

8 April 2020

The Grid Mod Squad: Investors, Ratepayers, and Regulators

By **Max N. Luke** and
Dr. Laura T. W. Olive

Introduction

Grid modernization describes many things: new technologies for power production and storage, investments in grid technologies to enable bi-directional operation with distributed energy resources (DERs), transportation electrification, and access to electricity customer data.

This paper summarizes examples of grid modernization regulatory proceedings in the United States. US regulators have conducted hundreds of such proceedings since 2000. Players in these regulatory activities are a familiar trio of actors that have always played the central roles in the US utility industry: investor-owned utilities, ratepayers, and regulators.

Survey of Regulatory Activity Related to Grid Modernization

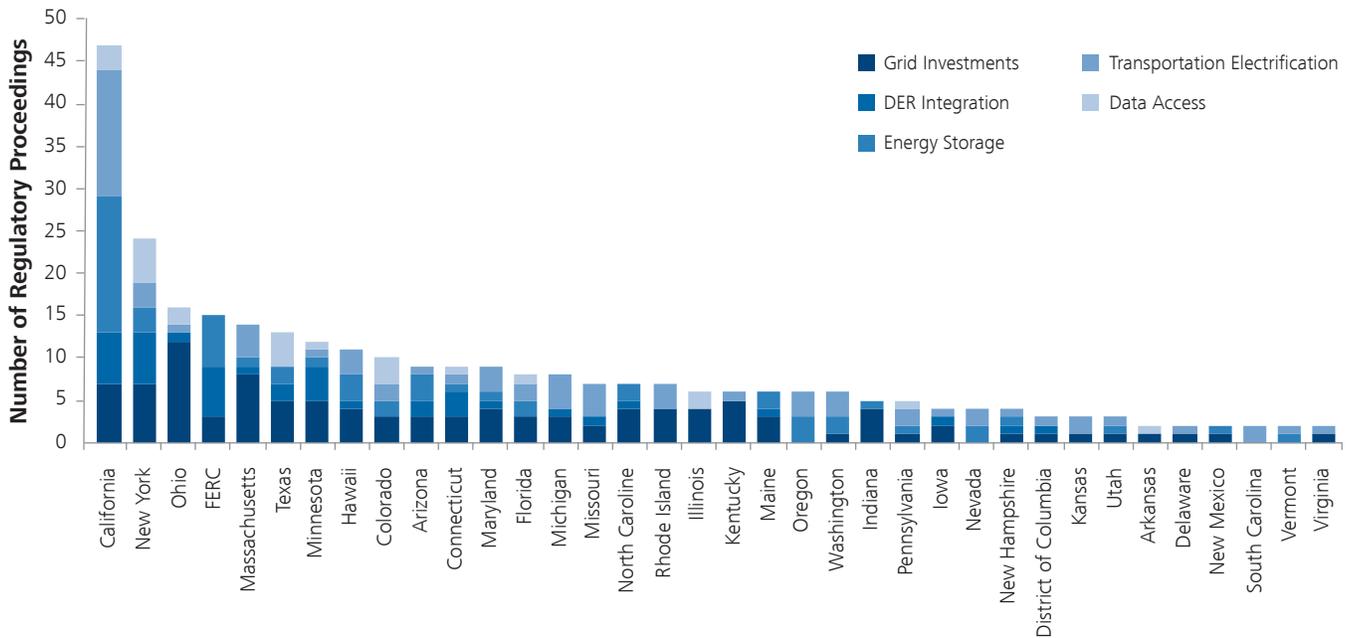
Grid modernization proceedings fall into five general categories: grid investments, transportation electrification, energy storage, DER integration, and data access. Since 2000, more than half of US states, the District of Columbia, and the Federal Energy Regulatory Commission (FERC) received applications from utilities or initiated their own proceedings in one or more of these categories. Between 2014 and 2018, state and federal regulators oversaw nearly 300 proceedings. Almost a quarter of those proceedings occurred before the utility commissions in California and New York.

- Grid investments represent 36% of proceedings. They relate to potential investments intended to increase the reliability, security, and operational efficiency of electricity distribution infrastructure. Such potential investments include advanced metering infrastructure (AMI) and equipment and software systems related to voltage optimization, data management, and cybersecurity.

- Transportation electrification comprises 23% of all proceedings, including utility investments in electric vehicle (EV) charging stations, time-variant EV pricing programs, and other matters related to EVs.
- Energy storage proceedings make up 19% of total proceedings in this time frame. They involve the deployment of energy storage as a wholesale electricity market resource or the deployment of customer-sited load-levelling capacity. Ten percent of such proceedings were or are before the FERC.
- DER integration proceedings, 13% of all proceedings, involve “non-wires alternatives” to traditional grid investments, as well as changes in wholesale market power rules and rules related to the interconnection of consumer-sited resources.
- Data access, the least common category reviewed by regulators, comprising just 8% of all proceedings, involve the ownership and use of customer data, including data related to customers loads, usage patterns, DER generation outputs, and related data privacy matters.

Figure 1 shows the number of regulatory proceedings by state (with two or more proceedings) and the FERC. With the exceptions of Oregon, Nevada, South Carolina, and Vermont, every state in Figure 1, the District of Columbia, and the FERC initiated at least one proceeding related to grid modernization investments.

Figure 1. **Grid Modernization Regulatory Proceedings Initiated by State and Federal Jurisdictions**
2000–2018

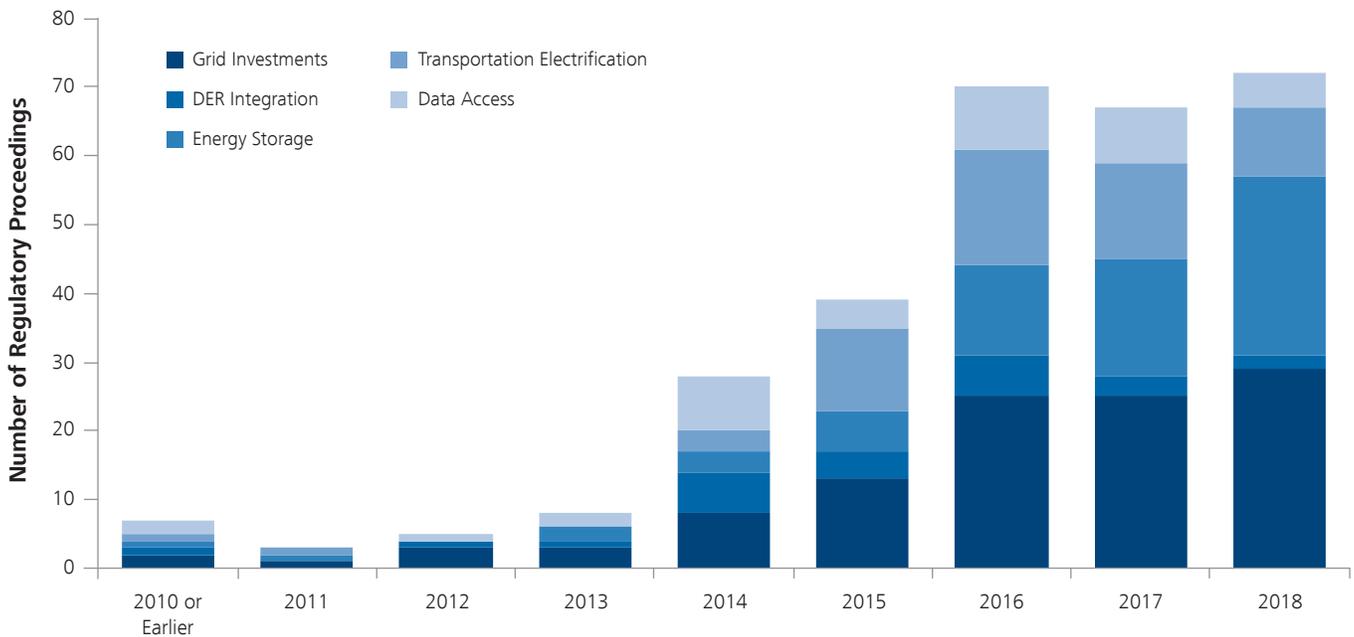


Source: NERA survey of US regulatory proceedings, 2000–2018

Regulators in California, New York, Minnesota, and Connecticut initiated proceedings related to each of the five grid modernization categories. Ten states initiated proceedings related to at least four categories. The FERC oversaw regulatory proceedings related to grid investments, energy storage, and DER integration. South Carolina is the only state that oversaw proceedings in just one category, transportation electrification (both proceedings were initiated in 2018 by Duke Energy).

Figure 2 shows the growth of regulatory activity related to grid modernization by category and year. In 2014, states and the FERC initiated more than double the number of proceedings initiated in all previous years combined. Figure 2 shows another large increase in regulatory activity in 2016 (an increase of more than 80% from 2015).

Figure 2. **Grid Modernization Regulatory Proceedings by Category and Year Initiated**



Source: NERA survey of US regulatory proceedings, 2000–2018

The annual number of proceedings initiated grew from three in 2011 to 72 in 2018. Proceedings related to grid investments and transportation electrification are the largest and second-largest categories during the entire survey period, respectively.

A Sample of Proceedings

Grid Investments

Duke Energy Ohio “Electric Security Plan”

In June 2017, Duke Energy Ohio proposed an “Electric Security Plan” in parallel with the Public Utilities Commission of Ohio’s efforts to improve the efficiency of regulated utility rates and to modernize the electric grid. The approved grid investments will be included in rates through May 2025.¹

Massachusetts Grid Modernization Investments

In December 2013, the Massachusetts Department of Public Utilities (DPU) issued an order requiring National Grid, Unitil, and Eversource Energy to develop grid modernization plans focused on (1) reducing the effects of outages; (2) optimizing demand, including reducing system and customer costs; (3) integrating DERs; and (4) improving workforce and asset management. In 2015, each utility presented its own plan. But in May 2018, the DPU concluded that the costs associated with achieving full advanced metering functionality exceeded the uncertain benefits.²

Transportation Electrification

Southern California Edison “EV Charge Ready” Program

In October 2014, Southern California Edison applied to launch the EV “Charge Ready” program. The California Public Utilities Commission approved a small pilot program in 2016. In 2018, the company applied to install 48,000 more charging ports over four years, costing \$760 million.³

DTE Electric “Charging Forward” Program

In July 2018, DTE Electric requested an EV program called “Charging Forward.” In May 2019, the Michigan Public Service Commission approved DTE to invest \$13 million in EV charging infrastructure over three years.⁴

Energy Storage

FERC Order 841

In February 2018, the FERC published Order 841 requiring RTO/ISOs to revise tariff structures to include electric storage resources and to encourage their participation in wholesale markets. In July 2019, the National Association of Regulatory Utility Commissioners challenged the Order and, in February 2020, several states filed in support of FERC’s decision.⁵

Kauai Island Utility Cooperative Solar-Storage System

In January 2017, Kauai Island Utility Cooperative applied for approval of a power purchase agreement with AES Lawai Solar for an integrated solar photovoltaic (PV) and battery storage system to support ramping requirements, reduce peak loads, reduce oil-fired generation, and improve grid stabilization. In mid-2017, the Hawaii Public Utilities Commission approved the proposal and operation commenced in January 2019.⁶

DER Integration

Brooklyn-Queens Demand Management Program

Facing growing peak load in parts of Brooklyn and Queens, New York, Consolidated Edison, Inc., proposed the Brooklyn Queens Demand Management (BQDM) program to procure 52 megawatts of peak load reduction by summer 2018 with the majority from customer-site solutions. The New York Public Service Commission approved the BQDM program in December 2014.⁷

DER Interconnection Standards in Minnesota

Given an evident backlog in the approval of new interconnection requests for distributed energy permits, a number of environmental and renewable interests filed a motion before the Minnesota Public Service Commission to speed the process in June 2016. In December 2019, Minnesota became the first state to adopt a new national standard for interconnection designed by the Institute of Electrical and Electronics Engineers.⁸

Data Access

Access to Customer Data in Texas

Texas adopted the Smart Meter Texas (SMT) platform in 2007 to collect meter data from distribution utilities and share it with competitive suppliers.⁹ In August 2017, the staff of the Public Utility Commission of Texas sought to determine requirements for making SMT data available to customers and third parties. In December 2017, the parties reached a settlement and, in July 2018, the Public Utility Commission of Texas limited the time that customer data is available without affirmative renewal to 12 months.¹⁰

AMI and Access to Customer Data in Colorado

Xcel Energy Colorado proposed an advanced metering system and associated customer data provision in August 2016 and the Colorado Public Utilities Commission approved a settlement agreement reached in 2017. Xcel Energy will deploy advanced meters over its entire service area starting in 2020 and provide customers and qualified third parties with all associated usage data.¹¹

Conclusion

Grid modernization is a catch-all term that describes a recent wave of technological innovation in the utility industry. Over the last 20 years, new regulatory proceedings related to grid modernization increased from a trickle to a waterfall. US state and federal regulators, investor-owned utilities, and ratepayers have long sought to advance the technological capabilities of the utility industry. At the center of grid modernization are US regulators who strive to balance the private interests of investor-owned utilities with the public interests of ratepayers.

Notes

- ¹ Public Utilities Commission of Ohio, "PUCO adopts agreement in Duke Energy Ohio rate cases," 19 December 2018, available at <https://www.puco.ohio.gov/media-room/media-releases/puco-adopts-agreement-in-duke-energy-ohio-rate-cases/>.
- ² The Commonwealth of Massachusetts Department of Public Utilities, *Order D.P.U. 12-76-A*, 23 December 2013, available at <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9241637>; The Commonwealth of Massachusetts Department of Public Utilities, *Order D.P.U. 15-120, D.P.U. 15-121, D.P.U. 15-122*, 10 May 2018, available at <https://fileservice.eea.comacloud.net/FileService.Api/file/FileRoom/9163507>.
- ³ Business Wire, "SCE Receives CPUC Approval for 'Charge Ready' Pilot Program; Will Install As Many As 1,500 Electric Vehicle Charging Stations in Southland," 14 January 2016, available at <https://www.businesswire.com/news/home/20160114006476/en/SCE-Receives-CPUC-Approval-%E2%80%98Charge-Ready%E2%80%99-Pilot>; Business Wire, "Southern California Edison Proposes \$760 Million Charge Ready 2 Program to Expand Electric Vehicle Infrastructure," 26 June 2018, available at <https://www.businesswire.com/news/home/20180626006640/en/Southern-California-Edison-Proposes-760-Million-Charge>.
- ⁴ Michigan Public Service Commission, "MPSC approves DTE Electric rate increase, EV pilot, denies system access charge for renewable energy," 2 May 2019, available at <https://mi-psc.force.com/sfc/servlet.shepherd/version/download/068t0000004SMCWA44>.
- ⁵ National Association of Regulatory Utility Commissioners, "NARUC Petitions Court to Review FERC Order 841," NARUC Press Releases, 16 July 2019, available at <https://www.naruc.org/about-naruc/press-releases/naruc-petitions-court-to-review-ferc-order-841/>. State of California Department of Justice, "Attorney General Becerra Supports Orders Removing Barriers to Battery and Other Electric Storage Resources' Participation in Wholesale Electricity Markets," Press Release, available at <https://oag.ca.gov/news/press-releases/attorney-general-becerra-supports-orders-removing-barriers-battery-and-other>.
- ⁶ Hawaii Public Utilities Commission, *Decision and Order No. 34723*, 28 July 2017, p. 4, available at <https://dms.puc.hawaii.gov/dms/DocumentViewer?pid=A1001001A17G31B51809C00883>; Caleb Loehrer, "Lawai solar farm opens," *The Garden Island*, 9 January 2019, available at <https://www.thegardenisland.com/2019/01/09/hawaii-news/lawai-solar-farm-opens/>.
- ⁷ State of New York Public Service Commission, *Order Establishing Brooklyn/Queens Demand Management Program*, Case Number 14-E-0203, 12 December 2014, available at <http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={83594C1C-51E2-4A1A-9D8B-5F15BCA613A2}>.
- ⁸ Environmental Law Policy Center (ELPC), Fresh Energy, Interstate Renewable Energy Council (IREC), "Motion to Reopen and Amend the State Interconnection Standards Under Minnesota Law 2001, Chapter 212," State of Minnesota Public Utilities Commission, 16 June 2016, available at <https://www.edockets.state.mn.us/EFiling/edockets/searchDocuments.do?method=showPopUp&documentId={ED452683-3E99-4CD9-955D-66DC28B42266}&documentTitle=20166-122321-02>; Xcel Energy, "Solar*Rewards Community," available at https://www.xcelenergy.com/programs_and_rebates/residential_programs_and_rebates/renewable_energy_options_residential/solar/available_solar_options/community-based_solar; Frank Jossi, "Minnesota solar installers expect to standard to streamline interconnection," *Energy News Network*, 18 December 2019, available at <https://energynews.us/2019/12/18/midwest/minnesota-solar-installers-expect-new-standard-to-streamline-interconnection/>.
- ⁹ Jeff St. John, "Texas Takes a Big Step in Improving Access to Smart Meter Data," Greentech Media, 6 February 2018, available at <https://www.greentechmedia.com/articles/read/texas-smart-meter-data-access>.
- ¹⁰ Public Utility Commission of Texas, Order, PUC Docket No. 47472, SOAH Docket No. 473-18-0708, 12 July 2018.
- ¹¹ Public Utility Commission of Colorado, Decision Granting Joint Motion to Approve Unopposed Comprehensive Settlement Agreement," 25 July 2017, available at https://www.dora.state.co.us/pls/efi/EFI_Search_UI.Show_Decision?p_session_id=&p_dec=24288.

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Contacts

For further information and questions, please contact the authors:

Dr. Laura T. W. Olive

Associate Director
Boston: +1 617 927 4588
laura.olive@nera.com

Max N. Luke

Consultant
Boston: +1 617 927 4506
max.luke@nera.com



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