Accelerate Energy Productivity 2030
Executive Review & Dialogue Session
Tuesday, June 28, 2016 | Meeting Notes

Background and Opening Remarks

The purpose of the Accelerate Energy Productivity 2030 Executive Review and Dialogue Session on June 28, 2016 was to provide input to the Department of Energy (DOE) from key industry representatives as DOE prepares the second installment of the Quadrennial Energy Review (QER 1.2). QER 1.2 will focus specifically on electricity, which is especially important as a support system for all other infrastructure. The target date for completing QER 1.2 is November 2016. This is the second installment in a series of four reports that constitute the Quadrennial Energy Review (QER). The QER is an important influence on policy; of the 63 recommendations in the first QER installment, which focused on energy transmission, storage, and distribution infrastructure, 12 have been implemented and 21 are fully or partially reflected in federal law. Not only is the QER influential in the United States, it has also been well-received overseas as a model approach to energy policy evaluation.

The work of DOE through the QER and other ongoing activities is designed to support positive energy efficiency and productivity outcomes. DOE works on appliance standards as well as improving the efficiency of federal buildings. One of the key goals of DOE's technology portfolio is to help improve American manufacturing competitiveness. Research and development as well as deployment of technologies are key areas of concern for DOE in ensuring U.S. competitiveness, including, for example, wideband materials and smart manufacturing.

The Accelerate Energy Productivity 2030 Executive Review and Dialogue Session was also an opportunity to build on the work done under the partnership of DOE, the Alliance to Save Energy and the Council on Competitiveness. Through the partnership, energy productivity has become an increasingly influential way to drive meaningful policy deployment in the United States and abroad. This Executive Dialogue follows on the 2014 announcement of the initiative at the 2014 American Energy and Manufacturing Competitiveness Summit by Secretary of Energy Ernest Moniz, and the release of *Accelerate Energy Productivity 2030: A Strategic Roadmap for American Energy Innovation, Economic Growth* at the 2015 AEMC. The partnership encourages all parties to endorse the goal of doubling U.S. energy productivity by visiting www.Energy2030.org/Endorse.

Introduction and General Topics of Interest

The Accelerate Energy Productivity 2030 Executive Review and Dialogue Session began with a lightning round of introductions, with each of the participants introducing their key concerns and issues. Below is a brief summary of the points raised:

- **Transportation:** It is critical that fuel efficiency in vehicles be improved, including through material lightweighting, turbo charging and the implementation of improved Corporate Average Fuel Economy (CAFE) standards. Likewise, anything that can be done to encourage consumers to adopt electric vehicles will be important for improving our overall energy productivity, including by encouraging smart charging infrastructure.

- **Enabling the Grid**: The top priorities for utilities should be to ensure the safety, reliability, resiliency and security in the electric grid. New technologies require a lot of investment, and this is a naturally slow-moving process that needs to be sped up. Rate design and a consistent regulatory approach are critical components for establishing the right incentives that encourage deployment of advanced metering infrastructure and supporting technologies. Regulatory inconsistency across states as well as between states and the federal government is an important issue that needs to be further addressed.

- **Equity and Workforce Development**: It is critical to ensure that consumer equity is a priority for the energy system. Those people least able to afford energy services must have access to energy efficiency. Likewise, active steps must be taken to ensure that the workforce is prepared for an energy transition. In doing so, we will strengthen American economic growth, competitiveness and resiliency.

- **States**: Federal initiatives often become complicated at the state level. By the same token, states remain a crucial player in energy outcomes that cannot be ignored.

- **Building Energy Codes**: Building energy codes are broadly important to support as a way of improving building envelope. It is crucial that the incorporation of on-site renewable energy generation into building energy codes not come at the expense of energy efficiency.

- **Incentives:** Incentive policies that put new, more efficient technologies in the hands of consumers and small businesses are important. However, some consumers may not know what incentive programs are available, as can be the case for electric vehicles. Ensuring consumer awareness would make incentive programs more effective. Others stated support for "sunsets," or the phasing out of most incentive programs, and an additional suggestion was put forward that the federal strategy towards incentive programs deserves a top-to-bottom re-evaluation.

- **Public-Private Partnerships**: DOE has a good track record in working with the private sector, and public-private partnerships are important to continue as a policy tool.

- **Financing:** Building new opportunities for financing energy efficiency is an important goal. The property-assessed clean energy (PACE) model is a promising approach that can be used to improve commercial and industrial buildings. PACE deployment is currently in a nascent stage, but PACE and other mechanisms hold significant promise for improved energy efficiency finance more broadly.

- **Specific Technologies of Focus:** Attendees raised specific points related to efficiency in water management as well as combined heat and power. Rate design is important for both – in terms of cost recovery in infrastructure-reliant water systems as well as creating opportunities for CHP to achieve greater market share. In water management, there is a great deal of water lost due to aging infrastructure, which means the energy used to move it is lost as well. Aged infrastructure has negative implications for resilience, and the situation is exacerbated by natural events, including floods and fires.

Strategies for Doubling Energy Productivity

Discussion was organized into five topics that were identified as key opportunities for improving energy efficiency.

Energy Management for Industrial, Commercial, and Institutional Facilities

- **Corporate Leadership:** Leadership commitments are an effective tool for more effectively managing energy in industrial facilities. Having an internal organizational sustainability champion at the senior executive level is particularly helpful. Energy efficiency challenges that involve all employees are another best practice. In addition to providing value back in terms of savings, it also helps secure employee buy-in to sustainable practices, making them more effective in the long run. In order to effect this behavioral change, a common understanding and desire to pursue key energy efficiency opportunities at higher levels of corporate management is critical. Engaged corporate leaders can appeal to employees in the same way that behavioral programs work in the residential sector.

- **ISO 50001 and Reporting Processes**: Strategic Energy Management Systems (SEM) and the ISO 50001 energy management system are worthwhile on a value basis. However, they can be complex and time-consuming to implement, so a high level of commitment is required. This is particularly true in buildings that are not of standard design or operation. Anything that the Federal government can do to help promote flexibility in energy management programs to enable them to be adapted to the specific characteristics of the buildings and facilities being

addressed would be helpful. Additional feedback indicated that there are too many programs with disparate requirements and that duplicative programs should be consolidated as much as possible.

It was agreed that reporting out the results of energy management and total use in reports is important. However, participants pointed out that energy use reporting is often reported in sustainability reports and should be kept separate from annual financial reports for two reasons: 1) There are different audiences for those two different documents; and 2) There are concerns that reporting this alongside financial reporting could trigger unintended consequences with regulatory authorities.

- **Recognition:** Policies and programs that give public recognition to corporations that implement efficiency programs are important. While energy efficiency is a competitive differentiator, recognition of efforts to improve energy management should be used to further encourage businesses to undertake efficiency upgrades. There is vibrant participation in energy efficiency and productivity programs among the larger corporate players. However, once past this 'top tier' of companies, there is significantly lower participation in these types of programs among small and medium companies. There is an under-utilized opportunity for recognition programs to target the large market of small and medium enterprises (SMEs).

Energy Management for Consumers (Residential and Small Businesses)

- **Market Barriers & Opportunities:** There are significant barriers to selling energy efficiency directly to consumers and small businesses. Energy efficiency on its own may not be a compelling investment for many businesses. Instead, consumers and small business owners may place higher emphasis on reliability or resiliency of their energy supply. For this reason, energy efficiency must be integrated into the market in such a way so that consumers purchase more energy efficient products based on other product considerations, such as improved quality or functionality. Consumers fundamentally respond better to higher quality products. The Nest thermostat, for instance, has consumer appeal beyond its impact on efficiency, as do LED lights.

- **Role of Regulators:** Regulations play a key role in ensuring that both appliances and buildings operate efficiently. In buildings, new construction or major renovations are generally the only real opportunities to make an impact on the quality of the building envelope. Energy efficiency must be incorporated into the building envelope design from the earliest stage.

- **Rate Design:** Rate design, transparency and bill stability are important for consumers. Rate designs that reward energy efficiency should be a priority, and it is important that changes in rate design do not disadvantage low-income households and also do not incentivize high-income customers to turn to grid alternatives. Market-wide, consumers and SMEs are negatively

affected by electricity bills that fluctuate too much. Transparency is important for consumers as well, which means that smart meters and other energy reporting methods and analysis should be a priority.

- **Financing:** Making efficiency affordable is another important aspect of reaching consumers that have traditionally underutilized energy efficiency opportunities. Affordable financing instruments that are available to businesses and households should be made available more broadly. Incentive programs are extremely important for making energy efficiency affordable. Frequently, however, consumers and businesses are unaware of the incentives available to them. Information campaigns are important to ensure that these opportunities work to actively stimulate consumer demand.

State and Utility Demand-Side Policies and Programs

- **Utility Energy Efficiency Programs:** Utility programs can be too siloed, with implementation often divided between residential, commercial, industrial, low-income, and demand response programs. This can lead to inefficiency in the broader energy efficiency market with multiple entities approaching consumers. Utility energy efficiency implementation should continue to promote prescriptive retrofit measures, but must also find ways to incentivize energy efficiency deployment in a more integrated fashion, such as coordinating standard retrofits along with energy management systems and distributed energy resources.

- **Challenges to the Grid:** In certain regions, a significant increase in renewable energy that qualifies for federal tax credits is reducing the price of energy in the market and is negatively affecting baseload generation. No matter what rate structure a utility implements, it should ensure that all costs are included. State net metering policies can reduce a customer's energy bill, but may also reduce a homeowner's incentive to install energy efficiency measures. Time varying rates such as time-of-use and critical peak pricing rates make a lot more sense as consumer devices, particularly thermostats, increasingly come equipped with transactive controls.

- **States & Regulatory Variability:** Beyond federal recommendations, DOE needs to consider the impact of regional and state agencies, which may be more impactful than federal regulations. Variability of regulatory structures among states is a challenge facing utilities throughout the market. States can help utilities by providing clarity on desired outcomes, whether its pricing carbon or resiliency, and removing barriers.

- **Market Transformation**: Automotive companies are setting aggressive targets for expanding electric vehicle sales, including goals as ambitious as increasing U.S. sales of electric vehicles to 25 percent of companies' total sales by 2025, a shift that will yield improvements in both performance and efficiency. There are also many opportunities for electrification at airports and seaports. The electrification of the vehicle market has the potential to be a massive transition, the likes of which have not been seen for 100 years.

  At the same time, CAFE standards are working. Improving fuel efficiency standards and continuing to innovate will increase energy efficiency in the automotive sector and beyond. The advent of more fuel efficient vehicles is critical. Vehicle lightweighting, fuel efficiency, and turbo charging technologies will all have a huge impact on energy efficiency across the U.S.

- **Consumer Education:** Market education to increase adoption of electric vehicles is crucial. Incentives at the federal level continue to be helpful. However, customers frequently are unaware of the incentive programs until they have already decided to purchase an electric vehicle. A marketing push on behalf of investment made by all car companies is necessary to stimulate the market. DOE's EV Everywhere[1] effort is doing well to address this issue.

- **Infrastructure, and the role of Utilities**: Charging infrastructure is the biggest issue facing the electric vehicle industry, and it is a complex challenge. Electric vehicles will require a charging network in order for consumers to consider their use as a household's primary vehicle. Installing charging stations could have a negative impact on the grid if not done in a thoughtful manner, and utilities will play a huge role for in shaping how this is done, which raises questions about how it will be regulated. Significant collaboration will be necessary between car companies, utilities, federal, state and local governments.

  This transformation must be looked at as a whole system, which will mean ensuring that transportation initiatives and sector leaders collaborate with utilities. The national labs also have a strong role to play in researching new technologies and analyzing the problem from a systems perspective. Careful consideration needs to be given to the implications of utilities taking on additional emissions on behalf of the transportation industry, and every effort should be made to adjust emissions target-setting that impacts utilities to ensure they are not penalized in this process.

[1] http://energy.gov/eere/eveverywhere/about-ev-everywhere

Technology Innovation

- **Sustainability Oriented Innovation**: It is important to ensure that engineers are considering sustainability first when planning projects. We need to find ways to help engineers prioritize sustainability. Prize competitions are one way to go about this.

- **Building Energy Codes:** Building energy codes are a way to encourage greater ambition and innovation. It is crucial that the incorporation of on-site renewable energy generation into building energy codes does not hinder the deployment of energy efficiency. Systems efficiency is the next horizon, and prioritizing data collection and analytics will be critical for ensuring maximum efficiencies are achieved.

  Despite their importance, there has been some backsliding on state building energy codes. And although enforcement and compliance can be politically challenging, they are crucial to positive efficiency outcomes. Top performers should be rewarded, and programs that support this should be encouraged and supported.

- **Barriers to Innovation:** Utilities are often not encouraged to engage in innovation, which needs to change. We need to deploy existing grid technologies to best effect, and utilities should be incentivized to do so. One way to do this would be through collaboration with the national labs. Help in creating a more accepting market for innovative projects is needed. Standards, white papers or accepted practice for innovating projects and technology would help promote acceptance of innovative projects.

  Likewise, regulatory innovation is important for state and local governments. The Lawrence Berkeley National Laboratory (LBNL) has done a lot of useful work of which states are generally unaware. It would be helpful to develop some sort of mechanism to help share their work on regulatory policies with these governments.