Comments of David K. Owens
Missouri Senate Energy Committee
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Good morning:

I am David K. Owens, Executive Vice President of Business Operations and Regulatory Affairs for the Edison Electric Institute (EEI). EEI is the trade association that represents all of the nation's investor-owned electric utilities. I am honored to speak with you today about alternative rate making approaches to address the rapid changes in our society that are impacting utilities and the importance of providing customers clean, safe, reliable, and affordable energy. I will also talk about renewable energy, the evolution of the electric grid, and the importance of refining approaches to net energy metering.

It is an understatement to say that utilities are in a rapidly changing environment. They are in a period of transformation. Much of the change is stimulated by policymakers who are seeking to have the utility reduce its carbon footprint. At the state level, this involves the use of renewable portfolio standards, and there is an array of federal initiatives such as the Environmental Protection Agency's Clean Power Plan. Greater energy efficiency is strongly encouraged through demand-side management programs, stricter building codes, and appliance standards. Many customers have sustainability goals, and are seeking green tariffs and power supply sources other than the increasingly clean portfolio of utilities. Moreover, some customers are providing their own generation through private solar, and utilities must purchase energy from these distributed generation sources at regulated rates.

Technology is also driving change. Nationwide, over 65 million smart meters have been installed which enable two-way communication between the utility and customers. Advanced metering infrastructure and other smart grid technologies are a part of grid modernization aimed at improving reliability and resiliency, and facilitating the integration of distributed resources including intermittent renewables. Time of use and prices based on location of resources can encourage customers to use the grid more efficiently.

And finally, change is occurring because of increased concern about reliability, resiliency, and cybersecurity, particularly, as it relates to the power grid. Grid modernization involves replacing old infrastructure, adding new technologies to enhance reliability, and digitizing the grid through monitors, sensors, and automated controls.

Alternative Ratemaking

These changes are having a substantial impact on utilities. Growth in demand for traditional utility services has slowed; it is flat in many regions. Increasing penetration of customer-owned distributed generation is creating new challenges for utilities. Capital expenditures programs must address the need for clean energy. A smarter, modernized grid to better serve customers, and replacement of aging infrastructure by adding new facilities does not trigger sales growth. New approaches must be developed to meet changing customer needs and expectations. This involves more customized solutions including special arrangements with customers such as green tariffs; but much more is needed in the regulatory area.

Traditional regulation cannot adequately address many of today's challenges. Base rates that compensate utilities for costs of non-energy impacts are adjusted only in general rate cases with historical test years. Historical test years cannot capture rapid changes in costs. Future test years can. Moreover, most base rates are drawn from volumetric and other usage charges but the cost of base rate impacts is driven more by capacity (infrastructure costs) than system use in the short-run (energy). So when sales decline, there is a smaller contribution to the capacity or infrastructure costs. Utilities needing to make capital expenditures are compelled to file rate cases more frequently. This was not a problem with increased customer usage because the resulting incremental revenues helped utilities finance rising costs without rate cases.

Alternative approaches to regulation are being proposed in many jurisdictions to address these challenges. They include: formula rates; multi-year rate plans; and fully-forecasted test years and may involve significant regulatory changes. Less sweeping approaches such as revenue decoupling and cost trackers address more targeted challenges. These alternative rate making approaches enable utilities to address the significant challenges before the industry, while at the same time making the necessary capital expenditures to provide customers with clean, safe, reliable, and affordable energy.

Net Energy Meting (NEM)

There is a growing interest in the use of Distributed Generation (DG) systems, such as customer-owned and leased rooftop solar photovoltaic (PV) panels, to meet electric power needs. DG offers an attractive option for some customers, and utilities are actively examining the ways in which DG systems can work with and enhance the existing electric power grid.

However, such renewable technologies are variable, which means they do not produce electricity when the sun is not shining and the wind is not blowing. To ensure around-the-clock reliability, they need to be backed up and balanced with non-renewable power plants.

As solar technologies become increasingly popular, solar PV costs continue to decline. The cost of generating solar power has declined by half since 1998. Moreover**, universal (utility-scale) solar is about half of the cost of private (rooftop) solar, and wind-powered energy generated on land is often far less costly than this**. Universal solar projects are highly efficient because they are designed to follow the sun to maximize electricity production and are located in the sunniest areas. Because they capture more of the sun's energy, they reduce the carbon footprint more substantially than rooftop solar facilities.

Although costs keep declining, the price differentials between private and universal solar will remain.

It is important to note that private solar and other distributed technologies are being subsidized through extensive federal and state tax credits and other incentives. They also benefit from regulatory policies, such as state net energy metering policies, which were approved to encourage the introduction of these systems and technologies when they first came to market years ago and were very costly.

Net energy metering enables ratepayer funded subsidies that many states are reevaluating for many reasons. It promotes the most expensive form of solar energy, not the least-cost: it creates winners and losers among utility customers.

Net energy metering is a billing system which credits the private solar or other distributed systems the full electric rate for any electricity they generate and they can sell this electricity to their local electric company via the electric grid. Electric companies are required to buy this power at regulated rates.

Finally, consumer protection is an increasing area of focus, and must continue to be a priority to address consumer complaints about fraud and misrepresentation on the part of the solar leasing companies.

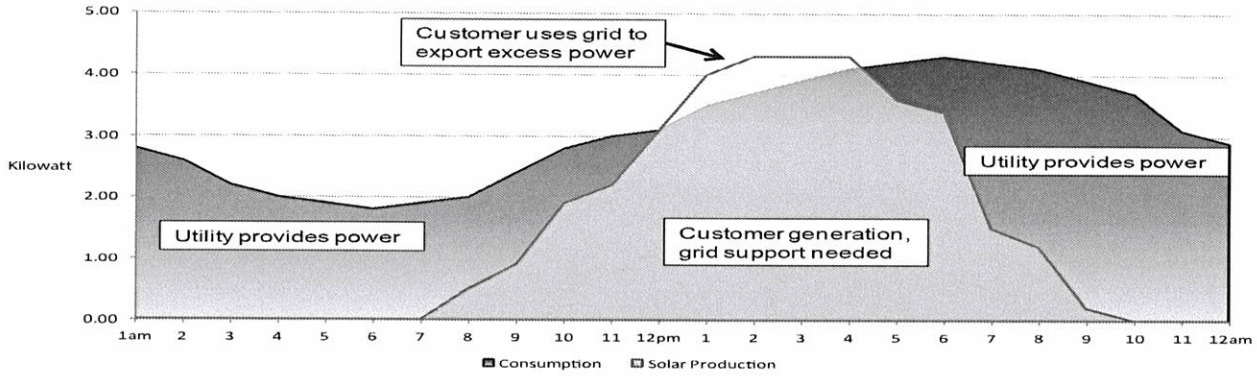
The Value of the Grid

There is a common misconception that DG customers derive no benefit from being connected to the host utility's distribution system. While it is easy to say that a DG customer is "free from the grid," that is simply not true – even for a DG customer (or a microgrid) that produces the exact amount of energy that it consumes in any given day or other time interval.

Figure 1 shows that because private solar facilities are variable, they are not available 24-7. Private solar facilities must remain interconnected to the grid at all times. Even at peak output, rooftop solar systems need the support of the grid to start large motors like air conditioners and refrigerators. Energy storage could be helpful in meeting consumer needs, but large batteries are still expensive and do not last long enough. Thus, even battery backup requires connection to, and services from, the grid.

FIGURE 1

Typical Energy Production and Consumption with Rooftop Solar



Source: *Value of the Grid to DG Customers*, Institute for Electric Innovation, October 2013.

Moreover, installing rooftop solar does not reduce grid investment needs. Since solar generation peaks in the middle of the day while power use peaks in early evening and because of the need for back-up power at night and when it rains, snows, or is cloudy, the grid must still be sized to meet peak needs.

The grid is increasingly becoming a multi-directional network interconnecting millions of consuming devices and flexible distributed energy resources including DG. The grid delivers new and exciting technologies to improve our lives and to help consumers better manage their energy use through smart technologies including distributed solar and demand response.

Private solar systems are part of this change because they transform a utility's distribution system from a one-way delivery mode into a complex network, but their electricity flows need to be carefully monitored and balanced. High penetration of DG actually requires electric utilities to invest in new systems to assure that the grid remains safe, reliable, and resilient.

Operations of such a system also require greater situational visibility, as well as collaborations with consumers and energy services providers. This also requires major new investments in monitors, sensors, and automated controls. But most distributed solar is not dispatchable, and is therefore of less value than larger systems that can be controlled by grid operators.

That's why it's important to make sure that public policies recognize the value of the grid to all customers, both those with and those without distributed generation.

Recent studies have raised concerns about the cost-shifting issues surrounding net energy metering that gives DG customers a bill credit for their solar production.
This shifts the costs to pay for the grid from DG rooftop solar consumers to non-DG consumers, including the low-income and elderly populations.

I am pleased that many states are examining this important issue to refine net energy metering policies and to end cost shifting. The National Association of Regulatory Utility Commissioners (NARUC) also supports the need to address this issue in its Draft NARUC Manual on Distributed Energy Resources Compensation, issued on July 23, 2016. The manual recognizes that industry developments such as technology advancements and growth in distributed generation have exposed deficiencies in the standard non-dynamic, volumetric residential rate designs that most utilities offer customers. Current flat and largely volumetric residential rates do not sufficiently reflect time-differentiation in underlying resource costs, the peak demand-driven nature of infrastructure investments that rates are intended to recover, or the 24/7 use of the power grid by distributed energy resources. A range of approaches are discussed in the manual which are being considered by states which are all aimed at addressing the cost shift to non-DG customers to ensure that electric rates are fair and affordable for everyone and that everyone who uses the grid continues to share in the costs of paying for the grid.

Since January 2014, many electric companies have sought approval from their respective commissions to increase residential (or fixed) charges to recover costs associated with the distribution grid to address the cost shift issue.

Some states are examining proposals for redesigning residential rates. They have concluded that existing tariffs do not reflect the underlying cost structure for providing electric service and maintaining grid reliability and resiliency. These are typically two-part rate designs. The first part is based on fixed costs incurred by the utility to serve the customer (e.g. like metering, billing, poles). The second part is a volumetric change based on a customer's monthly electricity consumption. Fuel costs would fall in this category.

Some options for evolving residential rates to meet changing customer needs and expectations include: introducing a demand charge; increasing the fixed charge; grid access charges; minimum bills; time of use rates; dynamic pricing; and stand-alone service class rates.

The introduction of a demand charge would change the rate structure from two-part to three-part – fixed charge, volumetric charge, and demand charge. Careful consideration of these alternative rate designs are a part of the dialogue at NARUC addressing the integration of distributed resources and the evolving distribution system. In fact, at the recent summer meetings at NARUC, two sessions were exclusively devoted to this area.

Another important issue is fuel diversity. Maintaining a diverse and flexible power supply is critical to a strong local and U.S. economy. At the same time we must invest in electric transmission and natural gas pipelines to assist the development, integration, and use of zero-

emitting or low-carbon-emitting power supply sources such as renewables, nuclear, and natural gas facilities.

Conclusion

In closing, alternative regulatory approaches are needed to address the significant changes in our society which are impacting utilities' ability to provide clean, safe, reliable, and affordable energy to customers. Power supply sources must be cleaner and greener. The grid must be modernized so that it is the platform for new and evolving technologies to meet and exceed customer needs and expectations, and rates must provide for the capital expenditures to make this happen. It is recognized that solar and other renewables are an important part of our nation's current and future energy mix. Customers should have the option to install private solar panels and sell the excess electricity they generate based on fair and competitively determined prices.

Also, I believe that it is critical to have collaborative forums and proceedings such as this one, to discuss and understand the issues to help shape future policies.

Thank you for the opportunity to speak to you today. I look forward to your questions.