

Distributed Energy Resources

Summary

In a shift from the traditional electric power paradigm, utilities and utility customers are installing distributed energy resources (DERs), including distributed generation (DG) facilities that employ small-scale technologies to produce or dispatch electricity closer to the end use of power. Driving this exponential growth is the dramatic decrease in the price of DER technology, as well as state, federal, and utility incentives for DER installations and state renewable portfolio standards (RPS). Use of DERs may offer numerous benefits, including avoided generation capacity costs (e.g., less need to build new generation), avoided transmission costs, less need for backup power, and reduced air emissions, but it may also pose operational and economic challenges to electric utilities and their customers. The American Public Power Association (APPA or Association) believes that DERs can play an important role in helping meet energy needs and achieving environmental goals so long as customers pay their fair share of the costs of keeping the grid operating safely and reliably. However, rate design and regulatory requirements for DERs must take into account a utility's technical limitations and geographic considerations. APPA also believes that DER implementation policy and rate design are matters of state and local retail regulation and, as such, Congress and federal agencies should refrain from imposing federal standards.

Background

Distributed energy resources include demand response, efficiency programs, and other demand-side management tools, as well as DG resources such as solar photovoltaic installations, small wind turbines, combined heat and power, fuel cells, micro-turbines, and storage devices such as large lithium batteries or grid-connected electric vehicles (EVs). Use of DERs may reduce the need for new utility generation assets and ancillary services, allow utilities to avoid higher transmission costs by reducing peak demand, reduce air pollution emitted by traditional fossil fuel-fired generation, and assist utilities in hedging against

widespread power outages. Despite these potential benefits, DERs may also create operational and economic issues for electric utilities and power customers, each of which should be addressed at the local and state level.

For example, too much DG can create excess demand at a substation, causing power to flow from the substation to the transmission grid and increasing the likelihood for high voltage swings and other stresses on electric equipment. DG may also threaten lineworker safety. One such example is "islanding," when the DG continuously energizes a feeder even though the utility is no longer supplying power due to an outage or other cause. In addition, DG is more difficult to monitor and may impact load forecasts. Finally, DG customers may introduce additional operational complexities for transmission, distribution, and generation systems more than non-DG-owning customers. Utilities will have to make capital investments to address these potential strains on the system, and these costs may be borne by both DG-owning and non-DG-owning electric customers.

Increased DG use may cause economic issues as well. For example, subject to applicable state or local laws, most electric utilities compensate DG producers through net metering. Under a net-metering program, a utility will credit customers with on-site generation for their kilowatt-hour (kWh) sales to the grid and charge them for periods when electricity consumption from the grid exceeds their generation (or the net difference between consumption and generation). Under many net-metering programs, the customer is both charged and credited at the utility's full retail rate of electricity, thus potentially over-compensating distributed generators with a value of generation that is higher than the utility's avoided cost. Some states and non-regulated utilities have designed alternative compensation schemes to appropriately value the full costs associated with DG production, including: increased customer charges for fixed costs, residential demand charges according to peak kW usage, time-based pricing, and standby rates. Additionally, some utilities have developed net billing or buy-all, sell-all arrangements where excess solar generation is compensated at an avoided cost, wholesale, or value of solar rate. Still, some regulators (states,

localities, and non-regulated utilities) have not implemented compensation schemes that properly account for certain fixed charges, and this may create an economic burden for both utilities and power customers. Community solar projects owned, in part, by consumers of the electricity produced by these facilities, may allow utilities to more accurately apportion costs and reduce variability on the system, thus addressing several of the issues associated with using solar DG. These economic issues may also arise in the future with the growth of storage and EVs.

Congressional Action

In the 114th Congress, comprehensive energy legislation in the House and Senate included provisions on DERs. H.R. 8, the North American Energy Security and Infrastructure Act, included language that would have created a new federal standard under section 111(d) of the Public Utility Regulatory Policies Act (PURPA) requiring states and non-regulated utilities to consider mandating that on receipt of a request, electric utilities offer interconnection and net billing services to community solar facilities. APPA and others in the electric industry opposed this provision because it was duplicative of standards added to PURPA section 111(d) in 2005 on net metering and interconnection. It also failed to recognize that community solar facilities should pay for their use of the power grid and ignored retail electric laws in states without retail competition.

S. 2012, the Energy Policy Modernization Act, did not include any PURPA “must-consider” requirements, but did include language directing the Department of Energy (DOE) to study net metering. APPA was concerned that such studies could lay the groundwork for future federal net metering policy. Despite several months of negotiations between the House and Senate to resolve differences between their energy bills, Congress did not pass comprehensive energy reform legislation in the 114th Congress.

A modified version of S. 2012 was introduced by Senate Energy & Natural Resources Committee Chairman Lisa Murkowski (R-AK) and Ranking Member Maria Cantwell (D-WA) in the 115th Congress. The bill (S. 1460) included various provisions in Subtitle D of Title II to promote grid storage, direct DOE to develop model grid architecture and scenarios examining the impact of various resources on the grid, promote hybrid micro-grid systems, and direct DOE to develop voluntary model pathways for modernizing the electric grid. It also included provisions to direct DOE to provide assistance to states, regional organizations, and electric utilities to develop voluntary state, regional, and local electricity distribution planning. In addition, it had language directing the Federal Energy Regulatory Commission (FERC) to have regional transmission organizations report on DERs and interconnected microgrid systems. However, S. 1460 was not considered by the full Senate in 2018.

On November 29, 2018, the Senate Energy & Natural Resources Committee held a legislative hearing on several bills, including S. 1875, the Flexible Grid Infrastructure Act. Introduced by Senator Wyden (D-OR), the bill would amend the Energy Policy Act of 2005 to require FERC and DOE to take several actions on DERs. Problematic aspects of the bill included the expansive definition of DERs, a mandatory national study on the potential for DERs and clearinghouse for DER data, and a voluntary action plan for model regulatory provisions for DERs. APPA had concerns that these provisions, would have laid the groundwork for future federal net metering requirements.

On the House side, Representatives Bob Latta (R-OH) and Jerry McNerney (D-CA) introduced in July 2017 H.R. 3290, legislation that is virtually identical to the voluntary model pathway language included in the Senate energy bill from the 114th Congress, but different than the language included in S. 1460, the revised Senate energy bill introduced in 2017. The House Energy & Commerce Committee did not consider this legislation in the 115th Congress. The committee did, however, hold a hearing in September 2017 to “explore the role advanced energy technologies play in empowering the nation’s electricity consumers.” It examined issues such as the blurring of jurisdictional lines between the federal government and states due to DERs, state policies, and demand respond products in wholesale electricity markets; energy storage; microgrids; and digitization and energy management systems. The committee also held a hearing on energy storage in July 2018, where the jurisdictional distinction between the federal government and states for DER resources such as storage was discussed.

American Public Power Association Position

APPA believes that DERs can and should play an important role in public power’s energy portfolio, and it supports member utilities’ efforts to safely and effectively install and facilitate the use of DERs. To continue fostering the growth of DERs, the Association believes that it is important that all customers pay their fair share of the costs of keeping the grid operating safely and reliably. Thus, rate structures should be designed to reflect costs and assure that those who benefit from the grid are sharing the costs associated with building and maintaining it. Because community solar projects may address several issues associated with DG usage, APPA supports this type of ownership structure for solar DG facilities. The Association opposes attempts by the federal government to nationalize rate design and distribution-related matters that have traditionally been governed by state and local laws.

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The American Public Power Association is the voice of not-for-profit, community-owned utilities that power 2,000 towns and cities nationwide. We represent public power before the federal government to protect the interests of the more than 49 million people that public power utilities serve, and the 93,000 people they employ. Our association advocates and advises on electricity policy, technology, trends, training, and operations. Our members strengthen their communities by providing superior service, engaging citizens, and instilling pride in community-owned power.