

Distributed Energy Resources

- Use of distributed energy resources (DERs) can provide significant benefits but may also create operational and economic issues for electric utilities, which should be addressed at the local and state levels.
- The American Public Power Association (APPA) supports federal programs that help public power utilities continue to invest in new and innovative DER technologies.
- APPA supports federal regulatory policies under which DERs can only participate in wholesale electric markets with the consent of state and local regulators.

Background

In a shift from the traditional electric power paradigm, utilities and their customers are installing DERs, including distributed generation (DG) facilities that employ small-scale technologies to produce or dispatch electricity closer to the end use of power. DERs include demand-side management tools, such as demand response and efficiency programs, and DG resources, such as solar photovoltaic (PV) installations, small wind turbines, combined heat and power, fuel cells, micro-turbines, and storage devices (e.g., large lithium batteries or grid-connected electric vehicles (EVs)).

Use of DERs may benefit utilities and their customers by reducing the need for new utility generation assets, particularly with rising electricity demand, and ancillary services, allowing utilities to avoid higher transmission costs by reducing peak demand, diminishing air pollution emitted by traditional fossil fuel-fired generation, and assisting utilities in hedging against widespread power outages.

Despite these potential benefits, DERs may also present significant challenges for electric utilities and power customers. DG resources may introduce operational complexities for transmission, distribution, and generation systems. 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 of high voltage swings and other stresses on electric equipment.

Increased DG use may also cause financial equity issues. Utilities may have to make capital investments to address potential strains on the system caused by DG deployment, and these costs may be borne by both DG-owning and non-DG-owning electric customers. Designing rates for DG customers can present challenges as well. For example, subject to applicable state or local laws, some electric utilities compensate DG producers through net-energy metering, under which customers with on-site generation are credited for their kilowatt-hour sales back to the grid and charged for periods when their electricity consumption from the grid exceeds their DG output. Under traditional net-energy metering programs, the customer is both charged and credited at the utility's full retail rate of electricity, thus potentially over-compensating DGs with a value of generation that is higher than the utility's avoided cost (since the full retail rate includes expenses other than the cost of the power itself). Some utilities have transitioned away from traditional net-energy metering and instead compensate DG production at an avoided cost or value of DG rate.

Regulatory Action

These reliability, operational, and financial challenges may be even more severe if DERs are permitted to participate in wholesale electric markets without the consent of state and local regulators. APPA raised this concern in response to the Federal Energy Regulatory Commission's (FERC) 2018 rule allowing electric storage resources located on the distribution network or even behind a

retail customer meter to participate in organized wholesale electricity markets without the consent of state and local regulators. The rule was ultimately upheld by a federal appeals court, which concluded that state and local regulators cannot use their authority over local distribution systems to broadly prohibit storage resources from accessing wholesale markets. The court did recognize that state and local regulators retain broad authority over the distribution system, which might be legitimately used to restrict wholesale market access in certain cases, including for safety or reliability purposes.

In Order No. 2222 issued in 2020, FERC adopted additional rule changes to facilitate DER participation in organized wholesale markets. While the new rules raise jurisdictional and practical concerns arising from such wholesale market participation, FERC significantly mitigated these concerns for most public power utilities by establishing an “opt-in” mechanism for small utilities under which DERs located on small utility systems may not participate in organized wholesale markets without the consent of the state or local regulator. Subject to that limitation, DERs are now able to participate in organized markets in California and New York. Other organized markets in New England, the Southwest, Midcontinent, and Mid-Atlantic will begin allowing DER participation between 2026 and 2029.

In 2023, FERC issued Order No. 901 directing the North American Electric Reliability Corporation (NERC) to address reliability gaps related to inverter-based resources (IBRs) connected to transmission and distribution systems. IBRs are resources that connect to distribution and transmission systems using power electronic devices that convert direct current power produced by a resource (e.g., a solar panel or lithium battery) to alternating current power that is compatible with the grid. IBRs operate differently than conventional resources, particularly during grid disturbances, which can impact the reliable operation of the whole grid, particularly as the use of IBRs has increased. FERC identified the need to collect additional data so that grid operators can properly plan for and operate the bulk power system with significant IBR integration. In 2024, FERC approved NERC’s proposal to register owners and operators of IBRs that are larger than 20 megawatts and connected at a voltage greater than 60 kilovolts, which effectively excludes residential and small commercial DERs. Owners and operators of such IBRs must register with NERC and comply with the relevant reliability standards by May 2026.

Congressional Action

Congress has passed several bills relating to DERs in recent years, including several provisions in the Energy Act of 2020 (P.L. 116-260) designed to support research, development, and deployment of DERs. The Infrastructure Investment and Jobs Act (IIJA) (P.L. 117- 58) authorized and appropriated additional funding for several DER programs, including energy storage demonstration grants and the Department of Energy (DOE) Smart Grid Investment Grant Program, to provide grant funding for utilities to deploy various grid technologies, including investments that enable the integration of DERs and electric vehicle-to-grid technologies. APPA supports federal programs that will help public power utilities continue to invest in new and innovative technologies and meet rising electricity demand while maintaining a reliable electric grid.

The 2022 Inflation Reduction Act (IRA)(P.L. 117-169) made significant changes to energy tax credits, making the existing production tax credit (PTC) and investment tax credit (ITC) available to tax-exempt entities, including public power utilities, as an elective pay, refundable credit. It also expanded the ITC to make the credit available to energy storage projects. More recently, however, Congress passed H.R. 1, the One Big Beautiful Bill Act, which was signed into law in July 2025, and scaled back and phased out PTC and ITC tax credits, including for wind, solar, and batteries, while maintaining availability for tax-exempt entities, like public power utilities. See APPA’s issue brief, “Elective Pay Tax Credits,” for more on energy tax credits.

DOE has also scaled back or repurposed much of the remaining unobligated funds from several programs funded under the IIJA that supported DER deployment. Despite these policy changes, many public power utilities continue to invest in DERs to meet rising demand, reduce their peak load, and increase reliability.

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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 and protect the interests of the more than 55 million people that public power utilities serve and the 100,000 people they employ.