

**Written Testimony of FERC Commissioner Richard Glick**

**Before the  
Committee on Energy and Natural Resources  
United States Senate**

**Hearing on  
Oversight of the Federal Energy Regulatory Commission**

**June 12, 2018**

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee. Thank you for the opportunity to testify this morning. I am honored to be appearing before the Senate Energy and Natural Resources Committee again.

I have been a Member of the Federal Energy Regulatory Commission (FERC or Commission) for approximately six months. During this short period, the Commission has been called upon to consider several challenging matters.

For instance, in January, the Commission voted unanimously to terminate the proceeding initiated by the Department of Energy's Proposed Rule on Grid Reliability and Resilience Pricing. Recognizing that the Proposed Rule, in actuality, had little, if anything, to do with resilience, the Commission instead initiated a new proceeding examining the resilience of the bulk power system in a larger context. We are now in the process of reviewing these comments.

In March, the Commission took several actions designed to ensure that ratepayers will benefit from the recently enacted corporate tax reduction in the Tax Cuts and Jobs Act of 2017. The Commission issued show cause orders to 48 electric utilities whose transmission tariffs still reference the higher tax rate. With regard to natural gas pipelines, the Commission issued a

Notice of Proposed Rulemaking that will enable FERC to determine which pipelines may be collecting unjust and unreasonable rates in light of the corporate tax reduction and changes to the Commission's income tax allowance policies. In addition, the Commission issued a Notice of Inquiry seeking information regarding whether and how the Commission should address accumulated deferred income taxes and bonus depreciation.

In April, the Commission began a review of how it evaluates applications to build interstate natural gas pipelines under section 7 of the Natural Gas Act by issuing a Notice of Inquiry. This proceeding will examine whether and how the Commission might revise its procedures in light of changes in the natural gas industry and increased stakeholder interest since the Commission adopted its current policy statement on pipeline certification in 1999. The proceeding seeks input from all affected parties, including communities, states, land owners, concerned citizens, and industry.

I am particularly interested in hearing from stakeholders on two issues. The first is whether and how we should consider evidence beyond precedent agreements when examining the need for new natural gas pipelines, especially when the parties to the agreements are affiliates of the same corporation. The second issue is how the Commission considers the impacts on the environment, including climate change, when evaluating whether a proposed pipeline is in the public interest.

Over the last six months, FERC has continued its efforts, initiated several years ago, to eliminate barriers in jurisdictional markets to new technologies. For example, in February, FERC voted unanimously to approve a Final Rule requiring regional transmission organizations (RTOs) and independent system operators (ISOs) to facilitate electric storage participation in wholesale electric markets. The Final Rule requires each RTO/ISO to establish a participation model for

electric storage resources that recognizes the physical and operational characteristics of those resources. The model must: (1) ensure that electric storage resources are eligible to provide all capacity, energy, and ancillary services that they are technically capable of providing; (2) ensure that such resources can be dispatched and can set the wholesale market clearing price as both a seller and a buyer; (3) account for the physical and operational characteristics of such resources through bidding parameters or other means; and (4) set a minimum size requirement for electric storage resource participation that does not exceed 100 kilowatts. The Final Rule also requires that each RTO/ISO specify that the sale of electric energy from the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets must be at the wholesale locational marginal price.

This Final Rule marks an important step forward in the Commission's regulation of wholesale electric markets. By eliminating barriers to electric storage resources' participation in RTO/ISO markets, today's order will facilitate the development of a class of technologies—such as batteries and pumped hydro—that has the potential to play a leading role in the transition to the electricity system of the future. As the cost of electric storage continues to decline, these resources are poised to become a bigger part of the generation mix, leading to the development of a more robust grid that can, among other things, help to accommodate the ever-increasing demand for clean, renewable resources. In addition, these electric storage resources will enhance the reliability and resilience of the grid, while reducing electric rates.

Today, the cost of using lithium-ion battery technology is less than one quarter of what it was at the start of the decade.<sup>1</sup> Partly as a result of those declining costs, industry forecasts project that the nation's installed electric storage capacity will increase by 750 percent in just five years.<sup>2</sup> According to The Brattle Group, installed electric storage capacity could increase to 50,000 megawatts nationwide if electric storage resources' value is fully captured, which will require further action by the states (e.g., through their integrated resource plans).<sup>3</sup> At least six states have adopted rules to address electric storage resources and 20 have active regulatory proceedings that affect storage. The Commission's action to reduce barriers to electric storage resources' participation in wholesale markets will help to further this remarkable trajectory, all while reducing consumers' energy bills.

The Notice of Proposed Rulemaking that led to the Final Rule on electric storage resources also proposed reforms to remove barriers to aggregated distributed energy resources' participation in wholesale markets. In particular, the Commission proposed to require each RTO/ISO to permit aggregated distributed energy resources to participate in the RTO/ISO markets under the model that best accommodates the physical and operational characteristics of those resources. The Commission's proposal would also have required RTOs/ISOs to remove any unnecessary limitations on how aggregated distributed energy resources must be operated. Although the final

---

<sup>1</sup> Claire Curry, *Bloomberg New Energy Finance, Lithium-ion Battery Costs and Market: Squeezed margins seek technology improvements & new business models* (July 5, 2017), <https://data.bloomberglp.com/bnef/sites/14/2017/07/BNEF-Lithium-ion-battery-costs-and-market.pdf>.

<sup>2</sup> GTM Research and Energy Storage Ass'n, *U.S. Energy Storage Monitor: Q4 2017 Executive Summary* 10 (Dec. 2017), [file:///C:/Users/geklj2/Downloads/US\\_ESM\\_\\_\\_Q4\\_2017\\_\\_\\_Exec\\_Summary.pdf](file:///C:/Users/geklj2/Downloads/US_ESM___Q4_2017___Exec_Summary.pdf).

<sup>3</sup> Judy Chang et al., The Brattle Group, *Getting to 50 GW? The Role of FERC Order 841, RTOs, States, and Utilities in Unlocking Storage's Potential* (Apr. 18, 2018), <http://www.brattle.com/news-and-knowledge/publications/getting-to-50-gw-the-role-of-ferc-order-841-rtos-states-and-utilities-in-unlocking-storages-potential>.

storage rule recognized the importance of removing barriers to aggregated distributed energy resource participation in wholesale markets, the Commission concluded that it needed additional information before issuing a final rule addressing distributed resources.

To gather this information, the Commission conducted a two-day technical conference in April that examined the potential participation of aggregated distributed energy resources in wholesale markets and the benefits that these resources can provide. I believe we now have the record needed to move forward with a final rule that eliminates the barriers to aggregated distributed energy resources' participation in wholesale markets. Indeed, based on that record, the Federal Power Act requires the Commission to act to eliminate the barriers to the participation of distributed energy resources in the wholesale markets, which I hope we will do in the near future.

Distributed energy resources are growing rapidly and providing increasing benefits to the grid. Distributed solar accounted for 12 percent of all new generating capacity in 2016.<sup>4</sup> California alone is expected to have 12,000 megawatts of distributed energy generating capacity by 2020.<sup>5</sup> Like electric storage resources, distributed energy resources are capable of providing energy, capacity, and ancillary services efficiently and cost-effectively. In addition, market signals can lead these resources to locate where new capacity is most needed, helping alleviate congestion during peak load conditions and reducing the need for new transmission facilities. The shorter

---

<sup>4</sup> U.S. Energy Information Administration, *U.S. electric generating capacity increase in 2016 was largest net change since 2011* (Feb. 27, 2017), <https://www.eia.gov/todayinenergy/detail.php?id=30112>.

<sup>5</sup> California Energy Commission, *Tracking Progress (Renewable Energy) 5*, [http://www.energy.ca.gov/renewables/tracking\\_progress/documents/renewable.pdf](http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf) (“As of November 1, 2017, almost 10,520 MW of distributed generation capacity was operating or installed in California, with an additional 440 MW pending.”).

lead time in developing distributed energy resources may also allow them to respond rapidly to near-term generation or transmission reliability-related requirements.

Facilitating distributed energy resource participation in the wholesale markets will lower prices and, ultimately, consumers' energy bills. In addition, it will give RTOs/ISOs greater understanding of where these resources are located and how they are operating, which helps the RTOs/ISOs operate the grid more reliably. Finally, facilitating the participation of these resources in wholesale markets will also help RTOs/ISOs account for their impacts on energy, capacity, and ancillary services requirements, thereby reducing the risk of over-procurement by improving load forecasting.

In addition, in April, the Commission issued a Final Rule reforming our standard generator interconnection procedures and agreements to improve certainty for interconnection customers, promote more informed interconnection decisions, and enhance the interconnection process in ways that should reduce the number of interconnection requests that are unlikely to reach commercial operation. Among other reforms, the Final Rule reduces potential barriers to large electric storage resources by explicitly including electric storage resources in the definition of generating facility, allowing for interconnection service to be requested below full generating facility capacity, and allowing for the interconnection customer to transfer surplus interconnection capacity. The Final Rule also expands opportunities for interconnection customers to exercise the option to build certain required interconnection facilities themselves, which provides interconnection customers more control and certainty during the design and construction phases of the interconnection process.

A significant amount of emphasis has recently been placed on the resilience of the bulk power system. Many observers suggest that we need to avoid becoming reliant on any one source of electric generation and, instead, encourage diversity of generation resources. Diversity is a worthwhile goal and one that we are increasingly realizing. For example, PJM Interconnection, L.L.C. states that its resource mix is more diverse than ever with wind, solar, hydro, coal, oil, natural gas, nuclear, energy efficiency, and demand response resources clearing in the most recent capacity auction.<sup>6</sup>

Renewable resources are responsible for much of this increased diversity as the increasing cost-effectiveness is causing utilities and their customers to choose renewable resources over more traditional technologies. MidAmerican Energy, for example, announced in 2016 a goal of providing 100 percent renewable energy to its customers, the majority of which will be from wind generators that are already built or under development.<sup>7</sup> And Southwest Power Pool, the first RTO/ISO to serve more than 50 percent of its load at a given time with wind energy, set a new record in March 2018 when it served 62 percent of its load with wind energy.<sup>8</sup> Similarly, solar energy met 50 percent of demand in the California Independent System Operator region in March 2018, a new record for California.<sup>9</sup>

---

<sup>6</sup> Stu Bresler, PJM Interconnection, L.L.C., *The value of markets* (May 22, 2018), <http://insidelines.pjm.com/the-value-of-markets/>; see also PJM Interconnection, L.L.C., *Capacity Market (RPM), Commitments by Fuel Type & Delivery Year 2007/08 - 2021/22* (Excel Spreadsheet), <http://www.pjm.com/markets-and-operations/rpm.aspx>.

<sup>7</sup> MidAmerican Energy, *Our 100% Renewable Vision* (2018), <https://www.midamericanenergy.com/our-renewable-energy-vision.aspx>.

<sup>8</sup> Tom Kleckner, RTO Insider, *Another Wind Penetration Record for SPP* (Apr. 5, 2018), <https://www.rtoinsider.com/spp-wind-penetration-record-89917/>.

<sup>9</sup> California ISO, *Monthly Stats: February 2018* (2018), <https://www.caiso.com/Documents/MonthlyStats-Feb2018.pdf>.

These new technologies also offer a variety of benefits beyond their contribution to the diversity of the resource mix and the reliability and resilience of the grid. The fastest growing energy sector jobs are in wind and solar energy, with an estimated 770,000 employees working in renewable energy as of the beginning of 2017.<sup>10</sup> Solar energy employment grew 24.5 percent in 2016, nearly 17 times the rate of job growth in the overall economy.<sup>11</sup> Even more impressive, in 2016, electric storage employment grew 235 percent.<sup>12</sup> These resources also have contributed to the significant reduction in greenhouse gas emissions from the electric sector.<sup>13</sup> In addition, with the increase in renewable generation, consumers are able to get something they want. Large technology companies, automobile manufacturers, and retail corporations, among others, are increasingly investing in renewable generation both because it is cost-effective and because their customers want products made with clean energy.<sup>14</sup>

---

<sup>10</sup> Environmental Defense Fund, *In Demand: Clean Energy, Sustainability and the New American Workforce* 10 (2018), [http://edfclimatecorps.org/sites/edfclimatecorps.org/files/edf\\_in\\_demand\\_clean\\_energy\\_sustainability\\_and\\_the\\_new\\_american\\_workforce.pdf?\\_ga=2.182833637.23745530.1528288588-477339387.1525368196](http://edfclimatecorps.org/sites/edfclimatecorps.org/files/edf_in_demand_clean_energy_sustainability_and_the_new_american_workforce.pdf?_ga=2.182833637.23745530.1528288588-477339387.1525368196).

<sup>11</sup> *Id.*

<sup>12</sup> *Id.* at 15.

<sup>13</sup> See U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, at 2-11 (Apr. 12, 2018), [https://www.epa.gov/sites/production/files/2018-01/documents/2018\\_complete\\_report.pdf](https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf) (“The decrease in coal-powered electricity generation and increase in renewable energy electricity generation have contributed to a 4.8 percent decrease in emissions from electric power generation from 2015 to 2016 . . . , and lower CO<sub>2</sub> emissions from fossil fuel combustion over the time series (i.e., 1990 through 2016).”); *id.* at 2-13 (“Total greenhouse gas emissions from the electric power sector have decreased by approximately 0.1 percent since 1990, and the carbon intensity of the electric power sector, in terms of CO<sub>2</sub> Eq. per QBtu input has significantly decreased by 12 percent during that same timeframe.”).

<sup>14</sup> See Brad Plumer, N.Y. Times, *A Year After Trump’s Paris Pullout, U.S. Companies Are Driving a Renewables Boom* (June 1, 2018), <https://www.nytimes.com/2018/06/01/climate/companies-renewable-energy.html>.



Although the increased development of new technologies, such as electric storage resources and aggregated distributed energy resources, offer many benefits, this sea change also creates uncertainty for the future of older technologies that may no longer be as cost-effective. The closure of uneconomic generation resources, while responsive to market signals indicating that these resources should retire, may lead to the loss of jobs and tax revenues in the communities in which they are located. For one, I am sympathetic to the plight of coal miners, who have been disproportionately affected as coal's share of the generation mix has declined. These men and women went to work every day, at considerable risk to their health and safety, to supply coal when it was needed most. Many of those same considerations extend to individuals employed at recently or soon-to-be decommissioned nuclear power plants. We have a history in this country of helping those who, through no fault of their own, have been adversely affected by technological and market change. But that is the responsibility of Congress and the state legislatures. It is not a role that the Federal Power Act provides to the Commission. FERC has the responsibility to ensure the reliability and resilience of the grid—and we should take our duties seriously—but we cannot try to stop the natural evolution of the industry by suggesting that there is an emergency, unless there is evidence to suggest that an emergency actually exists.<sup>15</sup>

---

<sup>15</sup> *E.g.*, PJM Interconnection, L.L.C., *PJM Statement on Potential Department of Energy Market Intervention* (June 1, 2018), <http://www.pjm.com/-/media/about-pjm/newsroom/2018-releases/20180601-pjm-statement-on-potential-doe-market-intervention.ashx> (“The PJM electrical grid is more reliable than ever, with 23 percent reserve margins and billions of dollars of new investment.”).

Chairman Murkowski and Ranking Member Cantwell, thank you again for the opportunity to appear before the Committee today. I look forward to answering your questions and the questions of your colleagues.