UNITED STATES OF AMERICA
BEFORE THE
DEPARTMENT OF ENERGY

Addressing Policy and Logistical Challenges to Smart Grid Implementation.	))	Request for Information

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COMMENTS
BY
THE OFFICE OF THE OHIO CONSUMERS' COUNSEL

JANINE L. MIGDEN-OSTRANDER
CONSUMERS' COUNSEL

Jody M. Kyler
Assistant Consumers' Counsel

Office of the Ohio Consumers' Counsel
10 West Broad Street, Suite 1800
Columbus, Ohio 43215-3485
(614) 466-8574 (phone)
kyler@occ.state.oh.us

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The Office of the Ohio Consumers' Counsel ("OCC") hereby submits the following comments in response to the United States Department of Energy ("DOE") Request for Information ("RFI") entitled "Addressing Policy and Logistical Challenges to Smart Grid Implementation" See 75 Fed. Reg. 57006 (September 17, 2010). The RFI requests comments and information from interested parties to assist DOE in understanding "policy and logistical challenges that confront smart grid implementation, as well as recommendations on how to best overcome those challenges."[1]

OCC is Ohio's statutory residential utility consumer advocate, empowered under Chapter 4911 of the Ohio Revised Code to represent the interests of Ohio residential utility consumers in proceedings before state and federal administrative agencies and courts. OCC has extensive experience with regulatory policies governing the electric utility industry and represents residential consumers of PJM member utilities in Ohio. The National Association of State Utility Consumer Advocates ("NASUCA"), of which OCC is a member, has adopted two Resolutions on Smart Grid Principles and Advanced Electric Metering ("Resolutions") that are also attached to these Comments. OCC's

[1] 75 Fed. Reg. 57006 (Sept. 17, 2010).

Comments will refer to recommendations from Resolutions as well as other issues not addressed therein.

I. COMMENTS

A. Interactions With and Implications for Consumers.

For consumers, what are the most important applications of the smart grid? What are the implications, costs, and benefits of these applications?

The most valuable application of the smart grid for consumers would encompass all applications that enable them to decrease their overall electricity costs. The smart grid has the potential to lower the operational expenses of the transmission and distribution systems which could in turn reduce the costs to consumers, reduce generation costs and prices, decrease the number of and duration of power outages, accommodate the integration of cleaner and cheaper renewable generation resources onto the grid, and allow consumers to manage their energy usage in a more cost-effective manner. The "killer" smart grid application would be an application which allows consumers to directly monitor and control their energy consumption in near real-time through web-based in-home display devices and home area networks. This functionality would allow consumers to use electricity when it is cheapest, giving consumers incentives to shift use to off-peak periods and potentially lowering their electricity bills.

However, achieving a robust smart grid through adoption and deployment of smart grid-enabling technologies entails significant and costly investments in infrastructure and metering. The implications of asking customers to pay the substantial costs necessary to implement the smart grid are that the promised benefits of smart grid must be carefully judged against the actual evidence relating to the costs and benefits to consumers before implementation should occur. It is important that these benefits

produce more savings than the smart grid technologies cost if it is going to be a worthwhile investment. Further, in order for smart grid to proceed, there should be need assurance of benefits through the immediate availability of useful, customer-friendly rate designs on a voluntary basis.

The potential benefits of smart grid technologies fall into more than one category. First are the measurable reductions in operating costs which should be netted against the costs to reduce the price tag of smart grid to consumers. Second are the enhanced reliability benefits of fewer outages, occurring over a smaller geographic footprint, and of shorter duration. Third are the benefits that accrue as consumers voluntarily migrate towards price-responsive rates that can reduce peak load. Reductions in peak load save all consumers by diminishing the need to build additional new peaking power plants, by reducing the need for peak period energy purchases, reducing distribution and transmission congestion, and by reducing emission which benefits the environment. All of these benefits need to be weighed against the costs.

With respect to the costs, it is critical that there be accountability, transparency, prudency, and the ability to verify costs. This includes routine independent audits by outside consulting firms to ensure that expenditures are prudent and reasonable as well as used and useful.

Additionally, another implication of adopting smart meter technologies is that such technologies could lead to significant reductions in consumer protections, such as enabling the remote disconnection of service in cases of non-payment or unintended public disclosure of consumer private information. Remote disconnections for non-payment, if permitted without safeguards, can present serious health and safety concerns

for consumers in jurisdictions where site visits are required to help ensure that there is personal contact and an assessment made of the impact that termination of service will have on the family before the electric service is disconnected.

However, in other jurisdictions where there are no requirements for such site visits, remote disconnection can provide savings to the general body of consumers. Fees for disconnection and reconnection vary, sometimes requiring a consumer to come up with an additional $50 in reconnection charges on top of the default payment. This practice often delays a customer from being reconnected. Where there is no site visit due to the deployment of smart grid technologies, there is virtually no cost—a few simple keystrokes and mouse clicks. Therefore, the disconnection and reconnection charges should be abolished. As further protection to consumers where remote disconnection is possible because of smart grid, an additional number of business days (five or more) should be added to the timeframe that a consumer has notice prior to disconnection. This extra time for notice will substitute for the extra days of notice that consumers currently receive due to delays caused by the logistics of scheduling site visits.

What new services enabled by the smart grid would customers see as beneficial? What approaches have helped pave the way for smart grid deployments that deliver these benefits or have the promise to do so in the future?

Smart grid should enable a host of alternative, innovative, and dynamic rate designs to be offered along with standard fixed service as tools to better control the consumers' monthly energy costs. Consumers who are interested and choose to participate in the dynamic pricing designs could have better information and ability to manage their individual home energy usage and could be offered the opportunity to lower their cost. Coupled with new rate designs will be in-home devices (at the appliance level

and the home area management level) which will provide an opportunity for customers to fully realize how their consumption patterns impact their monthly bills. With gradual movement upstream, the smart grid could lead to a more efficient distribution and transmission grid, ultimately reducing electric costs for consumers. Further, smart grid technologies can ease the integration of environmentally-friendly and lower cost renewable energy onto the grid, providing economic and reduced emission benefits to consumers. Finally, smart grid technologies could lessen the need to build new generation, transmission and distribution facilities whose costs are passed on to consumers.

How well do customers understand and respond to pricing options, direct load control, or other opportunities to save by changing when they use power? What evidence is available about their response?

To date, only a handful of all smart metered electricity consumers have access to dynamic pricing options. Thus, more data on consumer response will need to be collected. Further, multiple voluntary rate design options should be offered to consumers to assess consumer understanding and response to various approaches.

There is much work that needs to be done to properly educate customers as to the benefits of responding to price signals, both on an individual basis and from a societal standpoint, and how to effectively use the innovative dynamic pricing offered to them. Customer education is the lynchpin if smart meters and the smart grid are to be successful. Without consumer acceptance and consumer participation, the goals of smart grid will not be achieved. While there are numerous pilots across the country, time will be needed to appropriately evaluate the results and study what worked and did not work. It is important to highlight that consumers are economic agents that respond, as they have

responded in other markets, to well-designed price signals and clearly identified business cases. Education and information are prerequisites to increased buy-in and participation.

To what extent have specific consumer education programs been effective?

The effectiveness of some customer education programs accompanying smart grid pilots still appears to be unknown.[2] In order to increase knowledge about what types of education programs are effective, utilities should be required to provide specific performance metrics that can be measured and evaluated as part of the overall customer education plan that accompanies the roll-out of any smart meter program. Consumer education programs are catalysts to increased participation in well-designed and structured dynamic pricing and tariffs that offer consumers—as economic agents--the choice to meaningfully benefit from participating, or not participating.

What tools (e.g. education, incentives, and automation) increase impacts on power consumption behavior? What are reasonable expectations about how these programs could reshape consumer power usage?

Comprehensive education can positively increase the impact on a consumer's power consumption behavior.[3] Education will be the key component to making the smart grid a useful consumer tool and ensuring acceptance by the less technically sophisticated older consumers. This will likely take time and money, but effective consumer participation will be the backbone of the smart grid reaching its true potential. Current consumer awareness of the smart grid is very low, perhaps mainly because of absence of optional innovative dynamic pricing rates. Consumers in some areas of the country have been exposed to the negative media reports of the smart grid, but not surprisingly, as

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[2] *The Need for Essential Consumer Protections* ("Whitepaper"), *available at* http://www.nasuca.org/archive/White%20Paper-Final.pdf, at 20.

[3] Whitepaper at 20-21.

more pilot deployments are launched, more consumers are slowly hearing the beneficial aspects it has to offer actively participating consumers. Additionally, peak-time rebate programs can positively impact power consumption at the same or similar level as critical peak pricing programs.[4]

Stakeholders should work in collaboration to create national messaging explaining to customers the reasons for installing a smart grid and how customers can efficiently use it to benefit themselves and control their energy usage. It is important that consistent terminology be developed to facilitate customer understanding. For example, during electric deregulation, each state developed its own terminology, causing confusion from state to state in understanding the concepts being developed. There should be a universal glossary of terms when discussing this issue.

To what extent might existing consumer incentives, knowledge, and decision-making patterns create barriers to the adoption or effective use of smart grid technologies? For instance, are there behavioral barriers to the adoption and effective use of information, feedback systems, demand response, energy management, and home automation technologies? What are the best ways to address these barriers?

One barrier to the widespread deployment of smart grid technologies is that some consumers may prefer to remain on an existing fixed rate structure rather than switching to dynamic pricing structures enabled by smart grid technologies. Some consumers may think that monitoring the real-time information provided by a smart meter in order to benefit from the smart grid is an annoyance and not an investment worth the cost. To preserve consumer choice, dynamic rates should not be mandatory and significant investment in consumer education must be made. Consumers asked to pay for smart grid investments should have a choice between dynamic and fixed rates. Otherwise, the

[4] Whitepaper at 8-9.

possible large increases in consumer bills that may follow a mandatory switch from fixed rate structure to dynamic pricing will likely cause tremendous animosity among customers. Negative consumer experiences with mandatory dynamic rates could lead to public frustration that would hinder the ultimate adoption and use of smart grid technologies. To prevent consumer backlash and to protect vulnerable populations, consumers should be allowed to "opt-in" to various dynamic pricing rate options.[5]

Behavioral barriers may be a byproduct of dynamic pricing structures. On/Off peak times must be set in a way that consumers are able to take advantage of alternative rates. For example, a person may decide to only do laundry on the weekends to maximize on rates but may refuse or be unable to change the temperature in their homes at certain times during the week.

Some of these barriers can be overcome with simple technologies often offered by the utility, such as programmable thermostats and in-home display devices to help resolve these issues. However, in some cases these in-home technologies are also a barrier as some people do not want to feel as though the utility is invading their homes by remotely monitoring their behaviors. Customer education is needed to overcome this barrier, and it is unclear whether the utility will be the best to offer education in this area, especially among low-income and elderly consumers.

It is also less likely that vulnerable populations will have the ability to change behaviors. If they are unemployed or elderly, they will be less likely to affect the greatest opportunities for savings, such as heating and cooling, because they may be at home

[5] For more information, see Whitepaper at 14-15.

during the peak hours. Thus, alternative dynamic pricing options are needed for this group of consumers in order to maximize their potential benefits from smart grid.

Are steps necessary to make participation easier and more convenient, increase benefits to consumers, reduce risks, or otherwise better serve customers?

Dynamic pricing options must not be mandatory, but rather should be "opt-in" for residential and small business consumers. Likewise, the development of smart grid technologies should not undermine existing consumer protections. Traditional billing and dispute rights should be retained. Additionally, privacy and cyber-security protections should be in place prior to the deployment of smart grid technologies.[6]

As stated above, comprehensive consumer education is critical. Transitioning to the smart grid will require consumers to change their electric consumption habits from passive to more active involvement. This means utilities must listen to consumers, understand their needs and changes that will make consumers comfortable adopting smart grid technologies for their homes or businesses and changes their behaviors toward dynamic prices. Consumers' understanding of how their consumption pattern impacts their own bill could be the most important outcome of the smart grid. Consumers also must be able to fully understand the value of the smart grid, what it will mean to them individually, and any accompanying voluntary dynamic rate options, or there will be backlash and a lack of acceptance of the smart grid as a tool consumers could use to help them control their energy costs.

Further, if consumers will have greater control over their own energy costs, the parts of the smart grid with which consumers will directly interact must be understandable and clearly explained to consumers. An effective home energy display

[6] Whitepaper at 14-21.

that gives consumers information about their consumption habits and what electricity will cost them at certain times in the day, whether viewed inside a consumer's home or accessed through the Internet, is essential. This display must be easy for consumers to understand and use because consumer involvement will be critical to the success to future smart grid programs.

What role do factors like the trust, consumer control, and civic participation play in shaping consumer participation in demand response, time-varying pricing, and energy efficiency programs? How do these factors relate to other factors like consumer education, marketing and monthly savings opportunities?

Trust is a critical issue for consumers and they need to believe that the smart grid can and will provide the necessary safeguards if they are to participate. The utilities need to act in a manner that is consistent with and worthy of that implicit trust. With energy efficiency, we have seen programs designed to encourage a civic sense, such as programs that let customers know that their usage is above average. Results show that when customers know that, they do take steps to reduce. Thus, explanations of how reducing peak usage can help prevent black-outs or help manufacturers from losing product or having to temporarily shutdown their factories should be provided to consumers. Consumer control will be the strongest incentive to participate. People want to affect their own lives and don't want to feel that the utility is taking away that ability.

Civic participation may be a regional issue. Regardless of what state you are in, some areas will be rural, under-developed, under-educated, and therefore under-represented. It is even questionable whether these individuals will get a smart grid because the higher deployment costs may outweigh the benefits. If they do, all of the above will affect their access to participation and their voices may be unheard. Opportunities may be missed simply because people didn't understand it or because no

one was available to represent their interests in program development. However, there is room to address these issues through local community action agencies across the nation. They can represent the community and communicate company initiatives and are more likely to be received well because the citizens have an established trusting relationship with the agency that usually doesn't exist with the utility company. All these factors are interdependent such that if any one of them is missing, consumer participation will be affected.

How should combinations of education, technology, incentives, feedback, and decision structure be used to help residential and small commercial customers make smarter, better informed choices?

These are all good tools which should be utilized in combination. Customer education is the key and this will require an effective campaign. There should be national messaging on television, radio and other media. Focus groups with customers who participated in pilots could be helpful to get their input on and reactions to various program designs. Programs such as peak time rebates that provide incentives for participation should also be encouraged.

What steps are underway to identify the best combinations for different segments of the residential and commercial market?

Some utilities are using sophisticated market segmentation analysis to design and market their programs differently to various consumer segments. There should be a compilation of the data from various pilots to measure what worked best and what did not work at all. Ultimately, consumers will adopt smart grid technologies based on the value they attach to them. Thus, it is important for policy-makers not to mechanically evaluate the cost and benefits of smart grid, but instead to incorporate consumer value systems in the mix (for example, how likely or how fast will consumers shift load to off-peak

periods? How are consumer decisions affected by their income levels? How do low-use electricity consumers react to price changes compared to high-use consumers?).

Are education or communication campaigns necessary to inform customers prior to deploying smart grid applications? If so, what would those campaigns look like and who should deploy them? Which related education or public relations campaigns might be attractive models?

Public education will play a significant role in the successful deployment of smart grid applications. The development of well-defined comprehensive education programs with measurable and meaningful performance metrics necessitate involvement by all stakeholders including regulators, advocates, and community organizations. Education programs should inform both participating and non-participating consumers about the goals and impacts of smart grid programs, including how the smart grid technologies will be used, how it will affect them, and any concerns about the security of their individual energy consumption data.[7]

What should federal and state energy policymakers know about social norms (e.g. the use of feedback that compares a customers' use to his neighbors) and habit formation?

These types of programs are being piloted nationwide and information to answer this question should be forthcoming in the near future. This issue played out recently in various letters to a local newspaper editor criticizing and supporting this type of program. It is also too early to assess the persistence of the savings from these types of programs, however early indications look promising.

What are the important lessons from efforts to persuade people to recycle or engage in other environmentally friendly activity? What are the implications of these insights for determining which tasks are best automated and which should be subject to consumer control?

[7] NASUCA Resolution on Advanced Electric Metering.

These programs worked because there was a national campaign that appealed to people's sense of doing their part for the environment and to helping their local communities. The same compelling reasons can be used with smart grid with the added benefit that it provides an opportunity for customers to save money.

How should insights about consumer decision-making be incorporated into federal-state collaborative efforts such as the Federal Energy Regulatory Commission National Action Plan on Demand Response?

Statistically significant results concerning consumer decision-making should be incorporated in the FERC plan.

B. Assessing and Allocating Costs and Benefits.

How should the benefits of smart grid investments be quantified? What criteria and processes should regulators use when considering the value of smart grid applications?

The attached NASUCA Resolutions address, in detail, the types of analyses that regulators should conduct when considering smart grid applications. The need for smart grid technology must be justified based on real, quantifiable operational benefits. Investments in smart grid need to be verifiable and transparent and the utilities need to be held accountable for the costs they want customers to pay and the benefits they promise to deliver. Costs should be reasonable and prudent. Absent these measures, the smart grid infrastructure alone will likely increase utility rates markedly, and the savings achieved will not offset these additional costs.

When will the benefits and costs of smart grid investments be typically realized for consumers? How should uncertainty about whether smart grid implementations will deliver on their potential to avoid other generation, transmission, and distribution investments affect the calculation of benefits and decisions about risk-sharing?

Utilities should be held accountable for a portion of the risk of their predicted benefits of smart grid investments that were not actually received by consumers. The risk of faulty project designs or failure of their smart grid technology to conform to national

interoperability and cyber-security standards should fall on utilities. Cost recovery for smart grid should be authorized through base rate cases. In rate proceedings regarding smart grid investments, there should be an estimate of the cost impact of the smart grid investments on various demographic profiles as well as a risk analysis that reflects the degree to which predicted benefits of smart grid investments may not be realized. Further, the costs passed on to consumers should be periodically audited to ensure that predicted benefits are in fact being provided to consumers.

How should the costs and benefits of enabling devices (e.g. programmable communicating thermostats, in-home displays, home area networks, or smart appliances) factor into regulatory assessments of smart grid projects? If these applications are described as benefits to sell the projects, should the costs also be factored into the cost-benefit analysis?

In order to achieve maximum savings from smart grid technology, consumers would need to be on dynamic rates. To take full advantage of savings incentivized under dynamic rates, consumers may need to purchase energy efficient appliances capable of timer settings or include two-way communication with the grid in order to restrict usage to off-peak hours. It is likely that the most significant costs for consumers will be the purchase of such smart grid enabled appliances and smart meters. Because the costs of programmable two-way communicating thermostats, in-home displays, home area networks, or smart appliances are caused by the deployment of the smart grid and because without their installations the smart grid business case cannot be justified, their costs must be factored in any cost-benefit analysis of the smart grid.

In order to assist customers in the transition to such appliances – which should also be energy star rated – utilities should be encouraged to enter into aggressive demand-side management programs that include appliance rebate programs to help offset the

initial cost of the appliance. Demand-side management – or energy efficiency – is a very important tool towards managing energy costs from both a societal and individual customer perspective. First, it is the least-cost option and is far less expensive than any supply-side option that might be utilized to ensure adequate supplies of energy to reliably meet the load requirements. This is an example of the intersection between energy efficiency which actually reduces the need for power plants and demand response which alters when that capacity is needed in order to reduce the cost of meeting expensive peaking needs.

How does the notion that only some customers might opt in to consumer-facing smart grid programs affect the costs and benefits of AMI deployment?

Both consumers who "opt-in" to smart grid programs and those who choose not to participate must be sufficiently informed of the goals and impacts of the smart grid programs through vigorous education and outreach efforts. Thus, education campaigns may become a more costly part of the smart grid deployment. Because it is more efficient to install smart meters in every home in a neighborhood as they are deployed, it would make most sense to proceed in that manner. However, no customer should be forced into a price-responsive rate design. By the same token, customers who believe they can benefit from such a program should not be denied the opportunity to use various options of price-responsive rate designs as a tool to reduce usage. Thus, the key is that these programs must be voluntary and should cover the spectrum of risk, from no risk Peak Time Rebates to full risk real-time pricing.

How do the costs and benefits of upgrading existing AMR technology compare with installing new AMI technology?

Installing AMI into a utility system with existing AMR technology will not give the utility the meter reading-related operational benefits, and therefore, lower the benefits of an AMI business case. However, to the extent that AMI meters can help gas customers with meter-reading, gas companies should be encouraged to lease space from the electric companies to help reduce the total cost of smart grid. A study addressing whether or not upgrading existing AMR technology has more or less benefits than installing new AMI technology should be conducted.

How does the magnitude and certainty of the cost-effectiveness of other approaches like direct load management that pay consumers to give the utility the right to temporarily turn off air conditioners or other equipment during peak demand periods compare to that of AMI or other smart grid programs?

There are several ways that peak demand reductions can be achieved. One is through smart meters and another is through utility-sponsored peak demand programs. The difference between the two is that with smart meters and their concomitant rate designs, a customer can choose to respond as often as s/he likes and at the level s/he likes. With demand response programs, the utility controls the number of opportunities for a customer to realize savings and when those opportunities will occur. Consumers respond best to monetary pricing incentives present in the typical peak/off-peak pricing differentials. It would likely prove cost-effective to continue consumer education efforts to delay whatever electrical usage is possible to off-peak hours.

Air conditioning load control devices have proven quite effective at delaying and/or shedding significant portions of summer cooling load. Consumer response has been quite favorable, with most customers not even noticing when their air conditioner's cycling schedule is delayed beyond normal usage without a load control device. Further, the promotion of traditional conservation by consumers and better insulation is likely to

result in greater conservation of electricity and should be deployed as a complement to dynamic rates. Additionally, electric water heating customers should be encouraged and motivated through incentives to switch to natural gas heating, especially for winter-peaking utilities. Gas heating is usually more efficient and more economical than electric water heating.

How likely are significant cost overruns? What can regulators do to reduce the probability of significant cost overruns? How should cost overruns be addressed?

Any cost overruns, benefit shortfalls, or other negative impacts arising from the failure of a utility to prudently implement the smart grid should be the responsibility of the shareholders, and not consumers. To prevent obsolescence and reduce false estimates, utilities should complete security plans and standards and upgrade necessary communications prior to or at the same time as the installation of smart meter. Further, the meter technologies chosen should conform with industry standard so that they can be integrated other smart grid equipment additions without becoming obsolete. This will avoid expensive investments that have limited life spans.

With numerous energy efficiency and renewable energy programs across the county competing for ratepayer funding, how should state commissions assess proposals to invest in smart grid projects where the benefits are more difficult to quantify and the costs are more uncertain?

Energy efficiency is currently the most cost-effective resource and should be the first resource investment in the loading order. Renewable energy programs will also yield environmental, fuel diversity and hedging benefits, especially in a reduced carbon future. Smart Grid projects need to stand or fall with the robustness of their business cases and should seek to leverage themselves with energy efficiency and renewable applications.

What are appropriate ways to track the progress of smart grid implementation efforts? What additional information about, for example, customer interactions should be collected from future pilots and program implementations? How are state commissions studying smart grid and smart meter applications in pilots? In conducting pilots, what best practical approaches are emerging to better ascertain the benefits and costs of realistic options while protecting participants?

The American Recovery and Reinvestment Act of 2009 ("ARRA") included funding, under State Electricity Regulators Assistance Funding Opportunity Number: DE-FOA-0000100, to enhance state commissions' ability to effectively regulate, track, and provide incentives to facilitate investments in clean energy technologies including Smart Grid infrastructure by utilities. Therefore, state commissions should be able to track progress and effectiveness of these clean energy technologies as they are implemented by utilities. State commissions should create a data tracking system, organize stakeholders collaborative, require utilities to file smart grid implementation progress reports which should include the status of the costs and benefits compared with the approved business plan.

How should the costs of smart grid technologies be allocated? To what degree should state commissions try to ensure that the beneficiaries of smart grid capital expenditures carry the cost burdens? Which stakeholder(s) should bear the risks if expected benefits do not materialize? How should smart grid investments be aligned so customers' expectations are met?

Utility rate structures addressing the costs of smart grid technologies must avoid higher customer charges. Utilities generally prefer to pass an increasing percentage of their costs on to their customers through higher customer charges rather than energy consumption charges. This trend removes natural pricing incentives designed to promote conservation. There is no greater incentive for conservation than pricing of the energy charge.

Utilities must bear some of the risk of less-than-predicted benefits so that customers are assured that the predicted savings actually occur. Utilities should also bear the risk if their project design was faulty or that they selected a technology which failed to conform to pending national interoperability and cyber-security standards. We recommend: (a) proposed investments in smart metering and smart grid technologies should be justified by a robust cost-benefit analysis; (b) the implementation of smart metering and smart grid investments should be accompanied by measurable and enforceable performance metrics; and (c) smart metering and smart grid investments must be subject to prudence reviews and audits to determine if the consumer benefits have been delivered as promised.

When should ratepayers have the right to opt out of receiving and paying for smart grid technologies or programs like meters, in-home displays, or critical peak rebates? When do system-wide benefits justify uniform adoption of technological upgrades? How does the answer depend on the nature of the offering? How should regulators address customer segments that might not use smart grid technologies?

Residential and small commercial consumers' participation should begin on an opt-in basis. At a point in time where there is considerable customer understanding, policymakers can then consider whether to move towards an "opt-out" approach. However, vulnerable populations such as those with medical conditions or senior citizen populations should always have the right to "opt-in" instead of "opting out" of dynamic pricing programs.

How might consumer-side smart grid technologies, such as HANs, whether controlled by a central server or managed by consumers, programmable thermostats, or metering technology (whether AMR or AMI), or applications (such as dynamic pricing, peak time rebates, and remote disconnect) benefit, harm, or otherwise affect vulnerable populations? What steps could ensure acceptable outcomes for vulnerable populations?

The impact of dynamic pricing on vulnerable customer groups and on low-income consumers had not been adequately studied.[8] Pilot programs should be conducted to develop better data specifically directed at determining how vulnerable consumers, including low-income and elderly consumers, are affected by smart grid technologies. Further, any smart grid program participation should be voluntary, especially for vulnerable populations. Additionally, smart grid technologies should not be used to undermine any current bill protections for consumers.

C. Request for Reply Comment Opportunity.

Requirements for a period of time in which parties could file reply comments were not identified in this RFI. However, the depth and breadth of issues that are addressed within this RFI are key regulatory issues and DOE may want to consider providing an opportunity for parties in this proceeding to file a brief reply comment. OCC requests that DOE establish a time period for the public filing of reply comments.

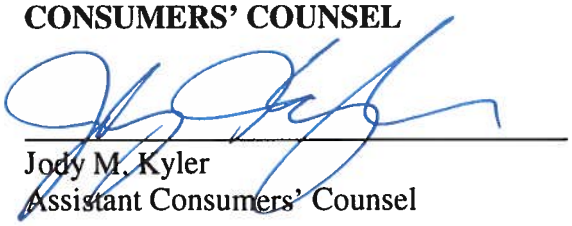
II. CONCLUSION

WHEREFORE, OCC appreciates the opportunity to comment in this docket concerning policy and logistical challenges to smart grid implementation. OCC respectfully requests that DOE use the OCC's recommendations for the benefit of consumers in developing its smart grid policies.

[8] Whitepaper at 10-11.

Respectfully submitted,

JANINE L. MIGDEN-OSTRANDER
CONSUMERS' COUNSEL



Jody M. Kyler
Assistant Consumers' Counsel

Office of the Ohio Consumers' Counsel
10 West Broad Street, Suite 1800
Columbus, Ohio 43215-3485
(614) 466-8574 (phone)
kyler@occ.state.oh.us

THE NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES
RESOLUTION 2009-03

SMART GRID PRINCIPLES OF THE NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES

Whereas, the National Association of State Utility Consumer Advocates ("NASUCA") has an earnest and long-standing interest in issues and policies that affect electric consumers, including issues and policies that involve new technologies, reliability of electricity service, and rates; and

Whereas, NASUCA has adopted a resolution setting forth its principles on Advanced Metering Infrastructure ("AMI"); and

Whereas, NASUCA recognizes that the U.S. Department of Energy defines "Smart Grid" as a broad range of solutions that optimize the energy value chain;[1] and

Whereas, Section 1306(d) of the Energy Independence and Security Act of 2007, Pub. L. No. 110-140, 121 Stat. 1492 (2007) ("EISA") states:

> The term "smart grid functions" means any of the following:
>
> (1) The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.
> (2) The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.
> (3) The ability to measure or monitor electricity use as a function of time of day, power quality characteristics such as voltage level, current, cycles per second, or source or type of generation and to store, synthesize or report that information by digital means.
> (4) The ability to sense and localize disruptions or change in power flows on the grid and communicate such information instantaneously and automatically for purposes of enabling automatic protective responses to sustain reliability and security of grid operations.

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[1] Smart Grid: Enabler of the New Energy Economy, A Report of the Electricity Advisory Committee at p. 3 (Dec. 2008), http://www.oe.energy.gov/DocumentsandMedia/final-smart-grid-report.pdf.

(5) The ability to detect, prevent, communicate with regard to, respond to, or recover from system security threats, including cyber-security threats and terrorism, using digital information, media, and devices.

(6) The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human interventions.

(7) The ability to use digital information to operate functionalities on the electric utility grid that were previously electro-mechanical or manual.

(8) The ability to use digital controls to manage and modify electricity demand, enable congestion management, assist in voltage control, provide operating reserves, and provide frequency regulation.

(9) Such other functions as the Secretary (of Energy) may identify as being necessary or useful to the operation of a Smart Grid; and

Whereas, the American Recovery and Reinvestment Act of 2009 ("ARRA") provides funds for expenses necessary for electricity delivery and energy reliability activities to modernize the electric grid, to include demand responsive equipment, enhance security and reliability of the energy infrastructure, energy storage research, development, demonstration and deployment, and facilitate recovery from disruptions to the energy supply, and for implementation of programs authorized under EISA; and

Whereas, the interests of the public as electric consumers are of paramount concern, since Smart Grid technologies are ultimately paid for by electric ratepayers and will affect their electricity usage, rates, bills, and equipment in their homes and businesses.

NOW THEREFORE, NASUCA RESOLVES that it supports the following Smart Grid principles:

1) A Smart Grid should be designed to improve the efficiency, reliability and security of the electric grid.

2) States, federal agencies, and utilities should conduct a detailed analysis of the costs and benefits of a proposed Smart Grid project through an evidentiary proceeding and should only go forward with the project if the benefits outweigh the costs. Such a proceeding would weigh all the tangible benefits leading to cost reductions from improved efficiencies accruing to the utility from Smart Grid deployment and would defray any Smart Grid investment costs against the identified utility tangible cost-reduction benefits when considering any utility cost-recovery. States should encourage utilities to seek ARRA funds to reduce the cost impact on ratepayers and consumers of any approved Smart Grid deployment.

3) An integrated approach to Smart Grid design includes adherence to FERC standards; optimization of regional and local planning to reduce rates, increase reliability and integrate renewable resources; and consideration of the interoperability with technology in neighboring utility service territories or grid systems and with existing or potential customer-side technology.

4) Smart Grid technology is in many cases new and evolving and the FERC and states should take steps to ensure that the specific set of technologies associated with a utility's proposed installation is in fact capable of operation as proposed, and to insure against the installation of technology that is soon outdated or stranded. Such assurances could take the form of placing the risk of loss associated with stranded costs, buyers' remorse or the like on shareholders.

5) Smart Grid design should prioritize a secure communications network with appropriate safeguards to prevent security breaches and reliability deficiencies.

6) Any implementation of a Smart Grid project should meet Federal and state requirements for cyber security and protect the privacy of customer usage information, both with respect to usage data derived by the utility for customer billing and information obtained concerning a customer's specific usage of electricity.

7) Consumption information obtained should be used to properly and accurately reflect demand side data with respect to electric energy and capacity in order to improve load forecast capabilities.

8) Smart Grid should be used to enable and inform the development of programs and policies that will lead to reduced costs for consumers. For example, Smart Grid should assist in the identification of portions of the grid that are nearing capacity in order for steps to be taken to reduce demand on that portion.

9) In conjunction with the installation of Smart Grid technology on the local level, local distribution utilities must maintain and operate their infrastructure system in a safe, adequate, and reliable manner.

10) That States and utilities should not be permitted to use Smart Grid deployment as a means for reducing consumer protections with regard to electric service in general and termination procedures in particular.

11) That the implementation of Smart Grid should not lead to mandatory dynamic pricing of electricity usage for residential and small commercial customers.

BE IT FURTHER RESOLVED that the Federal Energy Regulatory Commission should refrain from granting incentive returns for Smart Grid infrastructure, refrain from requiring the early replacement of otherwise useful transmission or distribution plant and refrain from making decisions that serve to restrict or otherwise impinge upon the ratemaking authority traditionally held by state regulatory commissions.

NASUCA authorizes its Executive Committee to develop specific positions and to take appropriate actions consistent with the terms of this resolution. The Executive Committee shall advise the membership of any proposed action prior to taking action if possible. In any event the Executive Committee shall notify the membership of any action pursuant to this resolution.

Approved by NASUCA
Boston, MA
June 30, 2009

THE NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES
RESOLUTION 2009-01

ADVANCED ELECTRIC METERING AND ADVANCED ELECTRIC METERING INFRASTRUCTURE PRINCIPLES OF THE NATIONAL ASSOCIATION OF STATE UTILITY CONSUMER ADVOCATES

Whereas, the National Association of State Utility Consumer Advocates ("NASUCA") has an earnest and long-standing interest in issues and policies that affect electric customers, including issues and policies that involve new technologies, reliability of electricity service, and rates; and

Whereas, many states and utility service territories are considering implementation of or are actively implementing advanced electric meters with the goals of reducing operational costs, increasing efficiency, increasing electric reliability, collecting real-time information about electricity usage and providing such information to customers, reducing electricity usage at peak times, achieving environmental benefits, enabling dynamic pricing options, *et al.*; and

Whereas, the interests of the public as electric consumers are of paramount concern, since deployment of advanced electric meters is ultimately paid for by electric ratepayers and will affect their electricity usage, rates, bills, and equipment in their homes and businesses; and

Whereas, in this Resolution the terms "advanced meters" and "smart meters" shall refer to advanced metering infrastructure ("AMI") that is composed of at least the following characteristics:

(i) the ability to measure and record electricity usage data on a time-differentiated basis in at least 24 separate time segments per day,

(ii) the ability to provide for the exchange of information between the electricity supplier or provider and the customer's electric meter in support of time-based rates or other forms of demand response,

(iii) the ability to provide data to such supplier or provider so that the supplier or provider can provide energy usage information to customers electronically, and

(iv) the ability to provide for net metering where applicable.

NOW THEREFORE, NASUCA RESOLVES:

That NASUCA supports the following principles to ensure that any implementation of AMI by electric utilities includes appropriate policies and procedures and reduces or eliminates potential negative impacts on customers:

1. That prior to implementation of advanced meters, states should consider the requirements of Section 1307 of the Energy Security and Independence Act of 2007 (now codified at 16 United States Code § 2621). States and utilities should also conduct a detailed analysis of the costs and benefits of a proposed advanced metering program and attendant rate design changes, if any, including but not limited to consideration of the following items:

    a. the bill impacts resulting from rate design changes, such as time-of-use and critical peak pricing rates, on different residential and business customer classes;

    b. the bill impacts or other effects on users in various usage and demographic profiles, including low-income consumers, elderly consumers, consumers with severe health conditions, and other consumers whose electric loads are relatively low or not easily shifted to off-peak times of the day;

    c. how the costs of additional equipment that would be necessary to be purchased or rented by individual ratepayers in order to participate in any voluntary or mandatory utility advanced metering program affects the cost-benefit analysis;

    d. how the costs of advanced metering included in rates are allocated among the various classes of customers served by the utility; and

    e. whether an advanced metering program may lead to a reduced need to build new peaking capacity or transmission and distribution infrastructure, or to environmental benefits through decreased fuel use, or may reduce the electricity bills of some customers through dynamic pricing options, or may create other system or consumer benefits that offset the costs paid by ratepayers;

The above consideration of costs and benefits should be done through an evidentiary proceeding before the appropriate state or municipal utility commission.

2. That since advanced metering is an evolving technology, states and utilities are encouraged to proceed with appropriate caution in ordering a widespread implementation of advanced meters, and to examine the

experiences of other states. To avoid customer frustration and/or stranded costs, it is important to carefully consider, before approving any deployment proposal: (i) whether the proposed advanced metering product is or may soon become obsolete; (ii) whether the proposed advanced metering product has the required cost-effectiveness and functionality; and (iii) whether the advanced metering products or protocols are governed by national standards. States and utilities are also encouraged to balance the risks inherent with deployment of this evolving technology against the cost of inaction on advanced metering, including failure to achieve potential reductions in energy use and/or capacity needs;

3. States and utilities are encouraged to consider the interaction of a proposed advanced metering program with broader "smart grid" measures that are associated with the distribution and transmission system (existing or proposed) to ensure, to the extent possible, that expectations of benefits of an advanced metering proposal are realized and the advanced meters do not become obsolete as smart grid infrastructure is introduced;

4. To determine costs and benefits of a proposed advanced metering program to a geographically targeted area, states and utilities are encouraged, prior to widespread implementation of advanced meters, to consider running a pilot program that is properly designed and includes independent evaluation. States and utilities are also encouraged to design a pilot program to ensure accurate representation of the whole customer base in the relevant territory.[1] It is essential to provide to potential pilot participants an accurate description of how their homes and businesses will be affected and a thorough description of the goals and operations of the pilot. In the absence of a pilot, states and utilities are encouraged to use caution in relying on data about the costs and benefits of advanced metering in other states, nations and service territories, as differences in demographics, climate, appliance penetration or other characteristics could lead to dissimilar results;

5. That utilities should be expected to implement any advanced metering program with prudence and collect at most only the net costs in rates,[2] and any cost overruns, benefit shortfalls, or other negative impacts arising from the failure of a utility to implement an advanced metering program in a prudent way should remain the responsibility of utility shareholders, not

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[1] See Testimony of the Honorable Frederick F. Butler, Commissioner, New Jersey Board of Public Utilities on behalf of the National Association of Regulatory Utility Commissioners on "Smart Grid" before the United States Senate, Committee on Energy and Natural Resources, March 3, 2009.

[2] The "net costs" would be actual costs of the advanced metering program less the projected net savings to the utility from the advanced metering program, such as reduced operational expenses due to more reliable new meters or better data about the source and scope of outages. In the absence of a reduction in utility recovery to "net costs," the utility could be overcompensated (at least between rate cases) and the risks of whether or not operational savings actually develop would be entirely on ratepayers.

ratepayers. For example, but not by way of limitation, if a utility imprudently deploys advanced meters and associated technologies that become prematurely obsolete, the ratepayers should not pay the resulting stranded costs. Prior to recovery by the utility of costs associated with an advanced metering program, the state or municipal utility commission should conduct a regulatory review or audit to ensure that such costs were prudently incurred;

6. That states and utilities are encouraged to analyze the interaction of proposed advanced metering programs with demand response measures and rate design to determine whether any proposed new infrastructure or program is the most cost-effective way to achieve the stated goals. In particular, but not by way of limitation, States and utilities should be encouraged to consider whether some of the goals expected to be achieved through implementing advanced meters, such as reductions in overall peak electricity loads or in energy usage, could be (or already are being) accomplished at low net cost to ratepayers in the aggregate through rate design measures such as inclining block rates, or through direct load control programs, such as those that offer customers value for interrupting central air conditioning or heat pumps during critical peak hours;

7. That the implementation of advanced metering should not lead to mandatory or "opt-out" dynamic pricing of electricity usage for residential and small commercial customers. Residential customers and small commercial customers should continue to be provided electricity under existing rate designs unless they affirmatively choose to receive dynamic prices that use smaller time increments, such as time-of-use rates or hourly pricing. Similarly, a customer should not be required to cycle off an air conditioner or other appliance in exchange for a bill credit unless the customer affirmatively chooses to be part of such a program.

8. That States and utilities should not be permitted to use advanced meters as a means for reducing consumer protections with regard to electric service in general and termination procedures in particular. The notices and warnings that typically are required prior to service termination provide important protections for low-income and other vulnerable customers and often avoid negative consequences, from misunderstandings to tragedies. Because utility systems, including billing systems, remain imperfect, States should consider increasing consumer protections regarding service terminations as part of the implementation of advanced metering to ensure that mistaken terminations and the attendant risks and hardships do not occur. This issue is of particular concern on weekends, holidays, and during severe weather conditions, when utility service personnel may not be immediately available to correct a mistaken termination;

9. The implementation of advanced metering should also not be used to degrade existing consumer protections in the area of prepayment. The implementation of advanced metering should not lead to new requirements for prepayment of electric service;

10. That any implementation of advanced meters should be administered through specific policies and programs that meet Federal and applicable standards for cybersecurity and protect the privacy of customer usage information, both with respect to usage data derived by the utility for customer billing and information obtained concerning a customer's specific usage of electricity; and

11. That any advanced metering program or pilot must be accompanied by a vigorous education and outreach effort to ensure, at a minimum, that participating and non-participating customers are aware of the projected goals and impacts of the program, that participating customers will understand how to utilize equipment provided by the utility and how the deployment would affect them, and to address concerns about privacy of customer usage information.

BE IT FURTHER RESOLVED that NASUCA authorizes its Executive Committee to develop specific positions and to take appropriate actions consistent with the terms of this resolution. The Executive Committee shall advise the membership of any proposed action prior to taking such action, if possible. In any event, the Executive Committee shall notify the membership of any action taken pursuant to the resolution.

Approved by NASUCA
Boston, MA
June 30, 2009