices stopped working, or behaved erratically**.

The 425,000 installed smart meters all broadcast in the 2.4GHz frequency range. Unfortunately, so do many of the consumer gadgets we take for granted these days including **routers, electric garage doors, fire alarms, clocks, electric pet fences, answering machines, and baby monitors**.

— Robert Vamosi | *Security Week* | 11/23/11 <https://www.securityweek.com/smart-meters-interfering-home-electronics>

[Maine] “Electronics on the fritz? Could be smart meters”

— excerpts:

The [Maine Public Advocate’s] office put out a statement this week saying Central Maine Power Co.’s “smart meters” — which use low-power radio frequency transmissions to send meter readings to the company — are **interfering with a wide range of household electronic devices, from garage door openers and WiFi devices to security systems**.

A spokesman for Central Maine Power said the company is aware of the problem and has set up a special unit to handle complaints. It will send experts to people’s homes to make fixes, if needed, John Carroll said, and has **bought new electronic devices for consumers in cases where it was not able to resolve the problem or if the equipment was damaged**.

... a critic of the devices said the small number of complaints may be due to people **not making the connection between a smart meter and interference with wireless routers, phones, clocks and even invisible fences for pets**. “I think the majority of people who are having problems with their router or can’t stream their Netflix (movies) or whose **dogs are zapped in their safe zones** have no idea” it could be the smart meter, said Elisa Boxer-Cook, who founded the Smart Meter Safety Coalition.

— Edward D. Murphy | *Portland Press Herald* | 11/19/11 https://www.pressherald.com/2011/11/19/electronics-on-the-fritz_-could-be-smart-meters_2011-11-19/

“Smart Meter RF Emissions vs. Other Common Devices”

by K.T. Weaver, SkyVision Solutions, April 24, 2013 <https://smartgridawareness.org/2013/04/24/smart-meter-rf-emission-vs-other-common-devices/>

Table 1 – Radio-Frequency Levels from Various Sources

Source	Frequency	Exposure Level (mW/cm2)	Distance	Time	Spatial Characteristic
Cell phone(1)	900 MHz, 1800 MHz	1–5	At ear	During call	Highly localized
Cell phone base station(2)	900 MHz, 1800 MHz	0.000005–0.002	10s to a few thousand feet	Constant	Relatively uniform
Microwave oven(3)	2450 MHz	~5 0.05-0.2	2 inches 2 feet	During use	Localized, non-uniform
Local area networks(4)	2.4–5 GHz	0.0002–0.001a 0.000005–0.0002 b	3 feet	Constant when nearby	Localized, non-uniform
Radio/TV broadcast(5)	Wide spectrum	0.001 (highest 1% of population) 0.000005 (50% of population)	Far from source (in most cases)	Constant	Relatively uniform
Smart meter(6)	900 MHz, 2400 MHz	0.0001 (250 mW, 1% duty cycle) 0.002 (1 W, 5% duty cycle) 0.000009 (250 mW, 1% duty cycle) 0.0002 (1 W, 5% duty cycle)	3 feet 10 feet	When in proximity during transmission	Localized, non-uniform

Source: *Radio-Frequency Exposure Levels from Smart Meters: A Case Study of One Model*, EPRI, Feb. 2011, p.9. https://www.socalgas.com/documents/ami/EPRI_1022270.pdf

“FCC CELLS US OUT”

(The following is by Kevin McKeown “a City Council member, and prior to that served on the Santa Monica Telecommunications Task Force.”)

That little box that suddenly appeared on a utility pole or street light near your home isn’t a birdhouse. It’s a 5G technology “small cell” wireless transmitter, and it has some of your neighbors worried.

For years we’ve lived with the older and larger cell phone transmitters, which are often affixed to tall buildings or on standalone poles disguised (unconvincingly) as trees.

The new 5G cells are different. They provide more reliable voice service and extremely high-speed data transfers for smartphones, but they broadcast effectively over a much shorter distance than the old cells.

That means there must be many more of the 5G cells, much closer together, and even deep within residential neighborhoods. City staff in a recent report advised the City Council that just within Santa Monica as many as 600 small cell sites may be applied for over the next two to three years.

City governments enjoy local control over most land use matters, but the **federal government has claimed sovereignty over telecommunications infrastructure**, telling cities like Santa Monica that we must accept 5G cells without any meaningful ability to mitigate their impacts.

Let’s be clear we’re not talking about radiation hazards – if only because we’re not allowed to. Starting with the Communications Act of 1996, the federal government has whittled away local control over radiation impacts, saying only “trust us.”

The entity in charge of cell towers and their safe operation is the Federal Communications Commission, or FCC. They have long held that **if a cell transmitter has been certified by their engineers as in compliance, local governments cannot restrict their location or operation based on concern over radiation**. Any appeal of a 5G “small cell” siting based on radiation concerns must be summarily denied.

Just over a month ago, your City Council heard three such appeals. We certainly sympathized with the residents who made convincing cases that the 5G sitings in question were too close to their bedrooms, for instance, but the cells were FCC certified, and thus we, outranked by federal law, could do nothing about the radiation concerns.

However, at that time, cities still retained some local control over the aesthetics of cell sitings, in terms of how the intrusive appearance was mitigated with camouflage and concealment elements, and whether the cell siting would interfere with other uses of the public right-of-way.

Our local cell control law had been written for the older, larger cell phone

towers, not the relatively less intrusive appearance of small cell 5G transmitters. The City Council on August 28th asked staff to return as soon as possible with an updated ordinance that might give us more control over these new 5G installations.

I thought we’d be ready with a local law, for local control, to protect Santa Monica residents from unreasonable intrusions and impacts.

Then, last Wednesday, the **Federal Communications Commission issued a harsh new regulatory declaration, further usurping local control over rapidly proliferating small cell installations**.

Under the new rules, cities like Santa Monica have even less time to process small cell applications, no matter how many are filed at one time. **If the municipality fails to completely review and process the application before the deadline, the application is deemed approved by default, granted by federal fiat**.

Who pays for this? You do, because the new FCC rules limit the application fee the telecomm company must pay to \$100. That makes any real study or public outreach a cost to taxpayers, subsidizing the telecomm company.

Most troubling, the new ruling further narrows the already limited grounds on which we are allowed to exert control over a small cell siting.

The telecomm industry and business media claim these restrictions on local control are needed because you, through your local government, are obstructing progress. The morning of the FCC vote on the new ruling, the *Wall Street Journal* claimed in an editorial that “U.S. cities are throttling deployment (of 5G technology) with extortionist fees... (and) self-serving behavior from local politicians.”

As a resident concerned for your home and your neighborhood, you may feel differently. You can share your dismay over forced small cell deployment with our Congressman, . . . or our Senators, . . .

The City of Santa Monica, even with its hands tied by the audacious FCC pre-emption, fights above its weight. I will support the strongest possible new local ordinance when it comes back to the Council.

The National League of Cities likely will fight this latest FCC over-reach, by lobbying Congress and by litigation if necessary. Almost inevitable is an appeal of the FCC ruling to one or more circuit courts, and it’s possible that the little not-birdhouse outside your bedroom window will make it all the way to the Supreme Court.

– Kevin McKeown | *Santa Monica Daily Press* | 10/3/18
<https://www.smdp.com/fcc-cells-us-out/169726>

Let’s be clear we’re not talking about radiation hazards – **if only because we’re not allowed to**. Starting with the Communications Act of 1996, the federal government has whittled away local control over radiation impacts, saying only “trust us.”

SAYING “NO!” TO “SMART” METERS

Harassing customers (includes misuse of public law enforcement)

[Tennessee] “Residents claim MLGW contractors are trying to install smart meters without consent” – excerpt:

People in the Vollintine community in Memphis are angry after a contractor with MLGW knocked on doors wanting to install smart meters without consent.

Memphis Light Gas and Water officials confirm they do have an agreement with the Utility Partners Association to go around installing smart meters for customers who didn't opt out of having smart meter.

Some people in the neighborhood told FOX13 MLGW didn't contact them about anyone coming to their homes to install something they didn't want in the first place.

“If I opted out last year clearly it should be in the system that I do not want it this year,” said Eric Dunn.

Dunn told FOX13 he also saw the contractor at other people's homes who have opted out of the installation in the past. He said he worries smart meters could be installed at homes where they aren't wanted while owners are at work.

– Jeremy Pierre | FOX13 Memphis | 6/14/19
<https://www.fox13memphis.com/top-stories/residents-claim-mlgw-contractors-are-trying-to-install-smart-meters-without-consent/958398472>

[Arizona, Texas, Montana, Michigan] “AMI Smart Meter Abuse Ramps Up Around the USA” – excerpts:

[M]edical doctor, Deborah L. Dykema, of Phoenix, Arizona, . . . was threatened with jail for her refusal of three smart meters on to her medical practice office wall where she treats patients!

The Arizona Public Service (APS) utility went to her office on March 1, 2018 and worked her over in front of patients, who were kept waiting while this dramatic ‘police state action’ took place in front of them!

As Dr. Dykema stated,

I repeatedly asked the APS supervisor that this matter be discussed at a time that would not keep my sick patients waiting, and they refused, which stopped my ability to see patients with scheduled appointments for nearly 90 minutes. I had several patients that waited 90 minutes and several patients who left the office unable to be seen due to their disruption. [...]

The police stated now that they had legal approval to arrest me. I was certain I was going to have to go to jail to protect my health and the health of my patients and asked my receptionist to contact the media to film this tragedy. Shortly after that, APS finally backed down and stated they would send their installation crew away.

I am still in shock. That a law-abiding citizen and business

owner just trying to take care of patients would have their business stopped by a powerful power monopoly without warning, that the police would threaten to arrest me at the monopoly's insistence citing a statute that does not apply, that I do not have the right in my own building to protect my health and the health of my patients and employees.”

– Dr. Deborah L. Dykema

owner just trying to take care of patients would have their business stopped by a powerful power monopoly without warning, that the police would threaten to arrest me at the monopoly's insistence citing a statute that does not apply, that I do not have the right in my own building to protect my health and the health of my patients and employees. Has it really gone this far? Do we actually live in a police state where the health rights of individuals do not matter?

– Catherine J. Frompovich | *The Activist Post* | 3/6/18
<https://www.activistpost.com/2018/03/ami-smart-meter-abuse-ramps-around-usa.html>

[S. Carolina] “Police in South Carolina Arrest Woman to Force Smart Meter in Blatant, Illegal Overreach” – excerpts:

... A Sheriff arrested and jailed a woman after she had a smart meter on her home changed to an analog meter due to health issues from the radiation. The arrest warrant for Elizabeth Michelle Mancini states that Palmetto Electric Coopera-

tive, Inc., did not approve the meter, and could not read it.

Ms. Mancini, a Technical Writer with no criminal record, stated, “Palmetto did not, and could not rebut my affidavit of claims related to their having put an unsafe and invasive meter on my home. I didn't violate any law because I was simply acting in self-defense against an unlawful meter.” She said she had no intent to defraud the utility company, and that “Utilities have been able to read analog meters for over 70 years—a third grader can do it.”

Ms. Mancini began requesting Palmetto to remove their smart meter in 2015, to protect her health and her Fourth Amendment right to privacy in the home. Ms. Mancini described going through an administrative process, serving the CEO of the power company with a “Notice and Demand,” and a subsequent “Notice of Default,” prior to installing a safe, hardwired analog meter. She returned the smart meter, undamaged, to the CEO of Palmetto and included photos of all readings for meter reading purposes and to show she was not attempting to defraud the company.

Armed officers came to her home and made the arrest.

– Stop Smart Meters 2/19/18 <https://stopsmartmeters.org/2018/02/21/breaking-news-out-of-south-carolina-armed-officers-arrest-and-jail-woman-to-enforce-smart-meters/>

[Michigan] “DTE Shut Off Threats and Customer Service Related Problems” – excerpts from Linda Hearsch's testimony:

• My husband is in the category of 65 or older..., but DTE violates the spirit of senior protection rules by continuing to contact us and inferring an ability to **shut us off even during the winter**. They also attempted installation just before November 1st to try to beat their deadline even after we told them several times we did not want a digital meter. That was followed by a robocall on December 12th and another letter on December 21, 2017.

- My husband’s business has been **overcharged every month** since smart meter, and has gone up significantly for no variable reason other than the meter change.

- DTE has a monopoly and leaves us in an entirely vulnerable and compromised position. We are forced to choose between two awful ‘non-options’, with *only the illusion of choice* where we can’t leave to get power elsewhere. Where are we to turn?

- DTE continues to pressure my husband and me by having people show up with intent to install a smart meter, continues to **threaten us with electrical shut off**, even though our electrical bill is paid in full every month, and continues to attempt to coerce us into acceptance of installation of a digital meter (transmitter on) or digital opt-out meter (transmitter off). Our concerns with digital meters go well beyond transmitting.

– Linda Hearsch | Michigan House Energy Policy Committee | 1/30/18
<https://house.mi.gov/sessiondocs/2017-2018/testimony/Committee420-1-30-2018-35.pdf>

[Michigan] “Woman says DTE shut off power because she won’t get smart meter” – excerpts:

A Ferndale woman says DTE Energy shut off her electricity, even though her bills were paid in full.

The problem she says, is that she didn’t want the utility to install a smart meter at her home. “Basically you are being blackmailed,” said Kay Watson. “(They are saying) you either take it or we cut power.”

— • —

“The guy was here at the door telling me they’re going to put in a smart meter and I said no,” she said. “He said you’re refusing? And I said yeah, so he said we’re cutting your power.”

— • —

DTE says Watson called Monday asking for a smart meter in order to get her power turned back on. But Watson says she never requested that and only wants the “opt out.” A program which allows a few customers who have concerns to have a smart meter installed with a digital signal turned off.

— • —

DTE says customers who choose to opt out will be charged a one time fee and \$9.80 per month for meter readings and related services.

– WJBK | 10/30/17
<http://www.fox2detroit.com/news/local-news/woman-says-dte-shut-off-power-because-she-wont-get-smart-meter>

[Pennsylvania] “Pennsylvania AMI Smart Meter Problems Escalating For Everyone; What To Do Now” – excerpts:

The AMI Smart Meter ‘vigoro’ currently is hitting the bureaucratic fan BIG time in Pennsylvania and citizens really are distraught. Since I happen to be the researcher for Pennsylvania Smart Meter Awareness (Pasma) and also have a highly publicized *pro se* case for refusing an AMI Smart Meter on medical reasons before the PA PUC, I get phone calls and emails daily from Pennsylvanians ready to pull out their hair regarding the harassment they receive from electric utility companies telling them their electric service will be turned off by a certain date if they do not submit to the retrofit of an AMI Smart Meter. Furthermore, if the service is turned off, **it will cost in excess of \$1600 to reconnect!**

[Texas] “THE EPIC SAGA OF A SMART METER OPT-OUT”

“The bulk of this was filmed in winter 2015 and the whole thing was so annoying, we didn’t even want to touch it for a good, long while.



“The entire process of opting out of and removing a smart meter – and going back to an analog meter – was so convoluted, so frustrating, so tedious and so taxing, that one can only conclude that the relevant companies and government agencies did everything in their power to make the opt out option as non-viable as possible for a population they have every intention of tracking, tracing and ruling over as a herd of 1’s and 0’s.

“Human health, privacy and the right to independence and non-interference hold no respect among those whose mission is to coat the planet in Internet of Things (IoT) connected devices. Data is the new currency; buyer beware.

“Despite the frustrations, however, taking a proactive step to disengage from this system, even in this small way, was worth it.”

– Aaron & Melissa Dykes | Truthstream Media | 9/29/17 | Watch video: <http://truthstreammedia.com/2017/09/29/the-epic-saga-of-a-smart-meter-opt-out/>
Also posted on youtube: <https://www.youtube.com/watch?v=uYgjuH5uJaA>

The ironic part about this harassment is their electric bills are paid in full with no balances due either!

– Catherine Frompovich | The Activist Post | 7/18/17 <https://www.activistpost.com/2017/07/pennsylvania-ami-smart-meter-problems-escalating-what-to-do.html>

[Arizona] “What It Takes To Get The Sheriff To Harass A Customer” – excerpt:

Steven Magee had to call the Sheriff to his home due to a suspected utility company impostor who was refusing to show his Tucson Electric Power (TEP) customer service identification card. Steven Magee is an electrical fraud researcher and realized that his health, safety and reputation was at risk in the presence of a suspected impostor who had shown up to his home unannounced. Steven Magee had called 911 to be protected from this suspected impostor ... Instead the Sheriff engaged in the harassment of Steven Magee. We now take a look at the fraudulent “Evidence” that was used to harass Steven Magee for eleven nights. Read more – download pdf: <http://www.environmentalradiation.com/What%20It%20Takes%20To%20Get%20The%20Sheriff%20To%20Harass%20A%20Customer.pdf>

[New York, Michigan; & an experiment in New Jersey:]

“Criminals Posing as Utility Workers” [Video]

To see how easily it can be done, ABC News’ Gio Benitez disguised himself as a water company worker.

– Nightline | ABC News | 3/26/16 <https://www.youtube.com/watch?v=cOhWnEP9n7o>

[Illinois] “Naperville settles lawsuit with smart meter foe” – excerpts:

Naperville City Council members this week settled a federal lawsuit filed last winter by a staunch opponent of the city’s smart meter installation program.

The 12-page agreement calls for paying \$117,500 to Naperville resident Malia “Kim” Bendis, whose Jan. 23 lawsuit accused the city and four of its police officers of violating her constitutional rights.

A founder of the grass-roots Naperville Smart Meter Awareness group, Bendis filed her complaint in U.S. District Court in Chicago two years to the day after her arrest by Naperville police on misdemeanor charges of eavesdropping and resisting a peace officer, charges on which she was later acquitted.

Bendis and members of her group opposed replacement of the city-owned residential analog electric meters at their homes with wireless alternatives. Bendis maintained police intervened during an installation of one of the devices at a home, in violation of her civil rights. The filing, which named four Naperville Police Department officers, also asserted that city officials decided in a closed door meeting to arrest Bendis and any other residents who interfered with their plan to “forcibly install the smart meters.”

– Susan Frick Carlman | *Naperville Sun* | 9/15/15
<https://www.chicagotribune.com/suburbs/naperville-sun/ct-nvs-smart-meter-suit-st-0916-20150915-story.html>

[Colorado] “Smart Meters, an arresting story” – excerpt:

The controversy over Smart Meters has been steaming in various counties in the United States, including the County of Larimer and the area served in Colorado’s Poudre Valley Rural Electric Association where Lt. Col. Tom Niichel lives with his wife and children. He is on active duty with the United States Air Force. He does not want a Smart Meter installed in his home, which is off the military base and he has been opposed to one being installed since 2010.

The Lt. Col. . . . opposed having the meter and in 2014 met with energy officials in their offices. After leaving their offices this is the incident he encountered. Others have had police encounters over smart meters, but this is an unusual one.

After the meeting with the Smart Meter officials Lt. Col. Tom Niichel, USAF, found himself suddenly confronted with police officers on exiting the building – to his surprise. He wrote in a narrative a report available to this reporter a long statement, and this is a quote:

As I was walking down the side walk I thought the sheriff’s car odd since there is a very narrow shoulder and I would have thought he would have had lights going since it was a hazard as parked. I stopped about 10 feet from the end of the walk to contemplate it

“Naperville City Council members this week settled a federal lawsuit filed last winter by a staunch opponent of the city’s smart meter installation program. The 12-page agreement calls for paying \$117,500 to Naperville resident Malia ‘Kim’ Bendis, whose Jan. 23 lawsuit accused the city and four of its police officers of violating her constitutional rights.”

– Susan Frick Carlman, *Naperville Sun*, 9/15/15

when two officers jumped up from behind some junipers separating the parking area from the turn-around drive. They were off to my left and about 75 feet from me. The younger officer to my far left had his pistol drawn and a bead on me. The other officer seemed to have difficulty mounting his AR weapon and never really got me in his sights. My hands were at my sides with several papers in my right. The younger officer yelled at me to get my hands away from my body, as I complied by raising my arms to 90 degrees, I noticed a third officer off to my right a little over a hundred feet distant among some trees, he too was armed with an AR type weapon and it was trained in my general direction if not directly on me.

The younger officer told me to turn around, I complied. I was very concerned by the 1st AR officer’s apparent inabilities with his weapon. During this entire sequence of events, my demeanor was calm, non-threatening and as professional

as one can be when facing three weapons. I was however very concerned with the apparent lack of skill or training of particularly the 1st AR officer as I could hear him fumbling with the weapon as I turned away from them. I actually remember wondering if I might become the victim of a negligent discharge,

I just prayed that if he did let one go, it would not be in my direction.

Virginia Farver wrote Fort Collins Light and Power saying she didn’t want the Smart Meter. The result from writing them in the Fall of 2013 came in March 2014. The power company put the Smart Meter in anyway and came to her door to tell her this with a policeman. The Smart Meter is still at her house.

Rich Farver, Virginia’s son, passed away in 2008 and Virginia believes that the kind of cancer he died of was partially the result of living near a cell pole carrying Smart Meter information connected to the grid. “There were three men in the same room in the same building (teachers) who were diagnosed with brain cancer in 2008.” . . .

– Land and Water USA website | 8/28/14
<https://landandwaterusa.com/BreakingNews/2014BreakingNews/8-28Smart-Meters-Part-1.html>

[Wisconsin] “Grandmother’s Water Shutoff Prompts State Legislation in WI” – excerpts:

Audrey Parker, an 81 year old grandmother who has refused to have a ‘smart’ water meter installed because of the privacy implications and the heart palpitations she experiences from the meters’ wireless pulses, last week had her water disconnected by the City of Baraboo, WI, in retribution for her “disobedience.”

The city has also cut off water service to her friends Darcy and Jim Sheriff, who have joined Audrey in refusing the meters. The two families have been using gallons of store bought water to flush their toilets, in a surreal scene of developing world desperation created solely by local authorities, who are pushing the meters despite growing evidence of harm.

– Josh Hart | Stop Smart Meters! 7/18/13
<https://stopsmartmeters.org/2013/07/18/wisconsin-grandmothers-water-shutoff-prompts-state-legislation-in-wi/>

[Ohio] “Ohio Sheriff in ‘Smart Meter’ Story That Led to One Woman’s Power Being Cut Tells Us His Side: It Could Have Ended Differently” – excerpts:

For months the utility [AEP, the local power company] was trying to install a “smart meter” at Ms. [Brenda] Hawk’s home. She resisted and managed to delay the installation until February 8th, when representatives from the company, escorted by a sheriff’s deputy, disconnected the power to Hawk’s home. This left the handicapped woman without power to pump water or operate the **medical device she needs to breathe** as she sleeps.

When Hawk told her story to *TheBlaze* and to Beck, she said that she asked the “sheriff” on the scene if he was there to protect her rights, he allegedly responded, “No, I’m here to protect them,” referring to the utility workers.

The details of Hawk’s struggle to keep her electricity and not be saddled with a “smart meter” sparked a public outcry that also got the Ohio governor’s office involved. Less than three hours after the story hit *TheBlaze*, power to Hawk’s home was restored. However, some people started looking in the direction of the Sheriff’s office and asking questions about why the local law enforcement was not protecting the rights of a citizen.

— *The Blaze* | 2/21/13
<https://www.theblaze.com/news/2013/02/21/ohio-sheriff-in-smart-meter-story-that-led-to-one-womans-power-being-cut-tells-us-his-side-it-could-have-ended-differently>

[Illinois] “Woman Arrested While Refusing Smart Meter Installation on Her Property Tells Us Her Story” – excerpts:

Jennifer Stahl has been a strong advocate against the smart meter program in Naperville, Ill., for the last two years. The issue came to a head Wednesday afternoon when she was arrested while refusing to let the utility workers install the controversial device.

Stahl was at a friend’s house when she received the call from her husband that the utility workers had arrived. She was home within 15 minutes and saw they were at a neighbor’s house. Her neighbors were not home, but they had signs stating they did not permit the new meter to be installed.

Stahl said she waited on her porch for the workers to arrive at her house. When they did, she refused them access to her backyard through her locked gate. The police – including the police supervisor, a sergeant – were called. Stahl said the sergeant explained the workers had authorization to access the meter, but Stahl stood her ground saying she didn’t approve it. The sergeant continued to try and convince Stahl to comply and said if she didn’t, he’d arrest her.

The lock on Stahl’s fence was cut, and when Stahl wouldn’t step away from

“The lock on Stahl’s fence was cut, and when Stahl wouldn’t step away from the meter, she was lead away by an officer, cuffed and waited for a marked squad car to arrive to take her to the department. When asked why she was being arrested, she was told it was for interfering with a police officer.”

— *The Blaze* | 1/24/13

the meter, she was lead away by an officer, cuffed and waited for a marked squad car to arrive to take her to the department. When asked why she was being arrested, she was told it was for interfering with a police officer.

— *The Blaze* | 1/24/13 <https://www.theblaze.com/news/2013/01/24/woman-arrested-while-refusing-smart-meter-installation-on-her-property-tells-us-her-story>

[Nevada] “Smart Meter or NO Power at All? Nevada Energy Sends Three Armed Men to Disconnect Power - Just for ‘Opting Out’”– excerpts:

Nevada is supposedly one of those states with a smart meter ‘opt out’ policy. On the ground, however, the reality is a little different.

The story starts when Nevada Energy (NVE) installed a ‘smart’ meter on Sarah’s bedroom wall in January without permission, or even so much as a few days’ notice.

Sarah [(not her real name) lives outside Las Vegas, Nevada] reports that she does not have any prior history of medical issues. Shortly after NV Energy installed the smart meter, she started noticing an increase in her heart rate first thing in the morning and an elevated blood pressure. She felt fatigued, and started having headaches. A low grinding sound had started when the meter was installed and this made it difficult for Sarah to sleep, or even be in her own home during the day. She tried different things to get rid of the symptoms, but nothing worked. Finally it dawned on her: the only thing which had changed in her life was the meter. When she started researching the issue, she realized she was not alone. Others were experiencing the same annoying humming grinding sound, the same adverse health impacts – and linking it to recent smart meter installations. . . .

A letter from Sarah’s doctor to NV Energy reads:

“Neurological and cardiological findings may be associated with pulsed EMF... EEG, ECG, MRI and sleep study changes may be associated in some hypersensitive individuals to pulsed EMF. If multiple Smart meters are in use in her area, the possibility of constructive and destructive interference between the various EMF signals is a distinct possibility whose effects may be potentially more dangerous. I recommend that this patient be allowed to have NVE reinstall an analog meter at her house.”

So she called the power company, expecting that they would remove the unsanctioned meter right away – or at least come out and do an analysis to find out what was causing the grinding noise. Months later, frustrated after at least six failed attempts to have NVE address the problem, Sarah finally purchased a standard analog meter and had an electrician install it at her residence. She carefully photographed and recorded the readings on the old and new meter, to be sure that she paid for every kilowatt-hour used. She attempted to return the unwanted

smart meter to NVE offices, but was turned away.

On August 6th, at about 10:30am, three men from Nevada Energy, armed with guns, arrived unannounced on her property, removed the analog meter from the socket, took her analog meter as well as the unauthorized smart meter she had removed, and left her living without electricity. One of the men identified himself as an investigator with the company and said that he was investigating her for “criminal tampering.”

She was in tears, visibly shaken by the encounter, and recalls asking the men, **“Why are you on my property with guns?” Their response: “this is procedure Ma’am.”** . . .

More than a month later, the lights are still off and Sarah hasn’t budged. “They’re not putting that thing back on my house,” she says.

We asked Angel de Fazio, who has been on the front lines working to fight NVE’s smart meter program, what is going on here? Doesn’t Nevada have an ‘opt out’ choice? Angel says “Nevada residents only won the right to be placed on the ‘delay list’, not a full ‘opt out.’” In other words, if you wised up before the installation trucks came and still have your analog, NVE has a ‘delay list’ you can sign to ‘delay’ your installation date. But if the power company managed to sneak on your property and install a smart meter – even without permission – then your choice is a smart meter or no power at all, as Sarah discovered. . . .

While awareness about smart meter problems has been greater in states like California, Maine, and several other states, the “take a smart meter or lose your power” policy remains quietly in force in other states where awareness may not be as widespread. However, people in these states (like Sarah) have had enough and are standing up to the utility industry in increasing numbers.

“NVE has conned the PUC into believing that only a certain number of people can opt out or their Federal Stimulus Grant will be in jeopardy. That is a lie,” Angel says.

NVE has been calling people on the ‘delay list’ who want to ‘opt out’ and repeatedly pressuring them to accept a smart meter. The company admitted that they lied to utility customers, telling them that the meters are federally mandated (which they are not), and telling people their power would be cut if they didn’t accept the meter (which they do not have the legal authority to do). Similar stories abound about other utilities including Southern California Edison, Detroit Edison, Duke Energy, and Oncor.

Sarah has borrowed a gas generator that she uses for an hour a day, but she’s worried that this is a fire hazard in the forest where she lives. The power cut has had a devastating effect on her life, she says. “My business has taken a nosedive since I have had

to travel into town to access my e-mails. I can’t use my computer, fax machine, or any lights. I’m cooking over a camp stove in my living room.”

– Josh Hart | Stop Smart Meters! | 9/12/12
<https://stopsmartmeters.org/2012/09/12/smart-meter-or-no-power-at-all-power-company-sends-three-armed-men-to-disconnect-power-just-for-opting-out/>

[Idaho] “Media Blackout on Idaho Power Smart Meter Incidents Involving Guns” – excerpt:

“No News is Suppressed News” by Vicky Davis — excerpts:

After OK-SAFE wrote an article titled “Smart Meter Battle Escalating – Idaho Power Brings Guns to the Fight,” I sent a link to it out to my email list. Somebody must have forwarded a link to the article to the *Times-News* newspaper in Twin Falls because a reporter called and asked me for an interview. We spent probably 15 minutes or so on the phone talking about the issue of the Smart Meter, the Smart Grid and my objections to it. We also talked about the implications of it for the future and the fact that most people have no understanding of that. . . . The reporter said she was going to talk to the Editor to see if she could write the story. That was several days ago but there has been no story. . . .

I searched the online edition of *Times-News* for articles on Smart Meters and found only this cheerleading article titled “Smarter homes in Magic Valley as energy meter overhaul reaches south-central Idaho”. Notice the quote from Idaho Power’s representative Mark Heintzelman:

“We would never force someone to use a different pay system, but late down the road we want to give the option for customers to choose to either pay for time of use or continue using the current tiered system in place now,” . . .

Of course Idaho Power would NEVER force anyone. They would just ask their buddies at the Idaho Public Utilities Commission to give them an Order to implement time of day pricing because the objective of the entire Smart Grid System is to control usage of electricity under the guise of conserving natural resources. Idaho Power has primarily hydroelectric but truth doesn’t matter. There is an agenda and they are moving forward with it up to and including bringing badges and guns to granny’s house in a show of force to prove that she can’t get away with Just Saying No.

“On August 6th, at about 10:30am, three men from Nevada Energy, armed with guns, arrived unannounced on her property, removed the analog meter from the socket, took her analog meter as well as the unauthorized smart meter she had removed, and left her living without electricity.”

– Josh Hart | Stop Smart Meters! | 9/12/12

I stopped by the Sheriff’s office today to make an appointment to talk to him about Idaho Power’s use of armed reinforcements. I didn’t get to talk to the Sheriff. I guess he’s too important to be bothered with a trivial issue of misuse of police power. I spoke with a lieutenant. He told me that they are at Idaho Power’s beck and call. Anytime Idaho Power calls for armed escort, the Sheriff’s office accommodates with no questions asked and no paperwork filed.” The rest of article is here http://www.channelingreality.com/Power/no_news_is_suppressed_news.htm

– OK-SAFE, Inc. Blog, 12/17/11
<https://oksafewordpress.com/2011/12/17/media-blackout-on-idaho-power-smart-meter-incidents-involving-guns/>

[Idaho] “Smart Meter Battle Escalating – Idaho Power Brings Guns to the Fight” – excerpt:

On Tuesday, December 13, 2011 Idaho Power showed up at Vicky Davis’ Twin Falls home with declaratory order and a Deputy Sheriff from Twin Falls County, to forceably remove the analog meter and replace it with a Smart Meter.

Davis, an independent researcher and long-time resident of Idaho, has been resisting the installation of the Smart Meter since last year, knowing that their installation was not mandated, and that technology that makes the digital meter works is dual use – serving both as a surveillance device and a reporting system.

Another Twin falls resident, Bonnie Menthe, had a similar incident at her home. She openly opposed the installation of the Smart Meter on her home, but Idaho Power installed the new meter while she was away. A neighbor watching her home challenged the Idaho Power company representative when he showed up at the Menthe home accompanied by an officer from the Twin Falls city police.

The representative told the neighbor nothing was going on and proceeded with the installation. The city police officer declined to answer the woman’s questions.

Davis received written notification of the forced installation a few days earlier. Menthe states she received no such written notice. “Nothing like that was given to me, not stuck in my door. I wasn’t home and they clearly knew that I didn’t want one. I have a notice posted on my meter stating my objection to the smart meter being installed.” Menthe went on to say, “I have a six foot fence, and the meter is on the side of my house, with a metal bar to prevent the door swinging opened. My neighbor says they (Idaho Power) had a step-stool like thing and climbed over the fence on that.”

– OK-SAFE, Inc. Blog | 12/14/11
<https://oksafewordpress.com/2011/12/14/smart-meter-battle-escalating-idaho-power-brings-guns-to-the-fight/>

IN THE U.K.

“Customers can still be hounded by suppliers over smart meters despite GDPR” – excerpts:

Customers can still be bombarded with letters advertising smart meters even if they have already rejected one despite the introduction of strict rules governing personal data.

The General Data Protection Regulation (GDPR) came into force last week and gives consumers more control over how companies use their personal information to contact them.

But those who have rejected the offer can still be harassed despite GDPR as the letters and emails are classed as “service communications” as opposed to unwanted marketing, which should be largely eliminated by the regulations.

“I spoke with a lieutenant. He told me that they are at Idaho Power’s beck and call. Anytime Idaho Power calls for armed escort, the Sheriff’s office accommodates with no questions asked and no paperwork filed.”

– Vicky Davis, OK-SAFE Inc. Blog, 12/17/11

– Sam Meadows | *The Telegraph* | 5/30/18
<https://www.telegraph.co.uk/bills-and-utilities/gas-electric/customers-can-still-hounded-suppliers-smart-meters-despite-gdpr/>

“Said no to a smart meter? Prepare for a deluge of junk mail after energy firms are given the green light to pester you” – excerpts:

. . . if a customer says they no longer wish to be contacted about smart meters, suppliers will be allowed to wait just a few months before beginning another barrage of letters, emails, calls and texts in a bid to change the person’s mind.

And in a move that will infuriate many homeowners, Ofgem said firms can continue setting up installation appointments for people without obtaining their permission. The letter said these so-called deemed appointments, which upset many *Money Mail* readers, were ‘appropriate . . . as part of a wider suite of consumer engagement tools’.

– Dan Hyde & Sara Smyth | *The Daily Mail* | 5/15/18
<https://www.ismybillfair.com/said-no-to-a-smart-meter/>

“Stop the smart meter bullying: We reveal the catalogue of dirty tricks power firms are using to force us to switch to digital meters” – excerpts:

The bullying tactics include:

- Charging people more unless they accept a smart meter;
- Setting up installation appointments for customers who haven’t requested them;
- Reneging on pledges to stop contacting customers who feel harassed;
- Giving people the impression they will face charges if they don’t accept a free meter;
- Bribing customers with £50 Amazon vouchers.

Crucially, all the major energy suppliers – British Gas, E.ON, SSE, ScottishPower, npower and EDF Energy – are under enormous pressure to install 50 million smart meters in UK homes and businesses by the end of 2020. But with two-and-a-half years to go, they can so far tick off only 11 million.

That means firms must fit 24 smart meters every minute between now and the deadline. If they fail to meet the target, power firms face swingeing fines equal to 10 per cent of their worldwide sales. In the worst cases, the penalties could exceed £7 billion.

Suppliers have been ordered by the Government to take ‘all reasonable steps’ to ensure every home has a smart meter fitted by the end of 2020. But firms say they have been issued no guidance on what ‘all reasonable steps’ means in practice. As a result, the Big Six privately admit they push the boundaries as far as they can.

– Dan Hyde | *The Daily Mail* | 4/10/18, updated 4/11/18.
This article is posted on the *This is Money* website and has 1,908 posts to the comment section (before being closed)!
<https://www.thisismoney.co.uk/money/bills/article-5600925/Stop-smart-meter-flying-tricks-power-firms-use-force-switch-digital-meters.html#comments>

SAYING “NO!” TO “SMART” METERS

Opting-out

[Iowa] “Utilities board rules against smart meter opt-out charge” – excerpts:

The Iowa Utilities Board has ruled against Alliant Energy’s proposal to charge customers for opting out of smart meters.

The decision came Wednesday after a few months of deliberating over testimony the board heard in November and December. Alliant Energy had asked the board permission to charge a monthly fee of \$15 to customers who opted out of smart meters, which transmit usage data through radio frequency. Alliant Energy had maintained that customers would not be able to retain their analog meters at all, and instead would have to use a non-transmitting digital meter if they did not want the smart meter.

The board ruled that not only must Alliant refrain from charging customers for opting out, it must allow them to keep their analog meters **until they fail or need to be replaced**.

The board has ordered Alliant to make the following changes to its proposal:

- Allow all residential customers to opt out of smart meters. However, the board is not requiring Alliant to provide an opt-out to non-residential customers or those taking the service under an optional, non-standard rate.
- Customers must be allowed to **opt out on a permanent basis**.
- Allow the **opt-out without any fee** to the customer. The board found that **meter-reading costs were already included in customers’ base rates**.
- Provide the choice of a **non-transmitting digital meter or a smart meter set to pulse only once per month** to customers who wish to opt out of Alliant’s standard smart meters.
- Use actual meter reads twice per year with estimated bills for the remaining months for customers who elect the opt-out option with an analog or non-transmitting digital meter.

The board also required Alliant to:

- Allow for an **area-wide opt-out**.
- Revise the privacy policy to **limit the selling of customer identifiable information** without customer consent within 30 days of the order.
- File a customer notice that describes the options and processes to opt-out for IUB review once the company has revised its proposed tariffs.

– Andy Hallman | *The Fairfield Ledger* | 2/7/19
Cached here:
<https://webcache.googleusercontent.com/search?q=cache:PBHoRj9Mp8oJ:https://www.filedger.com/subject/news/utilities-board-rules-against-smart-meter-opt-out-charge-20190207+&cd=1&hl=en&ct=clnk&gl=us&client=safari>

[Washington] Clallam County PUD “Opt Out Programs”:

On March 25, 2019 the Board of Commissioners voted to make revisions to the Residential Meter Policy, reducing the monthly opt-out fee, but creating two separate programs. Both programs’ costs are based on the actual costs incurred for the manual processes involved for PUD employees to manage these programs. The meter used for a customer who opts out of an advanced or remote-read meter will be a **digital meter without the remote-read component**. If requested, and available, the District will provide an electromechanical (analog) meter with a monthly upcharge (per meter) that covers the necessary periodic calibration and testing maintenance. For opt-out customers with multiple electric meters, or with both a PUD electric and water meter, the opt-out fee shall be assessed per service address, provided that the same account holder is named on all accounts. The opt-out fee(s) will be billed per the current Schedule of Deposits and Charges (costs shown below are subject to change as the Schedule of Deposits and Charges changes, and are current as of April 1, 2019). An access appointment fee of \$90.00 may be assessed if the change request is occurring outside of regular route maintenance.

– Clallam County PUD website. Accessed 4/16/19
<https://www.clallampud.net/opt-out-programs/>

[Texas] Austin Energy’s Smart Meter Opt-Out:

If you switch to an analog meter, charges will be added to your bill. These **charges are set by City Council**. They include an initial \$75 Smart Meter Opt Out Exchange Fee plus tax and a \$10 Smart Meter Opt Out Monthly Manual Read Fee.

– Austin Energy website | accessed 4/16/19
<https://austinenenergy.com/ae/residential/residential-services/smart-meters/opt-out>

[Arizona] “Smart” Meter Case Taken to Arizona Supreme Court” – excerpts:

Last month the Court of Appeals ruled against me in my appeal of the Arizona Corporation Commission’s decision regarding Arizona Public Service Company’s “smart” meters. Among other things, that “smart” meter decision allows APS to charge customers who refuse “smart” meters an extortion fee, and it completely disallows solar and commercial customers to refuse a “smart” meter when in the past they always could.

– Warren Woodward | Information & Perspective, Sedona, AZ | 1/10/19 | *Freedom’s Phoenix* <https://www.freedomsphoenix.com/Article/254335-2019-01-10-smart-meter-case-taken-to-arizona-supreme-court.htm> *Pdf of Petition for Review: <https://www.freedomsphoenix.com/Media/Media-Files/Petition-for-Review.pdf>

“ . . . I recommend that the increased energy usage that AMI opt-out customers are being charged . . . be credited against any opt-out surcharges if said surcharges are retained by the Commission. It appears likely that the amount being charged for increased energy consumption caused by the AMI Meters may involve costs which exceed the monthly opt-out surcharges.”

– William S. Bathgate [E.E., M.E.], “Direct testimony and exhibits of William S. Bathgate. On Behalf of Residential Customer Group, August 29, 2017”
<https://mi-psc.force.com/servlet/shepherd/version/download/0680000001UX3MAAW>

[Oregon] “Pacific Power backs off on opt-out fee for smart meters” – excerpts:

Pacific Power has dropped a \$137 opt-out fee for Oregonians who don't want a smart meter installed at their residence, a company representative said Wednesday.

Oregon's Public Utility Commission Tuesday in Salem approved the utility's request to drop the opt-out fee, Christina Kruger, regional business manager, told the Talent City Council, but a \$36 monthly meter-reading fee remains. Talent was among the communities that raised concerns about the smart meters and opt-out fees, with the council passing a resolution July 3 calling for fee reductions.

– Tony Boom | *Mail Tribune* | 8/16/18
<https://mailtribune.com/news/top-stories/pacific-power-drops-one-smart-meter-opt-out-fee>

[New Jersey] “New Jersey Bill Would Require Consent For Smart Meters, Undermine Federal Program” – excerpts:

TRENTON, N.J. (Feb. 21, 2018) – A bill filed in the New Jersey Assembly would require public utility districts to obtain written consent from customers before installing “smart meter” technology on homes and businesses. Passage of this bill would enable New Jersey residents to protect their own privacy, and it would take a step toward blocking a federal program in effect.

“THE STEALTH METERS: ANALOG METERS WITH HIDDEN TRANSMITTERS”

– excerpts:

Analog electrical meters sometimes transmit to the utility, just as a digital smart meter. Many people with these meters are unaware that they have a transmitter on their house, as these meters look like regular analog meters.

These “stealth meters” have been in use for well over a decade. New analog meters are probably no longer installed, but it is possible to upgrade some models by installing a transmitter.

There are meters available which transmit by wireless or by PLC, which both can cause health problems.

Keywords: wireless, electrical meter, smart meter, wired smart meter, wireless analog meter, analog smart meter, wireless electromechanical meter, power line carrier, PLC, hidden transmitter, health.

– EI Wellspring website | 2013. Read more:
<http://www.eiwellspring.org/smartmeter/StealthMeters.htm>

“DTE’s so-called opt-out meter is just a smart meter with the wireless turned off. It will hurt you nearly as much as the smart meter because of the ‘dirty electricity’ generated by the meter. If you wish to avoid the health (and privacy) problems associated with smart meters, then you must keep your analog meter.”

“... The radio-off opt-out meter still collects the same fine-grained usage data as a smart meter. The only thing that has been turned off is the radio-transmitter. None of the data-collection software has been turned off.”

– Smart Meter Education Network
<http://www.smartmetereducationnetwork.com/dirty-electricity-and-smart-meters.php>

Asm. Ronald Dancer (R-12) introduced Assembly Bill 2994 (A2994) February 8. The legislation would ensure utility customers can easily opt-out of smart meter programs.

Under the proposed law, utility companies would be required to obtain written consent customers before installing smart meters.

“An electric public utility shall not install an advanced or smart energy meter unless the electric public utility has **obtained the customer’s written consent**, as determined by the board, and has **provided the customer with a written disclosure detailing the type of data that will be transmitted from a customer’s advanced or smart energy meter to the electric public utility, how the data will be used, and any potential disclosure of the data to a third-party.**”

This bill actually goes further than most smart-meter legislation. Instead of putting the onus on the customer to opt out, the utility company must take the initiative and get express consent before installing this technology on a home or business.

– TJ Martinell | Tenth Amendment Center | Feb 21, 2018
<https://blog.tenthamentendmentcenter.com/2018/02/new-jersey-bill-would-require-consent-for-smart-meters-undermine-federal-program/>

[N. Carolina] “Landmark Decision by the NC Utilities Commission Removes Smart Meter Opt-Out Fees!” – excerpts:

“... the Commission believes it is inappropriate to require customers who maintain that they need to avoid exposure to RF emissions to the extent possible to protect their health to pay DEC’s proposed smart meter opt-out charges. Therefore, the Commission will require DEC to amend its Rider MRM to remove the customer charges for those customers who provide the Company with a notarized statement from a medical physician licensed by the North Carolina Medical Board that the customer must avoid exposure to RF emissions to the extent possible to protect their health. Upon receipt of such statement, the Company shall waive both the one-time and the monthly fees under Rider MRM. The Commission further requires that such medical statements must be handled and processed by the Company in a secure and confidential manner to protect customer privacy.”

<https://starwl.ncuc.net/NCUC/ViewFile.aspx?Id=412f8225-7c72-4917-9364-25a8a4da9e12>

– Raleigh ES | 6/22/18 <https://raleighes.info/smart-meters>

[New York, Kentucky, New Mexico] “Environmentalist sues to block smart meters” – excerpts:

Deborah Kopald, of Highlands [New York], recently filed suit in state Supreme Court in Albany County against the utility and the PSC [NY Public Service Commission], an

Albany-based state utility regulator that approved Orange & Rockland's smart meter rollout plan.

Kopald argues the PSC didn't adequately consider the forced obsolescence of working meters; exposure to potential cyber threats from hackers; health concerns; and privacy and up-charging worries from the mass collection of energy use data.

— • —

The utility's workers are currently upgrading the technology for roughly 113,000 electric meters and 42,500 gas modules across Orange and Sullivan counties, adding **digital meters** that use a low-level **radio frequency to transmit energy consumption** for customer billing and online monitoring.

O&R began rolling out smart meters in Orange County in August, and it will begin installing them in Sullivan County in May 2019 and in Rockland County in August 2019.

Also at issue in Kopald's lawsuit are the **opt-out fees** the PSC allowed O&R to charge. Ulster County activists succeeded in getting the commission to require Central Hudson Gas & Electric to **not charge an opt-out fee**.

But O&R is charging customers who opt out of smart meters \$10 per month for electric or gas service or \$15 per month for both. And customers who opt out after smart meter installation are subject to one-time fees of \$45 per electric meter, \$55 per gas meter, or \$90 for both services.

— • —

CALIFORNIA PUBLIC UTILITIES COMMISSION HEARING

(Santa Rosa, CA; 12/18/12)
— former meter reader testifies:

When I started working at PG&E, the annual budget for meter reading was 70 million dollars for roughly a thousand meter readers. My supervisor who was my best friend at the time told me this.

The Public Utility Commission and PG&E continually lie to the customers, saying it's a 2.2 billion dollar system. When the Public Utility Commission and PG&E were questioned by a law firm suing over smart meters, they admitted to a 10 billion dollar system. PG&E tells its own employees it is a 10 billion dollar system. That makes this illegal because it is a crime of fraud against the consumers of California.

When you divide the annual cost of meter reading into the 10 billion dollars, this system never ever comes close to breaking even. You cannot allow PG&E to charge extra for a meter reader to come read a customer's meter when they [the human meter readers] already do it infinitely cheaper. I would also like to point out that nobody else in PG&E does surveys through the gas department but the meter readers.

— Pat Wrigley's testimony in video posted under "PG&E knows 'smart meters' catch fire"... published on 3/7/13
<https://www.youtube.com/watch?v=EnxIoltNUek&feature=youtu.be>

Opponents point to rulings by **Kentucky** and **New Mexico** regulators, who rejected smart meters, and ruled **utilities did not prove the meters' potential benefits outweighed their costs**.

— Daniel Axelrod | *Times Herald-Record* | 10/19/18 <https://www.recordonline.com/news/20181019/environmentalist-sues-to-block-smart-meters>

[Tennessee] "Tennessee Bill Would Allow Customers to Opt Out of Smart Meters, . . ."— excerpts:

A bill introduced in the Tennessee Senate would allow customers to opt out of installing "smart meter" technology on their homes and businesses **without penalty**. Passage of this bill would enable Tennesseans to protect their own privacy, and it would take a step toward blocking a federal program in effect.

Sen. Mark Green (R-Clarksville) introduced Senate Bill 1679 (SB1679) on Jan. 18. The legislation would ensure utility customers can easily opt-out of smart meter programs.

Smart meters monitor home energy usage in minute detail in real time. The devices transmit data to the utility company where it gets stored in databases. Anybody with access to the data can download it for analysts. Without specific criteria limiting access to the data, these devices create significant privacy issues. Smart meters can also be used to **remotely limit power usage during peak hours**.

SB1679 would prohibit utilities from installing a smart meter on a home or business without the customer's written and signed consent. It would also prohibit utilities from punishing customers who refuse to install smart meters by discontinuing service or charging a fee. Under the proposed law, utilities could not charge a customer for removing an existing smart meter.

— • —

The federal government serves as a major source of funding for smart meters. A 2009 program through the U.S. Department of Energy distributed \$4.5 billion for smart grid technology. The initial projects were expected to fund the installation of 1.8 million smart meters over three years.

The federal government lacks any constitutional authority to fund smart grid technology. **The easiest way to nullify such programs is to simply not participate**. SB1679 would make that possible. **If enough states pass similar legislation, and enough people opt out, the program will go nowhere**.

— Mike Maharrey | Tenth Amendment Center | 1/23/18
<https://blog.tenthamentendmentcenter.com/2018/01/tennessee-bill-would-allow-customers-to-opt-out-of-smart-meters-undermine-federal-program/>

[Pennsylvania] "FOX43 Finds Out: Smart meter controversy"— excerpts:

The smart meter roll out is happening across central Pennsylvania right now . . .

— • —

Under Act 129 most power companies in Pennsylvania need to install the smart meters on homes and businesses by 2023.

— • —

There is legislation in Pennsylvania right now that could change the no opt out rule.

Representative Mike Reese out of western PA has introduced a few bills in the State House Consumer Affairs Committee to either repeal the mandate or at least give a chance for people to say no.

– Jackie de Tore | FOX43 | 6/21/17, updated 6/22/17
<https://fox43.com/2017/06/21/smart-meter-controversy/>

[USA] Opting-Out of Smart Meters

Many states have enacted legislation or policies supporting the installation of smart meters. However, at least 21 states have programs that allow consumers to opt-out of smart meter installation. While the general approach to opt-out programs varies, there are some trends. For example, many states have approved opt-out fees to cover the costs of manually reading the meter every month. However, a few exceptions do exist and there have been a number of bills introduced in state legislatures that seek to ban this type of opt-out fee. And while most states require a customer to request an opt-out, New Hampshire is the only state that requires that customers opt in. Utilities in the state must receive written consent prior to installing smart meters. Several states have considered bills in 2017 including Kentucky's S.B. 121, which would have required utilities seeking to install smart meters to offer advance notice and the option to opt out to customers. Missouri also considered H.B. 1033, which would have also included a one-time fee not to exceed \$100.

– *Plugged In* | NCSL'S State and Federal Energy Newsletter 8/29/2017 Vol. 5: Issue 3 | August 2017
<http://www.ncsl.org/research/energy/plugged-in-ncsl-s-state-and-federal-energy-newsletter636391761.aspx>

[Arizona] “The opposition to smart meters in Arizona – An insider’s view of the Arizona smart meter opposition, 2011-2015” The EI Wellspring website | July 2015

<http://www.eiwellspring.org/smartmeter/ArizonaSmartMeterStory.htm>

[CANADA] “More Than 110 Municipalities in Quebec Are Now Opposed to ‘Smart’ Meter Deployment” – excerpts:

To date, over one hundred municipalities (111 as of August 26, 2014), representing more than two million Quebecers have called for a moratorium on their [smart meter] deployment and/or a free opt-out. Considered to be exorbitant, unfair and punitive damages (\$17 per month plus \$98 initially), the fees for a “non communicating” meter (with no radio-frequency transmitter) are only intended to deter customers from opting-out. That didn’t stop more than 5600 households to do so, as of May 1st. And that’s not counting the tens of thousands who managed to prevent installers from taking away their old and safe electromechanical meters, which are apparently three times more durable than those fragile “smart” meters, that will need to be replaced every 15 years.

“To date, over one hundred municipalities (111 as of August 26, 2014), representing more than two million Quebecers have called for a moratorium on their [smart meter] deployment and/or a free opt-out. Considered to be exorbitant, unfair and punitive damages (\$17 per month plus \$98 initially), the fees for a ‘non communicating’ meter (with no radiofrequency transmitter) are only intended to deter customers from opting-out.”

– Jean Hudon, Electronic Silent Spring, 9/5/14

– Jean Hudon | Electronic Silent Spring | 9/5/14
<http://www.electronicssilentpring.com/primers/smart-meters/municipalities-quebec-opposed-smart-meter-deployment/>

[Arizona] “APS smart-meter fees rescinded” – excerpts:

Opponents of smart utility meters won a small victory this week when regulators reversed their December decision to allow Arizona Public Service Co. to charge its customers \$50 when they don’t want a wireless meter on their homes.

... About 20,000 APS customers refused to change out their old meters, which require an APS employee to read them manually before billing the customer.

The Arizona Corporation Commission voted in December to allow APS to begin charging a \$50 set-up fee for customers who want their smart meter replaced with a regular meter, plus \$5 a month. They decided the 20,000 who never changed their meter didn’t have to pay

the set-up fee.

APS initially asked the commission to charge those who want regular meters \$75 as a set-up fee plus \$30 a month, later reduced to \$21 a month. . . .

– Ryan Randazzo | *The Republic* | azcentral.com | 4/16/15
<https://www.azcentral.com/story/money/business/2015/04/17/smart-meter-fees-rescinded/25917927/>

[Arizona] “TEP’s new fee for old school electric meters unfair, critics say” – excerpts:

Tucson Electric Power customers who have opted out of using digital electric meters . . . are up in arms over a new fee being imposed, calling it unfair and excessive.

The new fee, as well as a \$38 one-time setup fee, applies to about 1,000 TEP customers who have asked to keep the older meters . . .

The new meter opt-out fee was approved, along with a one-time \$38 setup fee, by the **Arizona Corporation Commission** as part of its TEP rate decision in February. Customers were notified in early March.

Customers of UNS Electric, a sister company to TEP that serves Santa Cruz and Mohave counties, also are charged \$26 monthly for opting out of automated meters.

TEP has eliminated an option for customers without automated meters to self-read their own meters, . . .

A local activist who has complained to TEP about the fees said it’s unfair to charge people to avoid something that is potentially hazardous to their health.

Nationally, at least 15 states allow customers to opt out of smart meters, either at no additional charge or with monthly fees generally ranging from about \$5 to \$28, with most

under \$20 and one, Portland General Electric, charging \$45 a month.

TEP first asked for meter opt-out fees in 2013, seeking a \$20 setup fee and \$10 monthly fees for customers who opted out, with a \$5 self-reading discount.

The [Arizona] Corporation Commission balked at approving the fees and instead held statewide proceedings on the safety, health and privacy issues surrounding smart meters, asking the state Department of Health Services to study the issue.

In 2015 the Corporation Commission voted to rescind its decision to allow Arizona Public Service Co. to charge smart-meter opt-out fees of \$50 per setup and \$5 monthly, citing potential legal issues and pushing the issue to a full rate case. APS initially had sought monthly fees of \$30.

Some local ratepayers have no options. Trico Electric Cooperative, which serves rural areas of Pima, Pinal, and Santa Cruz counties, does not allow members to opt out of using its automated-reading meters.

The Salt River Project, a self-governed water and electric utility serving the Phoenix area, adopted smart meters early on and since 2011 has been charging customers \$20 a month to opt out, with no initial setup charge.

“It’s a lot of money and if you’re low-income or fixed-income, or you prefer to live in a low-tech way, to spend more than \$300 a year just to have a meter that doesn’t harm you to me seems exorbitant,” said Elizabeth Kelley, a TEP customer who heads the non-profit Electromagnetic Safety Alliance.

The \$26 monthly charge was included in proposed rate schedules filed by TEP and supported in written testimony by an expert for the Corporation Commission’s utilities staff, though he recommended a reduced initial setup fee that was adopted.

The state **Residential Utility Consumer Office**, which advocates for ratepayers, **did not object to the monthly fee.**

“But it should be in line with their **actual cost of service**,” said Fuentes, noting that the agency backs the APS settlement with lower fees. Fuentes said **RUCO will monitor complaints about the meter fee** and possibly revisit the issue.

Normally the Corporation Commission would have to agree to formally rehear the rate decision to make changes, which is rare.

But the rate-design part of TEP’s rate

“Customer also asks why he should pay fees to opt out (which according to PEPCO are for meter readers) when 70% of his bills last year were estimated.”

— Maryland Smart Meter Awareness, 2/10/15
<https://marylandsmartmeterawareness.org/smart-meter-news/sample-of-maryland-psc-smart-meter-complaints-2014>

“Some local ratepayers have no options. Trico Electric Cooperative, which serves [Arizona’s] rural areas of Pima, Pinal, and Santa Cruz counties, does not allow members to opt out of using its automated-reading meters.”

— David Wichner, *Arizona Daily Star*, 4/1/17

decision technically was kept open for 18 months in case adjustments are needed as TEP moves into second-phase rate proceedings to address the treatment of customers with rooftop solar.

While the federal government has encouraged smart-meter deployment . . . and has even funded such deployments, state smart-meter policies vary widely.

Pennsylvania requires electric customers to use smart meters; at the other end of the spectrum, **New Hampshire** requires customers’ written consent to install a smart meter.

More than 50 local governments in **California** moved to ban smart meters, though the legality of those moves is disputed.

— David Wichner | *Arizona Daily Star* | 4/1/17
https://tucson.com/business/tucson/tep-s-new-fee-for-old-school-electric-meters-unfair/article_bc004ce5-64f6-5031-a684-26acc5e7dec3.html

[Arizona] “State settles ‘smart’ meter debate” – excerpts:

About 20,000 APS customers have refused to allow the company to install smart meters on their homes. More than 1.1 million have been installed since the company began phasing out analog meters in 2006.

APS last year proposed an opt-out fee of \$75 up front, plus \$30 a month, for customers who prefer to keep their old meters.

But as the number of people who refused the meters increased from about 5,000 to about 20,000, the company recalculated that it would cost about \$20 a month to serve those customers with traditional meter readers, thanks to the economy of scale and the fact most of those opposing the meters are clustered in Prescott, Sedona and a few other rural locations.

SRP [Salt River Project] officials in November 2011 voted to charge customers \$20 a month to opt out of using a smart meter, with no initial setup charge. SRP, a government-owned utility, has its own board of directors and is not regulated by the Corporation Commission.

Commission Chairman Bob Stump and Commissioner Brenda Burns both suggested a fee of \$5 a month would be more appropriate. Commissioner Susan Bitter Smith suggested \$20 a month.

Sedona City Councilman Jon Thompson said there should be no opt out fee. About 1,600 Sedona residents refuse the meters. “Sixteen-hundred is a big number for us,” he said. “It should be for APS and this commission as well.”

— Ryan Randazzo | *The Republic* | 12/12/14, updated 12/19/14
<https://www.azcentral.com/story/money/business/2014/12/12/state-settles-smart-meter-debate/20343257/>

[Vermont] “Vermont Legislature Adopts Free Smart Meter Opt-Out” – excerpts:

Last week the State Legislators of Vermont voted to allow utility customers a no fee Smart Meter opt-out! Specifically, the bill says that customers must be allowed “to choose not to have a wireless smart meter installed, at no additional monthly or other charge”.

*From the proposed House of Representatives bill:

Sec. 15. 30 V.S.A. § 2811 SMART METERS; CUSTOMER RIGHTS; REPORTS (b) Customer rights. Notwithstanding any law, order, or agreement to the contrary, an electric company may install a wireless smart meter on a customer’s premises, provided the company:

- (1) provides prior written notice to the customer indicating that the meter will use radio or other wireless means for two-way communication between the meter and the company and informing the customer of his or her rights under subdivisions (2) and (3) of this subsection;
- (2) allows a customer to choose not to have a wireless smart meter installed, at no additional monthly or other charge; and
- (3) allows a customer to require removal of a previously installed wireless smart meter for any reason and at an agreed-upon time, without incurring any charge for such removal.

The legislation also calls for future reports related to smart

... State Legislators of Vermont voted to allow utility customers a no fee Smart Meter opt-out!

Specifically, the bill says that customers must be allowed “to choose not to have a wireless smart meter installed, at no additional monthly or other charge.”

– EMF Safety Network | 5/7/12

meters to be submitted on: cost-savings associated with smart meters; whether any security breaches occurred because of the wireless technology; and the health effects of smart meters.

– EMF Safety Network | 5/7/12
<http://emfsafetynetwork.org/vermont-legislature-bans-smart-meter-opt-out-fees/>

[Michigan] “In the matter of the application and request of the DETROIT EDISON COMPANY seeking approval and authority to implement its proposed Advanced Metering Infrastructure opt out program” – document contains:

EXHIBIT ONE

2012 statement of David O. Carpenter, M.D. and 45 other scientists and health professionals concerning hazards of radiation from ‘smart meters’
Institute for Health and the Environment
State University of New York at Albany

EXHIBIT TWO

Testimony of Dr. David O. Carpenter
Concerning health effects of WiFi System in Portland, Oregon Public Schools
Testimony given under oath December 20th, 2011
In the United States District Court
District of Oregon, Portland Division

– Case No U-15768, Before the Michigan Public Service Commission, State of Michigan
<https://ehtrust.org/wp-content/uploads/testimony-of-dr-david-carpenter-with-exhibits.pdf> Also: <http://www.wirelesswatchblog.org/wp-content/uploads/2001/11/Amended-Declaration-of-Dr-David-Carpenter.pdf>

SMART METER OPT-OUT POLICIES

Global smart grid plans require *every* residence and business to be hooked up to smart meters for water, gas, and electricity. If customers are given a choice, there are usually fees to “opt-out.” These are unnecessary, punitive, and coercive actions.

Smart meter opt-out policies vary from state-to-state and even within a state among different utility providers (depending upon who has the regulatory authority and whether or not they support smart grid policies). Below are two resources with more information:

50 STATE SMART METER OPT OUT CHART

This chart is up to date as of August 1, 2018, using information that is publicly available on the internet. See the chart: <https://www.ehs.group/smart-meter-opt-out-chart.php> Excerpts:

Background:

1. Smart meter opt outs take three general forms:

- a. State **legislation** mandating smart meter opt outs.
- b. State **public utility commission regulations** mandating smart meter opt outs.
- c. State **public utility commission orders** approving

opt outs and opt out tariffs for different utilities in their smart meter filings.

2. For several states that are new to smart meter deployment, we were unable to find state mandates, public utility regulations or tariffs regarding opt out filings, so we left those states blank, because we could find no references to smart meter opt out or to mandatory smart meter deployment for residential households.
3. If we were able to find at least one utility in the state which permits smart meter opt outs, we listed that state as a “YES”, because obviously, there is at least the possibility of opting out of smart meter deployment in that state.
4. All cited authorities in this chart are compiled and available in full format ...

SMART METER OPT OUT CHART WITH FEES

“[A]llows you to compare the Smart Meter Opt Outs FEES in Canada and the USA.” More here from the website for the Coalition to Stop Smart Meters in BC (British Columbia):

– Version 2019 Jan 10 <http://www.stopsmartmetersbc.com/metersgrid/smart-meter-opt-out-options-and-fees/> Download pdf: <http://www.stopsmartmetersbc.com/wp-content/uploads/OPT-OUT-FEES.pdf>

SAYING “NO!” TO “SMART” METERS

Filing complaints

FIND THE REGULATORY AUTHORITY

Utility regulation can be under different jurisdictions. So you first have to find the appropriate authority to contact. In Arizona for example, the Arizona Corporation Commission says it “is the regulatory authority with jurisdiction over **private and investor owned** utilities. **Municipal systems** (“City of”) are regulated by the **city or town council** and do not fall under our jurisdiction. The Salt River Project [SRP*] is also outside our jurisdiction.” <https://www.azcc.gov/utilities/electric/electric-faqs>

*SRP says it is “a community-based not-for-profit water and energy company” and is governed by officials elected to the Association’s Board of Governors and the District’s Board of Directors. <https://www.srpn.com/about/facts.aspx>

In “Electricity Explained” (8/31/18), the U.S. Energy Information Administration (EIA) says:

The retail structure of the electricity industry **varies from region to region**. The company selling you power may be a not-for-profit **municipal electric utility**; an **electric cooperative owned by its members**; a **private, for-profit electric utility owned by stockholders** (often called an investor-owned utility); or in some states, you may purchase electricity through a **power marketer**. A few federally owned power authorities – including the Bonneville Power Administration and the Tennessee Valley Authority, among others – also generate, buy, sell, and distribute power. Local electric utilities operate the distribution system that connects consumers with the grid regardless of the source of the electricity.”

https://www.eia.gov/energyexplained/print.php?page=electricity_delivery

The American Council for an Energy-Efficient Economy (ACEEE) “Utility Regulation and Policy” explains:

Investor-owned utilities (private companies with ownership shares held by stockholders) serve the majority of electricity and natural gas customers in the United States. These utilities are primarily regulated at the state level, where public service commissions (PSCs) are responsible for overseeing and authorizing investment decisions, operations and customer rates.

Publicly-owned utilities – which include rural electric cooperatives, municipal utilities and federal or state power authorities – are not generally regulated by state public service commissions. They are overseen by a variety of somewhat comparable organizations such as coop boards, municipal governments or federal regulators.

State regulators of investor-owned utilities (and their counterparts for publicly-owned utilities) are clearly in positions where their decisions and policies strongly influence utility investments and operations. They have a prominent role in establishing regulations and policies that support the establishment and implementation of utility-sector energy efficiency programs. **PSCs in some states pioneered regulations and policies that led to the development and practice of utility “demand-side management,”** which includes customer energy efficiency programs.

<https://aceee.org/topics/utility-regulation-and-policy>

“Electricity regulation in the United States: overview”

by Kenneth L Wiseman, Mark F Sundback, Bill Rappolt and Andrew P Mina, Sheppard Mullin LLP.

Law stated as at 01 Mar 2018 • USA (National/Federal) – Westlaw [https://content.next.westlaw.com/Document/Ieb49d7b91cb511e38578f7ccc38dcbec/View/Full-Text.html?contextData=\(sc.Default\)&transitionType=Default&firstPage=true&bhcp=1](https://content.next.westlaw.com/Document/Ieb49d7b91cb511e38578f7ccc38dcbec/View/Full-Text.html?contextData=(sc.Default)&transitionType=Default&firstPage=true&bhcp=1)

WHAT CAN BE ACCOMPLISHED?

Examples:

[Arizona] “Arizona bans power shutoffs until Oct. 15 after death of Sun City West woman” – excerpts:

Arizonans who are late on their utility bills this summer can’t be shut off from power until Oct. 15 under an emergency rule passed by regulators Thursday that takes effect immediately.

The emergency rule making was passed following news that a 72-year-old Sun City West woman died last year after Arizona Public Service Co. cut her power because she was behind on payments.

The emergency moratorium on utility shutoffs will protect customers while the Corporation Commission takes a deeper dive into the issue. The commission will accept public comment on shutoff rules for utilities and eventually pass a new policy on when companies are allowed to disconnect customers.

The commission’s emergency rule affects all regulated electric utilities in the state.

Salt River Project, which is not regulated by the Corporation Commission, is not making any changes.

The commission staff proposed the emergency rule at the request of Chairman Robert Burns.

– Ryan Randazzo | *Arizona Republic* | 6/20/19

<https://www.azcentral.com/story/money/business/energy/2019/06/20/arizona-corporation-commission-bans-electricity-shutoffs-summer/1505457001/>

[Missouri] “Independence, Missouri cancels AMI contracts, prohibits Smart Meter installations” – excerpts:

On June 3 [2019], the City Council of Independence, Missouri passed an ordinance prohibiting the installation of AMI/Smart Meters anywhere in the city and voiding all city AMI contracts.

“The City of Independence including the Mayor, City Council, City Manager, City Employees, and or anyone on their behalf shall be prohibited from installing AMI, also known as Smart meters at any location within the city limits of Independence or on any customer of municipally owned utility known as Independence Power and Light, and shall be prohibited from entering into a contract with any entity for the purposes of installing AMI, also known as Smart meters at any location within the city limits of Independence or on any customer of municipally owned utility known as Independence Power and Light. Furthermore, Non-ordinance action Item number 2, defeated on 03-18-2019, and passed by city council on 04/01/2019 authorizing “Council action is requested to authorize the City Manager to enter into a contract with Core & Main for Advanced Metering Infrastructure (AMI) for the Water, Water Pollution Control, and Power & Light Departments”, shall be voided and any contracts entered as a result of non-ordinance action item number 2 shall be canceled.”

This ordinance will expire after one year, and residents will have to create a permanent ban within that time.

This has been a long, expensive, and strange road. Independence has studied AMI since 2015, with many residents opposed to Smart Meters. In March, the city council voted on proposals by two AMI companies – Core & Main and Honeywell – but neither could not get a majority vote for approval.

Residents thought the issue was dead, but, at the April 1 city council meeting, councilman Curt Dougherty abruptly made a motion to approve the Core & Main AMI contract, even though it was not on the agenda. The motion was immediately seconded by Councilman Roberson. The mayor called for a vote, and in a virtually empty city council chambers, the motion passed 4-3, with Mayor Weir and Councilman Perkins also voting Aye.

Residents were outraged and immediately organized an initiative referendum as well as a recall campaign against Mayor Eileen Weir. At the next regular city council meeting, residents packed the chambers carrying signs and flip-flops, saying this was the flip-flop council.

The initiative referendum required 3000 signatures to qualify for the ballot. When all the petitions were handed in, the Election Board certified 5035 signatures.

The city council discussed the expense of putting this to a community vote. **Under the city charter, they were required to either do this or adopt the language of the initiative as an ordinance.**

On June 3, the city council adopted the initiative language prohibiting Smart Meters and voiding the AMI contract on a 6-1 vote, with Curt Dougherty the only opposing vote.

Councilman Dougherty did not recuse himself throughout this saga, despite a conflict of interest: Dougherty's employer had the Honeywell contract for Smart Meter installation.

...
— Smart Meter Harm | Posted 6/14/19 by admin
<https://smartmeterharm.org/2019/06/14/independence-missouri-cancels-ami-contracts-prohibits-smart-meter-installations/>

CONNECT WITH OTHERS

Stop Smart Meters! has a **Local Group Directory** that contains “a list of individuals and organizations working to oppose ‘smart’ meters and raise awareness of wireless health impacts around the world. These groups are listed to facilitate networking and lobbying.” “We do not know all of these groups personally, so please use your own judgment about joining.” “We are a growing movement, thanks to you! If you can’t find your area on this list – we can help you start your own group where you live. . . .”

<https://stopsmartmeters.org/frequently-asked-questions/contacts-database/>

Customer Judith Hill wanted to know where the rate increase would show up on her bill, which she said includes 18 “add-ons,” such as “energy efficiency program cost,” “resource adequacy rider,” “phase IN adjustment rider,” “environmental cost rider,” and “fuel adjustment,” none of which she understands.

In its July edition, the non-profit Consumer Reports organization says such fees are becoming more common, making it difficult to try to save money on your gas or electricity bill by being more energy efficient.

“... your best option is to demand that your public service commission reject utilities’ proposed fee hikes,” the organization recommended. “Do that by contacting the commission in your state, signing a petition, or attending a public hearing.”

— Seth Slabaugh, “I&M customers voice opposition to smart meters”, *Muncie Star Press*, 7/16/19
<https://www.thestarpress.com/story/news/local/2019/07/16/i-m-customers-voice-opposition-smart-meters/1743646001/>

[Iowa] “Iowa Utilities Board Says No to Alliant’s Opt-Out Fees for Smart Meters” – excerpts:

The Iowa Utilities Board has struck down a plan from Alliant Energy to charge customers who opt-out of having a “smart-meter” installed.

The board says Alliant energy and its parent company Interstate Power & Light cannot charge a \$15 per month fee for customers who opt out of having the new meters installed on their home. Alliant began installing the meters in 2017, with a goal of replacing more than 500K electric and around 250K gas meters with “smart” or intelligent meters which would remotely send the readings for billing purposes.

The board says this decision will not stop Alliant from seeking the opt-out fee in the future, but it would have to go before the board for approval.

— David Hightower | KBUR | 2/6/19
<https://www.kbur.com/2019/02/06/iowa-utilities-board-says-no-to-alliants-opt-out-fees-for-smart-meters/>

[Arizona] “APS Faces Investigation in Arizona Following Complaints of Increased Electricity Bills” – excerpt:

The Arizona Corporation Commission on Jan. 9 opened a docket to conduct a regulatory audit and a rate review of Arizona Public Service Company after the agency received complaints of large bill

increases from the utility’s electric customers. The commission said that the **significant number of complaints** indicate inadequate customer outreach efforts after the recent rate increase and that the **utility might be making profits beyond what was authorized.**

— Enerknol | 1/12/19
<https://enerknol.com/aps-faces-investigation-in-arizona-following-complaints-of-increased-electricity-bills/>

[Oklahoma] “Claremore City Council approves financial audit amid resident petition drive” – excerpts:

The City Council unanimously approved a resolution Monday evening requesting the state auditor’s office review potential financial issues brought forth in a citizen petition.

City Manager Jim Thomas, during a news conference, said the audit would cover all issues referenced in the citizen petition. The latest iteration of the petition . . . includes:

- “Possible misappropriation of utility revenue” and “purported excessive residential rates”;
- “Possible misuse, mismanagement and/or waste of” funds in constructing a new water treatment plant;
- Review the city manager’s contract, compensation and benefits to verify “appropriate use as legitimate city expenditure.”

— Corey Jones | *Tulsa World* | 8/6/18
https://www.tulsaworld.com/communities/claremore/news/claremore-city-council-approves-financial-audit-amid-resident-petition-drive/article_e6c3118e-2983-5142-ac8e-9e975ceb3e83.html

[S. Carolina] “South Carolina lawmakers seek review of SCE&G gas fee” – excerpts:

Aiken legislators want the state agency that regulates South Carolina Electric and Gas to review the private utility’s weather normalization adjustment, or WNA, a controversial fee that’s sparking dozens of complaints about surging energy bills.

In a letter to the S.C. Office of Regulatory Staff, Aiken County delegation members asked for a review of the WNA fee to determine if SCE&G customers are being over-charged, as well as if the fee is still necessary.

As of Monday, there have been 87 WNA complaints filed with the Office of Regulatory Staff, or ORS, said Dukes Scott, the agency’s executive director.

SCE&G used to impose a similar WNA fee on electric bills, but the fee was discontinued in 2013 following protest from the AARP and other South Carolina consumers.

The delegation’s interest in SCE&G also comes following a SCANA report that said **annual earnings surged by \$46 million in 2016. Earnings gained by \$18 million in the fourth quarter alone**, according to a news release.

— Michael Smith | *Aiken Standard* | 2/28/17
https://www.aikenstandard.com/news/south-carolina-lawmakers-seek-review-of-sce-g-gas-fee/article_21070526-fdbc-11e6-95b8-077d34f25177.html

[Nevada] “Nevada orders investigation into NV Energy smart meter fires” – excerpts:

- The Nevada Public Utilities Commission has directed NV Energy to hire an independent consultant to conduct safety tests on smart meters, following concerns they may present a fire hazard.
- In a letter to the utility, PUC staff asked for confirmation that each of the “consumed meters” — the 77 that caught on fire – failed to send a high temperature alarm. NV Energy says it cannot determine the cause of 20 of the 77 meter fires.
- Safety officials in Reno and Sparks, Nev., last year petitioned regulators to investigate meters following nine fires which may have been linked to residential meters.

Nevada’s investigation into the safety of smart meters appears to be focusing on the meters’ failure to send a high temperature alarm. The state opened an inquiry into the meters following a series of fires last year, . . .

The *Reno Gazette-Journal* reports that NV Energy no longer responds to high temperature warnings because they can be improperly triggered by direct sunlight.

There have been 1.1 million smart meters installed in NV Energy’s service territory since 2011, and of those the utility has reported 77 of those meters “consumed,” which means the casing on the meters was either melted or breached.

In the Feb. 3 letter to NV Energy, staff directed the company to hire Underwriters Laboratory to conduct third-party testing on the meters.

— Robert Walton | *Utility Dive* | 2/10/15 <https://www.utilitydive.com/news/nevada-orders-investigation-into-nv-energy-smart-meter-fires/362478/>

CONTACT STATE UTILITY COMMISSIONS

The following contact information was current as of August 9, 2019

Alabama Public Service Commission

100 N. Union St., Ste. 850, Montgomery, AL 36104
(334) 242-5218 <http://www.psc.Alabama.gov>
Online Complaint Form:

<http://www.psc.state.al.us/Complaints/ComplaintForm.htm>

Regulatory Commission of Alaska

701 West 8th Ave., Ste. 300, Anchorage, AK 99501-3469
(907) 276-6222 <http://rca.alaska.gov>

Complaints:

<https://rca.alaska.gov/RCAWeb/ForConsumers/InformalComplaints.aspx>

Arizona Corporation Commission

1200 West Washington St., Phoenix, AZ 85007-2996
(602) 542-3026 <http://www.azcc.gov>

Utilities Division - Consumer Services:

<https://www.azcc.gov/utilities/consumer-services>

Complaint Form: <https://eservice.azcc.gov/Utilities/Complaint>

Arkansas Public Service Commission

1000 Center St., Little Rock, AR 72201-4314
(501) 682-2051 <http://www.arkansas.gov/psc>

Consumer complaints: <http://www.apscservices.info/complaint.asp>

California Public Utilities Commission

California State Bldg., 505 Van Ness Ave.,
San Francisco, CA 94102-3298

(415) 703-2782 <http://www.cpuc.ca.gov>

File a complaint: <https://consumers.cpuc.ca.gov/complaint/>

Colorado Public Utilities Commission

1560 Broadway, Ste. 250, Denver, CO 80202

(303) 894-2000 www.colorado.gov/pacific/dora/puc

File a Complaint or a Comment:

<https://www.colorado.gov/pacific/dora/complaint-comment>

Connecticut Public Utilities Regulatory Authority

10 Franklin Sq., New Britain, CT 60510

(860) 827-1553 <http://www.ct.gov/pura>

PURA Inquiry or Complaint Form:

<http://www.dpuc.state.ct.us/PURACAIU.NSF/RevWebIntake?OpenForm>

Delaware Public Service Commission

861 Silver Lake Blvd., Cannon Bldg., Dover, DE 19904

(302) 736-7500 <http://depssc.delaware.gov>

Formal Complaint Process:

<https://depssc.delaware.gov/formal-complaint-process/>

Public Service Commission of the District of Columbia

1325 G St., N.W., Ste. 800,

Washington, DC 20005

(202) 626-5100 <http://www.dcpssc.org>

Utility Consumer Complaints, Mediation and Inquiries:

<https://dcpssc.org/Consumers-Corner/Utility-Bills-Complaints-and-Service-Providers/Utility-Consumer-Complaints-Mediation-Inquiries.aspx>

Florida Public Service Commission

2540 Shumard Oak Blvd., Gerald Gunter Bldg.,
Tallahassee, FL 32399

(800) 342-3552 <http://www.psc.state.fl.us>

File complaint: <http://www.psc.state.fl.us>

Georgia Public Service Commission

244 Washington St., Atlanta, GA 30334
(404) 656-4501 <http://www.psc.state.ga.us>
File complaint: <http://www.psc.state.ga.us/contactinfo.asp>

Hawaii Public Utilities Commission

465 South King St., Kekuanao'a Bldg.,
Honolulu, HI 96813
(808) 586-2020 <http://puc.hawaii.gov>
Filing complaints: <http://puc.hawaii.gov/filing/complaint/>

Idaho Public Utilities Commission

472 West Washington St., PO Box 83720,
Boise, ID 83720-0074
(208) 334-0300 <http://www.puc.idaho.gov>
File complaint:
<https://www.puc.idaho.gov/forms/consumerassistance.aspx>

Illinois Commerce Commission

160 N. LaSalle St., Ste. C-800,
Chicago, IL 60601
(312) 814-2850 <http://www.icc.illinois.gov>
Resolving Consumer Complaints:
<https://www.icc.illinois.gov/complaints/>

Indiana Utility Regulatory Commission

PNC Center, 101 West Washington St.,
Indianapolis, IN 46204
(317) 232-2701 <http://www.in.gov/iurc>
How to file complaint:
<https://www.in.gov/oucc/2452.htm>

Iowa Utilities Board

1375 E. Court Ave., Rm 69, Des Moines, IA 50319-0069
(515) 725-7300 <https://iub.iowa.gov>
Utility Complaints or Inquiries:
<https://iub.iowa.gov/utility-complaints-or-inquiries>

Kansas Corporation Commission

1500 S.W. Arrowhead Rd., Topeka, KS 66604
(785) 271-3100 <http://www.kcc.ks.gov>
File complaint:
<http://www.kcc.state.ks.us/file-a-complaint/file-a-utility-complaint>

Kentucky Public Service Commission

211 Sower Blvd., Frankfort, KY 40601
(502) 782-2553 <http://psc.ky.gov>
Problems with your Utility Service?:
<https://psc.ky.gov/Home/Complaints>

Louisiana Public Service Commission

PO Box 91154, 602 North Fifth St.,
Baton Rouge, LA 70821-9154
(225) 342-4999 <http://www.lpsc.louisiana.gov/>
Submitting a complaint:
<http://www.lpsc.louisiana.gov/complaints.aspx>

Maine Public Utilities Commission

18 State House Station,
Augusta, ME 04333-0018
(207) 287-3831 <http://www.maine.gov/mpuc>
File a consumer complaint:
https://www.maine.gov/mpuc/consumer/file_complaint.shtml

Maryland Public Service Commission

6 St. Paul St., 16th Floor, Baltimore, MD 21202-6806
(410) 767-8000 <http://www.psc.state.md.us>
File a utility dispute:
<https://www.psc.state.md.us/online-complaints/>

Massachusetts Dept. of Public Utilities

One South Station, Boston, MA 02110
(617) 305-3586 <http://www.mass.gov/dpu>
File a complaint involving a gas, electric, or water company:
<https://www.mass.gov/how-to/file-a-complaint-involving-a-gas-electric-or-water-company>

Michigan Public Service Commission

7109 W. Saginaw Hwy., Lansing, MI 48909
(517) 284-8100 <http://www.michigan.gov/mpsc>
How do I file a complaint?:
https://www.michigan.gov/mpsc/0,4639,7-159-16368_16415---,00.html

Minnesota Public Utilities Commission

121 7th Place East, Ste. 350, St. Paul, MN 55101-2147
(651) 296-7124 <http://www.mn.gov/puc>
File a complaint: <https://mn.gov/puc/consumers/help/complaint/>

Mississippi Public Service Commission

501 N. West St., Woolfolk State Office Bldg.,
Jackson, MS 39201-1174
(601) 961-5461 <http://www.psc.state.ms.us>
Utility Complaint Form: <https://www.psc.state.ms.us/Complaint/>

Missouri Public Service Commission

200 Madison St., Governor Office Bldg.,
Jefferson City, MO 65101
(573) 751-3234 <http://www.psc.mo.gov>
Submit a complaint: https://psc.mo.gov/General/Submit_A_Complaint

Montana Public Service Commission

1701 Prospect Ave., PO Box 202601,
Helena, MT 59620-2601
(406) 444-6199 <http://www.psc.mt.gov>
Request consumer assistance:
<http://psc.mt.gov/For-Consumers/Request-Assistance>

Nebraska Public Service Commission

PO Box 94927, Lincoln, NE 68509-4927
(402) 471-0221 <http://psc.nebraska.gov>
For consumers: <https://psc.nebraska.gov/for-consumers>

New Hampshire Public Utilities Commission

21 S. Fruit St., Ste. 10, Concord, NH 03301-2429
(603) 271-2431 <http://www.puc.nh.gov>
File complaint: <https://www.puc.nh.gov/Consumer/complaint.htm>

New Jersey Board of Public Utilities

44 S. Clinton Ave., Trenton, NJ 08625-0350
(609) 777-3300 <http://www.bpu.state.nj.us>
Filing complaints: <https://www.state.nj.us/bpu/assistance/complaints/>

New Mexico Public Regulation Commission

1120 Paseo de Peralta, Santa Fe, NM 87501-1269
(1) 888-427-5772 <http://www.nmprc.state.nm.us>
File a complaint:
<http://www.nmprc.state.nm.us/consumer-relations/file-complaint.html>

New York State Public Service Commission

Three Empire State Plaza, Albany, NY 12223-1350
 (518) 474-7080 <http://www3.dps.ny.gov>
 Complaint Filing with the Public Service Commission:
<http://www3.dps.ny.gov/W/PSCWeb.nsf/All/B40C096675BE10C085257687006F39E7?OpenDocument>

North Carolina Utilities Commission

4325 Mail Service Center, Raleigh, NC 27699-4300
 (919) 733-4249 <http://www.ncuc.net>
 How to pursue a complaint against a regulated utility:
<https://www.ncuc.net/Consumer/pursuecomplaint.html>

North Dakota Public Service Commission

600 E Boulevard Ave., Dept 408, Bismarck, ND 58505-0480
 (701) 328-2400 <http://www.psc.nd.gov>
 Public Awareness: Consumer Information:
<https://psc.nd.gov/public/consinfo/>

Public Utilities Commission of Ohio

180 E. Broad St., Columbus, OH 43215-3793
 (614) 466-3016 www.puco.ohio.gov/
 Get help with a complaint:
<https://www.puco.ohio.gov/be-informed/consumer-topics/get-help-with-a-complaint/>
 Contact us form: <https://www.puco.ohio.gov/puco/index.cfm/contact-us/contact-us-form/index.cfm?navitem=righttop>

Oklahoma Corporation Commission

Jim Thorpe Office Bldg., 2101 N. Lincoln Blvd.
 Oklahoma City, OK 73105-2000
 (405) 522-2211 <http://www.occeweb.com>
 Public Utility Consumer Complaints:
<https://www.occeweb.com/cs/ConsumerComplaints.htm>

Oregon Public Utility Commission

201 High St., SE, Ste. 100, Salem, OR 97301
 (503) 373-7394 <http://www.puc.state.or.us>
 Customer Complaint Process:
<https://www.puc.state.or.us/consumer/Customer%20Complaint%20Process.pdf>
 Online Complaint Form:
<https://apps.puc.state.or.us/consumer/complaint.asp>

Pennsylvania Public Utility Commission

PO Box 3265, Harrisburg, PA 17105
 (717) 772-7777 <http://www.puc.pa.gov>
 Filing complaints:
http://www.puc.state.pa.us/filing_resources/filing_complaints.aspx

Rhode Island Public Utilities Commission

89 Jefferson Blvd., Warwick, RI 02888
 (401) 941-4500 <http://www.ripuc.org>
 How to file a complaint:
<http://www.ripuc.org/consumerinfo/filecomplaint.html>

South Carolina Public Service Commission

101 Executive Center Dr., Ste. 100, Columbia, SC 29210-8411
 (803) 896-5100 <http://www.psc.sc.gov>
 File a complaint: <https://psc.sc.gov/consumer-info/file-complaint>

South Dakota Public Utilities Commission

State Capitol, 500 East Capitol Ave., Pierre, SD 57501-5070
 (605) 773-3201 <http://www.puc.sd.gov>
 Filing complaints: <https://puc.sd.gov/consumer/consumerinfo.aspx>

Tennessee Public Utility Commission

502 Deaderick St., 4th Fl., Nashville, TN 37243
 (615) 770-6851 <https://tn.gov/tpuc.html>
 TPUC online utility complaint form:
<https://www.tn.gov/tpuc/utility-complaint-resources/csd-online-utility-complaint-form.html>

Public Utility Commission of Texas

1701 North Congress Ave., Austin, TX 78701-3326
 (512) 936-7000 <http://www.puc.texas.gov>
 Utility complaint:
<https://www.puc.texas.gov/consumer/complaint/Complaint.aspx>

Public Service Commission of Utah

160 East 300 South, 4th Floor, Salt Lake City, UT 84111
 (801) 530-6716 <http://www.psc.utah.gov>
 Steps to resolving a problem:
<https://publicutilities.utah.gov/submitcomplaint.html>

Vermont Public Utility Commission

112 State St., 4th Floor, Montpelier, VT 05620-2701
 (802) 828-2358 <http://puc.vermont.gov/>
 Complaints: <https://puc.vermont.gov/public-participation/complaints>

Virginia State Corporation

1300 E. Main St., Richmond, VA 23219
 (804) 371-9608 <http://www.scc.virginia.gov>
 Consumer Protection – Utilities:
https://www.oag.state.va.us/consumer-protection/index.php?option=com_content&view=article&id=185

Washington Utilities and Transportation Commission

1300 S. Evergreen Park Dr., PO Box 47250,
 Olympia, WA 98504-7250
 (360) 664-1160 <http://www.utc.wa.gov>
 Consumer complaints:
<https://www.utc.wa.gov/consumers/Pages/ConsumerComplaints.aspx>

Public Service Commission of West Virginia

201 Brooks St., Charleston, WV 25301
 (304) 340-0300 <http://www.psc.state.wv.us>
 Consumer complaint procedures:
<http://www.psc.state.wv.us/Complaints/default.htm>

Public Service Commission of Wisconsin

North Tower, 6th Fl., Hill Farms State Office Bldg.,
 Madison, WI 53705-9100
 (608) 266-5481 <http://psc.wi.gov>
 PSC complaint disclaimer:
<https://psc.wi.gov/Pages/ForConsumers/LogAComplaint.aspx>
 File a complaint on-line:
<http://apps.psc.wi.gov/vs2010/complaint/consumer/FileComplaint.aspx>

Wyoming Public Service Commission

2515 Warren Ave, Ste. 300, Cheyenne, WY 82002
 (307) 777-7427 <http://psc.state.wy.us>
 How to File a Complaint:
<https://psc.wyo.gov/home/file-a-complaint>

Addresses and phone numbers are from NARUC (National Association of Regulatory Utility Commissions) website. Accessed 4/19/19
<https://www.naruc.org/about-naruc/regulatory-commissions/>

HIGH COST OF “SMART” TECHNOLOGY & INSIDIOUS FUNDING SCHEMES

Eye-popping dollar figures

[Indiana] “I&M customers voice opposition to smart meters” – excerpt:

Customers of Indiana Michigan Power complained to utility regulators on Monday night about the company’s plan to upgrade to smart meters; the numerous fixed charges added to monthly bills; and the impact another rate increase would have on the poor.

“AEP earned \$585 million in just the first quarter of this year, and at least one in five I&M customers lives below the poverty line, so this rate increase is unnecessary and unjust,” said Muncie customer Holly Hanauer, referring to the earnings of I&M’s parent company, American Electric Power.

John Eliades, a local physician, called smart meters a possible health risk and a fire hazard.

“Several issues have come up across the country, Canada and abroad regarding the fire hazard associated with these so-called smart meters,” he told IURC members. “In most cases, when these issues appear, usually ... the **homeowner has to go to a lot of trouble repairing things out of their own pocket for their home that got burned.**”

Many customers will end up paying higher costs as a result of smart meters, based on “time-of-day” rates, also known as “peak pricing” or “time-of-use” rates, said Eliades, who called the new technology “a backdoor way to simply extract more money out of the consumers.”

Hanauer added, “We don’t need to pay for another new meter. Smart meters were available five years ago when they installed new meters throughout the service area but I&M didn’t choose those then. Our current meters have 11 years of life remaining, and so I oppose the idea of replacing them now and charging customers.”

City council member Linda Gregory stirred murmurings of outrage from the audience when she told commission members that her I&M bill in February for her all-electric condo totaled \$579, with the furnace set at 65 degrees. She said she has only run her air conditioner for two days so far this year.

I&M is seeking an overall rate increase of 11.75 percent, which would generate an extra \$172 million a year in revenue, to be phased in during 2020 and 2021. An average residential customer’s bill would increase from \$141.91 a month to \$163.02 a month.

The company is also asking the IURC to allow it to increase the monthly service charge from \$10.50 to \$15.

I&M’s last rate increase took effect May 30, 2018. The company filed a petition for that rate increase on July 26, 2017.

– Seth Slabaugh | *Muncie Star Press* | 7/16/19 | Updated 7/16/19
<https://www.thestarpress.com/story/news/local/2019/07/16/i-m-customers-voice-opposition-smart-meters/1743646001/>

[New York] “NYSEG’s new meters: Here’s what you need to know” – excerpt:

One of the biggest programs ever proposed by New York State Electric and Gas Corp. and its sister company was supposed to have begun last year.

The proposal, estimated to cost upward of \$500 million, called for installation of nearly 1.8 million “smart meters” in Hudson Valley and upstate New York homes and businesses.

For reasons that are unclear, the NYSEG/RG&E proposal has been delayed as the company, state regulators and a handful of other parties negotiate the terms of the massive program behind closed doors in Albany.

Those negotiations are now entering their third year.

When the talks conclude, one thing is a near-certainty: Your utilities rates will jump to pay for the smart-meter rollout.

... Michele Hertz, a Hudson Valley resident who is president of the New York State Safe Meter Association, said any fire risk is too much. The old analog meters are fire- and surge-safe, she asserted, but she’s heard of several smart meter-related blazes in her part of the state. **Power surges are a trigger**, she said. Hertz said the PSC has not ordered testing of smart meters for fire and other risks, ...

–Steve Orr | *Poughkeepsie Journal* | 1/8/19
<https://www.poughkeepsiejournal.com/story/news/local/2019/01/08/nysegs-new-meters-heres-what-you-need-know/2500699002/>

“... Judith Hill wanted to know where the rate increase would show up on her bill, which she said includes 18 ‘add-ons,’ such as ‘energy efficiency program cost,’ ‘resource adequacy rider,’ ‘phase IN adjustment rider,’ ‘environmental cost rider,’ and ‘fuel adjustment,’ none of which she understands.

“In its July edition, the non-profit Consumer Reports organization says such fees are becoming more common, making it difficult to try to save money on your gas or electricity bill by being more energy efficient.

“ ‘... your best option is to demand that your public service commission reject utilities’ proposed fee hikes,’ the organization recommended. ‘Do that by contacting the commission in your state, signing a petition, or attending a public hearing.’ ”

– Seth Slabaugh, *Muncie Star Press*, 7/16/19

“THE FEES THAT RAISE YOUR ELECTRIC BILL EVEN WHEN YOU USE LESS ENERGY”

– excerpts:

You’ve done all the right things: Ditched your old appliances for energy-efficient ones. Installed a programmable thermostat. Switched from incandescent lightbulbs to CFLs or LEDs. Added insulation and sealed cracks around your windows and doors. And odds are that your local utility even encouraged you to make your home more energy efficient. But behind the scenes, their **lobbyists are manipulating the system so that you don’t reap the full savings of the energy-efficiency measures you’ve taken.** And it’s likely to get worse, according to “*Caught in a Fix: The Problem with Fixed Charges for Electricity*,” a report commissioned by Consumers Union, the policy and advocacy arm of *Consumer Reports*.

What’s happening? Some utilities have increased electric rates across the board. But a bill uptick could also be due to a **utility trick** called **higher “fixed charges.”** Stay with us here. This is a bit wonky, but important. There are two parts to your electric bill. The charge for the electricity you use, kilowatts per hour, and a **mandatory “fixed charge”** that every consumer has to pay **before the meter even starts running.** These per-customer fixed charges have historically ranged from \$5 to \$10 a month. But **many utilities are trying to double or triple the minimum charge, which penalizes consumers who use less energy and reduces their ability to control and lower their bills by using less energy.**

— • —
Highlights of the ‘*Caught in a Fix*’ Report

- **Low usage customers are hit the hardest.** Customers who use less energy than average will experience the greatest percentage jump in their electric bills when the fixed charge is raised. There are many reasons a customer might have low energy usage: they

may be located in apartments or dense housing units that require less energy; they may have small families or live alone; they may have energy efficient appliances or solar panels; or they may simply be conscientious about saving energy.

- **Fixed charges disproportionately impact low income customers.** In nearly every state, low income customers consume less electricity than other residential customers, on average. Because fixed charges tend to increase bills for low usage customers while decreasing them for high use customers, fixed charges raise bills most for those who can least afford the increase.

- **Reduced incentives for energy efficiency can raise costs for all consumers.** Increasing the flat charge portion of the bill instead of the variable portion of the bill means that a consumer’s efforts to save energy may not translate into a lower electric bill, which reduces the incentive to invest in energy efficiency or distributed generation, in which power is generated at the point of consumption rather than from a central location. With less incentive to save, customers may increase their energy consumption, and states would then have to spend more to achieve the same levels of energy efficiency and clean energy. Where electricity demand rises, utilities will need to invest in new power plants, power lines, and substations, thereby raising electricity costs for all customers.

– Celia Kuperszmid Lehrman with

Shannon Baker-Branstetter | *Consumer Reports* | 3/7/16
<https://www.consumerreports.org/consumer-protection/fees-that-raise-your-electric-bill-even-when-you-use-less-energy/>

[UK] “Green taxes, smart meters, profit margins: the extras adding £550 to your energy bill” – excerpts:

Those who thought household energy bills had been reined in by the Government’s price cap were proved wrong last week when half of the “Big Six” suppliers hiked their prices again.

Power, EDF and E.On implemented the increases after Ofgem, the regulator, announced it was raising the ceiling on bills by £118, little over a month after this limit was enforced.

The increase outstripped industry predictions despite being in line with the rise in the wholesale cost of providing energy – the amount suppliers pay to procure the power that keeps your lights on. Yet the actual cost of generating the energy makes up just 35pc of your bill.

– Sam Meadows | *The Telegraph* | 2/17/19 <https://www.telegraph.co.uk/bills-and-utilities/gas-electric/green-taxes-smart-meters-profit-margins-extras-adding-550-energy/>

[CHINA] “China Smart Meter Industry Report, 2019-2025”

– excerpts:

As the internet of things (IoT) penetrates into the public utility sectors, charging by meter allows the smart meter industry to grow at a solid pace. China’s shipment of smart meters was 200 million units in 2018, at a CAGR of 6.8% during 2013-2018, a rate which is expected to hold steady at 6.5% between 2019 and 2025.

In terms of market segments, the smart electric meter boasts the highest penetration in China, sweeping around 70% of the market, but its slower growth will lead to a declining market share; smart water and gas meters which are being deployed on a large scale, however, will be the main growth drivers in the near future.

– Research and Markets | February 2019 https://www.researchandmarkets.com/reports/4756596/china-smart-meter-industry-report-2019-2025?utm_source=C1&utm_medium=PressRelease&utm_code=mxcdwv&utm_campaign=1238960+-+China+Smart+Meter+Industry+Report%2c+2019-2025&utm_exec=chdo54prd

[New York] “60-second read: New RG&E meters will shake up your energy bill” – excerpts:

RG&E and its sister company NYSEG hope to install nearly 1.8 million “smart” electric and gas meters in homes and businesses in the Rochester region and Southern Tier in the coming years.

Under the initial proposal from Rochester Gas and Electric Corp. and New York State Electric & Gas Corp., their customers would be required to pay more than \$500 million for the new meters. State regulators have yet to consider or approve a final plan, . . .

. . . The latest cost estimate for rolling out the program is \$522 million. RG&E/NYSEG want to add a surcharge to monthly bills to pay for purchase, installation and other work, then amend their monthly rates to further recoup the expense. They claim cost savings will offset much of that expense over time. The final cost and the impact on your monthly bill remain either undetermined or confidential.

– Steve Orr | *Rochester Democrat and Chronicle* | 1/3/19, updated 1/5/19
<https://www.democratandchronicle.com/story/news/2019/01/03/rge-nyseg-smart-meters-what-you-need-know/2462514002/>

[GERMANY] “Smart Meter – The German ‘Sonderweg’ at a crossroads” – excerpts:

Will Germany be the next ‘failed state’ in rolling out smart meters? Already massively delayed, concerns grow that the German “super smart meter” will not live up to the high expectations, especially regarding its pioneering use in prosumer installations for grid services. The responsible

institutions shilly-shally over the rollout start for fear of a technical, economic and communication disaster – not unfounded: the justification for the **forced rollout, financed through high metering fees**, are highly questionable personal and economic benefits identified by a cost-benefit-analysis that even the authors themselves now consider unrealistic. Instead of panic rescue attempts with light versions of the “super smart meter” both, the European Commission and Germany should step on the emergency brake for a thorough revision. . . .

Reality check: Poor energy savings, costly technical issues

The European Commission kicked-off smart meter-rollouts across the EU years ago, . . . Years and a lot of rollouts in “pioneering” countries later the results are disillusioning. In **Italy**, smart Meters are abused as anti-theft measures by a grid operator that does not even have the courage to assess the results. **Sweden** and the **Netherlands** have done honest assessments – with poor results. And most recently, the **UK** is thrilling the smart meter community with a high frequency of bad news: the rollout has been plagued by problems and been massively delayed, the benefits have been overstated and the savings they could bring consumers are at risk. These multiple failings threaten to add nearly £3billion to the cost **paid for by consumers** through higher energy bills. Hence, the – even by experts – often heard argument “Other EU countries have long rolled out smart meters” to push the rollout in Germany is rather a warning not to do so.

– Holger Schneidewindt | *Energy Democracy* | 12/31/18
<https://energy-democracy.org/smart-meter-the-german-sonderweg-at-a-crossroads/>

PROJECTED SMART METER INSTALLATION COST: \$450 PER SYSTEM

[Arizona] *Community Economic Security and Climate Action Analysis, Final Report for the City of Tucson* (Office of Conservation and Sustainable Development) – excerpts:

Measure: Residential Direct Load Control Program (G6b)

Promote the deployment by Tucson Electric Power company (TEP) of **two-way residential direct load control** in ~13.5% of **owner-occupied single-family residences** in the City per year **starting in 2013** until **100% deployment is reached by the end of 2020**.

Total annual average implementation costs 2013-2020: \$7.0 million [\$7 million x 8 years = \$56 million]

Entity that bears the costs of implementation: Tucson Electric Power (**customers and/or shareholders**)

Note: Westmoreland Associates projects over the 20-year life of a Direct Load Control system (**a smart meter or any other dynamic time-of-use system**) a 10% household electricity reduction. Installation costs are projected to be (in consultation with TEP) \$450 per system.

– Westmoreland Assoc. (ARRA Climate Change Planning Consultant Services), Feb.2011, p.84
https://www.tucsonaz.gov/files/sustainability/CMS1_037899.pdf

[UK] “The great smart meter fiasco: Millions of the dubious devices may have to be ripped out of homes because they won’t work when you switch supplier” – excerpts:

As many as four million smart meters may need to be ripped out and replaced, . . . because it may not ever be possible for them to work properly when customers switch supplier.

The Government has promised to launch a new system to fix the problem so that all customers can switch provider without issue, but it has been repeatedly delayed. Now, an official report has claimed that their plan may not work for all of the meters affected.

Under the Government-run scheme, suppliers have been ordered to offer all households and small businesses a smart meter by 2020.

Customers can refuse to have a smart meter. But if suppliers cannot prove they made every effort to contact households, they will be hit with hefty fines.

– Victoria Bischoff for the *Daily Mail* | 11/27/18, updated 11/28/18
<https://www.thisismoney.co.uk/money/bills/article-6435495/Why-4-million-smart-meters-ripped-homes.html>

[Kentucky, Massachusetts] “Smart meter deployments slow as questions emerge over cost effectiveness, saturation” – excerpts:

. . . [A] look at data from the last decade shows the rate of AMI deployments may be slowing. And two utility AMI proposals were **rejected by state regulators this year**, bolstering arguments that they are **not cost effective**.

There have long been arguments that the savings smart meters generate do not justify the cost. Regulators in Kentucky and Massachusetts were not so blunt, but they did reject proposals this year over concerns that utilities did not sufficiently make the business case. AMI deployments are expensive: Kentucky Utilities and Louisville Gas & Electric had proposed to install AMI for 1.3 million customers over the next five years, but the plan carried a \$350 million price tag.

A Congressional Research Service report in April described the introduction of AMI as “problematic.”

“Smart meters have run into cost and performance issues and resistance to the technology (generally from concerns of some customers over potential health impacts of radio wave emissions),” the report said.

– Robert Walton | *Utility Dive* | 11/28/18
<https://www.utilitydive.com/news/smart-meter-deployments-slow-as-questions-emerge-over-cost-effectiveness-s/542941/>

[UK] “Smart meters rollout labeled a ‘fiasco’ as consumers face extra £500m bill” – excerpts:

Consumers face paying half a billion pounds more than expected for the rollout of smart meters and the programme has no chance of hitting its deadline, the UK’s spending watchdog has warned.

The National Audit Office said that with 39m old-fashioned meters yet to be replaced, there is “no realistic prospect” of meeting a goal of all homes and businesses being offered one by the end of 2020 as planned.

The NAO said bill payers would be hit with an increase in costs over the rollout of £500m above the government’s last estimate, or an extra £17 per household.

However, the watchdog said that estimate was conservative and the true cost was likely to be much higher. The extra £500m, for example, does not include energy companies’ marketing costs.

– Adam Vaughan | *The Guardian* | 11/22/18
<https://www.theguardian.com/environment/2018/nov/23/smart-meters-rollout-labelled-a-fiasco-as-consumers-face-extra-500m-bill>

[Georgia] “Albany, Ga., Pursues \$18.3M in Smart Meter Funding” – excerpts

The Albany, Ga., City Commission voted Tuesday night to move forward with the application process for an \$18.3 million loan that will help finance the city’s \$20.8 million advanced metering infrastructure project.

– Carlton Fletcher | *The Albany Herald* | 11/20/18
<https://www.govtech.com/budget-finance/Albany-Ga-Pursues-18-3M-in-Smart-Meter-Funding.html>

[Texas] “Midland automated water meters concern some residents” – excerpts:

“There have long been arguments that the savings smart meters generate do not justify the cost. Regulators in Kentucky and Massachusetts were not so blunt, but they did reject proposals this year over concerns that utilities did not sufficiently make the business case. AMI deployments are expensive: Kentucky Utilities and Louisville Gas & Electric had proposed to install AMI for 1.3 million customers over the next five years, but the plan carried a \$350 million price tag.”

– Robert Walton, *Utility Dive*, 11/28/18

The city of Midland’s automated water meters cause concern among some residents about the accuracy of their bills.

There are 45,000 active utility accounts in Midland. Seven thousand of which have automated water meters, according to the city. Automated water meters allow a water district employee to capture the meter’s information by simply driving by with a connected iPad or other device.

Midlander Matt Nunely and his family have spent hours figuring out their water bills. “That’s expensive stuff,” Nunely said as he turned on the water faucet in his kitchen. But it didn’t used to be, according to the tech professional. Nunely and his family bought a brand new home in a Midland suburb several months ago. The home came complete with an automated water meter. “The first two or three months you’re looking at \$120, \$140, \$160, and then all of a sudden an \$800 dollar one,” he said. The Nunely’s

received two nearly \$800 water bills.

— Gianni Windahl | CBS 7 | 8/1/18
<https://www.cbs7.com/content/news/Midland-automated-water-meter-causes-concern-among-some-residents-489712951.html>

[Maine, Pennsylvania] “AMI Smart Meter Overcharges & Overbillings Class Action Lawsuit” – excerpts:

On July 19, 2018, a civil action was filed against the Central Maine Power Company. It is a Class Action Complaint with Jury Trial Demand, Docket No. CV-18-324 filed by Mark Levesque in the State of Maine Superior Court, Cumberland, SS.

In the Introduction part of the Brief filed, we find this:

1. CMP delivers electricity to more than 624,000 customers in an 11,000 square mile service area in central and southern Maine. On October 30, 2017, CMP switched from its 27-year old mainframe computer to a **new electronic billing system**. That is when the trouble began. Indeed, beginning the following month, as a result of the new billing system and metering issues, approximately 97,000 CMP customers saw their bills increase by 50% or more.

Some saw their bills double or even triple, which was financially devastating for many customers. Another 200,000 CMP have been overcharged up to 50%.

4. This action is to recover the money that CMP unlawfully took from its customers.

— Catherine J Frompovich | *Activist Post* | 7/28/18
<https://www.activistpost.com/2018/07/ami-smart-meter-overcharges-overbillings-class-action-lawsuit.html>

[Note: See other “Smart Meter Lawsuits” – re: California, Kuai (Hawaii), Maine, Oregon, Illinois, Alabama, Texas
<https://stopsmartmeters.org/smart-meter-lawsuits/>]

[Texas] “Smart meters could result in higher water bills for some in this city” – excerpts:

Some Haltom City residents are joining forces on social media to protest high water bills that they started receiving **after the city outsourced its billing and meter reading** in January.

In January, Haltom City transferred the water customer service, including billing and meter reading, to Fathom Water Management, a company with offices in Austin and Phoenix.

— Elizabeth Campbell | *Fort Worth Star-Telegram* | 7/27/18
<https://www.star-telegram.com/news/local/community/northeast-tarrant/article21567325.html>

Note: Fathom Water Management is involved with “Advance Metering Infrastructure” and “smart grid for water”.
<https://www.gwfathom.com>

[Washington] “Seattle City Light customers getting rate hike” – excerpts:

Seattle City Light customers will pay more for power starting next year, and their **bills will continue to go up for the next six years**.

But before approving the rate hike, the city council blasted the utility for cost overruns. KIRO 7 was first to report the **\$5 million mistake they made on the smart meter program**.

Seattle City Light’s smart meter conversion is a case in point. KIRO 7 uncovered that converting to smart meters is costing \$17 million more than the utility projected. Five million dollars of that is because someone forgot to calculate the sales tax. . . .

Still, City Light says it needs a rate hike to keep up with maintaining its infrastructure, part of a six-year strategic plan. The first year, the average household will pay \$3.77 cents more per month. By year six, that monthly bill will have risen to \$85.59.

When the votes were tallied, only Council member Kshama Sawant was a no. “I have made it clear year after year,” said Sawant, “that I do not support a rate structure that puts the cost, rate increases and the cost disproportionately on the shoulders of working families and also some of the most struggling businesses.”

One reason City Light says it needs this rate hike? Its customers are doing so well conserving electricity, the utility isn’t bringing in the revenue it thought it would, revenue it needs to pay its bills.

The rate hike goes into effect in 2019.

— Deborah Horne | KIRO 7 | 7/9/18
<https://www.kiro7.com/news/local/seattle-city-light-customers-getting-rate-hike/786345060>

[Washington] “City Light’s ‘smart meters’ are \$17.4M over budget” – excerpts:

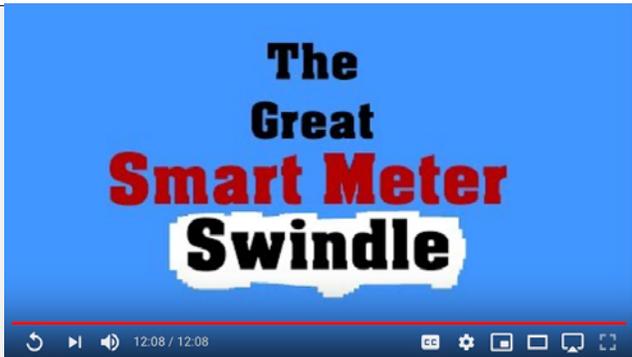
Seattle City Light’s new network of advanced energy meters – known informally as “smart meters” – is **\$17.4 million over budget, a 20 percent cost overrun** of its original \$84 million price tag. . . .

— David Kroman | *Crosscut* | 6/27/18
<https://crosscut.com/2018/06/city-lights-smart-meters-are-174m-over-budget>

[Tennessee] “According to City Data, Crucial Smart Meter Program Fails Expectations” – excerpts:

Tallahassee Reports has learned that after seven years the “Nights and Weekends” smart grid program has failed to reach the customer participation levels required to make the \$40 million smart meter investment cost-effective for taxpayers.

The latest information obtained by TR from the City of Tal-



[UK] The Great Smart Meter Swindle
 [12:08 min. video] MrJoeGooch | Published on Jun 18, 2018
<https://www.youtube.com/watch?v=gYPwrbpAHbk>

“‘Smart’ Meters are the biggest scam, scandal, and swindle ever perpetrated on the general public. This video explains why that is the case, what to do if you are told you need to have a smart meter installed, and what to do if you already have a smart meter.”

Source material: [Note: The original post only had urls. The title/ date of source material has been added after the url. – dkn]

1. Not compulsory and Not Free:

<https://www.thisismoney.co.uk/money/bills/article-4846700/Smart-meters-cost-household-420.html>

“Britons left out of pocket as smart meters will cost each household £420 - but experts dismiss them as just plain dumb,” Toby Walne, *The Mail on Sunday*, 9/2/17, updated 9/5/17

2. Pointless. Inaccurate:

<https://www.telegraph.co.uk/money/consumer-affairs/six-reasons-say-no-smart-meter/>

“Six reasons to say no to a smart meter,” Sam Meadows, *The Telegraph*, 8/2/17

<https://www.telegraph.co.uk/news/2017/03/06/smart-energy-meters-giving-readings-seven-times-high-study-finds/>

“Smart energy meters giving readings up to six times too high, study finds,” Katie Morley, *The Telegraph*, 3/6/17

<https://www.bbc.com/news/uk-39169313>

“SSE glitch: ‘Smart meter said I owed thousands,’” Laura Lea, *BBC News*, 3/5/17

<https://www.theguardian.com/business/2017/mar/05/sse-customers-charged-up-to-33000-a-day-by-faulty-smart-meters>

“SSE customers charged up to £33,000 a day by faulty smart meters,” Press Association, *The Guardian*, 3/5/17

3. Fires:

<https://www.wired.com/2012/09/self-combusting-smart-meters/>

“Smart Meter Causes Dumb Fire,” Kim Zettler, *Wired*, 9/12/12

<https://www.cbc.ca/news/canada/saskatchewan/saskpower-to-remove-105-000-smart-meters-following-fires-1.2723046>

SaskPower to remove 105,000 smart meters following fires,” CBC News, 7/31/14

<https://www.thenewamerican.com/tech/energy/item/18904-in-u-s-and-canada-smart-meter-fires-spark-alarm>

“SSE customers charged up to £33,000 a day by faulty smart meters,” Press Association, *The Guardian*, 3/5/17

4. They cost you money and bills increase!

<https://www.thisismoney.co.uk/money/bills/article-3322658/The-great-smart-meter-rip-UK-energy-giants-use-devices-DOUBLE-cost-power-need-most.html>

“The great smart meter rip-off: Energy giants will use devices to DOUBLE the cost of power when you need it most,”

Victoria Bischoff, *The Daily Mail*, 11/17/15

<https://www.chroniclelive.co.uk/news/north-east-news/woman-claims-energy-bills-almost-14527434>

“Woman claims her energy bills almost doubled after smart meter was installed,” Mr. Justice, *Chronicle Live*, 4/14/18

<https://www.itv.com/news/meridian/story/2017-03-07/smart-meters-viewers-complain-about-huge-bills/>

Smart meters: viewers complain about huge bills

ITV Report: False smart meter readings leave families shocked

ITV Report: Apology after smart meter readings show huge bills

5. Negative health effects:

<https://theecologist.org/2017/apr/11/smart-meters-and-cell-damage-pulsed-em-radiation-our-health-risk>

“Smart meters and cell damage from pulsed em radiation – our health at risk?,” Lynne Wycherley, *Ecologist*, 4/11/17

<http://emfsafetynetwork.org/smart-meters/smart-meter-health-complaints/>

Smart Meter Health Complaints | EMF Safety Network

<https://www.globalresearch.ca/smart-meters-not-so-smart-ive-never-been-so-sick-in-my-life/5429025>

“Smart Meters – Not so Smart.” Amy Worthington, 2/2/15

Effect on blood cells:

<https://www.youtube.com/watch?v=y4JDEspdx58>

“Live Blood Analysis – Observable Effects of RF/MW Radiation via Smart Meters,” 8/22/13

6. Control:

<https://krebsonsecurity.com/2012/04/fbi-smart-meter-hacks-likely-to-spread/>

“FBI: Smart Meter Hacks Likely to Spread,” *Krebs on Security*, 4/9/12

7. Hackable:

<https://www.theguardian.com/technology/2016/dec/29/smart-electricity-meters-dangerously-insecure-hackers>

“Smart electricity meters can be dangerously insecure, warns expert,” Alex Hern, *The Guardian*, 12/29/16

<https://www.reuters.com/article/us-utilities-cybersecurity/smart-technology-could-make-utilities-more-vulnerable-to-hackers-idUSKBN0FK1SZ20140716>

“‘Smart’ technology could make utilities more vulnerable to hackers,” Christoph Steitz & Harro Ten Wolde, 7/15/14

Cost, Disconnect and more:

<http://paullewisimoney.blogspot.com/2015/03/smart-meters-do-they-think-were-dumb.html>

“Smart Meters – Do they think we’re dumb?,” Paul Lewis, *Paul Lewis Money*, 10/21/16

8. Privacy

<https://www.theguardian.com/money/2017/jun/24/smart-meters-spying-collecting-private-data-french-british>

“Is your smart meter spying on you?,”

Patrick Collinson, *The Guardian*, 6/24/17

7. Surveillance

<https://www.theguardian.com/technology/2018/jun/01/uk-homes-vulnerable-to-staggering-level-of-corporate-surveillance>

“UK homes vulnerable to ‘staggering’ level of corporate surveillance,” Alex Hern, *The Guardian*, 6/1/18

8. Why energy firms want them:

<https://www.youtube.com/watch?v=NMz0K06ls6c>

“Who is Paying for the Government’s ‘Free’ Smart Meters,” 8:17 min. video, posted on youtube, published 2/1/17

<https://www.thisismoney.co.uk/money/bills/article-4946078/Eon-fire-smart-meter-bullying.html>

“Eon under fire over smart meter bullying: Energy firm agrees to review communications after we report it to watchdog,” Leah Milner, *The Daily Mail*, 10/3/17

<https://vimeo.com/130114334>

Utilities ‘Very Excited’ about Mining Smart Meter Data, 45 second video, uploaded 6/8/15

9. Removed:

<https://www.telegraph.co.uk/money/ask-a-money-expert/ask-expert-can-get-rid-smart-meter/>

“Ask an expert: ‘Can I get rid of my smart meter?’,”

Sam Meadows, *The Telegraph*, 9/25/17

and letter: Stop Smart Meters UK

<https://www.facebook.com/Stop-Smart-Meters-UK-370392813005017/>

lahassee shows that after seven years of promoting the “Nights and Weekends” program, 2,574 people are currently enrolled. The city’s projection for cost-effectiveness was 25,000 subscribers. This projection was clearly presented to the city commission on March 28, 2007:

Staff does not expect operational savings alone to exceed the capital investment within the first 15 years of deployment. However with good customer participation (25% or more) in load control and pricing programs, staff expects that operational savings coupled with future avoided capital costs (associated with building new power plants) will exceed total program costs.

City officials based their analysis on the participation of 25,000 households or roughly 25% of all residential customers in pricing and load control programs. Without this level of participation the analysis shows that the program will not be cost effective.

The “Nights and Weekends” program was introduced as a way to price electricity during peak times instead of the same price all day long. . . .

However, the data provided to *Tallahassee Reports* shows that **since 2010, 6,892 have signed up for the program, while 4,318 have cancelled.** As of May 2018, there are 2,574 accounts participating in the program.

The average time on the program for those who cancelled was calculated to be approximately 1.5 years.

. . . [T]he “Nights & Weekends” program has had more cancellations than new subscribers for 2016, 2017 and 2018.

– Staff | *Tallahassee Reports* | 5/13/18 <https://tallahassee-reports.com/2018/05/13/according-to-city-data-crucial-smart-meter-program-fails-expectations/>

[USA] “Water Bills Are Getting Out of Control in These 15 American Cities”

[Identified alphabetically in this article: 1. Austin, Texas...2. Boston, Massachusetts...3. Charlotte, North Carolina... 4. Chicago, Illinois...5. Dallas Texas... 6. Houston, Texas...7. Los Angeles, California... 8. Milwaukee, Wisconsin...9. New York City, New York ...10. Philadelphia, Pennsylvania...11. San Diego, California...12. San Francisco, California...13. San Jose, California...14. Seattle, Washington...15. Tucson, Arizona]

– *CheatSheet* | 3/23/18 <https://www.cheatsheet.com/money-career/cities-with-surging-water-bills.html>

[TASMANIA, AUSTRALIA] “TasNetworks’ high electricity prices could cause ‘death spiral’ as customers disconnect, report warns” – excerpt:

The Grattan Institute has warned of an electricity ‘death spiral’; where high power prices encourage consumers . . . to adopt to off-grid technologies, like solar, which leads to lower electricity consumption from the grid.

Consumers who remain with TasNetworks would face high-

“The report found overinvestment in the state-owned electricity distribution and transmission network has added around an extra \$150 per year to the average power bill.”

– Rhiana Whitson, ABC, 3/26/18

er prices while the government business struggled to recover costs.

The report found overinvestment in the state-owned electricity distribution and transmission network has added around an extra \$150 per year to the average power bill.

Almost half of a typical residential electricity bill goes towards paying for the grid: the poles, wires and substations that transport electricity from power stations to homes and businesses.

“Poor decisions by governments, in the form of overzealous reliability standards, and poor decisions by these businesses, in the form of excessive capital spending, have together produced much higher electricity prices for consumers,” the report said.

– Rhiana Whitson | ABC | 3/26/18 <https://www.abc.net.au/news/2018-03-26/call-to-privatise-tasnetworks-to-bring-down-electricity-prices/9586862>

“AMI SMART METER OVERCHARGES & OVERBILLINGS CLASS ACTION LAWSUIT”

– excerpts:

Overcharges seem to be an extremely ‘lucrative’ problem utility companies have, while always trying to pawn off overcharges as “better monitoring and/or measuring of customers’ actual usage”. What?

How can that be when, in reality, utility companies are billing customers for the electricity the utility sends to monitor the customer, which was never factored into utility bills rendered by analog meters for decades! Analogs only recorded what customers actually used; whereas AMI SMs [smart meters] record as customer usage the following:

Electric power spikes, aka “dirty electricity” or sinusoidal waves, sent as often as every 15 seconds.

Electric power signals to monitor “smart appliances” you have in your home. The AMI SM sends out electric signals until it finds a smart appliance to hook up with. . . .

Electric power to send signals back to the utility of what it finds from the surveillance of your smart appliances; what those appliances were doing and the times – as often as utility AMI SMs computer programs are written to send that information over HAN or LAN networks to cell towers or other networks.

I bet the above are ‘shockers’! Well, that’s what happens with the AMI SMs which, in reality, are surveillance computers that will have to be replaced every 5 to 6 years; . . . Also, utility companies build into customers’ monthly bills, the cost of the computer! So, now can you understand why utility bills increase dramatically?.

– Catherine J. Frompovich | 7/28/18 <https://www.activistpost.com/2018/07/ami-smart-meter-overcharges-overbillings-class-action-lawsuit.html>

“WHO PAYS FOR THE SMART GRID?”

— excerpts:

Electric Power Research Institute (EPRI)* released a new report, “Estimating the Costs and Benefits of the Smart Grid: A Preliminary Estimate of the Investment Requirements and the Resultant Benefits of a Fully Functioning Smart Grid”.

According to this report the Smart Grid could cost nearly three times what EPRI originally predicted, or around \$480 billion dollars. On an EPRI briefing call this morning the EPRI panelist, when asked who pays for this, stated, “ultimately the consumer pays for everything.”

Not only do customers pay for the Smart Grid, in order to fully participate in the “benefits” they will need to pay upwards of \$46,000 for a solar inverter, vehicle to grid converter, consumer energy management systems, in home displays, grid ready appliances, communications upgrades for building automation, and residential storage back up. This estimate does not include the cost of a solar system, an electric vehicle, or larger grid ready appliances. Adding these costs into the equation raises the consumer costs to an estimated \$90,000, plus the costs of the Smart Grid which, if approved, will be incurred through rate hikes mandated by the Public Utilities Commissions in each state.

*EPRI’s members represent more than 90 percent of the electricity generated and delivered in the United States.

— EMF Safety Network | 5/24/11
<http://emfsafetynetwork.org/who-pays-for-the-smart-grid/>

[Michigan] “High energy bills frustrate public, lawmakers”

— excerpts:

More than 200 people have contacted Rep. Michele Hoytenga, R-Manton, about big increases on their electric bills.

“I have just been blown up by this. It’s the number one topic in my district, in my three counties,” Hoytenga told the House Energy Policy Committee on Tuesday morning.

She’s not alone. Representatives and power companies have been hearing about price spikes after some consumers have seen higher bills in the last couple months. . . .

Doug and Louisa Westendorp are dairy farmers in Barry County, . . . They have separate bills for different properties and were surprised to see the one for their cow barn spike. Their bills are typically a little over \$2,000 for the barn, Louisa said, but spiked to \$5,864 in January.

She called Consumers and they told her about the longer billing cycle and the

————— • —————
“There have been other cities where groups of people saw spikes in their water use with no simple explanation. Santa Fe’s utility billing director quit after dozens of people complained the city’s new smart meter system over-reported their water use.”

— Mariana Dale, KJZZ, 1/8/18
————— • —————

colder temperatures. But the barn isn’t heated, she said, because cows produce their own heat. But the company didn’t explain how five extra days would double a bill that usually covers 30.

Rep. Tom Barrett, R-Potterville, said he was in the process of selling a home, and kept his unoccupied, 1,400 square foot house at 58 degrees. But his bill for a completely unoccupied house was \$135 for January.

— Emily Lawler | M Live | 2/13/18
https://www.mlive.com/news/2018/02/high_energy_bills_frustrate_pu_1.html

[Arizona, New Mexico] “Here’s What We Know About Ahwatukee’s Sometimes ‘Frustrating’ Water Bills” — excerpts:

Rene Self’s grandmother’s Ahwatukee home has a gravel front yard dotted with shrubs. . . . Self was shocked to open a \$421 water bill from the city of Phoenix in August. The house’s average bill for the last year was around \$40.

She called a plumber to check for leaks. He didn’t find any. The next month, the bill looked normal again. Self and her mom were two of 185 people who contacted the area city councilman’s office about unusually high bills.

When the water consumption goes back down, the assumption is that a leak was fixed. In Self’s case and several others, the water use seems to have dropped on its own and no one knows why.

Every Phoenix water customer’s meter is attached to a radio transmitter that wirelessly sends information about water consumption to a city staffer as they drive by.

The city [Phoenix] started converting to so-called smart meters in 2008 and finished in June 2017. Ahwatukee’s meters were updated in 2013.

Next, the Water Services Department is converting mechanical meters to digital registers. Right now about a third of customers have digital registers.

There have been other cities where groups of people saw spikes in their water use with no simple explanation. Santa Fe’s utility billing director quit after dozens of people complained the city’s new smart meter system over-reported their water use.

— Mariana Dale | KJZZ | 1/8/18
<https://kjzz.org/content/588962/heres-what-we-know-about-ahwatukees-sometimes-frustrating-water-bills>

[Arizona] “Phoenix officials looking into high water bills, meter issues” — excerpts:

Officials in Phoenix said Monday they were taking steps to figure out why water bills in a certain part of the city have skyrocketed as of late while other customers received free water.

Residents in the Ahwatukee neighbor-

hood have reported receiving bills for thousands of dollars and officials were unsure what was causing the spike.

The Ahwatukee Foothill News said one homeowners' associations received a bill for \$6,500. The city said the group used more than a million gallons to water two small parks, which the HOA said was impossible.

"An engineer said that, with a million gallons, the water in the park would be 23 feet deep," Steve Manolis, the HOA board's vice president, told the newspaper.

City assistant water manager Troy Hayes said a random sample of 400 homes found some problems with the meters.

"One of the meters was under-registering, meaning that more water was actually flowing through it than it was actually reading – there was some free water going to the customer," he said. "The other two meters that we had were actually not reading at all."

– KTAR.COM | 10/30/17

<http://ktar.com/story/1811787/phoenix-officials-looking-into-overly-high-water-bills-meter-issues/>

[Arizona] "Ahwatukee water bill woes echo nationwide complaints" – excerpts:

As anger and frustration over mysteriously huge spikes in water bills continue to grow in Ahwatukee, local consumers are not alone

For more than five years, dozens of large and small communities across the country have been plagued by similar waves of unusually high readings after wireless, or "smart," water meters were installed at homes and businesses.

No one has tied the problem in Ahwatukee to the wireless meters – and the city Water Services Department continues

to insist there is no problem at all on its end. ... Nevertheless, the complaints registered in recent weeks by city Water Services customers in Ahwatukee with the AFN and across social media echo the same problems reported from coast to coast – and abroad – since at least 2009.

— • —

When Phoenix began replacing its 425,000 analog water meters with its Automatic Meter Reading system eight years ago – a project it just completed in July – officials noted that a Water Services employee read about 400 meters a day in person and that meant "mistakes can happen."

— • —

"In order to meet the current and future demands of our customer's needs, it was important that AMR be brought in so the quality of customer service can be enhanced."

Such words ring hollow for residents like Dawn Lynch, whose July water bill of more than \$1,200 was three times greater than normal. The total gallons reported by her meter: a whopping 204,952. She said she called Water Services but "they refused to send someone out."

– Paul Maryniak | *Ahwatukee Foothill News* | 10/4/17

http://www.ahwatukee.com/news/article_968e5f48-a88d-11e7-ab41-375d104b2d81.html

[UK] "Smart meter rollout could force household bills to rise, says supplier" – excerpts:

Energy suppliers face rising costs for putting smart meters in millions of homes, adding pressure on firms to raise household bills further next year.

Fitting the meters, which automate readings and which the government has set a target of installing in every home and small business by the end of 2020, costs suppliers about £100 per household today.

"IoT/IoT DEVICE COMPANIES ARE MAKING THE 'SMART METER MISTAKE'"

– excerpts:

An impressive 7M customers in Texas have smart meters. Smart meter deployments have been completed in 271 of 488 zip codes in the coverage area for Comed in Illinois. What have these customers, who for the most part do not care about these smart meters, found out about the benefits?

1. Closed networks, security, infrastructure constraints and **technology obsolescence**: the **smart meters deployed in the last 1–3 years are already obsolete** in terms of the data communications standards, hardware and cybersecurity capabilities that exist on these meters. For the customers who are tied to the utility provided smart meter they are **stuck with these problems until the utility decides to upgrade the meters**. This won't be happening soon.
2. Data captured from the smart meters served the utilities by providing more visibility into usage and demand profiles. This **enabled the utility** to better plan and manage their own generation assets. The customers that benefited were the ones that already cared about their energy usage before they got the smart meters. I met a customer back then who had used Excel to track his energy usage for ~10 years before his smart meter was put in. He was an engaged customer and even he only got marginal benefits from the meters.
3. **The customer experience issues that existed with interactions with the utilities were never resolved with smart meters**. That poor bill and information display issue mentioned above? Still the case because the terms and approaches to communicating esoteric information to customers didn't really change with smart meters.

Suffice to say, the only metric on which these smart meter deployments could be considered as successful would be number of meters deployed. And this is only because **they were essentially mandated**

– Seyi Fabode | *Hackernoon* | 1/25/18

<https://hackernoon.com/iot-iiot-device-companies-are-making-the-smart-meter-mistake-2ab1471ff078>

But that will jump by nearly a third to £130 in 2018 as companies spend more time and money trying to contact harder-to-reach customers, according to one of the big six suppliers.

... When five of the big six did increase their tariffs in the first four months, several blamed smart meters. ScottishPower said smart meters accounted for £10 of the £86 bill increase for millions of its customers.

A source at one energy supplier, who did not want to be named, said the higher cost related to smart meters was due to “customer apathy, concerns and the difficulty in getting people to agree to have a meter fitted”. Staff were having to contact more people, more times, to achieve successful installs, they said.

Householders typically need to take a day off to be at home over a four-hour period for an engineer to swap in a smart gas and electricity meter.

— Adam Vaughan | *The Guardian* | 6/26/17
<https://www.theguardian.com/business/2017/jun/26/smart-meter-rollout-household-bills-rise>

[UK, CANADA, AUSTRALIA] “Smart meter problems keep growing: time for a re-think” – excerpts

Obsolescence already an issue

According to *Utility Week*, around 5 million smart meters have already been installed, although most of these are first generation (SMETS 1) meters with **limited functionality**. There have been recent press reports that **many of these meters will need to be replaced, potentially at an additional cost of £100 per unit**, as they will not be capable of being adopted into the infrastructure developed by the Data Communications Company (DCC), although the government disputes this.

SMETS 2 meters should have the full range of functionality, but so far these are still in the testing phase. Suppliers are reported as being unwilling to deploy these next-generation meters until the testing is fully complete and any issues resolved.

Even if the 5 million SMETS 1 smart meters are not replaced, the goal of installing 53 million smart meters by the end of 2020 is almost certainly unachievable.

An expensive programme with few benefits

“In the UK, the £11 billion costs of the smart meters programme are being recovered through consumers through their bills.”

— Kathryn Porter, *Watt-Logic*, 6/13/17

that the smart meter rollout was almost twice over budget and had failed to deliver the demand reductions anticipated. Similar findings were made by the Auditor General of Victoria, Australia:

“I concluded that, while VAGO’s [Victoria Auditor General’s Office] 2009 recommendations have been substantially addressed, these changes have not been sufficient to overcome manifest problems with the program’s design — that the control of costs to consumers and their realisation of benefits cannot be directly controlled by the state. Approximately only 80 per cent of original benefits are forecast to be realised, and consumers may experience a higher net cost than the most recent \$319 million estimate.”

The question of cost is a sensitive one. In the UK, the £11 billion costs of the smart meters programme are being recovered through consumers through their bills. In May 2017,

Harris Interactive, a research organisation, carried out a survey of the smart meter rollout on behalf of *Utility Week*. The survey found that over 60% of respondents were not aware that the costs of the programme were being recovered through energy bills, and the reactions to being told this were “extremely negative”.

The Institute of Directors recently renewed its calls for the smart meter programme to be put on hold, claiming that an **urgent review is needed to re-assess the costs and benefits**, particularly as the objectives of smart meters can be achieved more cheaply than via the current scheme.

“The programme has already failed to deliver interoperable meters for switching, is behind schedule, is over-budget and wedded to **out of date technology**. Not only that, the legal obligation on suppliers to install potentially incompatible meters by the deadline of December 2020 or else pay large fines is already pushing up inflationary costs in wages and advertising.”

“Questions continue to be raised as to whether smart meters deliver value for money. A recent study by the University of Waterloo in Canada found that the introduction of smart meters and time-of-use pricing in the province have had a very minor impact on electricity demand of just 2.6% in peak periods and 2.4% during mid-peak periods. A 2014 review by the Ontario Auditor General found that the smart meter rollout was almost twice over budget and had failed to deliver the demand reductions anticipated. Similar findings were made by the Auditor General of Victoria, Australia: . . .”

— Kathryn Porter, *Watt-Logic*, 6/13/17

— Kathryn Porter | *Watt-Logic* | 6/13/17
<http://watt-logic.com/2017/06/13/smart-meter-problems/>

[BRITAIN] “Smart meters: what would it take to stop the national rollout juggernaut?” – excerpts:

A scarcity of trained technicians capable of installing electricity and gas smart meters is the latest setback in the rush to roll out 53 million of the devices in Britain by 2020, but concerns have also been raised about security of the power supply.

The massive infrastructure endeavour, one of the biggest in the UK currently, has already been hit by a string of setbacks that could lead to costs swelling, causing acute embarrassment for the government.

The program is being implemented by energy suppliers at a cost of £11bn, which will be recouped from customers through energy bills.

— Josh Loeb | *Engineering and Technology* | 5/17/17 <https://eandt.theiet.org/content/articles/2017/05/smart-meters-what-would-it-take-to-stop-the-national-rollout-juggernaut/>

[USA] “Modernizing the grid: Who pays, who profits, who participates?” – excerpts:

The transformation of the country’s electric grid – into a **smart grid dotted with solar panels, batteries, microgrids and more** – holds nearly infinite potential to change our daily lives, our cities and our environment.

That was the overarching theme delivered by experts from industry, government and nonprofit groups at the national Grid Modernization Forum in Chicago this week.

But unlocking all this potential won’t be easy. Challenges include the risk of cyber-attacks, the overwhelming amount of data generated and a maze of regulations developed over more than a century.

Perhaps the greatest conundrum, though, is figuring out who should pay for grid modernization efforts, and how to quantify costs and benefits that are often intangible or based on a constantly shifting mosaic of variables.

Just as the electricity delivery system is changing from a one-directional flow to a multi-directional web, it is becoming less clear who is the provider and who is the consumer in complicated energy transactions that depend on automation and reams of data.

There has been much debate in recent years over the “death spiral,” the idea that decreasing electricity demand thanks to energy efficiency and distributed renewable energy will undermine utilities – who, the theory goes, must increase rates to cover costs, thereby creating incentives for customers to use even less energy.

“Energy as percent of GDP is the lowest it’s ever been in the U.S.,” said Phil Davis, vice president of planning and partnerships for Sterling Energy Assets

All this technology costs money, and under traditional models it would be the utilities who would spend that money.

CUSTOMERS PAY THE ELECTRICITY COST TO RUN UTILITY’S AMI/SMART ELECTRIC METERS?!

[Michigan] Evaluation of the ITRON Open Way AMI Meter report by Willian Bathgate, E.E., M.E. – excerpts:

(“Note: This report has been written in terms that a common person with limited knowledge of electricity and engineering can understand”):

Meter accuracy and your bill – Power Required to Run the AMI Meter

Based on real collected data, not extrapolated calculations

- At ~ \$.31 per day cost just to run the AMI meter this equals an **added \$113.15 per year per customer**
- If you consider the total annual AMI kWh use for the 1.2 M DTE customers this is an **added \$13.578M in added revenue to DTE** to run the AMI meters, fully paid by the customer base
- If you also consider the Annual kWh consumed by just running the AMI meters in the 1.2 Million Customers in the DTE territory this equals an added 103.806 Million kWh in required added generation capacity just to run the AMI meters.

Conclusion: There is absolutely no evidence the AMI Meter program saves energy in kWh or money, in fact it only drains the bank accounts of the consumer and pads the revenue of the utility.

The only way the AMI program will save kWh’s is to use

it to ration power to consumers via Demand Response/ Time of Use rate structures at 4-8 X normal rates where the elderly, disabled and young families with a parent and small children at home can least afford it or do without power during the Demand Response/Time of Use period. Under this scenario the AMI program is the largest fleecing of the consumer to ever exist.

— William Bathgate, EE, ME | 12/2/16 and 2/16/17 | p.39-40 <http://www.jeffpud.org/wp-content/uploads/Evaluation-of-the-ITRON.pdf>

William S. Bathgate’s background:

“I hold an electrical engineering and mechanical engineering degree and previously was employed through late 2015 for 8 years at the Emerson Electric Company. While at Emerson Electric I was the Senior Program Manager for Power Distribution Systems and in charge of RF and IP based digitally controlled high power AC power switching system product lines in use in over 100 countries and I was also directly responsible for product certifications such as UL, CE, PSE and many other countries electrical certification bodies. I am very familiar with the electrical and electronic design of the AMI meters in use because I was responsible for very similar products with over 1 Million units installed across the world. I have done this analysis due to my own curiosity without conflict of interest of this new technology.”

“I have 40 Years work experience in design and deployment of: High tech power management systems, UPS and power distribution Switched Mode Power Supplies; Electrical and Electronic hardware engineering; Computer systems engineering; Radio Systems design and testing; High Current and High Voltage switches; Internet communications using both wired and wireless technologies; UL, CE (Europe), Africa, Japan, Australia and China product safety certifications Cyber encryption and protection of Radio Communications using digital signals RFI/EMI mitigation.” (p.2)

Typically utilities can recoup their spending on infrastructure and services through customer rates. But the growth of microgrids, distributed solar and other developments has raised questions about whether all customers can be treated fairly or equally.

Private entities, from factories to universities and hospitals, can and do also own their own microgrids. This avoids the risk of passing costs on unfairly. But there are also complications in how these microgrids interact with the utility's grid, and whether they can get needed rights-of-way.

"Utilities currently take in their revenues based on a cost formula, but now they're being asked to take in services based on a value formula," said Robert Sheridan, Utility of the Future director for the multinational utility National Grid (<https://www.nationalgridus.com>).

"To the extent values are not being covered in cost, we can have a challenge. When you're paying out for something, a service that someone isn't paying in for, you need to make sure that is manageable so [utilities] can remain viable."

Many say the market will be key to driving the modern-

“Just as the electricity delivery system is changing from a one-directional flow to a multi-directional web, it is becoming less clear who is the provider and who is the consumer in complicated energy transactions that depend on automation and reams of data.”

— Kari Lydersen, *Energy News*, 4/7/17

ization of the grid and the larger energy transition. And indeed scores of start-ups and other companies have arisen to provide **software, hardware, expertise, security, management and other products related to the smart grid.**

Speakers and audience members at the forum raised the plight of low-income people, who do not have capital of their own to invest in solar panels, smart appliances or other smart grid-related products. Michael Burr, director of the Microgrid Institute (<http://www.microgridinstitute.org>), said that typically the U.S.

Department of Housing and Urban Development (HUD) would fund energy-related improvements for low-income households and public housing. But the agency may be in for cuts under Donald Trump's administration.

Burr added that city governments can and should help low-income people afford energy improvements, including through PACE financing. (<http://pacenation.us/what-is-pace/>) "Vulnerable populations are impacted by long term outages, there's an obligation to help those populations," he said.

A popular option from development to transportation to education is public-private partnerships, or P3s; and some say they could be key to grid modernization.

— Kari Lydersen | *Energy News* | 4/7/17
<https://energynews.us/2017/04/07/midwest/modernizing-the-grid-who-pays-who-profits-who-participates/>

“WATER UTILITIES CHANGE AMR/AMI SYSTEMS MORE FREQUENTLY THAN PREVIOUSLY THOUGHT”

— excerpts:

Study sponsored by Badger Meter shows utilities change their meter reading systems at an average age of 8.2 years

In a recent sponsored study, industry expert Dr. Howard Scott, PhD, worked to identify how long a water utility typically uses its AMR/AMI system before changing to a new one. This research showed water utilities change their meter reading systems at an average age of 8.2 years; **far more frequently than the commonly referred to 20-year life expectancy for the meters themselves.**

Thirty years of data collected to produce The Scott Report provided the foundation for the new analysis. Since the first utility AMR deployment in the mid-1980s, The Scott Report has recorded approximately 11,000 projects involving 58.8 million water AMR/AMI units.

“Many utilities and industry participants may believe in a 20-year rule of thumb,” says Dr. Howard Scott, “however my analysis shows water utilities actually change AMR/AMI systems after a much shorter amount of time.”

— PRWEB, 5/27/15 <http://www.prweb.com/releases/2015/05/prweb12748042.htm>

[GERMANY] “Germany’s “Silent Catastrophe” ...330,000 Households See Power Turned Off In One Year!” – excerpts:

The DPA German press agency reported yesterday on the rapidly spreading energy poverty now engulfing the country.

The main driver is Germany's skyrocketing electricity prices – primarily due to the legally mandatory feeding-in of wind and solar power. **Currently regular household consumers are paying nearly 30 cents a kilowatt-hour – almost three times the rate paid in the USA.**

6.2 million threats to cut off service were made!

T-online cites the German Bundesnetzagentur, adding that in 2015 also 44,000 households saw their natural gas turned off. T-online adds that millions more have been threatened with the loss of electric power: “Power cut-offs were threatened 6.2 million times. The average outstanding amount that electricity providers demanded from the impacted households was 119 euros.”

According to Bulling-Schröter: “Energy poverty in Germany is a silent catastrophe for millions of people, especially in the cold and dark winter months.”

— P Gosselin | *No Tricks Zone* | 3/3/17
<https://notrickszone.com/2017/03/03/germanys-silent-catastrophe-330000-households-see-power-turned-off-in-one-year/>

[Arizona] “Tucson...: Huge water bill for new house with no running water – ‘The meters are wrong’” – excerpts:

Excerpt from “Meter Mysteries” by Nick Vincent, KVOA News4 Tucson, 11/10/16:

How can a **new house**, one with **no running water**, rack up a massive water bill. That’s the question Chris Rechlin wants Tucson Water to answer. “It’s impossible. This is a vacant home. Nobody has ever lived in it. It’s brand new construction,” said Rechlin.

Rechlin says that last month he got a \$1251 water bill, for using nearly 80,000 gallons of water. An inspection found **no leaks**, and when Rechlin called Tucson Water about the bill he says he was told that maybe someone stole it.

“Nobody is stealing water, nobody is using water. There is not a toilet that is overflowing in here. The meters are wrong,” said Rechlin.

— • —

Eric Weiss says he got a \$300 bill after his water use suddenly jumped by more than 20,000 gallons. “There is no sign of that water ever being used. . . .

— • —

From 11/11/16 postings to the comment section:

Exact same story here. Suddenly I had a 700 dollar bill and next month it was back to 60. No leaks, no theft, no trace of those thousands of gallons of water they claim I used. – Derek Granger . . .

I too have received higher than normal water bills after new meters where installed, once on my primary residents and then just last month at my rental property. The water company said they can not say the meter is faulty. I had the water company come out and check the meter and it was performing as normal, no leaks. They said somebody is stealing my water. I live in the middle of nowhere. In both case the water usage returned to normal the next month. They ended up getting a extra couple hundred dollars out of me. – Brian Love

Just recieved a bill for \$600 dollar, same exact story as Bill. Auditor came to my house twice, could not find any thing. Do you know the Facebook page or how to contact Bill? – Tony Ray Baker. . . .

Similar story here, too. 2 adults, no drip system, A/C (no evap used), no leaks, toilets checked out OK. So where did 12,000 gallons of water go??? The City did “give” us a “courtesy adjustment” of 1/2 of the loss. And NO adjustment on the sewer side. “That’s the county’s juristiction”. BLAH, BLAH, BLAH, we’re still out the cash. –Dick Fosdal

I also received a 500\$ bill at my moms home. One woman no kids no pets. I also called they came read meter, no signs of leaks and no explanation just had to fork the money up. This happened in August of 2016 here in Tucson –Esmeralda Maken

[Original link (no longer active) to the “Meter Mysteries” report by Nick Vincent] <http://www.kvoa.com/story/33679907/n4i-investigators-meter-mysteries>
– Smart Meter Harm | 11/12/16 <https://smartmeterharm.org/2016/11/12/tucson-arizona-huge-water-bill-for-new-house-with-no-running-water-the-meters-are-wrong/>

[Colorado] “Xcel Energy Blames New Meter After Bill Triples In Amount” – excerpts:

DENVER (CBS4)– A family in the Denver metro area had some questions for Xcel Energy after their utility bill increased three-fold when they got a new meter.

“This has got to be wrong,” said Xcel Energy customer Dwight Hall. Hall said his meter was replaced by Xcel Energy earlier this month and his latest bill reflects a usage amount three times normal.

“We didn’t add any new equipment, we didn’t change anything and it jumped up three times,” said Hall.

Xcel told CBS4 that a part in Hall’s meter failed. That part helped read the kilowatt usage. Xcel replaced the meter.

– CBS Denver | 9/30/16
<https://denver.cbslocal.com/2016/09/30/xcel-energy-blames-new-meter-after-bill-triples-in-amount/>

[Colorado] “Problem solved: Woman’s energy bill quadrupled after Xcel installed new meter” – excerpts:

People around the Denver metro area are talking about new meters being installed by Xcel Energy in homes and saying they seem to be anything but smart.

However, Xcel says these new meters are not “smart meters,” even though many customers believe they are. The company has asked regulators for permission to start installing those types of meters starting next year.

One customer, Patsy Smith, lives in a 700-square-foot home and said she is conscientious about her energy use by unplugging things when they are not in use.

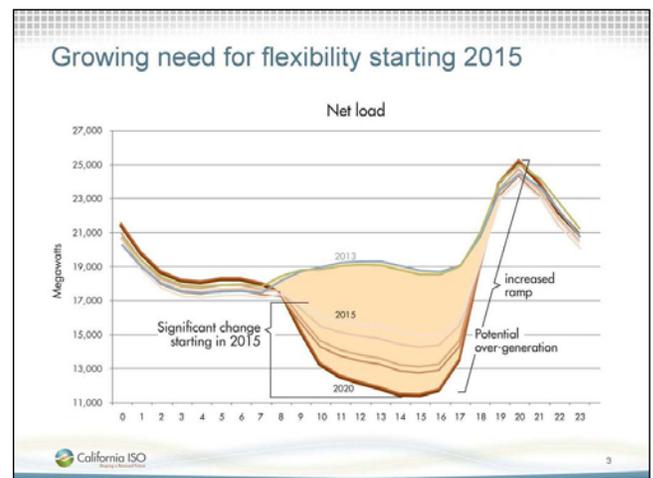
But with the new meter, her bill jumped from an average of \$50 a month to \$180. She has called Xcel several times, but it said there is nothing that can be done about her bill.

After sharing Smith’s story, the FOX31 Problem Solvers heard from many other Xcel customers who saw bills go up after new meters were installed.

– Web staff & Macrae Aegerter | Fox31 | 9/5/16
<https://kdvr.com/2016/09/05/energy-bill-quadrupled-after-xcel-installed-smart-meter-woman-says/>

[California] “What’s the Point of an Electricity Storage Mandate?” – excerpts:

An aptly named picture – the “duck graph” – is captivating the California energy policy world. It depicts electricity demand net of projected renewable generation (“net load”) on a representative day in the not too distant future. (For an update on the duck curve, see Meredith Fowlie’s recent blog: The Duck Has Landed, May 2, 2016)*



One point of concern is the duck's long neck, representing a 14,000 MW swing in net load in a roughly one hour period from 5 to 6PM. Currently, the largest swing system operators typically have to deal with is less than half that size. Adding insult to injury, the duck graph swing is projected to happen in shoulder months like March or October, when total system load will be low.

The duck graph encapsulates the **collective uncertainty about how the electricity system will operate as the state adds more and more renewables**. If the California electricity system has significant solar capacity, what happens on a typical March weekday when the sun gets low on the horizon just as office buildings are turning on their lights? How will system operators deal with a wild swing in net load as they lose solar generation?

One answer policymakers are offering is electricity storage. For example, the California Public Utilities Commission is in the process of implementing legislation requiring it to consider electricity storage procurement mandates.

– Catherine Wolfram | Energy Institute at Haas | 7/29/13 <https://energyathaas.wordpress.com/2013/07/29/whats-the-point-of-an-electricity-storage-mandate/>

*“The Duck Has Landed” | Meredith Fowlie | Energy Institute Blog | 5/2/16 <https://energyathaas.wordpress.com/2016/05/02/the-duck-has-landed/>

[JAPAN] “The fraud called electricity retail liberalization”

– excerpts:

Three months have passed since the retail sale of electric power was fully liberalized. Approximately 300 companies have since entered the business of generating and selling electricity, and more than 1 million consumers have signed contracts with them, switching from the major power companies that have monopolized each region.

Some of those consumers may be feeling satisfied with new lower power rates, but their satisfaction could be short-lived. They may well end up shouldering the huge cost of the liberalization program.

There are hidden costs related to generating and supplying electricity that consumers never catch sight of because they are not listed on their monthly bills. These hidden costs are so huge that they could erase any benefits to consumers.

How much savings have accrued to those 1 million plus consumers as a result of changing their power suppliers? It is still too early to come up with an exact answer because electricity bills usually go up sharply in the winter and summer months. But assuming the new contracts have resulted in an annual average saving of ¥10,000, as indicated by many websites' comparison of differences in power charges, the total savings come to about ¥11.1 billion.

“The [City of Santa Fe] Water Division's revenues have become a political issue at City Hall. A series of rate increases in recent years produced a \$95 million surplus for the division, and the City Council has put some of the millions to use covering budgets in other city operations.”

– Mark Oswald, “Water bills rise, releasing a flood of complaints”, *Albuquerque Journal*, 11/27/15
<https://www.abqjournal.com/682167/water-bills-rise-releasing-a-flood-of-complaints.html>

But this figure is only an illusion, because huge investments were made in preparation for liberalization and the money needed for those investments is being collected from all of the power consumers in the name of fees for using transmission lines.

One case that illustrates such big investments is the installation of what is known as a “smart meter,” a device that measures the amount of electricity consumed in real time and communicates the data to a power company for monitoring and billing. This device had been on the market even before liberalization but is now a must-have. A smart meter must be installed in every household in principle when its electricity supplier is changed. Tokyo Electric Power Co., which serves 20 million households, initially budgeted ¥21.9 billion for three years from 2012 to 2014 to install smart meters. Although a regulatory body reduced the sum by ¥6.5 billion, the balance still means that Tepco spent around ¥5 billion annually in the name of liberalizing the retail of electricity.

Other major power companies also invested huge sums to install smart meters. The total sum budgeted by the nine other regional power companies for that purpose averaged ¥62 billion a year. Even if it is assumed that 10 percent of that was slashed by the regulatory body, it still leaves a total of some ¥55 billion a year. When the amount spent by Tepco is added, as much as ¥60 billion has been spent every year for installing smart meters.

This sum more than offsets the cost effectiveness of liberalization. The estimated savings of ¥11.1 billion accruing to consumers is an overblown figure if various marketing devices to lure consumers are taken into account. This figure is likely to dwindle from next year on, showing that it is difficult for consumers to benefit.

After the liberalization got underway, however, it surfaced that it is impossible to collect the necessary data. The regional monopolies blame the manufacturers of the smart meters for supplying faulty products. But the monopolies, which bought the smart meters, aren't free of blame. They will have to bear the cost of parts replacement and repairs, which in turn will be passed on to consumers in the form of increased expenses for transmitting electricity.

Some of those consumers may be feeling satisfied with new lower power rates, but their satisfaction could be short-lived. They may well end up shouldering the huge cost of the liberalization program.

There are hidden costs related to generating and supplying electricity that consumers never catch sight of because they are not listed on their monthly bills. These hidden costs are so huge that they could erase any benefits to consumers.

How much savings have accrued to those 1 million plus consumers as a result of changing their power suppliers? It is still too early to come up with an exact answer because electricity bills usually go up sharply in the winter and summer months. But assuming the new contracts have resulted in an annual average saving of ¥10,000, as indicated by many websites' comparison of differences in power charges, the total savings come to about ¥11.1 billion.

– *Sentak Magazine* | *The Japan Times* | 7/27/16
<https://www.japantimes.co.jp/opinion/2016/07/27/commentary/japan-commentary/fraud-called-retail-electricity-liberalization/#V5kwUSMrLe0>

[Texas] “New Water Meters the Cause of Higher Bills” – excerpts:

Hundreds of Odessa residents are noticing a rather large increase to their water bills lately. So we decided to check it out, turns out **city officials say the big increase is due to new water meters.**

On average, residents have reported to CBS 7 about a 70 percent increase some even saying their bills completely doubled. So far only the east side of Odessa has the new meters, but by the middle of next year all of Odessa will have them meaning everyone will be seeing some sort of change to their bills.

Last year, the city of Odessa approved the purchase of 39,000 meters at a cost of 8.3 million dollars to be placed at every home and business

— Lauren Lanmon | CBS 7 | 10/12/15, updated 11/9/15
<https://www.cbs7.com/content/news/New-Water-Meters-the-Cause-of-Higher-Bills-332276362.html>

[California] “World’s largest solar plant applying for federal grant to pay off federal loan” – excerpts:

After already receiving a controversial \$1.6 billion construction loan from U.S. taxpayers, the wealthy investors of a California solar power plant now want a \$539 million federal grant to pay off their federal loan.

“This is an attempt by very large cash generating companies that have billions on their balance sheet to get a federal bailout, i.e. a bailout from us – the taxpayer for their pet project,” said Reason Foundation VP of Research Julian Morris. “It’s actually rather obscene.”

The Ivanpah solar electric generating plant is owned by Google and renewable energy giant NRG, which are responsible for paying off their federal loan. If approved by the U.S. Treasury, the two corporations will not use their own money, but taxpayer cash to pay off 30 percent of the cost of their plant, but taxpayers will receive none of the millions in revenues the plant will generate over the next 30 years.

Ivanpah is the largest concentrated solar power plant in the world. It was unveiled in February with great fanfare. Dr. Ernest Moniz, the U.S. Secretary of Energy, justified taxpayers’ investment at the time, saying, “We want to be technology leaders. It’s good for our economy and it’s also good for helping stimulate the global transition to low carbon.”

But since then the plant has not lived up to its clean energy promise. According to the U.S. Energy Informa-

tion Administration, the plant produced only about a quarter of the power it’s supposed to, a disappointing 254,263 megawatt-hours of electricity from January through August, not the million megawatt-hours it promised.

Touted as a clean, green energy, some environmentalists have turned against concentrated solar as a technology, deeming it dangerous and a threat to wildlife. Unlike solar photovoltaics, which turn sunlight directly into electricity, CSP uses thousands of large mirrors to concentrate reflected sunlight into powerful beams aimed at “power towers.” The heat generates steam to turn turbines that create electricity.

The problem is that birds see the mirrors as water. As they approach, the 800° F solar beams roast any bird that happens to fly by. A recent study released by the California Energy Commission conducted by the Center for Biological Diversity called Ivanpah a “mega-trap” that will kill up to 28,000 birds a year.

—William La Jeunesse, | *Fox News* | 11/8/14, Last Update 11/20/15
<https://www.foxnews.com/politics/worlds-largest-solar-plant-applying-for-federal-grant-to-pay-off-federal-loan>

[New Mexico] “Problems with city’s new ‘smart’ water meters generate numerous written complaints” – excerpts:

Stanley Gairey couldn’t understand how he had gone through 2,700 gallons of water at his home in one day. But his \$400 water bill said he had.

Gainey’s complaint is among more than two dozen logged in writing against the city’s Utility Billing Division in the last six months, about the same time the city started to replace defective meters with a new “smart” meter-reading system.

The New Mexican first reported a spike in complaints over water bills last month, most of which stemmed from the installation of new water meters.

— Daniel J. Chacón | *The New Mexican* | 12/28/15
https://www.santafenewmexican.com/news/local_news/problems-with-city-s-new-smart-water-meters-generate-numerous-complaints-1.448e931-9ff9-58a4-8a90-d366f2d3692e.html

[Oklahoma] “City has highest electric bills in Oklahoma, meter critic says” – excerpts:

Smart Meters are causing electrical bills in Claremore to jump as high as 500 percent, according to one resident who claims she paid more than \$1,500 in one month.

Shelly Taylor and her family moved into their new home Nov. 1, 2014 and in one month the electrical bill went from \$258 to more than \$1,000, she said.

Before the Smart meters went in, Taylor said her electric bills were never more

After already receiving a ... \$1.6 billion construction loan from U.S. taxpayers, the wealthy investors of a California solar power plant now want a \$539 million federal grant to pay off their federal loan.

“This is an attempt by very large cash generating companies that have billions on their balance sheet to get a federal bailout, i.e. a bailout from us – the taxpayer for their pet project,” said Reason Foundation VP of Research Julian Morris. “It’s actually rather obscene.”

— William La Jeunesse, *Fox News*, 11/8/14

than \$300. In fact, she said the family has taken several conservation steps, including new wall and attic insulation, the installation of double-pane windows and a five-minute time limit on showers.

Taylor claims power surges occur several times a day, causing reboots to occur, which in turn, creates more electrical usage.

“We have one elderly woman who is on Social Security and she had a \$600 electric bill,” Taylor said. “She had been in the hospital with colon cancer, so she wasn’t using electricity. She comes home and her electric bill while in the hospital was almost \$300.”

Taylor contends Claremore has the highest electric bills in the state. “We are 26.6 percent higher than any other city or town and they (city officials) make a 48 percent profit off our electric bills,” she said.

Claremore Electric is the city’s public power source, delivering electricity from the Grand River Dam Authority to more than 11,000 homes and businesses.

Utility customers nationwide have noticed huge hikes in their bill after a Smart meter is installed, and most are hundreds of dollars more than usual. Utility companies, like Claremore Electric, claim the meters are accurate, but unexplained over-billing has been featured in many reports around the U.S.

– Tim Farley | *Red Dirt News* | 10/19/15 <https://www.reddirtreport.com/red-dirt-news/claremore-smart-meters-create-substantial-increases-bills-residents-claim>

[USA] “Congressional Testimony: ‘Smart’ meters have a life of 5 to 7 years” – excerpts:

... Mr. Gaines made a surprising statement regarding the life expectancy of ‘smart’ meters as compared to existing traditional meters:

“These devices are now computers, and so they have to be maintained. They don’t have the life of an existing meter which is 20 to 30 years. These devices have a life of between 5 to 7 years. And so the challenge that the industry has is making sure they maintain their smart grid environment, not neglect it.”

Although Mr. Gaines doesn’t provide an explanation for the short lifetime of the ‘smart meter’ as compared to a traditional [analog] meter, the discus-

“Hundreds of Odessa residents are noticing a rather large increase to their water bills lately. So we decided to check it out, turns out city officials say the big increase is due to new water meters.”

– Tim Farley | *Red Dirt News* | 10/19/15

[Oklahoma] “Claremore Residents Shocked Over High Utility Bills” – excerpts:

Some Claremore families are getting high electric bills and think their new smart meters may be to blame, . . .

The City of Claremore runs its own electric utility and buys power from GRDA. The city has installed smart meters in 80 percent of the homes they serve and electronically monitors and records customers’ usage through the new technology.

– News on 6 | 8/4/15 <https://www.newson6.com/story/29710071/claremore-residents-shocked-over-high-utility-bills>

[Illinois] “Another suburb reports problems with digital water meters” – excerpts:

As one Chicago suburb struggles to cope with chronic overcharging by its “smart” digital water meters, another is ramping up random testing after finding that some of its meters claimed usage when not even hooked up.

A *Tribune* investigation, published in June, uncovered widespread problems in the southwest suburb of Tinley Park, where a different brand of digital meter had hundreds of cases of overbilling, with thousands more meter failures unexplained. . . .

– Joe Mahr, Lauren Zumbach & Gregory Pratt | *Chicago Tribune* | 7/25/15 <https://www.chicagotribune.com/news/ct-aurora-water-meters-met-20150724-story.html>

[Illinois] “Suburb’s smart water meters regularly overcharge residents”

– excerpts:

One of Chicago’s largest suburbs uses a type of water meter that it knows has regularly overcharged residents – sometimes by hundreds of dollars a bill – while failing to give the public accurate information about the scope of the problem.

– Gregory Pratt, Lauren Zumbach & Joe Mahr | *Chicago Tribune* | 6/4/15 <https://www.chicagotribune.com/news/watchdog/ct-water-meter-overcharge-met-20150603-story.html>

“These [‘smart’ meter] devices are now computers, and so they have to be maintained. They don’t have the life of an existing [analog] meter which is 20 to 30 years. These [‘smart’ meter] devices have a life of between 5 to 7 years. And so the challenge that the industry has is making sure they maintain their smart grid environment, not neglect it.”

– Mr. Bennett Gaines, Sr. Vice President Corporate Services, Chief Information Officer for FirstEnergy. Quote from the article “Congressional Testimony: ‘Smart’ meters have a life of 5 to 7 years”, 10/29/15

[New Mexico] “**Santa Fe water rates among highest, surveys show, but usage is low**” – excerpts:

Circle of Blue’s report says that, based on water usage of 100 gallons per person per day for a family of four, a household in Santa Fe would pay \$154 a month. The Las Vegas report puts it this way: In Santa Fe, the bill would be \$144 for the same amount of water Las Vegas residents pay \$41.50 for on their average monthly bill.

Santa Fe city officials . . . point out a shortcoming in the comparisons, noting that, because Santa Feans use less water than just about anybody in the West, the bills for most local households shouldn’t come up to the monthly totals reported in the Circle of Blue and Las Vegas reports.

Santa Fe, for instance, has per-capita water usage that’s less than half of the same measurement for Las Vegas.

And Santa Fe’s water rate scheme rewards frugal water users, with much **higher rates kicking in only after usage goes beyond a first-tier level** at which the city believes most households can live comfortably – 7,000 gallons a month September through April and 10,000 gallons a month in the summer.

The Circle of Blue and Las Vegas surveys assume water

usage amounts that put Santa Feans into the higher, **second tier** of rates, where customers must **pay more than three times as much** per 1,000 gallons used.

“The average Santa Fean isn’t using 100 gallons a day,” said [Caryn] Grosse [the city’s water conservation specialist]. “They just aren’t. In the first tier of rates, people have an appropriate amount of water at a relatively affordable rate. It’s a built-in incentive to use less water.”

She said, “It’s fair to say that Santa Fe has some of the higher rates in the Southwest but, when you look at how the rates are, **it’s not a bad bill until you go into the second tier.**”

An official measurement that puts Santa Fe’s water usage at a low level is called **gallons per capita per day, or GPCD**. It’s arrived at by dividing total water usage by total population. Santa Fe’s GPCD for 2013 was 101 gallons, despite water-use totals boosted by the city’s heavy dose of tourists.

Salt Lake City’s GPCD for the same year was 233 gallons. For other cities, GPCD was: Las Vegas, 222 gallons; Phoenix, 185 gallons; Albuquerque, 135 gallons; and Tucson, 127 gallons.

Santa Fe’s billing rate for most single-family residential customers is an \$18.42 monthly service charge, plus \$6.06 per

[USA] *Considerations for adopting AMI and AMR – A comprehensive guide for water utilities* – excerpts: p.9-10:

IV. Finance and Budgets for AMI/AMR Systems

It is important to understand all of the options and channels through which funding can be achieved because conversion projects can be cost prohibitive.

A. Standard Approaches to Financing an AMI Project

Rate Increases

Rate increases are the most common approach to covering the cost of system conversion. They can take on different forms that can make them easier on customers and easier to pitch to a governing body. Some rate increases are tiered, some involve increases over several years, and others are even initiated prior to the conversion so that there is more available for the conversion.

User Fees

User fees are fees or taxes imposed on users of a service or resource to help in covering the cost of providing or maintaining the service or resource. These fees are common among public services and utilities; . . .

Revenue Bonds

Revenue bonds (also known as municipal bonds) are available to municipalities that need funds for income-producing projects. These bonds are secured by identifying in advance the revenue sources that will enable repayment, such as revenue generated by improved billing in AMI systems. These bonds can be issued to any agency that operates like a business, generating revenue and incurring operational expenses. Revenue bonds require repayment of the principal and

the interest accrued, much like a loan, and in this sense should be obtained with care.

Reserve Capital

Every utility sets aside some funding for long-term capital investment projects or anticipated future expenses. In some cases, reserve capital can be used to fund a portion of the project or, with enough planning, the entire project.

Grants

A number of grant opportunities at the state and federal level can contribute to covering the cost of the conversion. However, many of them are treated as bonds or loans and require some contribution to the granting source, or a deliverable.

Performance Contracting

Performance contracting is a contractual partnership between a utility and a vendor company that identifies and guarantees certain energy, operational, and resource savings opportunities. The guaranteed savings are accounted for from increased billable revenues, energy savings, reduced Operation and Maintenance (O&M) costs, and avoided capital expenditures, which derive from implementing an AMI system. These savings are considered a certain future source of income, which can be used to pay for the completed project. Any savings that are obtained in excess of the amount owed the vendor are kept by the utility. Shortfalls are generally assumed by the vendor but can be delegated to the utility.

– Chelsea Hawkins and Allen Berthold | *Considerations for adopting AMI and AMR* | College Station, Texas | October 2015
<http://www.allianceforwaterefficiency.org/WorkArea/DownloadAsset.aspx?id=9674>

1,000 gallons for the first 7,000 gallons from fall through spring, or the first 10,000 gallons in the summer, with the per-thousand-gallon rate going up to \$21.72 for usage exceeding the first-tier limits.

— • —
Nick Schiavo, Santa Fe's public utilities director, said the city's rates "are linked to what it costs the city to provide water," including the water system infrastructure, water treatment, staffing and **debt service**.

— • —
One problem that added costs in Santa Fe was the purchase of a **\$5 million metering system** about a decade ago from the **now bankrupt Datamatic LTD**. About 13,000 of the units that were supposed to allow readers to get information without leaving their vehicles failed within a few years.

Now, Schiavo said, a new water meter system . . . will replace 34,000 meters over the next couple of years . . .

Under a previously announced, \$8.3 million, 10-year contract with Badger Meter Inc., the **new meters will use cellphone technology** to provide the city with water usage amounts without roving meter readers.

— Mark Oswald | *Albuquerque Journal* | 5/1/15
<https://www.abqjournal.com/577825/rates-are-high-but-usage-is-low.html>

[USA] New Research Reveals Life Expectancy of Meter Reading Systems" – excerpts:

Industry expert Howard Scott, Ph.D., worked to identify how long a water utility typically uses an AMR/AMI (automatic meter reading/advanced metering infrastructure) system before changing to a new one in a recent sponsored study, according to a press release.

The research revealed that water utilities change their meter reading systems at an average age of 8.2 years, which is significantly more often than the general referred life expectancy of 20 years for the meters, stated the release.

Since the first utility AMR deployment in the mid-1980s, The Scott Report has recorded around 11,000 projects involving 58.8 million water AMR/AMI units, reported the release.

The 30 years of data collected for The Scott Report provided the foundation for the new analysis, noted the release.

— Water Technology Staff | Water Technology 5/29/15
<https://www.watertechnology.com/new-research-reveals-life-expectancy-of-meter-reading-systems/>

[New Mexico] "Cellular-Enabled Smart Water Meter Project 'First of its Kind'"

— excerpts:

The city of Santa Fe has chosen Badger Meter's Beacon smart water meter system for full installation across all of its water meter endpoints, including both residential and commercial customers.

The foundation for the project is a **cellular-enabled smart meter**, which can be installed and immediately used for the utility's smart water network applications. The contract calls for about 35,000 smart meters to be installed, making it the single largest implementation of cellular machine-to-machine technology in the water utility sector worldwide, according to IHS.

— • —
According to the IHS publication, The Smart Water Meter Intelligence Service, in the past five years, telecom providers in North America have been altering their business plans to target critical infrastructure. In aligning with the smart grid, smart utility and smart cities movements, telecom providers have dramatically lowered rates, while investing in partnerships with various technology vendors targeting these industries. While market development for cellular adoption in utilities has occurred, it has been primarily in backhaul applications, whereby the cellular modem is essentially the last leg of a mainly utility-owned network, and not in the actual smart meters. So far projects of this scale have only been built for electric utilities, whereby devices are inductively powered and therefore do not have battery life concerns.

— Jessica Lyons Hardcastle | *Environmental Leader* | 4/7/15
<https://www.environmentalleader.com/2015/04/cellular-enabled-smart-water-meter-project-first-of-its-kind/>

[UK] "Smart metering technology 'could be out-of-date' by the time it is rolled out, MPs warn" – excerpts:

The Public Accounts Committee (PAC) has warned that some of the technology being implemented for the national smart meter rollout could be outdated by the time it is in place.

— Anh Nguyen | *Computer World UK* | 9/10/14
<https://www.computerworlduk.com/data/smart-metering-technology-could-be-out-of-date-by-time-it-is-rolled-out-mps-warn-3544247/>

[USA] How Dangerous and Expensive Became 'smart' – An Exposé of the "Smart Grid"— excerpts:

Across the U.S. installers continue to replace comparatively safe analog (mechanical) utility meters with digital "smart" meters for electrical, gas and water services. Most of the

new meters are wireless two-way transmitters that pulse signals to communicate continuously between your home, school, or workplace and utility companies miles away. The new meters are part of a nationwide project dubbed Advanced Metering Infrastructure (AMI). Most folks call this evolving make-over the "smart grid."

The AMI "smart" meter . . . records electrical consumption data and sends the information wirelessly to energy system managers. "Smart" meters can be programmed to read and transmit data monthly, or up to every fifteen seconds. Data may be relayed by systems similar to mobile phones or Wi-Fi. Or information may be relayed via fiber optics (thin, transparent cables that carry signals by pulsing light). Of these methods, fiber op-

— • —
"[T]he power companies are spending on rate payers' account," says Nancy Brockaway, a utilities attorney and former counsel with the New Hampshire Public Utilities Commission. Ratepayers foot the bill for the meters through higher utility bills. 'Utilities don't have much skin in the game,' she says."

— Andy Stone, "Smart Meters: Not So Sharp For Consumers", *Forbes*, 10/21/09
<https://www.forbes.com/2009/10/21/smart-grid-utilities-business-energy-meters.html#5674697f13b4>

tics may offer the safest transmission.

AMI is nested within the American Recovery and Investment Act of 2009, and the Obama Administration has shoveled an estimated eleven billion dollars into incentive programs for utilities that participate. ...

The Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) are among federal heavyweights behind the thundering AMI rollout. Several universities and corporations stand to profit hugely by providing AMI equipment, software and expertise. These include General Electric, IBM, Hewlett Packard, Siemens, Toshiba, Microsoft, Cisco, Verizon, Google, Itron and Tantalus.

With a financial and political engine of this magnitude, the AMI meter replacement project has moved at lightning speed. According to the Institute for Electric Efficiency (IEE), nearly 40 percent of U.S. households had an electric “smart” meter installed by August 2013. A total of sixty-five million “smart” meters are projected to be installed by 2015, covering more than half of all U.S. households.¹ Among states hit hardest so far have been Oregon, Idaho, California, Nevada, Arizona, Texas, Oklahoma, Maryland, Virginia, Indiana, Ohio, Pennsylvania, Michigan, Vermont, Florida, Georgia and Alabama.

— Amy Worthington | The Weston A Price Foundation | 1/19/15 <https://www.westonaprice.org/health-topics/environmental-toxins/smart-meters-not-so-smart/>

[UK] “Public may end up paying for obsolete smart meters that save little, MPs warn” – excerpts:

Public accounts committee says gas and electricity consumers will bear cost of installing meters likely to benefit suppliers most

The government’s £11bn roll-out of smart gas and electricity meters will cost every home about £215 over the next 15 years – yet households will save at most just 3% a year on the average energy bill by 2030, MPs have warned.

It said the **Department of Energy & Climate Change** had estimated the cost of the programme to install smart meters at £10.6bn, with households contributing through their energy bills.

— Rebecca Smithers | *The Guardian* | 8/10/14 <https://www.theguardian.com/environment/2014/sep/10/public-may-pay-obsolete-smart-gas-electricity-meters-save-little-mps-warn>

“The Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) are among federal heavyweights behind the thundering AMI rollout. Several universities and corporations stand to profit hugely by providing AMI equipment, software and expertise. These include General Electric, IBM, Hewlett Packard, Siemens, Toshiba, Microsoft, Cisco, Verizon, Google, Itron and Tantalus.”

— Amy Worthington,
The Weston A Price Foundation, 1/19/15

[Ohio] “Water-meter change costly for city” – excerpts:

Your water bill may go up \$2 a month so the city can continue to bill you for the service. ...

Canton – which has about 40,500 active water customers, including 23,300 residential customers inside the city – became one of the first cities in the country to install an automated meter reading [AMR] system, Converse said. A MTU is a small, gray sealed box that runs off a lithium battery. Converse said the battery life was supposed to be 15 to 20 years, but many began dying in 2009 after only 12 years.

Last year, 1,000 MTUs were failing each month. ... Its technicians were replacing about 600 each month. The meters, which have a similar life span as the MTUs, are also aging. Most of them are 16 years old, Converse said, and could begin failing, too. Converse wants to replace both at the same time. The units will be moved to the outside of each home or business as part of the project.

The meters cost \$75 and the MTUs run \$77.

— Matthew Rink | *Canton Rep* | 6/30/13 <https://www.cantonrep.com/article/20130630/News/306309912>

[Colorado] “Boulder’s Smart Grid Leaves Citizens in the Dark” – excerpts:

Utilities planning smart electric grid upgrades can learn from Xcel Energy’s SmartGridCity pilot in Boulder, Colo. – about how not to effectively communi-

“THREE ATTORNEY GENERALS REJECT ‘SMART’-METERS AS TOO EXPENSIVE AFTER TESTING”

– excerpts:

Three State Attorney Generals have solidly rejected utilities push for “smart”-meters.

Michigan, Illinois and Connecticut Attorney Generals cited the exorbitant costs to consumers with no proven benefits after testing a pilot program with 10,000 customers.

Illinois Attorney General Lisa Madigan Commentary in the *Chicago Tribune*, June 2012 wrote

“The utilities have shown no evidence of billions of dollars in benefits to consumers from these new meters, but they have shown they know how to profit.

“I think the only real question is: How dumb do they think we are?”

State of Connecticut Attorney General George Jepsen said

“The pilot [program] results showed no beneficial impact on total energy usage, and the savings that were seen in the pilot were limited to certain types of customers and would be far outweighed by the cost of installing the new meter systems.”

Michigan Attorney General Bill Schuette wrote

“. . . at least two very substantial issues remain that must be further addressed before the [the Michigan Utilities Agency] authorizes or approves any further deployment of smart meters by Michigan electric utilities and the recovery from ratepayers of the costs of smart meter deployment.

First, there must be a sufficient demonstration that implementation of the smart meter programs will actually produce a net economic benefit to customers. Second, customers must be afforded a meaningful and fair opportunity to opt out of smart meter installation without being penalized by unwarranted and excessive costs.”

– HOPE: News and Community | 7/1/12
<http://Ihope.org/hopeblog/three-attorney-generals-reject-smart-meters-after-testing/>

References:

Lisa Madigan, Illinois Attorney General, “An experiment too expensive for consumers,” *Chicago Tribune*, 6/21/11
<https://www.chicagotribune.com/opinion/ct-xpm-2011-06-21-ct-oped-0621-madigan-20110621-story.html>

Attorney General George Jepsen, State of Connecticut. Press release: “Jepsen urges state regulators to reject CL&P’s plan to replace electric meters,” 2/8/11
https://portal.ct.gov/-/media/AG/Press_Releases/2011/020811clpmeters.pdf

Attorney General’s Comments Pursuant to the MPS Order dated January 12 2012, Bill Schutte, Attorney General, State of Michigan, RE: MPS Case No. U-17000
http://Ihope.org/hopeblog/wp-content/uploads/2012/07/MichiganAGBill_SchuetteVsSmart-meters.pdf

cate with your customers.

Last month, a Boulder judge denied Xcel’s request to regain more than \$16 million from Boulder citizens for costs of the upgraded grid. . . .

Huston said that because Boulder’s smart grid was one of the first in the country, **some of the technologies it used, such as fiber optic communication technology, turned out to be less ideal than hoped.** The new two-way communication technology, installing smart meters for less than a quarter of the population and other features almost **doubled the project’s cost within a year** after it began. As of October 2012, the total costs were pushing \$45 million.

– April Nowicki | *GreenTech Media* | 3/18/13
<https://www.greentechmedia.com/articles/read/boulders-smart-grid-leaves-citizens-in-the-dark>

[Minnesota] “Edina to replace 14,000 water meters” – excerpts:

As the batteries in water meters begin to fail around the city, Edina has begun a \$3.6 million project to replace every one of its 14,000 water meters. [...] The old meters were installed in the mid- to late 1990s and **send out radio frequencies to city vehicles that collect data** by driving up and down streets. The meter batteries were expected to last about 10 years. Now, those **batteries are failing** at a catastrophic rate.

– Mary Jane Smetanka | *Star Tribune* | 9/4/12
<http://www.startribune.com/edina-to-replace-14-000-water-meters/168064286/>

[USA] “Why ‘smart meters’ increase electricity bills” – excerpts:

. . . ‘Smart Meters’. . . will significantly increase your electricity bill if you have any electrical appliances in your house or business like a washing machine, dishwasher, heat pump, storage heaters, air conditioning, hot water heater and/or pump, or full size electric cooker. . . .

Simply speaking, when any domestic electrical appliance is switched on, it momentarily draws heavily on the electricity supply. The key words to remember here are ‘**surge voltages**’. These surges at switch on can be several times the electrical rating of an appliance, and the bigger (and older) the appliance, the larger the surge. With the old meters this wasn’t an issue, as these surges are so short that the old electromechanical meters couldn’t record them. However, the ‘**Smart meters’ being purely electronic, record every last milliamp, and report these directly to the suppliers via a mesh type network on a real time basis.** Never mind being billed at varying rates for different times of the day.

– Bill Sticker | 4/12/12
<https://billsticker.wordpress.com/2012/04/12/why-smart-meters-increase-electricity-bills/>

[California] “CBS 5 Investigates Smart Meter Complaints” – excerpts:

. . . as to the other complaints of higher bills, “Many consumers simply don’t realize that rates have gone up. . . .”

And one of the reasons for those rate increases: the **2.2 billion dollars needed to put in those smart meters.**

– Anna Werner | CBS 5 San Francisco | 3/11/10 | 5:52 min news clip
<https://www.youtube.com/watch?v=csvmw2frBvs>

[Michigan] Smart Meters: A Cautionary Tale (Input to the Michigan Public Service Commission Docket Case Number: U-17000. Submitted by Richard Meltzer, Ph.D., 2012) – from Meltzer’s “SUMMARY OF KEY POINTS”:

- Smart meters, unlike the older analog meters, are computers and as such open up whole new areas of concerns.
- Analysis of smart meter programs shows a failed business case and benefits only for utility companies, not consumers. (Much more on this below.)
- The smart meter roll-out has largely been a clandestine operation. Little explanation, nor any mention of nine community (now 19) resolutions in opposition to smart meters, has been presented to the public or posted at DTE or MPSC websites.
- At a minimum, customers should have the option to opt-out of having a smart meter installed – especially since they can self-report meter readings at the DTE website or by phone. Better yet, there should be an opt-in requirement wherein a smart meter is only installed by customer request.
- Large body of biomedical evidence raising concerns about long-term, continuous exposure to RF/EMF especially for children – more than enough to invoke the Precautionary Principle and dictate an immediate halt to smart meter deployment (as had been requested by most of the petitioning communities). The Precautionary Principle shifts the burden of proof from those suspecting a risk to those who discount it.
- There is an immediate need for independent field studies to measure the output of installed smart meters – in terms of signal frequency and strength. Independent research means no industry sponsorship or involvement of the testing agency. EPRI does not qualify.
- There is an immediate need to establish the baseline of current exposure to RF/EMF by the population. No organization has this data; not the government nor the utility companies. Consequences become more serious with cumulative exposure to RF/EMF. And there has been a tremendous increase in RF exposure over the past decade due to ubiquitous wireless devices including cell phones.
- Independent authorities say (in contrast to industry spokespeople):
 - Smart meters exposure is 100 times stronger than that of a cell phone when full body exposure is considered.
 - Field measurements of some smart meters show that they transmit regularly, tens of thousands of times per day.
 - In-house measurements of smart meters show them to be far stronger than advertised due to reflective surfaces as are commonly found, for example, in modern kitchens.
- The FCC safety standards used to legitimize smart meters are out of date and inadequate. Conforming to a legal standard does not necessarily make a device safe. Current permissible power levels are considerably greater in the U.S. when compared to many other countries. Some assert that a different governmental unit, perhaps the FDA, should be the sanctioning agency, not the FCC.
- It cannot go unsaid that DTE (and presumably the other gas and electric utilities) are “For-Profit” companies. Executive salaries, bonuses, and stock dividends are predicated on profitability and \$3.2 billion dollars was available from the Dept. of Energy for smart meters. It is difficult for the utilities to generate revenue by rate increases but capital investments (like smart meter deployments) are more easily supported by the MPSC. Additionally, there is a consensus that once a smart meter is installed, residents notice their bills going up. This was even observed by State Senator Vincent Gregory. These factors reflect the true nature of this project – revenue enhancement (especially in light of research showing little consumer benefit).
- It is inappropriate to consider a single smart meter in isolation. Electric, gas, and water utilities are planning to install their own. That’s 3-4 smart meters on every house. And what about condo complexes and apartment buildings where dozens of meters are clustered close to living quarters – perhaps on the outside wall next to a baby crib. And what about the cumulative effect of all RF sources – whose level we don’t even know and effects we don’t understand.
- Smart meters will collect personal usage data in apparent violation of our rights guaranteed by the Fourth Amendment of the Constitution - to be secure in our persons, houses, papers, and effects. Ultimately this data will be worth big dollars to advertisers, appliance manufacturers, and insurance companies who will use life style data from the meters in claim and rate determination. Google has made a fortune by selling personal Internet surfing data. Major credit card companies are similarly positioning to sell consumer profiles based on their purchase behavior data. The allure of this treasure trove of riches will wear down any resistance to market this data by profit-seeking executives.
- Smart meters are involuntary. Continuous exposure to RF and having personal profile data collected will be mandatory. One chooses to use a cell phone; similarly with surfing the Internet, etc. And one can take precautions to make those activities safer. But not with smart meters.
- The Pentagon has been hacked as have all the major credit card companies and banks. Such reports appear regularly in the media. The electrical grid has been taken down in Brazil by hackers. DTE does not even begin to have the computer security expertise to attempt to control this. Computer security experts state that not a single energy utility company or distributor can pass a computer security audit. Our national security is at risk. Ultimately, what will be the cost of establishing a new cyber security division? This is not included in any current business model.
- Smart meters are computers and hackers can break their way into them – plant worms and viruses, disrupt service, determine when customers are home based on electricity usage patterns, alter usage and billing data, etc.

<https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000000wd5AA1>
Find more filings for U-17000 – “In the matter, on the Commission’s own motion, to review issues bearing on the deployment of smart meters by regulated electric utilities in Michigan”
<https://mi-psc.force.com/s/case/500t0000008efgAAA/in-the-matter-on-the-commissions-own-motion-to-review-issues-bearing-on-the-deployment-of-smart-meters-by-regulated-electric-utilities-in-michigan>

HIGH COST OF “SMART” TECHNOLOGY & INSIDIOUS FUNDING SCHEMES

Utility charges, fees, taxes, assessments . . .

[Arizona] ACC’s Frequently Asked Questions: “What are all these charges on my bill?” – excerpts:

Basic Monthly Service Charge: The monthly minimum for providing service, even if you use little or no energy during the month.

Energy Usage: Kilowatt hours (kWh) are the units that measure your energy usage for the billing period. The charge per kWh covers the costs to purchase and deliver the energy to your site.

Meter Charge: A fixed monthly fee for providing and servicing your meter.

Meter Reading Charge: A fixed monthly fee to determine your energy use.

Environmental Surcharge: A measure mandated by the Arizona Corporation Commission requiring nearly all Arizona utilities to generate or buy a portion of their power from renewable energy sources. The surcharge is associated with the development of environmentally friendly sources of energy.

Purchased Power Adjuster: Determines rate adjustment in connection with increase or decrease in the price of purchased power. May also be called Purchased Fuel Adjustment or Wholesale Power Adjustment.

Competitive Transition Charge: A charge to cover costs for investments in power plants made under regulation. This charge is based on kWh or kW used.

Regulatory Assessment: This monthly amount is imposed on customers of state-regulated utilities to help fund the Arizona Corporation Commission and, in the case of investor-owned utilities, the Residential Utility Consumer Office (RUCO).

System Benefits Charge or Public Benefits Charge: A monthly charge based on your kW or kWh usage to cover the cost of programs approved by the Arizona Corporation Commission, including: low-income assistance, conservation, environmental improvements, renewable energy projects and nuclear power plant decommissioning.

Commission rules require the company to make available, upon your request, a concise summary of the rate schedule for your particular type of service. They must provide this within 60 days of your request. The summary should reflect a monthly minimum or customer charge, the specific amount of usage included in the minimum charge and any rate adjustment factor(s) and the exact method of calculation. (See R14-2-204) . . .

How can I find out if my meter is accurate?: Contact your utility company. There are several ways to verify the accuracy of a meter. An electric meter can be used in Arizona only if it is the type approved by the American National Standards Institute code. To ensure that only accurate meters are used in the State of Arizona, the Commission: Verifies the accuracy of utility meter-testing devices to standards certified by the National Bureau of Standards; Monitors utility plans for the routine maintenance and replacement of meters, which meet the requirements of the code for electric metering; Ensures that each utility files an annual report, including surveys of the results of the meter maintenance and testing program for that year.

– Arizona Corporation Commission web site. Accessed 5/25/19
<https://www.azcc.gov/utilities/electric/electric-faqs>

[Arizona] “Tucson Electric Power Company Customer Information Schedule CIS-2 Taxes and Assessments” – excerpts:

Taxes and Assessments

These are charges levied by state and local regulatory and government authorities in addition to the charges for Tucson Electric Power Company (TEP) utility services. Depending on where you live and whether you are a residential, commercial or industrial customer, the following taxes and assessments may be included on your bill:

- **Arizona Independent Scheduling Administrator Assessment (AZISA):** an assessment of \$0.000002 per kWh effective July 01, 2014 is used to help fund the Arizona Independent Scheduling Administrator as required by the ACC [Arizona Corporation Commission]. The administrator oversees the application of operating protocols to ensure state-wide consistency for transmission access. This assessment is included in the net bill before other taxes, fees and assessments are calculated.
- **Franchise Fee:** a tax charged by the City of Tucson (2.25%), effective July 1, 2009 and applied to the bill after inclusion of the AZISA Assessment and the ACC and RUCO Assessments. A franchise fee is also charged by the City of South Tucson (2.0% of the net TEP monthlybill).
- **Public Utility Tax:** a tax charged by the City of Tucson (4.5%), effective July 1, 2016 and applied to the bill after inclusion of the AZISA Assessment and the ACC and RUCO Assessments. The Public Utility Tax shown on your bill is offset by the City of Tucson franchise fee, discussed above. If you are subject to both the franchise fee and the public utility tax, the public utility tax is 2.25% of your bill after inclusion of the AZISA Assessment and the ACC and RUCO Assessments.
- **City Sales Tax:** a tax charged by the cities of Tucson (2.6%), effective February 9, 2018, South Tucson (5.0%), effective February 16, 2017, Marana (4.0%), effective January 01, 2019, Sahuarita (2.0%), effective September 01, 2000 and Oro Valley (4.0%), effective August 3, 2011. All are applied to the bill after inclusion of the Franchise Fee (except for the City of Tucson), the AZISA Assessment and the ACC and RUCO Assessments.
- **Pima County Sales Tax:** a tax charged by Pima County (0.5%), effective July 1, 2006 for the Regional Transportation Plan, (approved by Pima County voters in the May 2006 election). This tax is applied to the bill after inclusion of the Franchise Fee, the Public Utility Tax, the AZISA Assessment, and the ACC and RUCO Assessments.
- **State Sales Tax:** a tax charged by the State of Arizona (5.6%), effective June 01, 2013 is applied to the bill after inclusion of the Franchise Fee, the Public Utility Tax, the AZISA Assessment, and the ACC and RUCO Assessments.
- **Arizona Corporation Commission Assessment:** a 0.22% fee, effective August 01, 2018, is charged to all customers, applied to the bill after inclusion of the Franchise Fee, the Public Utility Tax, the AZISA Assessment, City Sales Tax, County Sales Tax and State Sales Tax.
- **Residential Utility Consumers Office Assessment (RUCO):** a 0.05% fee, effective August 01, 2018, is charged to residential customers only, applied to the bill after inclusion of the Franchise Fee, the Public Utility Tax, the AZISA Assessment, City Sales Tax, County Sales Tax and State Sales Tax.

As the descriptions above indicate, there is a “tax-on-tax” impact for all of the taxes and assessments listed.

– Tucson Electric Power Company| 2017
<https://www.tep.com/wp-content/uploads/2017/08/TEP-CIS-Taxes-8-1.pdf>

[USA] Increasing Use of Surcharges on Consumer Utility Bills – excerpts p.1-3:

For many consumers, home utility bills are becoming more and more cluttered with new fees and surcharges to pay for everything from the investment in new gas pipelines to environmental compliance costs. The imposition of these **surcharges are a departure from the traditional utility rate setting process**, and regulators need to carefully evaluate utility requests for additional surcharges on a case-by-case basis to determine whether there is a proper balance of meeting utility needs and assuring ratepayer protections.

A surcharge is an additional fee imposed on a ratepayer's utility bill in addition to the base rate charge for utility service. In the past, surcharges were only approved by regulators in rare circumstances to address substantial, volatile and uncontrollable costs that, if not addressed outside of a base rate case, could threaten to harm a utility's financial health. Examples of such surcharges include fuel and purchased power adjustment mechanisms for electric utilities and gas cost recovery mechanisms for natural gas distribution utilities. In recent years, however, requests for other types of surcharges and tracking mechanisms by utilities have significantly increased.¹ Indeed, the National Regulatory Research Institute characterizes the use of cost trackers and mechanisms as the "latest trend."²

Utilities have requested surcharge rate mechanisms as a means to accelerate the recovery of a variety of costs, many of which are **not volatile or uncontrollable**. In some instances, the use of surcharges and other tracking mechanisms have proliferated so as to be baffling and expensive for consumers and burdensome for regulators to monitor.

Utilities say the surcharges are needed so they can make investments in aging infrastructure and comply with environmental regulations, among other claims, without compromising their financial health. Utilities also claim that the surcharges will result in smaller and less frequent rate increases as well as reduce the frequency of their general rate cases, which can be time consuming and costly to process.

But the increasing imposition of surcharges and other alternative rate-making mechanisms can also defeat some of the primary principles of the rate-setting and regulatory review process. Besides increased costs to consumers, surcharges can also result in such additional undesirable consequences as reducing utility incentives to control costs and shifting utility business risks away from investors and onto customers.

Regulators need to carefully evaluate utility requests for additional surcharges on a case-by-case basis to determine whether there is a proper balance of utility and ratepayer needs. If the regulator decides to approve a utility's request to impose new surcharges on ratepayers, adequate safeguards to protect consumers are a must.

In addition to base rates, most utilities assess a fuel surcharge (gas cost adjustment or fuel and purchased power adjustment) and revenue-based taxes in addition to the base rate charge. Typical "standard" charges that appear on a customer's electric utility bill may include:

- **customer charge**: The basic charge to recover costs for billing, meter reading, equipment, maintenance, etc. (state regulated)
- **generation charge (or commodity charge)**: Charges for the

production of electricity, based on usage (state regulated in non-deregulated states)

- **transmission charge**: Charges for moving high voltage electricity from a generation facility to the distribution lines of an electric distribution company [regulated by the Federal Energy Regulatory Commission ("FERC")]
- **distribution charge**: Charges for the use of local wires, transformers, substations, and other equipment used to deliver electricity to end-use consumers from the high voltage transmission lines (state regulated, only shown as a separate charge in deregulated states)
- **fuel and Purchased Power charges**
- **state taxes**

Typical standard charges that appear on a customer's gas utility bill may include:

- customer charge
- gas transmission or distribution charge
- commodity charge
- Purchased gas adjustment (true-up)
- state taxes

Other fees and surcharges fall into the category of "**single issue ratemaking**," which is a deviation from traditional ratemaking. Single issue ratemaking involves "singling out" specific expenditures from a company's base rates and allowing a utility to separately recover those costs from ratepayers. Singling out specific costs can make the traditional ratemaking formula unbalanced. For

example, if a utility replaces a large piece of equipment at its plant, the new equipment will affect multiple aspects of the business. The utility's rate base plant will increase, and revenues may increase, if the plant addition is to serve new customers. Future maintenance expenses may decrease if the addition improves efficiency. The lower maintenance costs, which would reduce rates for ratepayers, may not be reflected within a surcharge that focuses only on the new investment.

In the past, single issue ratemaking was typically approved by regulators only in limited situations for costs that were considered:

1. Largely outside the control of the utility,
2. Unpredictable and volatile, and
3. Substantial and reoccurring, and which would have the potential to adversely impact the utility's financial health if cost recovery is not addressed outside of a traditional rate case.

Examples of such volatile and unpredictable costs traditionally include fuel costs and purchased power costs for electric utilities, and purchased gas costs for gas utilities. In contrast, capital investments for plant additions or replacing aging infrastructure are not generally considered to be highly volatile, uncontrollable and/or unpredictable. Management can control these costs to some extent by comparison shopping materials and contractors. The timing of projects can also be adjusted based on availability of funds.

Yet in recent years, many other types of costs are being proposed by utilities to be recovered through surcharges that do not meet the above criteria.⁹ The National Regulatory Research Institute characterizes the use of cost trackers and mechanisms as the "latest trend."¹⁰

– Larkin & Associates, PLLC for AARP | May 2012 https://www.aarp.org/content/dam/aarp/aarp_foundation/2012-06/increasing-use-of-surcharges-on-consumer-utility-bills-aarp.pdf

“Besides increased costs to consumers, surcharges can also result in such additional undesirable consequences as reducing utility incentives to control costs and shifting utility business risks away from investors and onto customers.”

– Larkin & Associates, PLLC, May 2012

PURCHASE POWER AND FUEL ADJUSTMENT CHARGE

[Arizona] Tucson Electric Power: “Purchased Power and Fuel Adjustment Charge” – excerpts:

The PPFAC is a **usage-based credit or charge** that reflects changes in the costs TEP incurs to fuel its power plants and purchase energy for customers. The **charge includes only costs that are not already incorporated in summer or winter base power supply rates.** TEP passes these costs along without any markup and earns no profit from this charge.

In March 2019, the Arizona Corporation Commission approved TEP’s request to decrease the PPFAC to reflect lower fuel and purchased power prices.

A credit of \$0.003505 per kilowatt hour (kWh) will be applied to bills beginning on April 1, 2019. For a residential customer with average monthly usage of about 800 kWh, the adjusted rate will result in a monthly decrease of about \$2.80. Small General Service customers with average usage of about 2,500 kWh will see monthly bill decreases of about \$8.75.

The PPFAC appears on your bill under the heading “**Power Supply Charges**” along with your summer or winter base power supply rate.

... Similar [PPFAC] components are included in the electric rates of TEP’s sister company, **UniSource Energy Services**, as well as in those charged by **Arizona Public Service** and many other electric utilities.

Shares of solar energy purchased through TEP’s GoSolar Shares program are not subject to the PPFAC. . . .

– Tucson Electric Power | March 2019
<https://www.tep.com/news/ppfac/>

LOST FIXED COST RECOVERY

[Arizona] Tucson Electric Power: “Lost Fixed Cost Recovery Charge” – excerpts:

The Lost Fixed Cost Recovery (LFCR) charge, approved in 2013 by the Arizona Corporation Commission (ACC), partially offsets the revenue TEP loses when customers reduce their bills through our energy efficiency and renewable energy programs. Without the charge, TEP would be unable to recover the full cost of system improvements that serve all customers, regardless of usage.

This surcharge adds about \$2.67 to the average monthly bill of a typical residential customer starting on Oct. 1, 2018 un-

“The PPFAC [Purchased Power and Fuel Adjustment Charge] is a usage-based credit or charge that reflects changes in the costs TEP incurs to fuel its power plants and purchase energy for customers.”

– Tucson Electric Power, August 2017

“The Lost Fixed Cost Recovery (LFCR) charge, approved in 2013 by the Arizona Corporation Commission (ACC), partially **offsets the revenue TEP loses when customers reduce their bills through our energy efficiency and renewable energy programs.**”

– Tucson Electric Power, August 2017

til amended by the ACC. That estimate reflects average monthly usage of about 800 kilowatt hours (kWh), so businesses and other customers with higher usage will pay a higher LFCR fee.

Rooftop solar arrays, compact fluorescent light bulbs and efficient air conditioning systems have helped customers save money on their monthly electric bills. **These savings limit TEP’s ability to recover our service costs**, including many ‘fixed’ costs that aren’t reduced when customers use less power.

Examples of fixed costs include power line repairs, metering expenses and the cost of installing and maintaining the electric grid. . . .

The LFCR will help ensure that the success of our energy efficiency and renewable power **programs** does not compromise our ability to cover our fixed service costs.

Residential, small general service, medium general service and large general service customers are subject to the LFCR. Customers on TEP’s community solar program, traffic signal, lighting service, water pumping, and large light and power rate plans do not pay an LFCR charge.

The LFCR is based on a percentage of the applicable billing amount of a customer’s monthly bill. Under current rates, a residential customer with monthly usage of about 800 kilowatt hours (kWh) would pay about \$100 in Basic Service and Energy and Power Supply charges.

This represents an average increase of about 11 cents a month over the previous LFCR surcharge. The LFCR is listed under “**Surcharges**” on your monthly bill.

... The LFCR will vary each month with individual usage. Additionally, the percentage used to bill customers will be updated annually to reflect revised **estimates** of a portion of the revenue lost to energy efficiency and renewable power programs.

– Tucson Electric Power | August 2017
<https://www.tep.com/news/lfcr/>

FRANCHISE FEES

[Montana] “Class-action Lawsuit Against Billings Includes 35,000 People” – “Lawsuit the city improperly taxed residents by imposing franchise fees on their utility bills” – excerpt:

A Montana judge has certified a class-action lawsuit that claims the city of Billings improperly taxed residents by imposing franchise fees on their utility bills.

The *Billings Gazette* reports that Wednesday's ruling by District Judge Gregory Pinski increases the number of plaintiffs from seven people to about 35,000.

— *Associated Press | Flathead Beacon* | 4/11/19
<https://flatheadbeacon.com/2019/04/11/class-action-lawsuit-billings-includes-35000-people/>

[Georgia] “Georgia Power faces class-action suit accusing it of inflating fees” — excerpts:

A Fulton County judge has granted class-action status in a long-running lawsuit claiming Georgia Power overcharged customers for more than a decade. The status means the case now covers virtually all of the company's 2.5 million customers statewide, a swipe with somewhat rare sweep against Georgia's largest utility.

But the case, first filed in 2011, is far from over. It goes before the state's utility regulator — the Georgia Public Service Commission — for comment before being heard by Fulton Superior Court Judge Rachel Krause.

The suit argues that Georgia Power continues to inflate municipal franchise fees that are included in monthly electric bills, assessing them not just based on electricity revenue but incorrectly also on a financing fee tied to the Vogtle nuclear project as well as on a fee for environmental compliance.

— Matt Kempner | *The Atlanta Journal-Constitution* | 2/18/19
<https://www.ajc.com/news/local/georgia-power-faces-class-action-suit-accusing-inflating-fees/bXDyhzlMUcBVgrTbPIQMjK/>

[Washington] “King County Franchise Ordinance Litigation - Judge Chung's Final Order” — excerpts:

On November 7, 2016, the King County Council adopted Ordinance 18403 purporting to authorize the imposition and collection of “rent” from water, sewer, gas and electric utilities using county roads and rights-of-way. The County anticipated the Ordinance would generate \$10,000,000 per year for the County's general fund. On December 29, 2017, King County's Facilities Management Division adopted Rules for Determining Franchise Compensation intended to implement the Ordinance. The Rules went into effect on January 29, 2018.

On January 25, 2018, King County filed a lawsuit in King County Superior Court (Case No. 18-2-02238-0 SEA) against 21 water-sewer districts that had opposed the County's adoption of the Ordinance and Rules. The County sought a declaratory judgment that the Ordinance and Rules were valid. The water-sewer districts filed counter-claims against the County challenging the validity of the Ordinance and Rules, including a claim

“On August 1, 2018, King County Superior Court Judge Samuel Chung issued an oral ruling granting summary judgment to water, sewer and electric utilities that King County cannot charge the utilities rent for the use of county roads and rights-of-way.”

— Covington Water District | 9/5/18

that water-sewer districts have the right to locate their facilities in county roads and rights-of-way without having to pay rent to the County. A group of non-profit water associations and an electric utility intervened in the lawsuit and also challenged the County's ability to charge rent for their use of county roads and rights-of-way. The Court granted the motions for summary judgment filed by the water-sewer districts and the intervenors and ruled that the County cannot charge rent for the use of county roads and rights-of-way.

On August 1, 2018, **King County Superior Court Judge Samuel Chung issued an oral ruling granting summary judgment to water, sewer and electric utilities that King County cannot charge the utilities rent for the use of county roads and rights-of-way.** A formal order reflecting the Court's decision can be found [HERE](#).[*]

— Covington Water District | 9/5/18
<https://www.covingtonwater.com/CivicAlerts.aspx?AID=13>
* <https://www.covingtonwater.com/DocumentCenter/View/442/Judge-Chungs-Final-Order-and-Judgment>

[Montana] “Billings residents demand response, possible repayment in lawsuit over water bill fees” — excerpts:

... the water rates for most residents will go down and up simultaneously, resulting in a slight net increase. That's because the Billings City Council has approved a budget without franchise fees for water and waste disposal — a contentious issue among residents. Abandoning the franchise fee, however, meant the **city had a budgetary hole to fill**, and it saw **raising rates as one of the few means available**.

An in-depth look by *The Billings Gazette* into the possible class-action suit shows that a group of residents had been lobbying the council for nearly a year to drop the controversial fee assessment, asserting that it was an **illegal sales tax**. . . .

The residents also insist the city's stall tactics left them with few choices but to try a class-action suit, and they worry without a promise from the city franchise fees may come back.

“Franchise fees are charges imposed on ratepayers of a utility, usually for access to property or public rights-of-way.”

“... the franchise fees collected from [Billings] residents did not go back to improve the city's water and sewer service. Instead, it went to the general fund, something not necessarily allowed, the correspondence argues.”

— Darrell Ehrlick | *Billings Gazette* | 6/14/18

Franchise fees are charges imposed on ratepayers of a utility, usually for access to property or public rights-of-way. For example, cable television companies are often charged franchise fees for running lines along and through public property. Those **fees are passed through to customers on their bills.** The logic behind the fee goes something like this: Utility companies have the benefit of the public rights-of-way, and those are kept in place by government, so companies shouldn't get the service for free when, if they had been forced to

acquire access to lands, it would cost a substantial amount.

... in the lawsuit residents filed against the city as a possible class-action suit. ... they claim that **for years the city has charged every ratepayer every month a fee and the ratepayers have gotten virtually nothing in return.** The lawsuit claims franchise fees were used as a way to **pad the city's general fund**, and not as a way to improve the waste or water systems. Because of that, the court filings and correspondence say, the franchise fees were nothing more than a sales tax.

Months of back-and-forth conversations outline the residents' concerns, including that the **franchise fees did not give residents any special rights, nor did it go to improving the water or sewer systems.** Furthermore, the city has charged the utilities, for example, the water department, for fees without ever reimbursing it for the services they provided back to the city.

Juras points out in 2018, unreimbursed water, sewer and garbage rates for the city were more than \$1 million. Notably, the city does not charge itself for water it uses at one of its 47 parks with more than 3,000 acres.

Juras also points out that the **unreimbursed toll for water caused the council to raise water rates in 2016 by 3 percent to offset the loss.**

Meanwhile, the franchise fees collected from residents did not go back to improve the city's water and sewer service. Instead, it went to the **general fund**, something not necessarily allowed, the correspondence argues.

– Darrell Ehrlick | *Billings Gazette* | 6/14/18
https://billingsgazette.com/news/state-and-regional/govt-and-politics/billings-residents-demand-response-possible-repayment-in-lawsuit-over-water/article_daf2b57b-f9ac-5669-9e98-5b51044a7882.html

[Washington] Efforts to halt city utility tax progressing – excerpts:

The city of Federal Way's plans to impose a 7.75 utility excise tax on Lakehaven Water and Sewer District and other utilities in the city face challenges from two different fronts a week after the City Council approved the ordinance.

In a 5-2 vote, the City Council approved an ordinance March 20 that levies a 7.75-percent tax on water and sewer utilities not already paying excise taxes to the city. Federal Way already charges a 7.75-percent tax on gas, electric, cable, phone and other utilities. The city anticipates collecting \$980,000 from this tax, which will **offset a budget shortfall** of \$854,000.

Lakehaven officials have already said the taxing district would

sue the city if the ordinance passed. A Federal Way resident has also filed a referendum petition with the city that, if enough signatures are collected, would put the matter before voters to decide whether they support the tax.

Sanchez said city officials considered imposing a utility tax since the last time officials signed a franchise fee agreement. The city collects a 3.6 percent franchise fee from Lakehaven, but officials have said it costs the city more to assess it than it receives in return. The utility tax would replace the franchise fee.

– *Federal Way Mirror* | 4/2/18
<http://www.federalwaymirror.com/news/efforts-to-halt-city-utility-tax-progressing/>

[California] "Grand Terrace In Suit Vs. Riverside Highland Water Co. Over Franchise" – excerpts:

Two primary elements of the establishment in the Grand Terrace community are at loggerheads following City Hall's resolution earlier this year to begin collecting from the Riverside Highland Water Company a franchise fee the utility has avoided paying since the city's incorporation in 1978.

While the city maintains it has the right to impose such a fee by virtue of its accommodation of the company's operations within its jurisdiction, and estimates it has forgone some half of a million in revenue by not collecting franchise fees in the past, the company maintains that as a legally constituted local utility for more than a century it is exempt from paying such fees. The company resisted the city's imposition of the fee in question, prompting the city to file suit against the company. In response, the company maintains it has no other option than to raise rates to pass on the burden of defraying the cost of the fees to its customers, which it

claimed in a mailer recently sent to the city's residents is tantamount to a tax and therefore constitutes an illegitimate ploy by the city to raise taxes without a required vote of the city's taxpayers. . . .

– Mark Gutglueck | *San Bernadino County Sentinel* | 12/22/17
<http://sbc-sentinel.com/2017/12/grand-terrace-in-suit-vs-riverside-highland-water-co-over-franchise/>

[Minnesota] "Testimony: Utility Franchise Fees Imposed by Cities are Often Taxes in Disguise" – excerpt:

Testimony Before the Minnesota House Property Taxes and Local Government Finance Division

March 3, 2016

My name is Peter Nelson and I am Vice President and Senior Policy Fellow at Center of the American Experiment.

Thank you for the opportunity to discuss the use of utility franchise fees to raise revenue for cities.

Last fall I got involved in a case challenging the City of St.

"The utility tax would replace the franchise fee."

– *Federal Way Mirror* | 4/2/18

... the company maintains it has no other option than to raise rates to pass on the burden of defraying the cost of the fees to its customers, which it claimed in a mailer recently sent to the city's residents is tantamount to a tax and therefore constitutes an illegitimate ploy by the city to raise taxes without a required vote of the city's taxpayers. "

– Mark Gutglueck, *San Bernadino County Sentinel*, 12/22/17

Paul's right-of-way maintenance assessment. In the process, I learned a great deal about the legal distinction between a tax and a fee; how local governments evade limitations on their taxing power by calling something fee; and how raising revenue through fees undermines transparency, making it more difficult for citizens to hold elected officials accountable.

Taxation is the primary mechanism the government uses to raise revenue to fund the government.

The power to tax is inherent in sovereignty and essential to the very existence of government. At least that was U.S. Supreme Court Chief Justice John Marshall's opinion back in 1819.

This inherent power is limited within our state constitution. Article X provides that taxes shall be uniform and shall be levied for public purposes. In addition, the constitution exempts various entities from taxation and circumscribes how local governments can levy special assessments for local improvements.

Importantly, taxation is the only method by which a city can raise money to pay for general public purposes. If this were not the case, the state constitutional limitations on collecting taxes for public purposes would be meaningless. The constitution's uniformity protection and the various exemptions from taxation could easily be defeated if state and local governments could choose to raise revenue to fund public purposes outside the tax system.

Nonetheless, that is exactly what an increasing number of cities around Minnesota are starting to do.

Though a cities' power to tax is quite clear, cities are working to "diversify" their revenue streams by imposing fees and using the fee revenue to fund core services unrelated to the fee.

In the case of St. Paul, they charge a right-of-way maintenance fee to every property owner to fund the general maintenance of city streets, including snow plowing, street cleaning, traffic signals, and milling and overlaying of streets.

By calling it a fee, the city avoids the constitution's uniformity requirement and the city is able to apply the fee to all property owners, including churches, nonprofits and other exempt properties.

While Assumption Church pays a \$16,900 fee and First Baptist Church pays \$15,700 fee, the 25-story UBS Tower pays only a \$5,500 fee. That's not exactly uniform and it certainly doesn't exempt churches.

St. Paul is very clear on why they took this route. The City's ROW Study Report explicitly states, "The changes in the ROW assessment since 2003 were all a result of policy maker wishes to

"Though cities' power to tax is quite clear, cities are working to 'diversify' their revenue streams by imposing fees and using the fee revenue to fund core services unrelated to the fee."

— Peter Nelson, Center of the American Experiment, 3/3/16

control the growth of property taxes by shifting the responsibility for revenue generation to property owners that benefit from these on-street services."

Thus, the idea is to (1) limit property tax growth and (2) make more property owners contribute revenue—property owners that would otherwise be exempt.

That is the explicit rationale put forward to justify franchise fees.

The League of Minnesota Cities website says, "Franchise fees are an often overlooked alternative for Minnesota cities to diversify their revenue streams."

Minneapolis's website says franchise fees are "vital to the people of Minneapolis because they help pay for core services." There is no difference between funding core services and public purposes.

Burnsville is in the process of establishing a franchise fee and they are even more explicit on their intent. Their website explains, "Utility franchise fees help cities cover the increasing costs of providing important services ... without raising property taxes."

It didn't take too much digging to uncover more examples. I just went to Excel Energy's rate book, reviewed the utilities franchise agreements and picked the two highest fees. They were Rogers and Brooklyn Park. A quick google search found a Star Tribune article entitled, "Rogers residents protest new franchise fee to cover future road repairs," and a SunPost article entitled, "Brooklyn Park City Council supports franchise fees to fix streets."

The first problem with all of these fees is that they are going to fund core city services that should be funded through taxes and subject to the legal limitations on taxes.

State statute does allow cities to apply franchise fees "to raise revenue or defray increased municipal costs accruing as a result of utility operations, or both." Thus, the statute appears to authorize cities to impose the fee to raise revenue for any public purpose, which is in fact a tax. In addition, a city can impose the fee to fund the cost of regulation, a classic regulatory service fee. And it can use the fee to do both.

The statute creates a mess of confusion. How can a city impose a fee that is both a tax and fee when the legal requirements around each revenue raising measure are different?

Ultimately, cities appear to be levying these fees and ignoring the legal requirements around taxes. That means the fees are being unconstitutionally applied to organizations that would otherwise be tax exempt organizations and they might also run afoul of the state constitution's uniformity requirements.

Cities can't ignore these constitutional

"The first problem with all of these fees is that they are going to fund core city services that should be funded through taxes and subject to the legal limitations on taxes."

— Peter Nelson, Center of the American Experiment, 3/3/16

limitations on taxation just because the state statute calls it a fee. Not too long ago the Minnesota Supreme Court explained, “When it has been apparent that a city’s true motivation was to raise revenue – and not merely to recover the costs of regulation – we have disregarded the fee label attached by a municipality and held that the charge in question was in fact a tax.”

The second problem is that franchise fees make city budgets less transparent and accountable. Franchise fees create a second revenue stream that hides the true cost of public services from the taxpayers view. Franchise fees give elected officials the ability to go back to their constituents and claim they haven’t raised taxes. While some citizens might be paying attention, . . . , most citizens are not. Most look at their property tax bill for tax increases and if nothing changes they presume everything is being run just fine. As a result, franchise fees make elected officials much less accountable to constituents for how city funds are managed.

I took a look at both the Minneapolis and St. Paul budgets to see how much property taxes would need to increase if the tax were required to fund the core services funded by the franchise fee. For Minneapolis, ending the franchise fee would require a 9.6 percent increase in property taxes and a 16.3 percent increase in St. Paul. **These revenue streams and any increases in these streams are very much hidden from taxpayers. Even if someone knows their utility bill increased, they have no idea the increase goes to fund core services.**

Finally, I want to note that cities are taking a risk in establishing these fees. If a Minnesota court later finds that these franchise fees did not fund the regulation of the franchise agreement, then any money spent on core services may need to be remitted. This is exactly what happened in Des Moines, Iowa. In 2012, the Iowa Supreme Court required Des Moines to refund around \$40 million in excess fees paid.

Ultimately, taxes fund public purposes, whereas a fee is generally a voluntarily incurred charge to people who benefit from a service. This distinction is very important to maintain if constitutional limits on taxation are to mean anything and if citizens are to remain able to understand city budgets and hold elected officials accountable.

– Peter Nelson | Center of the American Experiment | 3/3/16
<https://www.americanexperiment.org/article/testimony-utility-franchise-fees-imposed-cities-often-taxes-disguise/>

“ . . . franchise fees make city budgets less transparent and accountable. Franchise fees create a second revenue stream that hides the true cost of public services from the taxpayers view. Franchise fees give elected officials the ability to go back to their constituents and claim they haven’t raised taxes. While some citizens might be paying attention, . . . , most citizens are not. Most look at their property tax bill for tax increases and if nothing changes they presume everything is being run just fine. As a result, franchise fees make elected officials much less accountable to constituents for how city funds are managed.”

– Peter Nelson, Center of the American Experiment, 3/3/16

[California] “Illegal tax? Outsized city fees on utility bills are challenged” – excerpts:

A legal team is seeking to overturn fees on utility bills that funnel nearly \$60 million each year to the City of San Diego after persuading an appellate court that similar fees in Santa Barbara are an illegal tax.

San Diego residents pay one of the largest such fees in the state, roughly 6 percent of their combined electric and gas bills. Most other cities charge 1 percent or so.

The fees are supposed to compensate a city for access to roadways and public rights of way by utility companies. San Diego uses about half of its fees for its general fund and for parks and open space, while the other half goes to a long-term program to bury overhead power lines underground.

The funding for the undergrounding program is the primary issue in the new legal challenge, as it was imposed in 2002, and critics say such a fee required voter approval at that time.

The Redondo-beach law firm that succeeded in making a similar argument in Santa Barbara notified San Diego in early March that the fees approved by the City Council in 2002 amount to illegal taxation.

San Diego Gas & Electric collects about \$119 million each year for the city in such surcharges, known as franchise fees. Heidenreich’s law firm is challenging about half that amount.

– Morgan Lee | *The San Diego Union-Tribune* | 3/23/15
<https://www.sandiegouniontribune.com/news/watchdog/sdut-franchise-fees-or-taxes-2015mar23-story.html>

[California] “City Utility Fee Ruled an ‘Illegal Tax’” – excerpts:

The City of Santa Barbara was dealt a significant setback this week by a court of appeal decision that the 1 percent surcharge it added to Southern California Edison’s franchise agreement was in reality “an illegal tax masquerading as a franchise fee.” Under the terms of Prop 218, any such tax needed to be approved by the voters first.

The Santa Barbara City Council imposed the additional 1 percent fee on the electric company in 2005 – on top of the 1 percent it was already collecting – and has been using the additional \$600,000 to \$700,000 generated a year for general purposes.

In 2011, downtown hotel owner Rolland Jacks sued City Hall on behalf of all ratepayers, charging the surcharge was an illegal tax and demanded a refund. The judicial panel ruled that if the revenues generated by the surcharge were used to compensate City Hall for installing poles and power

lines on city-owned rights of way, it would have constituted a “franchise fee” and would have been acceptable. But because the money was used “for general spending purposes,” the court deemed it a tax.

– Nick Welsh | *Santa Barbara Independent* | 3/4/15
<https://www.independent.com/2015/03/04/city-utility-fee-ruled-illegal-tax/>

[Iowa] “Sioux City Approves Franchise Fee Settlement” – excerpts:

As cities across Iowa face lawsuits over allegedly excessive franchise fees, **Sioux City, Iowa, has agreed to settle and absorb the cost of nearly \$6.5 million in refunds to be paid to residents who were overcharged for franchise fees on their utility bills.** The Sioux City settlement agreement stems from a 2006 class action lawsuit filed by those who paid franchise fees for gas or electricity to MidAmerican Energy Company or Woodbury County Rural Electric Cooperative from Sept. 5, 2001, to May 25, 2009.

– CoopLawBlog.com | 4/22/14
<https://www.cooplawblog.com/2014/04/sioux-city-approves-franchise-fee-settlement/>

[Iowa] “Court: Des Moines must refund resident utility fee” – excerpts:

The city of Des Moines must refund a portion of the franchise fee it collects on residents’ gas and utility bills because some of the fees are unlawful, the Iowa Supreme Court ruled Friday.

The Supreme Court also upheld a lower court’s ruling that the case can be certified as a class-action lawsuit to include all Des Moines utility customers.

Lawyers estimate the refund of fees paid by MidAmerican Energy customers between 2004 when the lawsuit was filed and May 2009 could cost the city about \$40 million.

Refunds are likely to be a few hundred dollars for the average homeowner. Attorneys estimated that more than 100,000 people are owed refunds. . . .

– *Globe Gazette* | 3/2/12
https://globegazette.com/news/iowa/court-des-moines-must-refund-resident-utility-fee/article_3d519aa4-649f-11e1-b51f-001871e3ce6c.html

[Iowa] “Iowa Supreme Court requires Des Moines to refund roughly \$35 million in franchise fees” – excerpts:

Kragnes, et al., v. City of Des Moines
(Iowa Supreme Court, March 2, 2012)

In 2004, the City of Des Moines considered raising property taxes to hire more police and firefighters, maintain the library’s hours, and rehabilitate deteriorating neighborhoods. The City realized the state was phasing out sales and use taxes on residential gas and electric services and determined that it would be possible to increase the franchise fees on these services to raise revenue. After deciding this source of revenue was preferable to an increase in property taxes, the City renegotiated the franchise agreements with MidAmerican Energy and increased the franchise fee beginning June 2005. Lisa Kragnes promptly filed a lawsuit on behalf of herself and all others similarly situated challenging the franchise fees as illegal taxes. She sought reimbursement for all illegal taxes paid through the allowable statute of limitations and sought an injunction prohibiting the City from charging

such franchise fees in the future. In the first suit that came before the Supreme Court the Court determined that a city has the authority to assess a franchise fee expressed as a percentage of the gross receipts derived from the utility’s sale of its services to the public, so long as the charge is “reasonably related to the reasonable costs of inspecting, licensing, supervising, or otherwise regulating the activity that is being franchised.” The case was sent back to district court to determine whether all or part of the franchise fees were reasonably related to the City’s administrative expenses in exercising its police power. It was also up to the district court to determine whether a class should be certified (which would allow all City of Des Moines utilities customers who paid the electricity or gas franchise fee from July 27, 1999, forward to be represented in a single action). The district court did, in fact, certify the class and determined that a portion of the franchise fee collected was excessive. **The court held the City must refund to the class, with interest, the amount by which the franchise fees exceeded \$1,575,194 per year for the electric utility and \$1,574,046 for the gas utility (an amount that would cost the city roughly \$40 million).**

– Gary Taylor | Iowa State University | 3/3/12
<https://blogs.extension.iastate.edu/planningBLUZ/2012/03/03/iowa-supreme-court-requires-des-moines-to-refund-roughly-35-million-in-franchise-fees/>

[South Carolina] “SCE&G to refund about \$1.5 million to 7000 customers after state lawsuit” – excerpt:

South Carolina Electric and Gas may refund about \$1.5 million to 7000 customers, about one percent of its customer base, in a settlement of a state lawsuit.

Attorney General Henry McMaster filed the unfair trade practices lawsuit in October on behalf of the state and customers who were charged monthly municipal franchise fees by SCE&G, a subsidiary of SCANA Corporation, on their electric and gas bills, even though they live outside a city and would not owe the fee.

SCE&G charges franchise fees, which are paid to municipalities for the use of rights of way for poles, lines and other equipment and are then passed along to municipal customers on their monthly bills.

McMaster says, “The municipalities charge the power company for using their property to run the electricity into the homes. But, if you don’t live within the city, then you shouldn’t be paying it.” He says the fee tends to be about three percent of the monthly bill.

The utility will refund customers improperly charged franchise fees since April 1999. The company says the fees were incorrectly added due to new construction, annexations and human error. SCE&G also will add interest to the refunds per the settlement.

Customers who wrongly paid the fees will get back around \$116.04 in credit on average on their next bill. McMaster says the company will alert customers who will receive a refund. He says about 4119 have been notified so far of refunds totaling \$478,000.

– Chris Rees | WIS News 10 | 9/24/04
<https://www.wistv.com/story/2213878/sceg-to-refund-about-15-million-to-7000-customers-after-state-lawsuit/>

HIGH COST OF “SMART” TECHNOLOGY & INSIDIOUS FUNDING SCHEMES

Weather Normalization Adjustment

[New York] “National Grid customers see bill increase because of warmer weather” – excerpts:

Typical National Grid gas customers this month saw a sharp increase in a portion of their bills that allows the company to recoup costs when weather is warmer than projected.

For Long Island customers, the so-called weather normalization adjustment jumped to just over 70 cents a gas unit compared to just over 4 cents a unit in October. (Gas units are measured in “therms.”)

For customers who used 65 units during the most recent period, that amounted to an increase of \$42.90. . . .

The change appears in a line item on bills known as the delivery rate adjustment. . . .

“Quite a jump,” noted Rich Miglietta, a homeowner in Port Washington, who said the increase was a shock. He used 33 therms in the month, lower than the norm. “This blindsided us – our monthly bill was almost triple from what it was the month before although our usage in therms wasn’t much different,” Miglietta said.

— Mark Harrington | *Newsday* | Updated 11/16/17
<https://www.newsday.com/long-island/national-grid-gas-increase-1.15005219>

[Kentucky] “What is the Weather Normalization Adjustment line item on my bill?” – excerpts:

The Weather Normalization Adjustment is a method of adjusting customers’ bills to **reflect normal, rather than actual, weather conditions** during the months of November through April. . . .

— Louisville Gas and Electric Company (LG&E), Kentucky Utilities Co. and Old Dominion Power Company (KU/ODP) | Accessed 5/1/19
<https://lge-ku.com/help/knowledge-base/what-weather-normalization-adjustment-line-item-my-bill>

[About LG&E & KU: “Louisville Gas and Electric Company and Kentucky Utilities Company, part of the PPL Corporation (NYSE: PPL) family of companies, are regulated utilities that serve nearly 1.3 million customers and have consistently ranked among the best companies for customer service in the United States. LG&E serves 326,000 natural gas and 411,000 electric customers in Louisville and 16 surrounding counties. KU serves 553,000 customers in 77 Kentucky counties and five counties in Virginia.” Source: <https://lge-ku.com/our-company>]

[S. Carolina] “South Carolina lawmakers seek review of SCE&G gas fee” – excerpts:

Aiken legislators want the state agency that regulates South Carolina Electric and Gas to review the private utility’s weather normalization adjustment, or WNA, a controversial fee that’s sparking dozens of complaints about surging energy bills.

In a letter to the S.C. Office of Regulatory Staff, Aiken Coun-

ty delegation members asked for a review of the WNA fee to determine if SCE&G customers are being overcharged, as well as if the fee is still necessary.

“SCE&G [South Carolina Electric and Gas] used to impose a similar WNA fee on electric bills, but the fee was discontinued in 2013 following protest from the AARP and other South Carolina consumers.”

— Michael Smith, *Aiken Standard*, 2/28/17

The delegation’s request comes following an Aiken Standard investigation of the gas WNA, a variable gas rate that fluctuates during periods of extreme warm or cold.

As of Monday, there have been 87 WNA complaints filed with the Office of Regulatory Staff, or ORS, said Dukes Scott, the agency’s executive director.

Forty-six complaints are from Aiken County, the highest concentration in the state. The Columbia area reported 35, five came from the Lowcountry and the

rest came from elsewhere in South Carolina.

State Sen. Tom Young, R-Aiken, said the delegation’s audit request is in response to numerous complaints from constituents.

SCE&G used to impose a similar WNA fee on electric bills, but the fee was discontinued in 2013 following protest from the AARP and other South Carolina consumers.

The delegation’s interest in SCE&G also comes following a SCANA report that said annual earnings surged by \$46 million in 2016. Earnings gained by \$18 million in the fourth quarter alone, according to a news release.

SCANA’s 2016 proxy report to the Securities and Exchange Commission stated that its top five executives earned more than \$13 million in salary, benefits and other perks in 2015. Chief Executive Officer Kevin Marsh earned \$5.7 million in compensation, which included a base salary of about \$1.2 million, SEC filings state.

— Michael Smith | *Aiken Standard* | 2/28/17
https://www.aikenstandard.com/news/south-carolina-lawmakers-seek-review-of-sce-g-gas-fee/article_21070526-fdbc-11e6-95b8-077d34f25177.html

[S Carolina] “SCE&G earnings surge in wake of rate hikes, rising bills” – excerpts:

South Carolina Electric & Gas annual earnings surged by \$46 million in 2016 and \$18 million in the fourth quarter ending Dec. 31, 2016, according to SCANA, parent company of SCE&G.

The earnings spike comes on the heels of continued electric rate hikes designed to help the private utility cover \$1.1 billion in cost overruns at the V.C. Summer Nuclear Plant that SCE&G and Santee Cooper are jointly building in Jenkinsville.

Earnings also come in the wake of ballooning gas bills in Aiken County and elsewhere in the state due to an obscure

“weather normalization adjustment,” or WNA, charge designed to offset declining energy usage during the unusually warm winter.

The S.C. Office of Regulatory Staff, which regulates SCE&G, said it’s received more than three dozen rate-related complaints concerning the private utility so far in 2017.

Dukes Scott, the agency’s executive director, said as of Thursday afternoon, the ORS has fielded 37 WNA-related complaints in 2017.

Twelve complaints previously had been filed through Tuesday, shortly after the Aiken Standard published its first story about the WNA charge on Feb. 14.

Twenty-eight complaints originated in the area of Columbia, Lexington and Cayce. Three were from the Aiken area and a fourth came from Warrentonville. Other complaints came from Ridgeville, Okatie, Walterboro and Goose Creek, according to the ORS.

SCE&G’s annual earnings rose from \$480 million in 2015 to \$526 million in 2016, while fourth quarter earnings soared from \$75 million to \$93 million, a SCANA news release said.

“The delegation’s interest in SCE&G also comes following a SCANA report that said annual earnings surged by \$46 million in 2016. Earnings gained by \$18 million in the fourth quarter alone, according to a news release.”

— Michael Smith, *Aiken Standard*, 2/28/17

The WNA is a variable rate that’s multiplied by therms of gas used to calculate the total bill. WNA rates have fluctuated wildly in December and January due to an unusually warm winter.

As a result, **many customers reported being billed more than \$300 for the month of January despite minimal natural gas usage**, triggering more complaints to the Office of Regulatory Staff.

— Michael Smith | *Aiken Standard* | 2/16/17
https://www.aikenstandard.com/news/sce-g-earnings-surge-in-wake-of-rate-hikes-rising/article_566691f6-f456-11e6-b43f-63a55077ff63.html

[Pennsylvania] “Despite Warm Weather, Natural Gas Charges May Be Higher” – excerpts:

It’s been an especially warm December. So why are PGW customers seeing an additional charge on their natural gas bills? The extra PGW charge is called a Weather Normalization Adjustment. ...

PGW is one of only two Pennsylvania utilities using the WNA. The PUC in March holds a hearing on utilities’ strategies to decouple revenue from how much electricity or gas they sell.

— Mike DeNardo | CBS Philly | 12/22/15
<https://philadelphia.cbslocal.com/2015/12/22/despite-warm-weather-natural-gas-charges-may-be-higher/>

“SCE&G BILL ADJUSTMENTS BASED ON WEATHER RIPPED”

– excerpts:

Prompted by public complaints, the S.C. [South Carolina] Public Service Commission has been asked to end a controversial SCE&G electric rate normalization program at the end of the year.

A study of the three-year program confirmed several problems with the weather-induced rate adjustment installed by S.C. Electric & Gas to smooth out spikes in customers’ bills and energy production in cases of extreme weather.

The concerns, confirmed Friday by the South Carolina Office of Regulatory Staff are that:

- **Only SCE&G could generate and verify the complicated adjustment factor it used to calculate customers’ bills.**
- **The adjustment had a negative impact on customers’ conservation efforts and SCE&G’s energy-efficiency programs.**
- **The electric rate adjustment negatively impacts customers who use natural gas to heat their homes.**
- **The adjustment is not “transparent”– meaning neither ratepayers nor the Office of Regulatory Staff could monitor how the adjustment rate was calculated.**
- **The adjustment lacked sound rate structure.**

The Office of Regulatory Staff, which is tasked with representing the S.C. public’s interest in utility regulation, made the recommendation to the Public Service Commission to end the program. The commission will make the final decision, according to Dukes Scott, the office’s executive director.

... Regulatory Staff said it had received 189 inquiries and complaints from consumers about the adjustment, many of them from senior citizens. Seniors, some of them on fixed incomes, view the monthly adjustments on their bills as rate increases, critics of the program, such as the AARP found.

— Roddie Burris | *The State* | 11/1/13
<https://www.thestate.com/news/business/article13827944.html>

[S. Carolina] “Mysterious charge has many SCE&G customers crying foul”

– excerpts:

“During periods of extremely hot or extremely cold weather a customer’s rate will be adjusted downward,” said SCE&G spokesperson Stephanie Jones. “But during milder weather, such as we’ve been experiencing this winter, the rate will be adjusted slightly upward.”

Shealy, Harley and Huffstetler noticed the upward adjustment. “It still just boils down to charging for something I didn’t use,” said Harley.

“They said it is a fee they add on there when they don’t make as much money during that month and I’m thinking, ‘Well I’m trying to be conservative, green, cut my lights off, turn my heat down and you’re charging me more because you didn’t make as much money?’” said Huffstetler.

Essentially, it increases or decreases the price you’re paying per kilowatt hour, based on a 15-year average of temperatures. It’s not just the weather. Other factors go in. SCE&G breaks it down into 19 different WNA categories, based on your billing rate, house type, and the usage response to weather conditions. Then they factor in the month, the billing cycle, and heating degree days and cooling degree days.

We found during the trial period, customers were credited \$94 million, but since according to the Office of Regulatory Staff, **full inception benefits have swung in the company’s favor some \$60 million.**

— WIS News 10 | 3/21/13
<http://www.wistv.com/story/21760683/mysterious-charge-has-many-sceg-customers-crying-foul/>

[Virginia] “Washington Gas (VA) – questionable billing practices? (Roanoke: credit, utilities)” – excerpts:

I received my bill for July and noted it was unusually high for this time of year (~\$50). Normally it is about half of that. After taking a closer look at the bill I had about the \$25 in natural gas charges including fees and distribution, but the total was nearly double that. I thought it was an error. I called Wash Gas the next day. I explained the bill to customer service...he seemed puzzled. He then placed me on hold for a couple of minutes. When he got back on the line he explained to me that I was assessed a surcharge because last winter wasn’t that cold. No, I am not joking. The surcharge was about \$23. I inquired as to why the surcharge wasn’t clearly stated on the bill and he had no explanation. He also assured

Essentially, it [the WNA] increases or decreases the price you’re paying per kilowatt hour, based on a 15-year average of temperatures. It’s not just the weather. Other factors go in. SCE&G breaks it down into 19 different WNA categories, based on your billing rate, house type, and the usage response to weather conditions. Then they factor in the month, the billing cycle, and heating degree days and cooling degree days.”

— WIS News 10 | 3/21/13

me that all Virginia customers were assessed the “it wasn’t that cold last winter surcharge,” and that I was not alone. He then promptly indicated that the Virginia commission that regulates utilities does permit this surcharge.

I then asked if he could provide me a bill clearly indicating that a surcharge was part of the total. He said, no problem. A week later I got a exact copy of the original bill on fancy Wash Gas letterhead with still no break-out of the surcharge. . . . The only reason I noted something was wrong was because **I got my ‘not so cold winter fee’ in the dead of summer...**

– City-Data Forum>U.S. Forums>Virginia>Northern Virginia | 9/3/12
<http://www.city-data.com/forum/northern-virginia/1680652-washington-gas-va-questionable-billing-practices.html>

[S. Carolina] “SCE&G Weather Normalization Adj. (WNA) a SCAM?”

– excerpts:

So I was looking at my SCE&G Bill and found that it went up by 12% from the same time last year ... even though the KWh usage was 20% less than last year.

Here is the breakdown ..

First 800 kWh X (\$ 0.117130 + \$ 0.011790 WNA)
Next 569 kWh X (\$ 0.128770 + \$ 0.011790 WNA)

The SCE&G Website

SCE&G - Electric Weather Normalization cites the following foggy concept of how they come up with the WNA amount ...

How is the WNA rate determined?

The method used to determine the WNA factor is approved by the Public Service Commission of South Carolina (PSC). **It is unique to each customer based on type of residence, rate and other individual billing factors. It also changes from one bill to the next based on weather.**

I called them to have them show me the formula they used to justify the extra charge. The CSR could not provide that information . . . all he did was direct me to the above web page. I called PSC . . . and after a 20-minute hold waiting for a rep . . . I got a “Please leave msg and we will call back”. Is this one more case of a big corporation picking the pockets of a gullible citizenry?

– City-City-Data Forum > U.S. Forums > South Carolina > Charleston area | 6/21/12
<http://www.city-data.com/forum/charleston-area/1617272-sce-g-weather-normalization-adj-wna.html>

“The only reason I noted something was wrong [with the Washington Gas bill] was because I got my ‘not so cold winter fee’ in the dead of summer . . .”

– City-Data Forum>U.S. Forums>Virginia>Northern Virginia | 9/3/12

[New York] “National Grid charges extra for mild winter” – excerpts:

Utilities this spring are charging consumers extra because of the mild winter.

If you’ve taken a hard look at your utility bill lately, you may see such a charge listed under “delivery services.” On National Grid bills it’s called the “Adjustment for Changes from Normal Weather.”

– Jim Kenyon | *CNY Central* | 4/19/12
<https://cnycentral.com/news/local/national-grid-charges-extra-for-mild-winter>

[Georgia] “HB 1461 - Gas utility; weather normalization adjustment; amend provisions (3)” – excerpts:

First Reader Summary

A BILL to amend Article 2 of Chapter 2 of Title 46 of the Official Code of Georgia Annotated, relating to the Public Service Commission’s jurisdiction, powers, and duties generally, so as to provide that in any case where the commission has approved a tariff to implement a weather normalization adjustment rider for a gas utility or has included within the rate structure of a gas utility a weather normalization adjustment and such weather normalization adjustment has been in effect for a period of five years, the commission shall be required to review such weather normalization adjustment applicable to a gas utility to determine whether such adjustment should continue to be a part of the gas utility’s rate structure; and for other purposes.

— Clerk of the House,
Georgia House of Representatives | 5/15/00
<http://www.legis.ga.gov/Legislation/Archives/19992000/leg/sum/hbl1461.htm>

[Virginia] “Virginia Weather Normalization Adjustment” – excerpts:

The Weather Normalization Adjustment is a billing adjustment mechanism in Virginia designed to minimize the effect of variations from normal weather, . . . Due to the much warmer than normal weather experienced from October 2016 to May 2017, Washington Gas will be collecting additional charges from Virginia customers during the billing months of August through October 2017.

The Weather Normalization Adjustment (WNA) was filed by Washington Gas in its 2007 rate case, which was subsequently **approved by the Virginia State Corporate Commission (SCC)**.

The WNA is designed to reduce the volatility of customers’

“If you’ve taken a hard look at your utility bill lately, you may see such a charge listed under ‘**delivery services.**’ On National Grid bills it’s called the ‘**Adjustment for Changes from Normal Weather.**’”

– Jim Kenyon | *CNY Central* | 4/19/12

natural gas bills due to changes in weather conditions. Washington Gas will adjust customers’ annual bills – through the use of a credit or surcharge – to reflect normal, rather than actual, weather conditions from the previous winter heating season (November to May).

The WNA is based on individual customer usage and weather conditions during the prior heating season, as well as historical data calculating “normal” temperatures. Weather conditions that

are colder than normal will result in a credit on the bill, . . . Warmer than normal weather conditions will result in a surcharge on the bill, . . .

. . . Washington Gas has applied the WNA to customer bills each summer since 2008. Each year, the SCC must approve the WNA calculations that Washington Gas files with the Commission.

The WNA credit or charge that appears on your bill is not based on your usage during the specific billing month, but rather on normal usage on the account and actual weather conditions from the prior heating season. . . .

The WNA provides . . . Washington Gas with the revenue it needs to recoup fixed costs associated with meter reading, maintenance, postage and safety during extremely warm years.

– Washington Gas Company | accessed 5/1/19
<https://www.washingtongas.com/my-account/account-services-support/current-rates/virginia-normalization-adjustment-info>

[Arkansas] “Arkansas Oks Weather Normalization for LDC” – excerpts:

The Arkansas Public Service Commission (PSC) has authorized Arkla, a division of Noram Energy Corp. and a natural gas local distribution company (LDC), to apply a weather normalization adjustment to billings from November through April. Finding that the new clause did not constitute a “general rate increase,” the PSC rejected procedural objections that it failed to meet certain notice requirements. It also rejected allegations that the LDC’s existing levelized billing programs already achieve the intended results of the new adjustment mechanism and that a specific weather normalization adjustment will send incorrect price signals to customers. Re Arkla, a division of Noram Energy Corp., Docket No. 95-617-TF, Order No. 2, Dec. 22, 1995 (Ark.P.S.C.).

– Phillip S. Cross | *Fortnightly Magazine* | 4/1/96
<https://www.fortnightly.com/fortnightly/1996/04/arkansas-oks-weather-normalization-ldc>

“The method used to determine the [SCE&G] WNA factor is approved by the Public Service Commission of South Carolina (PSC). It is unique to each customer based on type of residence, rate and other individual billing factors. It also changes from one bill to the next based on weather.”

– City-Data Forum > U.S. Forums > South Carolina > Charleston area | 6/21/12

HIGH COST OF “SMART” TECHNOLOGY & INSIDIOUS FUNDING SCHEMES

Devious “demand” charges (aka “efficiency rate”)

The federal “**Energy Policy Act of 2005**” (PL 109–58, 109th Congress) promoted “state investigation of demand response and time-based metering” and provided federal assistance, guidance, and encouragement to states, as well as utility regulators. (See “Federal legislation” in the “Drivers of ‘smart’ meter/grid policy, funding & regulation” section of these resources.)

Demand response and time-based pricing require a mechanism – i.e., computerized and communicating utility meters – that can collect, record, and transmit real-time utility use.

[Arizona] “What will happen with the APS rate-hike challenge? Here are 5 things to know” – excerpts:

The hearings are over. Now it’s time for a judge and state utility regulators to decide if a **\$95 million rate hike** approved last year for the state’s biggest electric company needs reconsideration or even elimination.

The Arizona Corporation Commission approved new rates for Arizona Public Service Co. in August of 2017.

First, the rates went up for 1.1 million customers. Over the next several months, the company shifted customers onto new rate schedules with changes to the basic service fees, on-peak time-of-use hours and other charges.

APS described the increase as averaging 4.5 percent, or about \$6 a month for the average customer. But soon after they took effect, customers began complaining that their impacts were higher than that.

APS showed a table that indicates 102,000 residential customers were expected to have their bills go down 3.7 percent as a result of the rate hike. APS officials said it’s unlikely those customers are complaining about high bills, or even understand the impact they are seeing.

But more than 300,000 customers were also expected to have bill increases of 10.8 percent or more.

Those are not even the most extreme examples. APS estimates show at least one customer was expected to have an 81 percent drop in average costs as a result of the changes, while six unlucky customers were predicted to see their bills increase 95 percent.

When APS filed for its rate increase in 2016, it proposed mandatory demand rates for all customers.

APS settled with the Corporation Commission staff and several other parties

“Demand charges bill customers based on the maximum amount of electricity they use in one short time period during each billing cycle. . . .”

– Kari Lydersen, *Energy News Network*, 12/2/15

and only implemented optional demand rates. But many customers have complained about unpredictable bill effects from those rate plans.

Like regular electric rates, demand rates charge a basic service fee, plus a fee for each kilowatt-hour of electricity used.

In addition, a demand rate charges a third fee for the single on-peak hour during the month when the most electricity was used. The more electricity used in that one hour, the higher the demand fee.

Utilities support demand rates to encourage customers to limit their use of major appliances during peak hours, when energy on the open market is most expensive.

Many consumers complain that a single meal cooked during peak hours in the month, when combined with air-conditioning and a pool pump or washer and dryer, can significantly increase the monthly bill.

– Ryan Randazzo | *Arizona Republic* | 10/9/18
<https://www.azcentral.com/story/money/business/energy/2018/10/09/aps-rate-hike-challenge-arizona-judge-deliberates-what-you-need-know/1506135002/>

[USA] “New Utility PR Playbook Seeks to Mislead Customers on Demand Charges” – excerpts:

The nation’s investor-owned electric utilities will attempt to deceive their customers into accepting new electric rate designs that would reduce people’s ability to save money by conserving energy or installing solar panels, according to a document describing the industry’s public relations plan obtained by *UtilitySecrets*.

The document is part of “The Lexicon Project,” a misinformation effort spearheaded by the utilities’ trade association, the Edison Electric Institute (EEI).

In the Lexicon’s latest edition, utilities outline their plan to rebrand “demand charges” as “efficiency rates.”

Residential demand charges: a new effort by utilities to claw back falling revenue

Families or small businesses may not understand why calling a “demand charge” an “efficiency rate” is misleading, because most will have never heard of a “demand charge” in the first place. Most electric customers generally pay two basic charges on their monthly bill: a “fixed charge” levies a fee for the cost of connecting the customer to the grid, and is the same every month. An “energy charge” is tied to how much electricity the customer uses; if the customer uses more, they pay more.

Utilities face the conundrum that they are

“Arizona regulators will begin an audit and review of Arizona Public Service Co.’s electric rates. . . . The commission . . . will . . . examine whether the utility is earning more than it has been authorized to earn in the last rate case. ”

– Jeff Stansfield | S&P Global | 1/11/19
<https://www.spglobal.com/marketintelligence/en/news-insights/trending/vp537mEie8kDcv3fmd1XcQ2>

increasingly collecting less money from customers as people and businesses become more efficient in their use of electricity and begin adopting rooftop solar power. Many utilities initially responded by trying to collect more money via fixed charges, but those efforts have proven politically unpopular, and have often been rebuffed by regulators.

Next, utilities attempted to introduce demand charges as a third type of charge for residential customers. Demand charges would charge customers based on the amount of electricity they use during one narrow window per month when they use the most electricity, often only 15 minutes or perhaps an hour long.

— David Pomerantz | Energy and Policy Institute | 12/18/17
<https://www.energyandpolicy.org/new-utility-pr-playbook-seeks-mislead-customers-demand-charges/>

[Arizona] “Demand charges vs. TOU rates: The great Arizona rate design experiment” – excerpts:

In its newly-initiated \$3.6 billion general rate case (GRC) for 2016 to 2018, Arizona Public Service (APS) is asking state regulators to approve the first-ever mandatory demand charge for an investor-owned utility.

Utilities have long used demand charges to reduce consumption from commercial and industrial customers, but their application to residential consumers has only caught on in the past two years. As regulators across the country scaled back utility proposals to increase fixed charges, sector leaders began to look at new options to cover system costs.

— Herman K. Trash | *Utility Dive* | 8/26/16
<https://www.utilitydive.com/news/demand-charges-vs-tou-rates-the-great-arizona-rate-design-experiment/426902/>

[Arizona, Colorado, Illinois, Nevada] “Move over, fixed fees – utilities see demand charges as revenue cure” – excerpts:

Demand-based charges normally reserved for big industrial users could also be applied to residential customers if an Illinois utility gets its way in the state legislature.

Demand charges bill customers based on the maximum amount of electricity they use in one short time period during each billing cycle. The analogy of a pipe is often used – utilities say what matters is the width of the “pipe” needed for the highest volume of delivery at one moment, not the total volume over time.

... critics say that residential demand

“[C]ritics of demand charges lament that one high spike each month could essentially wipe out the other measures consumers have taken to reduce electricity use or generate their own electricity with solar.”

— Kari Lydersen, *Energy News Network*, 12/2/15

charges discourage energy conservation and efficiency and are a disincentive to installing solar. And they argue that demand charges can unfairly saddle customers who use little energy with high bills, based on infrequent usage spikes.

Nationwide at least 18 utilities offer opt-in residential demand charges, including **Arizona Public Service, Georgia Power, Alabama Power, Duke Energy, and Xcel Energy in Colorado**, according to an analysis by Ryan Hledik, (<http://www.brattle.com/experts/ryan-hledik>) an energy consumer economics expert at the Brattle Group. . . .

The **Salt River Project** in Arizona is instituting a **mandatory demand charge for all new customers with distributed generation, sparking a lawsuit** (<http://www.utilitydive.com/news/why-srps-controversial-demand-charge-unlocks-a-huge-opportunity-for-solar-372548/>) from solar installer SolarCity. **Nevada Energy** and **UNS Electric** have made similar proposals, according to Hledik.

Critics of demand charges say that they are actually likely to have the most impact on residents who use smaller amounts of energy.

“If for 15 minutes you’re doing laundry and running air conditioning and someone’s using power tools at your house, your bill could be really high even if rest of the month you’re on vacation and not using any electricity,” said Rebecca Stanfield, vice president of policy and electricity markets

for Solar City. . . . “Big customers hire consultants and experts to help them manage around that charge. But it’s super confusing for typical residential customers, they’ll have a hard time figuring it out.”

“Demand-based rates will change the steps customers take to manage their delivery costs but do not eliminate their ability to do so,” said Marquez. “A customer’s demand would be reset to zero and re-measured each month, enabling a customer to **change behavior** and reduce delivery system charges.”

But critics of demand charges lament that one high spike each month could essentially wipe out the other measures consumers have taken to reduce electricity use or generate their own electricity with solar.

For customers with solar, the demand charge could encourage them to use more electricity when their solar panels are generating – to help offset their highest demand rate. But this would be in the daytime when overall demand from the grid and power plants is highest.

The DSM charge is a monthly, usage-based charge established by the **Arizona Corporation Commission (ACC)** to pay for cost-effective energy efficiency programs.

These . . . programs . . . help TEP work toward the goals in **Arizona’s Energy Efficiency Standard**, which **calls on utilities to achieve cumulative energy savings of 22 percent by 2020**

The DSM charge appears on your bill under the heading **“Green Energy Charges.”**

— Tucson Electric Power | February 2019
<https://www.tep.com/news/dsmcharge/>

“It’s not even lining up the customer’s peak with the utility’s peak [demand period],” said Stanfield. “It is pushing in the wrong direction in terms of price signal. This is really about locking people into high distribution charges no matter what their consumption pattern is.”

– Kari Lydersen | *Energy News Network* | 12/2/15 <https://energynews.us/2015/12/02/midwest/move-over-fixed-fees-utilities-see-demand-charges-as-revenue-cure/>

[Arizona] Arizona Public Service [APS] webpage for “peak hour usage (demand)” – excerpts:

For customers on the Saver Choice Plus or Saver Choice Max plans, part of your bill is based on your highest one-hour usage during on-peak hours only.

Your peak hour usage is the one hour of the month when your energy used during on-peak hours, Monday - Friday is at its highest.

Let’s look at an example of two families – with identical appliances – who have different peak hour usage based on how many major appliances they’re using at the same time, for one hour, during on-peak hours, Monday - Friday.

The Lara family, ... comes home from work and during one on-peak hour:

- Sets their AC at 75
- Cooks dinner
- Starts a few loads of laundry
- Runs their pool pump

The Smith family, ... comes home from work and during one on-peak hour:

- Sets their AC at 75
- Cooks dinner
- Then during off-peak hours they:
- Start a few loads of laundry
- Run their pool pump

THE LARA HOME One hour on-peak		
AC	On	3.8kW
Electric Dryer	On	1.9kW
Oven	On	1.3kW
Pool Pump	On	1.1kW
TOTAL PEAK USAGE DEMAND CHARGE		8.1kW

THE SMITH HOME One hour on-peak		
AC	On	3.8kW
Electric Dryer	Off	1.9kW
Oven	On	1.3kW
Pool Pump	Off	1.1kW
TOTAL PEAK USAGE DEMAND CHARGE		5.1kW

Examples are based on 1,800 sq. ft. homes during a typical summer evening. Kilowatt (kW) numbers are based on typical use during one hour during on-peak hours, Monday-Friday; kW shown is based on a partial running time of the appliances during that hour.

Since the Smith family chose to not run their electric dryer and pool pump during the same hour they were running their AC and oven during an on-peak hour and ran them during off-peak hours instead, their peak hour usage is lower than the Lara family’s and their peak hour usage charge will be lower as well.

– Arizona Public Service (APS), website accessed 5/19 <https://www.aps.com/en/residential/accountservices/serviceplans/Pages/demand-rates.aspx?src=demandrates>

“In its . . . \$3.6 billion general rate case (GRC) for 2016 to 2018, Arizona Public Service (APS) is asking state regulators to approve the first-ever **mandatory demand charge for an investor-owned utility.**”

– Herman K. Trash, *Utility Dive*, 8/26/16

“Many consumers complain that a single meal cooked during peak hours in the month, when combined with air-conditioning and a pool pump or washer and dryer, can significantly increase the monthly bill.”

– Ryan Randazzo, *Arizona Republic*, 10/9/18

“UTILITIES REBUILD AN AGING LEXICON TO KEEP PACE WITH CHANGE”

– excerpts:

“The Edison Electric Institute’s chart . . . lists its top 25 most-used terms relating to electricity. Through its ‘Lexicon Project,’ EEI is urging utilities to change the words and terms they use to describe the industry. The new language is meant to cut jargon, bring greater clarity to energy terms and to tweak industry messaging when policy fights break out in state capitals. Courtesy of the Edison Electric Institute.”

Energy Talk: Words Matter

We share common goals to deliver an energy future that is smarter, cleaner and stronger. And, it’s important that customers understand the work we are doing to benefit them, which means communicating in language that is customer-friendly. Below is a cheat sheet of customer-tested language to lose and language to use.

LOSE	USE
The basics	
Electricity or power	Energy
Utility, power company, electric company	Energy company
Grid or network	Smart grid (energy grid if smart grid is inaccurate)
Ratepayer	Customer
The future of the energy grid	
Evolving distribution system, grid transformation, etc.	Building a smarter energy infrastructure
Advanced, modern, 21st century grid, etc.	smart grid
Utility of the future	Next generation energy company
Advanced meter	Smart meter
Leading the way on clean energy	
De-carbonization	Reducing carbon footprint
Fuel mix	Balanced energy mix
Low-carbon energy	Clean energy
Green energy	Renewable energy
Intermittent sources	Variable sources
Utility-scale solar	Universal solar
Rooftop solar	Private solar
Solar installation	Solar power plant
Distributed generation	Private generation (where appropriate)
Net metering	Private solar credits
Wholesale rate	Competitive rate
Baseload generation	24/7 power sources
Generation capacity	Power capacity
Fundamentals of rates	
Rate case	Regulatory rate review
Rate	Bill (preferred) or rate
Demand response	Smart usage rewards
Distribution charge	Energy delivery charge

– Rod Kuckro | *Energywire* | 7/6/16 <https://www.eenews.net/stories/1060039811>

[Ohio] “Drowning in dysfunction: How the Cleveland water dept. is failing its community, violating rights” – excerpts:

“Drowning in Dysfunction” is the culmination of a year-long investigation by the *On Your Side News 5* investigative team that began with the uncovering of repeated customer complaints going unheard by the Cleveland Water Department . . . Our investigation reveals how the utility, which serves more than 1 million people in five counties and 79 communities, is “drowning in dysfunction.”

In 2015 alone, 16,000 water customers complained they were overbilled, and 44,000 shutoff notices were sent out.

Over the last three years, the water department turned over nearly 8,000 water customers to the Cuyahoga County Auditor, slapping liens on their homes.

Unlike other major utilities that are subject to state regulations by the Ohio Public Utilities Commission, the Cleveland Water Department goes both unregulated and unchecked. **It does not report to any entity, except a city council committee** that did not know how many complaints the water department had received when we asked.

. . . Cleveland water – the area’s only water source – is spending \$300,000 in **advertising, promotion and marketing** on items, such as water bottles and toothbrushes.

Jackie McFarquhar is fighting her 82-year-old mother’s water bill – \$3,816 for water and \$1,700 for sewer. Her mother is confined to her bed and a stroke victim. McFarquhar said she could not have used that much water.

We found more individual accounts bombarded with large bills, as well as baffling bills to vacant buildings. Cleveland water explained some of these bills are because of leaks. But some customers we spoke to insisted there were no leaks and even hired plumbers who proved that there were none.

“It’s like a highway robbery,” customer Francisco Vasquez told us. “How are they going to charge me for something I’ve never consumed, I’ve never had and I’ve never used?”

The charity-driven Moose Lodge in Northfield Village shared this frustration. They received a bill for \$16,000 for water and sewer, or 920,000 gallons, all in just 36 days. To put it in perspective, an Olympic-sized pool only holds 660,000 gallons.

In 2013, Cleveland water was in

“Phase One” of **replacing 420,000 water meters with wireless units, costing more than \$80 million**. But consumers like Rick Voiers, of Bay Village, complained the new meters had major glitches, producing bills of several hundred dollars for water that was never used.

Problems continued in 2014, causing the City of Westlake to obtain a judge’s ruling, allowing it to explore getting its water from Avon instead of Cleveland. The city ultimately won in court.

It has been a turbulent decade for Cleveland water, and our series of investigations since 2008 have exposed a wide variety of system failures that have produced thousands of consumer complaints and **millions of your tax dollars spent on consultants to clean it up**.

Our investigation uncovered another strong armed tactic by the Cleveland Water Department that has cost people their homes. . . . “They’re preying on families and individuals who are stressed out in many ways in other situations, and to add this on is very difficult,” Gordon said. “. . . It caused us to sell the home. We would have foreclosed, we would have lost the home.”

We also find the water department often intimidates and threatens, instead of working with homeowners.

Gordon said the water department told her they’d look into the issue of a \$3,000 water bill – water she said she never used. But she did not receive any answers, nor was she alerted regarding the lien.

Documents show nearly 8,000 water tax liens on homes across Cuyahoga County over the last three years, four times as many homeowners facing tax liens since 2013. More than 3,600 were filed in the last year.

Katherine Hollingsworth, an attorney with the Cleveland Legal Aid Society, said she believes this tactic contributes to the foreclosure crisis.

There’s also concern the water department is violating a federal court ruling protecting water customers’ rights. The water review board was created by a 1987 federal consent decree to help water customers facing excessive bills and threatened shutoffs. But some customers tell us they have never been told of their right to a hearing, and we uncovered the hearing process is cloaked in secrecy.

– Ron Regan, Jonathan Walsh, Samah Assad, & Joe Pagonakis | News 5 Cleveland | 12/22/16, updated 6/29/17
<https://www.news5cleveland.com/longform/drowning-in-dysfunction-how-the-cleveland-water-dept-is-failing-its-community-violating-rights>

“Documents show nearly 8,000 water tax liens on homes across Cuyahoga County over the last three years, four times as many homeowners facing tax liens since 2013. More than 3,600 were filed in the last year.”

“Katherine Hollingsworth, an attorney with the Cleveland Legal Aid Society, said she believes this tactic contributes to the foreclosure crisis.”

– Ron Regan, Jonathan Walsh, Samah Assad, & Joe Pagonakis, News 5 Cleveland, 12/22/16

HIGH COST OF “SMART” TECHNOLOGY & INSIDIOUS FUNDING SCHEMES

Sewer fees for smart meters and other stuff

[California] “Aaron Starr accuses Oxnard of illegally collecting sewer fees in latest lawsuit” – excerpts:

Aaron Starr . . . filed a new lawsuit against the city over wastewater rates. The class action lawsuit claims that the sewer rates billed to residents following the passage of Measure M were “collected illegally.”

The complaint filed by Starr and Oxnard resident Nancy Pedersen calls on the city to refund customers who paid wastewater fees from December 2016 to July 2017.

In the 2016 election, Oxnard voters passed Measure M, an initiative written by Starr to **repeal a series of wastewater rate increases** that begin with a **35 percent hike**. The city sued Starr over the legality of the ballot initiative. Ventura County Superior Court Judge Rocky Baio is expected to make a decision on the Measure M lawsuit later this month.

Starr is also suing the city over an **infrastructure use fee**, which is **money taken out of the utility funds to pay for public safety and street improvements**. . . .

— Wendy Leung | *VC Star* | 5/7/19 <https://www.vcstar.com/story/news/2018/05/07/mayor-candidate-aaron-starr-accuses-oxnard-illegally-collecting-sewer-fees/582957002/>

[California] “City Returns \$3.7 Million for Smart Water Meter Program” – excerpts:

The City of San Diego has agreed to return more than \$3.7 million to the city’s sewer fund which it took to pay for a citywide conversion to wireless water meters.

The refund was made in hopes of ending a lawsuit filed by a ratepayer who said the city was charging the 8,500 sewage customers who do not use city water in order to help pay for the \$67 million conversion to Advanced Metering Infrastructure, or AMI.

But the rollout has hit bumpy terrain. During a nearly two-year investigation NBC 7 Responds found that the city was made aware of a manufacturing glitch with one of the meter vendors but did not inform the public and does not know how many meters could potentially exhibit the so-called glitch. In addition, crews had been told to retrofit the old meters with the smart meter displays. Those **retrofits resulted in some meter misreads, and astronomical bills for some ratepayers**.

Then, in March 2018, the funding for the AMI project came under scrutiny with the lawsuit from ratepayer Miller Marks.

Attorney Paul Neuharth represents Marks. He says the city ignored recommendations from its oversight

board to pay for the new wireless meters using 70 percent from water fund reserves and 30 percent from the sewer fund. Instead the city chose to divvy up the costs 50 percent by 50 percent.

— Dorian Hargrove & Consumer Bob | NBC San Diego | 4/10/19 <https://www.nbcsandiego.com/news/local/Citys>Returns-37-Million-for-Smart-Water-Meter-Program-508403581.html>

[New York] “Redwood resident sues Alexandria over sewer fee hike” – excerpts:

The town of Alexandria faces litigation from a resident for raising the cost of sewer services in the hamlet.

Daniel B. Peterson and his attorney, James L. Sonneborn of Bousquet Holstein PLLC, are seeking a court order to eliminate the rate hike for the Redwood Sewer District, according to a lawsuit filed Friday in state Supreme Court. They also want the court to appoint an accountant to investigate the town’s finances. The complaint alleges that increasing the rate was unlawful because the town would use it to **recover funds lost from previous mismanagement**.

Affidavits from more than 25 property owners were included in the action. A GoFundMe campaign was created to help fund the litigation.

The town enacted the rate hike from \$450 per equivalent dwelling unit, or EDU, to \$650 per EDU in October to compensate for its **debt to the general fund** and to **create a reserve fund**. The town also raised the number of billable EDUs after discovering parcels that were either not billed at all or charged properly since shortly after the district was formed in 1992.

Mr. Peterson, however, has previously argued that the town’s **poor financial management caused the debt**, and the lack of record-keeping over the years fails to justify the increase.

Mr. Sonneborn wrote in the lawsuit that the town didn’t bill 47 properties in the district for sewer services until recently, made “unauthorized and/or inappropriate” fund transfers between the district and town’s general fund, paid for \$300,000 bond for the second Route 12 sewer district in part with money from the Redwood sewer district and deposited tax relevy money from unpaid water and sewer bills into the general fund instead of their respective water and sewer funds. **Using money generated from the rate increase to help recoup the funds from these previous actions would be an “act of fraud, collusion, corruption and/or bad faith,”** according to the action.

— Marcus Wolf | *Watertown Daily Times* | 1/31/19 <https://www.watertowndailytimes.com/news03/redwood-resident-sues-alexandria-over-sewer-fee-hike-20190131>

“The City of San Diego has agreed to return more than \$3.7 million to the city’s sewer fund which it took to pay for a citywide conversion to wireless water meters.”

“The refund was made in hopes of ending a lawsuit filed by a ratepayer who said the city was charging the 8,500 sewage customers who do not use city water in order to help pay for the \$67 million conversion to Advanced Metering Infrastructure, or AMI.”

— Dorian Hargrove & Consumer Bob, NBC San Diego, 4/10/19

[N. Carolina] “Some of the biggest homebuilders in Charlotte are suing the city for millions” – excerpts:

A dozen of the largest homebuilders in Charlotte have filed a class-action lawsuit against the city of Charlotte, seeking the return of millions of dollars worth of fees for sewer and water connections they claim were unlawfully charged.

The federal lawsuit was filed last week in Charlotte, and alleges the city charged homebuilders **excessive amounts for new connections to water lines and sewer systems**. The builders are suing on behalf of all homebuilders active in the city for the past three years, which could include hundreds of companies and individuals, according to the lawsuit.

A recent state Supreme Court decision stated that cities do not have the authority to charge for future services, forcing the town of Carthage in Moore County to repay impact fees for water and sewage going back 10 years.

The homebuilders also allege the fees were higher than an independent analysis said could be justified, the lawsuit says.

In fiscal year 2018, the lawsuit says, the city charged \$3,394 in capacity fees per new property. That’s \$936 more than an analysis by Raftelis Financial Consultants, commissioned by the city, found to be justifiable, the lawsuit says.

For fiscal year 2019, the city reduced the amount of capacity fees it charged to \$2,458, in line with the maximum amount determined by the consultants, the lawsuit said.

– Ely Portillo & Danielle Chemtor | *Charlotte Observer* | 1/14/19, updated 1/15/19 <https://www.charlotteobserver.com/news/local/article224507160.html>

[California] “Class Action Lawsuit States City of San Diego Misused Taxpayer Funds for Smart Water Meter Program” – excerpts:

A class-action lawsuit was filed Tuesday against the city of San Diego, the Public Utilities Department and the city council, alleging the city **misused taxpayer funds to pay for the city’s new smart water meters**.

The legal action alleges the city’s Public Utilities Department fostered an “illegal financing scheme” by using municipal sewer funds to pay for the advanced metering infrastructure, also known as the “AMI smart water meter program”.

The class action lawsuit is not related to a recent surge of complaints about high water bills.

Approximately **\$33-million** dollars used to pay for the more than

“A recent state Supreme Court decision stated that cities do not have the authority to charge for future services, forcing the town of Carthage in Moore County to repay impact fees for water and sewage going back 10 years.”

— Ely Portillo & Danielle Chemtor, *Charlotte Observer*, 1/14/19

\$67-million dollar meter project came from **sewer ratepayers** or the Municipal Sewer Fund, the suit claims. Attorney Paul Neuharth, whose office filed the case, said the city has 2.2-million sewer users and 1.3-million water users.

Neuharth told NBC 7 Responds that ratepayers who only have sewer services were forced to pay for metering equipment they will never use.

The lawsuit states that in March 2016, the Public Utilities Department determined the cost of the project and recommended the city apply for more than

\$42-million dollars of financing from the **State Water Board’s Clean Water State Revolving Fund**. That amount comprised 70% of the total project cost. The Public Utilities Department also recommended an **additional \$18-million dollars** in funding from the **Municipal Sewer Fund** for the **smart meter project**.

Then in December 2016, at an Independent Rates Oversight Committee hearing, Public Utilities Department staff reported half of the cost was going to be paid for by the **Sewer Fund**, rather than state financing. In addition, the **project’s total cost increased by more than \$7-million dollars**.

The lawsuit claims these financing decisions violated Proposition 218, a state measure that requires public input on public spending for any items the money was not originally designated for. The suit also demands the city repay ratepayers for sewer funds used to purchase the water meters.

– Tom Jones | NBC San Diego | 5/22/18, updated 8/14/18 <https://www.nbcsandiego.com/news/local/Class-Action-Lawsuit-States-City-of-San-Diego-Misused-Taxpayer-Funds-for-Smart-Water-Meter-Program-477694453.html>

[Alabama] “High sewer bills in Tuscaloosa County spark call for action” – excerpts:

Facing sewer bills as high as \$20,000, some residents of Lake View and the McCalla community in eastern Tuscaloosa County have called on state legislators for protection from business practices they call “arbitrary and capricious.”

The Alabama Department of Environmental Management oversees the operations of privately owned sewer systems, but there is no state-level oversight of the rates and consumer protection practices of those systems so the same issues facing Tuscaloosa County could have implications throughout the state.

The Alabama Public Service Commission regulates other utility providers, including Alabama Power and the natural gas provider Spire Inc., formerly Alagasco, but does not typically regulate sewer service.

State Rep. Rich Wingo’s Alabama House Bill 428 aims to change that, although

“The legal action alleges the city’s Public Utilities Department fostered an ‘illegal financing scheme’ by using municipal sewer funds to pay for the advanced metering infrastructure, also known as the ‘AMI smart water meter program’.”

— Tom Jones, NBC San Diego, 5/22/18

only on a small scale at first.

—Stephen Dethrage | *Tuscaloosa News* | 3/11/18
<https://www.tuscaloosaneews.com/news/20180311/high-sewer-bills-in-tuscaloosa-county-spark-call-for-action>

[Georgia] Dekalb County Water and Sewer System (Complaints filed with the Better Business Bureau)

<https://www.bbb.org/us/ga/atlanta/profile/water-supply-system/dekalb-county-water-and-sewer-system-0443-16004309/complaints>

[Pennsylvania] “Borough sues Suez over 11.5 percent hike, wants injunction to stop water and sewer bill increase” – excerpts:

As assured to residents by borough council, Middletown has gone to Dauphin County Court to try and stop Suez from imposing an **11.5 percent surcharge** on water and sewer bills.

On Monday, lawyers for the borough filed a complaint in county court requesting that a judge order an injunction blocking Suez from imposing the **surcharge**, pending the borough and Suez resolving a dispute over provisions in the 50-year lease of the water and sewer systems pertaining to a water sales shortfall.

New Jersey-based Suez is the operator of the water and sewer systems under the lease that borough council and the former borough water authority approved in 2014 with Middletown Water Joint Venture LLC. The joint venture is the defendant in the lawsuit just filed by the borough.

The joint venture says that the 11.5 percent surcharge is to be collected from borough water and sewer system customers to make up for water sales throughout the system falling below a threshold specified in the lease.

According to the joint venture, water sales fell below this target for the first three years of the lease, from Jan. 1, 2015, through Jan. 1, 2018, so for that reason the 11.5 percent surcharge is to be added to water and sewer bills for the next three years. Suez has told the *Press & Journal* that the surcharge is increasing the average bill by 20 cents per day, or by roughly \$72 a year.

The borough in its lawsuit said it is disputing the joint venture’s “assessment” of the water sales shortfall leading to the 11.5 percent surcharge.

The borough said it discovered while preparing for a mediation concerning the joint venture that **the threshold used regarding the water sales shortfall was “wrong.”**

“Rather than simply protecting the (joint venture) from an unexpected drop in retail water sales, it **created a built-in shortfall immediately upon inception of the lease**, with

the result that water and sewer charges would begin to increase in 2018” even before the annual rate increases allowed under the lease could go into effect starting in 2019, according to the lawsuit filed on behalf of the borough by James J. Rodgers, an attorney with Dilworth Paxson LLP.

The borough in the lawsuit also questions the accuracy of the numbers the joint venture uses upon which the alleged water shortfall is based, due to **problems with meters** that are detailed in the complaint.

... the lawsuit contends that the joint venture’s “proposed price increases will lead to the **average consumer paying \$240 more per year for their water service.**”

“The median rent in Middletown is \$809. Increases in water and sewer bills of the type sought by the (joint venture) could cause a significant increase in the monthly expenses of most Middletown residents,” the borough says in the lawsuit.

These rate increases could force some Middletown residents to “move out, and many will decide not to move to Middletown if it gains a reputation for unreasonably high water and sewer rates,” the borough says.

— Dan Miller | *Press & Journal* | 4/18/18
<http://www.pressandjournal.com/stories/borough-sues-suez-over-115-percent-hike-middletown-wants-injunction-to-stop-water-and-sewer-bill.32410>

[California] “Los Osos residents will foot the bill for a \$10 million sewer lawsuit settlement” – excerpts:

A contractor that claimed San Luis Obispo County short-changed it for work done during installation of the Los Osos sewer will receive about \$10 million in a pre-trial settlement, an amount that will ultimately be paid by Los Osos residents.

The county announced Wednesday in a news release that it will pay roughly \$9.95 million to Bay Area-based ARB, Inc., one of two companies contracted to install the pipeline for the sewer system.

According to a county staff report, the settlement was reached in mediation last month. It will now go before the County Board of Supervisors on Tuesday for final approval.

Because the capital project construction fund does not have enough to cover the cost and the new wastewater system’s operating fund has not built up reserves to cover this cost, the **settlement will be paid** through a **solar plant mitigation account** in the **general fund**.

But Los Osos residents will ultimately foot the bill.

The county said in its Wednesday news release that it’s

working with state and federal agencies to “explore low-interest funding options in an effort to avoid potential rate increases in Los Osos due to this settlement.” Specifically, county staff is exploring the possibility of **refinancing an existing state revolving loan or entering into a new loan from the state, the U.S. Department of Agriculture or a county general fund loan**, according to the report.

— Matt Fountain | *The Tribune* | 2/14/18
<https://www.sanluisobispo.com/news/local/article200135409.html>

[Michigan] “\$1.5M settlement proposed in lawsuit over sewer charges in Brighton Township” — excerpts:

Brighton Township and attorneys representing hundreds of township residents have reached a tentative \$1.5 million settlement in a class action lawsuit over **excessive fees levied for sanitary sewer system use**.

The lawsuit, which would be settled pending a final order by a Livingston County Circuit Court judge, alleges about 1,000 property owners within the original sewer special tax assessment district were overcharged for a sanitary sewer system that was overbuilt.

Two lead plaintiffs, Barbara Potocki and Dennis Shoner, allege that certain charges included in the township’s sewer rates were “unlawful ... motivated by a revenue-raising” and “disproportionate to the township’s actual costs of providing sanitary sewage disposal services,” according to the lawsuit.

— Jennifer Timar | *Livingston Daily* | 1/31/18
<https://www.livingstondaily.com/story/news/local/community/brighton-township/2018/01/31/1-5-m-settlement-proposed-lawsuit-over-sewer-charges-brighton-township/1078634001/>

[California] “City Settles Lawsuit Over Water Rates, Will Return \$12 Million To Water, Sewer Funds” — excerpts:

A lawsuit alleging that the City of Long Beach was illegally charging higher rates to its water department customers to fund general governmental operations was settled this week as the city and the plaintiff reached an agreement that will return \$12 million back to the city’s sewer and water funds over the next four years.

The decision comes just over two weeks after the city council met in closed session prior to its regular October 24 meeting and instructed the city attorney’s office to negotiate a settlement. Under the agreement the city will transfer an aggregate amount of \$12 million and will now be forced to address the shortfall going forward in future budget cycles.

The complaint, filed on behalf of Long Beach resident Diana Lejins in September 2016 in Los Angeles Superior Court, came after the city’s water commissioners and city council approved rate increases to the water and

sewer funds earlier in 2016, taking a portion through fees it charges the water company to use the pipes running under the city.

Lejins’ complaint alleged that the city has regularly adopted fees for its sewer and water services that are above the cost of providing the service, something that is unconstitutional according to California state law. The complaint alleges this practice has persisted since 2003 with the excess money going toward general governmental costs once the money is transferred to the city’s general fund.

The result, the complaint said, was over **\$10 million annually being transferred to the general fund** each year since 2013-2014.

“The transfers of the millions of dollars referenced above were undertaken solely for the purpose of bolstering the city’s general fund and to provide general governmental services unrelated to the provision of water and sewer services,” the September complaint read. “The expenses that are actually funded with the millions of dollars do not benefit water and sewer customers in anyway.”

The complaint asked for the cease of transferring of water and sewer pipeline permit fee funds going forward and a restoration of the full amounts transferred to the general fund since 2013. The rate increases, something also targeted by Lejins’ complaint, amounted to about \$1.83 per month for the average bill.

One of Lejins’ attorneys is former Fifth District Councilwoman Gerrie Shipske. Shipske served on the council from 2006 to 2014, meaning she was on the city council during one of the years outlined in the lawsuit but could collect some of the \$480,000 in attorney fees awarded in the lawsuit against the city. She is currently running for California’s 34th State Senate District.

Shipske called the victory a “tremendous win” for water customers in the city as it showed that cities like Long Beach **cannot “assess fees merely because they want to raise revenue.”**

Included in the settlement is a further reduction in monthly water bills which the city said will amount to roughly \$3 per month on the average customer’s bill.

The city has long had some of the lowest water rates in the region with the average bill standing at just under \$70 per month. In contrast, cities like Los Angeles (\$99.94), San Diego (\$128.49) and California’s statewide average (\$86.33) all charge their customers substantially more, according to the city.

— Jason Ruiz | *Long Beach Post* | 11/9/17
<https://lbpost.com/news/city-settles-lawsuit-over-water-rates-will-return-12-million-to-water-sewer-funds/>

“Lejins’ complaint alleged that the city has regularly adopted fees for its sewer and water services that are above the cost of providing the service, something that is unconstitutional according to California state law. The complaint alleges this practice has persisted since 2003 with the excess money going toward general governmental costs once the money is transferred to the city’s general fund.”

— Jason Ruiz, *Long Beach Post*, 11/9/17

[Maryland] “Baltimore County sewer fee billing draws complaints” – excerpts:

Unsure of data from a new water meter system, Baltimore County officials decided this year to estimate county residents’ sewer fees – a decision that has led to complaints of inaccurate bills.

The bills estimate sewer charges based on residents’ water consumption from two years ago, rather than meter readings from the past year. The fees – which also include an 8 percent rate increase – are part of annual property tax bills, which were mailed this summer.

Some property owners say using figures from 2015 is flawed, and in some cases ignores efforts people have made to reduce water use. Critics also complain that the county did not explain the change in advance.

Richard Worch of Florida inherited his father’s Carney-area home in 2015 when his father died. The family learned the house had a leaky toilet, resulting in a sewer fee of more than \$4,300. His family paid the fee in 2016 and fixed the toilet – but because the county estimated his new bill from 2015, officials now say he owes more than \$4,600 for the current bill.

Worch said when he called the county for an explanation and a copy of the rule change, a county employee told him this was simply the way things are being done.

County residents are served by Baltimore City’s water system, but their **sewer fees are included in property tax bills handled by county government**. The sewer fees are **based on a household’s water consumption**.

County officials say they were worried that **new meters** installed by the city would **render inaccurate readings**.

“As Baltimore City moved to install 150,000 new water meters in Baltimore County, there was concern that the transition period **might not yield accurate readings** at the beginning,” county officials said in a statement to *The Baltimore Sun*. “There was also concern that some citizens would be billed using old meters that may not have been functioning correctly.”

The fee in question is listed as the **“metro service charge”** on Baltimore County property owners’ tax bills. The charge includes a **flat fee called a water distribution charge, plus a sewer usage charge that changes depending on a property’s water consumption**.

Worch, a former elected sheriff in Florida, said he got “the brush-off” when he tried to get answers about his bill. He has appealed the bill to Public Works Director Steve Walsh.

In a letter to Walsh, Worch detailed his attempts to get information from the county by phone: “I commented that projecting this forward, if I am now to pay based on a year with a

broken toilet pipe, over the next ten years I would be paying an additional \$40,000+ in fees to property taxes, versus not having the broken pipe last year,” Worch wrote. “I was told this is the ‘way it is.’ Something is not correct here.”

Delores Creighton bought a home in Windsor Mill this summer and said she was shocked to discover a sewer fee of more than \$4,000. She doesn’t know what factors could have led to such a large bill.

The county’s 8 percent sewer fee increase this year comes after a 12 percent increase in 2016 and a 15 percent increase in 2015. County leaders say the money is being used for major upgrades to aging infrastructure.

– Alison Knezevich | *The Baltimore Sun* | 8/21/17
<https://www.baltimoresun.com/news/maryland/baltimore-county/bs-md-co-sewer-fees-20170821-story.html>

[Texas] “Fairer drainage fee system still skewing bills” – excerpt:

[Video description:] Since February, Austin’s Watershed Department has corrected dozens of flawed assessments and credited property owners more than \$33,000.

– KXAN | Feb. 2016 news segment, Published 9/14/16
https://www.youtube.com/watch?v=GN0_bKRC6PA

[Michigan] “Townships sue Kalamazoo claiming city has overcharged water and sewer customers” – excerpts:

Several Kalamazoo County townships are among 11 entities that have filed a joint lawsuit against the city of Kalamazoo alleging it has **intentionally inflated the water and sewer rates**.

The 16-count complaint claims the city, which provides water and sewer services to numerous surrounding municipalities, **“has manipulated and overstated” rates by charging more than what is “permitted by contract, agreement, settlement agreement, consent judgment and law.”** It claims the rates “were developed contrary to accepted industry practice ... are not reasonable and **do not reflect the actual cost of service.**”

The plaintiffs allege in their lawsuit that the city “breached, violated and has failed to comply with the terms and conditions of the Wastewater Service Agreements, the 1988 Rate Settlement Agreement, the 1995 Financial Policy and the 1998 Consent Judgment.” Specifically, they claim the city has set wastewater rates above those necessary to cover the operation, maintenance and replacement of treatment facilities and exceed what is permitted by contract.

The lawsuit alleges the city charged water rates which were not based on “actual cost of service” and which exceeded 150 percent of the water rates charged to customers within the city. Rates charged to customers in outlying municipalities are used, in part, to cover the cost of services, staffing and equipment within the city that do not benefit the municipalities, it claims.

“The lawsuit alleges the city [Kalamazoo, Michigan] charged water rates which were not based on “actual cost of service” and which exceeded 150 percent of the water rates charged to customers within the city.”

— Emily Monacelli, *M Live*, 5/8/14

The suit contends that the city's water rates provide it "an unfair rate of return greater than that which (the city) could receive on other investments of similar risk."

— Emily Monacelli | *M Live* | 5/8/14
https://www.mlive.com/news/kalamazoo/2014/05/kalamazoo_water_sewer_lawsuit.html

[Tennessee] "Thousands of Chattanoogaans stop paying sewer bills" — excerpts:

Since a **third-party vendor took over billing for sewer service** in January, thousands of Chattanoogaans have stopped paying their bills. As a result, the city is running a nearly \$2 million shortfall in its sewer account, Chief Operating Officer Andrew Kean told the City Council on Tuesday. He also said Mayor Andy Berke's staff is working with Tennessee American Water to **start shutting off residents' water if they don't make good on their sewer bills**.

But council members balked at any changes for residents until the city can address **mounting complaints customers have with ENCO Utility Services** and how it collects payments.

... the city is **considering allowing ENCO to handle customer service for residents whose water is turned off**.

With so many concerns on the table, one councilman asked why the administration would consider allowing the company to also provide customer service to residents. Constituents have expressed great concern with how ENCO does its business, ...

— • —

Residents' complaints range from **not receiving their bill until after it's due**, to a **\$3 convenience fee** if customers pay by phone or online, to **not being refunded for overcharges and confusion about who to call with complaints**, officials said.

One man in Councilman Russell Gilbert's district complained that when his water pipes burst he was charged a \$1,000 sewer fee. While Tennessee American Water waived the resulting water bill, ENCO Utility would not for the sewer fee, which was more than 10 times the amount of a normal payment, Gilbert said.

— • —

Tennessee American Water decided to stop billing customers for sewer services two years ago. The **city entered an inter-local agreement** with Rossville and the Hamilton County Water and Wastewater Authority last year. Together, they secured a vendor for sewer billing. Last August, the **previous City Council approved a four-year, \$1 million contract with ENCO Utility of Anaheim, Calif.**

In the past when Tennessee American Water billed residents, the company had the option to shut off residents' water if they didn't pay their sewer bill, but Kean said the city decided to wait until the new company was settled before considering that option again.

More than 13,000 accounts now owe

money, he said. That's about 25 percent of the city's customers.

Tennessee American Water could begin shutting off water for nonpayment by next year, Kean said. But the city is still studying who customers can call to have their water turned back on, he said. The city is considering a \$15 turn-off and another \$15 turn-on fee after residents pay toward their sewer bill.

— Joy Lukachick Smith | *Times Free Press* | 10/23/13
<https://www.timesfreepress.com/news/local/story/2013/oct/23/thousands-stop-paying-sewer-bills/122087/>

[California] "L.A. to Pay Millions in Sewer Bill Refunds: DWP: An agreement is reached to reimburse thousands of septic users who unknowingly paid for city sewage service" — excerpts:

The city of Los Angeles has agreed to make an estimated \$2 million to \$4 million in reimbursements to residents who unwittingly paid for sewer services they did not receive, officials said Wednesday.

Under an agreement between the city and state Assemblyman Richard Katz (D-Sylmar), the city will make the refunds after a study identifies those residents who unknowingly paid city sewer fees even though they were on private sewer systems. The city agreed to the reimbursements after a state Assembly committee approved legislation that would make the city's current sewer billing system illegal beginning Jan. 1, Katz said.

Department of Water and Power billing procedures that took effect in 1978 charged all water customers for sewer services whether or not they were connected to the sewer system. Users of septic tanks and other private disposal systems could apply for exemptions, but many failed to do so because they did not read or could not understand annual inserts in water bills explaining their rights, said Fred Nakamura, an attorney for San Fernando Valley Neighborhood Legal Services.

— • —

"Homeowners have been ripped off because the city of Los Angeles was too lazy to find out if they were hooked up to the sewer system," said Katz, whose district includes Pacoima. "The Department of Water and Power has been operating with a 'collect now, hope they don't ask questions' mentality, and that's just wrong. People should not have to pay for services they don't receive."

The city had said in response to Nakamura's complaint that billing only those who use the sewers was impractical because it did not know which properties are connected to sewers. Many sewer permit records are outdated or nonexistent, city officials said.

— • —
"The city of Los Angeles has agreed to make an estimated \$2 million to \$4 million in reimbursements to residents who unwittingly paid for sewer services they did not receive,..."

— Philipp Gollner, *Los Angeles Times*, 8/9/90

But members of Katz's staff and city officials have determined that they can obtain the information by conducting a study to identify water customers who have permits for sewer connections. Properties that have water hookups but no sewer connections most likely are on septic tanks or other disposal systems, officials said.

— Philipp Gollner | *Los Angeles Times* | 8/9/90
<https://www.latimes.com/archives/la-xpm-1990-08-09-me-93-story.html>

HIGH COST OF “SMART” TECHNOLOGY & INSIDIOUS FUNDING SCHEMES

Drainage fees – to fill revenue gaps?

[Michigan] “Fee or tax? Detroit’s controversial drainage rate faces legal challenge” – excerpts:

Known by opponents as the “rain tax,” the drainage rate’s rollout has been fiercely challenged by residents, business owners, and operators of faith-based institutions. They say the charge is unreasonably expensive and opaquely calculated. . . .

Drainage refers to any surface water, like rain or snowmelt, that enters Detroit’s combined sewer system, where it mixes with raw sewage. Per the **Clean Water Act**, that combination of water and sewage must be treated before it is discharged into the Detroit and Rouge rivers. In cases of extreme wet weather, the city must hold the combined sewage in retention basins to prevent overflows of untreated waste into the rivers.

The city’s new drainage rate charges residents based on the amount of hard surfaces they have on their property, like **driveways, roofs, or parking lots**. The logic: Any water that isn’t soaked into the ground ends up in the combined sewer system.

In the last four years, the water department has disconnected more than 100,000 residential accounts that are behind on their bills. The threshold for cutoff: 60 days behind or \$150 overdue.

The formation of the Great Lakes Water Authority as part of Detroit’s 2014 bankruptcy proceedings complicates matters further. Now, instead of paying into their own city’s coffers, a large portion of Detroiters’ money goes to the **regional body** that acts as the **wholesale provider** of water and sewerage services. The authority also controls \$3.8 billion of Detroit’s legacy debt.

Given the financial pressures the water department finds itself in, critics suspect that a **fixed drainage rate was simply devised to fill a revenue gap**.

. . . it’s an unconstitutional tax. “The drainage fee meets all three definitions of a tax, and if it met just one of them, it would be a tax,” Bellant said. “But it’s a tax, a tax, and a tax.”

According to a 1999 Michigan Supreme Court decision, *Bolt v. Lansing*, a **fee is distinguishable from a tax** based on three criteria: One, a **fee serves a regulatory purpose, not a revenue-raising purpose**; two, a **fee must be proportional to the service it provides**; and three, a **customer must be able to decline or control their use of the service**.

Like Bellant, plaintiffs in the case *Detroit Alliance Against the Rain Tax v. City of Detroit* argue that the drainage rate functions as a tax under all three criteria. That would put it in violation of Michigan’s Headlee Amendment, which requires a public vote for any new tax or tax increase.

Both Lansing and Jackson’s drainage rates have been overturned on similar arguments.

– Joey Hornan | *Outlier Media* | 9/13/18, updated 8/22/18
<https://www.michiganradio.org/post/fee-or-tax-detroit-controversial-drainage-rate-faces-legal-challenge>

[Colorado] “Judge: Drainage charge a tax” – excerpts:

The Grand Valley Drainage District’s charge, which for most of its residents is \$36 a year, “runs afoul of (the Taxpayer’s Bill of Rights) and is unconstitutional beyond a reasonable doubt,” Mesa County District Judge Lance Timbreza wrote in a 43-page decision handed down a year after Timbreza presided over a trial on the case.

Mesa County and the Grand Junction Area Chamber of Commerce sued to halt the charge, contending that it was an illegal tax. While the ruling halts the district from continuing to collect the charge, it’s silent on how or whether the district is to return the \$7.2 million already collected over the last three years.

– Gary Harmon | *The Daily Sentinel* | 6/6/18
https://www.gjsentinel.com/news/western_colorado/judge-drainage-charge-a-tax/article_af-09a3ec-694a-11e8-9ee7-10604b9f1ff5.html

[Texas] “Proposed City Budget Continues to Divert Drainage Fees” – excerpts:

The proposed FY2018-2019 City budget will, if adopted, continue to **spend most of the drainage fees paid by Houstonians on things other than drainage**. Any Council Member who votes for this budget is voting to siphon off the drainage fees that Houstonians were promised would be spent to reduce flooding.

I wish I could simply lay out the facts about how the City diverts the drainage fees but the City intentionally obfuscates how the drainage fees are spent. So, this is going to require a deep dive.

In 2012, the City began collecting drainage fees pursuant to a **Texas statute** that authorizes cities to establish a “drainage utility.” That state statute requires that drainage fees be held in a segregated account. The City has never done this. Instead, it deposits the money into the Dedicated Drainage & Street Renewal Fund, more commonly referred to as Rebuild Houston.

The City uses two devices to obfuscate how the drainage fees are spent. First, they are commingled with other monies. The total income deposited in the Rebuild Houston fund has been running a little over \$200 million. About half of that comes from drainage fees. The general mobility payments from Metro account for about a quarter of the money. The other big piece is a transfer from the General Funds which supposedly is equal to the amount that the City’s debt has declined because of the “pay-as-you-go” feature of Rebuild Houston. . . . Of course, once these funds are all commingled it becomes much more difficult to sort out what money is being spent where.

Second, the Turner administration began omitting certain critical information from the Rebuild budget in FY2016-2017. The first is a listing of the employee positions that are being funded by Rebuild. When this schedule was available, it was apparent that many of the positions being paid from the fund were not workers on the street, but rather City Hall bureaucrats. . . .

– Bill King | *Bill King blog* | 5/28/18
<https://www.billkingblog.com/uncategorized/proposed-city-budget-continues-to-divert-drainage-fees/>

[Michigan] “How driveways, parking lots are changing the cost of Detroit water bills” — “Business owner says drainage cost rose to \$1,000” – excerpts:

There are big changes coming to the water bills for hundreds of thousands of people, and it has nothing to do with how much water we’re using. Whether you own a vacant lot or a high-rise, how you pay for drainage is changing. . . .

“People have been charged for drainage for decades, but it was **buried in the sewage rate,**” said [Gary] Brown [Director of the Detroit Water and Sewerage Dept.].

DWSD is now using aerial images to measure how much impervious acreage you have. Translation: the more concrete and hard surfaces on your property, such as driveways, parking lots, and rooftops, the more storm water runoff you have.

– Heather Catalo | ABC 7 WXYZ Detroit | 10/25/17, updated 10/26/17
<https://www.wxyz.com/news/local-news/investigations/how-driveways-parking-lots-are-changing-the-cost-of-detroit-water-bills>

[Michigan] “Detroit water board slashes drainage fee after backlash from businesses, churches” – excerpts:

Detroit’s Board of Water Commissioners on Wednesday voted to slash a \$750-per-acre monthly drainage fee to \$125 for businesses, churches and other property owners following months of outcry over the charges.

The city’s water board established a new five-year phased-in fee schedule for some 22,000 property owners hit with the hefty fee for impervious surfaces that send storm water running into Detroit’s aging sewer system.

Crain’s first reported Sunday on the city’s decision to scale back the controversial drainage fee. The DWSD imposed the fee on some 22,000 property owners who hadn’t been paying for storm water runoff in response to a class-action lawsuit.

Michigan Warehousing Group LLC sued Detroit and its water department in 2015 for charging some property owners a \$852 per acre monthly fee and others nothing or as little as \$20 based on the size of their water meter pipe.

Under the revised fee schedule, commercial property owners in Detroit will see their monthly charge reduced to \$125 per impervious acre starting next month and then increased to \$250 in July, DWSD Director Gary Brown said. The fee for commercial property will then be increased to \$375 per acre in July 2018; \$500 in July 2019; \$626 in July 2020; \$651 in July 2021 and end at \$677 in July 2022.

– Chad Livengood | *Crain’s Detroit Business* | 4/19/17
<https://www.craindetroit.com/article/20170419/NEWS/170419789/detroit-water-board-slashes-drainage-fee-after-backlash-from>

“People have been charged for drainage for decades, but it was **buried in the sewage rate,**” said [Gary] Brown [Director of the Detroit Water & Sewerage Dept.].

– Heather Catalo, ABC 7 WXYZ Detroit, 10/25/17, updated 10/26/17

[Texas] “Drainage fee flaws could be costing you more” – excerpts:

Caroline Reynolds saw what looked like an elephant trunk coming out of a neighbor’s house, when she checked her home’s online drainage fee map this year.

That didn’t seem right, she said. So, Reynolds checked another neighbor’s house, and another, and another on her Allendale neighborhood street. The assessment for nearly every home appeared to have errors. Some issues were small – a phantom driveway– others were larger: an entire new home unaccounted for, she said.

All those apparent errors were in addition to problems she found on her own property. Reynolds said she’s concerned that the four-year-old **aerial photos used by the city to assess drainage fees** are outdated, and the technology used to map “impervious cover” isn’t perfect either.

“I kept saying: ‘It’s wrong, it’s wrong, it’s wrong,’” Reynolds said. “One of the McMansions over here is paying just 46 cents because all the map shows is a little bitty piece of his driveway, when they had the house scraped off.”

To create the online maps, the city contracted with independent firms for **aerial photos** and to create the digital overlays that **map impervious cover**. The city also has an independent contractor doing quality control. Since 2012, the city has spent more than **\$2 million on software, data and consulting for the drainage fee maps (about \$1.1 million of that amount is for mapping systems shared by numerous other city departments)**, according to records obtained through the Texas Public Information Act.

Overall, Austin has taken in roughly between \$65 million and \$77 million in drainage fees each of the past few years. The drainage fee revenue is expected to rise again this year. Austin takes in more per capita in drainage fees compared to Dallas and Houston, according to budget records.

The photos the city currently uses date back to 2012. It takes about two years to complete the digital overlays, called “planimetrics,” of impervious cover, Bell said. Therefore, in fiscal year 2017, the city will upgrade to aerial photos taken in 2015, Bell said. At that pace, the maps will always be about two years behind the present.

– David Barer | KXAN | 2/29/16
<https://www.kxan.com/news/drainage-fee-flaws-could-result-in-higher-bills/1049723762>

[Michigan] “Irate residents demand sewer refund” – excerpt:

Frustrated residents filled every seat and stood lining the walls at Monday night’s Brighton Township Board of Trustees meeting, which lasted three hours.

Many demanded refunds on sewer charges. One after another, residents walked up to the podium, claimed they had been overcharged and urged town-

ship officials to take action to resolve the situation.

There were possibly upward of 100 people at the meeting Monday. So many showed up that the work session meeting was moved from a small conference room to the larger boardroom. At first, people filled every inch of the small room and spilled out into the hallway.

Resident Bob Potocki made demands of the board, which included refunding \$17,500 to property owners who he claimed have been overcharged for a special tax assessment and capital charges.

Potocki called for a freeze on township cash and capital spending. He also requested an independent audit of the current sewer tax assessment roll. He also called the sewer tax “illegal.”

“We’ve endured such a tax for 16 years and have petitioned for release numerous times during that time. Now we’re demanding an immediate roll-call vote by the elected township trustees,” Potocki said. “Repeal the quarterly sewer tax and refund all winter and summer taxes for sewer capital exceeding \$4,500 per home, with a full refund for empty lots adjacent to homes with sewers. That is a yes or no answer.”

— Jennifer Timar | *Livingston Daily* | 1/5/16
<https://www.livingstondaily.com/story/news/local/community/brighton-township/2016/01/05/residents-demand-refund-sewer/78271752/>

[Alabama] “Lawsuit challenges Anniston’s stormwater drainage fee” – excerpts:

Two Anniston citizens, one a former council member, have filed a lawsuit over the city’s stormwater drainage fees.

Former council member Ben Little and citizen Ralph Bradford have filed suit in Calhoun County Circuit Court.

They say there are a number of problems with the **state law that allows cities to levy the fees** and the city of Anniston’s ordinance that does so.

The Anniston city council approved the fees last spring after the **state legislature passed their bill**.

The fees are \$10 dollars a year for residential property owners, and for commercial property owners, they’re calculated based on square footage, being capped at \$3,000.

Anniston is apparently the first city in Alabama to take that step.

Little says it conflicts with other state laws about an “act of God,” and that its appeals process puts too much power into the hands of the city manager. Little also says it’s a bad precedent for churches . . . to be ordered to pay a fee.

The ordinance does exempt utilities like Alabama Power and Alagasco from paying the fee.

Bradford says he’s both a business and property owner.

“I’m against any tax on which the people don’t have any input,” Bradford said.

Both he and Little criticized politicians who they say **disguise taxes as “fees.”**

— Dixon Hayes | WBRC | 1/15/15
<https://www.wbrc.com/story/27862247/lawsuit-challenges-annistons-stormwater-drainage-fee/>

[Texas] Confusion clouds Houston’s new drainage fee” – excerpt:

The program’s unveiling was full of confusion and after digging through every single bill with the investigative group Texas Watchdog, we still have questions about who’s paying what and why.

Let’s get this out in the open right at the outset.

Houston resident Clyde Bryan doesn’t like the new drainage fee. “They’re employing voodoo science to get the job done,” Bryan said.

When he showed us the drainage map for his street, houses are missing, driveways too; the street is jagged and he worries it’s not accurately counting how much money each homeowner owes the city. “It’s like a bad science project at a high school,” Bryan said.

For example, when Bryan called the city to verify his bill, he found out he didn’t have one. The city counted his lot as part of his neighbor’s.

So far, more than 19,000 people, or about 4 percent of residents, have complained about their drainage bill. Houston Mayor Annise Parker says she’s proud of the program, but admits there are problems.

“We are building the car while driving. This is light speed for a government entity to implement something this big and complicated this fast,” Parker said.

When it comes to improving drainage, the numbers on the bill aren’t all you’re paying.

The city is charging other government agencies – even other city departments – bills paid for by tax money or user fees, just moving from one government to another.

“A city taxing a city? That’d be like you taxing your wife,” Bryan said.

And as a city department, Houston’s airports can’t put up a fight. The drainage fee for Bush, Hobby and Ellington airports is \$6 million a year, every year.

The airports have a lot of concrete but no money trees. The cash comes from airport users, like you. You’ll pay another \$200,000 for the bill at the Port of Houston and at least another \$500,000 more for the bill at Harris County-owned Reliant Center and even more to pay METRO’s bill.

In Bryan’s mind, it’s good money down the drains, chasing the city’s \$125 million goal.

Long ago, the mayor and council decided the city should pay its fair share of the bill as well. But when we tallied up the city’s share in the fund, we calculated \$9.2 million, or about 7 percent of the entire fund, comes from taxpayers to pay the city’s bill.

The biggest item is Bush Intercontinental Airport, which comes in at \$3.8 million in drainage fees. . . .

— abc7NY | 7/27/11
<https://abc7ny.com/archive/8275041/>

DRIVERS OF “SMART” METER/GRID POLICY, FUNDING, & REGULATION

Federal, regional, and state government

Advanced Metering Infrastructure Deployment in the United States: The Impact of Polycentric Governance and Contextual Changes

Abstract: Advanced metering infrastructure provides the first building block in smart grids by empowering customers and utilities with real-time information regarding energy use. It is a key element in the U.S. government’s push for electric grid modernization. Using a panel dataset for 50 U.S. states and the District of Columbia over the years 2007–2012, we evaluate the impacts of a polycentric governance system and socioeconomic contexts on states’ performance in smart metering deployment. We find that the advanced metering technological change in the United States has been exclusively created by the interdependencies and interactions between different layers of government. High-tech industry is the only socioeconomic factor that has a negative impact on smart meter deployment, whereas other factors, such as pressures from energy consumers and environmental groups, and electric grid conditions, have negligible impacts.

“State regulatory bodies and policymakers play an important role in advancing transmission and facilitating the growth of smart grid. The policy areas these topics influence are many and include increased use of renewable energy, net metering, interstate transmission issues, deployment of digital smart electricity meters, restructuring of utility rates, feed-in tariffs and demand response.”

– National Governors Association (NGA), “Electricity Transmission & Smart Grid”, no date. Accessed 6/26/19
<https://www.nga.org/center/issues/electricity-transmission-smart-grid/>

“Energy Independence and Security Act,” 2007). EISA also directs the National Institute of Standards and Technology (NIST) and FERC to develop and implement smart grid technological standards. Since these two federal laws have similar legal effect for every state and their impacts have largely been reflected on state policy activities, which will be discussed in the next section, we do not test them in our model.

The American Recovery and Reinvestment Act (ARRA) of 2009 appropriates \$4.5 billion in matching funds for electricity delivery and energy reliability modernization efforts.¹ Applicants need to pass an initial eligibility review and a comprehensive merit evaluation. Evaluation focuses on the project plan, approach for addressing interoperability and cyber security, plan for data collection and cost benefit analysis, and how projects will enable smart grid functions (DOE, 2009). The final selection of applications also ensures a diverse group of projects is selected. . . .

– Shan Zhou & Daniel C. Matisoff, Georgia Institute of Technology | “Advanced Metering Infrastructure Deployment in the United States: The Impact of Polycentric Governance and Contextual

Changes” | *Review of Policy Research*, Vol. 33, No. 6 | 2016
https://cepl.gatech.edu/sites/default/files/attachments/Smart%20Meters%20RPR_0.pdf

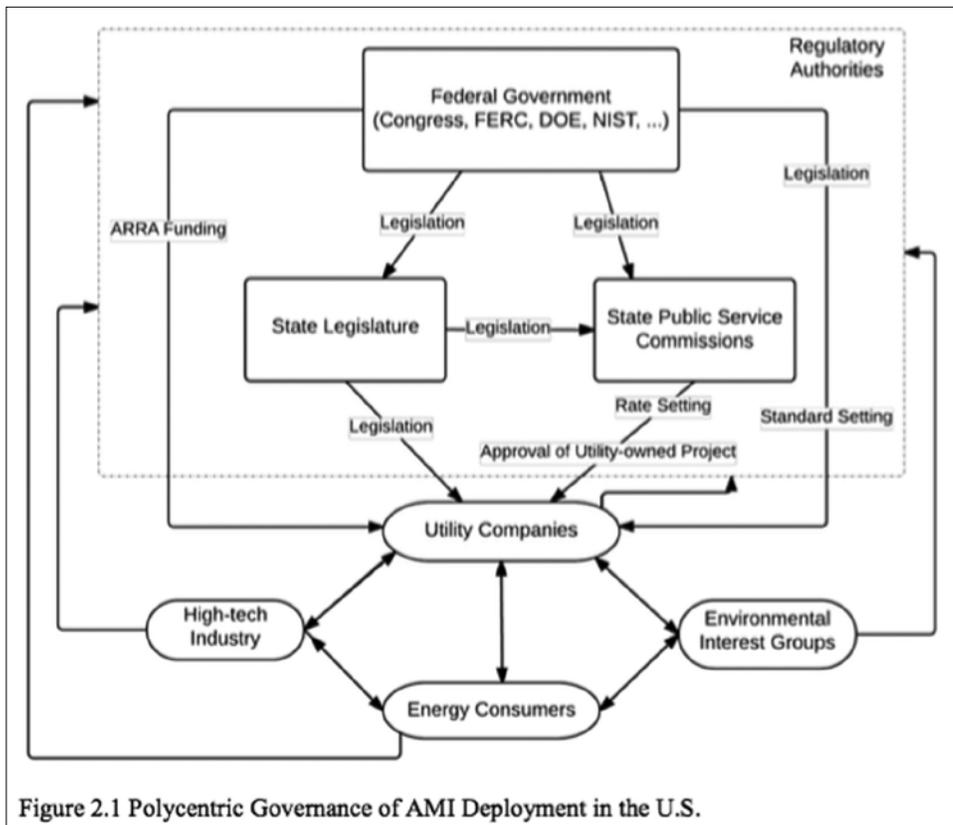


Figure 2.1 Polycentric Governance of AMI Deployment in the U.S.

Source: “Advanced Metering Infrastructure Deployment in the United States: The Impact of Polycentric Governance and Contextual Changes”

Governors Staying Ahead of the Energy Innovation Curve A Policy Roadmap for States

This material is based upon work supported in part by the Department of Energy under Award Numbers DE-OE0000817 and DE-EE0006303. This report was prepared as an account of work sponsored by an agency of the United States Government.

[Excerpt p.3:]

STAYING AHEAD OF THE TRANSPORTATION INNOVATION CURVE: STRATEGIES FOR GOVERNORS

Given the unique characteristics of each state, the following are possible strategies governors can consider as they pursue their policy objectives and adapt to transformations in the energy system.

Support technology innovation:

- Empower and direct agencies to explore and accelerate the adoption of innovative energy technologies.
- Appoint and convene working groups to gather stakeholder input on facilitating the adoption of innovative energy technologies.
- Direct state agencies to enable innovative technologies through energy planning processes.
- Promote the adoption of state procurement targets for innovative energy technologies.
- Encourage regulated utilities to pursue innovative energy technologies and offer customers choices.
- Request that agencies or utilities test and pilot emerging technologies.
- Directly support research and development (R&D) through innovation programs to develop home-grown technologies and expertise.
- Promote laws and regulations that drive technological innovation and deployment.

Modernize legislation, regulations, and incentives:

- Promote grid modernization initiatives.
- Implement performance incentives that reward utilities for meeting policy goals.
- Establish new rate design mechanisms and incentives for energy users.
- Foster competition between traditional utilities and third parties.
- Include targeted R&D or pilot programs in cost recovery and ratemaking structures.

Provide funding and financing mechanisms to drive technology deployment:

- Encourage adoption of financial incentives to drive deployment of innovative energy technologies.
- Support the development of mechanisms that can use scarce public dollars to spur private capital investment.
- Support the development of mechanisms that make it easier for residents and businesses to pay for deployment of innovative energy technologies on their properties.

Prepare the workforce:

- Partner with industry to identify skills gaps and workforce availability.
- Provide state-level incentives for energy sector business opportunities and workforce development programs to support these growing industries.
- Work with educational institutions at all levels to ensure that training programs are available to meet skills gaps both now and in the future.
- Identify underserved and high-unemployment groups and geographies to maximize benefits to communities in greatest need.

Update communications networks and data systems:

- Meet the broadband needs of underserved communities.
- Develop policies and programs to facilitate the state's transition to a "smart state."
- Encourage state agencies or utilities to assess infrastructure efficiencies.

Address cyber threats:

- Coordinate efforts and information sharing among stakeholders, with clearly defined roles.
- Incorporate cybersecurity into existing planning, including energy assurance plans.
- Promote practices among utilities that build on standards and guidelines to address unique threats and vulnerabilities.
- Ensure that state agencies, including public utility commissions, have a thorough understanding of how utilities manage risks.
- Continuously evaluate and upgrade skills, systems and planning in response to emerging threats.
- Develop and use the cyber expertise of the state's National Guard.
- Use expertise with the civilian workforce to assist with responses.

Educate consumers about the benefits and risks of technological innovation:

- Direct agencies and work with public utility commissions to explore the customer education and outreach activities needed to support the deployment of innovative energy technologies.
- Direct agencies to support engagement with and education of a range of consumers about the benefits and impacts of innovative energy technologies.
- Promote efforts by state agencies to create educational campaigns focused on kindergarten through grade 12 schools.

– National Governors Association • Foreword by Nevada Governor Brian Sandoval, NGA Chair, 2017-2018
<https://www.nga.org/wp-content/uploads/2018/07/Energy-Innovation-Roadmap-Final-Hi-Res-for-Posting-Online.pdf>

Demand Response and Smart Metering Policy Actions Since the Energy Policy Act of 2005: A Summary for State Officials

Prepared by the U.S. Demand Response Coordinating Committee for The National Council on Electricity Policy, Fall 2008
https://www.energy.gov/sites/prod/files/oe/oeprod/DocumentsandMedia/NCEP_Demand_Response_1208.pdf

[Excerpt p.i:]

Demand Response and Smart Metering Policy Actions Since the Energy Policy Act of 2005: A Summary for State Officials was prepared with the financial assistance of a grant from the U.S. Department of Energy (DOE) Office of Electricity Delivery and Energy Reliability (OE). This publication is the third in series of practical resources State officials to better understand, manage and coordinate electricity transmission and distribution issues.

The National Council on Electricity Policy Electric Transmission Series:

- *Electricity Transmission: A Primer* (June 2004)
- *Coordinating Interstate Electric Transmission Siting: An Introduction to the Debate* (July 2008)
- *Demand Response and Smart Metering Policy Actions Since the Energy Policy Act of 2005: A Summary for State Officials* (November 2008)
- *Examining Alternatives to Electric Transmission: A Guide for State Officials* (to be released in 2008)
- *The Smart Grid: Policy and Practical Essentials for State Officials* (to be released in early 2009)

The primary authors of this report were Dan Delurey and Paul Pietsch of the Demand Response Coordinating Committee. Their persistence allowed for multiple points of views to be expressed in one comprehensive document. The authors are grateful to several members of the National Council on Electricity Policy who helped to develop, guide and review the many versions of this document: Commissioner

Jeanne Fox, New Jersey Board of Public Utilities; Commissioner Phil Giudice, Division of Energy Resources, Commonwealth of Massachusetts; Jeff Genzer, General Counsel, NASEO; Charles Gray, Executive Director, NARUC; Kate Marks, Energy Program Director, NCSL; Sue Gander, Director of Energy, Environment & Natural Resources Division, NGA Center for Best Practices; Chris Haun of the New Jersey Board of Public Utilities; Miles Keogh, Director of Grants and Research, NARUC; and Andrew Spahn, Executive Director, National Council on Electricity Policy.

Finally, we owe a special thanks to Larry Mansueti from DOE who provided technical insight, patience and good judgment.

The National Council on Electricity Policy is **funded by the U.S. Department of Energy and the U.S. Environmental Protection Agency**. The views and opinions expressed herein are strictly those of the authors and may not necessarily agree with the positions of the National Council on Electricity Policy, its committee members or the organizations they represent, the National Council funders, or those who commented on the paper during its drafting.

[Excerpt p.ii:]

The National Council on Electricity Policy (National Council) is a unique venture between the **National Association of Regulatory Utility Commissioners (NARUC)**, the **National Association of State Energy Officials (NASEO)**, the **National Conference of State Legislatures (NCSL)**, **National Association of Clean Air Agencies (NACAA)** and the **National Governors Association (NGA)**. The National Council also includes participation by the **Federal Energy Regulatory Commission (FERC)**, **U.S. Department of Energy (DOE)**, and the **U.S. Environment Protection Agency (EPA)**. Established in 1994, the National Council enables better coordination between federal and state entities responsible for electricity policy and programs. Our members understand that improved intrastate, regional and federal coordination can result in more informed electricity policy decisions.

[Excerpt p.1 – Overview:]

This report demonstrates that a substantial amount of policymaking related to demand response has happened recently or is presently underway.

At the federal level, **Congress has stated its intention that demand response be incorporated into the nation’s electricity system from both a policy and business perspective. Congress has also taken several specific steps to make that happen and it has recognized that demand response and its enabling technologies are key ingredients to the development of a smart grid.** At the same time, Congress has not yet moved to use tax policy and mandates to stimulate the growth of demand response in a way similar to what it has done in the past for renewable energy and traditional energy efficiency. Elsewhere at the federal

level, however, **federal regulators have used their jurisdiction over wholesale power and regional markets to directly require development and deployment of demand response.**

At the State level, this report reflects the great diversity of approaches and the many levels of activity underway in the states. Some of that activity has been undertaken pursuant to Congressional direction such as Section 1252 of EPACT but much has also been activity initiated on a state’s own initiative. The other fact that is reinforced by this report is the significant role of states in demand response, given that much demand response involves modification of retail rates and approval of utility infrastructure investments, each of which are subject to state jurisdiction.

Table A [below] summarizes the State policy activity described in this report. Specifically, the table indicates with a check mark (“✓”) which states have taken some regulatory or legislative action on demand response, smart meters, and/or the smart grid. It also shows which states have initiated and completed regulatory consideration of PURPA Standard 14 on time-based metering and demand response (Section 1252 of EPACT 2005).

National Council on Electricity Policy: Electric Transmission Series for State Officials

Table A summarizes the State policy activity described in this report. Specifically, the table indicates with a check mark (“✓”) which states have taken some regulatory or legislative action on demand response, smart meters, and/or the smart grid. It also shows which states have initiated and completed regulatory consideration of PURPA Standard 14 on time-based metering and demand response (Section 1252 of EPACT 2005).

Table A: Summary Table of Demand Response Policy Developments

State	Policy		Smart Meter/ Smart Grid		Initiated Regulatory Consideration of EPACT 1252	Completed Regulatory Consideration of EPACT 1252
	Demand Response	Legislative	Regulatory	Legislative		
Alabama					✓	✓
Alaska					✓	✓
Arizona					✓	✓
Arkansas	✓				✓	✓
California	✓		✓	✓		
Colorado	✓	✓	✓	✓	✓	✓
Connecticut	✓	✓	✓	✓		
Delaware	✓		✓		✓	✓
District of Columbia	✓		✓		✓	✓
Florida	✓	✓	✓		✓	✓
Georgia	✓				✓	✓
Hawaii						
Idaho	✓	✓	✓		✓	✓
Illinois		✓	✓		✓	✓
Indiana	✓				✓	✓
Iowa	✓	✓			✓	✓
Kansas	✓	✓	✓		✓	✓
Kentucky	✓	✓			✓	✓
Louisiana					✓	✓
Maine	✓	✓				
Maryland	✓	✓	✓	✓	✓	✓
Massachusetts	✓	✓		✓		
Michigan	✓	✓	✓		✓	✓
Minnesota	✓	✓	✓		✓	✓
Mississippi						
Missouri					✓	✓
Montana					✓	✓
Nebraska						
Nevada					✓	✓
New Hampshire		✓	✓	✓	✓	✓
New Jersey	✓		✓	✓	✓	✓
New Mexico	✓	✓			✓	✓
New York	✓		✓		✓	✓
North Carolina	✓	✓			✓	✓
North Dakota					✓	✓
Ohio	✓	✓	✓	✓	✓	✓
Oklahoma	✓					
Oregon	✓		✓			
Pennsylvania	✓	✓	✓	✓		
Rhode Island	✓	✓			✓	✓
South Carolina					✓	✓
South Dakota					✓	✓
Tennessee					✓	✓
Texas	✓	✓	✓	✓	✓	✓
Utah					✓	✓
Vermont		✓	✓	✓	✓	✓
Virginia	✓	✓			✓	✓
Washington				✓	✓	✓
West Virginia					✓	✓
Wisconsin	✓				✓	✓
Wyoming					✓	✓
TOTALS	30	22	18	10	38	32

**TRANSFORMING THE NATION'S ELECTRICITY SYSTEM:
THE SECOND INSTALLMENT OF THE QER, JANUARY 2017**

– excerpts from the *Preface*, plus Figure 1-10 and 1-11 from *Chapter I: Transforming the Nation's Electricity System*, pg.1-24:

In June 2013, in response to a 2011 recommendation by the **President's Council of Advisors on Science and Technology [PCAST]**, President Obama initiated a quadrennial cycle of energy reviews to provide a multi-year roadmap for U.S. energy policy. In a **Presidential Memorandum** released on **January 9, 2014** (see page iii for full text), President Obama directed his Administration to conduct a Quadrennial Energy Review (QER),¹ and announced the formation of a **White House Task Force**—co-chaired by the **Director of the Office of Science and Technology Policy** and the **Special Assistant to the President for Energy and Climate Change from the Domestic Policy Council** and comprising **22 Federal agencies** with equities in energy – to develop the QER. The Task Force is directed to deliver a report to the President that does the following:

- Provides an integrated view of, and recommendations for, Federal energy policy in the context of economic, environmental, occupational, security, and health and safety priorities, with attention in the first report given to the challenges facing the Nation's energy infrastructures
- Reviews the adequacy of existing executive and legislative actions and recommends additional executive

and legislative actions as appropriate

- Assesses and recommends priorities for research, development, and demonstration programs to support key energy innovation goals
- Identifies analytical tools and data needed to support further policy development and implementation.

The President further directed the Department of Energy (DOE) to provide analytical support for the QER and to help manage the interagency process through a secretariat at DOE. This is consistent with DOE's missions and statutory responsibilities. DOE has undertaken periodic reviews and analyses of the energy sector (including in the "**National Energy Strategy**" of 1991 and the "**Comprehensive Energy Strategy**" of 1998) and contributed to the work of the **National Energy Policy Development Group** led by the **Vice President in 2001**, but that

"Beginning in 1933 with President Franklin D. Roosevelt's Science Advisory Board, each President has established an advisory committee of scientists, engineers, and health professionals. Although the **name of the advisory boards have varied over the years, the purpose of each remains the same** – to provide scientific and technical advice to the President of the United States."
– "About PCAST," The White House, President Barack Obama
<https://obamawhitehouse.archives.gov/administration/eop/ostp/peast/about>

national energy policy report was published nearly 16 years ago, and the U.S. energy system has changed very significantly over that period. The Presidential Memorandum on the QER acknowledges that such a review is overdue and recognizes the high value of the White House as the convener of such an effort. It also reinforces the equities that multiple agencies have in Federal energy policy.

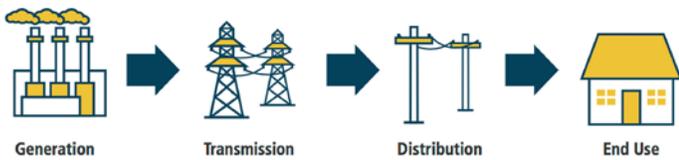


Figure 1-10. Traditional One-Way Flow Electricity Supply Chain⁷⁵
"The power grid was traditionally designed to move electricity from large generators to end users. Arrows represent power flows."

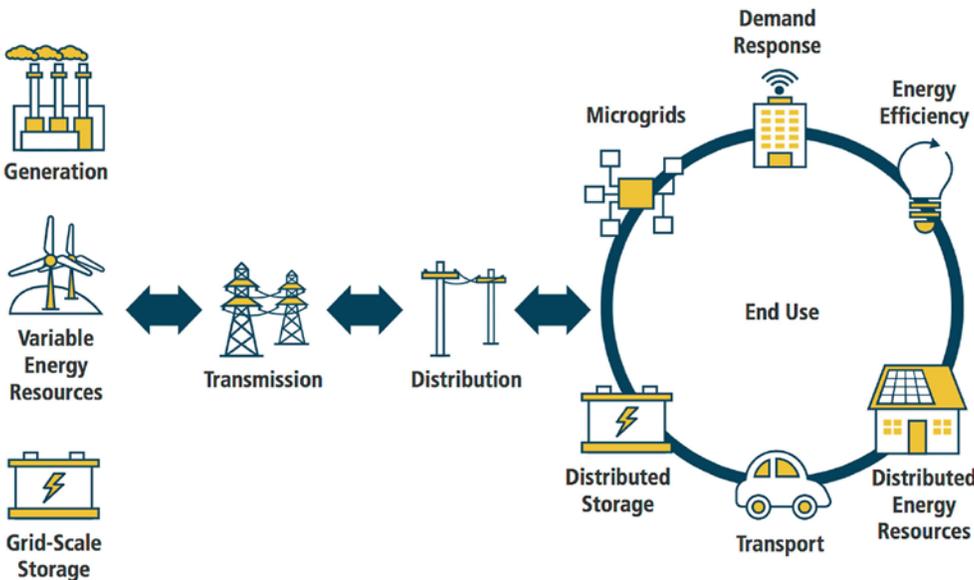


Figure 1-11. Emerging 21st-Century Electricity Two-Way Flow Supply Chain⁷⁶

As directed by the President, the QER is envisioned as a focused, actionable document designed to provide policymakers, industry, investors, and other stakeholders with unbiased data and analysis on energy challenges, needs, requirements, and barriers that will inform a range of policy options, including legislation. Each installment of the QER will analyze and make recommendations for a key component of the energy value chain.

Read more— *Transforming the Nation's Electricity System: The Second Installment of the QER*
<https://www.energy.gov/sites/prod/files/2017/02/f34/Quadrennial%20Energy%20Review--Second%20Installment%20%28Full%20Report%29.pdf>

Utility industry lobbying

[Arizona] “Arizona Utility Customers Are Funding Lobbying Against Public Health Regulations” – excerpts:

Arizona’s three major utilities charge their customers for membership in secretive groups that lobby against federal regulations to protect public health.

Those groups are the **Utility Water Act Group (UWAG)** and the **Utility Solid Waste Activities Group (USWAG)**. Utilities say that membership in these groups help them understand complex environmental regulations. But these decade-old groups have also lobbied fiercely in recent years against regulations aimed at protecting public health and the environment, such as clean water and coal-ash disposal rules.

Arizona Public Service, Salt River Project, and Tucson Electric Power are all members of the **Utility Solid Waste Activities Group**, spokespeople for those companies confirmed. USWAG is housed under the **Edison Electric Institute**, an industry association representing investor-owned utility groups.

Arizona Public Service and Salt River Project are both members of the Utility Water Act Group, run out of the law firm Hunton Andrews Kurth. Tucson Electric is not a member of the water group. All three companies charge their customers for costs of membership in these groups, according to their respective spokespeople.

SRP spent about \$141,000 of ratepayers’ money in 2018 on membership in both groups, said Scott Harelson, the company’s spokesperson.

APS spends about \$130,000 a year on both groups, also from customers. It joined UWAG in March 1999, and USWAG in 2009, according to spokesperson Suzanne Trevino. Since then, the costs of membership in USWAG had ranged from \$37,000 to \$39,000 a year, and for UWAG, between \$50,000 and \$90,000 a year.

Tucson Electric spent about \$28,600 on USWAG membership in 2018, paid through the Edison Electric Institute, TEP spokesperson Joe Barrios said, but he said that customer money did not go toward the group’s lobbying activities.

– Elizabeth Whitman | *Phoenix New Times* | 6/3/19
<https://www.phoenixnewtimes.com/news/asu-president-michael-crow-bully-letters-atra-board-members-11305180>

[California] “California’s big three utilities spent \$1.3 million on lobbying” – excerpts:

California’s three major utilities spent at least \$1.3 million to lobby state government in the first three months of 2019, during which one filed for bankruptcy and Gov. Gavin Newsom called for rethinking the state’s energy future.

PG&E and the parent companies for Southern California Edison and San Diego Gas & Electric disclosed on Monday their spending between Jan. 1 and March 31. They spent that

money paying lobbyists to advance their interests before the state Legislature, state agencies and the California Public Utilities Commission, the state’s utility regulator.

Edison International, Southern California Edison’s parent company, spent the most at nearly \$679,000, while **Sempra**, which includes **San Diego Gas & Electric**, spent about \$396,000. **PG&E**, in the midst of Chapter 11 bankruptcy proceedings, spent \$277,000. Nearly a third of the spending by PG&E went toward lobbying the CPUC, which oversees utilities’ wildfire safety plans and voted in January to let the utility access credit and loans during the bankruptcy.

The three investor-owned utilities are under increasing pressure as California experiences deadlier and more destructive wildfires, with some of the worst attributed to utility equipment. State law makes utilities financially liable for damage caused by wildfires sparked by their equipment.

PG&E filed for bankruptcy in January saying it couldn’t afford potentially tens of billions in costs related to the fires. Credit rating agencies recently downgraded the bond status of Southern California Edison and San Diego Gas & Electric, citing the growing risks from wildfires.

“[California] Lawmakers . . . passed a law making it easier for utilities to take out bonds to cover wildfire damages and pass some costs on to ratepayers.”

– Kathleen Ronayne, *AP News*, 2/1/19

All three utilities lobbied on more than 100 pending bills, not all related to wildfires.

PG&E’s disclosure showed the utility lobbied Newsom’s office related to the bankruptcy and the Legislature on issues including wildfire response and litigation. Edison’s filing shows it spent more than \$95,000 on food and other expenses for lawmakers, staff of lawmakers and the governor, and CPUC employees including President Michael Picker. Sempra’s filing showed it lobbied Newsom’s office and state agencies including the California Air Resources Board, the California Department of Forestry and Fire Protection and the California Environmental Protection Agency.

– Kathleen Ronayne | *Associated Press* | 5/1/19
<https://www.clp.com/articles/2019/05/california-s-big-three-utilities-spent-1-3-million-on-lobbying.html>

[California] “Embattled California utility spent most for 2018 lobbying” – excerpts:

Pacific Gas & Electric Corp. spent nearly \$10 million on California lobbying efforts in the year before the utility giant declared bankruptcy, spending more than any other entity seeking to influence California government in 2018.

The majority of that money — more than \$5 million — was spent for lobbying on proposals involving wildfire safety and response, including whether to reduce the strict liability utilities face when their equipment sparks wildfires.

Lawmakers ultimately didn’t reduce the liability but **passed a law making it easier for utilities to take out bonds to cover**

wildfire damages and pass some costs on to ratepayers.

PG&E, the nation's largest utility, filed Chapter 11 bankruptcy Tuesday as it faces potentially tens of billions of dollars in liability from devastating wildfires that ripped through Northern California in 2017 and 2018. The bankruptcy filing could lead to smaller payouts to wildfire victims and increased costs for PG&E customers.

Of the nearly \$10 million spent, about \$9.6 million went toward general lobbying, which includes things such as hiring in-house lobbyists or major Sacramento firms to advocate on behalf of legislation as well as paying for meals or other perks for state lawmakers.

Between July and September the company spent \$6 million lobbying, including buying meals and event tickets for a handful of public employees and giving more than \$10,000 in campaign contributions to nine sitting lawmakers and one candidate.

The utility also spent about \$350,000 lobbying the California Public Utilities Commission, the entity that regulates it and other utilities.

PG&E is facing **750 lawsuits**, its lawyer said in a Thursday court hearing.

Among California's other major utilities, **Sempra**, which owns San Diego Gas & Electric, spent about \$1.4 million lobbying lawmakers in 2018 and another \$167,000 lobbying the public utilities commission.

Edison International, the parent company of Southern California Edison, spent just more than \$4 million on general lobbying and another \$191,000 to influence the CPUC.

Behind PG&E, the second-highest spender for the year was the powerful **Western States Petroleum Association**, which spent nearly \$7.9 million to influence California government.

Among its priorities were lobbying the California Air Resources Board as it implements two pieces of cap-and-trade legislation passed last year that aim to limit greenhouse gas emissions from oil refineries and other polluters.

It also lobbied to influence regulations on low carbon fuel standards and injection wells, according to its disclosure form filed Thursday. Chevron and its subsidiaries spent about \$4 million on lobbying.

— Kathleen Ronayne | *AP News* | 2/1/19
<https://www.apnews.com/cbbdf051368e4c34b7be127bd2f423e>

[USA] "As Fires Ravaged California, Utilities Lobbied Lawmakers for Protection" – excerpts:

As California's deadliest wildfire was consuming the town of Paradise in November, some of the state's top power company officials and a dozen legislators were at an annual retreat at the Fairmont Kea Lani resort on Maui. In the course of four days, they discussed wildfires – and how much responsibility the utilities deserve for the devastation, if any.

It is an issue of increasing urgency as more fires are traced to equipment owned by California's investor-owned utilities. The largest, Pacific Gas and Electric, could ultimately have to pay homeowners and others an estimated \$30 billion for causing fires over the last two years. The most devastating of those, the Camp Fire, destroyed thousands of homes in Paradise and killed at least 86 people.

Realizing that their potential fire liability is large enough to bankrupt them, the utility companies are spending tens of millions of dollars on lobbying and campaign contributions. Their goal: **a California law that would allow them to pass on the cost of wildfires to their customers in the form of higher electricity rates.** After an earlier lobbying push, legislators have already voted to protect the companies from having to bear the cost of 2017 fires, and utilities are seeking the same for 2018.

— Ivan Penn | *New York Times* | 1/5/19
<https://www.nytimes.com/2019/01/05/business/energy-environment/california-wildfire-electric.html>

ELECTRIC UTILITIES CAMPAIGN CONTRIBUTIONS: TOP 20 RECIPIENTS - 2018

Rank	Candidate (Political party–State)	Office	Amount
1	Walden, Greg (R-OR)	House	\$260,750
2	Barrasso, John A (R-WY)	Senate	\$223,450
3	Hoyer, Steny H (D-MD)	House	\$209,000
4	Upton, Fred (R-MI)	House	\$192,615
5	Brady, Kevin (R-TX)	House	\$187,450
6	McCarthy, Kevin (R-CA)	House	\$180,700
7	Shimkus, John M (R-IL)	House	\$174,700
8	Warner, Mark (D-VA)	Senate	\$157,768
9	Stabenow, Debbie (D-MI)	Senate	\$153,663
10	Casey, Bob (D-PA)	Senate	\$148,156
11	Heitkamp, Heidi (D-ND)	Senate	\$143,907
12	Heinrich, Martin (D-NM)	Senate	\$130,745
13	Stivers, Steve (R-OH)	House	\$129,700
14	Feinstein, Dianne (D-CA)	Senate	\$124,557
15	Scalise, Steve (R-LA)	House	\$119,295
16	Kaine, Tim (D-VA)	Senate	\$118,364
17	Simpson, Mike (R-ID)	House	\$117,850
18	Clyburn, James E (D-SC)	House	\$111,850
19	Manchin, Joe (D-WV)	Senate	\$111,502
20	Neal, Richard E (D-MA)	House	\$111,500

METHODOLOGY: The numbers on this page are based on contributions from PACs and individuals giving \$200 or more. All donations took place during the 2017-2018 election cycle and were released by the Federal Election Commission on Friday, February 01, 2019.

Source: Center for Responsive Politics
<https://www.opensecrets.org/industries/recips.php?cycle=2018&ind=E08>

[Illinois] “The Water Drain” – Part 3: Precious Resources, Private Profits” – excerpts:

The drive for water companies to generate profits raises the broader debate of whether a business approach to a traditionally government-run entity is the right way to go.

At the center of the public-vs.-private water debate is the Illinois Commerce Commission. Critics of privatization say lack of local oversight allows private water companies to evade answering for the high rates or other complaints, and that the commission rubber-stamps approvals of water companies’ requested rate increases.

A publicly run system, by contrast, does not need approval of state regulators to raise rates, only the approval of local elected leaders.

Swirling around the debate is politics. Homer Glen Mayor George Yukich said “the thing that irks me the most” is Illinois American’s substantial political contributions.

Since 2011, the company’s PAC has spent about \$387,000 on campaign contributions to state lawmakers, and the pace of its donations is accelerating.

Smyth at Illinois American said the company’s PAC used money to promote legislation in Illinois that enhanced municipalities’ position in selling water systems.

– Ted Gregory, Patrick M. O’Connell & Cecilia Reyes | *Chicago Tribune* | 12/27/17 <http://graphics.chicagotribune.com/news/lake-michigan-drinking-water-rates/privatization.html>

[USA] “Utilities, PACs Casting Plenty of Bread on the Political Waters in 2016” – excerpts:

Ten major utilities spent more than \$250 million total on political expenditures over a five-year period beginning in 2011, according to a new report from the Investor Responsibility Research Center Institute (IRRCI) and the Sustainable Investments Institute (SRI).

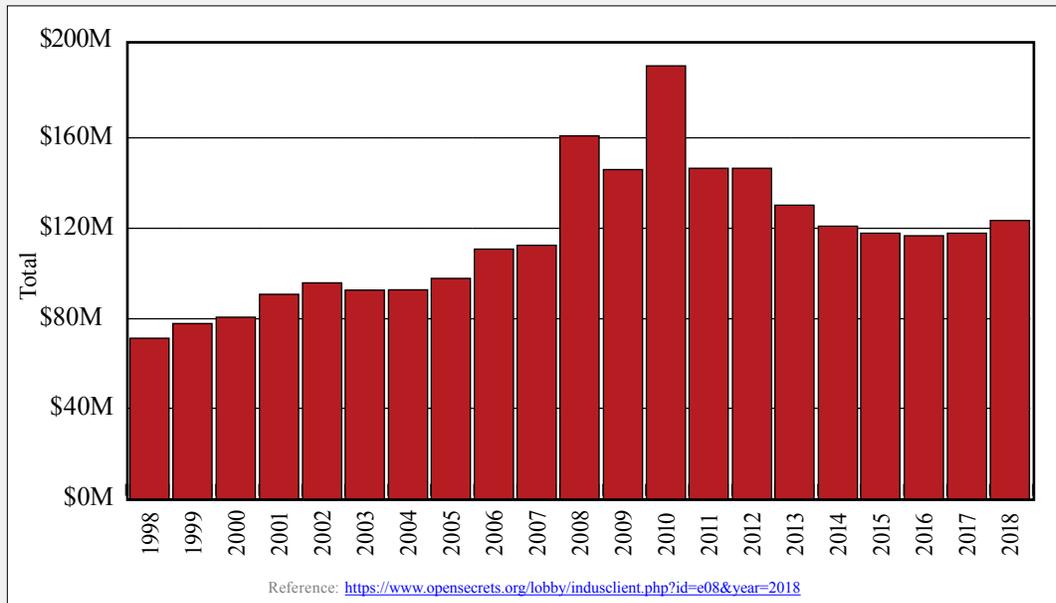
Southern Co., by far, led the way with nearly \$65 million in political spending from 2011 to 2015, nearly twice as much as second-place Duke Energy at \$36 million, according to the report. American Electric Power, Exelon and Next Era filled out the rest of the top half of the 10 biggest contributors (see list at bottom of story), while natural gas pipeline firm ONEOK anchored the bottom of the list by only spending about \$506,000.

– Rod Walton | *Electric Light & Power* | 4/22/16 <https://www.elp.com/Electric-Light-Power-Newsletter/articles/2016/04/utilities-pacs-casting-plenty-of-bread-on-the-political-waters-in-2016.html>

ANNUAL LOBBYING ON ELECTRIC UTILITIES: 1998 TO 2018

Source: Center for Responsive Politics

Year	USD\$ amount
2018	\$122,221,276
2017	115,632,720
2016	114,569,635
2015	116,408,237
2014	120,749,122
2013	128,197,074
2012	145,332,468
2011	145,105,040
2010	191,065,085
2009	144,646,195
2008	159,716,986
2007	111,133,266
2006	110,126,835
2005	96,129,892
2004	92,179,466
2003	91,115,615
2002	95,301,168
2001	90,292,038
2000	79,270,233
1999	76,177,193
1998	70,732,414



Reference: Center for Responsive Politics links:

1998	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=1998	2008	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2008
1999	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=1999	2009	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2009
2000	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2000	2010	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2010
2001	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2001	2011	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2011
2002	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2002	2012	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2012
2003	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2003	2013	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2013
2004	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2004	2014	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2014
2005	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2005	2015	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2015
2006	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2006	2016	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2016
2007	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2007	2017	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2017
		2018	https://www.opensecrets.org/lobby/indusclnt.php?id=e08&year=2018

“SMART GRID” LOBBYING

According to the Center for Responsive Politics: “170 client(s) reported lobbying on specific issues containing the word ‘smart grid’ in filings covering the period 2006 to the present, with additional reports included in prior years.” <https://www.opensecrets.org/lobby/lookup.php> Accessed 4/19

Assumptions should not be made about the policy position of the clients listed below.

However, it is of interest to note who is linked to federal Smart Grid Investment Grant awards – easily identified through their listing as recipients of SGIG awards (see pgs 169-171) – marked with an asterisk (*).

Others are parent companies that have a subsidiary that received an SGIG award – identified with two asterisks (**). There are likely many more in the later category than those identified herein. More research is needed in this area.

Listed by number of “smart grid” mentions

= Number of “Smart Grid” mentions

#	Client
139	PJM Interconnection*
80	Wal-Mart Stores
72	National Electrical Manufacturers Assn*
64	National Grid plc**
62	Current Group
60	Honeywell International
58	Washington State University*
57	Battelle Memorial Institute*
55	Consolidated Edison Inc**
54	Exelon Corporation
48	American Public Power Assn
48	Leidos Inc
44	Berkshire Hathaway
42	Nuclear Energy Institute
40	Southwire Co.
39	Siemens AG
37	ABB Group
35	Boeing Co.
34	Alstom
33	Gridwise Alliance
30	Clemson University
30	General Electric
30	Xcel Energy
28	Tendril Networks
27	Energy Future Holdings Corp.
27	Public Service Enterprise Group
26	Motorola Inc
26	National Electrical Contractors Assn
23	Technology CEO Council
22	Sony Corporation
21	GridPoint Inc
20	American Municipal Power Inc
20	PEPCO Holdings*
19	Duke Energy*
19	University of Pittsburgh
18	CMS Energy
18	PG&E Corp.*
18	Verizon Communications
18	Wisconsin Energy Corp.
17	Google Inc
17	Northern California Power Agency
17	Technology Assn of America
16	FirstEnergy Corp.*
15	CenterPoint Energy
15	Edison Electric Institute
15	Elster Solutions
15	Whirlpool Corp.*
14	AARP
13	CTIA-The Wireless Assn
13	Pinnacle West Capital
12	Arcadian Networks
12	Current Technologies
12	Sempra Energy
12	US Telecom Association
11	Dominion Resources
11	Nat’l Center for Manufacturing Sciences
11	United Telecom Council
10	ATC Management
10	Missouri River Energy Services
10	Public Power Council
10	Puget Equico
9	Demand Smart Grid Response Coalition
9	DTE Energy
9	EMC Corporation
9	NextEra Energy
9	Oklahoma Gas & Electric
9	Westar Energy*
8	Elster Electricity
8	SAP AG
8	Silicon Power
7	American Gas Association
7	CA Technologies
7	Entergy Corporation**
7	South Mississippi Electric Power Assn*
7	University of Colorado*
6	AES Corporation
6	Goldman Sachs
6	IPKeys Technologies
6	Northeast Utilities
6	Panasonic Corporation
6	Positive Energy
6	Semiconductor Industry Assn
6	Utilities Telecom Council
6	Viridity Energy
5	Accenture
5	BAE Systems
5	CAREBS
5	Cisco Systems
5	City of Pasadena, CA
5	Landis & Gyr
5	National Assn. of Manufacturers
5	New Mexico State University
5	Solar Energy Industries Assn
4	American Electric Power
4	Bismarck State College*
4	City of Los Angeles, CA
4	City of Sacramento, CA
4	Constellation Energy
4	Cooper Industries
4	Current Communications Group
4	Energy East
4	Institute/Electrical & Electronics Engineers
4	King County, WA
4	Microsoft Corporation
4	PNM Resources
4	Portland General Electric
4	PPL Corp.*
4	Qualcomm Inc**
4	Silver Spring Networks
4	SolarCity Inc
4	Underwriters Laboratories
4	Vectren Corporation
4	ViaSat Inc
3	ASHRAE
3	BPL Global
3	Digital Energy Solutions Campaign
3	Johnson Controls
3	North American Electric Reliability Corp
3	TechVision21
3	TECO Energy
3	Tennessee Valley Public Power Assn.
3	Vistra Energy
2	Ameren Corporation*
2	Assn of Home Appliance Manufacturers
2	Better World Fund/Energy Future Coalition
2	Black Hills Corporation**
2	Carnegie Mellon University
2	Consumer Reports
2	Dell Inc
2	Edison International
2	ENBALA Power Networks
2	Intertek Testing Services
2	Johnson Controls International
2	Kansas City Board of Public Utilities
2	Motorola Mobility
2	National Rural Electric Coop. Assn*
2	Neustar Inc
2	New York Assn. of Public Power
2	PBS&J
2	Progress Energy*
2	RedSeal Systems
2	Schneider Electric
2	Shift Research
2	TechNet
2	University of Arkansas
2	US Chamber of Commerce
1	Allied Fiber
1	American Composites
1	Manufacturers Association
1	Best Buy
1	Center for Applied Identity Management Research
1	City of Seattle, WA
1	Dimension4 Inc
1	DNV GL
1	Eaton Electrical
1	Electric Drive Transportation Assn
1	Enel SpA
1	Iberdrola SA
1	IBM Corporation
1	Illinois Tool Works
1	ITC Holdings
1	League of Conservation Voters
1	LG Electronics
1	Microplanet
1	Mirant Corporation
1	Motorola Solutions
1	National Information Solutions Cooperative
1	NorthWestern Corporation
1	Sargent Electric
1	Southern Company**
1	Wilderness Society

ELECTRIC UTILITIES 2018 CAMPAIGN CONTRIBUTIONS

\$122,301,276 Total for Electric Utilities
 177 Total # of Clients Reported
 756 Total # of Lobbyists Reported
 496 (65.6%) Total # of Revolvers

LISTED BY DOLLAR AMOUNT

Total (USD\$)	Client/Parent
12,300,000	Southern Co.
10,550,000	PG&E Corp
8,109,166	Edison Electric Institute
6,687,554	American Electric Power
5,625,000	Exelon Corp
5,345,592	Duke Energy
4,310,000	General Atomics
3,440,000	NextEra Energy
2,660,000	Sempra Energy
2,530,000	National Rural Electric Coop. Assn
2,490,000	FirstEnergy Corp
2,468,000	Entergy Corp
2,460,000	Energy Capital Partners
2,350,000	Fortis Inc [Canada]
2,256,000	Edison International
2,100,000	Dominion Resources
2,040,000	Nuclear Energy Institute
2,000,000	Public Service Enterprise Group
1,920,000	National Grid plc [England/Wales]
1,680,000	Xcel Energy
1,280,000	Ameren Corp
1,220,000	CMS Energy
1,200,000	Consolidated Edison Inc
1,100,000	Berkshire Hathaway
1,010,000	DTE Energy
990,000	Puget Equico
990,000	Salt River Project
940,000	WEC Energy Group
850,000	Covanta Holding
850,000	Black Hills Corp
800,000	Large Public Power Council
764,794	American Municipal Power Inc
750,000	BWX Technologies
743,000	Brookfield Business Partners
741,561	American Public Power Assn
730,000	NRG Energy
730,000	Pinnacle West Capital
703,000	Vistra Energy
680,000	Iberdrola SA [Spain]
680,000	Electric Reliability Coordinating Council
680,000	Eversource Energy
630,000	Vectren Corp [CenterPoint Energy subsid]
600,000	NiSource Inc
590,000	AES Corp
589,202	Northern California Power Agency
520,000	Valley Electric Assn
510,000	Orano Group [France]
480,000	TECO Energy [Canada]
480,000	LG&E [Louisville Gas & Electric] & KU [Kentucky Utilities] Energy LLC
480,000	Centrus Energy
453,470	PNGC Power
450,000	Alliant Energy
430,000	Ameresco Inc
420,000	Tenaska Energy
382,000	Piedmont Municipal Power Agency
380,000	PPL Corp [UK, USA]
380,000	Oklahoma Gas & Electric
350,000	PJM Interconnection
350,000	Puerto Rico Electric Power Authority

345,000	Symbion Power
340,000	Framatome SA [France]
330,000	Portland General Electric
320,000	Tri-State Generation & Transmission Assn
313,596	Oglethorpe Power
280,000	Nuclear Energy Systems of Ukraine
280,000	Columbia River Treaty Power Group
270,000	Jacksonville Electric Authority
256,000	South Carolina Public Service Authority
240,000	PNM Resources
240,000	LS Power
240,000	Great Basin Transmission
230,000	Scana Corp
220,000	Landauer
200,000	Louisiana Energy Services
200,000	Midcontinent Independent Transmission System Operator
200,000	Advanced Energy Mgmt. Alliance
200,000	Uranium Producers of America
195,000	Electric Power Supply Assn
190,000	Colorado Springs Utilities
180,000	ENGIE [France]
180,000	Municipal Electric Authority of Georgia
170,000	Direct Energy
160,000	EtaGen
160,000	Central Electric Power Coop.
160,000	Northern Star Generation
160,000	Kindle Energy
160,000	Idacorp Inc
160,000	Overton LLC
160,000	Voith Hydro [Germany]
159,643	Public Power Council
155,000	LSquared
150,000	Avista Corp
150,000	Decommissioning Plant Coalition
148,000	ALLETE Inc
146,000	Chelan County, WA
140,000	Cameco Corp [Canada]
130,000	Canadian Electricity Assn [Canada]
120,000	City Public Service
120,000	American Transmission
120,000	Electricities of North Carolina
120,000	Eergy Inc
120,000	Hudson Yards Gen-Par
120,000	ISO New England
120,000	NorthWestern Corp
120,000	Southeastern Federal Power Customer Group
120,000	Tennessee Valley Public Power Assn
120,000	Urenco Group [Netherlands, England, Germany]
113,831	SunZia Southwest Transmission Project
111,415	Omaha Public Power District
110,000	East Kentucky Power Coop.
110,000	Basin Electric Power Coop.
110,000	Aethon United BR LP
110,000	CenterPoint Energy
110,000	Transmission Access Policy Study Group
100,000	United Technologies
100,000	XO Energy
100,000	Freepoint Commodities
97,512	City of Seattle, WA
92,000	NC Assn of Electric Cooperatives
85,534	Missouri River Energy Services
84,000	Grant County, WA
80,000	Greenville Utilities Commission
80,000	El Paso Electric

80,000	City Light & Power Inc
80,000	Association of Energy Service Companies
80,000	American Nuclear Society
80,000	Northwest Public Power Assn
80,000	Northeast Public Power Assn
80,000	Southwestern Power Group
70,000	HQI Management
60,000	Federation of Electric Power Companies of Japan
60,000	IP3 International
60,000	South Utah Valley Electric Spec Service District
60,000	Algonquin Power & Utilities [Canada]
60,000	Energy Northwest
50,000	Fall River Rural Electric Coop.
50,000	Thorium Energy Alliance
40,000	Ketchikan Public Utilities
40,000	Mohave Electric Cooperative
40,000	Unitil
35,000	Florida Municipal Electric Assn
35,000	Alaska Electric Light & Power
32,000	New York Assn of Public Power
30,000	Naknek Electric Assn
30,000	Alaska Village Electric Coop.
30,000	Arizona Electric Power Coop.
30,000	WIRES
20,000	Council of Industrial Boiler Owners
12,500	Inside Passage Electric Coop.
10,000	Madison Gas & Electric
10,000	North American Electric Reliability Corp
10,000	Gridwise Alliance
5,906	National Association of Energy Service Companies

Source: Center for Responsive Politics
<https://www.opensecrets.org/lobby/industrialscientist.php?id=e08&year=2018&filter=P>

NOTE: All lobbying expenditures come from the Senate Office of Public Records. Data for the most recent year was downloaded on March 19, 2019]

LISTED ALPHABETICALLY (WITH SUBSIDIARIES/AFFILIATES)

Total USD\$	Client/Parent	Subsidiary/Affiliate
\$200,000	Advanced Energy Mgmt Alliance	-
590,000	AES Corp	-
0	Indianapolis Power & Light	-
110,000	Aethon United BR LP	-
35,000	Alaska Electric Light & Power	-
30,000	Alaska Village Electric Coop.	-
60,000	Algonquin Power & Utilities [Canada]	Empire District Electric
148,000	ALLETE Inc	-
450,000	Alliant Energy	-
1,280,000	Ameren Corp	Ameren Services
430,000	Ameresco Inc	-
6,687,554	American Electric Power	-
401,454	American Municipal Power Inc	-
363,340	"	Ohio Municipal Electric Assn
80,000	American Nuclear Society	-
741,561	American Public Power Assn	-
120,000	American Transmission	-
30,000	Arizona Electric Power Coop.	-
80,000	Assn of Energy Service Companies	-
150,000	Avista Corp	-
110,000	Basin Electric Power Coop.	-
230,000	Berkshire Hathaway	PacifiCorp
630,000	"	Berkshire Hathaway Energy
40,000	"	MidAmerican Energy
200,000	"	NV Energy

850,000	Black Hills Corp	-	80,000	"	<i>Idaho Power</i>
743,000	Brookfield Business Partners	-	12,500	Inside Passage Electric Coop.	-
	<i>Westinghouse Electric</i>		60,000	IP3 International	-
750,000	BWX Technologies	-	120,000	ISO New England	-
\$0	California Indep. Sys. Operator	-	270,000	Jacksonville Electric Authority	-
140,000	Cameco Corp [Canada]	-	40,000	Ketchikan Public Utilities	-
130,000	Canadian Electricity Assn	-	160,000	Kindle Energy	-
110,000	CenterPoint Energy	-	220,000	Landauer	-
160,000	Central Electric Power Coop.	-	800,000	Large Public Power Council	-
480,000	Centrus Energy	-	480,000	LG&E & KU Energy LLC	-
146,000	Chelan County, WA	-	200,000	Louisiana Energy Services	-
	<i>Chelan County Public Utility District</i>		240,000	LS Power <i>LS Power Development</i>	-
80,000	City Light & Power Inc	-	10,000	Madison Gas & Electric	-
97,512	City of Seattle, WA <i>Seattle City Light</i>	-	0	Manitoba Hydro Corp [Canada]	-
120,000	City Public Service	-	200,000	Midcontinent Independent Transmission System Operator	-
1,220,000	CMS Energy	-	85,534	Missouri River Energy Services	-
190,000	Colorado Springs Utilities	-	40,000	Mohave Electric Cooperative	-
280,000	Columbia River Treaty Power Grp	-	180,000	Municipal Electric Authority of Georgia	-
60,000	Consolidated Edison Inc	-	30,000	Naknek Electric Assn	-
240,000	"	<i>ConEdison Solutions</i>	5,906	National Assn of Energy Service Companies	-
900,000	"	<i>Consolidated Edison of New York</i>	1,920,000	National Grid plc [Britain]	-
0	Contractors International Group/ Nuclear Liability	-		<i>National Grid USA</i>	
20,000	Council of Industrial Boiler Owners	-	2,530,000	Nat'l Rural Electric Coop. Assn	-
850,000	Covanta Holding	-	92,000	NC Assn of Electric Cooperatives	-
	<i>Covanta Energy Corp</i>		32,000	New York Assn of Public Power	-
150,000	Decommissioning Plant Coalition	-	3,260,000	NextEra Energy	-
170,000	Direct Energy	-	180,000	"	<i>Florida Power & Light</i>
2,090,000	Dominion Resources <i>Dominion Energy</i>	-	0	NGNP Industry Alliance	-
10,000	"	<i>Dominion Virginia Power</i>	600,000	NiSource Inc	-
1,010,000	DTE Energy	-	10,000	North American Electric Reliability Corp	-
5,345,592	Duke Energy	-	80,000	Northeast Public Power Assn	-
110,000	East Kentucky Power Coop.	-	0	Northeast Texas Elec Co-op of Texas	-
0	East Texas Electric Cooperative	-	589,202	Northern Calif. Power Agency	-
8,109,166	Edison Electric Institute	-	160,000	Northern Star Generation	-
2,256,000	Edison International	-	80,000	Northwest Public Power Assn	-
80,000	El Paso Electric	-	120,000	NorthWestern Corp <i>Northwestern Energy</i>	-
195,000	Electric Power Supply Assn	-	730,000	NRG Energy	-
680,000	Electric Reliability Coordinating Council	-	2,040,000	Nuclear Energy Institute	-
120,000	Electricities of North Carolina	-	280,000	Nuclear Energy Systems of Ukraine	-
2,460,000	Energy Capital Partners <i>Calpine Corp</i>	-	313,596	Oglethorpe Power	-
60,000	Energy Northwest	-	380,000	Oklahoma Gas & Electric	-
180,000	ENGIE [France] <i>Engie North America</i>	-	111,415	Omaha Public Power District	-
808,000	Entergy Corp	-	40,000	Orano Group [France]	-
1,660,000	"	<i>Entergy Services</i>	470,000	"	<i>Orano USA</i>
160,000	EtaGen	-	160,000	Overton LLC	-
120,000	Evergy Inc <i>Kansas City Power & Light</i>	-	10,550,000	PG&E Corp	-
680,000	Eversource Energy	-	382,000	Piedmont Municipal Power Agency	-
5,605,000	Exelon Corp	-	730,000	Pinnacle West Capital	-
20,000	"	<i>Pepco Holdings</i>	350,000	PJM Interconnection	-
50,000	Fall River Rural Electric Coop.	-	453,470	PNGC Power	-
0	Fallbrook Public Utility District	-	240,000	PNM Resources	-
60,000	Federation of Electric Power Companies of Japan (FEPC)	-		<i>Public Service Co of New Mexico</i>	
2,490,000	FirstEnergy Corp	-	330,000	Portland General Electric	-
35,000	Florida Municipal Electric Assn	-	380,000	PPL Corp [USA, UK]	-
2,350,000	Fortis Inc [Canada] <i>ITC Holdings</i>	-	159,643	Public Power Council	-
340,000	Framatome SA [France]	-	1,860,000	Public Service Enterprise Group	-
100,000	Freepoint Commodities	-	80,000	"	<i>Public Service Electric & Gas</i>
4,310,000	General Atomics	-	60,000	"	<i>PSEG Power</i>
84,000	Grant County, WA	-	350,000	Puerto Rico Electric Power Authority	-
	<i>Grant County Public Utility District</i>		990,000	Puget Equico <i>Puget Sound Energy</i>	-
240,000	Great Basin Transmission	-	60,000	South Utah Valley Electric Spec Service District	-
80,000	Greenville Utilities Commission	-	990,000	Salt River Project	-
10,000	Gridwise Alliance	-	230,000	Scana Corp	-
0	Hawaiian Electric Industries	-	2,460,000	Sempra Energy	-
	<i>Hawaiian Electric</i>		200,000	"	<i>Oncor Electric Delivery</i>
70,000	HQI Management	-	256,000	South Carolina Public Service Authority	-
120,000	Hudson Yards Gen-Par	-	120,000	Southeastern Federal Power Customer Group	-
155,000	I Squared <i>Inkia Americas</i>	-			
680,000	Iberdrola SA [Spain] <i>Avangrid Inc</i>	-			
80,000	IDACORP Inc	-			

LOBBYING – TOP INDUSTRIES – 1998-2019

Total Industry	
\$4,152,801,221	Pharmaceuticals/ Health Products
\$2,819,625,333	Insurance
\$2,448,178,542	Electric Utilities
\$2,342,406,833	Electronics Mfg & Equip
\$2,325,246,476	Business Assns
\$2,193,140,396	Oil & Gas
\$1,761,571,628	Misc Manufacturing & Distributing
\$1,691,666,543	Education
\$1,685,559,608	Hospitals/Nursing Homes
\$1,620,238,509	Securities & Investment
\$1,613,926,362	Real Estate
\$1,603,435,516	Telecom Services
\$1,518,298,738	Health Professionals
\$1,498,109,202	Civil Servants/ Public Officials
\$1,480,377,616	Air Transport
\$1,161,281,508	Health Services/HMOs
\$1,142,753,139	Automotive
\$1,133,777,421	Defense Aerospace
\$1,085,525,388	Misc Issues
\$1,078,138,491	TV/Movies/Music
Center for Responsive Politics https://www.opensecrets.org/lobby/top.php?indexType=i&showYear=a	
Data for the most recent year was downloaded on April 25, 2019.	
12,300,000	Southern Co
80,000	Southwestern Power Group
113,831	SunZia Southwest Transmission Project
345,000	Symbion Power
	<i>Symbion Power Services</i>
480,000	TECO Energy [Canada]
420,000	Tenaska Energy <i>Tenaska Inc</i>
120,000	Tennessee Valley Public Power Assn
50,000	Thorium Energy Alliance
110,000	Transmission Access Policy Study Group
320,000	Tri-State Generation & Transmission Assn
100,000	United Technologies <i>NORESCO</i>
40,000	Unitil
200,000	Uranium Producers of America
120,000	Urenco Group [Netherlands, England, Germany] <i>Urenco</i>
520,000	Valley Electric Assn
630,000	Vectren Corp
703,000	Vistra Energy
0	" <i>TXU Energy</i>
160,000	Voith Hydro [Germany]
810,000	WEC Energy Group
130,000	" <i>We Energies</i>
0	Westar Energy
30,000	WIRES
1,680,000	Xcel Energy
100,000	XO Energy

Source: Center for Responsive Politics
<https://www.opensecrets.org/lobby/industries.php?id=e08&year=2018&filter=S>

EXECUTIVE ORDER 12803 - INFRASTRUCTURE PRIVATIZATION

Executive Order 12803 – Infrastructure Privatization was signed on April 30, 1992 by then-President George H.W. Bush. Longtime researcher Bernadine Smith describes this presidential authorization “as a part of the regional government planning which calls for elimination of cities, counties and states.” She warns that “Foreign governments could buy America lock, stock, and barrel.” A fundamental principle of E.O. 12803 is, in part, that “...**State and local governments should have greater freedom to privatize infrastructure assets.**” The E.O. 12803 text follows (bold emphasis added):

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to ensure that the United States achieves the most beneficial economic use of its resources, it is hereby ordered as follows:

Section 1. Definitions.

For purposes of this order:

(a) “**Privatization**” means the **disposition or transfer of an infrastructure asset, such as by sale or by long-term lease, from a State or local government to a private party.**

(b) “**Infrastructure asset**” means **any asset financed in whole or in part by the Federal Government and needed for the functioning of the economy.** Examples of such assets include, but are not limited to: **roads, tunnels, bridges, electricity supply facilities, mass transit, rail transportation, airports, ports, waterways, water supply facilities, recycling and wastewater treatment facilities, solid waste disposal facilities, housing, schools, prisons, and hospitals.**

(c) “Originally authorized purposes” means the general objectives of the original grant program; however, the term is not intended to include every condition requires for a grantee to have obtained the original grant.

(d) “Transfer price” means:

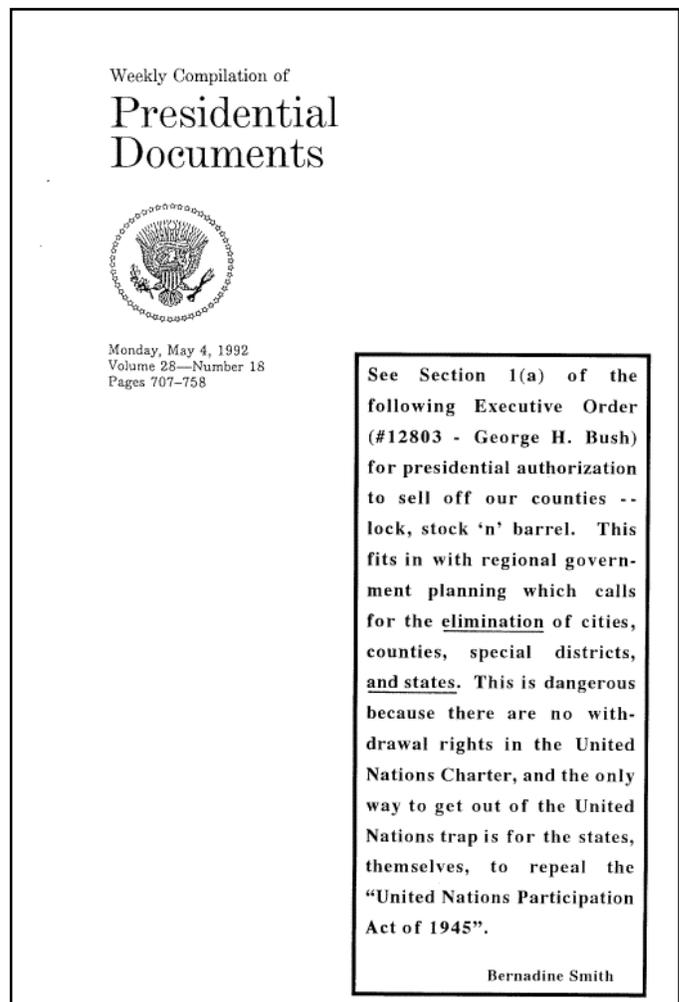
- (i) the amount paid or to be paid by a private party for an infrastructure asset, if the asset is transferred as a result of a competitive bidding; of
- (ii) the appraised value of an infrastructure asset, as determined by the head of the executive department or agency and the Director of the Office of Management and Budget, if the asset is not transferred as a result of competitive bidding.

(e) “State and local governments” means the government of any state of the United States, the District of Columbia, any commonwealth, territory, or possession of the United States, **and any country**, municipality, city, town, township, local public authority, school district, special district, intrastate district, regional or interstate governmental entity, council of governments, and any agency or instrumentality of a local government, and any federally recognized Indian Tribe.

Sec. 2. Fundamental Principles. Executive departments and agencies shall be guided by the following objectives and principles: (a) Adequate and well-maintained infrastructure is

critical to economic growth. Consistent with the principles of federalism enumerated in Executive Order No. 12612, and in order to allow the private sector to provide for infrastructure modernization and expansion, State and local governments should have greater freedom to privatize infrastructure assets.

(b) Private enterprise and competitively driven improve-



Executive Order 12803 was published in the *Weekly Compilation of Presidential Documents*, May 4, 1992, Vol. 28, No. 18, pages 733-735. Research credit: Bernadine Smith, Second Amendment Committee: <http://www.libertygunrights.com>
View document online: <http://www.libertygunrights.com/EO12803.html>

ments are the foundation of our Nation's economy and economic growth. Federal financing of infrastructure assets should not act as a barrier to the achievement of economic efficiencies through additional private market financing or competitive practices, or both.

(c) State and local governments are in the best position to assess the respond to local needs. State and local governments should, subject to assuring continued compliance with Federal requirements that public use be on reasonable and nondiscriminatory terms, have maximum possible freedom to make decisions concerning the maintenance and disposition of their federally financed infrastructure assets.

(d) **User fees** are generally more efficient than general taxes as a means to support infrastructure assets. Privatization transactions should be structured so as not to result in unreasonable increases in charges to users.

Sec. 3. Privatization Initiative.

To the extent permitted by law, the head of each executive department and agency shall undertake the following actions:

(a) Review those procedures affecting the management and disposition of federally financed infrastructure assets owned by State and local governments and modify those procedures to encourage appropriate privatization of such assets consistent with this order;

(b) Assist State and local governments in their efforts to advance the objectives of this order; and

(c) Approve State and local governments' requests to privatize infrastructure assets, consistent with the criteria in section 4 of this order and, where necessary, grant exceptions to the disposition requirements of the "Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments" common rule, or other relevant rules or regulations, for infrastructure assets; provided that the transfer price shall be distributed, as paid, in the following manner:

- (i) State and local governments shall first recoup in full the unadjusted dollar amount of their portion of total project costs (including any transaction and fix-up costs they incur) associated with the infrastructure assets involved;
- (ii) if proceeds remain, then the Federal Government shall recoup in full the amount of Federal grant awards associated with the infrastructure assets, less the applicable share of accumulated depreciation on such asset (calculating using the Internal Revenue Service accelerated depreciation schedule for the categories of assets in question); and
- (iii) finally, the State and local governments shall keep any remaining proceeds.

Sec. 4. Criteria.

To the extent permitted by law, the head of an executive department or agency shall approve a request in accordance with section 3(c) of this order only if the grantee:

(a) Agrees to use the proceeds described in section 3(c)(iii) of this order only for investment in additional infrastructure assets (after public notice of the proposed investment), or for debt or tax reduction; and

(b) Demonstrates that a market mechanism, legally enforceable agreement, or regulatory mechanism will ensure that:

- (i) the infrastructure asset or assets will continue to be used for their originally authorized purposes, as long as needed for those purposes, even if the purchaser becomes insolvent or is otherwise hindered from fulfilling the originally authorized purposes; and
- (ii) user charges will be consistent with any current Federal conditions that protect users and the public by limiting the charges.

Sec. 5. Government-wide Coordination and Review.

In implementing Executive Order Nos. 12291 and 12498 and OMB Circular No. A-19, the Office of Management and Budget, to the extent permitted by law and consistent with the provisions of those authorities, shall take action to ensure that the policies of the executive department and agencies are consistent with the principles, criteria, and requirements of this order. The Office of Management and Budget shall review the results of implementing this order and report thereon to the President 1 year after the date of this order.

Sec. 6. Preservation of Existing Authority.

Nothing in this order is in any intended to limit any existing authority of the heads of executive departments and agencies to approve privatization proposals that are otherwise consistent with law.

Sec. 7. Judicial Review.

This order is intended only to improve the internal management of the executive branch, and is not intended to create any right or benefit, substantive or procedural, enforceable by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

George Bush,
The White House,
April 30, 1992.

[Filed with the Office of the Federal Register, 4:17 p.m., April 30, 1992]

— Text online by Gerhard Peters and John T. Woolley, The American Presidency Project
<https://www.presidency.ucsb.edu/node/268879>

“Executive Order 12803 – Infrastructure Privatization” includes the “disposition or transfer of an infrastructure asset” – among the examples cited are: “electricity supply facilities, . . . , water supply facilities, recycling and wastewater treatment facilities, [and] solid waste disposal facilities”.

BUILDING GLOBAL UTILITY MONOPOLIES?

The privatization of taxpayer-funded U.S. infrastructure assets has opened the door to foreign/multi-national acquisition of essential U.S. resources/assets – including utilities.

Companies that generate, regionally distribute, and deliver electricity, gas, and water, etc to U.S. consumers are being privatized (sold) to foreign investors. One company in particular stands out: National Grid plc whose jurisdiction of incorporation is England/Wales. Source: [http://www.secinfo.com/\\$/SEC/Registrant.asp?CIK=1004315&View=Registrant](http://www.secinfo.com/$/SEC/Registrant.asp?CIK=1004315&View=Registrant))

While looking at companies identified as recipients of ARRA 2009 “Smart Grid Investment Grants (SGIG)” – as well as those involved with utility lobbying in the U.S. – I stumbled upon a “List of subsidiaries”* titled “Exhibit B”, the list contains the names of 297 companies identified as subsidiaries of an entity later discovered was **National Grid plc**. (*from the U.S. Securities and Exchange website <https://www.sec.gov/Archives/edgar/data/1004315/000119312512267777/d360489dex8.htm>)

Reuters’ profile of this company says:

National Grid plc, incorporated on July 11, 2000, is an **electricity and gas utility company** focused on **transmission and distribution activities in electricity and gas** in both the **United Kingdom and the United States**. The Company’s segments include UK Electricity Transmission, which is engaged in high voltage electricity transmission networks in Great Britain; UK Gas Transmission, which is the gas transmission network in Great Britain and UK liquefied natural gas (LNG) storage activities; UK Gas Distribution, which includes approximately four of the eight regional networks of Great Britain’s gas distribution system, and US Regulated, which includes gas distribution networks, electricity distribution networks and high voltage electricity transmission networks in **New York**, and **New England** and electricity generation facilities in **New York**. Its other activities relate to non-regulated businesses and other commercial operations not included within the above segments, including the United Kingdom **gas metering activities**; the Great Britain-France Interconnector; the United Kingdom property management; a United Kingdom LNG import terminal (National Grid Grain LNG Limited); the United States LNG operations; the United States unregulated transmission pipelines; together with corporate activities.

UK Electricity Transmission

The Company owns and operates the electricity transmission network in **England** and **Wales**, with day-to-day responsibility for balancing supply and demand. The Company operates but do not own the **Scottish networks**. Its networks comprise approximately 7,200 kilometers (over 4,470 miles) of overhead line, approximately 1,500 kilometers (over 930 miles) of underground cable and approximately 340 substations.

UK Gas Transmission

The Company owns and operates the gas national transmission system in Great Britain, with day-to-day responsibility for balancing supply and demand. Its network comprises ap-

proximately 7,660 kilometers (over 4,760 miles) of high pressure pipe and approximately 20 compressor stations. The gas throughput across the system is over 80 billion cubic meters.

UK Gas Distribution

The Company owns and operates approximately four gas distribution networks comprising over 131,000 kilometers (over 81,400 miles) of pipeline. The Company transports gas from the national transmission system to approximately 10.9 million consumers on behalf of approximately 40 shippers.

US Regulated

The Company jointly owns and operates transmission facilities across **upstate New York, Massachusetts, New Hampshire, Rhode Island** and **Vermont**. It owns and operates electricity distribution networks in **upstate New York, Massachusetts** and **Rhode Island**. The assets it operates include over 170 kilometers (approximately 110 miles) of underground cable, over 490 transmission substations and approximately 690 distribution substations. It owns and operates gas distribution networks across the **northeastern United States**, located in **upstate New York, New York City, Long Island, Massachusetts** and **Rhode Island**. The Company forecasts, plans for and procures over 20 billion standard cubic meters of gas each year.

– “Profile: National Grid PLC (NGG).” Reuters. Accessed 7/18/19. <https://www.reuters.com/finance/stocks/companyProfile/NGG>

In National Grid’s *Annual Report and Accounts 2018/19* is a list of the company’s “Subsidiary undertakings, joint ventures and associates” – explained as follows:

34: Subsidiary undertakings, joint ventures and associates

While we present consolidated results in these financial statements as if we were one company, our legal structure is such that there are a number of different operating and holding companies that contribute to the overall result. This structure has evolved through acquisitions as well as regulatory requirements to have certain activities within separate legal entities. [p.174]

SUBSIDIARY UNDERTAKINGS

A list of the Group’s subsidiaries as at 31 March 2019 is given . . . The entire share capital of subsidiaries is held within the Group except where the Group’s ownership percentages are shown. These percentages give the Group’s ultimate interest and therefore allow for the situation where subsidiaries are owned by partly owned intermediate subsidiaries. Where subsidiaries have different classes of shares, this is largely for historical reasons, and the effective percentage holdings given represent both the Group’s voting rights and equity holding. Shares in National Grid (US) Holdings Limited, National Grid Holdings One plc and NGG Finance plc are held directly by National Grid plc. All other holdings in subsidiaries are owned by other subsidiaries within the Group. All subsidiaries are consolidated in the Group’s financial statements.

Principal Group companies are identified in **bold**. These companies are incorporated and principally operate in the countries under which they are shown. [p.174]

JOINT VENTURES

A list of the Group's joint ventures as at 31 March 2019 is given . . . All joint ventures are included in the Group's financial statements using the equity method of accounting. Principal joint ventures are identified in **bold**. [p.176]

ASSOCIATES

A list of the Group's associates as at 31 March 2019 is given . . . Unless otherwise stated, all associates are included in the Group's financial statements using the equity method of accounting. Principal associates are identified in **bold**. [p.176]

OTHER INVESTMENTS

A list of the Group's other investments as at 31 March 2019 is given . . . [p.176]

Our interests and activities are held or operated through the subsidiaries, joint arrangements or associates as disclosed above. These interests and activities (and their branches) are established in – and subject to the laws and regulations of – these jurisdictions. [p.176]

Download the
Annual Report and Accounts 2018/19
National Grid
<https://www.nationalgrid.com/document/124642/download>

Also see the U.S. Securities and Exchange document: National Grid PLC – ‘20-F’ for 3/31/19, Commission file number: 001-14958 that says “NATIONAL GRID PLC (Exact name of Registrant as specified in its charter) England and Wales (Jurisdiction of incorporation or organization) 1-3 Strand, London WC2N 5EH, England (Address of principal executive offices) <http://www.secinfo.com/dUKXky28.htm>

Also see “Exhibit E-4” document for a chart for “THE NATIONAL GRID GROUP PLC (after giving effect to the merger)” – In accordance with Rule 202 of Regulation S-T, . . .”
<https://www.sec.gov/pdf/3527154a.pdf>

[Note: The following information about National Grid's “Subsidiary undertakings joint ventures and associates” (companies and locations of their registered offices) has been reformatted from the original formats (on pgs. 174-176) in order to make a list sorted by country/state]

NATIONAL GRID PLC

SUBSIDIARY UNDERTAKINGS, JOINT VENTURES AND ASSOCIATES

INCORPORATED IN:

ENGLAND AND WALES [UK]

SUBSIDIARY UNDERTAKINGS

Registered office: 1–3 Strand, London WC2N 5EH, UK

Beegas Nominees Limited
Birch Sites Limited
Carbon Sentinel Limited
Droylsden Metering Services Limited
Gridcom Limited
Icelink Interconnector Limited
Landranch Limited
Lattice Group Employee Benefit Trust Limited
Lattice Group Limited
Lattice Group Trustees Limited
Natgrid Limited
NatGrid One Limited
NatgridTW1 Limited
National Grid Belgium Limited
National Grid Blue Power Limited
National Grid Carbon Limited
National Grid Commercial Holdings Limited
National Grid Distributed Energy Limited
National Grid Electricity Group Trustee Limited
National Grid Electricity System Operator Limited
National Grid Electricity Transmission plc
National Grid Energy Metering Limited
National Grid Four Limited
National Grid Fourteen Limited
National Grid Gas Holdings Limited
National Grid Gas plc
National Grid Grain LNG Limited
National Grid Holdings Limited
National Grid Holdings One plc
National Grid IFA 2 Limited
National Grid Interconnector Holdings Limited
National Grid Interconnectors Limited
National Grid International Limited
National Grid Metering Limited
National Grid North Sea Link Limited
National Grid Offshore Limited
National Grid Partners Limited (previously National Grid Thirty Four Limited)
National Grid Property Holdings Limited
National Grid Seventeen Limited
National Grid Smart Limited
National Grid Ten
National Grid Thirty Five Limited
National Grid Thirty Six Limited
National Grid Twelve Limited
National Grid Twenty Eight Limited
National Grid Twenty-Five Limited
National Grid Twenty Seven Limited
National Grid Twenty Three Limited
National Grid UK Limited
National Grid UK Pension Services Limited
National Grid (US) Holdings Limited
National Grid (US) Investments 2 Limited
National Grid (US) Investments 4 Limited
National Grid (US) Partner 1 Limited
National Grid Ventures Limited
National Grid Viking Link Limited
National Grid William Limited

NG Nominees Limited
NG Shetland Link Limited
NGC Employee Shares Trustee Limited
NGG Finance plc
Ngrid Intellectual Property Limited
NGT Telecom No. 1 Limited
NGT Two Limited
Port Greenwich Limited
Stargas Nominees Limited
Supergrid Electricity Limited
Supergrid Energy Transmission Limited
Supergrid Limited
Thamesport Interchange Limited
The National Grid Group Quest Trustee Co. Limited
The National Grid YouPlan Trustee Limited
Transco Limited

Registered office: Shire Hall, PO Box 9, Warwick CV34 4RL, UK

Warwick Technology Park Management Company (No 2) Limited (60.56%)

JOINT VENTURES

Registered office: 1–3 Strand, London WC2N 5EH, UK

BritNed Development Limited (50%)*
Nemo Link Limited (50%)
NGET/SPT Upgrades Limited (50%)†

Registered office: Friars House, Manor House Dr., Coventry CV1 2TE, UK.

Joint Radio Company Limited (50%)!*

Registered office: Berkeley House, 19 Portsmouth Rd., Cobham, Surrey KT11 1JG, UK.

St William Homes LLP (50%)²

* National Grid Interconnector Holdings Limited owns 284,500,000 €0.20 C Ordinary shares and one £1.00 Ordinary A share.

** National Grid Gas plc owns all £1.00 A Ordinary shares.

† National Grid Electricity Transmission plc owns 50 £1.00 A Ordinary shares.

ASSOCIATES

Registered office: Ashbrook Court, Prologis Park, Central Blvd., Coventry CV7 8PE

Quadgas HoldCo Limited (39%)#

Quadgas HoldCo Limited is included in the financial statements from 30 June 2018 as an asset held for sale.

OTHER INVESTMENTS

Registered office: 1 More London Place, London SE1 2AF, UK

Energis plc (33.06%)‡

‡ In administration.

ISLE OF MAN [UK]

SUBSIDIARY UNDERTAKINGS

Registered office: 3rd Floor, St George's Court, Upper Church St., Douglas, IM1 1EE, Isle of Man, UK

National Grid Insurance Co. (Isle of Man) Limited
NGT Holding Company (Isle of Man) Limited

JERSEY [UK]

SUBSIDIARY UNDERTAKINGS

Registered office: 44 Esplanade, St Helier, Jersey JE4 9WG, UK

National Grid Jersey Investments Limited
NG Jersey Limited

AUSTRALIA

SUBSIDIARY UNDERTAKINGS

Registered office: Level 7, 330 Collins St., Melbourne, VIC 3000
National Grid Australia Pty Limited

BELGIUM

ASSOCIATES

Registered office: Avenue de Cortenbergh 71, 1000 Brussels
Coreso SA (15.84%)

CANADA

SUBSIDIARY UNDERTAKINGS

Registered office: 1959 Upper Water St., Suite 800, Halifax NS, B3J 2X2
KeySpan Energy Development Co.

FRANCE

JOINT VENTURES

Registered office: 1 Terrasse Bellini, Tour Initiale, TSA 41000 – 9291,
Paris La Defense, CEDEX

IFA2 SAS (50%)

NETHERLANDS

SUBSIDIARY UNDERTAKINGS

Registered office: Westblaak 89, 3012 KG Rotterdam, PO Box 21153,
3001 AD, Rotterdam

British Transco International Finance B.V.

Registered office: Prins Bernhardplein 200, 1097 JB, Amsterdam
National Grid Holdings B.V.

REPUBLIC OF IRELAND

SUBSIDIARY UNDERTAKINGS

Registered office: c/o Moore Stephens Nathans, 3rd Floor, Ulysses
House, 23/24 Foley St., Dublin 1, D01 W2T2
National Grid Company (Ireland) Designated Activity
Company (previously National Grid Insurance Com-
pany (Ireland) Designated Activity Company)*
* In liquidation.

UNITED STATES

CONNECTICUT

ASSOCIATES

Registered office: Carla Pizzella, 362 Injun Hollow Rd., East Hampton CT 06424
Connecticut Yankee Atomic Power Co. (19.5%)

DELAWARE

SUBSIDIARY UNDERTAKINGS

Registered office: Corporation Service Co., 251 Little Falls Dr.,
Wilmington, DE 19808, New Castle County

British Transco Capital Inc.
British Transco Finance, Inc.
Granite State Power Link LLC
GridAmerica Holdings Inc.
KeySpan CI Midstream Limited
KeySpan Energy Services Inc.
KeySpan International Corporation
KeySpan MHK, Inc.
KeySpan Midstream Inc.
KSI Contracting, LLC
KSI Electrical, LLC
KSI Mechanical, LLC
Metrowest Realty LLC
Mystic Steamship Corporation
National Grid Algonquin LLC
National Grid Connect Inc.
National Grid Development Holdings Corp.
National Grid Energy Management, LLC
National Grid Energy Trading Services LLC
National Grid Glenwood Energy Center, LLC
National Grid Green Homes Inc.

National Grid Islander East Pipeline LLC
National Grid LNG GP LLC
National Grid LNG LLC
National Grid LNG LP LLC
National Grid Millennium LLC
National Grid North America Inc.
National Grid North East Ventures Inc.
National Grid Port Jefferson Energy Center LLC
National Grid Services Inc.
National Grid US 6 LLC
National Grid US LLC
National Grid USA
NGNE LLC
Niagara Mohawk Energy, Inc.
Northeast Renewable Link LLC
North East Transmission Co., Inc.
Opinac North America, Inc.
Philadelphia Coke Co., Inc.
Vermont Green Line Devco, LLC (90%)

JOINT VENTURES

Registered office: Corporation Service Co., 251 Little Falls Dr.,
Wilmington, DE 19808, New Castle County

Clean Energy Generation, LLC (50%)
Goldendale Energy Storage LLC (50%)
Island Park Energy Center, LLC (50%)
LI Energy Storage System, LLC (50%)
LI Solar Generation, LLC (50%)
Swan Lake North Holdings LLC (50%)

Registered office: Corporation Trust Co., 1209 Orange,
Wilmington DE 19808, New Castle County

Islander East Pipeline Company, LLC (50%)

ASSOCIATES

Registered office: Corporation Service Co., 251 Little Falls Dr.,
Wilmington, DE 19808, New Castle County

Nysearch RMLD, LLC (22.63%)

Registered office: Corporation Trust Co., 1209 Orange,
Wilmington DE 19808, New Castle County

Algonquin Gas Transmission, LLC (20%)
Clean Line Energy Partners LLC (32%)
Millennium Pipeline Company, LLC (26.25%)
Sunrun Neptune Investor 2016 LLC^{3***}
*** National Grid Green Homes Inc. owns 1,000 Class A Membership Interests.

Registered office: Harvard Business Services, Inc., 16192 Coastal Hwy.,
Lewes DE 19958, Sussex County

Energy Impact Fund LP (9.42%)

MASSACHUSETTS

SUBSIDIARY UNDERTAKINGS

Registered office: Corporation Service Co., 84 State St., Boston MA 02109, Suffolk County

Boston Gas Company
Colonial Gas Company
EUA Energy Investment Corporation
Massachusetts Electric Company
Nantucket Electric Company
National Grid NE Holdings 2 LLC
National Grid Transmission Services Corporation
Nees Energy, Inc.
New England Energy Incorporated
New England Hydro Finance Co., Inc. (53.704%)
New England Hydro-Transmission Electric
Company Inc. (53.704%)
New England Power Company
Transgas, Inc.
Upper Hudson Development Inc.
Wayfinder Group, Inc.

Registered office: 404 Wyman St., Waltham MA 02451
NGV Emerald Acquisition Co. LLC
NGV Emerald Holdings LLC

ASSOCIATES

Registered office: De Maximus Inc., 135 Beaver St., 4th Floor, Waltham MA 02452
KHB Venture LLC (33%)⁷

Registered office: Brian Smith, 49 Yankee Rd., Rowe MA 01367
Yankee Atomic Electric Company (34.5%)¹⁰

NEW YORK

SUBSIDIARY UNDERTAKINGS

Registered office: Corporation Service Co., 80 State St.,
Albany NY 12207-2543, Albany County

Grid NY LLC
KeySpan Energy Corporation
KeySpan Gas East Corporation
KeySpan Plumbing Solutions, Inc.
Land Management & Development, Inc.
Landwest, Inc.
Metro Energy, LLC
National Grid Electric Services, LLC
National Grid Energy Services LLC
National Grid Engineering & Survey Inc.
National Grid Generation LLC
National Grid Generation Ventures LLC
National Grid IGTS Corp.
National Grid Insurance USA Ltd
National Grid Partners Inc. (previously National Grid
Technologies Inc.)
National Grid USA Service Company, Inc.
Niagara Mohawk Holding s, Inc.
Niagara Mohawk Power Corporation
NM Properties, Inc.
Port of the Islands North, LLC
The Brooklyn Union Gas Company

ASSOCIATES

Registered office: 507 Plum St., PO Box 5001, Syracuse NY 13250
Direct Global Power, Inc. (26%)

Registered office: Corporation Service Co., 80 State St., Albany NY 12207
New York Transco LLC (28.3%)

MAINE

ASSOCIATES

Registered office: Joseph D Fay, 321 Old Ferry Rd., Wiscasset ME 04578
Maine Yankee Atomic Power Company (24%)⁸

NEW HAMPSHIRE

SUBSIDIARY UNDERTAKINGS

Registered office: Corporation Service Co., 10 Ferry St., Suite 313, Concord NH
03301, Merrimack County

Broken Bridge Corporation
New England Electric Transmission Corporation
New England Hydro-Transmission Corp. (53.704%)

RHODE ISLAND

SUBSIDIARY UNDERTAKINGS

Registered office: Corporation Service Co., 222 Jefferson Blvd., Suite 200,
Warwick RI 02888, Kent County

Newport America Corporation
The Narragansett Electric Company
Valley Appliance and Merchandising Company

IMPORTANT:

National Grid plc is not the only for-
eign investor owned company that is
buying up U.S. infrastructure assets.

“TOP 10 SMART GRID CONSULTING/ SERVICES COMPANIES – 2018”

– excerpts:

The smart grid industry is growing at a rapid pace as the flag bearer of modern electric grid infrastructure, one that imbues environmental and economic stability. The smart grid technologies are extensively involved in detailed grid testing, consumer education, information sharing, and compliance management.

— • —

Alternative Resource Group (ARG) “A clean energy project development group and its blockchain based energy management and transaction platform”

Apparent “Provides an intelligent smart grid solution powered by big data that improves energy production, delivery, and use”

IncSys “Provides training and customized simulation models for power operators”

Nexant “Helps utilities embrace customer-centric model that aligns strategic planning, grid operations and demand side management to improve customer engagement, boost operational efficiency, reduce risk and deliver improved business results”

Patterson & Dewar Engineers “Specializes in microgrid consulting and analysis, industrial automation and communications design and integration, SCADA assessments and implementation, and operational technology planning and security”

PowerData “Provides a comprehensive platform for real-time control and simulation focused on electric power”

Sensus “Delivers wide range of software and solutions, and engages in designing metering and automatic meter reading solutions for utilities”

Siemens “Provides products, services, and solutions to help power producers, grid operators, power utilities, industrial companies, and municipalities effectively manage tasks economically despite increasing complexity”

Tendril “Delivers solutions for smarter grid management and enhanced consumer engagement capabilities”

Trilliant “Provides two-way communication platform and solutions for distribution and consumption end and the head-end of utility grids”

– Energy CIO Insights | 2018

<https://smart-grid.energycioinsights.com/vendors/top-smart-grid-consulting-services-companies-2018.html>

The following article brings up issues that arise when utilities are put in the hands of private investors where profit-making is the primary interest.

[Illinois] “The Water Drain” – Part 3: Precious Resources, Private Profits – excerpts:

Illinois American Water, a privately managed company, owns and operates Homer Glen’s system. The arrangement makes Kenney’s answer thorny and underscores complications that surface in many towns when a private company runs the water system, an increasingly frequent arrangement across the U.S.

Much of the tension swirls around profit being tied to providing an essential life resource, and the debate over higher rates that private water companies typically charge compared with municipally run systems.

Homer Glen residents pay \$85.58 a month per 5,000 gallons, not including sewer charges – a figure higher than all but one of the Chicago area’s publicly managed systems that use Lake Michigan water, according to a Chicago Tribune survey earlier this year. The average bill for 5,000 gallons in that survey was \$44. Similar stories of frustration with privately owned water systems are playing out across the Chicago region and beyond.

— • —

“A profit-driven ownership of a natural resource doesn’t seem quite right to me,” said Kenney, 47, a father of two who moved to Homer Glen with his wife from Chicago’s Wrigleyville neighborhood in 2012. “It’s not like a cable TV bill. You can’t go without water.”

Local residents are “really being held hostage in a way,” he added. “It is a tremendous burden for homeowners and unfortunately, it’s pricing some people out of their homes.”

— • —

Private companies own about 15 percent of the estimated 50,000 community water systems across the United States, according to the Environmental Protection Agency.

Two publicly traded companies – American Water Works, which is the holding company for Illinois American, and Aqua America, which runs Aqua Illinois – are the two biggest public firms in the industry, and they are active in the Chicago region. . . .

— • —

With their deep pockets, the two companies have stepped into the void as federal and state assistance for infrastructure repairs has dried up.

Federal funding for utilities has fallen to \$4.3 billion in 2014 from a peak of nearly \$17 billion in 1976, leaving municipalities increasingly hard-pressed to keep up with the millions of dollars needed to replace deteriorating pipes, pumps, hydrants, meters and other infrastructure.

In recent years, towns have been more receptive to selling their water systems to private companies, said Reese Tisdale, president of Bluefield Research, a Boston firm that analyzes the water market.

Through September, Bluefield has tracked 62 private acquisitions of community water systems across the country, compared with 30 deals done for the same period last year.

As of August, investor-owned utilities had acquired 238 systems nationwide for a total of \$3.1 billion over the past three years, according to Bluefield – a figure that far outpaces the number of communities that have reversed course on private water management and bought back their systems. Those buybacks, which usually are for smaller systems, amounted to a total of \$367 million for 42 systems over the past three years, according to Bluefield.

But once the systems go private, many residents are left with sticker shock when rate hikes start to kick in.

About 50 miles north of Homer Glen, residents in Hawthorn Woods are protesting the latest rate hike proposal from Aqua Illinois to the Illinois Commerce Commission, the regulatory agency that oversees water rates set by private companies.

In that proposal, Aqua is seeking new rates for Illinois customers that will vary depending on where customers live. That increase may amount to as much as 19.1 percent but could be lower. The company says its rate models justify a 22 percent increase.

The backlash against rate increases has led some communities to explore **buying back their systems**.

The anger over Homer Glen's water rates has been percolating since as early as 2003, when the **Illinois Commerce Commission granted Illinois American a 40 percent rate increase** shortly after the company acquired the village's previous water supplier, Citizens Utilities Co. of Illinois.

That was followed by a 26 percent increase in 2010, and other, smaller increases as well, according to ICC data. In 2017, the commission approved a 15 percent increase for the company.

As the bills increased, so did public anger. It led Homer Glen and four neighboring towns – Bolingbrook, Lemont, Romeoville and Woodridge – to create an agency to acquire from Illinois American an 18-mile main pipeline that delivers Lake Michigan water.

Among the more astonishing examples of high water bills in Homer Glen are those of residents who spend the winter in Florida or Arizona and still face steep charges – even though their usage was zero.

“Fees and service charges from private companies generally make up a higher percentage of water bills than they do with public systems.”

– Ted Gregory, Patrick M. O’Connell & Cecilia Reyes, *Chicago Tribune*, 12/27/17

Mark Breen and his wife have endured that experience. They leave Homer Glen for Naples, Fla., about three months each winter and regularly return to a combined water and sewer bill of more than \$100 a month that shows no water consumption.

He said Illinois American has told him that his home fire suppression system requires that water service to his condo be maintained whether the unit is occupied or not.

When Fred Hradek found a house in Homer Glen a decade ago, its previous owners warned him of high water bills, he recalled. Hradek learned just how high when he recently returned from Florida. Waiting for him was a \$130 bill showing \$1 in water consumption charges.

Fees and service charges from private companies generally make up a higher percentage of water bills than they do with public systems.

At the center of the public-vs.-private water debate is the Illinois Commerce Commission. Critics of privatization say **lack of local oversight allows private water companies to evade answering for the high rates or other complaints, and that the commission rubber-stamps approvals of water companies’ requested rate increases.**

A publicly run system, by contrast, does not need approval of state regulators to raise rates, only the approval of local elected leaders.

Since 2011, the company's [Illinois American's] **PAC has spent about \$387,000 on campaign contributions to state lawmakers, and the pace of its donations is accelerating.**

Smyth at Illinois American said the company's PAC used money to promote legislation in Illinois that enhanced municipalities' position in selling water systems.

– Ted Gregory, Patrick M. O’Connell & Cecilia Reyes | *Chicago Tribune* | 12/27/17
<http://graphics.chicagotribune.com/news/lake-michigan-drinking-water-rates/privatization.html>

[USA] “US allocates US\$37.5bn for energy and smart water projects” – excerpts:

The US government announced it will allocate US\$37.5bn to fund energy and water programmes in 2017. The funding will be channelled to accelerate the growth of the two sectors through the **department of energy, the US Army Corps of Engineers and the Bureau of Reclamation** as from the last quarter of 2016.

“At the center of the public-vs.-private water debate is the Illinois Commerce Commission. Critics of privatization say lack of local oversight allows private water companies to evade answering for the high rates or other complaints, and that the commission rubber-stamps approvals of water companies’ requested rate increases.”

– Ted Gregory, Patrick M. O’Connell & Cecilia Reyes, *Chicago Tribune*, 12/27/17

The approval of the funds by the Senate marks the first time the House has approved a stand-alone bill to fund energy and water programmes since 2009.

Smart water funding

The news follows an announcement by the US city of Austin that it is seeking assistance for rollout of smart water projects. . . . The city said it applied for loans from the Texas Water Development Board to help its water division, Austin Water, upgrade its metering and wastewater systems. . . . The projects include plans to direct the US\$80m loan towards the installation of smart water meters . . .

The approval of the **loan to deploy the smart water meters will result in Austin Water increasing its water rates by 1.7%/68 cents on consumers' monthly bills.**

However, besides awaiting approval of the loan, the city said it still needs to analyse the results of smart water meters pilots carried out by other US cities in order to have a guideline on how to deploy an AMI project before kickstart.

— Nicholas Nhede, Smart Energy International, 5/18/16
<https://www.smart-energy.com/regional-news/north-america/us-senate-approves-us37-5bn-for-spending-on-energy-and-smart-water-projects-in-2017/>

[Texas] “CenterPoint Energy subsidiary closes on \$700 million of general mortgage bonds” – excerpt:

CenterPoint Energy Houston Electric, LLC (Houston Electric), an indirect, wholly owned subsidiary of CenterPoint Energy, Inc. CNP, +1.36% today closed a registered public offering of \$700 million principal amount of 4.25% **general mortgage bonds** due Feb. 1, 2049. The net proceeds from the offering will be used for general limited liability company purposes, including capital expenditures.

— Marketwatch | 1/15/19
<https://www.marketwatch.com/press-release/centerpoint-energy-subsi-dary-closes-on-700-million-of-general-mortgage-bonds-2019-01-15>

General-Mortgage Bond Law and Legal Definition

General-mortgage bond means a corporate bond secured by a blanket charge on the assets of the issuer. However, the general-mortgage bond is often less valuable because it may be outranked by one or more prior bonds. This type of bond is commonly used by railroads. A general mortgage may not necessarily have priority of claim over other liens on specific assets or parcels of land.

— USLegal <https://definitions.uslegal.com/g/general-mortgage-bond/>

“Global smart water metering market worth US\$5.51bn by 2021” – excerpts:

According to a new study, the global market for smart water metering is expected to grow by 7.23% between 2016 and 2021. The growth in the adoption of the smart water metering infrastructure and technologies is a result of an increased focus on reducing non-revenue water, replacing of

“Since 2011, the [Illinois American] company’s PAC has spent about \$387,000 on campaign contributions to state lawmakers, and the pace of its donations is accelerating.”

— Ted Gregory, Patrick M. O’Connell & Cecilia Reyes, *Chicago Tribune*, 12/27/17

“THE FALLING STAR”

— excerpts:

Avimor, a **development company** out of **Arizona** was building a planned community of about 600 homes just outside of **Star, Idaho** [a rural town about 20 miles outside of Boise with a population of about 4,000 people at the time]. There were several problems with that. First, there was no market for them. Of the homes that had been built, most were sitting empty and a few were rented. Star did not have the infrastructure for the development – and especially did not have the roads to support it if they did manage to sell the houses. They are miles away from the Interstate and at least a mile or so from the old highway. At the time, Boise’s economy was not doing well. The few large corporations in Boise were moving jobs out, cutting back and scaling down which in turn put the rest of the economy in decline correspondingly.



Avimore development, 2018

The parent company of Avimor was SunCor, an Arizona corporation. **SunCor Development Company** was a wholly owned subsidiary of **Arizona Public Service (APS)**, **Arizona’s largest electricity supplier**. SunCor had thousands of acres of land under development in **Arizona, Utah, Idaho and New Mexico**. They also had developments in **California and Mexico**.

— Vicky Davis • 6/18/11
http://www.channelingreality.com/IEF_Agenda21/The_Falling_Star.htm

aging water infrastructure and accurate water billing.

[quote] The smart meters and accessories segment will lead the market in terms of growth, followed by investments in the IT and communication solutions sector.

The US followed by Europe are the two regions predicted to continue their domination in the market, as utilities will increasingly adopt automated water metering infrastructure to monitor their networks and reduce water leakages and operational costs. [Data analytics: Tata Consulting unveils new solution for water utilities]

RnRMarket Research notes that key players in the smart water metering market include **Itron Inc. (US)**, **Elster Group GmbH (Germany)**, **Sensus (US)**, **Landis+Gyr (Switzerland)**, and **Kamstrup A/S (Denmark)**, among others.

— Nicholas Nhede | Smart Energy International | 5/6/16 <https://www.smart-energy.com/news/rnrmarket-research-predicts-the-global-smart-water-metering-market-will-be-worth-us5-51bn-by-2021/>

DRIVERS OF “SMART” METER/GRID POLICY, FUNDING, & REGULATION

Federal legislation

This sections contains some of the Congressional proposals supporting utility/energy related policies that became U.S. public law. These laws have served to encourage, guide and support smart meter/grid policy (including regulatory actions) at national, regional, state, county, and local levels of governance. The federal infusions of multi-billions of public taxpayer dollars to utilities (public and private) – combined with state to local government complicity – is behind soaring utility costs that exist with utility use of costly and problematic ‘smart’ technologies. And further, propels utilities to request ongoing rate increases and implement ‘demand’ charge schemes to accommodate the higher revenue needs to pay for the technology.

Public Utility Regulatory Policies Act of 1978 (PURPA)

• Public Law 95-617, 95th Congress

(PURPA was one of five bills signed into law on 11/9/78 that were included as a part of the **National Energy Act of 1978**)

Signed into law by President Jimmy Carter on 11/9/1978

Download pdf:

<https://www.govinfo.gov/content/pkg/STATUTE-92/pdf/STATUTE-92-Pg3117.pdf#page=55>
or here: <https://www.usbr.gov/power/legislation/purpa.pdf>

Note: PURPA had major amendments made under the Energy Policy Act of 1992, Energy Policy Act of 2005, American Recovery and Reinvestment Act of 2009, and the Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010

(Ref: https://en.wikipedia.org/wiki/Public_Utility_Regulatory_Policies_Act)

Energy Policy Act of 1992

Public law 102-486, 102nd Congress

10/24/1992 Signed into law by President George H.W. Bush

<https://www.congress.gov/bills/102nd-congress/house-bill/776>

<https://www.govinfo.gov/content/pkg/STATUTE-106/pdf/STATUTE-106-Pg2776.pdf>

Energy Policy Act of 2005

Public Law 109–58, 109th Congress

8/8/2005 Signed into law by President George W. Bush

<https://www.govinfo.gov/app/details/PLAW-109publ58/related>

<https://www.govinfo.gov/content/pkg/STATUTE-106/pdf/STATUTE-106-Pg2776.pdf>

or here: <https://www.congress.gov/109/plaws/publ58/PLAW-109publ58.pdf>

Energy Independence and Security Act of 2007

Public Law 110–140, 110th Congress

12/19/2007 Signed into law by President George W. Bush

<https://www.govinfo.gov/content/pkg/PLAW-110publ140/pdf>

or here: <https://www.govinfo.gov/content/pkg/PLAW-110publ140/pdf/PLAW-110publ140.pdf>

American Recovery and Reinvestment Act of 2009

Public Law 111–5, 111th Congress

2/17/2009 Signed into law by President Barack Obama

<https://www.govinfo.gov/content/pkg/PLAW-111publ5/pdf/PLAW-111publ5.pdf>

Energy and Water, Legislative Branch, and Military Construction and Veterans Affairs Appropriations Act, 2019

Public Law 115–244, 115th Congress

9/21/2018 Signed into law by President Donald J. Trump

<https://www.congress.gov/bills/115th-congress/house-bill/5895/text>

[Note: Divison A is the “Energy and Water Development and Related Agencies Appropriations bill”]

<https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-signs-h-r-5895-law/>

<https://fas.org/sgp/crs/misc/R45214.pdf>

<https://www.congress.gov/115/bills/hr5895/BILLS-115hr5895enr.pdf>

DIVISION A—Energy and Water Development and Related Agencies Appropriations Act 2019

<https://www.congress.gov/115/bills/hr5895/BILLS-115hr5895enr.pdf>

“ENERGY POLICY ACT OF 2005”

Public Law 109–58, 109th Congress

Signed into law by President George W. Bush on 8/8/2005

<https://www.congress.gov/109/plaws/publ58/PLAW-109publ58.pdf>

Excerpts:

SEC. 1252. SMART METERING.

(a) **IN GENERAL.**—Section 111(d) of the **Public Utility Regulatory Policies Act of 1978** (16 U.S.C. 2621(d)) is amended by adding at the end the following:

“(14) **TIME-BASED METERING AND COMMUNICATIONS.**—

(A) Not later than 18 months after the date of enactment of this paragraph, each electric utility shall offer each of its customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility’s costs of generating and purchasing electricity at the wholesale level. The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology.

“(B) The types of time-based rate schedules that may be offered under the schedule referred to in subparagraph (A) include, among others—

“(i) time-of-use pricing whereby electricity prices are set for a specific time period on an advance or forward basis, typically not changing more often than twice a year, based on the utility’s cost of generating and/or purchasing such electricity at the wholesale level for the benefit of the consumer. Prices paid for energy consumed during these periods shall be pre-established and known to consumers in advance of such consumption, allowing them to vary their demand and usage in response to such prices and manage their energy costs by shifting usage to a lower cost period or reducing their consumption overall;

“(ii) critical peak pricing whereby time-of-use prices are in effect except for certain peak days, when prices may reflect the costs of generating and/or purchasing electricity at the wholesale level and when consumers may receive additional discounts for reducing peak period energy consumption;

“(iii) real-time pricing whereby electricity prices are set for a specific time period on an advanced or forward basis, reflecting the utility’s cost of generating and/or purchasing electricity at the wholesale level, and may change as often as hourly; and

“(iv) credits for consumers with large loads who enter into pre-established peak load reduction agreements that reduce a utility’s planned capacity obligations.

“(C) Each electric utility subject to subparagraph (A) shall provide each customer requesting a time-based rate with a time-based meter capable of enabling the utility and customer to offer and receive such rate, respectively.

“(D) For purposes of implementing this paragraph, any reference contained in this section to the date of enactment of the Public Utility Regulatory Policies Act of 1978 shall be deemed to be a reference to the date of enactment of this paragraph.

“(E) In a State that permits third-party marketers to sell electric energy to retail electric consumers, such consumers shall be entitled to receive the same time-based metering and communications device and service as a retail electric consumer of the electric utility.

“(F) Notwithstanding subsections (b) and (c) of section 112, each State regulatory authority shall, not later than 18 months after the date of enactment of this paragraph conduct an investigation in accordance with section 115(i) and issue a decision whether it is appropriate to implement the standards set out in subparagraphs (A) and (C).”

(b) **STATE INVESTIGATION OF DEMAND RESPONSE AND TIME-BASED METERING.**—Section 115 of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2625) is amended as follows:

- (1) By inserting in subsection (b) after the phrase “the standard for time-of-day rates established by section 111(d)(3)” the following: “and the standard for time-based metering and communications established by section 111(d)(14)”.
- (2) By inserting in subsection (b) after the phrase “are likely to exceed the metering” the following: “and communications”.
- (3) By adding at the end the following:

“(i) **TIME-BASED METERING AND COMMUNICATIONS.**— In making a determination with respect to the standard established by section 111(d)(14), the investigation requirement of section 111(d)(14) (F) shall be as follows: Each State regulatory authority shall conduct an investigation and issue a decision whether or not it is appropriate for electric utilities to provide and install time-based meters and communications devices for each of their customers which enable such customers to participate in time-based pricing rate schedules and other demand response programs.”.

(c) **FEDERAL ASSISTANCE ON DEMAND RESPONSE.**—Section 132(a) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2642(a)) is amended by striking “and” at the end of paragraph (3), striking the period at the end of paragraph (4) and inserting “; and”, and by adding the following at the end thereof:

“(5) technologies, techniques, and rate-making methods related to advanced metering and communications and the use of these technologies, techniques and methods in demand response programs.”.

(d) **FEDERAL GUIDANCE.**—Section 132 of the **Public Utility Regulatory Policies Act of 1978** (16 U.S.C. 2642) is amended by adding the following at the end thereof:

“(d) **DEMAND RESPONSE.**—The Secretary shall be responsible for—

- “(1) educating consumers on the availability, advantages, and benefits of advanced metering and communications technologies, including the funding of demonstration or pilot projects;
- “(2) working with States, utilities, other energy providers and advanced metering and communications experts to identify and address barriers to the adoption of demand response programs; and
- “(3) not later than 180 days after the date of enactment of the Energy Policy Act of 2005, providing Congress with a report that identifies and quantifies the national benefits of demand response and makes a recommendation on achieving specific levels of such benefits by January 1, 2007.”

(e) **DEMAND RESPONSE AND REGIONAL COORDINATION.**—

- (1) **IN GENERAL.**—It is the policy of the United States to encourage States to coordinate, on a regional basis, State energy policies to provide reliable and affordable demand response services to the public.
- (2) **TECHNICAL ASSISTANCE.**—The Secretary shall provide technical assistance to States and regional organizations formed by two or more States to assist them in—
 - (A) identifying the areas with the greatest demand response potential;
 - (B) identifying and resolving problems in transmission and distribution networks, including through the use of demand response;
 - (C) developing plans and programs to use demand response to respond to peak demand or emergency needs; and
 - (D) identifying specific measures consumers can take to participate in these demand response programs.
- (3) **REPORT.**—Not later than 1 year after the date of enactment of the Energy Policy Act of 2005, the Commission shall prepare and publish an annual report, by appropriate region, that assesses demand response resources, including those available from all consumer classes, and which identifies and reviews—
 - (A) saturation and penetration rate of advanced meters and communications technologies, devices and systems;
 - (B) existing demand response programs and time-based rate programs;
 - (C) the annual resource contribution of demand resources;

(D) the potential for demand response as a quantifiable, reliable resource for regional planning purposes;

(E) steps taken to ensure that, in regional transmission planning and operations, demand resources are provided equitable treatment as a quantifiable, reliable resource relative to the resource obligations of any load-serving entity, transmission provider, or transmitting party; and

(F) regulatory barriers to improve customer participation in demand response, peak reduction and critical period pricing programs.

(f) **FEDERAL ENCOURAGEMENT OF DEMAND RESPONSE DEVICES.**

—It is the policy of the United States that time-based pricing and other forms of demand response, whereby electricity customers are provided with electricity price signals and the ability to benefit by responding to them, shall be encouraged, the deployment of such technology and devices that enable electricity customers to participate in such pricing and demand response systems shall be facilitated, and unnecessary barriers to demand response participation in energy, capacity and ancillary service markets shall be eliminated. It is further the policy of the United States that the benefits of such demand response that accrue to those not deploying such technology and devices, but who are part of the same regional electricity entity, shall be recognized.

(g) **TIME LIMITATIONS.**—Section 112(b) of the **Public Utility Regulatory Policies Act of 1978** (16 U.S.C. 2622(b)) is amended by adding at the end the following:

“(4)(A) Not later than 1 year after the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated electric utility shall commence the consideration referred to in section 111, or set a hearing date for such consideration, with respect to the standard established by paragraph (14) of section 111(d).

“(B) Not later than 2 years after the date of the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the determination, referred to in section 111 with respect to the standard established by paragraph (14) of section 111(d).”.

(h) **FAILURE TO COMPLY.**—Section 112(c) of the **Public Utility Regulatory Policies Act of 1978** (16 U.S.C. 2622(c)) is amended by adding at the end the following:

“In the case of the standard established by paragraph (14) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraph (14).”.

(i) **PRIOR STATE ACTIONS REGARDING SMART METERING STANDARDS.**—

(1) **IN GENERAL.**—Section 112 of the **Public Utility Regulatory Policies Act of 1978** (16 U.S.C. 2622) is amended by adding at the end the following:

“(e) **PRIOR STATE ACTIONS.**—Subsections (b) and (c) of this section shall not apply to the standard established by paragraph (14) of section 111(d) in the case of any electric utility in a State if, before the enactment of this subsection—

“(1) the State has implemented for such utility the standard concerned (or a comparable standard);

“(2) the State regulatory authority for such State or relevant non-regulated electric utility has conducted a proceeding to consider implementation of the standard concerned (or a comparable standard) for such utility within the previous 3 years; or

“(3) the State legislature has voted on the implementation of such standard (or a comparable standard) for such utility within the previous 3 years.”

(2) **CROSS REFERENCE.**—Section 124 of such Act (16 U.S.C. 2634) is amended by adding the following at the end thereof: “In the case of the standard established by paragraph (14) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraph (14).”.

“ENERGY INDEPENDENCE AND SECURITY ACT OF 2007”

Public Law 110–140, 110th Congress

Signed into law by President George W. Bush on 12/19/2007

<https://www.govinfo.gov/content/pkg/PLAW-110publ140/pdf/>

Excerpts:

TITLE XIII—SMART GRID

SEC. 1301. STATEMENT OF POLICY ON MODERNIZATION OF ELECTRICITY GRID.

It is the policy of the United States to support the modernization of the Nation’s electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth and to achieve each of the following, which together characterize a Smart Grid:

- (1) Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid.
- (2) Dynamic optimization of grid operations and resources, with full cyber-security.
- (3) Deployment and integration of distributed resources and generation, including renewable resources.
- (4) Development and incorporation of demand response, demand-side resources, and energy-efficiency resources.
- (5) Deployment of “smart” technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications concerning grid operations and status, and distribution automation.
- (6) Integration of “smart” appliances and consumer devices.
- (7) Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.
- (8) Provision to consumers of timely information and control options.
- (9) Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid.
- (10) Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.

SEC. 1302. SMART GRID SYSTEM REPORT.

The Secretary, acting through the Assistant Secretary of the Office of Electricity Delivery and Energy Reliability (referred to in this section as the “OED-ER”) and through the Smart Grid Task Force established in section 1303, shall, after consulting with any interested individual or entity as appropriate, no later than 1 year after enactment, and every 2 years thereafter, report to Congress concerning the status of smart grid deployments nationwide and any regulatory or government barriers to continued deployment. The report shall provide the current status and prospects of smart grid development, including information on technology penetration, communications network capabilities, costs, and obstacles. It may include recommendations for State and Federal policies or actions helpful to facilitate the transition to a smart grid. To the extent appropriate, it should take a regional perspective. In preparing this report, the Secretary shall solicit advice and contributions from the Smart Grid Advisory Committee created in section 1303; from other involved Federal agencies including but not limited to the Federal Energy Regulatory Commission (“Commission”), the National Institute of Standards and Technology (“Institute”), and the Department of Homeland Security; and from other stakeholder groups not already represented on the Smart Grid Advisory Committee.

SEC. 1303. SMART GRID ADVISORY COMMITTEE AND SMART GRID TASK FORCE.

(a) SMART GRID ADVISORY COMMITTEE.—

- (1) ESTABLISHMENT.—The Secretary shall establish, within 90 days of enactment of this Part, a Smart Grid Advisory Committee (either as an independent entity or as a designated sub-part of a larger advisory committee on electricity matters). The Smart Grid Advisory Committee shall include eight or more members appointed by the Secretary who have sufficient experience and expertise to represent the full range of smart grid technologies and services, to represent both private and non-Federal public sector stakeholders. One member shall be appointed by the Secretary to Chair the Smart Grid Advisory Committee.
- (2) MISSION.—The mission of the Smart Grid Advisory Committee shall be to advise the Secretary, the Assistant Secretary, and other relevant Federal officials concerning the development of smart grid technologies, the progress of a national transition to the use of smart-grid technologies and services, the evolution of widely-

accepted technical and practical standards and protocols to allow interoperability and inter-communication among smart-grid capable devices, and the optimum means of using Federal incentive authority to encourage such progress.

(3) APPLICABILITY OF FEDERAL ADVISORY COMMITTEE ACT.—The Federal Advisory Committee Act (5 U.S.C. App.) shall apply to the Smart Grid Advisory Committee.

(b) SMART GRID TASK FORCE.—

(1) ESTABLISHMENT.—The Assistant Secretary of the Office of Electricity Delivery and Energy Reliability shall establish, within 90 days of enactment of this Part, a Smart Grid Task Force composed of designated employees from the various divisions of that office who have responsibilities related to the transition to smart-grid technologies and practices. The Assistant Secretary or his designee shall be identified as the Director of the Smart Grid Task Force. The Chairman of the Federal Energy Regulatory Commission and the Director of the National Institute of Standards and Technology shall each designate at least one employee to participate on the Smart Grid Task Force. Other members may come from other agencies at the invitation of the Assistant Secretary or the nomination of the head of such other agency. The Smart Grid Task Force shall, without disrupting the work of the Divisions or Offices from which its members are drawn, provide an identifiable Federal entity to embody

the Federal role in the national transition toward development and use of smart grid technologies.

- (2) MISSION.—The mission of the Smart Grid Task Force shall be to insure awareness, coordination and integration of the diverse activities of the Office and elsewhere in the Federal Government related to smart grid technologies and practices, including but not limited to: smart grid research and development; development of widely accepted smart-grid standards and protocols; the relationship of smart-grid technologies and practices to electric utility regulation; the relationship of smart grid technologies and practices to infrastructure development, system reliability and security; and the relationship of smart grid technologies and practices to other facets of electricity supply, demand, transmission, distribution, and policy. The Smart Grid Task Force shall collaborate with the Smart Grid Advisory Committee and other Federal agencies and offices.

The Smart Grid Task Force shall meet at the call of its Director as necessary to accomplish its mission.

- (c) AUTHORIZATION.—There are authorized to be appropriated for the purposes of this section such sums as are necessary to the Secretary to support the operations of the Smart Grid Advisory Committee and Smart Grid Task Force for each of fiscal years 2008 through 2020.

“In December 2007, Congress passed, and the President approved, Title XIII of the Energy Independence and Security Act of 2007 (EISA). EISA provided the legislative support for DOE’s smart grid activities and reinforced its role in leading and coordinating national grid modernization efforts. EISA Section 1303 established at DOE the Smart Grid Advisory Committee and Federal Smart Grid Task Force.”

“Grid Modernization and the Smart Grid,”
U.S. Dept. of Energy, Office of Electricity,
No date. Accessed 6/21/19
<https://www.energy.gov/oe/activities/technology-development/grid-modernization-and-smart-grid>

SEC. 1304. SMART GRID TECHNOLOGY RESEARCH, DEVELOPMENT, AND DEMONSTRATION.

(a) POWER GRID DIGITAL INFORMATION TECHNOLOGY.—The Secretary, in consultation with the Federal Energy Regulatory Commission and other appropriate agencies, electric utilities, the States, and other stakeholders, shall carry out a program—

- (1) to develop advanced techniques for measuring peak load reductions and energy-efficiency savings from smart metering, demand response, distributed generation, and electricity storage systems;
- (2) to investigate means for demand response, distributed generation, and storage to provide ancillary services;
- (3) to conduct research to advance the use of wide-area measurement and control networks, including data mining, visualization, advanced computing, and secure and dependable communications in a highly-distributed environment;
- (4) to test new reliability technologies, including those concerning communications network capabilities, in a grid control room environment against a representative set of local outage and wide area black-out scenarios;
- (5) to identify communications network capacity needed to implement advanced technologies.
- (6) to investigate the feasibility of a transition to time-of-use and real-time electricity pricing;
- (7) to develop algorithms for use in electric transmission system software applications;
- (8) to promote the use of underutilized electricity generation capacity in any substitution of electricity for liquid fuels in the transportation system of the United States; and
- (9) in consultation with the Federal Energy Regulatory Commission, to propose interconnection protocols to enable electric utilities to access electricity stored in vehicles to help meet peak demand loads.

(b) SMART GRID REGIONAL DEMONSTRATION INITIATIVE.—

- (1) **IN GENERAL.**—The Secretary shall establish a smart grid regional demonstration initiative (referred to in this subsection as the “Initiative”) composed of demonstration projects specifically focused on advanced technologies for use in power grid sensing, communications, analysis, and power flow control. The Secretary shall seek to leverage existing smart grid deployments.
- (2) **GOALS.**—The goals of the Initiative shall be—
 - (A) to demonstrate the potential benefits of concentrated investments in advanced grid technologies on a regional grid;
 - (B) to facilitate the commercial transition from the current power transmission and distribution system technologies to advanced technologies;
 - (C) to facilitate the integration of advanced technologies in existing electric networks to improve system performance, power flow control, and reliability;
 - (D) to demonstrate protocols and standards that allow for the measurement and validation of the energy savings and fossil fuel emission reductions associated with the installation and use of energy efficiency and demand response technologies and practices; and
 - (E) to investigate differences in each region and regulatory environment regarding best practices in implementing smart grid technologies.
- (3) **DEMONSTRATION PROJECTS.**—
 - (A) **IN GENERAL.**—In carrying out the initiative, the Secretary shall carry out smart grid demonstration projects in up to 5 electricity control areas, including rural areas and at least 1 area in which the majority of generation and transmission assets are controlled by a tax-exempt entity.
 - (B) **COOPERATION.**—A demonstration project under subparagraph (A) shall be carried out in cooperation with the electric utility that owns the grid facilities in the electricity control area in which the demonstration project is carried out.
 - (C) **FEDERAL SHARE OF COST OF TECHNOLOGY INVESTMENTS.**—The Secretary shall provide to an electric utility described in subparagraph (B) financial assistance for use in paying an amount equal to not more than 50 percent of the cost of qualifying advanced grid technology investments made by the electric utility to carry out a demonstration project.
 - (D) **INELIGIBILITY FOR GRANTS.**—No person or entity participating in any demonstration project conducted under this subsection

shall be eligible for grants under section 1306 for otherwise qualifying investments made as part of that demonstration project.

(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated—

- (1) to carry out subsection (a), such sums as are necessary for each of fiscal years 2008 through 2012; and
- (2) to carry out subsection (b), \$100,000,000 for each of fiscal years 2008 through 2012.

SEC. 1305. SMART GRID INTEROPERABILITY FRAMEWORK.

(a) INTEROPERABILITY FRAMEWORK.—The Director of the National Institute of Standards and Technology shall have primary responsibility to coordinate the development of a framework that includes protocols and model standards for information management to achieve interoperability of smart grid devices and systems. Such protocols and standards shall further align policy, business, and technology approaches in a manner that would enable all electric resources, including demand-side resources, to contribute to an efficient, reliable electricity network. In developing such protocols and standards—

- (1) the Director shall seek input and cooperation from the Commission, OEDER and its Smart Grid Task Force, the Smart Grid Advisory Committee, other relevant Federal and State agencies; and
- (2) the Director shall also solicit input and cooperation from private entities interested in such protocols and standards, including but not limited to the Gridwise Architecture Council, the International Electrical and Electronics Engineers, the National Electric Reliability Organization recognized by the Federal Energy Regulatory Commission, and National Electrical Manufacturer’s Association.

(b) SCOPE OF FRAMEWORK.—The framework developed under subsection (a) shall be flexible, uniform and technology neutral, including but not limited to technologies for managing smart grid information, and designed—

- (1) to accommodate traditional, centralized generation and transmission resources and consumer distributed resources, including distributed generation, renewable generation, energy storage, energy efficiency, and demand response and enabling devices and systems;
- (2) to be flexible to incorporate—
 - (A) regional and organizational differences; and
 - (B) technological innovations;
- (3) to consider the use of voluntary uniform standards for certain classes of mass-produced electric appliances and equipment for homes and businesses that enable customers, at their election and consistent with applicable State and Federal laws, and are manufactured with the ability to respond to electric grid emergencies and demand response signals by curtailing all, or a portion of, the electrical power consumed by the appliances or equipment in response to an emergency or demand response signal, including through—
 - (A) load reduction to reduce total electrical demand;
 - (B) adjustment of load to provide grid ancillary services; and
 - (C) in the event of a reliability crisis that threatens an outage, short-term load shedding to help preserve the stability of the grid; and
- (4) such voluntary standards should incorporate appropriate manufacturer lead time.

(c) TIMING OF FRAMEWORK DEVELOPMENT.—The Institute shall begin work pursuant to this section within 60 days of enactment. The Institute shall provide and publish an initial report on progress toward recommended or consensus standards and protocols within 1 year after enactment, further reports at such times as developments warrant in the judgment of the Institute, and a final report when the Institute determines that the work is completed or that a Federal role is no longer necessary.

(d) STANDARDS FOR INTEROPERABILITY IN FEDERAL JURISDICTION.—At any time after the Institute’s work has led to sufficient consensus in the Commission’s judgment, the Commission shall institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets.

(e) AUTHORIZATION.—There are authorized to be appropriated for the purposes of this section \$5,000,000 to the Institute to support the activities required by this subsection for each of fiscal years 2008 through 2012.

SEC. 1306. FEDERAL MATCHING FUND FOR SMART GRID INVESTMENT COSTS.

(a) MATCHING FUND.—The Secretary shall establish a Smart Grid Investment Matching Grant Program to provide reimbursement of one-fifth (20 percent) of qualifying Smart Grid investments.

(b) QUALIFYING INVESTMENTS.—Qualifying Smart Grid investments may include any of the following made on or after the date of enactment of this Act:

- (1) In the case of appliances covered for purposes of establishing energy conservation standards under part B of title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C. 6291 et seq.), the documented expenditures incurred by a manufacturer of such appliances associated with purchasing or designing, creating the ability to manufacture, and manufacturing and installing for one calendar year, internal devices that allow the appliance to engage in Smart Grid functions.
- (2) In the case of specialized electricity-using equipment, including motors and drivers, installed in industrial or commercial applications, the documented expenditures incurred by its owner or its manufacturer of installing devices or modifying that equipment to engage in Smart Grid functions.
- (3) In the case of transmission and distribution equipment fitted with monitoring and communications devices to enable smart grid functions, the documented expenditures incurred by the electric utility to purchase and install such monitoring and communications devices.
- (4) In the case of metering devices, sensors, control devices, and other devices integrated with and attached to an electric utility system or retail distributor or marketer of electricity that are capable of engaging in Smart Grid functions, the documented expenditures incurred by the electric utility, distributor, or marketer and its customers to purchase and install such devices.
- (5) In the case of software that enables devices or computers to engage in Smart Grid functions, the documented purchase costs of the software.
- (6) In the case of entities that operate or coordinate operations of regional electric grids, the documented expenditures for purchasing and installing such equipment that allows Smart Grid functions to operate and be combined or coordinated among multiple electric utilities and between that region and other regions.
- (7) In the case of persons or entities other than electric utilities owning and operating a distributed electricity generator, the documented expenditures of enabling that generator to be monitored, controlled, or otherwise integrated into grid operations and electricity flows on the grid utilizing Smart Grid functions.
- (8) In the case of electric or hybrid-electric vehicles, the documented expenses for devices that allow the vehicle to engage in Smart Grid functions (but not the costs of electricity storage for the vehicle).
- (9) The documented expenditures related to purchasing and implementing Smart Grid functions in such other cases as the Secretary shall identify. In making such grants, the Secretary shall seek to reward innovation and early adaptation, even if success is not complete, rather than deployment of proven and commercially viable technologies.

(c) INVESTMENTS NOT INCLUDED.—Qualifying Smart Grid investments do not include any of the following:

- (1) Investments or expenditures for Smart Grid technologies, devices, or equipment that are eligible for specific tax credits or deductions under the Internal Revenue Code, as amended.
- (2) Expenditures for electricity generation, transmission, or distribution infrastructure or equipment not directly related to enabling Smart Grid functions.
- (3) After the final date for State consideration of the Smart Grid Information Standard under section 1307 (paragraph (17) of section 111(d) of the Public Utility Regulatory Policies Act of 1978), an investment that is not in compliance with such standard.
- (4) After the development and publication by the Institute of protocols and model standards for interoperability of smart grid devices and technologies, an investment that fails to incorporate any of such protocols or model standards.
- (5) Expenditures for physical interconnection of generators or other devices to the grid except those that are directly related to enabling Smart Grid functions.
- (6) Expenditures for ongoing salaries, benefits, or personnel costs not

incurred in the initial installation, training, or start up of smart grid functions.

- (7) Expenditures for travel, lodging, meals or other personal costs.
- (8) Ongoing or routine operation, billing, customer relations, security, and maintenance expenditures.
- (9) Such other expenditures that the Secretary determines not to be Qualifying Smart Grid Investments by reason of the lack of the ability to perform Smart Grid functions or lack of direct relationship to Smart Grid functions.

(d) SMART GRID FUNCTIONS.—The term “smart grid functions” means any of the following:

- (1) The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.
- (2) The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.
- (3) The ability to measure or monitor electricity use as a function of time of day, power quality characteristics such as voltage level, current, cycles per second, or source or type of generation and to store, synthesize or report that information by digital means.
- (4) The ability to sense and localize disruptions or changes in power flows on the grid and communicate such information instantaneously and automatically for purposes of enabling automatic protective responses to sustain reliability and security of grid operations.
- (5) The ability to detect, prevent, communicate with regard to, respond to, or recover from system security threats, including cyber-security threats and terrorism, using digital information, media, and devices.
- (6) The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human intervention.
- (7) The ability to use digital information to operate functionalities on the electric utility grid that were previously electro-mechanical or manual.
- (8) The ability to use digital controls to manage and modify electricity demand, enable congestion management, assist in voltage control, provide operating reserves, and provide frequency regulation.
- (9) Such other functions as the Secretary may identify as being necessary or useful to the operation of a Smart Grid.

(e) The Secretary shall—

- (1) establish and publish in the Federal Register, within 1 year after the enactment of this Act procedures by which applicants who have made qualifying Smart Grid investments can seek and obtain reimbursement of one-fifth of their documented expenditures;
- (2) establish procedures to ensure that there is no duplication or multiple reimbursement for the same investment or costs, that the reimbursement goes to the party making the actual expenditures for Qualifying Smart Grid Investments, and that the grants made have significant effect in encouraging and facilitating the development of a smart grid;
- (3) maintain public records of reimbursements made, recipients, and qualifying Smart Grid investments which have received reimbursements;
- (4) establish procedures to provide, in cases deemed by the Secretary to be warranted, advance payment of moneys up to the full amount of the projected eventual reimbursement, to creditworthy applicants whose ability to make Qualifying Smart Grid Investments may be hindered by lack of initial capital, in lieu of any later reimbursement for which that applicant qualifies, and subject to full return of the advance payment in the event that the Qualifying Smart Grid investment is not made; and
- (5) have and exercise the discretion to deny grants for investments that do not qualify in the reasonable judgment of the Secretary.

(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary such sums as are necessary for the administration of this section and the grants to be made pursuant to this section for fiscal years 2008 through 2012.

SEC. 1307. STATE CONSIDERATION OF SMART GRID.

(a) Section 111(d) of the **Public Utility Regulatory Policies Act of 1978** (16 U.S.C. 2621(d)) is amended by adding at the end the following:

“(16) CONSIDERATION OF SMART GRID INVESTMENTS.—

“(A) IN GENERAL.—Each State shall consider requiring that, prior to undertaking investments in nonadvanced grid technologies, an electric utility of the State demonstrate to the State that the electric utility considered an investment in a qualified smart grid system based on appropriate factors, including—

- “(i) total costs;
- “(ii) cost-effectiveness;
- “(iii) improved reliability;
- “(iv) security;
- “(v) system performance; and
- “(vi) societal benefit.

“(B) RATE RECOVERY.—Each State shall consider authorizing each electric utility of the State to recover from ratepayers any capital, operating expenditure, or other costs of the electric utility relating to the deployment of a qualified smart grid system, including a reasonable rate of return on the capital expenditures of the electric utility for the deployment of the qualified smart grid system.

“(C) OBSOLETE EQUIPMENT.—Each State shall consider authorizing any electric utility or other party of the State to deploy a qualified smart grid system to recover in a timely manner the remaining book-value costs of any equipment rendered obsolete by the deployment of the qualified smart grid system, based on the remaining depreciable life of the obsolete equipment.

“(17) SMART GRID INFORMATION.—

“(A) STANDARD.—All electricity purchasers shall be provided direct access, in written or electronic machine-readable form as appropriate, to information from their electricity provider as provided in subparagraph (B).

“(B) INFORMATION.—Information provided under this section, to the extent practicable, shall include:

“(i) PRICES.—Purchasers and other interested persons shall be provided with information on—

“(I) time-based electricity prices in the wholesale electricity market; and

“(II) time-based electricity retail prices or rates that are available to the purchasers.

“(ii) USAGE.—Purchasers shall be provided with the number of electricity units, expressed in kwh, purchased by them.

“(iii) INTERVALS AND PROJECTIONS.—Updates of information on prices and usage shall be offered on not less than a daily basis, shall include hourly price and use information, where available, and shall include a day-ahead projection of such price information to the extent available.

“(iv) SOURCES.—Purchasers and other interested persons shall be provided annually with written information on the sources of the power provided by the utility, to the extent it can be determined, by type of generation, including greenhouse gas emissions associated with each type of generation, for intervals during which such information is available on a cost-effective basis.

“(C) ACCESS.—Purchasers shall be able to access their own information at any time through the Internet and on other means of communication elected by that utility for Smart Grid applications. Other interested persons shall be able to access information not specific to any purchaser through the Internet. Information specific to any purchaser shall be provided solely to that purchaser.”.

(b) COMPLIANCE.—

(1) TIME LIMITATIONS.—Section 112(b) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(b)) is amended by adding the following at the end thereof:

“(6)(A) Not later than 1 year after the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority) and each nonregulated utility shall commence the consideration referred to in section 111, or set a hearing date for consideration, with respect to the standards established by paragraphs (17) through (18) of section 111(d).

“(B) Not later than 2 years after the date of the enactment of this paragraph, each State regulatory authority (with respect to each electric utility for which it has ratemaking authority), and each nonregulated electric utility, shall complete the consideration, and shall make the determination, referred to in section 111 with respect to each standard established by paragraphs (17) through (18) of section 111(d).”.

(2) FAILURE TO COMPLY.—Section 112(c) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(c)) is amended by adding the following at the end:

“In the case of the standards established by paragraphs (16) through (19) of section 111(d), the reference contained in this subsection to the date of enactment of this Act shall be deemed to be a reference to the date of enactment of such paragraphs.”.

(3) PRIOR STATE ACTIONS.—Section 112(d) of the Public Utility Regulatory Policies Act of 1978 (16 U.S.C. 2622(d)) is amended by inserting “and paragraphs (17) through (18)” before “of section 111(d)”.

SEC. 1308. STUDY OF THE EFFECT OF PRIVATE WIRE LAWS ON THE DEVELOPMENT OF COMBINED HEAT AND POWER FACILITIES.

(a) STUDY.—

(1) IN GENERAL.—The Secretary, in consultation with the States and other appropriate entities, shall conduct a study of the laws (including regulations) affecting the siting of privately owned electric distribution wires on and across public rights-of-way.

(2) REQUIREMENTS.—The study under paragraph (1) shall include—

(A) an evaluation of—

(i) the purposes of the laws; and

(ii) the effect the laws have on the development of combined heat and power facilities;

(B) a determination of whether a change in the laws would have any operating, reliability, cost, or other impacts on electric utilities and the customers of the electric utilities; and

(C) an assessment of—

(i) whether privately owned electric distribution wires would result in duplicative facilities; and

(ii) whether duplicative facilities are necessary or desirable.

(b) REPORT.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to Congress a report that describes the results of the study conducted under subsection (a).

SEC. 1309. DOE STUDY OF SECURITY ATTRIBUTES OF SMART GRID SYSTEMS.

(a) DOE STUDY.—The Secretary shall, within 18 months after the date of enactment of this Act, submit a report to Congress that provides a quantitative assessment and determination of the existing and potential impacts of the deployment of Smart Grid systems on improving the security of the Nation's electricity infrastructure and operating capability. The report shall include but not be limited to specific recommendations on each of the following:

(1) How smart grid systems can help in making the Nation's electricity system less vulnerable to disruptions due to intentional acts against the system.

(2) How smart grid systems can help in restoring the integrity of the Nation's electricity system subsequent to disruptions.

(3) How smart grid systems can facilitate nationwide, interoperable emergency communications and control of the Nation's electricity system during times of localized, regional, or nationwide emergency.

(4) What risks must be taken into account that smart grid systems may, if not carefully created and managed, create vulnerability to security threats of any sort, and how such risks may be mitigated.

(b) CONSULTATION.—The Secretary shall consult with other Federal agencies in the development of the report under this section, including but not limited to the Secretary of Homeland Security, the Federal Energy Regulatory Commission, and the Electric Reliability Organization certified by the Commission under section 215(c) of the Federal Power Act (16 U.S.C. 824o) as added by section 1211 of the Energy Policy Act of 2005 (Public Law 109– 58; 119 Stat. 941).

DRIVERS OF “SMART” METER/GRID POLICY, FUNDING, & REGULATION

Dangling U.S. taxpayer-funded federal dollars

191 FEDERAL SMART GRID RELATED PROJECTS

Grant-funded by **The American Recovery and Reinvestment Act of 2009**

Reference: U.S. Dept. of Energy, Office of Electricity Delivery & Energy Reliability, SmartGrid.gov website

Accessed April-May 2019 https://www.smartgrid.gov/recovery_act/project_information.html

Alternate link (to archived copy): https://web.archive.org/web/20190416114224/https://www.smartgrid.gov/recovery_act/project_information.html

# of Awards / project types	# of Awards (by state)			
77 Advanced Metering Infrastructure	1 Alabama	5 Illinois	4 Montana	2 Rhode Island
9 Consumer Behavior Studies	5 Arizona	6 Indiana	2 Nebraska	4 South Carolina
79 Customer Systems	3 Arkansas	3 Iowa	4 Nevada	4 South Dakota
43 Distributed Energy Resource	18 California	3 Kansas	3 New Hampshire	4 Tennessee
69 Distribution System	5 Colorado	2 Kentucky	4 New Jersey	12 Texas
16 Energy Storage	2 Connecticut	5 Louisiana	5 New Mexico	5 Utah
2 Equipment	2 Dist. of Columbia	2 Maine	8 New York	2 Vermont
76 Pricing	11 Florida	3 Maryland	8 North Carolina	1 Virgin Islands
14 Synchrophasor	8 Georgia	10 Massachusetts	2 North Dakota	4 Virginia
22 Transmission System	1 Guam	6 Michigan	8 Ohio	7 Washington
# of Awards / funding program	4 Hawaii	4 Minnesota	1 Oklahoma	2 West Virginia
49 Workforce Training	5 Idaho	4 Mississippi	5 Oregon	7 Wisconsin
99 Smart Grid Investment Grant		5 Missouri	10 Pennsylvania	3 Wyoming
41 Renewable & Distributed Systems Integration				

Abbreviation: AMI = Advanced Metering Infrastructure

<u>Awardee / Project</u>	<u>Headquarters</u>	<u>Award Amount</u>	<u>Project Value</u>	<u>Total</u>
AEP Ohio (gridSMART Demonstration Project)	Ohio	\$75,161,200	\$148,822,000	
Amber Kinetics, Inc. (Flywheel Energy Storage Demonstration)	California	3,694,660	7,457,590	
Ameren Services Co. [Smarter Workforce Training Program]	Missouri	5,679,900	9,200,000	
American Transmission Co. (Enhanced SCADA & PMU Communications Backbone Project)	Wisconsin	11,444,200	22,888,400	
American Transmission Co. (Phasor Measurement Unit Project)	Wisconsin	1,330,820	2,661,650	
Aquion Energy (Sodium-Ion Battery for Grid-level Applications)	Pennsylvania	5,179,000	10,359,800	
ATK Launch Systems (Integrated, Automated DG Technologies Demonstration Phase I Extension)	Utah	2,148,130	2,685,160	
Atlantic City Electric Co. (SGIG Distribution Automation Project)	New Jersey	18,700,000	37,804,700	
Austin Community College [Preparing Occupations for Lineman Education]	Texas	44,959	132,169	
Avista Utilities (Spokane Smart Circuit)	Washington	20,000,000	40,049,000	
Baltimore Gas and Electric Co. (Smart Grid Initiative)	Maryland	200,000,000	451,814,000	
Battelle Memorial Institute (Pacific Northwest Division Smart Grid Demonstration Project)	Washington	88,821,200	177,642,000	
Bismarck State College [National Energy Center Excellence Smart Grid Laboratory (GridLab)]	North Dakota	728,060	808,958	
Black Hills Power (AMI/Meter Data Management System)	South Dakota	9,576,630	19,153,300	
Black Hills/Colorado Electric Utility Co. (AMI/Meter Data Management System)	Colorado	6,142,850	12,285,700	
Boeing Co., The (Boeing Smart Grid Solution)	Missouri	8,561,400	17,172,800	
Burbank Water and Power (Smart Grid Program)	California	20,000,000	50,818,200	
CCET (Technology Solutions for Wind Integration)	Texas	13,516,500	27,075,500	
CenterPoint Energy Houston Electric, LLC (Smart Grid Project)	Texas	200,000,000	639,187,000	
Central Lincoln People's Utility District (Smart Grid Team 2020 Program)	Oregon	9,579,600	19,159,200	
Central Maine Power Co. (CMP AMI Project)	Maine	95,900,000	195,900,000	
Centralia Community College [Northwest Center of Excellence for Clean Energy: SMART Grid Workforce Develop.]	Washington	4,998,860	11,832,000	
Chevron Energy Solutions L.P. (CERTS: Microgrid Demo. w/Large-Scale Energy Storage & Renewables at Santa Rita Jail)	California	6,418,710	12,285,500	
Cheyenne Light, Fuel and Power Co. (AMI/Meter Data Management System)	Wyoming	5,033,440	10,066,900	
City of Anaheim (Model for Small and Midsize Utility Districts around the United States)	California	5,896,020	12,167,000	
City of Auburn, Indiana (SmartGRID Project)	Indiana	2,075,080	4,150,160	
City of Fort Collins (Research Development and Demonstration of Peak Load Reduction On Distribution Feeders Using Distributed Energy Resources for the City of Ft. Collins)	Colorado	6,695,880	11,797,900	
City of Fort Collins Utilities (Front Range Smart Grid Cities)	Colorado	18,101,300	36,202,500	
City of Fulton, Missouri (Smart Grid Project)	Missouri	1,527,640	3,055,280	
City of Glendale, California (AMI Smart Grid Initiative)	California	20,000,000	51,302,400	

(continued)

Awardee / Project	Headquarters	Award Amount	Total Project Value
City of Leesburg, Florida (Leesburg Smart Grid Investment Grant Project)	Florida	9,748,810	19,497,600
City of Naperville, Illinois (City of Naperville Smart Grid Initiative)	Illinois	10,994,100	21,988,200
City of Painesville, Ohio (Vanadium Redox Battery Demonstration Program)	Ohio	4,243,570	9,462,620
City of Quincy, Florida (Smart Grid Project)	Florida	2,471,040	4,942,080
City of Ruston, Louisiana (AMI and Smart Grid Development Program)	Louisiana	4,331,650	8,663,300
City of Tallahassee, Florida (Full-Scale Implementation of Automated Demand Response)	Florida	8,890,550	17,781,100
City of Wadsworth, Ohio (Connected Grid Project)	Ohio	5,298,070	10,596,100
Cleco Power, LLC (AMI Project)	Louisiana	20,000,000	61,786,700
Clemson Univ. Electric Power Research Assn. [Power Industry Essentials Certificate Program]	South Carolina	744,374	827,083
Cobb Electric Membership Corp (Cobb EMC Smart Grid Program)	Georgia	15,805,200	31,610,300
Community College of Rhode Island [Electrical Power Technician Program]	Rhode Island	745,841	910,841
Connecticut Municipal Electric Energy Coop. (CMEEC Smart Grid Project)	Connecticut	9,188,050	18,376,100
Consolidated Edison Co. [Control Center Training for Smart Grid Operation]	New York	236,675	473,350
Consolidated Edison Co. of New York, Inc. (Secure Interoperable Open Smart Grid Demo. Project)	New York	45,388,300	92,388,200
Consolidated Edison Co. of New York, Inc. (Smart Grid Deployment Project)	New York	136,171,000	272,342,000
Consolidated Edison Co. of New York (Interoperability of Demand Response Resources Demonstration in NY)	New York	6,824,390	12,973,200
Council for Adult & Experiential Learning [EPCE Workforce Preparedness for Smart Grid Deployment Project]	Colorado	2,549,470	5,398,960
Critical Intelligence Inc [Intelligence Training for Targeted Cyber Attacks]	Idaho	463,176	648,376
Cuming County Public Power Dist. (Formerly Eastern Nebraska Public Power Dist. Consortium) (Smart Grid Initiative)	Nebraska	1,874,990	4,470,050
Cuyahoga Community College [Increasing Competitiveness of the Electric Power Sector through Responsive Workforce Training Strategies]	Ohio	749,204	841,994
Denton County Electric Coop., Inc. (CoServ Advanced Metering Project)	Texas	17,205,800	40,966,300
Detroit Edison (Advanced Implementation of Energy Storage Technologies)	Michigan	4,995,270	10,877,300
Detroit Edison Co. (SmartCurrents)	Michigan	83,828,900	167,658,000
Duke Energy [Smart Grid Workforce Training]	North Carolina	3,490,040	6,980,080
Duke Energy Business Services (Notrees Wind Storage Demonstration Project)	North Carolina	21,806,200	43,612,500
Duke Energy Business Services (Smart Grid Deployment)	North Carolina	200,000,000	555,706,000
Duke Energy Carolinas, LLC (PMU Deployment in the Carolinas w/Communication System Modernization)	North Carolina	3,826,960	7,653,910
East Penn Manufacturing Co. (Grid-Scale Energy Storage Demonstration Using UltraBattery Technology)	Pennsylvania	2,543,520	5,087,270
El Paso Electric Co. (Distribution Automation Project)	Texas	1,014,410	2,196,190
Energys New Orleans, Inc. (AMI Pilot)	Louisiana	4,996,970	9,993,940
Energys Services, Inc. (Deployment and Integration of Synchro Phasor Technology)	Louisiana	4,611,200	9,222,400
Electric Power Board of Chattanooga (EPB) (Smart Grid Project)	Tennessee	111,568,000	226,708,000
FirstEnergy (Smart Grid Modernization Initiative)	Ohio	57,470,100	114,940,000
Florida Power & Light [Gateway to Power: Dev. of Innovative Strategic Electric Power, Renewable Energy, & Smart Grid Workforce]	Florida	5,000,000	12,539,700
Florida Power & Light Co. (Energy Smart Florida)	Florida	200,000,000	578,963,000
Georgia Institute of Technology [Electrical Power Transmission & Distrib. Connector Selection & Installation Training]	Georgia	647,368	719,298
Georgia System Operations Corp. (Energy Management Infrastructure Project)	Georgia	6,456,500	12,913,000
Glendale Community College [Southern California Utility Initiative]	California	750,000	844,396
Golden Spread Electric Coop., Inc. (Smart Grid Project)	Texas	17,263,100	43,157,800
Guam Power Authority (Smart Grid Project)	Guam	16,603,500	33,207,000
Hawaii Natural Energy Institute (Managing Distribution System Resources for Improved Service Quality & Reliability, Transmission Congestion Relief & Grid Support Functions)	Hawaii	6,994,980	14,383,000
Hawaiian Electric Co. (East Oahu Switching Project)	Hawaii	5,347,600	10,695,200
Hazle Spindle (Formerly: Beacon Power) (20 MW Flywheel Frequency Regulation Plant)	Massachusetts	24,064,000	52,415,000
Honeywell Int'l, Inc. (Full-Scale Implementation of Automated Demand Response)	California	11,384,400	22,768,700
Idaho Power Co. (IPC Smart Grid Program)	Idaho	47,000,000	98,270,400
Illinois Institute of Technology [Smart Grid Education and Workforce Training Center]	Illinois	5,000,000	12,620,200
Illinois Institute of Technology (The Perfect Power Prototype for the Illinois Institute of Technology)	Illinois	7,648,680	13,575,600
Incremental Systems Corp. [Massive Real-time Simulations for Training Smart Grid Operators]	Washington	3,600,000	8,287,500
Indianapolis Power & Light Co. (Smart Energy Project)	Indiana	20,000,000	48,900,000
Iowa Association of Municipal Utilities (Smart Grid Thermostat Project)	Iowa	5,000,000	12,531,200
Iowa Valley Comm. College [Iowa Valley Collaborative Lineworker Training & Awareness Project]	Iowa	634,399	761,279
ISO-New England (Synchrophasor Infrastructure & Data Utilization (SIDU) in the ISO New England Transmission Region)	Massachusetts	7,993,710	18,087,400
Ivy Tech [Crossroads SmartGrid Training Program]	Indiana	4,699,350	9,398,710

(continued)

Awardee / Project	Headquarters	Award Amount	Total Project Value
Jacksonville Electric Authority (Smart Energy Project)	Florida	13,031,500	26,204,900
Kansas City Power and Light (Green Impact Zone SmartGrid Demonstration)	Missouri	23,940,100	49,830,300
Key Training Corp. [Grid Training Modernization Project]	Idaho	750,000	1,722,010
Knoxville Utilities Board (Knoxville Smart Grid Community Project)	Tennessee	3,585,020	7,170,040
Lafayette Consolidated Government (Lafayette Utilities System Smart Grid Project)	Louisiana	11,630,000	23,260,000
Lakeland Electric (Smart Grid Initiative)	Florida	14,850,000	35,078,200
Lehigh University [Keystone Smart Grid Fellowship Program]	Pennsylvania	748,058	879,674
Long Island Power Authority (Long Island Smart Energy Corridor)	New York	12,496,000	25,293,800
Los Angeles Department of Water and Power (Smart Grid Regional Demonstration)	California	60,280,000	120,560,000
M2M Communications (Agricultural Load Control Program in California Central Valley Grid)	California	2,171,710	8,620,910
Madison Gas & Electric Co. (Customer Driven Design of Smart Grid Capabilities)	Wisconsin	5,550,940	11,101,900
Marblehead Municipal Light Department (Integrated AMI System with Real-Time Pricing Pilot Program)	Massachusetts	1,346,180	2,692,350
Memphis Light, Gas & Water Div. (Implementation of Smart Grid Technology in a Network Electric Distrib. System)	Tennessee	5,063,470	13,112,400
Michigan Dept. of Energy, Labor, & Economic Growth [Michigan Electric Power Workforce Training Strategy]	Michigan	4,388,020	21,179,000
Midwest Energy (Relay Replacement for Knoll Substation)	Kansas	712,257	1,424,510
Midwest Independent Transmission System Operator (Midwest ISO Synchrophasor Deployment Project)	Indiana	17,271,700	34,543,500
Minnesota Power (Smart Grid AMI Project)	Minnesota	1,544,000	3,088,010
Mississippi Gulf Coast Community College [Workforce Dev. for the Electric Power Sector]	Mississippi	729,070	1,384,470
Modesto Irrigation District (Smart Grid Deployment and Installation Project)	California	1,493,150	3,495,110
Monongahela Power Co. [West Virginia Super Circuit]	West Virginia	2,819,060	4,258,930
Municipal Electric Authority of Georgia (MEAG Smart Grid Distribution Automation Project)	Georgia	12,267,400	24,534,700
National Electrical Manufacturers Assn. [Vids for Grids: New Media for the New Energy Workforce]	Virginia	247,360	317,800
National Grid USA Service Co. [Northeast Regional Smart Grid Training Program]	Massachusetts	2,185,500	4,370,990
National Rural Electric Coop. Assn. (Enhanced Demand & Distribution Mgmt. Regional Demonstration)	Virginia	33,932,100	67,864,300
Navajo Tribal Utility Authority [Smart Grid Workforce Training]	Arizona	704,485	1,408,970
Navajo Tribal Utility Authority (AMI Project)	Arizona	4,991,750	10,611,800
New Hampshire Electric Coop., Inc. (Communications Systems Infrastructure/Automated Metering Infrastructure)	New Hampshire	15,815,200	35,144,900
New York Independent System Operator, Inc. (New York Capacitor/Phasor Measurement Project)	New York	37,828,800	75,710,700
New York Power Authority (Evaluation of Instrumentation & Dynamic Thermal Ratings for Overhead Lines)	New York	720,000	1,440,000
New York State Electric and Gas (Advanced Compressed Air Energy Storage)	New York	1,394,450	2,942,260
North Carolina State University [Master of Electric Power Systems Engineering]	North Carolina	2,492,270	3,403,460
Northeast Wisconsin Technical College [NEW Generation Power Skills Training Development Initiative]	Wisconsin	750,000	859,232
Northern Michigan University [Electrical Power Technician Workforce Training Program]	Michigan	673,462	785,955
Northern Virginia Electric Coop. (Electric Distribution System Automation Program)	Virginia	5,000,000	10,000,000
NSTAR Electric and Gas Corp. (Automated Meter Reading-Based Dynamic Pricing)	Massachusetts	2,362,000	4,877,990
NSTAR Electric and Gas Corp. (Urban Grid Monitoring and Renewables Integration)	Massachusetts	5,267,590	10,591,900
NSTAR Electric Company (Grid Self-Healing and Efficiency Expansion)	Massachusetts	10,061,900	20,123,800
NV Energy, Inc. (NV Energize)	Nevada	138,878,000	277,756,000
Ohio State University, The [II-SMART: Integrated Curriculum for Smart Power Engineering]	Ohio	2,499,940	3,748,550
Oklahoma Gas & Electric (Positive Energy Smart Grid Integration Program)	Oklahoma	130,000,000	293,201,000
Oncor Electric Delivery Co. [Grid Reliability through Engineering Advancement and Training]	Texas	188,748	431,937
Oncor Electric Delivery Co. (Dynamic Line Rating)	Texas	3,471,680	7,136,550
Oregon Institute of Technology [Strategic Training and Education in Power Systems]	Oregon	2,491,100	2,865,040
Pacific Center for Adv. Technology Training [Edu. & Research in Clean Energy & Island Sustainability]	Hawaii	750,000	833,000
Pacific Gas and Electric Co. (Advanced Underground Compressed Air Energy Storage)	California	25,000,000	355,938,000
Pacific Northwest Generating Coop. (Advanced Meter Infrastructure Implementation Project)	Oregon	19,576,700	39,153,500
Peak Reliability (formerly part of Western Electricity Coordinating Council) [Western Interconnection Synchrophasor Prog.]	Utah	53,890,000	107,780,000
Pecan Street Project Inc (Energy Internet Demonstration)	Texas	10,403,600	24,657,100
PECO (Smart Future Greater Philadelphia)	Pennsylvania	200,000,000	415,119,000
Pennsylvania State University [GridSTAR Center: Smart Grid Training & Application Resource Center]	Pennsylvania	5,000,000	10,000,000
Pepco [Smart Grid Workforce Training Project]	Dist. of Columbia	4,376,050	8,752,100
Pepco Holdings, Inc.-DC (Smart Grid Project)	Dist. of Columbia	44,580,500	92,753,400
PJM Interconnection, LLC (PJM SynchroPhasor Technology Deployment Project)	Pennsylvania	13,698,100	27,840,100
Potomac Electric Power Co. (Maryland) (Smart Grid Project)	Maryland	104,781,000	213,354,000

(continued)

Awardee / Project	Headquarters	Award Amount	Total Project Value
Powder River Energy Corp. (Powder River Innovation in Energy Delivery Project)	Wyoming	2,554,810	5,643,810
PPL Electric Utilities Corp. (PPL Smart Grid Project)	Pennsylvania	19,054,800	38,109,000
Pratt Community College [Smart Grid Curriculum Development]	Kansas	749,375	861,275
Primus Power Corp. (Wind Firming EnergyFarm)	California	14,000,000	46,700,000
Princeton Energy Resources Int'l [Mid-Atlantic Renewable Energy Edu. Prog. for Rural Electric Power Sector]	Maryland	750,000	966,160
Progress Energy Service Co. (Optimized Energy Value Chain)	North Carolina	200,000,000	520,186,000
Public Service Co. of New Mexico (PV Plus Battery for Simultaneous Voltage Smoothing & Peak Shifting)	New Mexico	2,305,930	6,113,430
Public Utility Dist. No. 1 of Snohomish County (Smart Grid Infrastructure Modernization of Electrical Distrib. Sys.)	Washington	15,825,800	31,651,600
Qualcomm Atheros, Inc. (HomePlug Green PHY Integrated Circuit Development)	California	4,554,800	9,109,600
Rappahannock Electric Coop. (Smart Grid Initiative)	Virginia	15,694,100	31,388,200
Raytheon Ktech (Flow Battery Solution for Smart Grid Renewable Energy Applications)	New Mexico	4,764,280	9,528,570
Reliant Energy Retail Services, LLC (Smart Grid Enabled Consumer Participation)	Texas	19,839,700	54,665,100
Sacramento Municipal Utility District (SmartSacramento)	California	127,506,000	307,698,000
Saint Paul College [Energy Process and Smart Grid Technology Program]	Minnesota	750,000	2,208,700
Salt Lake Community College (Utah's Smart Grid Training)	Utah	1,523,000	2,899,200
Salt Lake Community College (Workforce Training in Utah's Electric Power Sector)	Utah	614,240	921,755
Salt River Project Agricultural Improvement & Power Dist. (Adv. Data Acquisition & Mgmt. Program)	Arizona	56,859,400	114,004,000
San Diego Gas & Electric (Borrego Springs Microgrid)	California	7,477,810	12,399,900
San Diego Gas & Electric Co. (SDG&E Grid Communication System)	California	28,115,100	59,427,600
Savannah Technical College [Electric Utility Industry Workforce Development]	Georgia	695,100	948,793
Seeo Inc (Solid State Batteries for Grid-Scale Energy Storage)	California	6,196,060	12,392,100
Sioux Valley Southwestern Electric Coop., Inc. (SVE SmartGrid Program)	South Dakota	3,603,590	7,323,260
South Kentucky Rural Electric Coop. Corp. (AMI Deployment)	Kentucky	9,538,230	19,636,200
South Mississippi Electric Power Assn. (AMI & Associated Smart Grid Investments for Rural Mississippi)	Mississippi	30,564,000	61,318,000
Southern California Edison Co. (Irvine Smart Grid Demonstration)	California	39,621,200	79,242,400
Southern California Edison Co. (Tehachapi Wind Energy Storage Project)	California	24,978,300	49,956,500
Southern Company Services, Inc. (Smart Grid Project)	Georgia	164,527,000	362,595,000
Southwest Transmission Coop., Inc. (Arizona Cooperative Grid Modernization Project)	Arizona	32,244,500	64,489,000
St. Louis Community College [Lineman Employment Training]	Missouri	82,026	164,052
Stanton County Public Power District (AMI Initiative)	Nebraska	397,000	794,000
SuperPower Inc (Fault Current Limiting Superconducting Transformer)	Wisconsin	10,239,400	20,478,800
SustainX Inc. (Isothermal Compressed Air Energy Storage)	New Hampshire	5,396,020	13,046,600
Syracuse University [Multi-Institutional Curriculum Dev. & Delivery to Create the New Smart Grid Workforce]	New York	2,500,000	3,159,080
Talquin Electric Coop. (Smart Grid Project)	Florida	8,100,000	16,200,000
Town of Danvers, MA (Smart Grid Implementation Program)	Massachusetts	8,476,800	16,953,600
Tri-State Electric Membership Corp. (Smart Grid Project)	Georgia	1,138,060	2,428,450
University Enterprises [California Smart Grid Workforce Development Network]	California	749,992	833,347
University of Colorado, Boulder [Strategic Networking Training for Power Systems]	Colorado	2,470,340	2,747,080
University of Hawaii, Manoa [Integrated Educ. & Research in Clean Energy & Island Sustainability – Electric Power Sector Training]	Hawaii	277,778	2,500,000
University of Houston [Smart Grid Energy Training Coalition]	Texas	2,499,900	3,832,900
University of Kentucky [Power and Energy Education Institute]	Kentucky	2,497,960	3,012,990
University of Minnesota [Revitalization of Electric Power Engineering Education]	Minnesota	2,500,000	4,175,420
University of Tennessee, Chattanooga [Workforce Training for the Electric Power Sector]	Tennessee	2,394,800	2,663,860
UNLV [University of Nevada, Las Vegas] (Decreasing the Peak Demand in the Desert Southwest)	Nevada	6,948,280	15,170,900
Vermont Transco, LLC (eEnergy Vermont)	Vermont	68,928,600	137,857,000
Vineyard Power (Vineyard Energy Project)	Massachusetts	567,250	1,134,500
VionX Energy (formerly Premium Power) (Distributed Energy Storage System)	Massachusetts	6,062,550	12,514,700
Washington State University [Training in Clean Energy Smart Grid Engineering]	Washington	2,500,000	4,341,830
Wellsboro Electric Co. (Smart Choices Project)	Pennsylvania	431,625	961,195
Westar Energy (SmartStar Lawrence Project)	Kansas	19,041,600	39,290,700
Whirlpool Corp. (Smart Appliance Project)	Michigan	19,330,000	39,096,300
Wisconsin Power and Light Co. (Smart Grid Distribution Automation)	Wisconsin	3,165,700	6,377,490
Woodruff Electric Coop. (Woodruff Electric AMI Project)	Arkansas	2,357,520	5,190,540
Workforce Development Institute [Development of a Smart Grid Lineman Workforce]	New York	1,588,440	3,116,870

ABSTRACTS FOR RECIPIENTS OF FEDERAL “RECOVERY ACT” GRANT AWARDS

Reference: U.S. Dept. of Energy, Office of Electricity Delivery & Energy Reliability, SmartGrid.gov website

Accessed April-May 2019 https://www.smartgrid.gov/recovery_act/project_information.html

Alternate link (to archived copy): https://web.archive.org/web/20190416114224/https://www.smartgrid.gov/recovery_act/project_information.html

AMI/SMART METER AND SMART GRID PROJECTS

The entries below received “Smart Grid Investment Grant” (SGIG) funds via “The American Recovery and Reinvestment Act of 2009” and were categorized as “Advanced Metering Infrastructure (AMI)” projects. But there are two exception indicated with one or two asterisks:

* One asterisk identifies entries (31) listed under other smart grid projects types – e.g., “Consumer Behavior Studies”, “Customer Systems”, “Distributed Energy Resource”, “Distribution System”, “Energy Storage”, “Equipment”, “Pricing”, “Synchrophasor”, and/or “Transmission System”.

** Two asterisks identifies entries (11) that were on the “Advanced Metering Infrastructure (AMI)” project type list but not included on the list of 99 Smart Grid Investment Grant awards. All are identified as receiving funding through the American Recovery and Reinvestment Act of 2009 (ARRA).

<u>Awardee / Project</u>	<u>Headquarters</u>	<u>Award Amount</u>	<u>Total Project Value</u>
*American Transmission Co. (Enhanced SCADA & PMU Communications Backbone Project)	Wisconsin	\$11,444,200	\$22,888,400
*American Transmission Company LLC's (ATC's) Enhanced Supervisory Control and Data Acquisition (SCADA) and Phasor Measurement Unit (PMU) Communications Backbone project deployed new fiber optic transmission communications infrastructure across the company's Wisconsin footprint. The interconnection of the new fiber segments integrated a total of 149 substations within ATC's data communications and collection networks and expanded ATC's data transfer capability. ATC enhanced the fiber optic network with satellite communication links to boost reliability across key segments of the system." https://www.smartgrid.gov/project/american_transmission_company_enhanced_scada_and_pmu_communications_backbone_project.html			
*American Transmission Co. (Phasor Measurement Unit Project)	Wisconsin	\$1,330,820	\$2,661,650
*American Transmission Company LLC's (ATC's) Phasor Measurement Unit project deployed synchrophasor technologies to expand collection of synchrophasor data from 25 to 70 substations across the company's service area. The project deployed phasor measurement units (PMUs) and data collection software, and digital fault recorders (DFRs) were upgraded to achieve PMU functionality. This project was associated with ATC's Enhanced Supervisory Control and Data Acquisition and PMU Communications Backbone Project, another project funded through the Smart Grid Investment Grant program." https://www.smartgrid.gov/project/american_transmission_company_phasor_measurement_unit_project.html			
**AEP Ohio (gridSMART Demonstration Project)	Ohio	\$75,161,200	\$148,822,000
*AEP Ohio and its partners are building a secure, interoperable, and integrated Smart Grid infrastructure in Ohio that demonstrates the ability to maximize distribution system efficiency and reliability, and consumer use of demand response programs to reduce energy consumption, peak demand costs, and fossil fuel emissions. The demonstration area includes 150 square miles including parts of Columbus, Bexley, Gahanna, New Albany, Whitehall, Reynoldsburg, Westerville, Blacklick, Johnstown, Alexandria, Minerva Park, and Pataskala. This area includes approximately 110,000 meters and 70 distribution circuits. AEP Ohio will implement Smart Grid technology over 58 13kV circuits from 10 distribution stations and 12 34.5kV circuits from six distribution stations. Included in this project is a redistribution management system, integrated volt-VAR control, distribution automation, advanced meter infrastructure, home area networks, community energy storage, sodium sulfur battery storage, and renewable generation sources. These technologies will be combined with two-way consumer communication and information sharing, demand response, dynamic pricing, and consumer products, such as plug-in hybrid vehicles." https://www.smartgrid.gov/project/aep_ohio_gridsmartm_demonstration_project.html			
*Atlantic City Electric Co. (SGIG Distribution Automation Project)	New Jersey	\$18,700,000	\$37,804,700
*The Atlantic City Electric Company's (ACE's) Smart Grid Project deployed distribution automation (DA) assets on 27 circuits, 43,782 direct load control devices, and a wireless communications network. Customers were offered direct load control devices and associated financial incentives for allowing ACE to cycle air conditioners or control thermostats during peak periods. DA equipment deployed included smart substation devices, equipment condition monitors, and automated feeder reclosers/switches and capacitors." https://www.smartgrid.gov/project/atlantic_city_electric_company_sgig_distribution_automation_project.html			
*Avista Utilities (Spokane Smart Circuit)	Washington	\$20,000,000	\$40,049,000
*Avista Utilities' (Avista's) Spokane Smart Circuit project upgraded and automated targeted sections of Avista's distribution system. New switches, capacitors, and sensors were installed in substations and on distribution circuits across the project area. This equipment provides automated regulation of power quality, rapid response to grid disturbances, and improvements to grid reliability. A radio and fiber optic communications system integrates real-time data from grid sensors with the grid operator's distribution management software platform." https://www.smartgrid.gov/project/avista_utilities_spokane_smart_circuit.html			
Baltimore Gas and Electric Co. (Smart Grid Initiative)	Maryland	\$200,000,000	\$451,814,000
*Baltimore Gas and Electric Company's (BGE's) Smart Grid Initiative consisted of a territory-wide deployment of advanced metering infrastructure (AMI), which included the replacement of over 575,000 electric meters. The utility also implemented a customer web portal and home energy management reports, which provide customers with behavioral science-based presentation of usage information to encourage home energy efficiency and conservation. A newly deployed customer care and billing system and meter data management system (MDMS) enable optimal utilization of the new technologies and allow BGE to leverage the AMI data to offer residential customers a peak-time rebate (PTR) program. Finally, the BGE project built upon an existing direct load control program, PeakRewardsSM, that offers customers financial incentives to allow BGE to cycle central air conditioning equipment and electric hot water heaters." https://www.smartgrid.gov/project/baltimore_gas_and_electric_company_smart_grid_initiative.html			
**Battelle Memorial Institute (Pacific Northwest Division Smart Grid Demonstration Project)	Washington	\$88,821,200	\$177,642,000
*Battelle Memorial Institute is collaborating with utilities, universities, and technology partners in a Smart Grid demonstration project across five states and three climatic regions, spanning the electrical system from generation to end-use, and containing all key functionalities of the future Smart Grid. This demonstration will validate new technologies; provide two-way communication between distributed generation, storage and demand assets, and the existing grid infrastructure; quantify Smart Grid costs and benefits; advance interoperability standards and cyber security approaches; and validate new business models. More than 20 types of responsive Smart Grid assets will be tested across six regional and utility operational objectives at 15 unique distribution sites operated by 11 utilities. A base of Smart Grid technology serving more than 60,000 customers will be installed, validated, and operated. All use classes are represented in the demonstration including residential, commercial, industrial, and irrigation customers. The demonstration will develop a single integrated Smart Grid incentive-signaling approach and will test and validate its ability to continuously coordinate the responses of Smart Grid assets to meet a wide range of operational objectives. It will also be among the first to engage distributed control so that wind integration problems are mitigated. Micro-grid islanding will also be evaluated for its potential to enhance reliability for customers and relieve energy demand. Team members are committed to commercializing proven technologies." https://www.smartgrid.gov/project/battelle_memorial_institute_pacific_northwest_division_smart_grid_demonstration_project.html			
Black Hills Power (AMI/Meter Data Management System)	South Dakota	\$9,576,630	\$19,153,300
*Black Hills Power (BHP) is one of three Black Hills Corporation subsidiaries that deployed advanced metering infrastructure (AMI), a meter data management system (MDMS), a customer web portal, and an outage management system (OMS). The other two are Black Hills Corporation/Colorado Electric and Cheyenne Light, Fuel and Power. The BHP project built upon existing smart grid functionality to provide customers with previously unavailable options. The AMI system supports potential future implementation of time-based rate programs that can help customers reduce peak loads and lower their monthly bills. The integration of the AMI system with the new OMS provides improved outage management and restoration services. This combination of advanced technologies and new data analytics capabilities enable more efficient design and operation of the electric distribution system, resulting in improved power quality and better service for BHP customers." https://www.smartgrid.gov/project/black_hills_power_advanced_metering_infrastructuremeter_data_management_system.html			
Black Hills/Colorado Electric Utility Co. (AMI/Meter Data Management System)	Colorado	\$6,142,850	\$12,285,700
*Black Hills Corporation/Colorado Electric (BHC/COE) is one of three Black Hills Corporation subsidiaries that deployed advanced metering infrastructure (AMI), a meter data management system (MDMS), a customer web portal, and an outage management system (OMS). The other two are Black Hills Power and Cheyenne Light, Fuel and Power." https://www.smartgrid.gov/project/black_hillscolorado_electric_utility_company_advanced_metering_infrastructuremeter_data.html			
Burbank Water and Power (Smart Grid Program)	California	\$20,000,000	\$50,818,200
*Burbank Water and Power's (BWP's) Smart Grid Program included smart meters, communications infrastructure, an outage management system (OMS), distribution automation (DA), time-based rate programs, advanced customer service options, energy storage, and electric vehicle (EV) charging stations. The project implemented two-way communications and metering to enable customers to view their energy consumption at their convenience through systems such as web portals. The project also included DA to enhance the reliability and quality of electric delivery and reduce operations and maintenance costs. In addition, the project included controls for distributed energy resources to manage peak electric demand and integrate renewable resources into grid operations." https://www.smartgrid.gov/project/burbank_water_and_power_smart_grid_program.html			

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

CenterPoint Energy Houston Electric, LLC (Smart Grid Project) Texas \$200,000,000 \$639,187,000

"CenterPoint Energy Houston Electric's (CEHE) Smart Grid Project (Project) consists of (1) advanced metering infrastructure (AMI) including the deployment of more than 2.2 million advanced meters across CEHE's entire service territory; (2) communications infrastructure which links the meters and facilitates the transfer of usage data from the meter back to CEHE's data collection engine and ultimately to customers through the Smart Meter Texas (SMT) Web portal; and (3) distribution automation system upgrades covering a portion of the service territory. This area encompasses a portion of the Texas Medical Center (the world's largest medical center), Houston's key business districts, the Port of Houston, petrochemical infrastructure facilities that are vital to the nation's fuel supply, and high reliability impact areas along the northern portion of the service territory. Project objectives include (1) automating meter reading, (2) eliminating truck rolls, (3) enabling residential and commercial customers to effectively manage and control their electricity usage, and (4) improving distribution system efficiency and reliability." https://www.smartgrid.gov/project/centerpoint_energy_houston_electric_llc_smart_grid_project.html

Central Lincoln People's Utility District (Smart Grid Team 2020 Program) Oregon \$9,579,600 \$19,159,200

"As part of their Smart Grid Team 2020 Project, Central Lincoln People's Utility District (Central Lincoln PUD) deployed advanced metering infrastructure (AMI), a meter data management system (MDMS), an AMI-enabled web portal, an outage management system (OMS), and distribution automation (DA) assets. The AMI component of the project included system-wide installation of smart meters and deployment of communications infrastructure to support the AMI data transfer. DA upgrades included deployment of an enhanced supervisory control and data acquisition (SCADA) system; automated distribution feeder controls, regulators, monitors, and fault indicators; and an upgraded fiber optic cable network." https://www.smartgrid.gov/project/central_lincoln_peoples_utility_district_smart_grid_team_2020_program.html

Central Maine Power Co. (CMP AMI Project) Maine \$95,900,000 \$195,900,000

"Central Maine Power Company's (CMP's) Advanced Metering Infrastructure (AMI) project featured territory-wide deployment of more than 622,000 smart meters, covering all of CMP's residential, commercial, and industrial customers. This project created a technology platform for providing customers with electricity usage information and alternative electricity rates from third-party energy providers. Customers view their energy consumption through a web portal and can use that information to help manage electricity bills. CMP assessed the load-shape and consumption impacts of providing customers with different types of information using web portals and proactive bill alert messages." https://www.smartgrid.gov/project/central_maine_power_company_cmp_advanced_metering_infrastructure_project.html

Cheyenne Light, Fuel and Power Co. (AMI/Meter Data Management System) Wyoming \$5,033,440 \$10,066,900

"Cheyenne Light, Fuel and Power Company (CLFP) is one of three Black Hills Corporation subsidiaries deploying advanced metering infrastructure (AMI)—the other two are Black Hills/Colorado Electric (BHCOE) and Black Hills Power, Inc. (South Dakota/Wyoming). CLFP's project includes the deployment of smart meters, communications infrastructure, and a meter data management system (MDMS). The project provides improved outage restoration from the integration of an outage management system with the AMI. Two-way communication allows for off-cycle reads, tamper detection, potential remote connect/disconnect of customer loads and potential future implementation of time-based rate programs." https://www.smartgrid.gov/project/cheyenne_light_fuel_and_power_company_advanced_metering_infrastructure_meter_data_management.html

City of Anaheim, California (Model for Small and Midsize Utility Districts around the U.S.) California \$5,896,020 \$12,167,000

"The City of Anaheim Public Utilities Department's smart grid project involved a limited deployment of advanced metering infrastructure and an expansion of distribution automation capabilities. Distribution automation devices included circuit switches, remote fault indicators, and smart relays. In addition, an enterprise service bus was installed to provide the interface to the meter data management system, customer information system, and the outage management system." https://www.smartgrid.gov/project/city_anaheim_model_small_and_midsize_utility_districts_around_united_states.html

City of Auburn, Indiana (SmartGRID Project) Indiana \$2,075,080 \$4,150,160

"The City of Auburn's SmartGRID project involved deployment of a city-wide advanced metering infrastructure system, a meter data management system, a customer web portal, a distribution management system, and distribution automation equipment on ten circuits: automated switches, capacitors, voltage regulators, fault indicators, smart relays, and equipment sensors." https://www.smartgrid.gov/project/city_auburn_smartgrid_project.html

City of Fort Collins Utilities (Front Range Smart Grid Cities) Colorado \$18,101,300 \$36,202,500

"The City of Fort Collins' Front Range Smart Grid Development project involved the municipal utilities for the cities of Fort Collins and Fountain, Colorado. The project included citywide deployment of advanced metering infrastructure (AMI). AMI allowed for implementation of demand response products and pilot testing of time-based rate programs. With these devices and programs came customer education and web portal access. In addition, the project expanded distribution automation capabilities, including installation of supervisory control and data acquisition (SCADA) system-connected fault indicators and SCADA-connected remote-operated feeder switches." https://www.smartgrid.gov/project/city_fort_collins_utilities_front_range_smart_grid_cities.html

City of Fulton, Missouri (Smart Grid Project) Missouri \$1,527,640 \$3,055,280

"The City of Fulton, Missouri, (Fulton) Smart Grid Project installed smart meters for all residential and commercial electric customers inside city limits and deployed supporting two-way communications infrastructure. Through the project, Fulton has been able to offer advanced electricity services to customers across the city's entire customer base. These services including the launch of a new energy management web portal to engage customers and help them analyze and reduce electricity usage and monthly bills." https://www.smartgrid.gov/project/city_fulton_missouri_smart_grid_project.html

City of Glendale, California (AMI Smart Grid Initiative) California \$20,000,000 \$51,302,400

"The City of Glendale's Advanced Metering Infrastructure Smart Grid Initiative project involved system-wide deployment of advanced meters; meter data management system; use of customer systems and in-home displays; installation of distribution automation equipment systems; enterprise computers systems, including outage management/distribution management system, enterprise service bus, conservation voltage reduction system, meter data analytics system; and management of distributed energy storage. The project implemented secure wireless communications (1) to allow customers to view their electricity consumption through web portals on mobile devices and in-home displays 24 hours a day, and (2) to provide Glendale with the ability to manage, measure, and verify targeted demand and voltage reductions during peak periods. In addition to the AMI deployment, Glendale upgraded selected feeders with distribution automation equipment to improve operational efficiency as well as system reliability." https://www.smartgrid.gov/project/city_glendale_ami_smart_grid_initiative.html

City of Leesburg, Florida (Leesburg Smart Grid Investment Grant Project) Florida \$9,748,810 \$19,497,600

"The City of Leesburg's (Leesburg's) Smart Grid Investment Grant project involved city-wide deployment of advanced metering infrastructure (AMI), installation of new customer systems, and expansion of distribution automation (DA) capabilities. Leesburg enacted a consumer education program to help customers fully exploit the new devices and the energy usage information they provided. The project also automated and increased the efficiency of portions of the electric distribution system through deployment of automated voltage capacitors, intelligent electronic device (IED) controls located in new and existing feeder breakers, and automated field reclosers. A system-wide coordination and sectionalizing study was also performed." https://www.smartgrid.gov/project/city_leesburg_fl_leesburg_smart_grid_investment_grant_project.html

City of Naperville, Illinois (City of Naperville Smart Grid Initiative) Illinois \$10,994,100 \$21,988,200

"The City of Naperville (Naperville) Smart Grid Initiative involved city-wide deployment of an advanced metering infrastructure (AMI) system, a meter data management system (MDMS), and an expansion of distribution automation (DA) capabilities." https://www.smartgrid.gov/project/city_naperville_il_city_naperville_smart_grid_initiative.html

City of Quincy, Florida (Smart Grid Project) Florida \$2,471,040 \$4,942,080

"The City of Quincy, Florida (Quincy) Smart Grid Project involves the installation of new smart meters, supporting communication infrastructure, and advanced service programs for customers across its entire customer base. The project includes: 1) implementing two-way communication and utility applications to enable customers to view their energy consumption at their convenience through the customer's Web portal, 2) deploying monitoring devices, supervisory control and data acquisition (SCADA) and load control systems to Quincy's distribution system, and 3) adding demand response programs to all customer classes including programmable communicating thermostats capable of cycling air-conditioning units with no manual intervention." https://www.smartgrid.gov/project/city_quincy_fl_smart_grid_project.html

City of Ruston, Louisiana (AMI and Smart Grid Development Program) Louisiana \$4,331,650 \$8,663,300

"The City of Ruston's Smart Grid Investment Grant (SGIG) project implemented advanced metering infrastructure (AMI), a meter data management system (MDMS), and a customer prepay program. The City's customer information system (CIS) was also upgraded to enable the use of AMI data for billing. Distribution automation (DA) improvements included installation of capacitor banks, reclosers, and voltage regulators. The DA project also included the total replacement and modernization of two substations that utilize multi-tap smart grid-enabled transformers. These upgrades will allow the City to implement conservation voltage reduction programs. The AMI and DA networks and applications were blanketed with protection via a newly implemented and robust cybersecurity plan. The goal of the project was to move Ruston towards increased automation and full interoperability between its various electric system components through improvements to metering, customer systems, and distribution circuits. The project sought to increase operational efficiency and provide customers with tools that enable more informed energy management. Two-way communications infrastructure and automated distribution circuits significantly enhance Ruston's remote monitoring, diagnostic, and troubleshooting capability, improving overall electric service reliability." https://www.smartgrid.gov/project/city_ruston_louisiana_advanced_metering_infrastructure_and_smart_grid_development_program.html

City of Tallahassee, Florida (Full-Scale Implementation of Automated Demand Response) Florida \$8,890,550 \$17,781,100

"The City of Tallahassee's Automated Demand Response project involved deployment of customer systems, load control programs, and distribution automation equipment. The City deployed an automation distribution system to the majority of its critical circuits. Enhanced distribution automation implementation also included upgrades to the outage management system, supervisory control and data acquisition system, and geographic information system. The project also improved overall system cyber security." https://www.smartgrid.gov/project/city_tallahassee_fl_full_scale_implementation_automated_demand_response.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

City of Wadsworth, Ohio (Connected Grid Project) Ohio \$5,298,070 \$10,596,100

"The City of Wadsworth's (Wadsworth's) Connected Grid project involved system-wide deployment of advanced metering infrastructure (AMI) and targeted installation of in-home displays (IHDs), home area networks (HANs), programmable communicating thermostats (PCTs), and load control devices. Wadsworth also upgraded and expanded its deployment of distribution automation (DA) equipment across 17 circuits, including installation of automated reclosers (feeder switches) and capacitor bank controls." https://www.smartgrid.gov/project/city_wadsworth_connected_grid_project.html

Cleco Power, LLC (AMI Project) Louisiana \$20,000,000 \$61,786,700

"Cleco Power's (Cleco's) advanced metering infrastructure (AMI) project involved the deployment of nearly 285,000 new meters, covering all of Cleco's residential, commercial, and small industrial customers. Meter communications are supported through a secure, **scalable radio frequency network infrastructure** including 75 collectors and 3,134 routers. A newly deployed meter data management system (MDMS) **collects and processes meter data.**" https://www.smartgrid.gov/project/cleco_power_llc_advanced_metering_infrastructure_project.html

Cobb Electric Membership Corp. (Cobb EMC Smart Grid Program) Georgia \$15,805,200 \$31,610,300

"The Cobb Electric Membership Corporation (Cobb EMC) project involved the installation of a fully integrated advanced metering infrastructure (AMI) solution across the service territory. Cobb EMC installed more than 194,195 smart meters, 12 new communication towers, and 15 Tower Gateway Base stations. The new **two-way network infrastructure** and meter data management system (MDMS) allow Cobb EMC to **collect and process interval usage data** for customers and improve outage management and power restoration efforts by integrating the AMI data and functionality into operational and maintenance procedures." https://www.smartgrid.gov/project/cobb_electric_membership_corp_cobb_emc_smart_grid_program.html

Connecticut Municipal Electric Energy Cooperative (Connecticut Municipal Electric Energy Cooperative Smart Grid Project) Connecticut \$9,188,050 \$18,376,100

"The Connecticut Municipal Electric Energy Cooperative (CMEEC) smart grid project (ConnSMART Program) involved participation of four municipal utilities: Groton Utilities, Jewett City Department of Public Utilities, Norwich Public Utilities, and South Norwalk Electric and Water. The project deployed 38,598 advanced meters and made interval usage web presentation available to two thirds of advanced meter customers; the ultimate intention is to provide access to all customers with smart meters. All substations located within Groton Utilities' two service territories have been fully automated. The project also developed a new business intelligence platform to improve understanding and control of wholesale power costs. In addition, small pilot programs introduced and tested voluntary time-based rates and direct load control devices." https://www.smartgrid.gov/project/connecticut_municipal_electric_energy_cooperative_connecticut_municipal_electric_energy.html

***Consolidated Edison Co. of New York, Inc. (Smart Grid Deployment Project) New York \$136,171,000 \$272,342,000**

"The Consolidated Edison Company of New York, Inc. (Con Edison) Smart Grid Investment Grant project involved installation of smart grid systems and components to enhance the electric grid's performance and operating flexibility. The project installed distribution automation systems and equipment on 840 out of 2,297 circuits. Con Edison also deployed upgrades to the supervisory control and data acquisition network and launched an integrated distribution management system to enable enhanced control over network and system performance, reliability, and resilience." https://www.smartgrid.gov/project/consolidated_edison_company_new_york_inc_smart_grid_deployment_project.html

***Cuming County Public Power Dist. (Formerly Eastern Nebraska Public Power District Consortium) (Smart Grid Initiative) Nebraska \$1,874,990 \$4,470,050**

"The Cuming County Public Power District's (CCPPD's) Smart Grid Initiative, with key partner Stanton County Public Power District (SCPPD), implemented a supervisory control and data acquisition (SCADA) system and distribution automation (DA) equipment on all 68 circuits. A wireless communication network has been deployed throughout both PPDs' service territories to support the new SCADA and DA software. These systems provide the foundation for future substation automation (SA) and down line automation of newly installed intelligent reclosers and voltage regulator controls." https://www.smartgrid.gov/project/cuming_county_public_power_district_smart_grid_initiative.html

Denton County Electric Cooperative, Inc. (CoServ Advanced Metering Project) Texas \$17,205,800 \$40,966,300

"The Denton County Electric Cooperative (CoServ) Advanced Metering project installed advanced metering infrastructure throughout CoServ's service territory and explored the application of distribution automation and customer systems." "The project was aimed at improving customers' understanding of their electricity usage, reducing utility operations and maintenance costs, and improving CoServ's awareness of and response to distribution system outages. The project implemented **two-way communications** to (1) provide customers with more timely electricity usage information, (2) identify when and where outages are occurring, and (3) demonstrate the performance of select DA, load management, and customer systems equipment." https://www.smartgrid.gov/project/denton_county_electric_cooperative_inc_coserv_advanced_metering_project.html

Detroit Edison Co. (SmartCurrents) Michigan \$83,828,900 \$167,658,000

"Detroit Edison's (DTE's) SmartCurrentsSM project involved deployment of distribution automation (DA) assets on 55 circuits, an advanced metering infrastructure (AMI) system to support 725,000 meters, a meter data management system (MDMS), a distribution management system (DMS), and various customer systems, including a new web portal, in-home displays, and programmable communicating thermostats. The DA component included implementation of automated switches and monitors for improved volt/VAR control at 11 substations. DTE also piloted a time-based rate program to assess **demand response** potential and customer acceptance. The project improved distribution system reliability, operational efficiency, and power quality. DTE also enabled customers to make more informed decisions about electricity usage to control costs." https://www.smartgrid.gov/project/detroit_edison_company_smartcurrents.html

Duke Energy Business Services (Smart Grid Deployment) North Carolina \$200,000,000 \$555,706,000

"Duke Energy Business Services' (Duke's) Smart Grid Deployment project, a part of the Duke Smart Grid Program, involved implementing advanced metering infrastructure (AMI) and distribution automation systems in five states. The project included large-scale deployments of AMI and distribution automation in **Ohio** and **North Carolina**, and smaller limited deployments of distribution automation in **Indiana**, **Kentucky**, and **South Carolina**. Duke also initiated pilot programs for electricity pricing, including time-of-use rates, peak-time rebates, and critical peak pricing. Customers in these pilot programs used smart thermostats, web portals, and direct load control devices to reduce their electricity consumption and peak demand." https://www.smartgrid.gov/project/duke_energy_business_services_smart_grid_deployment.html

***Duke Energy Carolinas, LLC (PMU Deployment in the Carolinas with Communication System Modernization) North Carolina \$3,826,960 \$7,653,910**

"Duke Energy Carolinas, LLC's (Duke's) project focused on the modernization of the existing serial-based communications infrastructure across the Carolinas. Upgrades to 52 substations included installations of phasor measurement units (PMUs) and centralized phasor data concentrators (PDCs). Existing energy management systems were also upgraded, and visualization software was deployed to provide enhanced situational awareness for grid operators." https://www.smartgrid.gov/project/duke_energy_carolinas_llc_pmu_deployment_carolinas_communication_system_modernization.html

***El Paso Electric Co. (Distribution Automation Project) Texas \$1,014,410 \$2,196,190**

"El Paso Electric's Distribution Automation (DA) Project involved installation of new switches, relays, fault locators, and sensors on eight distribution circuits. The equipment enables automated response to grid disturbances and helps operators more quickly diagnose outages to reduce restoration times for customers on those circuits. A new supervisory control and data acquisition (SCADA) communications network allows for integration of real-time data from the sensor equipment with the distribution management system (DMS) to provide grid operators with significantly enhanced visibility into the state of the system. The project addressed specific reliability needs in two separate service areas: one in Van Horn, Texas, and one in Santa Teresa, New Mexico." https://www.smartgrid.gov/project/el_paso_electric_company_distribution_automation_project.html

Entergy New Orleans, Inc. (AMI Pilot) Louisiana \$4,996,970 \$9,993,940

"Entergy New Orleans, Inc.'s (ENO's) advanced metering infrastructure (AMI) pilot included deployment of smart meters, in-home displays (IHDs), programmable communicating thermostats (PCTs), and a web portal for low-income customers. ENO worked with local community outreach organizations to help solicit and enroll low-income customers in the SmartView pilot program. The project evaluated customer acceptance of the new energy management technologies and the impacts of peak-time rebates, air conditioning load controls, and enabling technologies on low-income customer electricity usage and peak demands." https://www.smartgrid.gov/project/entergy_new_orleans_inc_advanced_metering_infrastructure_pilot.html

***Entergy Services, Inc. (Deployment & Integration of Synchro Phasor Technology) Louisiana \$4,611,200 \$9,222,400**

"Entergy Services, Inc. (Entergy) installed phasor measurement units (PMUs), substation computers, phasor data concentrators (PDCs), and state-of-the-art decision support tools across Arkansas, Louisiana, Mississippi, and non-ERCOT1 portions of East Texas. Additionally, the project focused on training and education throughout the Entergy operations and engineering groups to provide the foundational learning required to implement these advanced tools." https://www.smartgrid.gov/project/entergy_services_inc_deployment_and_integration_synchro_phasor_technology.html

Electric Power Board of Chattanooga (EPB) (Smart Grid Project) Tennessee \$111,568,000 \$226,708,000

"EPB's smart grid project involved deployment of a fiber optic network as the primary means of communication for all smart grid equipment, an advanced metering infrastructure (AMI) system, an energy management web portal, and distribution automation (DA) equipment on over half of EPB's circuits. The project also delivered time-based rate programs to customers to create incentives for peak load and overall bill reductions. The EPB smart grid project has enabled a new kind of partnership with customers aimed at reducing peak loads, overall electricity use, and operations and maintenance costs. The distribution system upgrades increase operational efficiency, reduce line losses, and improve service reliability for customers." https://www.smartgrid.gov/project/epb_smart_grid_project.html

FirstEnergy Services Corp. (Smart Grid Modernization Initiative) Ohio \$57,470,100 \$114,940,000

"FirstEnergy Services Corporation's (FirstEnergy's) Smart Grid Modernization Initiative (SGMI) involved deployment of advanced metering infrastructure (AMI), distribution automation (DA), volt/VAR optimization (VVO), time-based rate programs, direct load control (DLC) devices, and customer systems in parts of **New Jersey**, **Ohio**, and **Pennsylvania**. SGMI's Ohio footprint covered a 400-square-mile area southeast of **Cleveland**. **Smart meters were piloted in Ohio**, and a statistically rigorous study assessed load impacts and customer acceptance of time-based rate programs. DA equipment deployed in **New Jersey**, **Ohio**, and **Pennsylvania** included reclosers, capacitor banks and **grid sensing devices**. VVO equipment, deployed in **Ohio** and **Pennsylvania**, included capacitor banks and load tap changer regulator controls. Advanced load control devices were deployed in **New Jersey** and **Pennsylvania**." https://www.smartgrid.gov/project/firstenergy_smart_grid_modernization_initiative.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value **Total**

Florida Power & Light Co. (Energy Smart Florida) **Florida** **\$200,000,000** **\$578,963,000**

"The Florida Power & Light Company (FPL) project, known as Energy Smart Florida (ESF), deployed advanced smart meters, distribution automation, an electricity pricing pilot, and advanced monitoring equipment for the utility's transmission system. As part of the Smart Grid Investment Grant (SGIG) effort, over three million FPL consumers received smart meters." https://www.smartgrid.gov/project/florida_power_light_company_energy_smart_florida.html

***Georgia System Operations Corp. (Energy Management Infrastructure Project)** **Georgia** **\$6,456,500** **\$12,913,000**

"The Georgia System Operations Corporation (GSOC) Energy Management Infrastructure Initiative (GEMINI) Project involved upgrades to the company's transmission operations, communications and control systems, and new analysis tools for grid operators. The objective of the GEMINI project was to install or upgrade the infrastructure necessary to support smart grid applications deployed by GSOC's 38 rural electric distribution cooperatives to increase the reliability, security, interoperability, and efficiency of their distribution systems. The project implemented advanced analysis software for improved monitoring, planning, and electricity cost analysis. The improvements to wide-area monitoring, visualization, and control system capabilities enable GSOC to rapidly analyze operations across its entire transmission system and automatically communicate information about disruptions or changes in power flow on the grid to its member electric cooperatives." https://www.smartgrid.gov/project/georgia_system_operations_corporation_energy_management_infrastructure_project.html

Golden Spread Electric Cooperative, Inc. (Smart Grid Project) **Texas** **\$17,263,100** **\$43,157,800**

"The Golden Spread Electric Cooperative, Inc. (GSEC) Smart Grid Project deployed advanced metering and distribution automation (DA) to 10 of its 16 member distribution cooperatives (co-ops). The deployment included a total of 88,411 smart meters. The geographic area served by GSEC and the 10 participating co-ops is large and rural in nature. Each member co-op designed and planned a project to address specific challenges and achieve benefits." https://www.smartgrid.gov/project/golden_spread_electric_cooperative_inc_smart_grid_project.html

Guam Power Authority (Smart Grid Project) **Guam** **\$16,603,500** **\$33,207,000**

"The Guam Power Authority's (GPA's) Smart Grid Project involved a territory-wide deployment of advanced metering infrastructure (AMI) and integration of the AMI with an outage management system (OMS). GPA also implemented substation automation equipment including voltage regulators, fault indicators, smart relays, and transformer monitors. An energy management system was deployed to leverage the new automation assets. Customers now have the ability to install devices that assist in managing electricity use and costs, including in-home displays and home area networks." https://www.smartgrid.gov/project/guam_power_authority_smart_grid_project.html

***Hawaiian Electric Co. (East Oahu Switching Project)** **Hawaii** **\$5,347,600** **\$10,695,200**

"Hawaiian Electric Company, Inc.'s (Hawaiian Electric's) East Oahu Switching project involved the installation of automation equipment for a key part of the utility's 46-kilovolt (kV) sub-transmission grid, coupled with a smart controller to automate switching in the event of a transmission outage in the area. The distribution automation entailed upgrades in eastern Oahu near Honolulu, with 8 of the company's 147 substations receiving new supervisory control and data acquisition (SCADA) equipment and communications links. SCADA equipment and a communications link were also installed on a 46 kV sub-transmission line switch that can restore power to 4 distribution substations in the project's service area." https://www.smartgrid.gov/project/hawaiian_electric_company_east_oahu_switching_project.html

***Honeywell International, Inc. (Full-Scale Implementation of Automated Demand Response)** **California** **\$11,384,400** **\$22,768,700**

"Honeywell International, Inc. (Honeywell) worked with Southern California Edison (SCE), Pacific Gas and Electric Company (PG&E), and San Diego Gas and Electric (SDG&E) to demonstrate, on a utility program scale, commercial acceptance of automated demand response (autoDR). Honeywell provided a turnkey utility-style program effort to sign up and implement technology for commercial and industrial customers whose average electric load exceeds 200 kilowatts (kW). Large-scale customer adoption of autoDR enables partner utilities to initiate and automatically execute customized load shedding and other strategies in response to peak load event notifications or price signals. Honeywell provides all aspects of customer delivery for the autoDR program, including customer audits, installation of customer-sited automated load control devices, and recommendations for optimal demand response strategies.

This project coincides with the California utilities' adoption of critical peak pricing (CPP). CPP is a mandatory tariff for new large commercial customers. The project aimed to address obstacles to effective participation in demand response programs and secure load shed during demand response events." https://www.smartgrid.gov/project/honeywell_international_inc_full_scale_implementation_automated_demand_response.html

Idaho Power Co. (IPC Smart Grid Program) **Idaho** **\$47,000,000** **\$98,270,400**

"Idaho Power Company's (IPC's) Smart Grid program included deployment of advanced metering infrastructure (AMI), AMI-enabled customer systems, and advanced synchrophasor monitoring equipment for the transmission system. IPC installed 380,928 smart meters for residential and commercial customers and deployed a web portal to provide customers with access to their AMI data and new energy management tools. Smart meters enable IPC to enhance its offering of existing time-of-use rates to customers and further reduce peak loads on the system. Peak load is also managed through direct load control devices on participating customers' irrigation systems. IPC also installed phasor measurement units (PMUs) to improve the diagnostic capabilities and overall reliability of the transmission system. In addition, the company developed tools to enable the effective integration of renewable resources onto the transmission grid." https://www.smartgrid.gov/project/idaho_power_company_ipc_smart_grid_program.html

Indianapolis Power & Light Co. (Smart Energy Project) **Indiana** **\$20,000,000** **\$48,900,000**

"Indianapolis Power & Light Company's (IPL's) Smart Energy Project involved implementation of distribution automation (DA) assets, an advanced metering infrastructure (AMI) system, a meter data management system (MDMS), and various customer systems. The project deployed 10,275 smart meters and DA equipment including automated switches, relays, reclosers, capacitors, voltage regulators, and condition monitors. Customer systems included enhanced website features, allowing customers to enroll in energy programs and to access personalized energy dashboards. IPL also deployed 162 electric vehicle (EV) charging stations, evaluating usage to better understand EV impacts on the grid." https://www.smartgrid.gov/project/indianapolis_power_light_company_smart_energy_project.html

Iowa Assn. of Municipal Utilities (Smart Grid Thermostat Project) **Iowa** **\$5,000,000** **\$12,531,200**

"The Iowa Association of Municipal Utilities (IAMU) Smart Grid Demand Response Project comprised eight municipal utilities implementing advanced "smart" technologies. The project deployed advanced metering infrastructure (AMI) systems, a customer web portal, direct load control switches, programmable communicating thermostats, and a dedicated paging system to support demand response." https://www.smartgrid.gov/project/iowa_association_municipal_utilities_smart_grid_thermostat_project.html

***ISO-New England
(Synchrophasor Infrastructure and Data Utilization (SIDU) in the ISO New England Transmission Region)** **Massachusetts** **\$7,993,710** **\$18,087,400**

"ISO-New England (ISO-NE) and seven of its transmission owners have installed phasor measurement units (PMUs) and phasor data concentrators (PDCs) across the six states in the New England control area. These devices, in conjunction with a set of new applications, have the potential to improve the reliability of the transmission grid and to prevent the spread of local disturbances to neighboring regions through enhanced monitoring capabilities and increased situational awareness. ISO-NE is exploring a long-term plan for operations where advanced transmission management software will assist in determining real-time grid stability margins. ISO-NE has already used this technology to increase power system engineers' visibility into bulk power system conditions in near-real time and enabled the potential for earlier detection of disturbances that could result in instabilities or cascading outages. Access to more granular grid state information has allowed ISO-NE power system engineers to improve power system models and analytical techniques, enhancing the overall reliability of the ISO-NE system." https://www.smartgrid.gov/project/iso_new_england_synchrophasor_infrastructure_and_data_utilization_sidu_iso_new_england.html

Jacksonville Electric Authority (Smart Energy Project) **Florida** **\$13,031,500** **\$26,204,900**

"JEA's Smart Energy Project involved the deployment of an advanced metering infrastructure (AMI) solution, including a territory-wide two-way communications network. JEA provided 40,000 customers with new smart meters and reconfigured 150,000 existing residential one way communicating smart meters to collect hourly usage data. A new meter data management system (MDMS) was installed to provide a software platform for organization and analysis of customer interval and meter data. The MDMS enables a new prepay service offering, as well as presentation of validated usage data to customers via an AMI-enabled energy management web portal." https://www.smartgrid.gov/project/jacksonville_electric_authority_smart_energy_project.html

****Kansas City Power and Light (Green Impact Zone SmartGrid Demonstration)** **Missouri** **\$23,940,100** **\$49,830,300**

"Kansas City Power & Light and its partners are demonstrating an end-to-end SmartGrid - built around a major SmartSubstation with a local distributed control system based on IEC 61850 protocols and control processors—that includes advanced generation, distribution, and customer technologies. Co-located renewable energy sources, such as solar and other parallel generation, will be placed in the demonstration area and will feed into the energy grid. The demonstration area consists of ten circuits served by one substation across two square miles with 14,000 commercial and residential customers. Part of the demonstration area contains the Green Impact Zone, 150 inner-city blocks that suffers from high levels of unemployment, poverty, and crime. Efforts in the Green Impact Zone will focus on training residents to implement weatherization and energy efficiency programs to reduce utility bills, conserve energy, and create jobs. KCP&L's SmartGrid program will provide area businesses and residents with enhanced reliability and efficiency through real-time information about electricity supply and demand. It will enable customers to manage their electricity use and save money." https://www.smartgrid.gov/project/kansas_city_power_and_light_green_impact_zone_smartgrid_demonstration.html

Knoxville Utilities Board (Knoxville Smart Grid Community Project) **Tennessee** **\$3,585,020** **\$7,170,040**

"The Knoxville Utilities Board (KUB) Knoxville Smart Grid Community project deployed advanced metering infrastructure (AMI) and distribution automation assets. The project achieved better power quality and reactive power management with fault current indicators and volt-ampere reactive (VAR) control at substations." https://www.smartgrid.gov/project/knoxville_utilities_board_knoxville_smart_grid_community_project.html

Lafayette Consolidated Government (Lafayette Utilities System Smart Grid Project) **Louisiana** **\$11,630,000** **\$23,260,000**

"Lafayette Utilities System (LUS) is part of the Lafayette Consolidated Government. This municipally-owned electric utility serves the City of Lafayette and surrounding areas - comprising a population of more than 120,000 people over 47.7 square miles in southwestern Louisiana. The LUS Smart Grid project deployed advanced metering infrastructure (AMI), distribution automation equipment, and advanced monitoring equipment including Phasor Measurement Units (PMU) for the transmission system. The network of new transmission and distribution assets provides improved reliability and reduced outage duration, as well as reduced peak loads and overall energy usage across LUS's service territory. LUS also provided customer access to an enhanced web portal." https://www.smartgrid.gov/project/lafayette_consolidated_government_lafayette_utilities_system_smart_grid_project.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

Lakeland Electric (Smart Grid Initiative) Florida \$14,850,000 \$35,078,200

*Lakeland Electric's (Lakeland's) Smart Grid Initiative involved the deployment of smart meters and communications infrastructure. These technologies supported implementation of time-based rate programs and advanced customer service options, which were also part of the project scope. Lakeland's project included a [consumer behavior study \(CBS\)](https://www.smartgrid.gov/project/lakeland_electric_smart_grid_initiative.html) assessing the impacts of time-based rate programs." https://www.smartgrid.gov/project/lakeland_electric_smart_grid_initiative.html

****Long Island Power Authority (Long Island Smart Energy Corridor) New York \$12,496,000 \$25,293,800**

*The Long Island Power Authority (LIPA) is creating a [Smart Energy Corridor](https://www.smartgrid.gov/project/long_island_power_authority_long_island_smart_energy_corridor.html) located along Long Island, New York business Route 110. The Corridor work includes the 1) installation of smart meters; 2) upgrade and enhancement of monitoring equipment at three Corridor substations; and 3) the installation of additional distribution automation equipment. The project will evaluate the impact on customer behavior and consumption with alternative tariff structures, information and analytical tools provided. The project will demonstrate how distribution automation could reduce the number and duration of unplanned interruptions at reduced cost and with increased reliability. Stony Brook University is developing expert systems software in support of LIPA's automation thrust, with cybersecurity capabilities. Farmingdale State College is supporting the project with public outreach through on-campus demonstration of small-scale wind, solar, plug-in hybrid vehicles (PHEV) and fuel cells. An energy efficient model home is under construction and will be open to public tours to attract visitors to the campus and to promote energy efficiency concepts." https://www.smartgrid.gov/project/long_island_power_authority_long_island_smart_energy_corridor.html

****Los Angeles Department of Water & Power (Smart Grid Regional Demonstration) California \$60,280,000 \$120,560,000**

*Los Angeles Department of Water and Power (LADWP) is collaborating with a consortium of research institutions to develop new Smart Grid technologies, quantify costs and benefits, validate new models, and create prototypes to be adapted nationally. The project consists of four broad initiatives, including:

Demand Response (DR): perform an integrated demonstration of Smart Grid operations and technology as applied to DR. Test bed sites will investigate a full range of user environments: residential, commercial, light industrial, and institutional
Electric Vehicle (EV) Integration into the LADWP Grid: demonstrate aspects such as smart charging and battery aggregation; renewables and EV battery integration; an operational microgrid; demonstration of a ride/car share program at LADWP; and EV test bed sites at USC and UCLA

Customer Behavior: demonstrate a comprehensive portfolio of studies and focused surveys related to the impact of Smart Grid communications systems and processes on customer usage; energy savings from using Smart Grid enabled interfaces; pricing options and programs; and effective messaging and incentives regarding electric vehicles

Next-Generation Cyber Security: demonstrate technologies to show grid resilience against physical and cyber-attack, an operational testing approach for components & installed systems, and redefine the security perimeter to address Smart Grid technologies to the meter in residential and commercial sites." https://www.smartgrid.gov/project/los_angeles_department_water_and_power_smart_grid_regional_demonstration.html

***M2M Communications (Agricultural Load Control Program in California Central Valley Grid) California \$2,171,710 \$8,620,910**

*Beginning in March 2010, M2M Communications (M2M) developed and installed two-way, web-to-wireless load-control devices as part of the Peak Energy Agriculture Rewards (PEAR) program, an agricultural demand response program in California's Central Valley. The program was marketed to agricultural customers within Pacific Gas and Electric (PG&E) and Southern California Edison (SCE) service territories and ran through April 2011. The controllers collected real-time information on water use and soil conditions, enabling farmers to make informed decisions as to whether they could participate in peak demand response vents and earn cash incentives. The load-control devices turned irrigation pumps off and on in response to announcements of critical peak events." https://www.smartgrid.gov/project/m2m_communications_agricultural_load_control_program_california_central_valley_grid.html

****Madison Gas and Electric Co. (Customer Driven Design of Smart Grid Capabilities) Wisconsin \$5,550,940 \$11,101,900**

*The Madison Gas and Electric Company's (MGE's) Customer Driven Design of Smart Grid Capabilities project involved the deployment of advanced metering infrastructure (AMI), a new distribution management system (DMS), and electric vehicle (EV) charging stations. MGE provided AMI meters to all medium-to-large commercial and industrial customers and a representative random sample of residential and small business customers within the utility's service territory. Under a pilot project, MGE also installed 19 public EV charging stations and AMI meters to monitor at-home vehicle charging at 25 locations." https://www.smartgrid.gov/project/madison_gas_and_electric_company_customer_driven_design_smart_grid_capabilities.html

****Marblehead Municipal Light Dept. (Integrated AMI System with Real-Time Pricing Pilot Program) Massachusetts \$1,346,180 \$2,692,350**

*The Marblehead Municipal Light Department (MMLD) project involved town-wide installation of a fully integrated advanced metering infrastructure (AMI) system. MMLD deployed a [two-way communications network](https://www.smartgrid.gov/project/marblehead_municipal_light_department_integrated_ami_system_real_time_pricing_pilot_program.html), over 10,000 AMI meters, an energy management web portal, and demand response equipment. The project also included a pilot program to assess the effectiveness of critical peak pricing (CPP) and automated in-home load management, as well as a study of [consumer behavior](https://www.smartgrid.gov/project/marblehead_municipal_light_department_integrated_ami_system_real_time_pricing_pilot_program.html) in response to the CPP pilot." https://www.smartgrid.gov/project/marblehead_municipal_light_department_integrated_ami_system_real_time_pricing_pilot_program.html

***Memphis Light, Gas and Water Division (Implementation of Smart Grid Technology in a Network Electric Distribution System) Tennessee \$5,063,470 \$13,112,400**

*Memphis Light, Gas, and Water Division (MLGW) implemented smart grid technology in a network electric distribution system. The installed technologies included new intelligent relays and sensor equipment to provide remote switching at the transformer level as well as vital information to aid in the design, operation, and preventive maintenance of the complex electric system. The project deployed a communications system that facilitates the flow of real-time data from intelligent electronic devices and sensors installed in the field with MLGW's control systems." https://www.smartgrid.gov/project/memphis_light_gas_and_water_division_implementation_smart_grid_technology_network_electric.html

***Midwest Energy (Relay Replacement for Knoll Substation) Kansas \$712,257 \$1,424,510**

*Midwest Energy, Inc. (Midwest) deployed new communications equipment and smart relays at its Knoll substation. These relays included synchrophasor measurement technologies that increase grid operators' visibility of bulk power system conditions in near-real time, enable earlier detection of problems that threaten grid stability or cause outages, and facilitate sharing of information with neighboring control areas." https://www.smartgrid.gov/project/midwest_energy_relay_replacement_knoll_substation.html

***Midwest Independent Transmission System Operator (Midwest ISO Synchrophasor Deployment Project) Indiana \$17,271,700 \$34,543,500**

*For this project, the Midwest Independent Transmission System Operator (Midwest ISO) deployed synchrophasor technology throughout its service footprint. The project deployed phasor measurement units (PMUs), phasor data concentrators, and advanced transmission software applications. This technology has increased grid operators visibility into bulk power system conditions in near-real time, enabled earlier detection of conditions that could result in grid instability or outages, and facilitated information sharing with neighboring regional control areas." https://www.smartgrid.gov/project/midwest_independent_transmission_system_operator_midwest_iso_synchrophasor_deployment.html

Minnesota Power (Smart Grid AMI Project) Minnesota \$1,544,000 \$3,088,010

*Minnesota Power's Smart Grid Advanced Metering Infrastructure (AMI) project deployed 8,030 smart meters, two-way communication network infrastructure, and a new web portal to help customers better understand and manage their energy usage. It also implemented 1,571 direct load control (DLC) devices and piloted distribution automation (DA) equipment on one circuit. Minnesota Power leveraged the new AMI system to conduct a rigorous [consumer behavior study](https://www.smartgrid.gov/project/minnesota_power_smart_grid_advanced_metering_infrastructure_project.html) to measure and validate [demand responses](https://www.smartgrid.gov/project/minnesota_power_smart_grid_advanced_metering_infrastructure_project.html) to a time-based rate and education program." https://www.smartgrid.gov/project/minnesota_power_smart_grid_advanced_metering_infrastructure_project.html

Modesto Irrigation District (Smart Grid Deployment and Installation Project) California \$1,493,150 \$3,495,110

*The Modesto Irrigation District's (MID's) Smart Grid Deployment and Installation project involved installation of an advanced metering infrastructure (AMI) system, a meter data management system (MDMS), and a web portal to enable customers to better manage their electricity consumption and costs. The smart meter deployment covered the Mountain House Development, a single isolated area with 3,348 customer sites. The project also included installation of distribution automation (DA) equipment for 45 of 120 circuits and deployment of a distribution management system (DMS)." https://www.smartgrid.gov/project/modesto_irrigation_district_smart_grid_deployment_and_installation_project.html

***Municipal Electric Authority of Georgia (MEAG Smart Grid Distribution Automation Project) Georgia \$12,267,400 \$24,534,700**

*The Municipal Electric Authority of Georgia (MEAG) is a Generation and Transmission entity serving 49 MEAG Distribution "communities". The Smart Grid Investment Grant (SGIG) project upgraded 133 of 171 substations across the territory. The effort involved implementation of substation automation equipment and integrated information technology infrastructure, as well as remotely controlled motor-operated transmission switches within 11 key substations. As a result of this project, over 75% of MEAG's distribution substations have been enhanced by SGIG improvements." https://www.smartgrid.gov/project/municipal_electric_authority_georgia_meag_smart_grid_distribution_automation_project.html

****National Rural Electric Cooperative Assn. (Enhanced Demand & Distribution Mgmt. Regional Demonstration) Virginia \$33,932,100 \$67,864,300**

*National Rural Electric Cooperative Association (NRECA) is demonstrating Smart Grid technologies with [27 cooperatives in 11 states](https://www.smartgrid.gov/project/national_rural_electric_cooperative_association_enhanced_demand_and_distribution_management.html) across multiple utilities, geographies, climates, and applications including low density areas, low consumer income areas, and service areas prone to natural disasters. NRECA will conduct studies in advanced volt/volt-ampere reactive for total demand; generation and transmission-wide (G&T) demand response over advanced metering infrastructure (AMI); critical peak pricing over AMI; water heater and air conditioning load control over AMI; advanced water heater control and thermal storage; consumer Internet energy usage portal pilots; consumer in-home energy display pilots; time-sensitive rates pilots; multiple AMI integration at G&T co-ops; distribution co-op meter data management system applications; and self-healing feeders for improved reliability. Installations will be implemented in four successive tranches, each of four months' duration. A study will be conducted at the conclusion of each tranche to improve the study plan, alter the [type of data collected](https://www.smartgrid.gov/project/national_rural_electric_cooperative_association_enhanced_demand_and_distribution_management.html) if necessary, and to assess the type of equipment installed and its configuration. This information will be shared across the co-op community." https://www.smartgrid.gov/project/national_rural_electric_cooperative_association_enhanced_demand_and_distribution_management.html

Navajo Tribal Utility Authority (AMI Project) Arizona \$4,991,750 \$10,611,800

*The Navajo Tribal Utility Authority's (NTUA's) Advanced Metering Infrastructure (AMI) project deployed 40,001 residential smart meters, network infrastructure, and a meter data management system (MDMS) to monitor, analyze, and process the meter data. Existing (pre-project) back office systems were integrated with the new AMI system to enable improved customer service." https://www.smartgrid.gov/project/navajo_tribal_utility_authority_advanced_metering_infrastructure_project.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value **Total**

New Hampshire Electric Cooperative, Inc. (Communications Syst. Infrastructure/Automated Metering Infrastructure) New Hampshire \$15,815,200 \$35,144,900

"The New Hampshire Electric Cooperative (NHEC) Communications Systems Infrastructure (CSI)/Advanced Metering Infrastructure (AMI) project involved the installation of two-way voice and data communications infrastructure to support improved communications in the field and smart metering systems for over 83,000 members located throughout New Hampshire." The aim was to help NHEC members manage electricity consumption and associated costs by providing them with detailed usage information and the option to participate in time-based rate programs. In addition, NHEC expected the new systems to improve outage detection and response time, provide tamper detection, and reduce operations and maintenance costs." https://www.smartgrid.gov/project/new_hampshire_electric_cooperative_inc_communications_systems_infrastructureautomated.html

***New York Independent System Operator, Inc. (New York Capacitor/Phasor Measurement Project) New York \$37,828,800 \$75,710,700**

"In the New York State Capacitor/Phasor Measurement Project, the New York Independent System Operator, Inc. (NYISO) and its eight transmission owner (TO) subrecipients deployed phasor measurement units (PMUs), phasor data concentrators (PDCs), and smart grid-enabled capacitors. These devices provide the NYISO with enhanced transmission grid monitoring capabilities for the New York Control Area (NYCA). Project participants also deployed new software to assist in determining real-time grid stability margins." https://www.smartgrid.gov/project/new_york_independent_system_operator_inc_new_york_capacitorphasor_measurement_project.html

***Northern Virginia Electric Coop. (Electric Distribution System Automation Program) Virginia \$5,000,000 \$10,000,000**

"Northern Virginia Electric Cooperative's (NOVEC's) Electric Distribution System Automation Program deployed digital devices to expand automation and control systems to cover a majority of NOVEC's substations and distribution circuits. The project also deployed a new communications network to complement the distribution system upgrades, enabling more precise monitoring and management of grid operations. The project's primary purpose was to accelerate the deployment of digital technologies to NOVEC's substation and distribution line automation program to improve system efficiencies, reduce line losses, and enhance situational awareness of critical components on the system. NOVEC also aimed to achieve overall reliability improvements and lower operating costs." https://www.smartgrid.gov/project/northern_virginia_electric_cooperative_electric_distribution_system_automation_program.html

***NSTAR Electric Co. (Grid Self-Healing and Efficiency Expansion) Massachusetts \$10,061,900 \$20,123,800**

"The NSTAR Electric Company (NSTAR) Grid Self-Healing and Efficiency Expansion project involved deployment of two-way communications infrastructure and distribution automation (DA) equipment on 400 circuits. New switches, sectionalizers, reclosers, and condition monitors were installed to enable automatic detection and isolation of power outages, followed by rapid restoration of functional portions of the circuits." https://www.smartgrid.gov/project/nstar_electric_company_grid_self_healing_and_efficiency_expansion.html

****NSTAR Electric and Gas Corp. (Urban Grid Monitoring & Renewables Integration) Massachusetts \$5,267,590 \$10,591,900**

"NSTAR will enhance grid monitoring instrumentation on one of its secondary area network grids in downtown Boston, MA using state-of-the-art sensor equipment to monitor current and conductor temperature. This project will monitor grid-points in about 445 manholes with a layered instrumentation approach. The manholes designated "minor nodes" (about 315) will have sensors that detect high and low current and cable temperature threshold values on individual secondary-main cables within the grid-point. These nodes will have wireless transmitters to broadcast the alarms which will be collected wirelessly. The "major nodes" manholes (about 130) will be instrumented with technology to provide current sensing on a real time basis and be equipped with powerline carrier technology to allow near real-time monitoring at the operations center. Advanced metering infrastructure-capable meters will be deployed at customer locations on the grid where solar photovoltaics (PV) are located and will monitor consumption. In two substations, the remote terminal units will be upgraded to include programmable logic controllers (PLCs) to store network feeder information, continuously analyze data, and take actions when necessary. Information from the sensors, smart meters, and SCADA data will be sent to a repository for analysis." https://www.smartgrid.gov/project/nstar_electric_and_gas_corporation_urban_grid_monitoring_and_renewables_integration.html

NV Energy, Inc. (NV Energize) Nevada \$138,878,000 \$277,756,000

"NV Energy's NV Energize project includes deployment of smart meters and communications infrastructure for all residential and commercial customers and pilot programs for time-based rates, advanced customer service options, and electric vehicle monitoring. The project also includes a new meter data management system (MDMS) that integrates all the smart meter data for use in system management, operations, and billing activities. An advanced demand response management system (DRMS) integrates the utility's portfolio of demand response programs and provides a link to customer service, control operations, system operations, and other functions. An energy management system links the control of the electric transmission, distribution, and generation facilities with the two distinct northern and southern Nevada balancing areas, thereby consolidating transmission and balancing operations statewide across all of NV Energy's generation fleet and grid interface points. The associated operations improvements results in reduced operations costs, fewer truck rolls, and associated reductions in emissions." https://www.smartgrid.gov/project/nv_energy_inc_nv_energize.html

Oklahoma Gas & Electric (Positive Energy Smart Grid Integration Program) Oklahoma \$130,000,000 \$293,201,000

"The Oklahoma Gas and Electric Company (OG&E) project involved system-wide deployment of a fully integrated advanced metering infrastructure (AMI) solution and distribution of in-home devices to selected customers. OG&E also deployed a distribution management system, automated switching, and integrated volt/volt-ampere reactive (var) control. The project included an AMI-enabled study of consumer behavior in response to different forms of dynamic pricing and home area network technologies on an opt-in basis. Additionally, OG&E collaborated with University of Oklahoma faculty and students to deploy energy saving technologies within 46 buildings on the Norman, Oklahoma, campus and took advantage of opportunities for smart grid education and training." https://www.smartgrid.gov/project/oklahoma_gas_electric_positive_energy_smart_grid_integration_program.html

Pacific Northwest Generating Cooperative (AMI Implementation Project) Oregon \$19,576,700 \$39,153,500

"The Pacific Northwest Generating Cooperative (PNGC) project is a collaborative effort between nine distribution cooperatives that implemented advanced metering infrastructure (AMI) solutions. Project teams deployed energy management web portals, meter data management (MDM) systems, two-way communications infrastructure, and 97,013 smart meters." https://www.smartgrid.gov/project/pacific_northwest_generating_cooperative_advanced_meter_infrastructure_implementation.html

****Pecan Street Project Inc (Energy Internet Demonstration) Texas \$10,403,600 \$24,657,100**

"Pecan Street Inc. is developing and implementing an Energy Internet at the 711-acre Robert Mueller mixed-use development in Austin, Texas. Smart Grid systems that form the foundation of this project include home energy monitoring systems, a smart meter research network, energy management gateways, distributed generation, electric vehicles with Level 2 charge systems and smart thermostats. These technologies will be integrated into a smart grid that links 1,000 residences - including 250 newer, green-built homes, 250 homes at least 10 years old that were not green-built and 140 apartments - 25 small commercial properties and three public schools. Over 200 of the residential participants will acquire rooftop solar photovoltaics (PV) and 75 homes will acquire electric vehicles with level-2 charging systems through this research trial. The project will also integrate 50 residences with smart water and smart gas meters. Through the use of Pecan Street's home energy monitoring systems, customers can view their energy use in real-time at the device level, set and track utility bill budgets, have software manage electricity use of individual appliances and sell energy back to the grid; cars connected to the grid can be powered with solar energy and help level loads; and utilities can store power and deliver it when needed. The project team will also develop and test advanced data acquisition and management structures that will transform big energy data into useful information within a secure environment." https://www.smartgrid.gov/project/pecan_street_project_inc_energy_internet_demonstration.html

Peak Reliability (formerly part of Western Electricity Coordinating Council) (Western Interconnection Synchrophasor Program) Utah \$53,890,000 \$107,780,000

"Peak Reliability (Peak) and eight of its member transmission organizations deployed synchrophasor technology throughout the U.S. portion of the Western Interconnection. The project installed or upgraded 584 phasor measurement units (PMUs) (393 using WISP program funding), 77 phasor data concentrators (PDCs) (57 using WISP program funding), a wide-area communications network to support PMU data transfer, information technology infrastructure, and advanced transmission software. Together, these systems increase grid operators' visibility into bulk power system conditions in near-real time, enable earlier detection of problems that threaten grid stability or cause cascading outages, and facilitate sharing of information with neighboring control areas." https://www.smartgrid.gov/project/western_electricity_coordinating_council_western_interconnection_synchrophasor_program.html

PECO (Smart Future Greater Philadelphia) Pennsylvania \$200,000,000 \$415,119,000

"PECO's Smart Future Greater Philadelphia project included installation of a robust, multi-tiered communications infrastructure to support deployment of advanced metering infrastructure (AMI) and distribution automation (DA). Over 784,000 smart meters were deployed, as well as a meter data management system (MDMS), a web portal, a time-of-use (TOU) pricing pilot, and a variety of DA assets, including capacitor and voltage controllers." https://www.smartgrid.gov/project/peco_smart_future_greater_philadelphia.html

Pepco Holdings, Inc.-DC (Smart Grid Project) Dist. of Columbia \$44,580,500 \$92,753,400

"The Pepco-District of Columbia Smart Grid Project in Washington, DC, involved distribution automation (DA), advanced metering infrastructure, and demand response programs that involved load control devices and time-based rates. DA included deployment of smart substation devices, automated distribution circuit reclosers/ switches, and network and substation transformer monitors." https://www.smartgrid.gov/project/pepco_holdings_inc_dc_smart_grid_project.html

***PJM Interconnection, LLC (PJM SynchroPhasor Technology Deployment Project) Pennsylvania \$13,698,100 \$27,840,100**

"PJM Interconnection (PJM) and 12 of its member transmission owners deployed synchrophasor measurement devices in 85 high-voltage substations and implemented a robust data collection network to provide the necessary information technology infrastructure and wide-area monitoring and coverage necessary to support further use of advanced transmission applications. The project successfully deployed phasor measurement units (PMUs), phasor data concentrators, communications systems, and advanced transmission software applications." https://www.smartgrid.gov/project/pjm_interconnection_llc_pjm_synchrophasor_technology_deployment_project.html

Potomac Electric Power Co. (Maryland) (Smart Grid Project) Maryland \$104,781,000 \$213,354,000

"The Pepco - Maryland Smart Grid project includes distribution automation, advanced metering infrastructure (AMI), and a demand response program that involves direct load control and time-based rate programs. The AMI installation is designed to provide customers and Pepco with detailed electricity usage information, which, when combined with demand response programs, can help customers reduce their electricity usage and manage their electricity costs. The distribution automation deployment includes automated distribution circuit switches and transformer monitors that can improve the reliability of the distribution system while decreasing the cost of operations and maintenance." https://www.smartgrid.gov/project/potomac_electric_power_company_maryland_smart_grid_project.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

***Powder River Energy Corp. (Powder River Innovation in Energy Delivery Project) Wyoming \$2,554,810 \$5,643,810**

"Powder River Energy Corporation's (PRECorp's) Innovation in Energy Delivery project involved the installation of communications infrastructure for the distribution grid throughout the entire service territory in northeastern Wyoming and southeastern Montana. Three sets of upgrades included 1) the addition of new microwave terminals and antennas to the backhaul network between operators and the distribution grid, 2) upgrades that allow key substations to establish radio monitoring linkages with grid operators, and 3) supervisory control and data acquisition (SCADA) equipment upgrades that enable improved integration with the new communications infrastructure. By increasing the ability of operators to remotely monitor and respond to grid disturbances, PRECorp has improved electric power reliability and reduced operating costs and emissions from truck rolls for field visits." https://www.smartgrid.gov/project/powder_river_energy_corporation_powder_river_innovation_energy_delivery_project.html

***PPL Electric Utilities Corp. (PPL Smart Grid Project) Pennsylvania \$19,054,800 \$38,109,000**

"PPL Electric Utilities' smart grid project deployed new distribution automation (DA) equipment at 10 substations and on 50 circuits to understand installation, integration, and operational challenges and benefits in anticipation of automating the remainder of the circuits over a 5 year period. The pilot project included installation of new grid communications and control systems and focused on upgrades in South Central Pennsylvania, largely in the vicinity of the City of Harrisburg, and northeastern Pennsylvania, in the Pocono region." https://www.smartgrid.gov/project/ppl_electric_utilities_corporation_ppl_smart_grid_project.html

Progress Energy Service Co. (Optimized Energy Value Chain) North Carolina \$200,000,000 \$520,186,000

"Progress Energy Service Company's (Progress Energy's) Optimized Energy Value Chain project involved deployment of advanced metering and distribution automation systems. The project implemented two-way communications to allow Progress Energy to manage, measure, and verify targeted demand reductions during peak periods. New information and communications systems capture commercial and industrial (C&I) meter data for billing and future implementation of new pricing programs and service offerings. Progress Energy implemented a distribution management system, automated switching, and integrated voltage and reactive power control to reduce line losses and improve service reliability. The project also installed advanced transmission systems, including on-line monitoring equipment on key and "at-risk" transmission substations and transformer banks. In addition, Progress Energy installed 255 electric vehicle charging stations in the Carolinas and Florida service territories." https://www.smartgrid.gov/project/progress_energy_service_company_optimized_energy_value_chain.html

***Public Utility Dist. No. 1 of Snohomish County (Smart Grid Infrastructure Modernization of Electrical Distribution System) Washington \$15,825,800 \$31,651,600**

"The Snohomish County PUD, Washington, (Snohomish PUD) project involves several types of smart grid systems to enhance distribution system performance and reliability. The project includes a digital communication network covering Snohomish PUD's entire distribution system to better respond to changes in electricity demand and grid conditions. The project upgrades 42 of 85 substations with automated control capabilities to prepare the substations for full-scale deployment of distribution automation and integration of distributed energy resources. The project is deploying advanced automation equipment to 10 circuits to reduce line losses and to improve service reliability. These assets are being managed through a distribution management system, which allows Snohomish PUD to better monitor and control grid operations and conditions. These upgrades allow Snohomish PUD to reduce operations and maintenance costs and improve distribution system efficiency, reliability, and power quality." https://www.smartgrid.gov/project/public_utility_district_no_1_snohomish_county_smart_grid_infrastructure_modernization.html

***Qualcomm Atheros, Inc. (HomePlug Green PHY Integrated Circuit Development) California \$4,554,800 \$9,109,600**

"Through this HomePlug Green Physical Layer (PHY) Integrated Circuit Development project ("HomePlug"), Qualcomm Atheros, Inc. (Qualcomm Atheros) developed a compliant power line communications (PLC) solution to support smart grid functionality in a wide range of equipment: advanced metering infrastructure (AMI), smart meters, smart appliances, electric transportation, and home area network peripheral devices." https://www.smartgrid.gov/project/qualcomm_atheros_inc_homeplug_green_phy_integrated_circuit_development.html

Rappahannock Electric Cooperative (Smart Grid Initiative) Virginia \$15,694,100 \$31,388,200

"Rappahannock Electric Cooperative's (REC's) Smart Grid Initiative project deployed smart meters across the service territory and a supporting communications infrastructure, as well as a meter data management system (MDMS) to help manage the increased data available from the smart meters. The project also deployed distribution automation equipment, including supervisory control and data acquisition (SCADA) and automated controls on distribution voltage regulators to improve power quality, reduce line losses, and reduce operations and maintenance costs through monitoring and control of distribution voltage." https://www.smartgrid.gov/project/rappahannock_electric_cooperative_smart_grid_initiative.html

Reliant Energy Retail Services, LLC (Smart Grid Enabled Consumer Participation) Texas \$19,839,700 \$54,665,100

"Reliant Energy Retail Services' (Reliant's) Smart Grid Enabled Consumer Participation project deployed new home energy management equipment, services, and market offerings for retail customers in the Electric Reliability Council of Texas (ERCOT) region. The project deployed in-home energy displays, smart appliances, and new time-based rate programs for customers, along with individualized weekly usage emails that helped customers understand their energy consumption patterns. Thanks to its position as a licensed retail energy provider within ERCOT, Reliant has access to the Smart Meter Texas data exchange, which the company used to obtain interval meter data and communicate usage, trending, and home energy management information to customers." https://www.smartgrid.gov/project/reliant_energy_retail_services_llc_smart_grid_enabled_consumer_participation.html

Sacramento Municipal Utility District (SmartSacramento) California \$127,506,000 \$307,698,000

"Sacramento Municipal Utility District's (SMUD) SmartSacramento Project involves system-wide deployment of an advanced metering system integrated with existing enterprise and information technology systems as well as a partial deployment of advanced distribution grid assets that equip SMUD's distribution circuits with automated control and operation capabilities. The project also involves customer systems that provide usage and cost information to customers that educate and enable more control over their consumption. These systems enable more informed participation by customers and more effective management by SMUD to improve reliability and efficiency of grid operations and better optimize the use of assets. The project includes a field test of plug-in electric vehicle charging stations to assess their technical performance, vehicle charging patterns, and effects on electric distribution system operations." https://www.smartgrid.gov/project/sacramento_municipal_utility_district_smart-sacramento.html

Salt River Project Agricultural Improvement & Power Dist. (Adv. Data Acquisition & Mgmt. Program) Arizona \$56,859,400 \$114,004,000

"Salt River Project's (SRP) Advanced Data Acquisition and Management Program project involves the installation of smart meters, supporting communication infrastructure, and the expansion of advanced electric service options for customers. Virtually all SRP customers are receiving new smart meters, which monitor electric consumption and power quality. A two-way communication system relays customer electricity data to the utility, where upgraded software platforms analyze and present the data. SRP expects the smart meters to reduce meter-reading costs and field service visits, lower vehicle emissions, and enable development of advanced electric services for customers. These services include a Web portal and expansion of existing time-of-use rates that empower the customer and enable a lower peak demand for SRP. Transformer metering is being monitored and evaluated and sub-metering is being used to assess of desert high temperatures on customer air conditioning units and energy consumption." https://www.smartgrid.gov/project/salt_river_project_agricultural_improvement_and_power_district_advanced_data_acquisition_and.html

San Diego Gas & Electric Co. (SDG&E Grid Communication System) California \$28,115,100 \$59,427,600

"San Diego Gas & Electric's (SDG&E's) Grid Communication System (SGCS) project involved the installation of various wireless communication systems. These systems cover targeted intelligent electronic devices on transmission and distribution poles and other electric assets. SDG&E's implemented advanced high-speed wireless communications systems, updated and expanded supervisory control and data acquisition (SCADA) capabilities, and increased the communications fiber footprint, allowing the utility to remotely monitor, communicate with, and control transmission and distribution equipment. The project made critical communications upgrades at substations and supporting telecom sites. SDG&E also expanded and optimized communications infrastructure to support smart grid initiatives while increasing system resilience." https://www.smartgrid.gov/project/san_diego_gas_electric_company_sdge_grid_communication_system.html

Sioux Valley Southwestern Electric Cooperative, Inc. (SVE SmartGrid Program) South Dakota \$3,603,590 \$7,323,260

"The Sioux Valley Energy (SVE) Smart Grid Program deployed an advanced metering infrastructure (AMI) system to provide AMI-based services for SVE customers; installations included 27,641 smart meters and a supporting communications network. The project also implemented a critical peak pricing (CPP) pilot across the service territory to assess the effectiveness of time-based rate programs. The pilot involved deployment of home area networks, in-home displays, and a customer web portal, as well as implementation of a time-of-use electricity rate." https://www.smartgrid.gov/project/sioux_valley_southwestern_electric_cooperative_inc_sve_smartgrid_program.html

South Kentucky Rural Electric Coop. Corp. (AMI Deployment) Kentucky \$9,538,230 \$19,636,200

"The South Kentucky Rural Electric Cooperative Corporation (SKRECC) installed a fully integrated advanced metering infrastructure (AMI) system across the service territory. The deployment included 69,065 smart meters, a meter data management system (MDMS), enhanced communications infrastructure, an energy management web portal, and 2,000 direct load control devices." https://www.smartgrid.gov/project/south_kentucky_rural_electric_cooperative_corporation_advanced_metering_infrastructure.html

South Mississippi Electric Power Assn. (AMI & Associated Smart Grid Investments for Rural Mississippi) Mississippi \$30,564,000 \$61,318,000

"South Mississippi Electric Power Association (SMEPA), a generation and transmission cooperative, deployed an advanced metering infrastructure (AMI) system to benefit not only SMEPA but also five of its member distribution cooperatives: Coast Electric Power Association (Coast), Magnolia Electric Power Association (Magnolia), Pearl River Valley Electric Power Association (Pearl River), Southern Pine Electric Power Association (Southern Pine), and Southwest Mississippi Electric Power Association (Southwest). The AMI system has enabled two-way communication between SMEPA and its member cooperatives' substation meters and between the member cooperatives and their customers' meters. Additionally, three of the member cooperatives (Magnolia, Southwest, and Pearl River) implemented supervisory control and data acquisition systems." https://www.smartgrid.gov/project/south_mississippi_electric_power_association_advanced_metering_infrastructure_and_associated.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

****Southern California Edison Co. (Irvine Smart Grid Demonstration) California \$39,621,200 \$79,242,400**

"Southern California Edison (SCE) is conducting an end-to-end demonstration of numerous Smart Grid technologies necessary to meet state and federal policy goals for the year 2020. The Irvine Smart Grid Demonstration (ISGD) project will investigate the use of phasor measurement technology to enable deep, substation-level situational awareness. The project will also evaluate the latest generation of distribution automation technologies, including looped 12 kV distribution circuit topology utilizing universal remote circuit interrupters. Advanced Volt/VAR Control capabilities will also be used to demonstrate customer energy consumption savings through conservation voltage reduction. The project scope includes customer homes, where the integration, monitoring, control, and efficacy of home area network devices such as energy management systems, smart appliances, energy storage, and photovoltaic systems will be demonstrated. The impact of device-specific demand response (DR), as well as load management capabilities involving energy storage devices and plug-in electric vehicle charging equipment will also be assessed. DR events will use the protocol standards being adopted by Advanced Metering Infrastructure programs such as Edison SmartConnect®. The project results will also demonstrate the next generation of Substation Automation (SA-3), an automation and control design based on the open standard IEC-61850. This is expected to provide measurable engineering, operations, and maintenance benefits through improved safety, security, and reliability." <https://www.smartgrid.gov/project/southern-california-edison-company-irvine-smart-grid-demonstration.html>

***Southern Company Services, Inc. (Smart Grid Project) Georgia \$164,527,000 \$362,595,000**

"Southern Company Services' (Southern Company's) Smart Grid Project involved integrated upgrades of the distribution, transmission, and grid management systems throughout the company's large service territory. Primary efforts included automation of significant sections of the distribution system and selected transmission lines, and installing smart monitors and relays in over 350 substations." <https://www.smartgrid.gov/project/southern-company-services-inc-smart-grid-project.html>

Southwest Transmission Coop., Inc. (Arizona Cooperative Grid Modernization Project) Arizona \$32,244,500 \$64,489,000

"Three electric cooperatives in Arizona joined forces together to upgrade their electric grid infrastructure: Southwest Transmission Cooperative (SWTC), Mohave Electric Cooperative (MEC), and Sulphur Springs Valley Electric Cooperative (SSVEC). SWTC provides transmission service to distribution cooperatives MEC and SSVEC. "All three projects installed or upgraded communications networks and deployed or enhanced supervisory control and data acquisition (SCADA) systems or energy management systems (EMS). SWTC upgraded the communications infrastructure of their transmission network by installing optical ground wire (OPGW) cables between several substations. SSVEC expanded their existing fiber optic communications infrastructure. MEC expanded the power line carrier (PLC)-based meter communications network as well as fiber optic and microwave radio communications between the substations and their call center. "SWTC further enhanced the transmission network with microprocessor-based protective relays and equipment monitors. SSVEC and MEC jointly provided 59,745 smart meters to 59,358 customers and deployed a meter data management system (MDMS) to process and package the data to be leveraged" <https://www.smartgrid.gov/project/southwest-transmission-cooperative-inc-arizona-cooperative-grid-modernization-project.html>

Stanton County Public Power District (AMI Initiative) Nebraska \$397,000 \$794,000

"Stanton County Public Power District's (SCPPD's) Advanced Metering Infrastructure (AMI) Initiative installed 2,293 smart meters to extend AMI technology from a limited pilot deployment to nearly all customers in the service territory. The purpose of the project was to further the deployment of an AMI solution to enable automatic, remote meter reading and improved outage detection and response across the SCPPD service territory." <https://www.smartgrid.gov/project/stanton-county-public-power-district-advanced-metering-infrastructure-initiative.html>

Talquin Electric Cooperative (SmartGrid Program) Florida \$8,100,000 \$16,200,000

"Talquin Electric Cooperative, Inc.'s (TECI's) Smart Grid program involved the installation of advanced metering, communications infrastructure, distribution automation equipment, and customer systems. The project implemented two-way communication that enables customers to view their energy consumption at their convenience through customer systems and web portals." <https://www.smartgrid.gov/project/talquin-electric-cooperative-smartgrid-program.html>

Town of Danvers, MA (Smart Grid Implementation Program) Massachusetts \$8,476,800 \$16,953,600

"The Town of Danvers' Smart Grid Implementation Program included deployment of advanced metering infrastructure (AMI), a meter data management system (MDMS), and distribution automation (DA) technology on all thirty three circuits. Smart meters and AMI for Danvers' residential, commercial, and industrial customers support time-based rate programs and a home energy network pilot." <https://www.smartgrid.gov/project/town-danvers-ma-smart-grid-implementation-program.html>

Tri-State Electric Membership Corp. (Smart Grid Project) Georgia \$1,138,060 \$2,428,450

"Tri-State Electric Membership Corporation's (TSEMC's) smart grid project involves deployment of about 15,000 new smart meters, supporting communications infrastructure, an upgraded meter data management system, and advanced energy management programs for customers. The Advanced Metering Infrastructure (AMI) system and associated customer web portal provide the capability to enhance outage management, enable remote, automated meter reading, and introduce time-based rate programs to customers. The project aimed to reduce theft, improve outage management, lower operations and maintenance costs, and encourage conservation by providing customers with more information and more control over their energy consumption." <https://www.smartgrid.gov/project/tri-state-electric-membership-corporation-smart-grid-project.html>

Vermont Transco, LLC (eEnergy Vermont) Vermont \$68,928,600 \$137,857,000

"The Vermont Transco eEnergy Project is a collaboration of 11 publicly owned and investor-owned utilities in Vermont, as well as the statewide energy efficiency utility, Efficiency Vermont. The project deployed advanced metering infrastructure (AMI), including 305,464 smart meters across the state, and provides two-way communication between customers and the utilities. The project also installed automated voltage regulators and supervisory control and data acquisition (SCADA) equipment at selected substations. The scope of work included assessment of time-of-use and peak-time rebate programs through statistically rigorous consumer behavior studies that involved consumer web portals and in-home displays. Although all project equipment has been deployed, data gathering and analysis from the studies is ongoing." <https://www.smartgrid.gov/project/vermont-transco-llc-eenergy-vermont.html>

***Vineyard Power (Vineyard Energy Project) Massachusetts \$567,250 \$1,134,500**

"The Vineyard Energy Project (VEP) deployed home area networks, direct load control devices, and new smart appliances, as well as integrating these assets into the Vineyard Power Management System (VPMS) and a load balancing system. The project gave 40 participants access to a web portal, allowing them to view their energy usage information online. In addition, the project deployed a custom load control system at a supermarket display case cooler. All these appliances were turned on/off in a demand response demonstration responding to utility price signals." <https://www.smartgrid.gov/project/vineyard-power-vineyard-energy-project.html>

Wellsboro Electric Co. (Smart Choices Project) Pennsylvania \$431,625 \$961,195

"The Wellsboro Electric Company (WECO) Smart Choices Project involved the deployment of advanced metering infrastructure (AMI), a meter data management system (MDMS), and an energy management web portal and mobile device application made available to all customers. The project enables WECO to more efficiently monitor and respond to voltage irregularities, customer outages, and tampering alarms. Serving one of the poorest communities in Pennsylvania, WECO rolled out a large energy education campaign using radio spots and informational booths to teach customers how to use the new technologies to reduce their electricity consumption and lower their bills." <https://www.smartgrid.gov/project/wellsboro-electric-company-smart-choices-project.html>

Westar Energy (SmartStar Lawrence Project) Kansas \$19,041,600 \$39,290,700

"Westar Energy, Inc.'s (Westar's) SmartStar Lawrence project deployed an advanced metering infrastructure (AMI) system, integrated communications infrastructure, a meter data management system (MDMS), a customer web portal, and distribution automation (DA) equipment on 15 circuits in Lawrence, Kansas. A few neighborhoods in Wichita, Kansas, received smart meters and access to the online energy dashboard as well." <https://www.smartgrid.gov/project/westar-energy-smartstar-lawrence-project.html>

***Whirlpool Corp. (Smart Appliance Project) Michigan \$19,330,000 \$39,096,300**

"The Whirlpool Smart Appliance Project developed and marketed smart grid kitchen appliances and management protocols that allow Whirlpool appliances to interact with the U.S. grid system, wifi internet cloud systems, and smart device applications. The scope of work included obtaining inputs from the electric utility industry, consumers, and smart grid communications companies. Whirlpool designed wifi, smart phone, and cloud communications apps, installed and tested them in the appliances, obtained the tooling, and manufactured new Smart 6th Sense Live™ refrigerators, dishwashers, clothes washers, and clothes dryers." <https://www.smartgrid.gov/project/whirlpool-corporation-smart-appliance-project.html>

***Wisconsin Power and Light Co. (Smart Grid Distribution Automation) Wisconsin \$3,165,700 \$6,377,490**

"Wisconsin Power and Light Company's (WPL's) Smart Grid Distribution Automation project installed a new distribution management system (DMS) and added intelligent communications and control modules to 32% of the existing switchable capacitor banks. WPL also deployed a volt/volt-ampere reactive (volt/VAR) control application and two-way data transfer infrastructure to enable real-time optimization of feeder voltages and reduce demand on the system." <https://www.smartgrid.gov/project/wisconsin-power-and-light-company-smart-grid-distribution-automation.html>

Woodruff Electric Cooperative (Woodruff Electric AMI Project) Arkansas \$2,357,520 \$5,190,540

"Woodruff Electric Cooperative's (Woodruff's) advanced metering infrastructure (AMI) project deployed 14,900 two-way communicating smart meters to all of its residential customers and select commercial customers. The communications infrastructure includes a meter communications network using power line carrier (PLC) technology between the meters and substations and an Internet protocol-based fiber backhaul between the substations and the AMI head-end system. Woodruff has enabled remote connect/disconnect and tamper detection functionality through the AMI system. The project's primary purpose was to reduce operating costs to forestall rate increases. By deploying AMI technology to gain operational efficiencies Woodruff could eliminate field trips for routine distribution system service work and start/stop service requests. The utility also expected to gain improvements in system reliability through improved data acquisition and analytics." <https://www.smartgrid.gov/project/woodruff-electric-cooperative-woodruff-electric-advanced-metering-infrastructure-project.html>

49 “WORKFORCE TRAINING” PROJECTS RELATED TO SMART GRID

(filtered from 191 total entries)

Awardee / Project	Headquarters	Award Amount	Total Project Value
Ameren Services Co. (Smarter Workforce Training Program)	Missouri	\$5,679,900	\$9,200,000
<p>*Ameren's Smarter Workforce Training Program addresses three Smart Grid areas: advanced distribution management systems (ADMS), a new geographic information system (GIS), and other smart devices for electric distribution systems. As a part of their training process, Ameren identifies key users who will receive additional training as instructors. This approach builds instructor credibility and enables these instructors to share their knowledge at their work sites. Ameren fosters a culture of continuous feedback to increase the effectiveness of their training and ensure student learning. Key stakeholders validate training materials, processes, and delivery methods during pilot training sessions. Ameren uses the Kirkpatrick model to evaluate training programs by targeting student satisfaction, learning, application of knowledge and skills gained, and track results, such as improved morale, return on investment, increase in sales/production, and increased customer satisfaction." https://www.smartgrid.gov/project/ameren_services_company.html</p>			
Austin Community College (Preparing Occupations for Lineman Education)	Texas	\$44,959	\$132,169
<p>*Austin Community College District's (ACC) Preparing Occupations for Lineman Education (POLE) Program facilitates smart grid implementation by providing a pipeline of workers (utility linemen) to enable smart grid functionality and support economic recovery by connecting job seekers with training and employment opportunities. The POLE Program is developing the curricula for a utility lineman certificate and an associate of applied science degree. Courses teach industry-required topics such as: electrical safety codes, climbing skills, power transmission, switching and metering. The curricula are devised by an advisory committee tasked with conducting a systematic assessment of the skills and competencies required for the occupation. The project is also utilizing professional curriculum developers to incorporate these skills into a five-semester utility lineman associate degree and a one-year utility lineman certificate, and to begin recruiting job seekers for the training programs." https://www.smartgrid.gov/project/austin_community_college.html</p>			
Bismarck State College (National Energy Center Excellence Smart Grid Laboratory (GridLab))	North Dakota	\$728,060	\$808,958
<p>*Bismarck State College's National Energy Center of Excellence (NECE) is building a new laboratory to assist classroom and online workforce training in the areas of Smart Grid technology, distributed generation, demand response, and consumer integration of smart technologies. GridLab is a complete, integrated Smart Grid with a mock smart home, industrial loads, distributed and renewable generation, and advanced communication and control systems. It is interconnected and controlled from a web-based advanced smart control system that allows real-time access to facility energy data. Multiple scenarios will be tested to simulate various Smart Grid implementation and energy rate structures. GridLab can be operated locally or remotely. The GridLab Human Machine Interface is web-based and can be accessed from anywhere an Internet connection is available." https://www.smartgrid.gov/project/bismarck_state_college.html</p>			
Community College of Rhode Island (Electrical Power Technician Program)	Rhode Island	\$745,841	\$910,841
<p>*The Community College of Rhode Island (CCR) and industry partner, National Grid, are developing and implementing a new one-year Energy Utility Technology certificate and a redesigned two-year Engineering Systems Technology Associate degree focused on the electric power industry. The certificate program is based on a program developed and tested at three Massachusetts community colleges. The curriculum is designed to address the economic needs of the region, train incumbent and future workers, and prepare graduates to contribute to the state's workforce at various positions of the energy industry. The certificate includes classroom and laboratory training, and a capstone on-the-job practicum with the industry partner. Students for the program will be recruited from partnering high schools, workforce development clients, and returning military. This effort will include high school visits, campus tours, open house events, and job placement assistance for program graduates." https://www.smartgrid.gov/project/community_college_rhode_island.html</p>			
Consolidated Edison Co. (Control Center Training for Smart Grid Operation)	New York	\$236,675	\$473,350
<p>*Consolidated Edison of New York (ConEd) is developing a training program to prepare their workforce to implement advanced system capabilities, such as rapid restoration and grid reconfiguration, for their electric system and its customers. The curriculum includes three modules: a selection module that enable's ConEd to select appropriate personnel; a training module that develops the training curriculum based on industry needs; and a qualification module consisting of formal written and practical examinations that verify skill levels and qualification. The curriculum includes remote operation of reclosers, switches (SF6), regulators, sophisticated capacitor band controllers, supervisory controls, communication systems (SCADA, Smart Grid), and sectionalizers. It also includes the management of these systems and the successful completion of North American Electric Reliability Corporation Critical Infrastructure Protection training. A novel training feature of ConEd's training is the use of simulators in a distribution control center environment that includes an integrated use of SCADA, risk management, contingency analysis, and contingency response." https://www.smartgrid.gov/project/consolidated_edison_company.html</p>			
Council for Adult & Experiential Learning (EPCE Workforce Preparedness for Smart Grid Deployment Project)	Colorado	\$2,549,470	\$5,398,960
<p>*The project leverages the existing capacity and distinctive features of the Energy Providers Coalition for Education (EPCE) model for developing and delivering industry-endorsed, standardized, continuously updated online technical training and education. The project employs a number of training strategies aligned with employer needs and utilizes existing and new online electric power technology curriculum developed by Bismarck State College's (BSC) National Energy Center for Excellence." https://www.smartgrid.gov/project/council_adult_and_experiential_learning.html</p>			
Critical Intelligence Inc (Intelligence Training for Targeted Cyber Attacks)	Idaho	\$463,176	\$648,376
<p>*Critical Intelligence Incorporated is building a 12-week instructor-lead online course that trains energy sector information security employees to detect and respond to cyber threats. Developed with energy sector partners, including a major U.S. utility, the course will focus on building a threat intelligence program capable of identifying and responding to targeted attacks and sharing information garnered from the intelligence program with industry peers and government partners. This training differs from other programs, because it is energy sector specific, has courses of longer duration, eliminates travel, and applies learned techniques to the current work environment. Each training course instructs between 12 and 30 students and is equivalent to a 3-credit university course. The courses are comprised of about 2.5 hours of lecture and 7 hours of on-the-job application each week. Courses are ungraded; however, the instructor will provide detailed feedback about performance and capability" https://www.smartgrid.gov/project/critical_intelligence_inc.html</p>			
Cuyahoga Community College (Increasing Competitiveness of the Electric Power Sector through Responsive Workforce Training Strategies)	Ohio	\$749,204	\$841,994
<p>*Cuyahoga Community College and partner Cleveland Public Power is developing and designing a curriculum to specifically build Smart Grid knowledge and fill job vacancies. The workforce training program includes classroom, lab, work-site and online instruction. Cuyahoga will use Designing A Curriculum (DACUM), a process that assesses job classifications, to provide in-depth analysis of occupational skills that will lead to new and relevant curriculum design for Smart Grid. DACUM analysis and curriculum will be shared with Owens Community College, Columbus State Community College, Washington State Community College, and Sinclair Community College to aid in their workforce training programs. Cuyahoga will also disseminate a Green Residential Building Training curriculum across Ohio." https://www.smartgrid.gov/project/cuyahoga_community_college.html</p>			
Duke Energy (Smart Grid Workforce Training)	North Carolina	\$3,490,040	\$6,980,080
<p>*This project will develop training materials for electrical operations and field safety skills for both Duke employees and contract workers. In addition, informational packages will be provided to local and state emergency management associations, and to the crews from other utilities who come into Duke Energy's service territory to restore power after a major storm event. Training modules will focus on the installation and operation of automated meters and their associated communication systems." https://www.smartgrid.gov/project/duke_energy.html</p>			
Florida Power & Light (Gateway to Power: Devel. of Innovative Strategic Electric Power, Renewable Energy, & Smart Grid Workforce)	Florida	\$5,000,000	\$12,539,700
<p>*The Gateway to Power Consortium (G2P), led by Florida Power & Light and Smart Energy Grid Associates, consists of four Florida colleges/universities and three out-of-state universities. Their mission is to deliver workforce training for electrical power sector personnel in areas most relevant to the next-generation electric power workforce. These college and university-level cross-disciplinary training programs will lead to both certificates and degrees that include science, engineering, social science, economics, and other topics needed as the traditional power system transforms into a national, clean-energy Smart Grid. Courses include Advanced Metering Infrastructure, Customer Interaction with Smart Grid, and Synergy of Smart Energy Systems. Program graduates will have the knowledge and skills to design, plan, construct, operate, and maintain a modern electricity delivery system, including power system infrastructure and information systems. It is expected that several jobs with salaries ranging from \$57K to \$95K will be created as a result of this initiative." https://www.smartgrid.gov/project/florida_power_light.html</p>			
Georgia Institute of Technology (Electrical Power Transmission & Distribution Connector Selection & Installation Training)	Georgia	\$647,368	\$719,298
<p>*The National Electric Energy Testing, Research, and Applications Center (NEETRAC) of the Georgia Institute of Technology is working with its 35 member companies and other utilities to deliver training for line crews and engineers. NEETRAC scientists and engineers will develop and conduct the training. Line crews will learn how to install new technology connector products through classroom lectures and discussions that use NEETRAC failure investigation studies and hand-on practicum where students will install various accessories. Engineers will learn about connector theory, how to specify connectors, and how to create quality systems that ensure reliability of field installations." https://www.smartgrid.gov/project/georgia_institute_technology.html</p>			
Glendale Community College (Southern California Utility Initiative)	California	\$750,000	\$844,396
<p>*Southern California Utility Initiative (SCUI) is a consortium that includes Glendale Community College, California State University Northridge, and Southern California Public Power Authority, Workforce Investment Boards (WIB), and Smart Grid investment grant funding recipients. The consortium is establishing a coalition that facilitates training and increases the number of qualified graduates by expanding existing training curricula and programs to meet the workforce needs of the Southern California region's electric utility industry. SCUI will provide regional WIB One-Stop Workforce career centers to help workers acquire training and obtain good-paying jobs. Training will focus on three curricular areas leading to an Electric Utility certificate with 24 units of transferable college credit. SCUI will collaborate with academic institutions to ensure that the training material stays current with new technological advancements and industry requirements." https://www.smartgrid.gov/project/glendale_community_college.html</p>			

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

Illinois Institute of Technology (Smart Grid Education & Workforce Training Center) Illinois \$5,000,000 \$12,620,200

"Illinois Institute of Technology (IIT) is using their established power engineering education training center to provide Smart Grid education and training to diverse groups, such as power industry employees, union workers, college and high school students, high school teachers, Veterans, lawyers, entrepreneurs, and information technology professionals. IIT's Smart Grid Education and Workforce Training Center is a collaborative effort of 100 participating members including three domestic and five international universities, 49 community colleges, high schools, six city and government organizations, eight labor unions and councils, one national laboratory, six power transmission and distribution systems operators, five professional training organizations, 17 Smart Grid manufacturers and software companies, and 13 energy system consulting services. Educational options include university-level four-year degree programs, graduate programs, certificate programs, Associate degree programs, short courses and workshops. The Center is equipped with state-of-the-art software, including Areva T&D's Dispatcher Training System and Distribution Management System, and OSIsoft's PI System power grid monitoring and control software. IIT's campus is home to the first-of-its-kind Perfect Power microgrid - Smart Grid deployment that provides perfect reliability, enhanced efficiency, and energy sustainability. IIT's facility is located near one of the nation's largest utilities, Exelon/ComEd, who will use the Center to upgrade employee skills and train new workers. IIT and its partners plan to grow the program through the use of web-enabled courses and a fee-based membership program." https://www.smartgrid.gov/project/illinois_institute_technology.html

Incremental Systems Corp. (Massive Real-time Simulations for Training Smart Grid Operators) Washington \$3,600,000 \$8,287,500

"Incremental Systems Corporation (IncSys) is providing training with real-time simulations so that operators, engineers, and students will learn to prevent major power system events. With the PowerSimulator, IncSys has the ability to run massive drills with hundreds of operators using web-enabled simulations of complete interconnections. These simulations will include Smart Grid technologies such as wind farms, solar farms, demand side management, smart micro-grids, and plug-in hybrid electric vehicles. The program will also simulate cascading outages. PowerSimulator training is conducted by a team of software developers, model development technicians, power system engineers, trainers and operator trainees. The training demonstrates how new Smart Grid systems, people, and processes can all work together to benefit system reliability and reduce restoration times." https://www.smartgrid.gov/project/incremental_systems_corporation.html

Iowa Valley Community College (Iowa Valley Collaborative Lineworker Training & Awareness Project) Iowa \$634,399 \$761,279

"The Iowa Valley Collaborative Lineworker Training and Awareness Project is developing new training strategies, as well as increasing public awareness of the line worker career through recruitment efforts targeted toward new populations. The project streamlines the apprenticeship system to increase flow in the educational pipeline. It also develops a new pre-employment training program that culminates in a diploma, allowing individuals to begin training as a line worker before they are employed by a utility company. The reduction in entry level positions will be addressed by building awareness of the line worker career among displaced workers from other sectors, underemployed individuals seeking better jobs, and recruiting high school students into a pre-employment diploma program." https://www.smartgrid.gov/project/iowa_valley_community_college.html

Ivy Tech (Crossroads SmartGrid Training Program) Indiana \$4,699,350 \$9,398,710

"Ivy Tech and Purdue University is combining education and industry to form the Crossroads SmartGrid Training Program to develop education courses to minimize the education-workforce gap in the electric energy sector. Educational areas include systems management and security, information technology and power systems engineering, and training of line workers, technicians, and mechanics. The curriculum will train operators, technicians, engineers, and research scientists in college degree and certificate programs. Crossroads will use HUB technology developed at Purdue as a training module." https://www.smartgrid.gov/project/ivy_tech.html

Key Training Corp. (Grid Training Modernization Project) Idaho \$750,000 \$1,722,010

"Over three years, Northwest Lineman College (NLC) will work with manufacturers, utilities and construction companies to develop training strategies, programs and delivery methods for the workers who will install, maintain and operate the clean energy Smart Grid. Target groups for this project include line workers, substation technicians, system operators, meter technicians, and plant operators. As the single largest trainer of electrical line workers in the country, Northwest Lineman College has a unique ability to use its existing infrastructure, staffing, curriculum and utility customer base to rapidly develop and disseminate Smart Grid training programs nationwide." https://www.smartgrid.gov/project/key_training_corporation.html

Lehigh University (Keystone Smart Grid Fellowship Program) Pennsylvania \$748,058 \$879,674

"Lehigh University and the University of Pittsburgh are establishing a network of graduate Smart Grid fellows to help build a community of scholars who will be trained to become trainers of a skilled Smart Grid workforce. Lehigh University is modifying its current Master's programs to include a specialized concentration of Smart Grid electives including courses such as Energy Generation, Communications and Networking for Smart Grid, and Energy System Engineering. Lehigh is recruiting professors currently teaching at community colleges and high schools, recent graduates of electrical and computer science engineering programs, and engineers focused on becoming trainers of electric power sector workers. The University of Pittsburgh is advancing its electric power and energy engineering education programs at both the undergraduate and graduate levels. Enhancements to the core curriculum in electric power include new courses on Smart Grid Technologies, Renewable and Alternative Energy Systems, Power Electronics for T&D Applications - FACTS and HVDC, and Electrical Distribution Engineering. In addition, corporate partnerships and government funding are providing opportunities for collaborative research in these same areas." https://www.smartgrid.gov/project/lehigh_university.html

Michigan Dept. of Energy, Labor, & Economic Growth (Michigan Electric Power Workforce Training Strategy) Michigan \$4,388,020 \$21,179,000

"In response to critical skills shortages facing the electric utility industry, the Michigan Department of Energy, Labor, and Economic Growth (DELEG) established the Michigan Utility Workforce Development Consortium, a Michigan Skills Alliance. The Consortium brings together over 25 partners from industry, labor, associations, and academia to develop customizable, collaborative solutions to the industry's workforce needs. Each partner has a key role in making the most efficient use of established training curriculums, facilities, laboratories, and equipment to provide the utility industry with the talent necessary to succeed. High-tech training in the power sector is offered through various community colleges and utility/union training trusts, including pre-apprenticeship, apprenticeship, and incumbent worker training in the areas of line technician, cable splicer, substation operations/maintenance, substation/engineering technician, underground line technician, advanced metering infrastructure technician, and electrical maintenance. Michigan Works! partners, who oversee workforce development services in their local area and are governed by the state's 25 workforce development boards, provide assessment and screening to identify eligible participants and refer them toward the appropriate training pathway." https://www.smartgrid.gov/project/michigan_department_energy_labor_economic_growth.html

Mississippi Gulf Coast Community College (Workforce Devel. for the Electric Power Sector) Mississippi \$729,070 \$1,384,470

"Mississippi Gulf Coast Community College is expanding its instructional capacity by providing training for apprentice linemen, incumbent linemen, and process operations and instrumentation specialists. Students will interact with a broad base of clean energy industry personnel via courses, internships with industry and government laboratories, and outreach with communities. Courses and training will be conducted in traditional classroom, hybrid, and online formats with evening and weekend training scheduled for incumbent workers. Students will earn industry-recognized credentials in Smart Grid technology." https://www.smartgrid.gov/project/mississippi_gulf_coast_community_college.html

National Electrical Manufacturers Assn. (Vids for Grids: New Media for the New Energy Workforce) Virginia \$247,360 \$317,800

"National Electrical Manufacturers Association (NEMA), in partnership with George Mason University and Northern Virginia Community College, is producing videos that target senior high school or first-year college students. Each video covers a fundamental electromagnetic concept integral to the deployment of Smart Grid or a particular piece of grid equipment. The videos incorporate a short interview with a subject matter expert, equipment demonstration, and may include scenes from equipment assembly, installation, and use. The subject matter experts will also serve as virtual mentors. The videos will be integrated into basic electrical engineering curriculum and posted electronically for use by colleges, training centers, and the general public. Filming will be done on-site at the facilities of leading power equipment manufacturers, such as A123, Hazle Spindle, Cooper Power Systems, Eaton Corporation, Itron, Leviton, Nexans/The Valley Group, Rockwell Automation, Southwire, and Thomas & Betts. Podcasts will be produced that incorporate openended questions with student-selected experts on their experiences in the power sector." https://www.smartgrid.gov/project/national_electrical_manufacturers_association.html

National Grid USA Service Co. (Northeast Regional Smart Grid Training Program) Massachusetts \$2,185,500 \$4,370,990

"National Grid USA will provide Smart Grid workforce training to nearly 5,000 employees representing 15 different job categories impacted by Smart Grid technologies. Personnel associated with the Worcester Massachusetts Smart Grid Pilot Project will be trained including: approximately 500 employees in the Worcester region, 800 in the New England North region, and 1,300 employees in the New England South region. National Grid will design and develop all training materials. Pending approval, National Grid will train 2,300 additional employees in upstate New York service territory in the Syracuse and Albany Smart Grid projects." https://www.smartgrid.gov/project/national_grid_usa_service_company.html

Navajo Tribal Utility Authority (Smart Grid Workforce Training) Arizona \$704,485 \$1,408,970

"Navajo Tribal Utility Authority (NTUA) has been diversifying its power generation sources and modernizing its distribution services through the upgrade of remote switching and monitoring operations, feeder and substation automation for online monitoring and equipment interoperability, and the deployment of information technology solutions. In support of these improvements, NTUA is developing a program to provide trainees with the skills and abilities to continue these upgrades and contribute to the development of a nationwide Smart Grid. As an educational partner, Navajo Technical College is marketing the training program and identifying individuals within its students who have an interest or aptitude to work within the power industry. In addition to the Navajo Technical College, training is also provided at NTUA's district offices and will be web-enabled for distance learning. Courses provide the fundamentals of electric power distribution systems, business management skills, and specialized training in advanced areas. NTUA's training program will maximize employment opportunities for citizens of the Navajo Nation, reduce unemployment, and aid in the successful implementation of the Smart Grid." https://www.smartgrid.gov/project/navajo_tribal_utility_authority.html

North Carolina State University (Master of Electric Power Systems Engineering) North Carolina \$2,492,270 \$3,403,460

"North Carolina State University (NC State) is developing an intensive professional Master's degree program for power system engineers and managers to develop and deploy next generation Smart Grid systems. The Master of Electric Power Systems Engineering (MEPSE) covers both core power engineering topics, Smart Grid applications, and cross-disciplinary courses, including risk management, communication skills, project management, engineering economics, and technical writing. MEPSE targets new graduates in the utility industry, displaced workers seeking a new career, and current utility industry employees seeking to enhance their skills. It is an intensive systems-focused, hands-on program designed for training a population with diverse backgrounds in approximately 10 months. NC State plans to grow the program through an innovative, real-time distance learning component to accommodate a broader audience." https://www.smartgrid.gov/project/north_carolina_state_university.html

Northeast Wisconsin Technical College (NEW Generation Power Skills Training Development Initiative) Wisconsin \$750,000 \$859,232

"The NEW Generation Power Skills Development Initiative develops and enhances regional training programs for the emerging Smart Grid workforce by incorporating industry identified "core skills," and utilizing multiple delivery methods to accommodate the diverse needs of the learners (e.g., incumbent workers, unemployed, traditional students). The initiative maximizes the resources and expertise of the four partner colleges to integrate a standardized set of core competencies into Smart Grid related programming either through new courses and/or modification to existing curricula." https://www.smartgrid.gov/project/northeast_wisconsin_technical_college.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

Northern Michigan University (Electrical Power Technician Workforce Training Program) Michigan \$673,462 \$785,955

"Northern Michigan University (NMU) is establishing a training center to provide training that includes both the knowledge and skills required for an entry level technician in the electrical power industry. NMU's mock electrical substation will provide students with a hand-on laboratory, with actual equipment, enabling them to practice skills that are needed in the workplace. Lab size will be limited to an 8-12 student maximum. A program coordinator will stay abreast of current technology to make sure that the program includes all relevant technology in use and under development. The curriculum was developed by Northern Michigan University in consultation with industry partners in the LSCP consortium." https://www.smartgrid.gov/project/northern_michigan_university.html

Oncor Electric Delivery Co. (Grid Reliability through Engineering Advancement and Training) Texas \$188,748 \$431,937

"Oncor Electric Delivery Company is partnering with Siemens Power Technologies International to provide training in transmission planning and system protection due to increased urban energy loads and to meet the need for specialized wind power studies. Students will focus on developing practical problem-solving abilities and building a greater working knowledge of transmission power systems. The training will enable engineers to plan, design, and protect a Smart Grid. Courses include Power Electronics in Transmission Systems (HVDC, FACTS) and Wind Power, Analytical Methods for Voltage Control and Reactive Power Planning, Power System Stability and Stabilizer Tuning, and courses based on Siemens' PSS® software, such as Graphical Model Builder and Advanced Power Flow. Training will be provided at Oncor for their employees and at Siemens for the public." https://www.smartgrid.gov/project/oncor_electric_delivery_company.html

Oregon Institute of Technology (Strategic Training and Education in Power Systems) Oregon \$2,491,100 \$2,865,040

"Oregon Institute of Technology's (OIT) Strategic Training and Education in Power Systems project cross-trains power engineering graduates in electrical, mechanical, and energy engineering; building on a strong foundation in mathematics and science. OIT graduates also have a firm understanding of renewable energy source integration, energy policy, and economics. OIT will increase the number of energy and systems engineers in the electric power industry by augmenting curriculum and faculty resources, expanding laboratory capabilities, and increasing industry collaboration. New faculty will be hired and laboratory facilities expanded to support anticipated enrollment." https://www.smartgrid.gov/project/oregon_institute_technology.html

Pacific Center for Advanced Technology Training (Education & Research in Clean Energy & Island Sustainability) Hawaii \$750,000 \$833,000

"Pacific Center for Advanced Technology Training, in cooperation with Leeward Community College, Siemens Power and Transmission, and Hawaiian Electric Company, are developing a curriculum for technicians that deploys and maintains electric power transmission and distribution through the application of Smart Grid technologies, while providing participants with a working knowledge of generation, transmission, and distribution topics. This project provides an educational pathway for traditional, non-traditional, incumbent, and displaced workers to develop the knowledge and skills required for deploying and maintaining a Smart Grid distribution system while acquiring an associate degree or two-year certificate. This training program includes the development of practical problem-solving skills for lineworkers, technicians, system planners, reliability coordinators, control room operators, and control system administrators." https://www.smartgrid.gov/project/pacific_center_advanced_technology_training.html

Pennsylvania State University (GridSTAR Center: Smart Grid Training & Application Resource Center) Pennsylvania \$5,000,000 \$10,000,000

"The GridSTAR Center will provide education and training of a workforce needed to design, construct, and operate a reliable, secure, economical, energy efficient, and safe Smart Grid. Operations will begin at University Park and will include two satellite locations: the Philadelphia Navy Yard and the Pittsburgh Green Innovators facility at the former Pittsburgh Public Vocational-Technical High School. The GridSTAR Center is coordinating with a diverse team of utility, energy management, manufacturing, and training partners to provide systems-based continuing education and train-the-trainer programs in advanced power systems design, energy economics, cyber security, distributed energy generation, and building-vehicle-grid systems." https://www.smartgrid.gov/project/pennsylvania_state_university.html

Pepco (Smart Grid Workforce Training Project) D.C. \$4,376,050 \$8,752,100

"This project trains the next generation of electric utility technicians in four primary areas: 1) Customer engagement with adoption of energy efficiency, dynamic pricing, direct load control and distributed generation programs, 2) Deployment and operation of smart metering, load control, distribution automation and grid optimization infrastructure, 3) The implementation, operation and control of a two-way communications infrastructure, 4) Compliance with standards to ensure interoperability and cyber security." <https://www.smartgrid.gov/project/pepco.html>

Pratt Community College (Smart Grid Curriculum Development) Kansas \$749,375 \$861,275

"Pratt Community college is forming the Kansas Community College Energy Consortium to develop training that meets the needs of the electric power industry. This project is incorporating Smart Grid training into electric power lineman, power plant, and information network certificates and AAS curricula statewide. Opportunities for power career exploration and training is provided for both new and incumbent workers. Web-based training will be utilized to enhance the training experience and to reach a larger number of participants." https://www.smartgrid.gov/project/pratt_community_college.html

Princeton Energy Resources Int'l (Mid-Atlantic Renewable Energy Education Program for Rural Electric Power Sector) Maryland \$750,000 \$966,160

"Princeton Energy Resources International (PERI) is teaming with a local community college and two rural electric cooperatives to provide training and workforce development to accelerate the use of sustainable energy resources in the Mid-Atlantic region. Working with Worcester and Wicomico Community College, PERI is developing and implementing an Associate degree program in Electrical Engineering, an Associate of Applied Sciences degree in Environmental Engineering Technology, and a certificate program in alternative energy. A distance learning component will be added to the program to provide further outreach to electric cooperatives. The PERI team is also assisting Salisbury University in the development of a Rural Energy Business Administration Certificate program that focuses on business issues related to sustainable and renewable energy. To further enrich the learning experience, Choptank Electric Cooperative is implementing hands-on training at their wind and solar data collection laboratory. Mentorships and scholarships are supported by the Maryland Energy Administration and the Old Dominion Electric Cooperative." https://www.smartgrid.gov/project/princeton_energy_resources_international.html

Saint Paul College (Energy Process and Smart Grid Technology Program) Minnesota \$750,000 \$2,208,700

"Saint Paul College (SPC) is developing knowledge and skills for students in the energy process, the power industry, and in Smart Grid technology. The program is designed to meet a variety of student needs, including a two-semester certificate for entry level skills, a four-semester diploma, and a six-semester Associate degree attainable by both certificate and diploma graduates. New equipment will be purchased following the successful recruitment of two new program faculty. SPC is directly recruiting and marketing the training program, implementing a continuous evaluation process, and is monitoring enrollment to ensure program support." https://www.smartgrid.gov/project/saint_paul_college.html

Salt Lake Community College (Utah's Smart Grid Training) Utah \$1,523,000 \$2,899,200

"Salt Lake Community College (SLCC) is providing training on the introduction and integration of Smart Grid. Occupational training and placement activities focus on electric power line installer/repairer, control valve installer/repairer, power plant operator, utility energy efficiency technician, automation technician, efficiency measurement technician, and energy auditor jobs. SLCC is targeting displaced workers, as well as current and future electric power sector personnel. Workforce training will aid the state of Utah in meeting its energy and Smart Grid goals. Through the use of distance learning, SLCC will increase its geographic reach to expand the capacity of a trained Smart Grid workforce." https://www.smartgrid.gov/project/salt_lake_community_college_smartgrid.html

Salt Lake Community College (Workforce Training in Utah's Electric Power Sector) Utah \$614,240 \$921,755

"Salt Lake Community College (SLCC) and its partners are providing training for electric power line installers and repairers, control valve installers and repairers, and power plant operators, fulfilling a critical need for workers trained in line worker technology, including metering and substations. In addition to Utah, entry-level training is being offered in Wyoming, Arizona, Nevada, and Idaho. To enhance workforce skills, SLCC is also providing training on the introduction and integration of Smart Grid. Using pilot cohorts, SLCC will evaluate training delivery models including use of the Internet." https://www.smartgrid.gov/project/salt_lake_community_college.html

Savannah Technical College (Electric Utility Industry Workforce Development) Georgia \$695,100 \$948,793

"Savannah Technical College, in collaboration with regional electric power companies and Savannah State University (SSU), is developing and delivering courses in electrical utility technology to address the shortage of qualified utility technicians and mid-level technical personnel in Southeast Georgia and the South Carolina Low country. The program will include an Advanced Technician certificate track and an Associate degree track. Incorporation of emerging trends differentiates this program through instruction on Smart Grid, mini-grids, renewable energy, and utility tie-in of distributed sources. Expertise will be enlisted from industry, academia, and vocational/ technical education. Training will be integrated into existing trade and apprenticeship programs. The curriculum increases the number of well-trained, technically-current and certified electric utility technical personnel; enables electric utilities to expand and embrace emerging technology; contributes to the increase in per capita income in the service area by upgrading skills; and equips program graduates with technical knowledge that enables them to succeed in baccalaureate degree programs in electric power-related disciplines." https://www.smartgrid.gov/project/savannah_technical_college.html

St. Louis Community College (Lineman Employment Training) Missouri \$82,026 \$164,052

"St. Louis Community College (STLCC), and partner AmerenUE, will recruit and train linemen in the Greater St. Louis region for high-tech jobs in the electric power industry. AmerenUE will train 90 displaced workers in a five-week, 200-hour pre-employment training program. AmerenUE will select 60 of these individuals to participate in its own internal screening and selection process and will place 45 in the lineman apprenticeship program. Training will include pole climbing, technical reading, math, and physical conditioning. Past experience has shown that candidates have found pole climbing particularly difficult. STLCC and AmerenUE will help mitigate that difficulty by installing a practice pole yard. STLCC will use retired linemen as trainers to give students real-world experience." https://www.smartgrid.gov/project/st_louis_community_college.html

Syracuse University (Multi-Institutional Curric. Dev. & Delivery to Create the New Smart Grid Workforce) New York \$2,500,000 \$3,159,080

"Syracuse University and collaborating partners are creating an innovative curriculum to deliver regional and distance offerings of associate, undergraduate, and graduate degrees in Smart Grid technologies. This multi-institutional, multi-disciplinary effort includes participation from academic and industry partners, and technology manufacturers. The curriculum includes a comprehensive spectrum of knowledge and skills from Smart Grid basics to the technical requirements associated with the design, security, and operation of communication and control devices. Curriculum courses include topics such as Advances in Grid Infrastructure, Smart Grid Security, Monitoring and Diagnostics, Bulk Power Transmission Systems, Wireless Networking, and Modern Power Systems. The project will be conducted at four locations in upstate New York: Buffalo, Rochester, Syracuse, and Potsdam. Courses will be delivered in the classroom, online, in cyber laboratories, and will include site visits to installations of Smart Grid components. Students will have the opportunity to gain hands-on experience by working with National Grid's Smart Technology Centre in Liverpool, New York. Plans also include the establishment of a Power Systems Laboratory at the University of Buffalo and Buffalo State College, and a Sensor and Measurement Laboratory and a Monitoring and Diagnostics Laboratory at Syracuse University." https://www.smartgrid.gov/project/syracuse_university.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

The Ohio State University (I-SMART: Integrated Curric. for Smart Power Engineering) Ohio \$2,499,940 \$3,748,550

"The Ohio State University (OSU) is developing courses and web-enabled distance learning systems to educate next-generation engineering students and electric power engineers from power companies and manufacturers. The I-SMART curriculum will bridge the gap between basic education for the electric power sector and the needs of the Smart Grid, such as power electronics, distributed control, networks and communications, sustainable energy, clean coal technology, high voltage engineering, and game theory-based policy and pricing. OSU will use its novel Hardware-in-the-Loopbased Virtual Smart Grid Test Platform as a training tool to simulate Smart Grid sub-systems. As a partner, American Electric Power will use their gridSMART SM facilities for demonstrations and tours, and will provide expertise in course development." https://www.smartgrid.gov/project/ohio_state_university.html

University Enterprises (California Smart Grid Workforce Development Network) California \$749,992 \$833,347

"The California Smart Grid Workforce Development Network (CSGWDN) is supporting the development of California's Smart Grid workforce by engaging electric utilities, California State University campuses, California community colleges, labor unions, and Smart Grid manufacturers in workforce training in advanced power system technology. The partners have identified the need to train 897 incumbent engineers, 521 new hire engineers, and 1,306 craft and technical workers over the next five years. CSGWDN is creating, executing, and evolving a statewide workforce development strategy through degree and certificate programs by connecting Smart Grid technology advances to workforce needs. Two webinars will be conducted to advance the professional development of professors and instructors at participating education locations. The program will be made available to the remaining 23-campus California State University system." https://www.smartgrid.gov/project/university_enterprises.html

University of Colorado, Boulder (Strategic Networking Training for Power Systems) Colorado \$2,470,340 \$2,747,080

"The University of Colorado is building a graduate engineering program with the capacity to train a large number of students from diverse backgrounds with the skills needed to be leaders in the next generation of Smart Grids. The Digital Energy Program focuses on networking, wireless communication, and cyber security within energy systems. Instruction is provided on-campus and through long distance learning. Students can earn a Master's degree, a five-year joint electrical engineering Bachelor's degree and telecommunications Master's degree, or an Energy Communication Networks certificate. Discounts will be granted to students and scholarships will be given based on need or merit. Working with a large network of industry partners ensures that the curriculum is relevant and skills marketable, provides access to additional training opportunities and internships, and assists in job placement. Students will also work with industry and professional associations to increase employment networking." https://www.smartgrid.gov/project/university_colorado_boulder.html

University of Hawaii, Manoa (Integrated Education and Research in Clean Energy and Island Sustainability – Electric Power Sector Training) Hawaii \$277,778 \$2,500,000

"This project will create a new cross-disciplinary program at the University of Hawaii Manoa (UHM) that includes Responsive and Dynamic (RAD) training coupled with foundational research-based curricula in clean energy technologies, renewable energy production, storage, grid integration and Smart Grid technologies. The program leverages industry expertise to train B.S., M.S., and Ph.D. level students in multiple disciplines across the electricity and power sectors. Each student will have a broad cross-disciplinary knowledge of clean energy and sustainability issues, including engineering, science, social and economic impacts. Students will learn through formal and foundational coursework, labs/group research projects and rotational training. Special attention will be given to the unique challenges that the Hawaiian islands face with integrating an increasing amount of renewable energy to its isolated grid." https://www.smartgrid.gov/project/university_hawaii_manoa.html

University of Houston (Smart Grid Energy Training Coalition) Texas \$2,499,900 \$3,832,900

"The Smart Grid Energy Coalition is establishing a Power Training Campus in response to workforce needs; establishing processes to determine skill objectives and design training; and providing a clear career progression from entry-level hands-on training through the development of basic and specialized skills to the attainment of advanced skills and degrees for higher-level design and management functions. The Coalition will ensure that credits are transferable by executing agreements across training partners. Students, job seekers, academia, and industry participants will integrate through a community/social networking system. Training development will occur in a repeated cycle of needs assessment, training design, validation cohort training, and transition of training to production programs. Progress will be measured by monitoring the number and content of the courses developed, cohort response, expansion of Coalition members, and tracking student progress through the networking system." https://www.smartgrid.gov/project/university_houston.html

University of Kentucky (Power and Energy Education Institute) Kentucky \$2,497,960 \$3,012,990

"The University of Kentucky Research Foundation is creating a Power and Energy Institute of Kentucky (PEIK) at the College of Engineering. In close collaboration with industry, the PEIK will combine existing power engineering courses within the College with newly created courses and laboratories, and coordinate with relevant courses in other engineering and non-engineering fields to provide students with an attractive clearly-marked pathway into the power engineering workforce. This project will grant baccalaureates, graduate degrees, and certificates of completion for the Professional Development Program." https://www.smartgrid.gov/project/university_kentucky.html

University of Minnesota (Revitalization of Electric Power Engineering Education) Minnesota \$2,500,000 \$4,175,420

"Building on their current electric power engineering program, the University of Minnesota (UMN) is revitalizing U.S. power engineering education by creating a consortium of a large number of universities that will share state-of-the-art laboratories in power engineering. Programs are collectively designed and shared with consortium universities who disseminate laboratories and curricula to non-member regional universities, and technical and community colleges. This method of dissemination enables flexibility in fulfilling each university's needs and facilitates information sharing with novel laboratories. The consortium is also supporting faculty development and providing new classroom materials. Establishing a foundation for graduate education and research in the areas of renewable energy such as wind, solar, storage, and energy conservation is also a part of these revitalization efforts." https://www.smartgrid.gov/project/university_minnesota.html

University of Tennessee, Chattanooga (Workforce Training for the Electric Power Sector) Tennessee \$2,394,800 \$2,663,860

"The University of Tennessee at Chattanooga (UTC) is developing a workforce fully trained in power technology by providing education and training to current and future workers across a variety of educational levels. For middle schools and high schools, UTC trains teachers about power technology to draw more future workers into the industry. Power-related electives permit undergraduate students to specialize in high-demand technologies. Engineers who have already earned university degrees benefit from additional training in modern power systems through a Master's program, short courses, and seminars. Additionally, certificate programs are being developed in cyber security, Smart Grid, clean energy and efficiency, and power engineering for current technicians and displaced workers. UTC will also develop programs for managers by integrating engineering management courses with power systems education." https://www.smartgrid.gov/project/university_tennessee_chattanooga.html

Washington State University (Training in Clean Energy Smart Grid Engineering) Washington \$2,500,000 \$4,341,830

"Washington State University, in collaboration with 11 partners, is developing and delivering six undergraduate courses and 12 graduate courses in Smart Grid engineering. Undergraduate courses provide power engineering fundamentals and Smart Grid basics. Graduate courses are in the areas of clean energy generation technologies, Smart Grid technologies, Smart Grid planning, and Smart Grid operation. Most of the course development will be done at Washington State University and the University of Washington. Due to their expertise, specialized parts of the courses will be developed by Pacific Northwest National Labs, Incremental Systems, Aрева T&D, and the Bonneville Power Administration. The remaining organizations will review courseware, participate in its initial delivery, and provide course assessments. This project utilizes computerized delivery mechanisms, such as electronic blackboards and video-streaming that will be continually upgrade to reflect technological change." https://www.smartgrid.gov/project/washington_state_university.html

Workforce Development Institute (Develop. of a Smart Grid Lineman Workforce) New York \$1,588,440 \$3,116,870

"The Workforce Development Institute is collaborating with the International Brotherhood of Electrical Workers, Northeastern Joint Apprenticeship Training Committee, the National Electrical Contractor's Association, and major utilities to ensure that adequate numbers of lineman are trained and available to install, maintain, and support the New York State electric power sector. The program will upgrade and improve skills needed to support Smart Grid implementation. This project will result in 450 new apprenticeship positions and establish a career path for these individuals to move from pre-apprentices to apprentices to journeymen. The project is also training 800 current lineworkers (journeymen, current apprentices, groundhands, splicers, and equipment operators) with adequate knowledge for job retention and implementation of the Smart Grid. Trainees are immediately placed in jobs." https://www.smartgrid.gov/project/workforce_development_institute.html

41 "RENEWABLE & DISTRIBUTED SYSTEMS INTEGRATION" PROJECTS

(filtered from 191 total entries)

Awardee / Project Headquarters Award Amount Project Value Total

AEP Ohio (gridSMART Demonstration Project) Ohio \$75,161,200 \$148,822,000

See abstract info under "Smart Grid Investment Grant" category

Amber Kinetics, Inc. (Flywheel Energy Storage Demonstration) California \$3,694,660 \$7,457,590

"Amber Kinetics is developing a flywheel system from sub-scale research prototype to full-scale mechanical flywheel battery and will conduct both a commercial-scale and a utility-scale demonstration. The goal is to deliver a cost-effective prototype flywheel system that can be grid connected and electrically charged and discharged. The system will have built-in sensing components that can determine frequency and voltage characteristics of the grid and can override the grid signal to manage the amount of electricity discharged. The flywheel stores energy in a spinning rotor that is connected to an electric motor that converts electrical energy into mechanical energy. To recover the energy the motor is electrically reversed and used as a generator to slow down the flywheel converting the mechanical energy back into electrical energy. Amber Kinetics will improve the traditional flywheel system by engineering breakthroughs in three areas, resulting in higher efficiency and radically reduced cost: magnetic bearings, low-cost rotor, and high-efficiency motor generator. This technology can also be used to optimize existing infrastructure." https://www.smartgrid.gov/project/amber_kinetics_inc_flywheel_energy_storage_demonstration.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value Total

Aquion Energy (Sodium-Ion Battery for Grid-level Applications) Pennsylvania \$5,179,000 \$10,359,800

"Aquion Energy and its partners will demonstrate a low cost, grid-scale, ambient temperature sodium-ion energy storage device. The energy storage chemistry in this device uses an electrochemical couple that combines a high capacity carbon anode with a sodium intercalation cathode capable of thousands of deep discharge cycles over extended periods of time. The proposed aqueous sodium-ion technology includes the use of thicker electrodes, less expensive separator and current collector materials, and the use of benign materials for electrodes and electrolyte salts. This project will progress the work from bench-scale to pilot-scale enabling multiple ampere-hour cells to be manufactured and assembled into test batteries. Aquion plans to site units between 10 kWh and 100 kWh capacity that have the ability to perform medium to long duration (more than 2 hours) charge and discharge functions with greater than 95 percent DC-DC efficiency. The units will be safe and environmentally benign. Testing will characterize the energy storage capacity of the units, the response to various signals, compliance with utility interconnection standards, battery and power conversion system efficiency, and effectiveness under various cycles typical of the applications being validated. Utility application-level testing will test the functionality of the unit with respect to its ability to respond to external control signals and properly interact with electric grid in carrying out relevant sequences. The pilot line will be commissioned for production at the end of the project." https://www.smartgrid.gov/project/aquion_energy_sodium_ion_battery_grid_level_applications.html

ATK Launch Systems (Integrated, Automated DG Technologies Demonstration Phase I Extension) Utah \$2,148,130 \$2,685,160

"ATK Launch Systems in Promontory, Utah comprises over 540 buildings on a sprawling 19,900-acre site accessible by 75 miles of roads. Their power system of three main substations and 60 miles of power lines deliver about 17 MW (on-peak) to the facilities, with an annual energy bill of over \$15 million. The objective of this project is to "develop and demonstrate a diverse system of renewable distributed generation technologies that are integrated into an intelligent automation system with two-way communications to the utility and that will produce an on-demand reduction of 15% of substation load." The ATK Launch Systems Demonstration Project technology includes: Renewable Energy Sources, which are waste heat recovery systems – 100 kW of generation, wind turbines (water pumping/compressed air storage) – 100 kW total capacity, and 500 kW of total storage capacity. The wind and waste heat generators will provide energy to recharge the storage systems. The project includes load aggregation and monitoring, fault detection and diagnostics, remote monitoring and control, two-way customer-utility web interface, black start, historical trending and reports, as well as alarm and event notification." https://www.smartgrid.gov/project/atk_launch_systems_integrated_automated_dg_technologies_demonstration_phase_i_extension.html

Battelle Memorial Institute (Pacific Northwest Division Smart Grid Demonstration Project) Washington \$88,821,200 \$177,642,000

See abstract info under "Smart Grid Investment Grant" category

Boeing Co., The (Boeing Smart Grid Solution) Missouri \$8,561,400 \$17,172,800

"Boeing and its partner PJM Interconnection will demonstrate the benefits of advanced technologies for improving cyber security in an energy management environment. This project is differentiated by its ability to leverage network architecture and industry leading security experience and capabilities that are scalable and interoperable with both legacy systems and new smart grid technologies. The PJM project region covers all or part of 13 states and the District of Columbia, includes over 243,000 square miles, and serves more than 61 million people. This densely populated region accounts for more than 26% of total generation and load for the entire Eastern Interconnection. Boeing will demonstrate a combination of technologies that it has successfully implemented in the commercial, defense, and intelligence communities that will result in enhanced situational awareness and security. The project will commence with an in-depth security assessment of the regional network and the evolving communication, telemetry, and advanced controls required for a secure, reliable power grid. Assessment results will determine the set of selected technologies to be evaluated, integrated and tested for inclusion as part of the cyber security suite for the strong, secure, smart grid. The project will conclude with operational demonstrations conducted for government and industry stakeholders. Deliverables will include reports on technology benefits achieved through analysis, experimentation and demonstration. Results will contribute significantly to providing metrics for assessing smart grid progress for the transmission system. Thus the project will advance the DOE's ultimate goals of increasing the reliability of the grid, providing greater security, and establishing a baseline for grid-wide replication." https://www.smartgrid.gov/project/boeing_company_boeing_smart_grid_solution.html

CCET (Technology Solutions for Wind Integration) Texas \$13,516,500 \$27,075,500

"The Center for Commercialization of Electric Technologies (CCET) is demonstrating new response mechanisms to help integrate large amounts of highly variable wind generation into the ERCOT grid by utilizing better system monitoring capabilities, enhanced operator visualization, and improved load management. Improved load management includes the use of smart grid technologies at Texas facilities: Reese Technology Center in Lubbock, Mueller Development in Austin, the Harmony solar community, north of Houston and residential consumers in the Dallas-Fort Worth and Houston areas." https://www.smartgrid.gov/project/ccet_technology_solutions_wind_integration.html

Chevron Energy Solutions L.P. California \$6,418,710 \$12,285,500

(CERTS: Microgrid Demonstration with Large-Scale Energy Storage and Renewables at Santa Rita Jail)

"The overarching objectives of the proposed demonstration are to significantly reduce peak load and measurably improve power reliability at Santa Rita Jail. This will be accomplished by implementing a CERTS (Consortium for Electric Reliability Technology Solutions) microgrid that incorporates one of the nation's largest customer-sited NaS energy storage systems with multiple distributed energy resources. By effectively reducing peak load, the project will improve grid reliability, increase grid efficiency and security. By providing islanding capability, the project will meet critical customer reliability requirements." https://www.smartgrid.gov/project/chevron_energy_solutions_lp_certs_microgrid_demonstration_large_scale_energy_storage_and.html

City of Fort Collins Colorado \$6,695,880 \$11,797,900

(Research Devel. & Demonstration of Peak Load Reduction on Distribution Feeders Using Distributed Energy Resources for the City of Fort Collins)

"The primary aim of the project is to demonstrate the monitoring, aggregation, distribution system integration, dispatch, and verification of distributed generation, renewable energy, and demand response resources (collectively, Distributed Energy Resources or DER) for reducing peak loading on two feeders within Fort Collins Utilities electric distribution network by at least 15% (target goal is in the 20% to 30% range). Over 3.5 megawatts (MW) of DER from approximately 5 different participant locations were aggregated to demonstrate technical feasibility and the benefits of DER to asset owners and distribution network operations. Distributed generation sources (including renewable generation sources) that will be part of the demonstration include photovoltaic, micro-turbines, dual fuel CHP systems using process-generated methane, reciprocating engines, conventional backup generators, wind turbine simulator, plug-in hybrid electric in a vehicle-to-grid configuration, and fuel cells. Demand response capabilities will be aggregated from a mix of heating and air conditioning loads, process loads, and thermal storage. Energy efficiency upgrades will also contribute toward long-term reduction of loads on the selected feeders." https://www.smartgrid.gov/project/city_fort_collins_research_development_and_demonstration_peak_load_reduction_distribution.html

City of Painesville, Ohio (Vanadium Redox Battery Demonstration Program) Ohio \$4,243,570 \$9,462,620

"The City of Painesville, Ohio and its partners will demonstrate vanadium redox battery storage capacity at the 32 megawatt (MW), coal-fired Painesville Municipal Electric Plant (PMEP). Using stored power enables the facility to attain the same daily output requirement, more efficiently and with a lower carbon footprint. When the project is fully implemented, the plant will operate at a constant 26 MW, 80 percent of rated capacity. The long-term goal is to scale the battery system in stages, ultimately upgrading the facility to 10 MW of capacity with up to 80 MW hours of storage. In the first phase, 1 MW of power with 6 to 8 hours of storage will be installed. This capacity is sufficient for Painesville to evaluate the benefits of energy storage, assess its uses in optimizing power generation efficiency, and facilitate American Municipal Power with leveling the peak demands of the system. A bi-directional four quadrant inverter, with a rated capacity of 1.0MW and 1,440 amps at 480 VAC, will be used to provide AC/DC and voltage conversions. The battery will be constructed with two parallel electrolyte flow systems providing the total net electrical capacity of 1.0 MW. Each subsystem will be comprised of 64, 10kW stacks. The subsystems will be arranged in parallel to supply peak operating loads. Each stack subsystem will have their electrolyte flow into two 15,000 gallon polymer tanks, at rates ranging between 500 and 1500 gallons per minute. The battery components will be produced in the United States and the stacks will be assembled in Painesville before being installed at the PMEP Battery Building." https://www.smartgrid.gov/project/city_painesville_ohio_vanadium_redox_battery_demonstration_program.html

Consolidated Edison Co. of New York, Inc. (Secure Interoperable Open Smart Grid Demonstration Proj.) New York \$45,388,300 \$92,388,200

"The Consolidated Edison Company of New York and its partners are demonstrating a secure, interoperable, open Smart Grid that reduces electricity demand and increases energy reliability and efficiency. The project performer, servicing New York City and its suburbs, has one of the highest load densities in the world, representing a complex and diverse test bed, including critical organizations such as Wall Street, the Federal Reserve, major medical facilities, and hubs for national and global communications. Distributed thermal and battery storage, advanced metering infrastructure, home area networks, building management systems, photovoltaics, and smart electric vehicle charging have been demonstrated. The demonstrations have illustrated how data from disparate systems are securely communicated, integrated, and displayed to the control center operator through the use of decision-aid tools, thus helping operators identify problem areas and prioritize corrective action in both normal and contingency operations. Other new technologies developed include a rules-based dashboard for operators, a risk management engine to facilitate efficient operation, a transmission decision management engine that aggregates electricity supply data, an adaptive stochastic controller, and an intelligent maintenance system. It is anticipated that the technologies listed above will be scalable across urban utility territories nationwide." https://www.smartgrid.gov/project/consolidated_edison_company_new_york_inc_secure_interoperable_open_smart_grid_demonstration.html

Consolidated Edison Co. of New York, Inc. (Interoperability of Demand Response Resources Demonstration in NY) New York \$6,824,390 \$12,973,200

"Increasing Con Edison's ability to harness demand response resources is a key to limiting system peak demand in one of the largest and most complex electric power systems in the world. This project demonstrates methods to enhance the integration of demand response resources into the distribution network to enhance its reliability and efficiency. This project demonstrates the required software, protocols and communication infrastructure required to enable distributed resources to improve load control, increase system efficiency and reliability, and optimize these resources in the distribution network. Interoperability is being demonstrated by the ability to integrate the operation of a variety of conventional and renewable demand response resources into the existing distribution network. A goal of this project is to develop standards that will excite non-participating distributed resources to consider being engaged in this kind of program." https://www.smartgrid.gov/project/consolidated_edison_company_ny_interoperability_demand_response_resources_demonstration_ny.html

Detroit Edison (Advanced Implementation of Energy Storage Technologies) Michigan \$4,995,270 \$10,877,300

"DTE Energy will demonstrate the use and benefits of Community Energy Storage (CES) systems to strengthen grid reliability and test the ability to integrate secondary-use electric vehicle (EV) batteries into the CES demonstration effort in their service territory at the Trinity Circuit. The performance data of the CES devices and control systems under in-service operating conditions will be analyzed and used to identify gaps and facilitate how the devices can be standardized for use across the U.S. The project will also integrate the utility-owned 500 kW solar system to the energy storage device; provide proof of concept testing for an integrated, centralized communication system; and test the use of secondary-use Electric Vehicle (EV) batteries as CES devices." https://www.smartgrid.gov/project/detroit_edison_advanced_implementation_energy_storage_technologies.html

(continued)

Awardee / Project

Headquarters Award Amount Project Value **Total**

Duke Energy Business Services (Notrees Wind Storage Demonstration Project) **North Carolina** **\$21,806,200** **\$43,612,500**

"The Notrees Project will analyze and discern how, when integrated with wind power, energy storage can compensate for the inherent intermittency of this renewable power generation resource. Incorporating both existing and new tools, technologies and techniques, this demonstration project will provide valuable information regarding wind energy storage and serve as a model for other entities to adapt and replicate. The energy storage system will be designed and constructed using fast response, advanced lead-acid batteries configured to provide 36 MW output capabilities with a storage capacity of 24 MWh." https://www.smartgrid.gov/project/duke_energy_business_services_notrees_wind_storage_demonstration_project.html

East Penn Manufacturing Co. (Grid-Scale Energy Storage Demonstration Using UltraBattery Technology) **Pennsylvania** **\$2,543,520** **\$5,087,270**

"East Penn Manufacturing will design and construct an energy storage facility consisting of an array of UltraBattery™ modules integrated in a turnkey Battery Energy Storage System (BESS). In addition to the UltraBatteries™, the BESS will include a power conditioning system, a master programmable controller, and a battery monitoring system. The completed energy storage system will be designed to sell up to 3 MW of frequency regulation to Noble Americas Energy Solutions, a designated load serving entity within PJM. In addition to frequency regulation, the system will provide demand management services to Met-Ed during specified peak power periods. These services will provide up to 1MW for 1 to 4 hours to meet the requirements of PA Act 129. The UltraBattery™ is uniquely suited to these applications because it was designed for High Rate Partial State of Charge cycling. The system is sized to maintain the battery's state of charge between 70 percent and 30 percent for a maximum 40 percent depth of discharge for continuous regulation services. The UltraBattery™ is a hybrid energy storage device that combines an asymmetric ultracapacitor and a lead-acid battery in one unit cell. The UltraBattery™ is expected to provide the same benefits as lead-acid battery systems, such as low initial cost, full recyclability, plus increased cycle life by incorporating ultracapacitor technology within the battery. To demonstrate modularity and portability, self-contained, Containerized UltraBattery™ System will be designed and included as a subset of this project." https://www.smartgrid.gov/project/east_penn_manufacturing_co_grid_scale_energy_storage_demonstration_using_ultrabattery.html

Hawaii Natural Energy Institute **Hawaii** **\$6,994,980** **\$14,383,000**
(Managing Distribution System Resources for Improved Service Quality & Reliability, Transmission Congestion Relief & Grid Support Functions)

"The overarching project objective is to develop and demonstrate a distribution automation solution that aggregates distributed generation (DG), energy storage, and demand response technologies in a distribution system to achieve both distribution and transmission level benefits. Ideally, the application of these new technologies would increase system reliability and improve power quality along with reducing costs to both the utility and its customers. The project is broken up into two phases. In Phase One, energy management architecture will be developed and validated to meet all needs, focusing on energy management at the distribution level. In Phase Two, the capabilities will be demonstrated at a Maui Electric Company, Ltd. (MECO) substation at Wailea on Maui. A major goal of the program is to incorporate advanced technology into the Maui grid that will allow for a reduction of peak energy consumption of at least 15% of the automated feeder upon completion. The 200 MW island system will include roughly 72 MW of wind generation and over 15 MW of solar PV. As of June 5, 2013 12 MW of storage have been installed on the island." https://www.smartgrid.gov/project/hawaii_natural_energy_institute_managing_distribution_system_resources_improved_service.html

Hazle Spindle (Formerly: Beacon Power) (20 MW Flywheel Frequency Regulation Plant) **Massachusetts** **\$24,064,000** **\$52,415,000**

"Hazle Spindle will design, build, and operate a flywheel energy storage frequency regulation plant at the Humboldt Industrial Park in Hazle Township, Pennsylvania. The plant will provide frequency regulation services to grid operator PJM Interconnection. The Beacon Power technology uses flywheels to recycle energy from the grid in response to changes in demand and grid frequency. When generated power exceeds load, the flywheels store the excess energy. When load increases, the flywheels return the energy to the grid. The flywheel system can respond nearly instantaneously to an independent system operator's control signal at a rate 100 times faster than traditional generation resources. The system does not burn fuel and has zero direct emissions. The Beacon Gen4 flywheel is designed to provide 100 kW of output and store 25 kWh of energy. Two hundred flywheels will be connected in parallel to provide 20 MW in capacity and can fully respond in less than 4 seconds. The plant can operate at 100% Depth of Discharge with no energy degradation over time and can do so for over 150,000 full charge/discharge cycles. The flywheels are built to last 20 years or more. Virtually no maintenance is required in the mechanical portion of the flywheel system. Flywheel technology has been successfully tested on live grids at scale power in New York and California. The technology achieved system availability of over 97 percent, higher than the average for conventional generators performing frequency regulation. It has been deployed at multi-megawatt scale under New England's Alternative Technologies pilot program, and a 20 MW plant in New York Independent System Operator (ISO) territory in Stephentown NY." https://www.smartgrid.gov/project/hazle_spindle_20mws_flywheel_frequency_regulation_plant.html

Illinois Institute of Technology (IIT) (The Perfect Power Prototype for the Illinois Institute of Technology) **Illinois** **\$7,648,680** **\$13,575,600**

"Illinois Institute of Technology (IIT) in collaboration with Exelon, the Galvin Electricity Initiative (GEI), S&C Electric and other key partners (the team) propose to develop, demonstrate, promote, and commercialize a system and supporting technologies that will achieve "Perfect Power" at the main campus of IIT. This will be a self healing, learning and self-aware Smart Grid that identifies and isolates faults, reroutes power to accommodate load changes and generation, and dispatches generation and reduces demand based on price signals, weather forecasts, and loss of grid power." https://www.smartgrid.gov/project/illinois_institute_technology_iit_perfect_power_prototype_illinois_institute_technology.html

Kansas City Power and Light (Green Impact Zone SmartGrid Demonstration) **Missouri** **\$23,940,100** **\$49,830,300**

See abstract info under "Smart Grid Investment Grant" category

Long Island Power Authority (Long Island Smart Energy Corridor) **New York** **\$12,496,000** **\$25,293,800**

See abstract info under "Smart Grid Investment Grant" category

Los Angeles Department of Water & Power (Smart Grid Regional Demonstration) **California** **\$60,280,000** **\$120,560,000**

See abstract info under "Smart Grid Investment Grant" category

Monongahela Power Co. (West Virginia Super Circuit) **West Virginia** **\$2,819,060** **\$4,258,930**

"This **FirstEnergy/MonPower** RDSI demonstrates improved distribution system performance, reliability, and security of electric supply through the integration of distributed resources. The West Virginia Super Circuit (WVSC) is a smart grid demonstration project led by FirstEnergy. Its subsidiary MonPower is working with selected partners and vendors to demonstrate improved distribution system performance, reliability, and security of electric supply through the integration of distributed resources and advanced technologies." https://www.smartgrid.gov/project/mon_power.html

National Rural Electric Cooperative Assn. (Enhanced Demand & Distribution Mgmt. Regional Demonstration) **Virginia** **\$33,932,100** **\$67,864,300**

See abstract info under "Smart Grid Investment Grant" category

New York Power Authority (Evaluation of Instrumentation and Dynamic Thermal Ratings for Overhead Lines) **New York** **\$720,000** **\$1,440,000**

"New York Power Authority (NYP&A) and its partners will implement and demonstrate the effects that Dynamic Thermal Circuit Ratings (DTCR) technology can have on areas of the New York State transmission system where there is the potential for wind generation. NYP&A will use real-time thermal ratings measurements to correlate increased wind generation and increased transmission capacity, which could defer millions of dollars in capital expenditures on transmission projects. DTCR will be applied to three 230 kV transmission lines: Moses-Willis line spanning 710 feet surrounded by inactive agricultural land and low hayfields near to the town of Massena; Willis-Ryan line spanning 580 feet surrounded by cultivated cropland close to Chateaugay; and Moses-Adirondack line spanning 545 feet in Massena surrounded by permanent pasture and near natural forest and wetland." https://www.smartgrid.gov/project/new_york_power_authority_evaluation_instrumentation_and_dynamic_thermal_ratings_overhead.html

New York State Electric and Gas (Advanced Compressed Air Energy Storage) **New York** **\$1,394,450** **\$2,942,260**

"New York State Electric & Gas (NYSEG) will build an advanced compressed air energy storage (CAES) plant with a rated capacity of 150 MW using an existing 4.5 million cubic foot underground salt cavern in Reading, New York. The plant is sited between the bulk of U.S. wind resources and the heavy population centers of the East Coast; it is the closest proposed underground storage asset to the New York and New England load areas. The plant will have the capacity to operate 16 hours a day and will provide energy arbitrage for approximately 2,300-2,500 hours each year. It will use off-peak electricity to compress air into the cavern. When electricity is needed the air will be withdrawn, heated, and passed through a turbine to drive an electric generator, burning one-third the amount of fuel compared to conventional combustion turbines. NYSEG's CAES plant will provide flexible generation capability to accommodate fluctuations in load. The plant will be tied to NYSEG's cross-state 230 kV/345 kV transmission system that feeds major metropolitan centers in Central New York. The 230 kV line is the recipient of a large proportion of wind power and is tied to the New York City load areas. It will provide redundancy in capacity, ensure against congestion and power fluctuations, and can provide improved power quality to the grid. Iberdrola USA, the parent of NYSEG, plans to conduct a feasibility study in the future to determine the ability to increase the plant's capacity to 360 MW or greater." https://www.smartgrid.gov/project/new_york_state_electric_and_gas_advanced_compressed_air_energy_storage.html

NSTAR Electric and Gas Corp. (Automated Meter Reading-Based Dynamic Pricing) **Massachusetts** **\$2,362,000** **\$4,877,990**

"NSTAR is enabling residential dynamic pricing (time-of-use, critical peak rates, and rebates) and two-way direct load control by capturing Automated Meter Reading (AMR) data transmissions and communicating through existing customer-sited broadband connections in conjunction with home area networks. This will enable recording and transfer of interval consumption data to NSTAR via a two-way communications pathway that can also be used for sending load control signals, measuring demand response loads, and conducting event-specific impact evaluations. Customers can view their real-time energy consumption and costs through in-home displays and via a web portal. This approach has been validated in NSTAR's Smart Grid test lab. The project demonstration includes approximately 2,700 residential customers in the Boston area. Data collection will span two summer (i.e., cooling) seasons and occur over a period of about 24 months." https://www.smartgrid.gov/project/nstar_electric_and_gas_corporation_automated_meter_reading_based_dynamic_pricing.html

NSTAR Electric and Gas Corp. (Urban Grid Monitoring and Renewables Integration) **Massachusetts** **\$5,267,590** **\$10,591,900**

See abstract info under "Smart Grid Investment Grant" category

Oncor Electric Delivery Co. (Dynamic Line Rating) **Texas** **\$3,471,680** **\$7,136,550**

"Oncor and its partners are conducting studies to remove constraints that prevent utilities from using Dynamic Line Rating (DLR) technology. Oncor will install and commission DLR technology at 26 locations distributed along eight transmission

circuits located in Bell, Bosque, Falls, Hill, McLennan, and Williamson counties in central Texas. These circuits have been identified as significantly constrained by the Electric Reliability Council of Texas. At each location sensors will be attached to transmission towers. Radio receivers will be installed inside ten substations. The remaining dynamic line rating components will be housed at a transmission management system control center in Dallas. DLR technology uses a tension sensing device installed directly in a transmission circuit that accurately rates the conductor allowing better line management that enables the reduction of grid congestion. The use of DLR will provide the true transfer capacity of the grid in real time accounting for actual weather conditions. Oncor will demonstrate how installation can be streamlined; optimize the number of monitors required to rate the transmission line; train installation crews in effective installation practices; evaluate current calibration techniques to improve productivity and accuracy; and develop a best practices manual for future installations. Oncor will also demonstrate a technology that monitors line sag/clearances without requiring mounting equipment on the structures or line, which provides the flexibility to move sensors as needed." https://www.smartgrid.gov/project/oncor_electric_delivery_company_dynamic_line_rating.html

Pacific Gas & Electric Co. (Advanced Underground Compressed Air Energy Storage) California \$25,000,000 \$355,938,000

"Pacific Gas and Electric Company's (PG&E) advanced underground, compressed air energy storage (CAES) demonstration project is intended to validate the design, performance, and reliability of a CAES plant rated at approximately 300MW with up to 10 hours of storage. The CAES demonstration project is scoped to test the suitability of a porous rock formation as the storage reservoir in California, and demonstrate the technological improvements in the design of such plants. Porous rock formations are much more plentiful than the salt domes now used by the two operational plants in Alabama and Germany. If this geology is proven viable, this technology has the potential to be replicated throughout California and elsewhere in the United States. The project is also differentiated by its potential use of a new CAES plant design that is much more efficient than first generation Alabama and German designs. This project is comprised of three phases. Phase I includes site selection, reservoir testing, preliminary plant design, an environment assessment and a competitive solicitation to determine if there are interested and viable parties for plant construction, ownership and operations/maintenance. Phase II is estimated to last 4.5 years. Phase III, which includes obtaining approval to proceed with the construction and commissioning of a full CAES plant, has an estimated 6-year duration. Phase III includes operations & monitoring and is expected to occur over 2 years." https://www.smartgrid.gov/project/pacific_gas_and_electric_company_advanced_underground_compressed_air_energy_storage.html

Pecan Street Project Inc (Energy Internet Demonstration) Texas \$10,403,600 \$24,657,100

See abstract info under "Smart Grid Investment Grant" category

Primus Power Corp. (Wind Firming EnergyFarm) California \$14,000,000 \$46,700,000

"Primus Power is deploying a 25MW/75MWh EnergyFarm™ in the Modesto Irrigation District (MID) in California's central valley that consists of an array of 250kW EnergyPods™; plug-and-play zinc-flow battery modules and power electronics systems housed inside ISO shipping containers. The modular design and operation will be field tested at Pacific Gas & Electric with support from Sandia National Laboratories and the Electric Power Research Institute. The 25MW EnergyFarm™ will support MID's efforts to balance increasing amounts of renewable generation and more efficiently manage its fleet of generating assets to meet peak loads. The system will likely be deployed incrementally in multiple substations and provide additional benefits such as local-area voltage stability and deferral of substation upgrades. EnergyFarms™ are scalable and rapidly deployable, and can be scaled to greater than 100MW/300MWh in increments of 250kW/750kWh." https://www.smartgrid.gov/project/primus_power_corporation_wind_firming_energyfarm.html

Public Service Co. of New Mexico (PV Plus Battery for Simultaneous Voltage Smoothing and Peak Shifting) New Mexico \$2,305,930 \$6,113,430

"Public Service Company of New Mexico and its partners co-located a 500kW/1MWh advanced lead acid battery with a separately installed 500kW solar photovoltaic (PV) plant to create a dispatchable distributed generation resource. This hybrid resource provides simultaneous voltage smoothing and peak shifting through advanced control algorithms and switches between two configurations, end-of-feeder and beginning-of-feeder. Data collection and analysis produce information for a wide range of applications including grid upgrade deferral. The project has also yielded modeling tools used to optimize battery system control algorithms and further the understanding of feeders with storage and distributed generation. The site is located in southeast Albuquerque." https://www.smartgrid.gov/project/public_service_company_new_mexico_pv_plus_battery_simultaneous_voltage_smoothing_and_peak.html

Raytheon Ktech (Flow Battery Solution for Smart Grid Renewable Energy Applications) New Mexico \$4,764,280 \$9,528,570

"Raytheon Ktech and EnerVault will integrate EnerVault's Vault-20 battery energy storage system (250 kW, 1 MWh) with a Helios dual-axis tracker 180 kW photovoltaic (PV) system. The system will be deployed at an agricultural site in California's Central Valley. It will store the energy generated and dispatch power to run an irrigation pump and inject energy back into the utility grid during peak times to help offset demand from a section representing 4 percent of California's electricity demand. The modularity of the system provides scalability for multi-megawatt deployments. The Vault-20 consists of electrolyte tanks and transporters, which house stacks, pumps, control system, and power conditioning systems. Technology development will progress from 15x15 cm lab-scale cells and 20-layer stacks, to a 2-5 kW prototype system, then a 30kW alpha system, concluding with a 250 kW beta system. EnerVault plans to begin manufacturing flow battery stacks in its Northern California plant within 12 months of project completion." https://www.smartgrid.gov/project/raytheon_ktech_flow_battery_solution_for_smart_grid_renewable_energy_applications.html

San Diego Gas & Electric (Borrego Springs Microgrid) California \$7,477,810 \$12,399,900

"San Diego Gas and Electric (SDG&E) will conduct a pilot scale proof-of-concept test in San Diego, California of how advanced GridWisem™ information-based technologies and DER may increase asset utilization and reliability of the power grid in a nationally scalable approach. The application of appropriate technologies in an integrated fashion has the potential to allow more power to be delivered through existing infrastructure and reduce the need to build more in the future." https://www.smartgrid.gov/project/san_diego_gas_electric_borrego_springs_microgrid.html

Seeo Inc (Solid State Batteries for Grid-Scale Energy Storage) California \$6,196,060 \$12,392,100

"Seeo and its partners are demonstrating a large-scale prototype of a solid-state electrolyte lithium-ion rechargeable battery for use in Smart Grid energy storage applications. Seeo seeks to validate this technology to address the needs of Community Energy Storage Systems—small (less than 100 kW) distributed energy storage systems alongside pad-mounted and pole-mounted transformers. The battery pack is more than a 50 percent improvement in weight and energy density; has 10-15+ year operating life with 3,000-5,000 or more cycles; has no volatile or flammable components; and will be 35 percent cheaper than existing lithium-ion batteries. This approach allows independent control over mechanical and electrical properties. The cell can withstand temperatures as high as 150°C and voltages of 10 volts without incident. An independent analysis of the environmental and economic impact of battery improvement will also be conducted." https://www.smartgrid.gov/project/seeo_inc_solid_state_batteries_grid_scale_energy_storage.html

Southern California Edison Co. (Irvine Smart Grid Demonstration) California \$39,621,200 \$79,242,400

See abstract info under "Smart Grid Investment Grant" category

Southern California Edison Co. (Tehachapi Wind Energy Storage Project) California \$24,978,300 \$49,956,500

"Demonstration of a new auto-configuration application is intended to significantly reduce manual effort, errors, and omissions. SA-3 is designed to meet or exceed current generation North American Electric Reliability Corporation Critical Infrastructure Protection (NERC CIP) compliance requirements, and will demonstrate interoperability among multiple vendors and their existing equipment. ISGD's Secure Energy Network will enable end-to-end interoperability and provide the cybersecurity essential to Smart Grid development and adoption across the nation." https://www.smartgrid.gov/project/southern_california_edison_company_tehachapi_wind_energy_storage_project.html

SuperPower Inc (formerly: Waukesha Electric Syst. Inc) (Fault Current Limiting Superconducting Transformer) Wisconsin \$10,239,400 \$20,478,800

"SuperPower and its partners originally intended to design, develop, manufacture, install, and demonstrate a Smart Grid compatible Fault Current Limiting (FCL) Superconducting transformer on a live grid utility host site. However, when the transformer manufacturer decided to leave the project, the team effort was refocused to develop the key technologies necessary to produce a FCL Second Generation (2G) High Temperature Superconducting (HTS) transformer commercial prototype." "The technology portfolio includes a completed FCL HTS transformer design, proven integrated FCL operation, 2G conductor bonding to a stronger substrate material, 2G conductor to bushing terminations, ac loss mitigation and improved 2G conductor performance, piece lengths and cost improvements." "As of October 2015, the prototype FCL HTS transformer design is complete, the integrated FCL operation has been tested and confirmed using a winding design created for a commercial superconducting FCL transformer. 2G conductor bonding to a stiffer substrate has been perfected for long lengths and the 2G conductor to bushing termination technology has been developed. 2G conductor performance and piece lengths have doubled without the loss of high-end current carrying capacity, resulting in the expected conductor cost benefits." "AC loss mitigation techniques have been tested and more are being developed in an attempt to reduce the heat load generated by the fields surrounding the windings inside of the transformer during operation." https://www.smartgrid.gov/project/superpower_inc_fault_current_limiting_superconducting_transformer.html

SustainX Inc. (Isothermal Compressed Air Energy Storage) New Hampshire \$5,396,020 \$13,046,600

"SustainX is developing and demonstrating a modular, market-ready energy storage system that uses compressed air as the storage medium. SustainX uses a crankshaft-based drivetrain to convert electrical energy into potential energy stored as compressed air. SustainX's iCAES system captures the heat from compression in water and stores the captured heat until it is needed again for expansion. Storing the captured heat eliminates the need for a gas combustion turbine and improves efficiency. SustainX achieves isothermal cycling by combining patented innovations with a design based on mature industrial components and principles. The system is designed for a 20-year lifetime. It achieves full power output from start-up in less than one minute, and it does not use toxic chemicals." https://www.smartgrid.gov/project/sustainx_inc_isothermal_compressed_air_energy_storage.html

University of Nevada, Las Vegas (UNLV) (Decreasing the Peak Demand in the Desert Southwest) Nevada \$6,948,280 \$15,170,900

"This project demonstrates dramatic peak demand reduction in residential new construction through distributed generation, distributed energy storage, energy efficiency, direct load control and price-responsive load control. In cooperation with a nationally recognized home builder, a green field development of 185 homes has been built in which each home was designed for optimal energy efficiency and electrically metered with the most advanced technology available. Efficiency improvement over conventionally designed homes has exceeded 45% and the goal of 65% efficiency is expected when storage batteries are adopted by home owners. The multi-faceted approach to effective and efficient electricity use includes solar photovoltaic systems, direct and price-responsive load control and peak load reduction strategies. Most importantly, UNLV is directing this development along with the local utility with cutting edge metering and communication technologies to assess the cooperative behavior of residences in the goal of electricity conservation. An "Intelligent Agent" software system has been developed to integrate Internet and communications with home owners that weaves customer preferences into the energy savings strategy in a way to that is intended to excite and engage residential customers in the demand management process." https://www.smartgrid.gov/project/unlv_decreasing_peak_demand_desert_southwest.html

VionX Energy (Distributed Energy Storage System) (Formerly: Premium Power) Massachusetts \$6,062,550 \$12,514,700

"VionX Energy and its partners will demonstrate a multi-hour, vanadium redox battery-based energy storage system (ESS) for load shifting, peak shaving, and renewable system integration. The 6-10 hour battery will not degrade as quickly as lithium ion and lead acid batteries, allowing a lifetime of 20 years. The ESS is a fully integrated system that comprises energy storage, power conditioning, system control, and thermal management subsystems. Two ESSs are to be demonstrated with National Grid at locations in Massachusetts. One ESS will be integrated into a single 500kW multi-hour system installed next to a 605 kW photovoltaic (PV) array in Everett, MA and the other ESS will be interfaced with a 600 kW wind turbine at the Holy Name High School feeder in Worcester, MA. National Grid will deploy, operate, and monitor the aggregated 1MW ESS's in their respective locations for two years." https://www.smartgrid.gov/project/vionx_energy_distributed_energy_storage_system.html