BEFORE THE
DEPARTMENT OF ENERGY
WASHINGTON, DC 20585

Addressing Policy and Logistical Challenges to Smart Grid Implementation	Docket ID: DOE-HQ-2009-0003-0959

COMMENTS OF CONSUMER ELECTRONICS ASSOCIATION

The Consumer Electronics Association ("CEA") respectfully submits these comments in response to the Department of Energy's ("DOE") Request for Information ("RFI") in the captioned proceeding. The RFI seeks input on: "the best way to define the term 'smart grid' for policymaking purposes; the consumer-level benefits from, and challenges to, smart grid deployment; the benefits and challenges associated with smart grid implementation on the 'utility side' of the meter; the ways in which policy makers at all levels of government can share experience and resources; and the broader economy-wide benefits and challenges associated with the smart grid."[1]

CEA, the principal U.S. trade association of the consumer electronics and information technology industries,[2] supports DOE's efforts through this RFI, and its two prior Requests for Information,[3] to explore the numerous challenges related to the deployment and implementation

[1] Addressing Policy and Logistical Challenges to Smart Grid Implementation, Office of Electricity Delivery and Energy Reliability, Department of Energy, *Request for Information*, FR Doc. 2010-23251, 75 Fed. Reg. 57006 (Sept. 17, 2010) [hereinafter RFI].

[2] CEA's approximately 2,000 member companies include leading manufacturers and providers of consumer- and utility-facing smart grid products and services.

[3] *See* Implementing the National Broadband Plan by Empowering Consumers and the Smart Grid: Data Access, Third Party Use, and Privacy, Department of Energy, *Request for Information*, FR Doc. 2010-11127, 75 Fed. Reg. 26203 (May 11, 2010) [hereinafter Data RFI]; and Implementing the National Broadband Plan by Studying the

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of smart grid technologies, and DOE's efforts to create a national dialogue on these issues. CEA agrees that these RFIs, the reports issued in conjunction with the DOE's RFIs, and the National Science and Technology Council's creation of the Subcommittee on the Smart Grid are essential to the creation of a "long-term comprehensive strategy in partnership with the states that will further President Obama's comprehensive energy and climate plan, as well as the [American Recovery and Reinvestment Act's] effort to catalyze the development of a smarter grid."[4]

CEA appreciates the opportunity to participate in this ongoing national dialogue on the challenges and benefits of smart grid implementations and provides responses to several of the questions set forth in the RFI in the following categories: Definition and Scope; Interactions with and Implications for Consumers; Assessing and Allocating Costs and Benefits; and Utilities, Device Manufacturers and Energy Management Firms.

Definition and Scope

DOE QUESTION: We also invite comments on the geographic scope of standardization and interconnection of smart grid technologies. Should smart grid technologies be connected or use the same communications standard across a utility, state, or region? How does this vary between transmission, distribution and customer-level standards? For example, is there need to go beyond ongoing standards development efforts to choose one consumer-facing device networking standard for states or regions so that consumers can take their smart appliances when they move and stores' smart appliance will work in more than one service area?[5]

CEA RESPONSE:

To achieve many of the national, state and local policy objectives that smart grid technologies promise, the smart grid and its communications standards necessarily must cross state and geographic boundaries, and achieve industry consensus. This is particularly pertinent to consumer-facing products and services because region-specific or fragmented standards would

Communications Requirements of Electric Utilities to Inform Federal Smart Grid Policy, Department of Energy, *Request for Information*, FR Doc. 2010-11129, 75 Fed. Reg. 26206 (May 11, 2010) [hereinafter Communications RFI].

[4] RFI, 75 Fed. Reg. at 57007.

greatly impede the creation of national markets for consumer devices, increase costs and reduce consumer choice.

A patchwork approach would not only limit the ability of consumers to take their smart appliances when they move, but it could also require manufacturers to create New York-, California-, and Georgia-specific devices, which simply will not happen with any cost effective, mass-produced products. As noted by the Illinois Statewide Smart Grid Collaborative in its report to the Illinois Commerce Commission (the "Illinois Collaborative Report"), "[t]he scope of the smart grid exceeds local or state boundaries. To identify standards that only apply within Illinois would potentially create barriers to interoperability between utilities in different states. Specifying an Illinois-only standards framework could possibly limit the products and services available to consumers within Illinois."[6]

Therefore, any analysis of interoperability standards and network architectures necessarily requires an effective partnership between federal, state and local agencies, utilities, and smart grid vendors to avoid fragmentation. As DOE is aware, the industry is striving to obtain consensus on standards and protocols for every aspect of the smart grid through the National Institute for Standards and Technology's Smart Grid Interoperability Panel and other consensus-building efforts.

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[5] *Id.* at 57008.

[6] ENERNEX CORP., ILLINOIS STATEWIDE SMART GRID COLLABORATIVE: COLLABORATIVE REPORT 26-27 (Sept. 30, 2010), *available at* http://www.ilgridplan.org/Shared%20Documents/ISSGC%20Collaborative%20Report.pdf [hereinafter Illinois Collaborative Report]; *see also* Peter Behr, *Technology Companies are Lining Up for Smart Grid Business,* NY TIMES (Oct. 22, 2010), *available at* http://www.nytimes.com/cwire/2010/10/22/22climatewire-technology-companies-are-lining-up-for-smart-28118.html [hereinafter Behr, *Lining Up for Smart Grid*] (quoting Paul DeMartini, chief technology officer of Cisco Systems and former top smart grid executive at Southern California Edison: "You don't want 51 versions of standards [for smart grid technology] . . . This isn't Baskin-Robbins. We need to make sure we have a unified approach."); Shirley Ann Jackson, *Obama's First 100 days*, SCIENTIFIC AMERICAN (Dec. 8, 2008), *available at* http://www.scientificamerican.com/article.cfm?id=obamas-first-100-days (arguing that the "president should convene governors and regulators to plan how to replace the current patchwork of transmission regulations within and between states with a single set of interoperability standards for a truly nationwide, intelligent, self-healing power grid.").

Policymakers should actively participate in and monitor these consensus-building efforts to ensure that smart grid implementations leverage architectural models, protocols, and standards that have achieved consensus among industry participants. So doing will help preserve the competitive nature of these markets and avoid region-specific smart grids.

For example, the Association of Home Appliance Manufacturers ("AHAM"), an industry organization with overlapping membership to CEA, recently released a report noting that a clear preference exists among the home appliance industry for a communications architecture that features a hub or gateway "that can communicate using common protocols and serve as the adapter or bridge to other devices on the Home Area Network (HAN)."[7] Policymakers are encouraged to evaluate this model as one that has received broad industry consensus in evaluating smart grid implementations. This architectural model allows a "more robust, comprehensive 'home networking' system approach compatible with consumer electronics devices."[8] It also simultaneously supports diverse HAN communications protocols and provides a single point of interface to interconnect with utilities' wide area networks ("WANs"). Policymakers can then focus on a nationally-adopted standard interface between the HAN gateway and the WANs.

[7] ASSOCIATION OF HOME APPLIANCE MANUFACTURERS, ASSESSMENT OF COMMUNICATIONS STANDARDS FOR SMART APPLIANCES: THE HOME APPLIANCE INDUSTRY'S TECHNICAL EVALUATION OF COMMUNICATION PROTOCOLS iii (Oct. 2010), *available at* http://www.aham.org/ht/a/GetDocumentAction/i/50696%20 [hereinafter AHAM REPORT].
[8] *Id*.

Interactions with and Implications for Consumers

DOE QUESTION: For consumers, what are the most important applications of the smart grid? What are the implications, costs and benefits of these applications? 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?[9]

CEA RESPONSE:

Some of the most appealing smart grid applications available today are those products and programs that empower consumers to better manage their energy consumption and energy bills. A number of CEA members already market a wide-ranging array of home energy management technologies and services that empower consumers to make better energy management decisions. For example, Home Automation, Inc. currently offers: in-home displays that allow consumers to see their actual consumption in real time, estimate their bill for the month, and remotely control the air conditioner and water heater for energy efficiency; programmable communicating thermostats that allow consumers to adjust their air conditioning units; and load control modules that allow consumers to control major energy consumers (*e.g.*, water heaters, pool pumps, etc.) according to electricity costs and schedule. Additionally, GE, another CEA member, currently has available smart grid-enabled thermostats and in home displays. It is also developing Nucleus™ Energy Manager, a smart grid-enabled gateway that will communicate with smart meters, record and store energy usage information for up to three years, and provide consumers with real time and historical energy data that can be used to understand and reduce their energy usage. This gateway will work in conjunction with Brillion™-enabled smart appliances. GE's full suite of kitchen and laundry appliances, refrigerators, ranges, dishwashers, water heaters, clothes washers and dryers are currently shipping to utilities for use in smart grid demonstration projects. Many of these smart grid

[9] RFI, 75 Fed. Reg. at 57008.

technologies can be implemented with minimal upfront costs, and could save consumers hundreds of dollars in the long term, especially when coupled with dynamic pricing plans.

That being said, smart grid consumer applications constitute a nascent industry and it is too soon to tell how the industry will evolve and which technologies will ultimately be deemed useful to consumers. As DOE noted, "our experience with Internet technologies strongly suggests that it may be difficult or impossible to predict uses to which a 'smarter' and more interactive electrical grid will ultimately be put."[10] The introduction of dynamic pricing programs, coupled with consumers' desire to retain control over their energy management, will further motivate the consumer electronics industry to develop energy management and demand response products and services.[11] Long term, smart devices and appliances could "defer a portion of [their] operating cycle to a time of day when true energy costs are lower and power generation is ample. Not only will this save the consumer money through reduced electric bills, but it will help reduce the need for additional peak power plants."[12]

To assist policymakers and participants in implementing consumer-facing smart grid deployments, DOE should encourage and facilitate a dialog between federal, state and local regulators, grid managers, researchers and devices manufacturers to develop rate structures and programs that take advantage of smart grid-enabled technologies. Policymakers should also avoid adopting rules that unnecessarily hinder innovation and experimentation. As noted in

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[10] DEPT. OF ENERGY, DATA ACCESS AND PRIVACY ISSUES RELATED TO SMART GRID TECHNOLOGIES 6 (Oct. 5, 2010).

[11] For example, the International Organization for Standardization ("ISO") and the International Electrotechnical Commission ("IEC") are jointly developing technical standards for an energy management agent, which is a controller that could be programmed to respond to time-varying prices automatically, taking into account the mix of appliances in the house, user preferences and the user's budget for electricity. *See* ISO/IEC, INFORMATION TECHNOLOGY-HOME ELECTRONIC SYSTEM (HES) APPLICATION MODELS - PART 3: MODEL OF AN ENERGY MANAGEMENT SYSTEM FOR HES, JTC 1/SC 25 WG1 N1419 (May 3, 2010), *available at* http://hes-standards.org/doc/SC25_WG1_N1419.pdf.

[12] Press Release, Association of Home Appliance Manufacturers, US Home Appliance Industry Issues Principles & Requirements for Achieving a Widely Accepted Smart Grid (Dec. 14, 2009), *available at* http://www.aham.org/ht/a/GetDocumentAction/i/44301 [hereinafter AHAM Principles].

CEA's comments to the Data RFI, for example, regulators should not place artificial caps on the types or amounts of data that consumers and third party designees should be able to access.[13] Third party providers could then experiment and create products and services appealing to consumers that leverage the various types of data generated by the smart grid.

DOE QUESTION: 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 what extent have specific consumer education programs been effective? 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?[14]

CEA RESPONSE:

Given the opportunity, consumers can understand and will respond to smart grid pricing signals. The PowerCentsDC™ Program is just one recent example of a study that explores changing consumer behavior based on a mix of incentives, technology, and education. In the study, participants were given a broad set of education and informational materials including in-person group meetings, welcome packages, refrigerator magnets, brochures, printed reports and access to a consumer engagement website.[15] Participants received financial incentives by way of Critical Peak Pricing ("CPP"), Critical Peak Rebate ("CPR"), and hourly pricing programs. Some participants also received smart thermostats to automate their responses to pricing signals. Results published in September's final report indicate that this combination of consumer education, technology and dynamic pricing substantially reduced demand during peak times and led to net consumer savings. More specifically, CPP and consumer education by themselves led to summer demand reductions of 29% as compared against the Pepco's tiered pricing schemes.[16]

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[13] *See* CEA Comments to Data RFI at 7 (July 12, 2010).
[14] RFI, 75 Fed. Reg. at 57008.
[15] EMETER CORP., POWERCENTSDC™ PROGRAM FINAL REPORT 19-20 (Sept. 2010), *available at* http://www.powercentsdc.org/ESC%2010-09-08%20PCDC%20Final%20Report%20-%20FINAL.pdf [hereinafter POWERCENTSDC REPORT].
[16] *Id.* at 4.

When smart thermostats were introduced, summer demand reductions during peak times increased to 49%.[17] Additionally, OPOWER, an energy efficiency company that partners with utilities, noted that its clients achieved savings of "2 to 3 percent in peak power usage by sharing information on households' energy consumption. OPOWER analysis can combine detailed data about a household's electricity usage with information about the age, size and construction of the home to suggest how the consumer can save more, [Alex Laskey, President of OPOWER] said."[18]

CEA acknowledges that utility-sponsored consumer education programs are necessary components to the successful implementation of smart grid technologies. The Illinois Collaborative Report made some helpful recommendations regarding the goal and content of consumer education programs.[19] According to the report, the goal of consumer education programs "should be to provide customers with ample information to make informed choices about their participation. Consistent with this goal, program-specific consumer education and outreach efforts should be developed to support the successful implementation of any

[17] *Id*. *Accord, Texas Following 'No-Regrets" Policy that Embraces Smart Grid*, SMARTMETERTODAY (Sept. 13, 2010), *at* http://www.smartgridtoday.com/members/2037.cfm (subscription required) (citing a study that shows "when a customer is provided a smart meter, he saves 7-12%/month, but when that's coupled with [time of use pricing], the savings can go to 18-20%"); AHMAD FARUQUI & SANEM SERGICI, HOUSEHOLD RESPONSE TO DYNAMIC PRICING OF ELECTRICITY – A SURVEY OF THE EXPERIMENTAL EVIDENCE (Jan. 10, 2009), *available at* http://www.science.smith.edu/~jcardell/Readings/uGrid/House%20DemandResp%20Experience.pdf?bcsi-ac-364B66AA4820E961=1BD9949600000006KDsKe2sHYEM/LRFwL5E9h5D6X0QCAAAABgAAAAcrBgCAUQEAAAAAAPQdAAA= (based on an evaluation of fifteen dynamic pricing experiments, the survey concludes that on average "[time of use] programs are associated with a mean reduction of four percent in peak usage, and a 95 percent confidence interval ranges from three to six percent. CPP programs reduce peak usage by 17 percent and a 95 confidence interval ranges from 13 to 20 percent. CPP programs supported with enabling technologies reduce peak usage by 36 percent and a 95 confidence interval ranges from 27 to 44 percent.).

[18] Peter Behr, *Who Will Become the Masters of the 'Smart Grid'?*, NY TIMES (Sept. 23, 2010), *available at* http://www.nytimes.com/cwire/2010/09/23/23climatewire-who-will-become-the-masters-of-the-smart-grid-4691.html [hereinafter Behr, *Masters of the Smart Grid*].

[19] Illinois Collaborative Report, *supra* note 6, at 164.

Commission-approved smart grid programs and smart grid-enabled rate structures (*e.g.*, time of use, critical peak pricing, real time pricing, peak time rebates, or direct load control)."[20]

If implemented correctly, the combination of dynamic electricity pricing plans, education, and enabling technologies will allow people to save energy or money with minimal changes to their behavioral patterns and in a way that is comfortable and self-directed.

DOE QUESTION: Are education or communications campaigns necessary to inform customers prior to deploying smart grid applications? If so, what would these campaigns look like and who should deploy them? Which related education or public relations campaigns might be attractive models?[21]

CEA RESPONSE:

Successful smart grid implementations will depend upon successful campaigns to educate consumers on the benefits of smart grid technologies. As a general matter, Americans are unaware of what the smart grid is and how it could impact their lives. For example, one recent study indicated that 78% of the individuals polled still had not heard the term "smart grid." [22] On the bright side, that same study also showed that of the consumers that had heard of the smart grid, 80% believed that it will help the country rely on more clean domestic sources and 72% thought that the technologies could help reduce their monthly bills.[23] CEA's own consumer

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[20] The Illinois Collaborative Report went on to say that the consumer education program should provide sufficient information such that: "1. Consumers should understand the nature of the program, including: (a) A basic understanding of the technologies being used or new options available to the consumer; (b) An understanding of any associated rate structure changes or options; (c) The role of the utility and third parties. 2. Consumers should understand the goals of the program, including potential individual and societal costs and benefits. 3. Consumers should have a clear understanding of the potential implications (benefits, costs, and risks) associated with their participation (or non-participation) in a smart grid program or rate option in light of their personal electricity needs and usage profile. Potential costs and benefits could include bill impacts and service changes, as well as identified environmental and societal impacts that have been documented. Risk implications could include price volatility, potential higher bills, and data privacy/access issues." *Id.*

[21] RFI, 75 Fed. Reg. at 57008.

[22] Press Release, GE Energy, National Survey: Americans Feel a Smart Grid Will Help Reduce Power Outages, Personal Energy Usage (March 23, 2010), *available at* http://www.ge-energy.com/about/press/en/2010_press/032310a.htm [hereinafter GE National Survey]. *See also* Behr, *Lining Up for Smart Grid*, *supra* note 6 (noting that "the reality that most consumers still don't know what the smart grid is or what benefits it promises to offset the rising costs of new meters, new grid operating equipment. . . .").

[23] *See* GE National Survey, *supra* note 22 (the study indicates that 78% of Americans do not know what the term "Smart Grid" means but of those that were aware of Smart Grid, 80% believed that the Smart Grid "will help the

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research supports this finding of low awareness of the term "smart grid," indicating only 28% of consumers are familiar or very familiar with the term.[24] This level contrasts sharply with 93% familiarity with the term "Energy Efficiency" and 70% for "ENERGY STAR."[25] However, low awareness of smart grid does not translate to unwillingness to engage in reducing electricity consumption. In the same study, four of the top six green behaviors with a high rate of participation were those associated with reducing energy consumption, including turning off lights, adjusting the thermostat, turning off a computer when not in use and unplugging chargers when not in use.[26]

As part of each utility deployment of smart grid technologies, state commissions will ultimately need to decide the level and types of consumer education that should accompany such deployment. Education without technological solutions and pricing plans, or smart grid implementations without education are recipes for disaster. DOE can assist state regulators by developing best practice recommendations for consumer education campaigns. Additionally, the federal government can play a role in increasing awareness. DOE or other federal agencies could support nationwide campaigns to inform consumers of the numerous benefits of smart grid technologies and help overcome the lack of consumer knowledge.[27] These campaigns could target consumers using a variety of media and approaches including town hall meetings, newspaper and televisions ads, Internet, social media, regional workshops, and state meetings. Piecemeal efforts that rely entirely on bill inserts and door hangers probably will not be sufficient in themselves, and educational programs must be developed and implemented in

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country rely on more clean domestic energy sources (i.e. wind, solar, biogas, etc.)[,] 74 percent understand that smart grid will give them the info they need to make better decisions about their electricity usage[, and] 72 percent think that smart grid will help them save money on their monthly bills.").

[24] *See* CONSUMER ELECTRONICS ASSOCIATION, MARKET RESEARCH ANALYSIS BRIEF: SHADES OF GREEN-CONSUMER ATTITUDES REGARDING GREEN CE (Apr. 2010) (subscription required).

[25] *Id.*

[26] *Id.*

concert with a complete smart grid deployment strategy, including pricing plans and smart grid installations. Such a public information campaign was one of the many ways outlined in the Google and The Climate Group white paper recently delivered to the administration by which the federal government could help spur innovation in homes and businesses.[28]

DOE QUESTION: 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? 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? When is it appropriate to use social norm based tools?[29]

CEA RESPONSE:

The changes in consumer behavior necessary to achieve many of the federal and state policy objectives through the smart grid will not occur overnight. These changes will require a concerted and coordinated effort by and among federal, state and local policymakers and utilities to inform consumers of the value of these changes. Additionally, the development of smart grid devices and pricing plans will help automate consumer choices and could assist this transition. In fact, the more comfortable consumers are with programs, policies, and devices associated with energy management, the more likely they are to modify their behavior and engage in the smart grid. If this is easy to do, convenient, and understandable, then consumers will participate and purchase consumer electronics products that support it. Demand response studies indicate that consumers can respond to pricing signals and reduce demand when given the proper technological tools, education and incentives.[30]

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[27] The ENERGY STAR program and the Federal Communications Commission's ("FCC") Digital Television campaigns are good examples of effective programs that could be emulated.

[28] GOOGLE AND THE CLIMATE GROUP, OPPORTUNITIES FOR THE FEDERAL GOVERNMENT TO UNLEASH INNOVATION IN HOMES AND BUSINESSES BY PROVIDING CONSUMERS WITH READY ACCESS TO ENERGY INFORMATION (Oct. 18, 2010).

[29] RFI, 75 Fed. Reg. at 57008-9.

[30] *See, e.g.,* POWERCENTSDC REPORT, *supra* note 15.

Predating the current discussion of social norms in the smart grid context is the simple approach of giving consumer information about energy consumption which CEA believes is a key element in the transformation of our energy use. In support of the Federal Trade Commission's recent TV energy labeling rules,[31] CEA's vice president of technology policy noted "It's an exciting and important development for consumers that will provide helpful energy use information for TVs. CEA has long supported efforts to provide consumers with more information about the energy use of the electronics they purchase, and we look forward to working with the FTC as it considers similar measures for other product categories. The consumer electronics industry worked hard to develop standard ways of measuring TV energy use that support such labeling programs while at the same time dramatically improving the energy efficiency of digital TVs. The average TV today uses less energy than two 75-watt light bulbs, while providing a rich viewing experience."[32]

Assessing and Allocating Costs and Benefits

DOE QUESTION: 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?[33]

CEA RESPONSE:

While utility-controlled demand response and direct load management programs may provide an effective way for utilities to curb peak demand, these utility-managed programs cannot be the sole means available to consumers. As one study indicates, a majority of consumers are unwilling to turn over load control to their utilities unless they receive a steep

[31] *See* Press Release, Federal Trade Commission, Starting in 2011, FTC to Require EnergyGuide Labels for Televisions (Oct. 27, 2010), *available at* http://www.ftc.gov/opa/2010/10/tvlabeling.shtm.
[32] *See* Press Release, Consumer Electronics Association, CEA Applauds New FTC TV Labeling Rules (Oct. 27, 2010), *available at* http://www.ce.org/Press/CurrentNews/press_release_detail.asp?id=11990.
[33] RFI, 75 Fed. Reg. at 57009.

discount on their energy bills.[34] In the long run, devices that empower consumers to take control of their energy usage will likely be the ones that will receive widespread consumer adoption.[35] Indeed, as AHAM noted, the "purpose of the Smart Grid is to provide more efficient use of energy, not for utilities to control or monitor appliance usage."[36] It is therefore important to foster an open competitive market for companies to offer a variety of demand response options to consumers.

DOE QUESTION: How do the costs and benefits of upgrading existing AMR technology compare with installing new AMI technology?[37]

CEA RESPONSE:

Many of the benefits of HANs and in-premise technologies can be achieved without the need to upgrade from AMR to AMI technology. For example, in-home devices could receive the energy data supported by the one-way meter data through the Internet or in a machine-readable format on a real time basis. Additionally, AMR meters could be connected to HANs through bolt-on communications devices without the deployment of an AMI network. State policymakers should carefully evaluate the pros and cons of AMI deployments in comparison to other architectures that do not require such a significant capital outlay.

DOE QUESTION: 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

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[34] Press Release, Accenture, Consumers Unwilling to Allow Electricity Suppliers to Remotely Limit Energy Use Without Significant Price Discount, Accenture Study Finds (Apr. 20, 2010), *available at* http://newsroom.accenture.com/news/consumers+unwilling+to+allow+electricity+suppliers+to+remotely+limit+energy+use+without+significant+price+discount+accenture+study+finds.htm (noting that only one in four consumers would give utility control if they received a ten percent discount and only one in three would give utility control if they received a twenty percent discount).

[35] *Accord* Behr, *Masters of Smart Grid*, *supra* note 18 ("'The consumer wants to be in control' when smart meters arrive and new programs emerge, [Fiona Sim, director of the Intel Open Energy Initiative] said. That means consumers control their energy usage data, control the gateway to those data and decide how they will be used.").

[36] AHAM Principles, *supra* note 12.

[37] RFI, 75 Fed. Reg. at 57009

affect vulnerable populations? What steps could ensure acceptable outcomes for vulnerable populations?[38]

CEA RESPONSE:

As noted in CEA's comments to the Data RFI, consumer-side smart grid technologies have the capability to empower all consumers, including vulnerable populations, to make decisions to manage their utility bills more effectively.[39] Consumers are best served by open and interoperable standards, competitive markets, and widespread deployments and adoption of products. These policies will improve economies of scale, reduce per unit production costs, and make smart grid products more affordable for all consumers. Policymakers should be mindful of all segments of society, however, in crafting dynamic pricing plans and smart grid programs to ensure the implementation of these programs is coupled with consumer education programs that help educate all consumer segments on the costs and benefits of these smart grid programs.

Utilities, Device Manufacturers and Energy Management Firms

DOE QUESTION: How will programs that use pricing, rebates, or load control to reduce consumption during scarcity periods affect the operations, efficiency, and competiveness of wholesale power markets? Will other smart grid programs have important impacts on wholesale markets? Can policies improve these interactions?[40]

CEA RESPONSE:

Demand side management programs coupled with dynamic pricing plans and smart devices have the capability of reducing peak demand, thereby reducing the need for peak generation resources. Many residential devices now have or will have the capability to serve as alternatives to spinning reserves. These devices can also provide other ancillary services that could have a positive impact on the wholesale market. These demand side reductions could

[38] *Id.*
[39] *See* CEA Comments to Data RFI at 4 (July 12, 2010).
[40] RFI, 75 Fed. Reg. at 57010.

ultimately be bid into wholesale markets as a generation resource and be used by regional transmission organizations or independent system operators for resource planning purposes.

DOE QUESTION: What is the potential for third-party firms to provide smart grid enabled products and services for use on either or both the consumer and utility side of the meter? In particular, are changes needed to the current standards or standard-setting process, level of access to the market, and deployment of networks that allow add-on products to access information about grid conditions? How should the interaction between third-party firms and regulated utilities be structured to maximize benefits to consumers and society?[41]

CEA RESPONSE:

Consumers and society will benefit most from a smart grid marketplace characterized by competition, innovation, and experimentation. Policymakers should support regulations that foster these characteristics. Third party firms are willing and capable of offering smart grid-enabled products and services that appeal to consumers and assist regulated utilities enhance the electrical grid. These providers should be able to offer these services on a competitively and technologically neutral footing as opposed to one skewed in favor of any company or technology.

To encourage innovation and experimentation, policymakers should avoid adopting rules or regulations that legislate a particular market structure of the smart grid and instead allow this nascent market to develop as technology dictates.[42] For example, models that only contemplate utility-sponsored demand response could foreclose numerous opportunities and constrain the development innovative products and services. Instead, policymakers need to create an open

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[41] *Id.*

[42] Behr, *Masters of the Smart Grid*, *supra* note 18 (the reports notes that there are least three models by which the home energy market could develop: (1) utilities could focus on their historic mission of managing the electricity infrastructure and delivering electricity and letting the "consumer choose a non-utility company to manage smart grid applications", (2) utilities could become a "'trusted portal,' endorsing particular vendors that would compete to provide smart grid services within the utilities' franchises" or (3) utilities "could morph into a complete smart grid service provider, supplying digital meters and home energy displays, leasing solar panels, and owning electric vehicle charging stations."). The three options presented above are just three of many examples by which the smart grid market could develop. *See also* Comments of Whirlpool, Consumer Interface with the Smart Grid, Office of

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environment for new service providers to offer energy management, distributed generation, and demand response services. Providers such as consumer electronics providers, cable companies, telephone companies, web companies, retailers, and companies still being conceived by entrepreneurs may serve the customer better than the incumbent utility and should be encouraged to enter this market.

DOE QUESTION: How should customer-facing equipment such as programmable communicating thermostats, feedback systems, energy management systems and home area networks be made available and financed? Are there consumers' behavior or incentive barriers to the market achieving efficient technology adoption levels without policy intervention?[43]

CEA RESPONSE:

As the history of Internet, cable and wireless markets indicates, there are a variety of pricing options that could be made available to market and sell smart grid products and services. For example, smart grid vendors could develop creative ways to lease smart grid devices to consumers, or to provide device discounts in exchange for the right to provide smart grid devices to consumers under service contracts similar to the wireless industry. The smart grid marketplace should be allowed to experiment among different pricing policies and marketing schemes to encourage consumer adoption.

Science Technology and Policy, *Request for Information* (Mar. 16, 2010) (noting that the market and consumers should decide the interfaces that will be used to provide home energy management services to consumers.).

[43] RFI, 75 Fed. Reg. at 57010.

CONCLUSION

CEA appreciates the opportunity to submit responses to the DOE's RFI and looks forward to participating in this ongoing national conversation.

Respectfully submitted,

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