




Department of Energy

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MEMORANDUM TO THE DEPARTMENT OF ENERGY ELECTRICITY ADVISORY COMMITTEE

From: Patricia A. Hoffman 
Assistant Secretary
Office of Electricity Delivery and Energy Reliability

Subject: DOE Responses to EAC Work Products

I want to thank all members of the Department of Energy's (DOE) Electricity Advisory Committee (EAC) for your hard work during 2013.

The work products delivered by the Committee during 2013 are listed below. The purpose of this memo and its attachments is to provide to you in a systematic and inclusive form the Department's responses to your analyses and recommendations.

EAC 2013 products

1. Recommendations for DOE Action regarding Interconnection-Wide Planning, June 2013
2. Recommendations for DOE Action regarding the Race to the Top Initiative, June 2013
3. Recommendations for DOE Action regarding Consumer Acceptance of Smart Grid, June 2013
4. Recommendations for DOE Action regarding the CSC Interstate Transmission Siting Compact June 2013

The attachments that follow summarize DOE's actions and responses to these 2013 work products.

I look forward to the future efforts of the EAC and am committed to ensuring a strong and fruitful working relationship between the Committee and DOE.



**Electricity Advisory Committee (EAC) Recommendations
Interconnection-Wide Planning
June 2013**

The EAC recommends that DOE work with each group to facilitate their continued efforts with clear objectives and governance and to assist the groups in arranging their own funding mechanisms either through established mechanisms, by proposal to DOE, or by other means. To the extent that other funding is not forthcoming, we encourage DOE to protect the very substantial return on its initial investment here by responding positively to well-grounded proposals from the interconnection-wide planning groups.

DOE appreciates the EAC's positive assessment of the value of the work done by the participating organizations in the three interconnections, and it agrees with the EAC that DOE should continue to support such work in the future; to the extent its resources will permit.

As your memorandum makes clear, the circumstances in the three interconnections vary significantly. In all three interconnections, however, the industry participants in the planning processes have created organizations that can serve as frameworks within which interconnection-scale analyses and planning can be undertaken, and these companies appear prepared to provide the resources required to support such work on an ongoing basis.

It is more challenging, however, to develop parallel mechanisms that will provide a predictable stream of funds to support participation by states and non-governmental organizations (NGOs) in these studies. This is particularly the case in the Eastern Interconnection, where the large size of the interconnection and number of affected states may make it particularly worthwhile to sustain a state-based interconnection-wide organization {such as the Eastern Interconnection States Planning Council (EISPC)}.

If a non-DOE means of sustaining such organizations can be established, DOE would be willing to consider providing partial financial support to them for "well-grounded [analytic] proposals," to use your term, but again, to the extent its resources will permit. However, given the budget stringencies that DOE and other federal agencies are now facing, I do not think it likely that DOE would find it appropriate to provide ongoing funds strictly to enable the continuation of these organizations (i.e., for staff salaries, office space, office equipment, etc.).

I appreciate the EAC's interest in these questions, and invite you to continue giving them your attention. As yet, they remain unresolved, and it may appropriate to consider them as part of the larger bundle of questions about how best to fund the increases in R&D and technical assistance needed to enable a timely and productive transition to the modernized electric infrastructure we will need for the 21st century.

Electricity Advisory Committee (EAC) Recommendations
Race to the Top Initiative
June 2013

The EAC Recommended Principles for the Race to the Top Initiative (RttT) include 1) RttT should allow participation by States and other eligible applicants with all types of utility ownership and business models; 2) Phase 1 RttT qualifying criteria should be descriptive rather than prescriptive, allowing flexibility and innovation in meeting requirements that have been identified as important for achieving energy efficiency and productivity; 3) In Phase 2, RttT applicants should be judged and rewarded based on their own improved performance; 4) Phase 1 RttT funds should be used to support development of innovations, programs, policies, regulations and/or laws that advance energy efficiency and energy productivity in a manner that provides benefits to customers in excess of costs. Phase 2 awards should be made based on the achievement of improvements in energy efficiency and energy productivity; 5) The RttT awards should be focused on achieving improvements in energy efficiency and productivity.

DOE appreciates the EAC's recommendations to help design an effective "Race to the Top" performance-based awards program that would support State governments implementing policies designed to cut energy waste and modernize the grid. Modeled after the Administration's successful approach to education reform, the Fiscal Year 2014 (FY'14) budget includes a request of \$200 million for this initiative. Early indications from both the House and Senate Appropriations Committees' actions suggest that they are not supporting this initiative. A final appropriations bill is pending. It is anticipated that this initiative will involve a number of different program offices at DOE. Should funding become available for the "Race to the Top" initiative, all programs involved will consider the EAC's thoughtful recommendations and work with EAC members to implement the most effective program possible to achieve the goals of making progress toward improving energy efficiency and energy productivity.

Electricity Advisory Committee (EAC) Recommendations

Consumer Acceptance of Smart Grid

June 2013

Introduction

This paper addresses the recommendations put forward by the Electricity Advisory Committee (EAC) regarding the Department of Energy's (Department) role in promoting consumer acceptance of the smart grid (see Page 9). The Department agrees that meaningful efforts to inform consumers about the smart grid are very important especially as consumers become more involved in decisions involving energy management and investments in grid modernization. The Department is currently involved in several activities that correlate with many of the EAC's recommendations and they are described in this response. In addition, there are some recommendations that the Department will consider, but are not currently within its scope.

Close collaboration between utilities and their customers will be needed so that consumers better understand why investments in infrastructure are necessary. Utilities will also need to better understand how to deploy and manage emerging customer-based systems successfully over the long term. The Department will continue to work with interested stakeholders to ensure that consumer education and awareness about the smart grid is accomplished.

Current Efforts within the Department of Energy

The Department's activities in this area fall within the following main areas:

- Smart Grid Investment Grant (SGIG) Program Consumer Behavior Studies
- Smart Grid Customer Engagement Working Group (SGCEWG)
- Privacy Voluntary Code of Conduct
- Green Button Initiative
- Additional Stakeholder Outreach Efforts

Smart Grid Investment Grant (SGIG) Consumer Behavior Studies

There are eleven consumer behavior studies associated with several SGIG projects that involve the application of experimental design techniques such as randomized controlled trials to improve understanding of the magnitude of demand response, consumer acceptance, and customer retention in time-based rate programs. Consumers participating in the studies have smart meters and various types of customer systems such as programmable controllable thermostats, in-home displays, and web portals; several of the studies include assessments of information and education programs. The results of these efforts are being provided by the SGIG projects in interim and final evaluation reports that are posted on www.smartgrid.gov. In addition, the Department is conducting extensive evaluation and analysis on the results of the

consumer behavior studies to understand what consumers will accept, how they will react to various pricing programs and what circumstances influence consumer behavior related to their electricity usage. The Department's analysis will also be posted on the website.

The SGIG projects involved in these studies typically meet once a month to share their experiences designing, implementing and evaluating their studies and what lessons each utility has learned from those experiences. Much of the discussion focuses on the utilities' involvement with customers. The resulting lessons learned are posted on the [consumer engagement page of smartgrid.gov](#). Some of the initial results are also presented in the Department's [first report on customer enrollment](#). As the utilities finalize their consumer behavior studies and have developed lessons learned, more of qualitative information will be collected, posted on the website and shared widely with stakeholders.

In addition, the SGIG projects undertaking the consumer behavior studies have shared their results and experiences at various conferences, including sessions organized by the Department, with additional conference sessions now being planned.

Several of the utilities involved in these studies have undertaken comprehensive consumer education and awareness efforts. Two efforts are highlighted below.

Nevada Energy (NV Energy)

Through its SGIG consumer behavior study, NV Energy offered consumers a series of games based on a conservation and energy efficiency curriculum. Through online and mobile channels, the energy education game posed multiple choice questions to customers. Players received prizes (both randomly, for playing and based on number and speed of correct answers provided). NV Energy also provided these customers with related online and print materials (e.g., a deck of cards displaying the curriculum items). Pre- and post-study surveys have already revealed three important findings:

- 1) Customer participation (i.e., downloading and playing the game) was broad and sometimes frequent: participation ranged across demographics (players' ages, genders, home sizes and bill sizes were diverse). More than 67% of the randomly-selected residential households downloaded the game application. Of these, 45% played the game at least weekly, and 31% played at least daily.
- 2) Many customers learned about household energy management through the game, and put what they learned into action: while statistical analysis of the surveys continues, the initial review indicates that most education game recipients learned substantially through delivery of the curriculum, and acted on what they had learned.
- 3) An energy education game engages consumers: while industry experience would indicate that typical households spend only a few minutes per month engaged with energy management (most of that brief time spent paying bills), the median participation time of recipients of the energy education game was 21 minutes per month.

Energy education and training games based on the Nevada project have been initiated at several other utilities. As part of its SGIG grant, NV Energy also successfully deployed a multi-channel consumer confidence program to inform Nevadans about the utility's smart meter deployment. Both the energy education game and the consumer confidence program are part of NV Energy's *customer energy ownership* strategy, which aims to help customers take charge of their household energy use, and be satisfied to do so.

Sacramento Municipal Utility District (SMUD)

Through the application of experimental techniques, SMUD sought to understand how its customers accept and respond to various forms of time-based pricing in both a default (opt-out) as well as a voluntary (opt-in) setting. SMUD set some of the industry's highest recruitment goals for its study. As such, the utility realized early on that it would need to actively engage and educate its customers for the study to be a success.

SMUD spent a significant amount of time and money developing an effective marketing and educational campaign to encourage customer enrollment. From February through August 2011, SMUD conducted 25 focus groups and 4 surveys involving more than 2,000 customers to solicit input on marketing messages, naming conventions and other communication issues as input to its marketing and education plan. Based on this market research, the company created a highly effective recruitment plan that achieved opt-in recruitment rates in excess of 16% and opt-out recruitment rates in excess of 92%.

Once a customer was enrolled in the study, SMUD provided a variety of educational materials and methods for pushing that material to the study's participants. YouTube videos, Facebook posts, and monthly newsletters were just a handful of the approaches SMUD used to enable and engage customers in the study. To date, less than 15% of the participants have chosen to leave the study, regardless of the way they were enrolled in the study (opt-in vs. opt-out).

Smart Grid Customer Engagement Working Group (SGCEWG)

Between July 2011 and December 2012, the Department held seven regional workshops involving more than 400 participants representing approximately 180 organizations to identify best practices and lessons learned regarding consumer engagement and technical implementation of smart grid related technologies. Building on the success of the regional peer-to-peer workshops and to leverage and capture the knowledge and experience gained by SGIG projects, as well as other utilities deploying smart grid technologies, the Department established the Smart Grid Customer Engagement Working Group (SGCEWG) in November 2012 to embark on a nine-month process to capture industry insights and wisdom. The SGCEWG engaged a wide variety of stakeholders, including utilities, vendors, regulators, consumer advocates, and other stakeholders from across the electricity industry, to discuss their experiences around smart grid customer engagement. Topics discussed during the SGCEWG's

process included resource planning, consumer advocacy, information technology, stakeholder engagement, marketing, regulatory strategies, and metrics.

The result of the work undertaken by the SGCEWG is the *Voices of Experience | Insights on Smart Grid Customer Engagement* (Guide) which was released in July 2013. The Guide provides practical advice in the form of “industry insights” and includes examples from utilities that have implemented smart grid engagement programs with topics ranging from creating a strong project management structure to developing the right messages and channels to thinking through opt-out approaches.

While the Guide largely references advanced metering infrastructure (AMI)/smart meter customer engagement (which is the starting point for many utilities’ increased customer engagement efforts), the principles and insights apply to a much broader perspective and is posted on smartgrid.gov/voices. To ensure that the Guide has been widely disseminated, the Department has undertaken an extensive outreach effort to share the Guide with a broad group of smart grid stakeholders.

The Department announced the publication of the Guide in July 2013. Other outreach efforts on the Guide include distributing it to national organizations including the National Association of Regulatory Utility Commissioners (NARUC), the National Rural Electric Cooperative Association (NRECA), the American Public Power Association (APPA), the Edison Electric Institute (EEI) and the Smart Grid Consumer Collaborative (SGCC). In addition, the Guide has been distributed to state public utility commissions, utilities and other stakeholders. The Department is partnering with the SGCC to further disseminate the Guide and to gather additional insights and lessons learned. Additional areas for dissemination and further engagement are currently under review and development.

Privacy Voluntary Code of Conduct

The Department is the designated lead agency for the Federal Smart Grid Task Force (Task Force) which is facilitating a multi-stakeholder process to develop a Voluntary Code of Conduct (VCC) for utilities and third parties providing consumer energy use services. The VCC will establish common practices that protect the access, use, and sharing of customers’ electricity usage and related data. The first stakeholder meeting on the VCC took place in February 2013, with periodic future meetings taking place to inform and drive the effort.

The VCC stakeholder process includes representation from all major stakeholder groups. An executive team has been established to provide direction and guidance when requested from the broader stakeholders. Efforts are being taken to ensure that the views and opinions of all stakeholders are heard and taken into account during the VCC development process. Participating entities include utilities (investor-owned, municipally-owned and rural electric cooperatives), state public utility commissions, consumer advocate groups, building managers, third parties, energy efficiency organizations, and standards bodies. Based upon a review of existing privacy language and associated information, the Task Force is currently drafting

principles in five areas: (1) notice & awareness, (2) choice & consent, (3) access & participation, (4) security & integrity, and (5) management & redress. All meetings of the VCC stakeholder process are open to the public and are webcast to ensure the widest participation possible. Meeting and work group information is posted on www.smartgrid.gov/privacy.

Green Button Initiative

The Green Button Initiative (Green Button) is the result of a White House industry call-to-action in the fall of 2011 to give consumers secure access to their own energy consumption information. Green Button is based on the notion that electricity consumers should be able to securely download their own easy-to-understand energy usage information from their utility or electricity supplier. Armed with this information, consumers can use a growing array of new web and Smartphone tools to make more informed decisions about their electricity consumption patterns, optimize the size and cost-effectiveness of solar panels for their home, or verify that energy efficiency retrofit investments are performing as promised.

The Department is partnering with the White House, the National Institute of Standards and Technology (NIST) and the electric power industry to advance the Green Button standard. Using Green Button "Download My Data," a utility customer can securely download his/her comprehensive energy usage data. Consumers can also, at their sole discretion, choose to make their data available to third parties. "Green Button Connect My Data," is a powerful model which allows a consumer to authorize a third-party service provider to receive direct access to his/her Green Button data. These authorizations are valid for an agreed upon time and can be revoked at any time.

Following the White House call-to-action, California utilities and other utilities across the U.S. began to deploy the Green Button standard in early 2012. To encourage Green Button electric power industry adoption, the Department challenged the industry through its "Apps for Energy" contest to create the best new apps to help utility customers make the most of their Green Button electricity usage data. Over 12,000 people actively followed the "Apps for Energy" contest which resulted in over sixty Green Button apps being developed.

In June 2013 President Obama announced that the U.S. federal government will be using the Green Button standard to manage energy consumption in its facilities. Over the next year, another 20 million U.S. homes are expected to have access to Green Button data. In the fall of 2012, the Ontario Minister of Energy announced that Ontario would adopt the Green Button Initiative. By August 2013, over 2.6 million homes in Ontario had access to Green Button data. The Department, NIST and the White House Office of Science and Technology Policy continue to be active champions of Green Button.

Additional Department of Energy Efforts with Stakeholders

National Association of Regulatory Commissioners (NARUC): The Department has engaged NARUC and its members (both commissioners and staff) on the SGIG program, including the consumer behavior studies. Several presentations have been given at the regulatory regional and national meetings, as well as webinars and face-to-face meetings. This outreach on consumer awareness and other smart grid issues is an ongoing effort by the Department.

National Rural Electric Cooperative Association (NRECA): The Department has formed a partnership with NRECA to share information on smart grid, including customer education and awareness. The partnership will result in ongoing discussions and joint outreach efforts to educate rural cooperatives and their customers on the benefits of smart grid. The Department intends to extend this partnership concept to other national utility trade associations.

Power-Over-Energy Initiative: The Department is participating as a member of the Power – Over-Energy Initiative, which is an energy literacy campaign created by a coalition of various energy and environmental groups to better inform consumers on energy management.

Smart Grid Consumer Collaborative (SGCC): The Department is assisting the SGCC to develop language that describes the benefits of smart grid technology in a report on the value proposition of the smart grid to Consumers. The SGCC is a nonprofit organization chartered to represent consumers, advocates, utilities, and technology providers to advance the adoption of smart grid and to ensure long-lasting sustainable benefits to consumers.

Institute of Electrical and Electronic Engineers (IEEE) Professional Engineering Society: In 2012, DOE and IEEE identified a set of collaborative activities for communicating the results of the SGIG projects, including the consumer behavior studies, to the electric power industry. Existing IEEE publications and conferences provide established mechanisms for reaching utility decision makers, and joint DOE–IEEE activities can be beneficial for leveraging SGIG information and reports on impacts, costs, benefits, and lessons learned.

Electric Power Research Institute (EPRI): The Department has collaborated with EPRI in developing a methodology for conducting time-based rate pilot projects and is planning a joint workshop to be held in the summer of 2014 on findings and lessons learned from these studies.

Discussion

The Department is working with many stakeholders to develop and share information that can help key organizations more fully engage with consumers in a number of key areas, including providing methodology for conducting consumer behavior studies, developing a voluntary code of conduct for protecting the privacy of consumers, sharing lessons learned on engaging consumers with respect to smart grid deployment, and promoting mechanisms for consumers to gain access to their electricity usage information so that they can make more informed choices. These stakeholders include utilities, regulators, and consumer advocates.

The Department will continue to support such efforts where it can fully leverage the resources and reach of these key stakeholder groups, especially as they work directly with consumers in their daily business practices. In this manner, the Department serves more as a clearinghouse and facilitator of information exchange rather than as a policy setter. Additional efforts, such as developing model practices used to evaluate, measure and validate customer responses for predictable forecasting or for supporting third-party behavioral science studies, will be considered.

Subject	EAC Recommendations on Consumer Acceptance of the Smart Grid (Submitted June 6, 2013)
Stakeholder Dialogue	<i>The Department should cultivate dialogue with key stakeholders at the national level to assist in developing "Key Resource" materials and disseminating those materials, e.g., National Association of Regulatory Utility Commissioners, Natural Resources Defense Council, National Association of State Utility Advocates, Edison Electric Institute, National Rural Electric Cooperative Association, American Public Power Association, etc. The Department should seek to form partnerships with these groups to gain their support and involvement in disseminating materials and messages.</i>
National Communications Program	<i>Individual utilities and states may be aware of local and regional experiences, market characteristics, politics and drivers, but may lack the skills and experience needed to lead the design and implementation of effective education and outreach strategies. DOE should explore options to match utilities and states with the resources needed to produce the most effective education and outreach efforts. As discussed earlier, The National Action Plan on Demand Response offers a strategy that is applicable to Smart Grid consumer acceptance, e.g., the recommended "National Communications Program" would be a very complimentary tool.</i>
Messages to End-Users	<i>DOE should encourage utilities and states to emphasize messages that address the values and concerns of end-users. Campaigns that emphasize the benefits all end-users will realize through Smart Grid will help blunt potential criticism and opposition to the Smart Grid. Again, these materials need to be developed so they are objective and discuss benefits and the challenges associated with the SG.</i>
Key Resource Material Dissemination	<i>The Department should cultivate dialogue with key stakeholders at the national level to assist in developing "Key Resource" materials and disseminating those materials, e.g., National Association of Regulatory Utility Commissioners, Natural Resources Defense Council, National Association of State Utility Advocates, Edison Electric Institute, National Rural Electric Cooperative Association, American Public Power Association, etc. The Department should seek to form partnerships with these groups to gain their support and involvement in disseminating materials and messages.</i>
Technical Materials on Privacy, Cybersecurity, etc.	<i>Comprehensive technical materials that address specific issues such as health and safety concerns, privacy, cyber-security and rate impact issues should be prepared by DOE, or highly credible and neutral third party organizations, and made available to individual utilities and states when these issues arise.</i>
On-Going Efforts to Update Materials	<i>There is a need for materials that address the near-term issues associated with educating and communicating the planning and installation of SG technologies. Further, the need for local utilities to have regular contact with Smart Grid participants must be identified and budgeted accordingly. And for The Department, the best practices of education and outreach will continue to evolve over time, so there must be an on-going effort to update materials and distribute the most up-to-date information through their distribution network.</i>
Voluntary Code of Conduct	<i>In keeping with its prior work on this issue, the Department should continue to acknowledge privacy concerns and to work with the industry, regulators, and consumers to develop principles and procedures that address those concerns. In this vein, the EAC understands that the Office of Electricity Delivery is undertaking an effort to develop a "Utility Voluntary Code of Conduct for Smart Grid Data Privacy" through a Department of Energy-facilitated stakeholder process. The EAC urges that as the Department conducts this effort, it take steps to ensure that utilities of all stripes and sizes and consumers are well-represented in the stakeholder process, to avoid a final product that does not in fact adequately address the issues that are being encountered "on the ground." The Department should also coordinate its efforts and seek to build upon, rather than reinvent, the significant work that has been completed by other national organizations addressing this issue, including NIST, NARUC, Smart Grid Interoperability Panel and NAESB.</i>
Strategies to Ensure Prudent Smart Grid Investments	<i>By working together, state and federal regulators, utilities, stakeholders, and the Department can identify strategies to bring about broad implementation of smart grid technology while insuring that the investments are prudent for the provision of safe, reliable, affordable and environmentally sustainable electricity. The customer and other beneficiaries must be protected from poor utility investment decisions. Benefits of prudent smart grid investments can be achieved for all beneficiaries whether in a conventionally retail-regulated state or in one which has retail competition.</i>
Generic Template for Model EM&V Practices	<i>Outreach and education by the Department should also include model EM&V practices for the integration of predictable, automatic smart grid responses to price mechanisms into reliable load forecasts. To the extent possible, development of a generic template for EM&V should be developed in partnership with states and federal entities such as BPA and TVA.</i>
Research from Credible Third-Party Sources	<i>Additionally, the Department should support additional research (including evidence-based behavioral social science) from highly credible third-party sources unaffiliated with electric utilities or equipment manufacturers, and continue to monitor and collect accurate and complete information regarding the scientific and technical validity of the concerns, and then to disseminate that information to utilities, regulators and the general public in an unbiased manner. The Department should not downplay these concerns simply to achieve greater consumer acceptance of smart grid deployment; rather, the Department should obtain and disseminate the most accurate science-based information so that the public debate on these issues can be conducted in the most informed manner. In the longer term, such high quality information should do more to dispel health and safety concerns to the extent these concerns are unwarranted.</i>

**Electricity Advisory Committee (EAC) Recommendations
CSC Interstate Transmission Siting Compact
June 2013**

The EAC, accordingly, recommends that DOE engage in such supportive efforts as are reasonable, including, but not limited to: 1) communicating to state governors and legislators DOE's support for state adoption of interstate compacts, including, as appropriate, the IETSC, as a means to support development of a robust interstate transmission system; 2) advocacy for adoption of compacts in regularly scheduled DOE/NARUC discussions; and 3) advocacy for adoption of compacts as a topic during DOE technical conferences.

Ensuring adequate transmission capacity is important to the Administration and DOE. As the June 6, 2003 memo points out, compacts between states on transmission siting are one way to bring efficiencies to state siting of new transmission lines.

Soon this fall, a Quadrennial Energy Review is to be launched by the Administration. The President's Climate Action Plan (CAP) includes a commitment to institute a Federal Quadrennial Energy Review as part of unlocking long-term investment in clean energy innovation. Conducting a Quadrennial Energy Review was also recommended by the President's Council on Science and Technology.

The Quadrennial Energy Review – which has a four-year planning horizon – will be led by the White House Domestic Policy Council and Office of Science and Technology Policy, supported by a Secretariat established at DOE of Energy. The Quadrennial Energy Review is to involve the robust engagement of outside stakeholders, not just Federal agencies, to ensure a more outward focus than previous quadrennial reviews undertaken by other Federal Agencies in the past. Also, unlike the issue of national defense and the Quadrennial Defense Review that is done periodically by DOE of Defense, states are very involved in energy. Thus state legislators, state governors, state public utility commissions, and other relevant state offices involved with energy can be expected to be consulted broadly and often during the Quadrennial Energy Review .

Given that the Federal Quadrennial Energy Review's focus will be energy infrastructure, including transmission, the EAC's recommendations regarding interstate siting compacts are best to considered as part of that pending review.