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GRID MODERNIZATION ACT OF 2019

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Ms. MURKOWSKI, from the Committee on Energy and Natural Resources, submitted the following

R E P O R T

[To accompany S. 2332]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 2332) to provide for the modernization of the electric grid, and for other purposes, having considered the same, reports favorably thereon without amendment and recommends that the bill do pass.

PURPOSE

The purpose of S. 2332 is to provide for the modernization of the electric grid.

BACKGROUND AND NEED

The United States' electric grid is comprised of a vast network of transmission and distribution systems that deliver electricity from producers to consumer homes and businesses. Many sectors of our economy, including healthcare and manufacturing, simply cannot operate without a reliable supply of electricity.

Large, centralized fossil fuel-fired resources have historically provided the majority of electricity generation in the United States. Recently, however, the generation fuel mix has moved toward an increased use of intermittent renewable resources and decentralized, behind-the-meter sources of power. For example, in 1998 coal accounted for approximately 55 percent of electricity generation, and non-hydropower renewables accounted for just over one percent. In 2018, coal declined to only 27.4 percent of generation, and non-hydropower renewables increased to slightly over 10 percent.

Such a dramatic shift in the power supply mix has required utilities to spend a significant amount on upgrades and additions to

transmission infrastructure. In 2016 and 2017 alone, utilities regulated by the Federal Energy Regulatory Commission (FERC)—which represent about 70 percent of all electricity demand in the country—spent over \$40 billion on capital additions for transmission infrastructure. Utilities have also invested significantly in energy storage, which helps to balance the output of renewable resources. According to Wood Mackenzie Power & Renewable’s recent report, “Global Energy Storage Outlook 2019: 2018 Year in Review and Outlook to 2024,” U.S. energy storage deployments will grow thirteen fold over the next six years, with \$71 billion in investment.

S. 2332 would provide the Department of Energy (DOE) with the tools it needs to facilitate this grid transition and support industry and states as they adapt to the energy needs of the future. Specifically, the bill authorizes research, development, and demonstration programs at DOE for energy storage, distribution infrastructure, and microgrids. It also requires DOE to develop model grid architecture and model policy pathways to modernize the electric grid.

LEGISLATIVE HISTORY

S. 2332 was introduced by Senators Cantwell, Heinrich, and Hirono on July 30, 2019.

In the 115th Congress, a similar measure was included as title II, subtitle D, in S. 1460, the Energy and Natural Resources Act of 2017. S. 1460 was introduced by Senators Murkowski and Cantwell on June 28, 2017, and placed directly on the Legislative Calendar (Cal. 162).

In the 114th Congress, a similar measure was included as title II, subtitle D, in S. 2012, the Energy Policy Modernization Act of 2016. An original bill, S. 2012 was reported by the Committee on Energy and Natural Resources on July 30, 2015, and passed by the Senate, as amended, on April 26, 2016, by a vote of 85–12.

The Senate Committee on Energy and Natural Resources met in open business session on September 25, 2019, and ordered S. 2332 favorably reported.

COMMITTEE RECOMMENDATION

The Senate Committee on Energy and Natural Resources, in open business session on September 25, 2019, by a majority voice vote of a quorum present, recommends that the Senate pass S. 2332. Senators Barrasso and Lee asked to be recorded as voting no.

SECTION-BY-SECTION-ANALYSIS

Section. 1. Short title; table of contents

Section 1 sets forth the short title of the bill and includes a table of contents.

Sec. 2. Definitions

Section 2 provides key definitions.

Sec. 3. Grid storage program

Section 3(a) directs the Secretary of Energy (Secretary) to conduct a program of research, development, and demonstration of grid-scale energy storage that addresses the principal challenges

identified in the 2013 Department of Energy Strategic Plan for Grid Energy Storage.

Subsection (b) specifies the program's focus areas, including systems research; power conversion technologies research; grid-scale testing and analysis of storage devices; and electric storage device safety and reliability.

Subsection (c) authorizes the Secretary to provide technical and financial assistance to States, Indian Tribes, or units of local government to participate in or use the program.

Subsection (d) authorizes \$50 million for each of fiscal years (FYs) 2020 through 2028 for purposes of this section.

Subsection (e) states that nothing in this Act shall conflict with or duplicate regulatory requirements or mandatory standards pursuant to section 215 of the Federal Power Act (16 U.S.C. 824o).

Subsection (f) directs the Secretary to ensure that the use of funds to carry out this section is coordinated among all Department offices within the Grid Modernization Initiative and other programs conducting energy storage research.

Sec. 4. Technology demonstration on the distribution system

Section 4(a) requires the Secretary to establish a grant program to carry out projects related to the modernization of the electric grid, including for distribution system technologies.

Subsection (b) specifies that to be eligible for the grant program projects must be: (1) designed to improve the performance and efficiency of the future electric grid; and (2) demonstrate (A) secure integration of two or more energy resources and (B) secure integration and interoperability of communications and information technologies.

Sec. 5. Micro-grid and hybrid micro-grid systems program.

Section 5(a) provides key definitions for this section.

Subsection (b)(1) requires the Secretary to establish a program to promote the development of: (A) hybrid micro-grid systems for isolated communities and (B) micro-grid systems to increase the resilience of critical infrastructure.

Subsection (b)(2) divides the program into the following five phases: Phase I consists of developing a feasibility assessment; Phase II consists of developing an implementation strategy for hybrid micro-grid systems for isolated communities; Phase III, to be done in parallel with Phase II, consists of developing an implementation strategy for micro-grid systems that increase the resilience of critical infrastructure; Phase IV consists of cost-shared demonstration projects; and Phase V consists of a benefits analysis plan to inform regulators, policymakers, and stakeholders about the program's benefits.

Subsection (b)(3) specifies requirements for the Secretary to consider in developing the strategy to promote the development of hybrid micro-grid systems for isolated communities in paragraph 2(B). These requirements include establishing targets for the potential for renewable integration into hybrid micro-grid system; local workforce opportunities; additional infrastructure needs for such systems; and the impact of hybrid micro-grid systems on defense, homeland security, economic development, and environmental interests.

Subsection (c) provides that the Secretary shall carry out the program with relevant stakeholders, including States, local governments, Indian Tribes, and private sector entities.

Subsection (d) requires the Secretary to submit within 180 days, and annually thereafter through calendar year 2029, a report to the Senate Energy and Natural Resources Committee and the House Energy and Commerce Committee on the efforts to implement the program and the status of the program's strategy.

Sec. 6. Electric grid architecture, scenario development, and modeling

Section 6(a) requires the Secretary to establish and facilitate a collaborative process to develop model grid architecture and a set of future scenarios to examine the impacts of different combinations of resources on the electric grid. Based on the findings of the model architecture and scenarios, which must account for market structure differences, the Secretary is required to determine whether any new standards are necessary for the grid, and if so, make recommendations for such standards.

Subsection (b) directs the Secretary to conduct modeling based on the scenarios developed in subsection (a) and analyze and evaluate the impacts of the models to assist stakeholders in enhancing planning, avoiding stranded costs, and maximizing cost-effective grid-related investments.

Subsection (c) directs the Secretary to develop the scenarios and conduct the modeling and analysis under this section with a variety of stakeholders, including States, National Laboratories, academic institutions, and industry.

Subsection (d) states that nothing in this section grants any person the right to review protected information concerning grid architecture or scenarios.

Sec. 7. Voluntary model pathways

Section 7(a) requires the Secretary to initiate, within 90 days of enactment, the development of voluntary model pathways for modernizing the electric grid through a collaborative public-private effort that, among other goals, produces illustrative policy pathways for States, regions and regulators, and facilitates the modernization of the grid and associated communications networks. The goal of the pathways is to achieve a number of objectives, including situational awareness of the electric system; increased innovation; consumer empowerment; and enhanced grid resilience. This section further directs the Secretary to establish a steering committee, within 90 days of enactment, consisting of experts from the public, private, and academic sectors to develop such pathways.

Subsection (b) authorizes the Secretary to provide technical assistance to States, Indian Tribes, or units of local government to adopt or implement one or more pathway elements.

Sec. 8. Performance metrics for electricity infrastructure providers

Section 8(a) directs the Secretary, in consultation with the steering committee, to submit to the Senate Energy and Natural Resources Committee and the House Energy and Commerce Committee, within two years of enactment, a report that includes an evaluation of grid performance and a description of the costs and

benefits associated with the changes evaluated in the scenarios under section 6.

Subsection (b) specifies requirements for the Secretary to consider in developing metrics for the required report, including standard methodologies for calculating performance metrics and costs and benefits to ratepayers; identification of tools, resources, and deployment models that enable improved performance through adoption of emerging technologies; and the role of States and local regulatory authorities in enabling a robust future electric grid.

Sec. 9. Voluntary State, regional, and local electricity distribution planning

Section 9(a) directs the Secretary to provide, on the request of a State, regional organization, or electric utility, assistance to develop electricity distribution plans by conducting resource assessments and analysis of future demand and distribution requirements, and developing open source tools for State, regional, and local planning and operations.

Subsection (b) states that such assessments must include the evaluation of physical security, cybersecurity, communications needs, and the advanced use of grid architecture to analyze risks in an all-hazards approach.

Subsection (c) specifies that information collected in the course of conducting a resource assessment and analysis of future demand and distribution requirements shall be considered critical electric infrastructure information under section 215A of the Federal Power Act.

Subsection (d) directs the Secretary to provide technical assistance to States, regional reliability entities, and other distribution asset owners and operators in the development of distribution plans.

Subsection (e) states that any entity that requested technical assistance under this section may withdraw the request at any time and, at such time of withdrawal, the Secretary shall terminate all assistance efforts.

Subsection (f) provides that nothing in this section authorizes the Secretary to require any entities to adopt any model, tool, plan, analysis, or assessment.

Sec. 10. Authorization of appropriations

Section 10 authorizes \$200 million for each of FYs 2020 through 2028 to carry out section 4 through section 10.

COST AND BUDGETARY CONSIDERATIONS

The Congressional Budget Office estimate of the costs of this measure has been requested but was not received at the time the report was filed. When the Congressional Budget Office completes its cost estimate, it will be posted on the internet at www.cbo.gov.

REGULATORY IMPACT EVALUATION

In compliance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee makes the following evaluation of the regulatory impact which would be incurred in carrying out S. 2332. The bill is not a regulatory measure in the sense of impos-

ing Government-established standards or significant economic responsibilities on private individuals and businesses.

No personal information would be collected in administering the program. Therefore, there would be no impact on personal privacy.

Little, if any, additional paperwork would result from the enactment of S. 2332, as ordered reported.

CONGRESSIONALLY DIRECTED SPENDING

S. 2332, as ordered reported, does not contain any congressionally directed spending items, limited tax benefits, or limited tariff benefits as defined in rule XLIV of the Standing Rules of the Senate.

EXECUTIVE COMMUNICATIONS

Executive views on S. 2332 were not requested by the Committee.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, the Committee notes that no changes in existing law are made by S. 2332 as ordered reported.