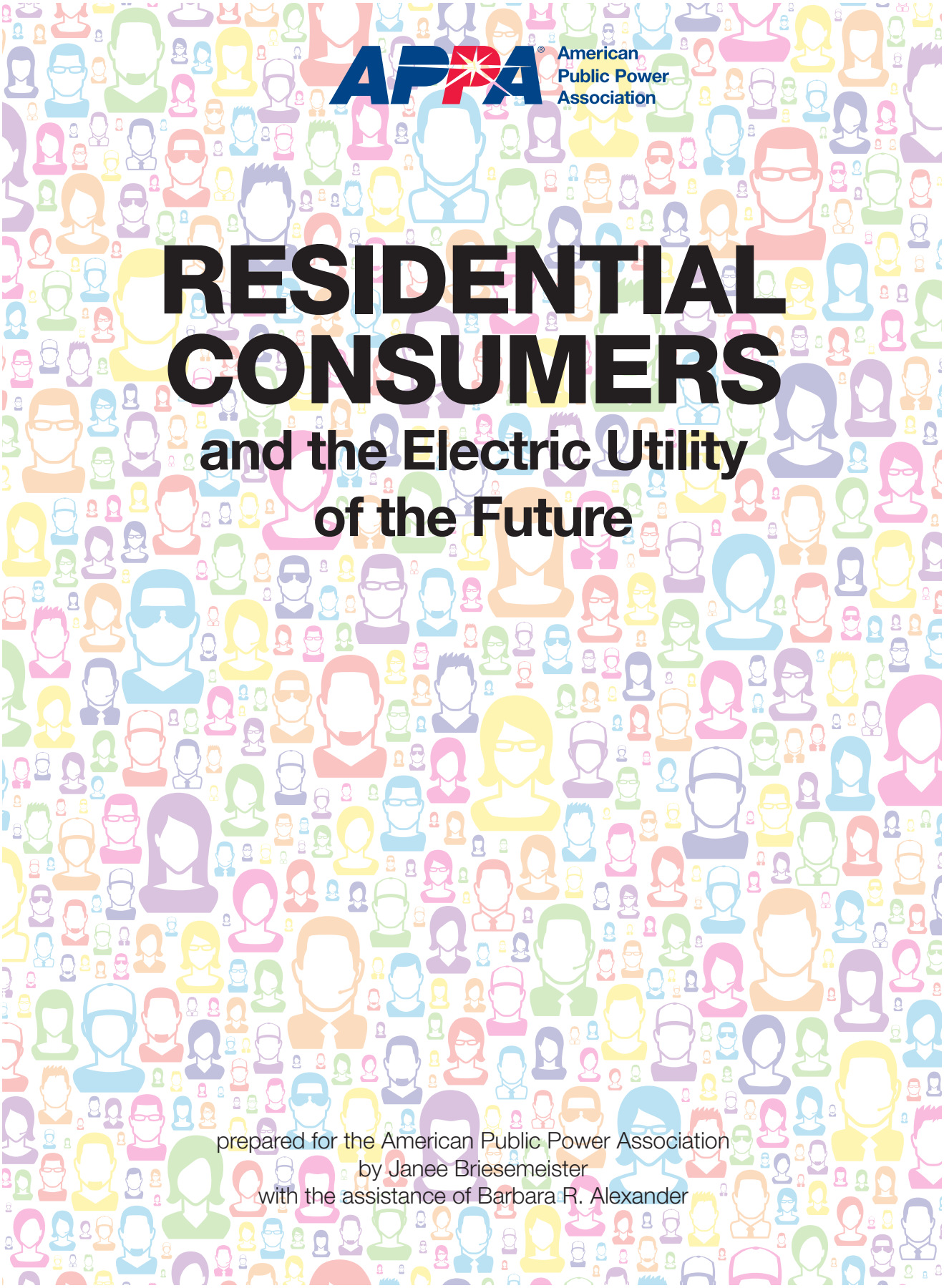
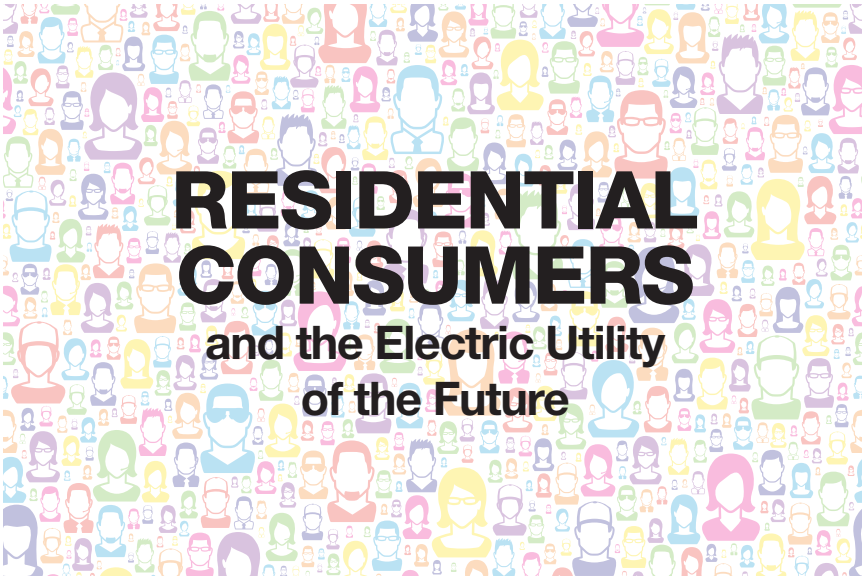


RESIDENTIAL CONSUMERS

and the Electric Utility of the Future

prepared for the American Public Power Association
by Janee Briesemeister
with the assistance of Barbara R. Alexander



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Prepared by
Janee Briesemeister
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American Public Power Association

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The American Public Power Association represents not-for-profit, community-owned electric utilities that power homes, businesses and streets in nearly 2,000 towns and cities, serving 48 million Americans. More at **www.PublicPower.org**.

Public Power Forward is an APPA strategic initiative to help members address technological and regulatory changes reshaping their relationships with customers. APPA provides education and training on relevant issues and new technologies. APPA also develops tools to help members integrate distributed resources, energy efficiency, and demand response into their businesses and operations.

About the Authors

Janee Briesemeister has more than 25 years of experience in consumer advocacy, policy development and advocacy issue campaigns on the state and national levels, and is nationally recognized as a leading consumer advocate on residential utility issues. From 2006-2014 Briesemeister was senior legislative representative in the Department of State Advocacy and Strategy at AARP. At AARP she was responsible for supporting the organization's state offices on consumer-oriented legislative and regulatory advocacy for affordable utility service, including home energy, telecommunications, water and wastewater. Ms. Briesemeister received the 2011 AARP Lyn Bodiford Award for Excellence in Advocacy, recognition from her colleagues nationwide for leadership of the organization's advocacy for affordable home utility service. Previously Briesemeister was senior policy analyst at Consumers Union, the policy division of Consumer Reports.

Barbara R. Alexander opened her own consulting practice in March 1996. From 1986-96 she was the director, Consumer Assistance Division, at the Maine Public Utilities Commission. Alexander received her J.D. from the University of Maine School of Law in 1976. Her clients include national and local consumer organizations, state public utility commissions, and state utility public advocates. Her areas of expertise include consumer protections to accompany the implementation of retail electric, natural gas, and local telephone competition, service quality performance standards for electric, natural gas, and telecommunications providers, low income program design and implementation, consumer protections associated with pilot and system-wide installation of advanced metering and dynamic pricing programs, analysis of utility customer service programs, and residential rate design policies.

Interviewees

The authors gratefully acknowledge the individuals who agreed to be interviewed and quoted in this report. Those individuals are not responsible for any facts or recommendations in this report.

Consumer Advocate Interviews

David Springe, Executive Director, NASUCA, formerly consumer advocate, Kansas

Sonny Popowsky, AARP Volunteer, formerly Pennsylvania consumer advocate

Richard Berkley, Executive Director, Public Utility Law Project of New York

John Howat, Senior Energy Analyst, National Consumer Law Center

Bill Malcolm, Senior Legislative Representative, State Advocacy and Strategy, AARP

Shawn McMurray, Senior Assistant Attorney General, Arkansas Office of Attorney General

Ron Elwood, Supervising Attorney, Minnesota Legal Advocacy Project

Mark Toney, Executive Director, The Utility Reform Network, California

Dave Kolata, Executive Director, Illinois Citizens Utility Board

Public Power Interviews

Scott Benson, Manager, Resource and Transmission Planning, Lincoln Electric System, Nebraska

Eric Campbell, Manager of Planning and Analysis, Pasadena Water and Power, California

Arlen Orchard, CEO, Sacramental Municipal Utility District, California

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Introduction

"Utility of the Future" typically refers to a range of policy initiatives to stimulate the growth in distributed energy resources and make fundamental changes in the utility business model, not only in terms of ratemaking policies, but also the utility's relationship to its customers and how rates are structured and designed. Also common to these discussions is the assumption that a market will develop to offer and deliver energy-related services and products to customers outside of the regulated services offered by utilities. Proposals under the Utility of the Future rubric include:

- Expansion of distributed energy resources and integration into the local grid.
- New rate designs that are intended to both influence consumer behavior and provide greater revenue stability for the utility.
- A new role for the distribution utility as an interface with third party DER providers.
- Investments in grid modernization and/or hardening the system to reduce outages.

For investor-owned utilities, additional proposals include performance-based ratemaking, earnings sharing and other types of incentives that are not applicable to public power. Even so, the type of rate designs, investments, and other policy proposals associated with the Utility of the Future would significantly change the way residential consumers procure and pay for home energy. Furthermore, the additional investments necessary to support many of the Utility of the Future proposals could result in large rate increases in the short run, with the risk that the predicted long-term benefits do not occur at all or at the level necessary to justify these costs. Consumer advocates around the country have raised alarms about these potential impacts and are calling for a more careful review of the long and short-term consequences for consumers to ensure the affordability of essential electric service.

The most well-known and ambitious foray into the Utility of the Future, the New York Reforming the Energy Vision (REV) proceeding, was announced in April 2014 by the New York Public Service Commission and Governor Cuomo with the stated intent of transforming the role and manner of regulation of the electric distribution companies. Other proceedings include Minnesota e21, Michigan Roadmap, Massachusetts Grid Modernization proceedings, as well as multiple proceedings in California and Illinois flowing from statutory mandates.[1] Beyond these more publicized initiatives, many utilities and state regulators are exploring some or all of these policy proposals in individual utility ratemaking proceedings. Finally, 17 state governors have signed an agreement to "diversify energy generation and expand clean energy sources; modernize energy infrastructure; encourage clean transportation options; and collaborate on transformational policy changes."[2]

For many advocates for residential ratepayers, this rush to pursue fundamental policy changes is reminiscent of restructuring (divesting generation supply from regulated distribution service and creating retail electric and natural gas competition), a move hailed as the path to lower prices for generation supply compared to the traditional cost of service policies. The actual results have been controversial and widely criticized, particularly for retail consumers who have been subject to predatory and deceptive marketing and a less than transparent pricing mechanism in a complicated and highly federally-regulated wholesale market. As a result, when promised that "smart grid" will result in significant cost savings and provide a pathway to "empowering" customers to better manage their energy usage, many consumer advocates counter with warnings reminiscent of a frequently quoted observation about the smart grid: "[t]he problem isn't just that 'smart grid' is a vague and over-applied term; the bigger problem is that it has morphed into a catch-all idea, stuffed full of promises that could smother the true potential."[3] Consumers want to ask the tough questions about costs and benefits and question the assumptions, citing the potential risk that payments and higher bills now will not result in future benefits.

This paper identifies the issues of greatest concern for residential ratepayer advocates under proposals for the Utility of the Future. It does so through a review of filings made by

[1] Appendix B to this Report includes a summary of these state initiatives and links to their current status and key documents.

[2] The Guardian: http://www.theguardian.com/environment/2016/feb/16/us-states-renewable-energy-green-economy The 17 states are California, Connecticut, Delaware, Hawaii, Iowa, Massachusetts, Michigan, Minnesota, New Hampshire, Nevada, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Virginia, and Washington. See, also, Governor Charlie Baker (MA) press releases at http://www.mass.gov/governor

[3] Saving the Smart Grid Hype, Hysteria, and strategic planning. By Steven Anderson, editorial contributions by Michael T. Burr, Editor-in-chief, Public Utilities Fortnightly; Kevin Cornish, PE, Executive Consultant Smart Grid Consulting Practice Lead, Black & Veatch; Mark Munday, Elster Solutions N.A; and Rick Stevens, Hydro One Published in Public Utilities Fortnightly, January 2011

Introduction

consumer advocacy organizations[4] in relevant regulatory and legislative proceedings, interviews with selected consumer advocates[5], the authors' own knowledge and experience, and other relevant sources, referred to in this paper as "advocates." In addition, representatives of several public power utilities were interviewed regarding their views and concerns on grid modernization, rate design and related issues around the Utility of the Future concept.

Both advocates and public power cited a range of concerns related to affordability, equity, consumer protection, and communications with customers. For advocates, the Utility of the Future discussion has been focused on complete transformation with little or no discussion about a least cost path to that goal, much less whether the contemplated transformation will provide the promised benefits to consumers. Grid modernization can provide benefits, but how? Who pays and by what rules? Where are the concrete cost benefit analyses? What are the bill impacts? Is there an interim step with less bill impact that could provide most of the benefits? Should there be a better balance between who pays and the future benefits? How can we integrate more renewable energy in a manner that ensures that the grid will operate to provide electricity when and if it is needed? Advocates are asking these questions, but most believe policymakers are not having this discussion in an atmosphere in which facts and risk analysis are integral to the dialogue.

Most advocates are more optimistic with regard to how public power might approach Utility of the Future. Several noted that public power is good at "not following the crowd," citing as examples public power's reluctance to adopt retail restructuring and efforts to reform wholesale markets. Public power does not have the same incentive to grow its rate base or make changes in order to ensure its allowed rate of return or profits. Because the business model for public power is different than for investor-owned utilities, advocates agreed public power can and should take time to study Utility of the Future, determine which aspects provide value to customers, mitigate negative impacts, and adopt reasonable consumer protections.

[4] Consumer advocacy organizations include state supported agencies and offices charged with representing residential utility consumers, nonprofit organizations active in utility rate proceedings and members of the National Association of State Utility Consumer advocates (NASUCA).

[5] Appendix A identifies those interviewed for this Report.

Keeping Essential Electric Service Affordable

"We talk about the utility death spiral but where more and more costs are borne by fewer and fewer remaining captive customers to support grid modernization and others' distributed generation, that's a consumer death spiral."

Ron Elwood, Supervising Attorney, Legal Services Advocacy Project, Minnesota

"Electricity cannot be viewed as a classic market product. Electricity is a basic necessity. Affordability should be defined broadly by looking beyond households participating in the Low Income Home Energy Assistance Program. At least 30-40% of households nationally don't have sufficient income for basic necessities."

John Howat, Senior Energy Analyst, National Consumer Law Center

Affordability of service should be a priority when proposals for new investments and rate design are considered. This includes consideration of customer bill impacts for a wide range of customer classes and demographic criteria, such as household income, age, housing type, and presence of or evidence of conditions that exacerbate vulnerability, such as medical conditions. The growing gap between household income and ability to pay higher electric bills threatens the ability of more households to pay for other necessities. For households earning more than $50,000, residential energy expenditures represent 3% of average after-tax household income, while households making less than $10,000 on average pay 33% of their income for basic and essential energy bills.[6] When a household cannot pay these higher bills, the result is expensive collection actions by utilities in the form of payment plans, customer service calls, premise visits, and, in many cases, disconnection of service.

An analysis of data of investor-owned utilities in New York State by the Public Utility Law Project (Utility Project) documents the basic fact that electric and gas utility service is not affordable for many residential customers of the state's utilities. The utilities' reports to the Public Service Commission indicate that as of December 31, 2014, 977,484 residential utility customers (almost 1 million) were more than 60 days late in paying their bills. This was 12% of the state's residential customers, who owed the utilities almost $970 million for charges outstanding more than 60 days after payment was due.[7] AARP also routinely collects demographic data from older Americans. For example, in a recent AARP study 48% of New York City seniors age 65 and over stated that they are extremely or very concerned about their inability to pay monthly utility bills, while 63% stated that their utility bills had gone up in the last two years, a clear perception that restructuring and reforms have not resulted in the promised result of lowered costs for residential consumers.[8]

A. Investments in Grid Modernization Come with a Big Price Tag

Advocates agreed that the extensive investments required for smart grid, grid modernization, Utility of the Future, and related stranded costs of current investments, are the greatest threat to affordability of service. "Huge cost, massive costs, speculative, all hype, risky, based on promises." These words and phrases are used repeatedly in advocates' filings and discussions.

In their comments on Massachusetts Grid Modernization plan, the Massachusetts Office of Attorney General, the Low Income Network and the Associated Industries of Massachusetts urged a cautious approach to grid investments, particularly when the smart grid pilot projects in the state and elsewhere had not yet been fully evaluated:

"Caution is advisable for a number of reasons. Grid modernization technologies are still developing and carry a risk of obsolescence with them. Requiring investments today

[6] "Energy Insecurity: A Framework for Understanding Energy, the Built Environment, and Health Among Vulnerable Populations in the Context of Climate Change," American Journal of Public Health, April 2013, Vol. 103, No. 4 (Editorial)

[7] Comments of Public Utility Law Project of New York and AARP before the New York Public Service Commission, Proceeding on Motion of the Commission to Address Energy Affordability for Low Income Utility Customers, Case 14-M-0565 (March 4, 2015).

[8] AARP, The State of the 50+ in New York City (July 2014).

without fully considering the results of these pilots will yield uncertain future benefits and potential stranded costs. Many technologies are not yet proven through wide-scale deployment to provide actual benefits, and in some cases, program benefits will hinge on customer engagement, which is uncertain. Moreover, cost overruns for deployment of grid modernization have been a problem in these pilots."[9]

Many advocates are skeptical of the rush to make the grid "smarter" or more "modern," especially without a careful examination of costs versus benefits. Some speculate the move is as much driven by investor-owned utilities drive to expand their rate base and/or win new earnings incentives, as it is to expand renewables and achieve environmental goals. One Advocate suggested that with declining sales, utilities are now looking to the distribution system to increase their rate base. Several noted that the substantial investments in smart meters have not resulted in promised benefits for consumers.

Several advocates identified investments that clearly benefit a minority of customers but only have speculative benefits for "the system" as a growing threat to affordability, pointing to excessive payments to solar customers and proposals to have ratepayers pay for charging stations for electric vehicle owners.[10] Consumer advocates have opposed these proposals because the investments raise rates for struggling consumers, while providing benefits for wealthier consumers who can afford solar investments and very expensive electric vehicles. For example, residential electricity customers would have paid an additional 70 cents per month to subsidize PG&E's proposal for 25,100 EV charging stations throughout its California service area.[11]

Most advocates recognize that grid modernization in particular will provide benefits to the system and customers. Some smart grid investments, such as improved circuit operations, conservation voltage regulation, and improved outage restoration systems were cited as potential benefits that could accrue to all customers. The goal should be to prioritize the investments that produce verifiable savings or other benefits that will accrue to customers.[12]

The volume and complexity of Utility of the Future proceedings are also seen as threats to affordability. The New York REV proceeding is composed of over 17 separate dockets or proceedings with multiple subparts, making it difficult to get a handle on the total investment required to achieve the stated goals. A number of key policy decisions have then deferred actual implementation to future base rate cases, thus making consumer input even more difficult in terms of the need for resources and long term commitment to participation, expert witness costs, and attorney fees. In other jurisdictions, proceedings have been done piecemeal, with no unifying vision, making it difficult for policymakers to see the big picture, while the costs to consumers keep adding up.

Advice to Public Power

Advocates agreed public power should be more cautious about demanding costly new investments or simply following the crowd on the "reform" of the moment. In part this is due to the lack of incentives for public power utilities to expand their rate base to ensure a rate of return on investments. As one Advocate stated: "Public power can approach investments differently, be more selective in what they do. They don't have to fall victim to the hype. They can look for value for their constituents. For public power, the constituents are their customers; with IOUs the constituents are the shareholders. Public power can focus on the value proposition." As of a result of this input, public power electric utilities should undertake a review of Utility of the Future and grid modernization investments with a careful review and gather information as recommended below:

- Every investment should be carefully evaluated both individually and as part of a comprehensive plan so the cumulative impacts can be taken into account. Larger

[9] Commonwealth of Massachusetts, Department of Public Utilities, D.P.U. 12-76 Investigation Modernization of the Electric Grid. Initial Comments of the Office of the Attorney General, the Low Income Network and the Associated Industries of Massachusetts, July 24, 2013.

[10] http://www.greentechmedia.com/articles/read/Regulators-Turn-Down-PGEs-654-Million-EV-Charging-Station-Proposal

[11] http://www.mercurynews.com/business/ci_28760989/

[12] For example, a Chattanooga-based electric utility used its smart grid investments to alert a landlord about excessive usage in a vacant apartment that, upon investigation by the building owner, turned out to be a faulty water heater. See, http://www.timesfreepress.com/news/business/aroundregion/story/2016/jan/12/watch-live-special-epb-announcement-about-chattanoogas-smart-grid/344242/

investments should be linked to short-term benefits that can be tracked and identified, such as by cutting operational costs or reducing the price of generation supply. Public power should ask whether the proposed technology will drive up costs while providing only future or vague customer benefits, or benefits that only a subset of customers are likely to see.

- Present the justification or cause of these proposed investments. Are these costs associated with system-wide needs relating to growth and development? Are the costs in response to a new trend or requirement that is beyond traditional investments to maintain the distribution system? It may not be appropriate for all customers to pay for investments in the distribution system to accommodate an influx of distributed generation unless there is a clear linkage between those investments and benefits that will accrue to all customers. If not, it would be fairer to allocate the costs for some investments and related operations and maintenance expense to the customers who are causing the additional costs.
- Be skeptical of investments based on future customer programs that are designed to reduce consumption (efficiency) or reduce peak load usage (capacity), thereby potentially reducing the cost of electricity. Are these proposed new costs justified on customer benefits that are estimated to appear in the long run? What happens if a sufficient number of customers do not enroll, or results do not persist over time? Who bears the risk if costs will be incurred and included in rates, but the future benefits do not occur as predicted? The short-term bill impacts should be contrasted with a proposed longer stream of customer benefits, where applicable. Public power regulators cannot transfer this risk to shareholders as can regulators of investor-owned utilities. Therefore, there is even a more important obligation to publicly identify and discuss these risks and consider the potential adverse implications if the future scenarios do not pan out.
- Reporting requirements and performance standards should track the estimated costs and all the benefit categories that are identified as justification for the new investments, particularly when the costs are incurred in the short-run, but the benefit streams depend on estimates over a longer period of time.

B. Basic Service at Reasonable Rates Must Be Maintained

"We view our role as the "provider of last resort" and no matter if the wind doesn't blow or sun doesn't shine, we have to have sufficient power supply to meet all needs."

Eric Campbell, Manager of Planning and Analysis, Pasadena Water and Power

"The utility needs to continue to have the central role in planning and investment in the distribution system to ensure that it can "see" all power resources and manage the system to ensure reliability of service. But utilities also need to be more transparent in their planning process and look at alternative investment strategies including DERs."

Arlen Orchard, CEO, Sacramento Municipal Utility District

Several advocates cited the continued need for a "basic service" even as policies allow customers to move toward greater use of distributed generation, efficiency programs, and the creation of microgrids. While using different terms such as basic service, standard offer, and default service, most suggested utilities must maintain reliable and cost competitive service for those who don't want to or can't move to new programs or opportunities, particularly when those alternatives programs may require significant household investments. This sentiment was keenest among advocates with experience in states with retail electric competition. As Sonny Popowsky, a former Consumer Advocate in Pennsylvania noted, legislators in nearly every state that moved to retail competition ensured that customers who do not choose an alternative supplier would receive generation service from their local distribution utility. Popowsky sees the same type of default service as necessary in any move to Utility of the Future.

Advocates stress that utilities should always have an obligation to serve and offer a reasonably priced service. Some customers are simply not early adopters, and will not leave the utility. For others, DER is not an option because they are lower income households, renters, or live in locations inappropriate for rooftop solar panels. This notion of basic service should

not be viewed as an afterthought, or even a safety net. advocates emphasize that as policymakers discuss a future of smart grid and consumer empowerment, the essential role of the local utility should not change. Basic service should be the best service at the best price; distributed energy resources should be viewed as optional choices for customers.

Advice to Public Power

The role of public power as the local utility with the obligation to serve should not be altered or diminished. As the economics of the utility system change, it is essential to ensure all customers contribute in a way that covers their costs and maintains equity principles. Reasonably priced basic service must be available for everyone as the default.

C. Customer Assistance Programs

There is broad acknowledgement that customer assistance programs targeted to low income customers are necessary, and will be even more so in the future. As one advocate said, "The societal problem of inequitable distribution of wealth is not going away." The federal LIHEAP program is insufficient alone to address the needs of lower income households. Many utilities also provide their own bill payment assistance and arrearage management programs. But these assistance programs "draw a line" between those who are eligible and those who are not, leaving out customers who not only struggle to pay bills, but may also be paying subsidies within their rates to support use of distributed energy resources by other customers. Some suggest Utility of the Future proceedings could be a forum for reducing inequities instead of exacerbating them. A potentially positive development occurred with a recent order in New York that requires utilities to expand current low income programs and increases funding mandates. How that order will actually offset or take into account the potential for higher rates due to other renewable energy and distributed generation mandates and subsidies is not yet clear.

Recently, community solar projects targeted to low income areas have been suggested as a means to address affordability and the inequitable access to distributed energy resources. Low income advocates note that many low income households will not be able to participate in community solar projects, and the projects are not of a scale to offset the costs to low income consumers or the cross subsidy that they face. Indeed, some advocates expressed frustration that a few token community solar projects targeted to low income communities distract from addressing the broader equity issues and regressive aspects of Utility of the Future proposals.

Advice to Public Power

- All public power utilities should adopt at a minimum customer assistance programs, including bill payment and arrearage management, to ensure universally available and affordable electric service. However, while these assistance programs are necessary, they are not sufficient to address the concerns about affordability and equity in rate design because these programs do not reach all those qualified based on household income, nor do they address the growing constraint associated with rising utility bills for those households with incomes above the income guidelines.
- Public power has the flexibility to think about affordability more broadly than just a targeted bill payment assistance program. An example of this approach is to consider the impact of changes in rate design on lower income households. While not a perfect correlation everywhere, lower income households often also have lower usage. Rate designs that rely more heavily on fixed charges have a disproportionate impact on lower usage customers.[13] [14]
- Public power should routinely gather and evaluate indicia of affordability for their customers. For example, utilities should be required to report credit and collection information on a regular basis, such as late payment indicators, issuance of termination notices, status of payment plans, termination and reconnection activities, receipt of financial assistance payments and customer

[13] http://consumersunion.org/research/caught-in-a-fix-the-problem-with-fixed-charges-for-electricity/
[14] http://www.nclc.org/energy-utilities-communications/utility-rate-design.html

complaint resolutions. This information will be valuable in considering the impact of higher rates and changes in rate design for residential customers.

- Public power can take a more active role in designing larger scale community solar programs to serve its customers, including those who are unable to install rooftop solar and often at a lower cost than rooftop solar. Such initiatives, if located and designed properly, can be operated to achieve the maximum impact on electricity prices paid by all customers.

Rate Design and Cost Allocation

"Any analysis of rate design changes should analyze the impact across the entire customer class to determine impacts on customers with different usage patterns, income, housing type, and other variables so that the full range of bill impacts can be known and taken into account. Rate design is a zero sum game and there will always be "winners" and "losers" compared to the current rate design. "

Dave Kolata, Executive Director, Citizens Utility Board (Illinois)

"Fixed charges typically harm lower usage and lower income customers. Lower income customers use less electricity on average than higher income customers. Furthermore, fixed charges send a perverse signal with regard to conservation and energy efficiency because when a customer reduces their consumption and would pay a lower bill based on kWhs alone, the higher fixed customer charge offsets this benefit."

John Howat, Senior Energy Analyst, National Consumer Law Center

"Public power agencies often have a "follower" strategy regarding significant changes to rate design. Part of this approach includes analyzing what others have done to determine how well it would work in their own service area. It is important to learn from these experiences before making dramatic changes."

Eric Campbell, Manager of Planning and Analysis, Pasadena Water and Power

Closely related to concerns about affordability are questions of equity in the allocation of utility costs among customer classes, usually reviewed as part of a cost allocation study, and the structure of the rate itself, usually referred to as "rate design." These issues can result in shifting common utility costs to residential customers in an effort to support the economic value of larger commercial and industrial customers who can and do threaten to "leave the system" if they are required to pay a higher portion of utility costs. In addition, how rates are structured can have a significant impact on a customer's bill, particularly if there is a shift to move revenue recovery from variable or per kWh rates to fixed or demand rates. advocates stressed that equity among ratepayers should be front and center in discussion of Utility of the Future. Electricity is a basic necessity for consumers, equity and fair allocation and recovery of costs should be the first consideration before policy change is adopted or investment is made.

A. Equity Among Customers

Some of the investments proposed to support new technologies or develop retail markets are seen as benefiting only a subset of the customers. This issue has particular relevance to the installation of advanced metering systems where deployment is tied to customer behavior changes or the increased penetration of rooftop solar and electric vehicles; investments in the distribution grid to support the management of electric vehicles and rooftop solar; microgrid investments; and efficiency programs that rely on rebates for the purchase of new and more energy efficient appliances. An increasing concern reflects the potential inequities developing within the residential class, issues that are closely associated today around net metering policy and situation of customers who may not have access to distributed energy resources because they reside in rental properties and multi-unit developments.

Net Metering

Net metering is a policy where the local utility pays the solar customer for excess power generated by the rooftop solar system. According to the Edison Electric Institute, the typical net metering policy is to credit the customer at the full retail rate (distribution and transmission), although a few states have recently moved away from crediting full retail costs.[15] [16] [17] The policy of crediting the full retail rate was frequently described by advocates as "inequitable" and "regressive," creating an undue subsidy from non-participants to participants, who are frequently higher

income households because of the significant upfront costs associated with installing a solar system on the roof or to make required payments for a community solar system.

As described by Sonny Popowsky: "Net metering (paying the full retail rate for distributed solar generation) unfairly shifts costs to non-participating customers. Furthermore, this type of rate often overpays for the actual value of individual rooftop solar to the utility system. Rather, payments for solar should be based on a fact-based analysis of the avoided generation, transmission and distribution costs, including avoided environmental compliance costs, that result from rooftop solar, and should not eliminate the obligation of solar customers to support the utility network services upon which they rely."

Many states and even public power utilities are considering reforms to the traditional net metering policy. For example, the "value of solar" approach used by Austin Energy and proposals for reform of net metering under consideration in several States[18] were cited as more equitable approaches. Under these reforms, the "value of solar" is determined similarly to the value of any new generation resource, looking at avoided costs and creating a payment that reflects an analysis of the value of the rooftop solar exports to the system as a whole. Critical to these reforms to net metering is the principle that solar customers must at the very least pay their fair share of the distribution system and be paid a price for their generation supply that is reflective of actual avoided costs, similar to the type of analysis that is used to assign a value to efficiency programs and purchased power contracts. Because solar customers would continue to pay distribution and transmission rates and receive benefits based on an analysis of the "value of solar" to the entire utility system, the risk of cross subsidy to solar customers is reduced.

Renters

The dilemma of how to solve the inequities associated with rental customers has been around since ratepayer funded energy efficiency programs were first introduced in the 1980s. Most advocates felt the discussions hadn't progressed much since then, because there are no easy answers to be had. Renters do not control the structure they live in, and landlords seldom have an incentive to invest in energy saving measures, including solar or building improvements to reduce energy usage. Renters often end up paying for these programs through their electric bills without any realistic opportunity to personally benefit. If they benefit at all it is through savings achieved in generation supply costs flowed through to all customers. Nationally, 37% of households are renters,[19] but this portion is much higher in some urban areas, such as New York City where the vast majority of residential customers live in apartments or master metered multi-unit buildings.[20] Furthermore, low income households are far more likely to rent rather than own, and it is also likely their rental housing and appliances are older and less energy efficient than those of higher income households. While low-income electric customers on average use less electricity than higher income customers, there are well documented examples where low income customers use more than the average residential customer, such as if the rental housing has electric baseboard heat, is poorly insulated, and/or comes with inefficient water heating and refrigeration.[21]

[15] Edison Electric Institute, Straight Talk About Net Metering, September 2013, http://www.eei.org/issuesandpolicy/generation/NetMetering/Documents/Straight%20Talk%20About%20Net%20Metering.pdf

[16] The Solar Energy Industry Association, for example, defines net metering "Net energy metering (NEM) is fundamentally a bill credit that represents the full retail value of electricity delivered" although this definition is not strictly correct. See http://www.seia.org/research-resources/net-energy-metering-guiding-principles

[17] http://www.greentechmedia.com/articles/read/hawaii-regulators-shutdown-hecos-net-metering-program

[18] http://www.nrel.gov/tech_deployment/state_local_governments/basics_value-of-solar_tariffs.html ; also see http://www.utilitydive.com/news/maine-governor-vetoes-solar-bill-that-would-end-retail-rate-net-metering/418296/

[19] National Multifamily Housing Council presents demographic data derived by the U.S. Census Bureau, http://nmhc.org/Content.aspx?id=4708

[20] Ibid., Other cities with large penetration of rental housing includes Chicago, Los Angeles, and Austin, TX.

[21] For example, the District of Columbia low income assistance program provides a higher benefit level to "all electric" low income customers compared to "non-all electric" low income customers because of the prevalence of electric baseboard heat in low income rental housing and apartments. See, e.g., http://www.dcpsc.org/pdf_files/consumerservices/outreach/Factsheets/English/Residential_Aid_Discount_Electric_Bill.pdf

B. Rate Design

Changes in rate design are among the most contentious debates between consumer advocates and utilities in recent years. More and more utilities are seeking higher fixed monthly charges or demand rates for residential customers, citing the need for a revenue stream less reliant on volumetric rates, in an era of energy conservation and declining sales — the so-called "death spiral." Some utilities and environmental advocates have argued for mandatory time variant rates that send a "price signal" based on shorter-term or the marginal pricing of electricity in the wholesale market, such as time of use rates, critical peak pricing rates, and peak time rebate programs. The growing penetration of solar and distributed generation has also prompted proposals for new rate designs—as a means of responding to the lost revenues and to impose some additional contribution from solar customers (without adopting a different rate for solar customers). Finally, the potential for expanded use of electric vehicles have prompted some utilities to push for time of use rates for these customers to encourage "plugging in" during off peak hours.

Proposals such as high fixed charges and demand charges were described by one advocate as a "blunt instrument" to address a specific problem, with the result of making many ratepayers worse off. Any change in rate design will create winners and losers, but some proposals will impact some customers more than others. Very high fixed charges, with at least one utility proposing a move to a $67 monthly charge[22] —make service unaffordable for low usage/low income customers. Residential demand charges raise similar concerns, as well as questions about how residential customers could reasonably be expected to understand, and control, household demand. Some advocates describe a rate design that mandates demand charges for residential customers as a "gotcha" rate that could be very harmful to some customers due to the "surprise" impact of using any appliance at a particular time of day or month.

In response to proposed residential rate design changes under the Reforming the Energy Vision proceeding, The Public Utility Law Project of New York recommended:

> Any rate design recommendation must be accompanied by detailed analysis of bill impacts on all residential customers, not merely focusing on "average" bill impacts or usage profiles. Furthermore, any such analysis should focus on bill impacts if customers do not change their usage profile and should not, as apparently recommended by some commenters, reflect undocumented assumptions about what customers might do in response to these "price signals." Market-based theory is only one tool for analysis for predicting consumer and/or producer behavior. It is not a magic panacea that obviates the need for careful factual inquiry, comprehensive study of actual rather than theoretical evidence, or the application of traditional tools of rate design and regulation.[23]

High Fixed Charges

Most residential customers now pay for electricity based on a flat cents per kilowatt hour (kWh) rate that is collected based on usage. Many advocates support, and some utilities have adopted, inclining block rates for residential customers in which the flat per kWh charge increases based on the predetermined usage blocks, e.g., 100-200 kWh, 201-500 kWh, 501-1,000 kWh, and over 1,000 kWh. Customer charges are per-month fixed charges that apply to each customer in a tariff class, regardless of their usage.

Utilities in some parts of the United States are seeking to sharply increase monthly fixed charges, with offsetting reductions to the per-unit price for electricity.[24] This approach deviates from long-established rate design principles holding that only customer-specific costs — those that actually change with the number of customers served — properly belong in fixed monthly fees. The effect is to sharply increase bills for most lower usage customers, including apartment dwellers,

[22] Madison Gas and Electric proposed a phased in increase to $67, see: http://www.utilitydive.com/news/as-solar-grows-madison-utility-seeks-rate-structure-change/291281/; also see Synapse Energy Economics, Caught in a Fix, The Problem with ity Fixed Charges , http://consumersunion.org/wp-content/uploads/2016/02/Caught-in-a-Fix-FINAL-REPORT-20160208-2.pdf

[23] Reply Comments of PULP, Staff Whitepaper on Ratemaking and Utility Business Models (Track 2, REV), Case No. 14-M-0101 (November 23, 2015).

[24] The fullest expression of this trend is a straight fixed/variable (SFV) rate design, recovering all fixed costs through fixed charges, and all variable costs (fuel, purchased power) through per kWh charges.

urban consumers, highly efficient homes, and customers who have distributed generation systems installed, while typically benefitting larger homes and suburban and rural customers. Most impacted are low-income customers who tend to be low-use customers. Large-volume (often wealthier) customers, meanwhile, see decreasing bills as a result of the shift in revenue recovery from kWh usage charges to higher fixed monthly charges.[25]

An analysis by Synapse Energy Economics[26] prepared on behalf of Consumers Union compared the impact on low and high usage residential customers of increasing a fixed charge from $9.00 per month to $25.00 per month, with a corresponding decrease in the per-kilowatt-hour charge. Bills for higher usage customers (1,250 kilowatt-hours per month) would not see a change, while low-usage customers (250 kilowatt-hour per month) would receive an increase of nearly 40 percent.

Consumer and environmental groups have joined together to oppose moves to higher fixed charges.[27] These groups agree that increasing fixed charges, while lowering volumetric rates, has a disproportionate impact on low usage customers, as shown by the example above. John Howat noted that the best national data shows that lower income, elder and minority-headed households tend to be lower-usage customers,[28] although this relationship between usage and income can vary depending on local demographics, housing, and end-uses for electricity. Further, lowering volumetric rates dampens any incentive to reduce usage in order to lower bills.

Demand Charges

Demand charges (or demand rates) are commonly used to recover some costs of generation, transmission, and distribution of large commercial and industrial customers. Because traditional demand charges are measured on the basis of the individual customer's peak, regardless of whether it coincides with the peaks on any portion of the system, this approach has the potential to result in a mismatch between the costs incurred to serve the customer and the prices charged if the customer's peak is non-coincident with the system peak. Although common for commercial and industrial customers, demand charges have rarely been used for the residential class, and then usually on an opt-in basis. Today, with smart meters and AMI some utilities and policymakers have proposed to experiment with demand rates for residential customers.

Demand charges are intended to create an incentive to reduce peak usage by increasing the bills of those customers who do not moderate their usage profile to avoid a higher demand charge. Most advocates view residential demand charges as fraught with problems, adding complexity that most residential customers will have difficulty understanding, much less controlling. In a presentation to NASUCA, then Consumer Counsel of the Citizens' Utility Ratepayer Board in Kansas, David Springe, described demand charges as having the same negative impacts as high fixed charges-- unless the consumer can avoid them, and they probably cannot. Several advocates echoed Mr. Springe's concerns with residential demand charges, as described in his presentation:[29]

- Demand is a difficult concept, consumers are used to controlling their kWhs not KWs.
- Residential customers have limited ability to control peak usage; they can't stop their air conditioner or refrigerator from cycling on.
- Bills will be higher for lower usage customers.
- Smart meters measure kWh not KW.
- The residential load has greater diversity than the commercial and industrial load.
- A household may be penalized for demand that is not coincident with the system peak.
- It is very difficult to calculate the correct KW for demand in the ratemaking process.

[25] http://www.nclc.org/energy-utilities-communications/utility-rate-design.html. The data presented by the National Consumer Law State reflects both national and individual state energy use and income profiles derived from the Energy Information Administration's Residential Energy Consumption Survey.

[26] Synapse Energy Economics, Caught in a Fix, The Problem with Utility Fixed Charges , http://consumersunion.org/wp-content/uploads/2016/02/Caught-in-a-Fix-FINAL-REPORT-20160208-2.pdf

[27] See for example comments from Natural Resources Defense Council on the "Nix the Fix" coalition: https://www.nrdc.org/experts/ralph-cavanagh/energy-efficiency-progress-americas-utilities-year-review

[28] As reflected in the compilation of income and usage data by NCLC. See, fn. 22.

[29] See David Springe's presentation at http://nasuca.org/event/2015-nasuca-annual-meeting/

Time-variant rates

Time-variant rates (TVR) include hourly prices (where the price reflects the wholesale market hourly price), time of use (where prices change based on the time of day), critical peak pricing (where there is an even higher price charged for "super peaks" that occur several times during hot weather), and peak time rebate (where the customer is paid to reduce usage during "super peak" hours or days). These rate options are also more discussed and implemented for residential customers because of the adoption of advanced or interval metering by some utilities. California regulators have ordered that electric utilities start the transition to mandate time of use (TOU) as the "default" rate option for residential customers by January 1, 2019.[30] In addition, the Sacramento Municipal Utility District in California has stated that it will transition all residential customers to TOU rates as the default rate design in 2018. While advocates have typically not opposed offering TOU rates as an option to residential customers, most advocates oppose changing the default basic flat rate residential service to TOU or any other time varying rate as the default. Historically, there is only a small percentage of residential customers who have affirmatively enrolled in a TOU rate, but there are exceptions. Optional TOU rates paired with a demand charge have proven popular with some Arizona Public Service customers, for example. With an optional rate, those customers who benefit will participate, and can provide benefits to the utility through changed usage patterns. But imposing a rate design change as mandatory or default ignores the significant number of customers who cannot alter their usage patterns and may incur unaffordable bills for an essential service. The Maryland Public Service Commission rejected Baltimore Gas & Electric's proposal to shift to TOU rates with the installation of advanced metering, but did approve a peak time rebate program in which customers who reduced their usage during critical peak hours or days would receive a credit on their bill.[31] The reliance on the "carrot" versus the "stick" approach to residential pricing for basic electric service remains controversial.

Advocates point to customers who may find it difficult or burdensome to shift usage off peak, perhaps due to work schedules, or households with young children and older adults who both need adequate heating and cooling, even during peak periods. Of most concern are TVR plans that base residential rates on short-term wholesale market prices. Residential customers don't have the information to know when high prices are going to hit. The "polar vortex" pricing of early 2014 in the Northeast was a wakeup call on the risks of reliance on wholesale spot pricing when customers served pursuant to variable rate contracts by alternative retail suppliers were socked with rates that doubled and even tripled their promotional or initial contract prices without warning.

In order to implement TVR on a wide scale, the utility will have to invest in advanced or smart metering systems, web portals to provide customer access to their interval usage information, billing changes, and customer education costs. These costs need to be included in any cost-benefit analysis of moving to TVR. Furthermore, in order to justify a widespread reliance on TVR, the utility must document the long-term persistence of the results and the impact of those results on peak usage and resulting generation supply prices. These time-differentiated rate options require customer education and bill analysis to determine what type of usage pattern will benefit or suffer higher bills. Whether voluntary or mandatory, most advocates endorse "shadow billing" for at least one year, to allow consumers to compare the TVR rate option with default rates.

Advice to Public Power

Consumer advocates do not necessarily oppose new rate design options. As advocates struggle with addressing the pros and cons of new rate design proposals, many also question why rate design is a one size fits all and suggest a move to targeted rate design. Under Utility of the Future model, different subsets of consumers will use the system

[30] California PUC Press Release, July 3, 2015, "Residential customers will default to time of use rates on January 1, 2019, but can opt to remain on the tiered rate structure. Time of use rates reflect predictable daily changes in the cost of electricity service, and enable customers to reduce usage during peak hours when electricity prices are higher. Time of use rates will help California meet its climate goals by giving customers incentives to use energy in ways that better integrate renewable generation, and to invest in their own solar and storage resources that will help green the grid." http://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M153/K072/153072586.doc

[31] Maryland Public Service Commission, Order No. 83410, Case 9208 (June 21, 2010). It should be noted that BGE's subsequent amended AMI proposal was approved without the mandatory TOU recommendation and with other changes to the business case for AMI.

Rate Design and Cost Allocation

differently, and it would be fair to consider that their rates should reflect the cost to serve them. Public power is seen as having the flexibility to study and mitigate the disparate impact of imposing radical changes in rate design for the entire residential class. In considering rate design changes, public power utilities should implement the following policies:

- Fairly allocate costs among ratepayers to ensure that everyone who uses and benefits from the electric grid pays their fair share to maintain it. This approach is particularly important to ensure that all customers pay for the distribution grid that is vital to the reliability of the system and that is necessary to support electric service for all customers.
- Calculate and disclose the total value of all taxpayer and ratepayer-funded subsidies and support for renewable and distributed generation programs.
- Explore a "value of solar" type tariff for customers of distributed energy resources, rather than full retail net metering.
- A significant increase in the fixed or minimum monthly customer charge should not be adopted to ensure revenue stability. Rate reviews should be used more frequently, if necessary, to reflect changes in sales and revenues that impact the utility's revenues.
- In general, TVR and demand rates should be offered as voluntary options for residential customers. Consumer advocates generally oppose the move to mandatory or default TVR or demand rate structures for all residential customers. Public power should watch the implementation of the mandatory TOU rate structures by the California utilities in terms of customer acceptance and bill impacts.[32] In the meantime, voluntary TOU or demand rate options can be explored and tested if there is sufficient interest and justification, ideally with a one-year bill guarantee and shadow billing (comparing the customer's actual usage profile under current and optional rates prior to enrollment).
- Consider alternatives to demand charges and TVR that provide an incentive to reduce usage during peak times, such as the widespread reliance on the Peak Time Rebate programs endorsed in Maryland.[33]
- Any analysis of rate options or rate design changes should include a realistic estimate of the costs to educate customers and respond to their questions and concerns. This may be a significant cost for very small public power utilities.
- Explore the implications of new or different rate designs in pilot programs and, where they are determined to be cost effective and beneficial to participating customers as well as contributing to lower generation supply costs, offer them on an opt-in basis.
- Before adopting any new rate design conduct a detailed analysis of bill impacts on all residential customers, not merely focusing on "average" bill impacts or usage profiles.
- Bill impact analysis should focus on bill impacts under the assumption that customers will not change their usage profile to evaluate the worst case scenario and potential risks of adverse consequences.

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[32] It should be noted that the experience in California may not directly translate to other service areas because for most California utilities the residential rate structure is based on an inclining block rate that charges very high prices for higher usage customers and is not typical in other jurisdictions.

[33] For example, Baltimore Gas & Electric and Potomac Electric Co. in Maryland implement a Peak Time Rebate program that pays customers for reducing their usage on a voluntary basis during critical peak events when the utilities alert customers for critical peak events the next day. Under this program, customers who don't take action receive their bill under standard volumetric rates, but customers who do reduce usage during those hours compared to a customer-specific baseline usage profile get a credit on their electric bill. This credit is valued based on the price paid for capacity in the wholesale market. These utilities have found that it is easier to get many customers to reduce usage a relatively small amount compared to soliciting a much smaller group of customers to enroll and pay very high prices for critical peak hours or be required to monitor their appliances in a demand rate by focusing on the "carrot" rather than the "stick."

Consumer Protection

"Public power needs to be ahead of the game in terms of evaluating and responding to the marketing and sales promotions undertaken by solar providers."

Leslie Rutledge, Attorney General of Arkansas

"In New York a proposal to create a "digital marketplace" to stimulate third party distributed energy providers to market to retail customers will require new authority and protocols to protect customer specific data and supervise how and under what circumstances third party entities will have access to this information."

Richard Berkley, Executive Director, Public Utility Law Project of New York

"As we move forward to an era of the Utility of the Future there is a lack of input and baseline of substandard consumer protections for vulnerable customers in many public power jurisdictions."

John Howat, Senior Energy Analyst, National Consumer Law Center

"Policy makers need to step up and respond to the need for consumer protections associated with the marketing of rooftop solar programs. We get calls frequently from our customers about what appears to be misinformation in marketing this product."

Arlen Orchard, CEO, Sacramento Municipal Utility District

A Utility of the Future driven by "consumer empowerment" raises the specter of a "wild west" marketplace for some advocates. While all see value in consumer choice and innovations, the experiences in retail electric markets, and more recently with rooftop solar, demonstrate the need for robust consumer protections. Comments filed jointly by AARP and The Utility Project in the New York proceedings vigorously opposed expanding third party suppliers access to consumers until the state beefed up consumer protections, oversight and enforcement:

> "…Commission oversight, consumer protection and licensing policies that currently govern ESCO[34] activity in New York are inadequate and have exposed residential customers to practices and prices that harm their ability to afford essential electric service. To adopt, as proposed by the Staff, polices that will promote ESCO market share and enable ESCOs and DER providers to interact with ratepayers on the regulated utility bill, and possibly relying on the utility to collect their unregulated charges, would be unreasonable prior to any resolution of the outstanding consumer protection policies applicable to ESCOs for the sale of commodity supply services."[35]

States with robust retail energy markets and hundreds of licensed retail suppliers have routinely initiated consumer protection reforms as a result of documented abuses by some suppliers, as well as widespread evidence that alternative suppliers charge more than the utility's default service.[36] Many of these abuses relate to variable rate contracts that have shifted the risk of market volatility from suppliers and (traditional) utilities to residential customers.[37] Numerous public studies have documented the higher prices charged by alternative suppliers and states have initiated formal enforcement proceedings to seek million dollar penalties and customer restitution as a result of misrepresentation and deceptive marketing practices.[38] The most recent data was released by the Connecticut Consumer's Counsel and

[34] New York uses the term ESCO ("Energy Service Company") to refer to alternative retail energy suppliers.

[35] State of New York, Department of Public Service, Case 14-M-0101-Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision. Comments of AARP and Public Utility Law Project of New York, Inc. on Developing the REV Market in New York: DPS Staff Straw Proposal on Track One Issues, September 22, 2014, p. 14.

[36] In most jurisdictions default service is obtained in the wholesale market on a laddered series of fixed price contracts to avoid price volatility.

[37] This experience has led the Connecticut Legislature to ban variable rate contracts for residential customers in their retail energy market.

[38] The Comments filed by the Division of Public Advocate before the Delaware Public Service Commission in a pending rulemaking to adopt additional consumer protections for retail energy suppliers documents the studies of higher supplier prices in New York, Connecticut, Pennsylvania, state regulatory reforms, and enforcement actions. See, Delaware Commission's PSC Docket Regulation 49, at, https://delafile.delaware.gov/Global/AdvanceSearch.aspx?CNo=cmVnLiA0OQ==

documented that in calendar year 2015 residential customers served by alternative suppliers paid $58 million more than the state investor-owned utilities' default service.[39] With regard to rooftop solar providers, a number of State Attorneys General have filed enforcement actions pursuant to their Unfair and Deceptive Trade Practice authority, while several states have recently considered, and Arizona adopted, laws requiring certain disclosures and contract terms in consumer transactions for rooftop solar. A recent report has recommended a more comprehensive regulatory approach to the sale of rooftop and community solar by third party marketers.[40]

Advocates were in wide agreement that consumer protections in this area are essential. But, as Scott Benson of Lincoln Electric System noted, this is a complex area for public power; it may not be an appropriate role for a public power utility to adopt and enforce consumer protections related to third party providers. In addition to the question of appropriateness, a public power utility may not have legal authority to adopt such standards. If the responsibility falls to local government, what about a public power utility such as SMUD that operates in more than one municipality?

Remote Disconnection Using Smart Meters/Smart Meter Opt Out Program

Where smart meters have been installed, there is a concern by advocates that using remote disconnection for nonpayment will eliminate the consumer protections associated with the premise visit and payment options some utilities have traditionally offered to their customers. Regulators in some states, including New York, Maryland, and Pennsylvania, have emphasized the obligation to retain the policy to make a premise visit prior to physical disconnection of service for nonpayment for residential customers. While this will eliminate some savings associated with the smart metering system, this policy reflects a long standing concern about the potentially harmful impact of disconnection of electric service, the need to be observant of medical and other vulnerable conditions at the household, and the obligation to accept payment or payment plans to avoid disconnection where possible. This policy does not eliminate the use of the remote communication feature of the new metering system for reconnection of service and for disconnection where the reason is due to the request of the customer (terminating their account status). The remote communication feature remains particularly valuable for rental properties where the meter can be turned on and off in between tenants at a reduced operation cost.

Another aspect of this new metering system is that some customers have refused installation of the new meter and have demanded an "opt out" policy that typically requires them to pay an incremental fee to retain a mechanical meter or to disconnect the communication system on their digital meter. The decision to adopt an opt out policy for customers who reject smart meters should be accompanied by a fact-based analysis of the costs that are imposed by the opt-out customers, relating to the need for on-site meter reading.

Privacy and Security of Customer Information

Privacy of customer data collected by utilities has already been a hot topic with regard to smart meters and retail competition. The concern is heightened with initiatives to expand retail markets for efficiency, demand response, alternative rates, and distributed generation products and service by providers that are not necessarily regulated in the same manner as public utilities. Smart metering systems, if installed, provide detailed energy usage data at hourly or even shorter intervals for each customer on a 24/7 basis; and third party marketers want access to this data in order to design customer specific products and services or, in some cases, to determine which customers not to serve.

Richard Berkley of the Utility Project believes there are several key questions that have yet to be answered:

- Under what circumstances should a utility have to turn over data to a third party provider?

[39] http://www.ct.gov/occ/lib/occ/2015_electric_supplier_facts_press_release.pdf

[40] Alexander and Briesemeister, "Solar Power on the Roof and in the Neighborhood: Recommendations for Consumer Protection Policies (March 2016), available from the Maryland Office of People's Counsel website: http://www.opc.state.md.us/Portals/0/Publications/BAlexander.FINAL%20Solar%20Power%20Consumer%20Protection%20Report.March2016.pdf

- What qualifies the third party to get the data?
- How is security of data transfer assured? What are the protocols for safe transfer of confidential data between parties? How often is the data moved? Moving the data increases vulnerability.
- Where is the data stored? If data is stored in another state, or another country, whose laws apply?

In most jurisdictions, customer-specific data maintained or gathered by utilities cannot be released to any other entity unless the customer has given specific authorization. The specific evidence of that authorization is typically established by the regulatory authority and may include a signature, an electronic confirmation, or verification by a third party that is recorded. Additional issues arise with respect to whether any entity can have access to utility data that does not reflect customer specific information, such as usage for a census tract or neighborhood. Privacy issues may be more problematic for public power systems that have competing obligations regarding privacy and open records laws.

Advice to Public Power

- Public power should evaluate and consider the implications for traditional consumer protections associated with disconnection of service when deploying advanced or smart meters.
- Consider an opt out policy for smart meters that reflects cost implications to the utility.
- Privacy of customer information should be protected and detailed interval usage data should not be released to third parties without affirmative customer authorization.
- Adopt privacy and security protocols.
- Communicate your privacy and security rules to consumers.
- Determine whether state or local open records law could impinge on privacy of consumer information.
- Where third party providers for distributed generation, efficiency, or other products interact with the consumers and access the utility system, consumer protection policies should be adopted. How and where these policies are adopted and enforced will depend on the governance of the public power system. At a minimum, public power utilities should discuss these issues with their Attorney General (who has authority under the Unfair Trade Practice statute that almost every state has enacted to pursue deceptive and unfair trade practices) to identify the potential for coordinated information and enforcement activities.
- Consumer protection policies should be adopted in the following areas:

  Registration or Licensing: Consumer protections are not effective unless a governmental agency has the authority to investigate complaints and take action against bad actors, and such enforcement cannot occur without registration or licensing. For public power, this role may be taken on by local government, who should know how to contact authorized representatives, investigate the background of a business, and take action against a provider for violations of laws and regulations.

  Disclosures: A Customer Template: All providers marketing to residential customers should use the same terms and definitions and make their offers in a manner that allows a comparison of impacts on the customer's electricity bills and obligations under the applicable financial arrangement.

  Contract Provisions: Standardizing contract terms and disclosures does not in any way regulate or limit the price charged for a solar lease, purchase power agreement or sale. However, certain contract terms should be specifically addressed and, in some cases, mandated or prohibited to prevent unfair dealing and one-sided bargains about fine print terms and conditions.

  Sales and Marketing Conduct: Consumer protection regulation applicable to providers should explicitly prohibit misleading and deceptive sales and marketing statements and reference the state's specific unfair trade practice or general consumer protection law. A seller cannot misrepresent the nature of the formal agreement or use statements that are directly contradicted by the formal agreement or contract.

  Terms at the Sale of a Property: With rooftop solar there have been complaints about third party financing arrangements including a provision giving the solar provider (the owner of the solar panels in several types of financial arrangements) the right to approve a

purchaser before the lease could be transferred to a new owner. Several states have addressed this situation in proposed legislation. Rights and obligations at the time of the sale of property are a key disclosure in a recently enacted Arizona law.[41]

Enforcement and Penalties, Customer Complaints: Consumer protections cannot be effective unless those regulations can be enforced and violators penalized. Enforcement requires that an agency have the authority and necessary resources to investigate complaints, access the solar provider's records demonstrating compliance with the underlying consumer protection and contract requirements, take actions to revoke licenses or registration, and assess fines or penalties to ensure customers are protected.

[41] Arizona has adopted several consumer protection initiatives applicable to solar providers. See, http://azcapitoltimes.com/news/2016/01/04/new-laws-take-effect-jan-1/

Customer Communications and Accountability

Communicating with Customers

Effective customer education benefits both the utility and its customers. Yet, the prevailing view is that most residential consumers have not been well served by typical customer education programs implemented by most utilities. What is labeled "customer education" is oftentimes more akin to promotional activity designed as "feel good" advertising. Information about specific programs or rate options is often buried in complicated web pages or issued once a year in a brochure. Many utilities have closed in-person customer service offices and rely on "1-800" call centers that are often located far from the customer's service area or that are designed to keep calls short and offer only high-level information. While there are exemptions to the generic observation, attempts by many utilities to promote voluntary rate options, such as time of use for customers with the new smart metering systems, have been met with little interest by consumers or grow in participation much more slowly than initially predicted.

At the same time, residential customers in some states have seen a significant increase in marketing by third party rooftop and community solar providers. As an example, rooftop solar is marketed to consumers with promises of "free electricity" and "getting off the grid," as well as claims of savings on the electric bill that do not reflect the potential for changes to the utility's net metering rates or value of solar tariff. Marketers are not alone to blame, as state polices often promote renewables but fail to provide consumers with information that might ensure that customers have more information to compare offers or that they understand the basis for their "savings" is not part of their contract with the solar provider. It's not surprising then that many residential customers with rooftop solar believe they are "off the grid" and don't understand or agree with policy changes that reduce net metering reimbursements and/or increase fixed charges. Consumers cannot be expected to understand ratemaking, but it is important to help them understand there is potential for changes in rates and rate structure, that could increase their costs.

Communications and public dialogue prior to decisions being made is in the best interest of both the utility and its customers. Community engagement rather than one-way communication takes more time and commitment, but produces better results. The changes proposed under Utility of the Future are significant, making consumer education all the more important. A public power utility can take advantage of its local focus by having more meaningful interactions with customers. Indeed, we found that many public power systems have put these recommendations into practice. For example, SMUD undertook a large-scale outreach among its nine municipal districts with community meetings and information with respect to its proposal to increase the monthly customer charge from $10 to $20 and also phased in this change over three years.

While many advocates cite controversies around smart meters as an example of botched customer communications, Mark Toney, executive director of TURN in California, was impressed with the way SMUD and Silicon Valley Power handled their deployment of smart meters. Well ahead of their smart meter roll out these utilities began the consumer education process, including multiple community meetings. Residential customers knew about the change well ahead of time and had their questions answered. Toney felt the public power customers did not view smart meters as being "crammed down their throats" as did customers of the investor-owned utilities. It also helped that SMUD was able to demonstrate immediate and quantifiable savings for their customers based on lower operational costs.

With Utility of the Future the potential changes faced by residential customers are enormous and customer education becomes more challenging. With the move into greater access to third party providers, the focus of customer education should be focused on such topics as — who do you complain to? Who's responsible for what? Some proposals limit utility communications with customers when a third-party provider is involved.

Advice to Public Power

Communication with customers should begin prior to the implementation of changes. An oft repeated refrain is, "Ask customers, don't just tell them." advocates recommended that public power hire staff reflective of the community and from the community, including communities of color, and non-English speaking communities. Communications should reflect the need for persistence: people have busy lives, one notice is not enough.

When considering changes, the following tools and approach should be considered:

Customer Communications and Accountability

- Research
- Focus groups
- Customer dialogue
- Listen to all viewpoints--residential customers do not often have the same organized voice as the environmental community, for example
- Public hearings
- Pilots—test and evaluate proposals, and solicit and review customer feedback

When implementing change, the following approaches are recommended:

- Be proactive with customers: Provide information up front, explaining proposed changes, the reasons, and the impact on customers.
- Don't withhold information—could the proposal change down the road? Are some groups of customers impacted differently? How?
- Be open to making adjustments. Are there different impacts on different groups? Can they be mitigated? Can you make change easier to understand or handle?
- What is the plan for continued communication after the initial rollout of the new policy or the need for additional investments?

Accountability to Customers

As utilities owned by a public entity, public power has the potential to have more direct accountability to its customers compared to investor-owned utilities, due in part to the ownership structure and the nonprofit obligation. Nonetheless, advocates identified two areas where public power should consider the potential for possible reforms to improve their accountability to customers, particularly when considering significant grid modernization investments and potential rate design changes that will impact all customer bills.

First, public power utilities typically make decisions in a legislative-type atmosphere where the utility presents their proposals to a governing body who may then convene one or more public hearings. Thus, residential consumers may lack some of the tools that are relied upon by consumer advocates in investor-owned utility proceedings that are more judicial in nature, such as the ability to ask questions and request data. This different decision making process may be more evident with the complexity of issues around Utility of The Future where there is a need for considering significant investment costs that are often justified based on assumptions about long term customer benefits. Moving into these more complex and costly proposals presents a more compelling need for decision makers to hear a full presentation of issues and concerns. Despite the obvious differences between public power and investor- owned utilities, providing more robust representation of residential ratepayers is not insurmountable for some public power utilities. The Austin Energy rate review process that includes an Independent Hearing Examiner and Independent Consumer Advocate was cited as a good model for public power by some advocates.[42] Formal hearings and advocacy testimony may not be appropriate or practical for all public power utilities, but additional effort to identify and address residential customer concerns in the more complex world of distributed generation, advanced metering, and rate design options or mandates would benefit both consumers and utilities. Clearly, the governing bodies of smaller public power systems can initiate and implement more extensive and meaningful public participation compared to larger investor-owned utilities governed by a state agency that has its own limitations on budget and resources for outreach and education.

Second, because the customers and shareholders of public power are one and the same, customers bear all the risk of a poor decision made by the utility. Investor-owned utilities are subject to a review of expenses for prudence and theoretically have the risk that expenses will be disallowed and risks shifted to shareholders. The City of Boulder, Colorado, "SmartGrid City" project is one such example, where Xcel Energy was not permitted by the state commission to recover all of the project's cost overruns from ratepayers.[43] The same option is not available to public power and several advocates expressed concern that customers of public power may be at greater risk if promised benefits of Utility of the Future proposals aren't borne out or there are inequities in terms of who is able to benefit with new technologies and service options. This concern suggests a careful review of the reasonableness of the promised benefits and regular reporting mechanisms to track

[42] http://austinenergy.com/wps/portal/ae/rates/2016-rate-review
[43] See http://www.dailycamera.com/news/boulder/ci_27433279/questions-swirl-around-possible-rates-under-boulder-utility

and assure that benefits are being realized as predicted.

Advice to Public Power

- Consider a modified "rate case" proceeding, including hiring an independent consumer advocate to participate on behalf of residential and small commercial customers, where the public power utility is of a sufficient size to justify these additional expenses.
- Consult with local, state or federal consumer advocacy organizations. Local community action agencies can be a valuable resource for interacting with lower income customers.
- Establish metrics for tracking the success of projects and programs. Provide updates to customers. Be prepared to make changes to programs and policies where results do not appear as predicted.

APPENDIX
SUMMARY OF SELECTED UTILITY OF THE FUTURE PROCEEDINGS IN STATES

There has been much written about reforms on utility ratemaking policies by state regulatory commissions and policymakers. Referred to as "Utility of the Future" or "Utility 2.0", these reform efforts are typically associated with the commitments in one or all of the following policy initiatives:

- Reduce greenhouse gas emissions (carbon pollutants).
- Increase reliance on renewable resources in place of coal and even natural gas generation.
- Promote efficiency programs to reduce consumption.
- Promote markets to enhance distributed generation investments, particularly solar generation to avoid other more polluting generation resources.
- Upgrade distribution and transmission infrastructure to "harden" the system in the face of severe weather events.
- Experiment with or mandate alternative rate designs for residential customers in the face of declining utility sales revenues, due in part to the above policy mandates.

Often included in these reforms are proposals to change the way electric utilities are regulated by reducing the emphasis on sales revenues based on consumption, expanding the use of surcharges to enhance revenue streams instead of traditional rate cases, developing performance metrics to measure performance and incent or reward utility management and shareholders.

The following provide a high level summary of several state initiatives in this area that, while not comprehensive, describe the typical proceedings, policies, and range of policy changes and orders that reflect the Utility of the Future model.[44]

NEW YORK: REFORMING THE ENERGY VISION

Initiated in April 2014, the New York Public Service Commission and the Governor announced a Reforming the Energy Vision (REV) proceeding with the intent of transforming the role and manner of regulation of the electric distribution companies:

> The energy industry is in transition. Technological innovation and increasing competitiveness of renewable energy resources, combined with aging infrastructure, extreme weather events, and system security and resiliency needs, are all leading to significant changes in how electric energy is produced, managed and consumed. New York State must lead the way to ensure these trends benefit the State's citizens, whose lives are so directly affected by how electric energy is manufactured, distributed, and managed.
>
> To meet this challenge, the Commission commenced its Reforming the Energy Vision (REV) initiative to reform New York State's energy industry and regulatory practices. This initiative will lead to regulatory changes that promote more efficient use of energy, deeper penetration of renewable energy resources such as wind and solar, wider deployment of "distributed" energy resources, such as micro grids, on-site power supplies, and storage. It will also promote greater use of advanced energy management products to enhance demand elasticity and efficiencies. These changes, in turn, will empower customers by allowing them more choice in how they manage and consume electric energy.
>
> The Commission has identified six core policy outcomes relating to customer knowledge, market animation, system-wide efficiency, fuels and resource diversity, system reliability and resiliency, and carbon reduction. A staff report and proposal sets forth a vision for how to accomplish the Commission's objectives. The proposal describes how customer-side resources can become a primary tool in the planning and operation of the utility system, which will improve system efficiency and enable the deployment of cleaner and more resilient technologies. The report further explains how reforms in the utility ratemaking process will be necessary, to provide the correct incentives for utilities and markets to develop a cleaner and more efficient electric system.[45]

In order to accomplish these objectives and make these changes the Commission initiated two major tracks for this proceeding. Track One established the REV policies and goals. The Track Two proceeding was designed to adopt changes in ratemaking and rate design policies, tariffs, and

[44] While an attempt has been made to provide the most currently available information in these summaries, several of these proceedings are multi-faceted and ongoing.

[45] The REV proceeding is Case No. 14-M-0101 at which all the REV policy documents can be accessed. http://www3.dps.ny.gov/W/PSCWeb.nsf/All/CC4F2EFA3A23551585257DEA007DCFE2?OpenDocument

performance metrics and incentives to achieve the adopted goals. The Commission adopted its Track One policies on Feb. 26, 2015. The adopted policies are basically the same as proposed by the Commission itself when it started this proceeding and when the staff submitted its proposals for public comments. A typical example that permeates this document:

> REV will establish markets so that customers and third parties can be active participants, to achieve dynamic load management on a system-wide scale, resulting in a more efficient and secure electric system including better utilization of bulk generation and transmission resources. As a result of this market animation, distributed energy resources will become integral tools in the planning, management and operation of the electric system. The system values of distributed resources will be monetized in a market, placing DER on a competitive par with centralized options. Customers, by exercising choices within an improved electricity pricing structure and vibrant market, will create new value opportunities and at the same time drive system efficiencies and help to create a more cost-effective and secure integrated grid.
>
> The more efficient system will be designed and operated to make optimal use of cleaner and more efficient generation technologies. Weather-variable renewable resources will be made more economically efficient by increased use of load control, smart devices, and storage. The values of customer-sited generation – both reliability and environmental – will be recognized in markets. The system will encourage substantial increases in deployment of these technologies. [Order at 11]

The Track Two ratemaking and rate design proceeding was initiated with a Staff proposal in July 2015 and resulted in an order in May 2016. This "policy" order allows electric utilities to adopt new earnings sharing mechanisms and revenue protection mechanisms to entice the utilities into support for and proposals for investments to enable distributed generation, clean energy renewable resources, and efficiency programs. The Commission stated that over a period of time utility earnings must be divorced from sales revenues and tied to "consumer value," pointing to the information and technology markets. However, no mandates were adopted to change the current rate structure, but rather opt-in rate options were endorsed for the near term. A study was ordered to consider demand rates or time of use rates for residential and small commercial customers with detailed bill impacts to be analyzed for statewide implications. These new policy proposals will be fleshed out and implemented in the future utility rate cases in which distribution resource implementation plans will be proposed and reviewed.[46]

The Commission has also adopted policies and guidelines to govern a revised Benefit Cost Analysis Framework that will ensure that environmental and societal costs and benefits will be evaluated when comparing distributed energy resources and investments with traditional programs and investments.

While this proceeding was pending, a New York Clean Energy Plan was proposed and adopted by the Governor and his energy offices, that calls for a 50% renewable generation resource mix by 2030 and a 40% reduction in carbon or greenhouse gas emissions from 1990 levels by 2030. Several of the REV proceedings have sought to implement those objectives. The most controversial proceeding is associated with the Commission's pending proposal to adopt a "clean energy standard" that would require ratepayers to support the operation of two upstate nuclear power plants that have threatened premature closure due to their inability to cover their costs and make a profit in the wholesale market.

In May 2016 the Commission adopted a long awaited order mandating reforms and additional budgets for New York's gas and electric low income programs. The order will expand those eligible for discounts from 1.1 million to 1.65 million customers and ordered a collaborative among other state agencies to reach all of the state's 2.3 million households at or below 200 percent of federal poverty level and have greater access to clean energy programs, including efficiency and assistance programs. The order seeks to ensure that low income customers do not pay more than 6 percent of their household income for essential energy services, noting that this percentage is half of what many of these low income families must spend for electric and gas heating.[47]

More importantly the REV proceeding has spawned many

[46] New York PSC, Order Adopting a Ratemaking and Utility Revenue Model Policy Framework, Case 14-M-0101 (May 19, 2016).
[47] New York PSC, Order Adopting Low Income Program Modifications and Directing Utility Filings, Case 14-M-0565 (May 20, 2016).

other proceedings designed to implement or compliment the REV goals and objectives. Among the pending proceedings are the following:

- Community Choice Aggregation
- Community Net Metering
- Clean Energy Fund
- Clean Energy Standard
- New York Green Bank
- Dynamic Load Management
- Distributed Energy Resources Oversight
- Large Scale Renewables
- Low Income Affordability
- Net Metering
- Utility Energy Efficiency Programs
- ESCO (alternative energy suppliers) Licensing and Consumer Protection Reform
- Guidance on Distributed Energy Resource Plans
- Benefit Cost Analysis Guidelines
- Demonstration Projects

Process. The New York Commission initiated a regulatory proceeding in which Staff proposals are issued for public comments and reply comments, followed by an order. To date, there has not been any formal collaborative process. Nor has there been a formal public hearing with evidence and opportunity for cross-examination of facts and party positions prior to adopting any of these orders to date. The Commission has held workshops and "technical conferences" that are open to any party, but those activities typically reflect a predetermined agenda with presentations by selected experts and organizations. The commission has held numerous public meetings and opportunities for public comment with transcripts available throughout the state in a legislative style setting. It is also important to note that this REV initiative does not reflect a statutory mandate. Nor have the clean energy goals or the Clean Energy Plan been adopted by the Legislature.

Observations, Consumer Comments. According to AARP and the Public Utility Law Project of New York and other consumers, the REV proceeding has emphasized broad policies and goals to encourage the reliance on distributed generation, efficiency, and "clean" energy, but has yet to clearly identify the actual costs that ratepayers will be required to include in rates to achieve this vision. In a July 18, 2015 letter to the Commission, AARP and the Public Utility Project Law Project of New York asked policymakers to "Ensure that essential electricity service is affordable for all New York households. New mandates that may flow from this proceeding should not result in higher costs and bills." In addition, these consumer representatives have emphasized throughout their comments on the need for additional resources and mechanisms to allow consumer participation in the REV process and the many sub-proceedings associated with REV.[48] These advocates and others have commented in opposition to the adoption of earning incentive mechanisms for utilities without appropriate performance metrics that reflect affordability and value for consumers. Finally, advocates have questioned the need for any radical change in rate design to protect utility revenues without further analysis of the wide range of potential bill impacts.

MINNESOTA "e21" Initiative

The Great Plains Institute[49] and the Center for Energy and Environment hosted a collaborative effort in 2014 to set the stage for reform in how Minnesota electric utilities are regulated and "correct" the "misalignment between the utility business model (and the regulatory framework that supports it) and the realities of today's marketplace and Minnesota's public policy goals." Labeled the "e21 Initiative, ["e21" stands for 21st Century Energy System], the December 2014 Phase I Report[50] recommended two fundamental changes to correct this "misalignment" (1) shift from providing everyone with the same grid electricity to one that offers customers more options in how and where their energy is produced and how and when they use it; and (2) shift from a regulatory system that rewards the sale of electricity and capital intensive investments to one that "rewards utilities for achieving agreed upon set of performance outcomes that the public and customers want (e.g., energy efficiency, reliability, affordability, emissions reductions, predicable rates, etc.)"

The report reflected "consensus recommendations" of the participants, but there was no listed participation of the

[48] advocates have noted that New York is one of the few states without a legislative mandate for an independent consumer advocate office to represent consumers before the Public Service Commission.

[49] www.betterenergy.org

[50] The Phase I Report: http://www.betterenergy.org/sites/www.betterenergy.org/files/e21_Initiative_Phase_I_Report_2014.pdf

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Minnesota public advocate or the regulatory commission. There was one representative of the low income legal aid community. Most of the participants were utilities and environmental organizations and businesses that promote renewable and solar programs.

The "recommendations" for a new regulatory framework:

Forward Looking Approach to Ratemaking and Incentives: Allow utilities to opt in to a five-year forward looking performance-based business plan that will provide predictable rates to consumers. Under these plans, utility revenues would depend in some part on achievement of an agreed upon set of performance metrics. These plans assume that the utility will propose investments to modernize the grid, plan and manage Distributed Energy Resources, and optimize the system's overall efficiency.

Customer Option and Rate Design Reforms: Using the "customer centric" objective, deliver services and options that customers value, "while providing universal access and affordable service," rate design review with suggestion of more or different optional time varying rates[51]; flexibility for utilities to "tailor" rate and service options that respond to "customer needs and interests," and pilot programs to test and bring to market more quickly new options and services.

Reforms to Regulatory Process: More resources for regulators, use "more fully their existing quasi-legislative authority," more collaborations, generic dockets, support the development of "forward-looking solutions through more collaborative stakeholder process in advance of the formal hearings. Along with rate adjustments for costs and expenses, the report recommended a continuation of the existing surcharges for energy efficiency, purchased energy costs and other "costs recovered through cost recovery riders that the commission determines are appropriate and necessary for the effective implementation of the plan."

Planning for a Modern and Efficient Grid: The current grid is "old" and doesn't support "modern" technologies. Need for proactive planning. Suggests a "distribution planning and grid modernization stakeholder process."

The report recommended many significant revisions to current Minnesota statutes and regulations, including an "opt in" five-year performance based rate plan, and special treatment for "energy intensive trade exposed" industries.

While first vetoed by the Governor due to the last minute nature of the legislative process that resulted in the statutory changes, several statutory changes reflected in the Phase I Report were adopted in 2015.[52] Among the changes that were adopted:

- Utilities may propose a five-year rate plan with performance standards that are "quantifiable, verifiable, and consistent with state energy policies." These performance standards may allow the utility to earn incentives. This proposal must reflect or be accompanied by a plan that identifies "investments that it considered necessary to modernize the transmission and distribution system by enhancing reliability, improving security against cyber and physical threats, and by increasing energy conservation opportunities by facilitation communication between the utility and its customers through the use of two way meters, control technologies, energy storage and microgrids, technologies to enable demand response, and other innovative technologies." The utility can recover its forecasted rate base based on a "formula, a budget forecast, or a fixed escalation rate, individually or in combination." Operations and maintenance expenses can be recovered based on "an electricity related price index or other formula." The authorized tariffs include the potential (but not a mandate) for "an affordability rate for low income residential customers." A new transmission cost adjustment mechanism is authorized. The new statutory language explicitly authorizes cost recovery for costs associated with distribution planning and investments in distribution facilities to modernize the grid after review and approval by the commission.
- The Commission is authorized to approve a "competitive rate for one or more energy intensive, trade exposed electric utility customers." This allows a special rate schedule for these customers that includes options, such as a fixed rate, market based rate and rates to encourage utilization of clean energy technology. When considering

[51] See, e.g., the recommendation that the Commission should not "disadvantage low income ratepayers" with these options and reformed TOU price signals. Page 10.

[52] The substantive changes to the Minnesota public utility laws were included in an omnibus bill adopted in June 2015: 1st Special Session 2015, Chapter 1, https://www.revisor.leg.state.mn.us/laws/?year=2015&type=1&doctype=Chapter&id=1

> the proposed tariff the Commission must consider "potential cost impacts on utility customers" and the "net benefit to the local or state economy."

While the web page for this initiative identifies a Phase II list of participants and observers, this list does not include any consumer or low income advocates or representatives.[53] Furthermore, no further action from the e21 collaborative has occurred. However, in March 2016 the Staff of the Minnesota Public Utilities Commission issued a report on grid modernization that seeks public input on a proposed definition of grid modernization, proposes policies to implement grid modernization, and identified a potential three phased approach to adopt policies and implement grid modernization:

> When combined, these three components will allow the Commission to identify and consider necessary policy development and implementation in a manner that best suits the needs of Minnesota. This process will provide ample opportunity for stakeholders to provide input in the process. Specifically, this report highlights the need for the Commission to: address distribution system planning in order to enhance grid reliability and resiliency; ensure optimal utilization of grid assets to minimize total system costs; and enable integration of a variety of distributed energy resources.[54]

According to this report, the staff's recommendations were also developed as a result of a collaborative process with three stakeholder meetings. During this process, a wide range of proponents for grid modernization made comments and presentations. To date, no additional Commission action or comments have been submitted with respect to the staff's report.

Process. While the e21 Initiative was undertaken as a collaborative process that strove to achieve consensus, several of the participants (namely Xcel Energy and the large industrial customers associated with the "energy intensive, trade exposed" policy) proposed statutory changes to implement some, but not all of the recommendations of the Phase I Report. In part due to this result, the lone low income consumer representative resigned from the collaborative process. This initiative has now stalled and is perhaps being overcome with formal regulatory proceedings at the Minnesota PUC.

Observations and Consumer Input. While the e21 Initiative has failed to achieve consensus and has not yet included ongoing participation by residential consumer and low income advocates, its agenda may be overtaken by more formal regulatory proceedings. Certainly, the experience with respect to the implementation of some but not all, of the Phase I Report recommendations has resulted in a barrier to a defensible process.

The Minnesota Attorney General's Office of Residential Utilities and Anti-Trust Division submitted comments at the start of the collaboration on grid modernization, including the following that is typical of many consumer advocate concerns on the grid modernization and Utility of the Future agenda:

> In sum, grid modernization suggests a tantalizing future; one in which the flow of information could unlock a bevy of innovative energy services, but also one in which the system could work against those without the resources to participate. In thinking about the modernized grid, it will be especially important to consider the costs and risks of implementation because, if not carefully considered, grid modernization could end up benefitting the few at the expense of the many.[55]

MICHIGAN ROADMAP TO NEW ENERGY POLICY

The Michigan Energy Office initiated a "Roadmap to Implementing Michigan's New Energy Policy" that was funded in part with a grant from the U.S. Department of Energy in January 2015.[56] This project includes state government, business, utilities, advocacy groups, and other stakeholders to consider a baseline assessment and research on Michigan's

[53] http://www.betterenergy.org/sites/www.betterenergy.org/files/e21_Initiative_ParticipantsObservers_PhaseII.pdf
[54] Staff Report on Grid Modernization (March 2016), available at:
[55] Comments of the Attorney General (September 15, 2015), available at the Grid Modernization case file at the Minnesota PUC: https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=eDocketsResult&docketYear=15&docketNumber=556#{C336BAF9-C0A1-4BBE-A994-8C4BC6EF7B54}
[56] http://www.michigan.gov/energy/0,4580,7-230-72052_72054_73554---,00.html

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current energy policies and regulatory framework and then develop "paths to the future." The purpose is to develop recommendations for changes to the current regulatory structure and framework and consider alternative rate designs. Three phases are outlined for this process and span a 24 months process: (1) Identify and conduct research on key baseline areas and issue a report; (2) develop a vision and guiding principles for changes to regulatory model and rate making and make recommendations and report; and (3) develop recommendations for specific changes to ratemaking and rate designs with an implementation strategy.

This process has resulted in a "Baseline Research Report" and a "Paths to the Future Report," the latter which has not yet been adopted or approved by the stakeholders. Meetings were held throughout 2015, but the last scheduled meeting occurred in December 2015. At that time there was a discussion of the potential for a hiatus in the activities of this effort due to the ongoing Flint water crisis and the diversion of state government stakeholders to responding to that crisis: "Recognizing that there is uncertainty around the fate of energy policy in 2016, the group determined that the best course of action would be to put their meetings on hold until February 2016. If at that time there is energy legislation, then the steering committee will meet to discuss what the next steps are for the stakeholder group. Stakeholders agreed to this approach." On February 22, 2016 a meeting was held to discuss "final recommendations" for demand response programs, considering time of use and critical peak pricing options, as well as demand response or peak time rebate programs. Specific demand response policy recommendations were discussed and widespread consensus was apparently obtained on such recommendations.[57]

The Paths to the Future Report[58] published in August 2015 includes a detailed discussion of options that address the role of the distribution utility in a future dominated by distributed generation (referred to as "codes of conduct" in this report); performance regulatory models, including tracking utility performance and incentives; customer rate design and the need for changes in rate design to accommodate the new power sector changes; decoupling and how to design such a policy; and infrastructure planning, analysis, and review.

Process. This project includes specific guidelines for the operation of the stakeholders. A Steering Committee is composed of state government officials from the Agency for Energy, Department of Environmental Quality, and Michigan Public Service Commission. The Stakeholder Group is composed of individuals representing the Attorney General (the official ratepayer advocate), large industrial customers, utilities (both investor owned and publicly owned), environmental organizations, and other energy related businesses. There is no member of the non-governmental advocacy organizations representing low income or ratepayers. The project has contracted with the Regulatory Assistance Project to assist the group with background materials and research.

The meetings are open, announced, and accompanied by publicly available minutes. However, there has been no public outreach or public meetings scheduled for this process to date.

There is a written Stakeholder Group Responsibilities and Procedures that sets forth the obligations of the Steering Committee and the other stakeholders. While consensus is the preferred result, a "supermajority" consisting of at least one more than a simple majority "will constitute the level of agreement necessary for a consensus recommendation to the steering committee." The Steering Committee has the responsibility for the proposed regulatory or rate design changes. "A policy call will be made by state decision makers on whether to implement recommended changes to ratemaking and rate design and, if so, when and how to make this transition."[59] A common theme for these recommendations include the policy that demand response programs be voluntary and that they be accompanied by extensive customer education, including shadow billing and programs to help customers who enroll in these programs save money on their electric bill.

Observations and Consumer Input. While this effort, funded in part by a grant from the U.S. Department of Energy, appears to reflect many of the same potential initiatives and policies as those contemplated in New York and Minnesota, the actual progress to date has been slowed down, probably due to other priorities for the members of the Steering

[57] http://www.michigan.gov/documents/energy/DR_Recommendations_Feb22_522981_7.pdf
[58] http://www.michigan.gov/documents/energy/path-to-future-report_497839_7.pdf
[59] Stakeholder Group Responsibilities and Procedures, http://www.michigan.gov/documents/energy/responsibilities-procedures_497842_7.pdf

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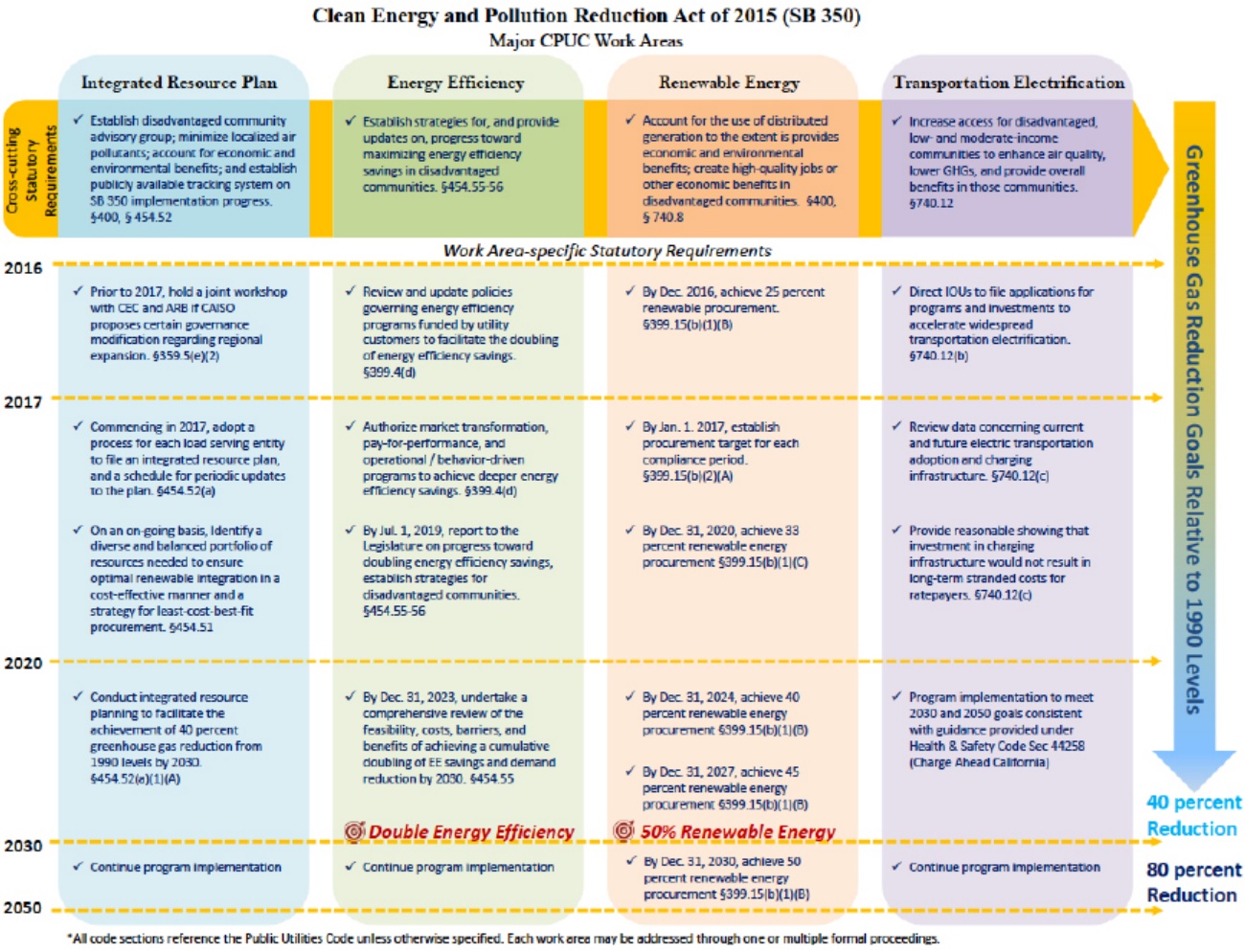

Committee. There has yet to be any consensus recorded or developed for the "paths to the future" recommendations that have been published for public comment or submitted to the Michigan Public Service Commission for implementation. It is difficult to identify the input of consumer advocates on the meeting agendas or discussions to date. Finally, none of the documents or presentations prepared to date identify incremental costs and benefits to ratepayers with these policy changes.

CALIFORNIA CLIMATE CHANGE INITIATIVES

California's energy policies are driven by legislative and statutory mandates. The Clean Energy and Pollution Reduction Act of 2015 (Senate Bill 350) requires the California Public Utility Commission to focus energy procurement decisions on reducing greenhouse gas emissions by 40 percent by 2030, including efforts to achieve at least 50 percent renewable energy procurement, doubling of energy efficiency, and promoting transportation electrification. These mandates reflect and are integrated with California's long standing commitment to funding for efficiency programs, renewable energy resources, support for net metering for solar installations, and grid modernization investments. For

example, the commission approved advanced metering for all California gas and electric utilities before any other state undertook such an expensive mandate. Furthermore, the California Commission has long supported time varying rates and in June 2015 adopted a rate design order that will require residential customers to take electricity under a default time of use rate structure by 2019.[60] Finally, California utilities implement robust and well-funded low income assistance programs, including rate discounts and no-cost weatherization and efficiency measures.[61]

California's ratemaking policies have relied on multi-year base rate cases with a significant number of surcharges and other riders to reflect specific costs and revenues. California utilities operate under a decoupling program that allows for recovery of lost revenues pursuant to the multi-year rate plan formula. While initially adopting restructuring and retail competition, that process was halted in 2002 after the nascent wholesale market passed through volatile and very high prices to end use customers. As a result, California utilities are required to plan and implement generation supply service for their customers, whether through wholesale market contracts, self build, or purchase power agreements. Residential retail electric competition does not exist, but larger customers can shop and select an alternative supplier.

The commission's implementation activities focus on integrated resources planning, energy efficiency, renewable energy, and transportation electrification:

In addition, the commission has identified 17 separate dockets and proceedings to implement these and related statutory directives.[62]

Process. The California commission is a regulatory agency and operates under formal rules of procedure. The typical process for any major policy order or ratemaking change is to initiate a formal proceeding, seek formal intervenors, solicit comments, hold workshops and/or hearings, issue a tentative order from an administrative law judge subject to comments and exceptions, and adopt an order by vote in an open meeting of the commissioners. These proceedings typically require a stakeholder to obtain an attorney and participate in a potentially lengthy process that may involve multiple comments and workshops or meetings. This burden on ratepayers is ameliorated in part by California's long standing intervenor funding program in which intervenors that can document their inability to support formal participation can seek reimbursement after the fact of their expenses valued at "market based rates" for attorneys and experts.

MASSACHUSETTS GRID MODERNIZATION

According to the Massachusetts Department of Public Utilities:

> The modern electric system that we envision will be cleaner, more efficient and reliable, and will empower customers to manage and reduce their energy costs. The modern electric system will build on the Administration's progress towards our clean energy goals by maximizing the integration of solar, wind, and other local and renewable sources of power. It will minimize outages by automatically re-routing power when lines go down, and immediately alert the utility when customers have lost power. Because customers will have new tools and information to enable them to use less electricity when prices spike, the electric system will be appropriately sized and less expensive.[63]

The DPU's implementation of its grid modernization vision was begun in October 2012, when the department issued a Notice of Investigation into the modernization of the electric grid. From November 2012 through June 2013, a Grid Modernization Working Group was formed in which stakeholders discussed grid-facing (referring to distribution grid investments and technologies) and customer-facing (referring to customer programs and rate design) issues relating to the modernization of the grid. On July 2, 2013, the stakeholders submitted a final report[64] to the department with their recommendations. On December 23, 2013 the department issued an order[65] (D.P.U. 12-76-A) containing

[60] http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Meetings_and_Events/ResidentialRateReformFactSheet.pdf
[61] http://www.cpuc.ca.gov/iqap/
[62] http://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Electric_Power_Procurement_and_Generation/Procurement_and_RA/Inventory%20of%20SB%20350%20proceeding%20timelines.pdf
[63] http://www.mass.gov/eea/energy-utilities-clean-tech/electric-power/grid-mod/grid-modernization.html 6
[64] final report
[65] 12-76-A

a straw proposal for moving forward with modernizing the electric grid, based in large part on the deliberations of the working group. On June 12, 2014, the department issued an order[66] (D.P.U. 12-76-B) requiring each utility in Massachusetts to develop and implement a 10-year grid modernization plan, to be updated regularly. In this order, the department required the utilities to include a proposal for full scale deployment of smart meters and associated investments for evaluation under a cost-benefit evaluation. The department concluded and found that grid modernization will provide several benefits including:

- Empowering customers to better manage and reduce electricity costs.
- Enhancing the reliability and resiliency of electricity service in the face of increasingly extreme weather.
- Encouraging innovation and investment in new technology and infrastructure, strengthening the competitive electricity market.
- Addressing climate change and meeting clean energy requirements by integrating more clean and renewable power, demand response, electricity storage, microgrids and electric vehicles, and providing for increased amounts of energy efficiency.

In November 2014, the department issued a companion order on time varying rates[67] (D.P.U. 14-04-C) that established a policy that residential customers should be required to pay electricity pursuant to a time of use rate structure as their "default" rate design.

Process. The Working Group project was implemented by a "process consultant" and an "expert" resource advisor. The stakeholders considered and adopted procedural rules in which consensus would be sought, but that where consensus was not reached, the differing views of the parties would be noted and described in the final report. Furthermore, the department staff was actively involved in the process and supervising the overall project. The Steering Committee comprised 25 member organizations, representing all categories or interested persons and organizations. These members included the ratepayer advocate, representatives of low income consumers, business customers, environmental organizations, other state government offices, and new technology marketers. There were eight plenary meetings and numerous subcommittee meetings. While there were contentious discussions, the final report was viewed by all participants as fairly representing the various views of the stakeholders and included a clear identification of where consensus was reached and where differing views existed. For example, where stakeholders differed on the identification of barriers to the implementation of a modernized grid and associated technologies and infrastructure investments, those additional views were identified in the report. The Massachusetts Attorney General (ratepayer advocate) and the low income representatives identified the following barriers and concerns that were not necessarily agreed to by other parties:

Cost Effectiveness for Evaluating Customer-facing Programs: Assessing the benefits and costs for certain customer-facing investments or programs requires additional consideration, and the framework for how to conduct and evaluate the cost -effectiveness of these programs needs to be established.

Regulatory Framework: A framework for regulatory review and cost recovery needs to be established for grid modernization investments and programs that will help ensure that: customers' rates are affordable, just and reasonable; that costs are allocated to customers based on cost allocation and assignment principles in place today, and; investments are least -cost, prudent and used -and useful.

Balancing Safety and Reliability: Grid modernization investments must be made in alignment with and in support of the distribution companies' responsibility to provide reliable, safe, and least -cost service to customers at affordable rates.

Affordability: Distribution companies' customers will likely be asked to pay for many future grid modernization investments. Investments into grid modernization may be more costly than traditional investments. Such investments could undermine the distribution companies' ability to achieve, maintain and promote affordable electricity rates and charges for all customers.

Benefits: Many of the benefits associated with some grid modernization investments and programs have not yet been demonstrated in full-scale implementation and may

[66] 12-76-B
[67] http://www.mass.gov/eea/docs/dpu/electric/grid-mod/d-p-u-14-04-c-final-order-11-5-2014.pdf

be experienced differently among customers who may be asked to pay for these investments.

Customer Engagement: In order to obtain some of the benefits of grid modernization it will be important to engage customers to participate in new or innovative programs. Customer engagement and sustainability may be uncertain, may vary significantly across customers, and may be highly dependent upon the types of technologies and programs offered them.

Technological Change: The pace of technological change, and the potential for technological obsolescence, increases the complexity of the issues and risks in evaluating some grid modernization investments.

The actual departmental orders were adopted in 2014 after proposed orders were issued with opportunity for comment. However, there was no formal hearing or evidentiary process that led to the adoption of any of the department's orders summarized above.

Observations. The department's orders issued in late 2014 were followed by the election of a new Governor and the appointment of new commissioners. While the utilities duly filed their grid modernization plans in August 2015, no immediate action was implemented to consider these plans in a formal evidentiary process until mid-2016. These proceedings are ongoing.