AMENDMENT TO

RULES COMMITTEE PRINT 116-54

OFFERED BY MR. QUIGLEY OF ILLINOIS

Page 1677, after line 16, insert the following:

Subtitle E—Advanced Energy Technologies and Grid Efficiency

SEC. 33501. SHORT TITLE.

This subtitle may be cited as the ''Advanced Energy Technologies and Grid Efficiency Act of 2020''.

SEC. 33502. DEFINITIONS.

In this subtitle:

(1) ADVANCED ENERGY TECHNOLOGY.—The term ''advanced energy technology'' means any energy generation, modifying transmission loading, or storage technology with zero or minimal greenhouse gas emissions that is connected—

(A) to the distribution system;

(B) to the transmission system; or

(C) behind the meter.

(2) ADVISORY COMMITTEE.—The term ''Advisory Committee'' means the advisory committee established under section 33503(a)(2)(A).

(3) COMMISSION.—The term ''Commission'' means the Federal Energy Regulatory Commission.

(4) ELECTRIC UTILITY.—The term ''electric utility'' has the meaning given the term in section 3 of the Federal Power Act (16 U.S.C. 796).

(5) GRID OPERATOR.—The term ''grid operator'' means—

(A) a Transmission Organization, including—

(i) an Independent System Operator; and

(ii) a Regional Transmission Organization;

(B) a public utility; and

(C) an electric utility.

(6) INDEPENDENT SYSTEM OPERATOR.—The term ''Independent System Operator'' has the meaning given the term in section 3 of the Federal Power Act (16 U.S.C. 796).

(7) INITIATIVE.—The term ''Initiative'' means the Advanced Energy Technology Research Initiative established under section 33503(a)(1).

(8) PUBLIC UTILITY.—The term ''public utility'' has the meaning given the term in section 201(e) of the Federal Power Act (16 U.S.C. 824(e)).

(9) REGIONAL TRANSMISSION ORGANIZATION.—The term ''Regional Transmission Organization'' has the meaning given the term in section 3 of the Federal Power Act (16 U.S.C. 796).

(10) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

(11) TRANSMISSION ORGANIZATION.—The term ''Transmission Organization'' has the meaning given the term in section 3 of the Federal Power Act (16 U.S.C. 796).

SEC. 33503. POWER SYSTEM MODELING REFORM AND UPDATES TO GRID SERVICES AND GRID OPERATOR SOFTWARE.

(a) ADVANCED ENERGY TECHNOLOGY RESEARCH INITIATIVE.—

(1) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Commission, in coordination with the Secretary, shall establish within the Office of Energy Policy and Innovation of the Commission an initiative, to be known as the ''Advanced Energy Technology Research Initiative'', to research and provide recommendations on how to improve the modeling, operational, and planning practices used for the bulk electric system.

(2) ADVISORY COMMITTEE.—

(A) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Commission, in coordination with the Secretary, shall establish an advisory committee to research, report on, and provide recommendations on matters relating to the Initiative, including—

(i) whether the existing modeling (including power flow modeling) and long-term and short-term planning practices used by grid operators for power systems, including power markets, adequately incorporate expected integration with respect to advanced energy technologies;

(ii) whether the methods used to determine future transmission and capacity needs and make reliability-related determinations use the right data to adequately forecast and model the integration of advanced energy technology into electric power systems;

(iii) whether the modeling and planning practices described in clause (i) and the methods described in clause (ii) need to be updated to better account for the inte-

gration of advanced energy technology into electric power systems;

(iv) any undue barriers to the adoption of advanced energy technology presented by—

(I) existing modeling, operational, and planning practices; and

(II) State estimation tools for planning and reliability;

(v) any need to develop emerging technologies or software for use in improving modeling, planning, and operations in wholesale electricity markets to resolve computational or technical barriers to the adoption of advanced energy technology, including software relating to—

(I) the use of big data, artificial intelligence, and probabilistic methods to predict, in near-real-time—

(aa) energy generation from variable and distributed resources;

(bb) load profiles; and

(cc) consumption and congestion; and

(II) the use of artificial intelligence to improve the responsiveness of energy system operations;

(vi) whether existing and future grid reliability service definitions and the modeling techniques, operational processes, and planning processes used to procure grid reliability services—

(I) appropriately account for the technical and operational characteristics of advanced energy technologies;

(II) allow for the use of those advanced energy technologies to provide grid reliability services when cost-effective to do so; and

(III) include appropriate cybersecurity safeguards; and

(vii) any rulemaking, technical conference, or policy statement that, in the determination of the Advisory Committee, the Commission should consider.

(B) COMPOSITION.—The Advisory Committee shall consist of—

(i) not fewer than 1 representative from each of—

(I) the Commission;

(II) the Department of Energy;

(III) the Electric Reliability Organization (as defined in section 215(a) of the Federal Power Act (16 U.S.C. 824o(a)));

(IV) an Independent System Operator or a Regional Transmission Organization;

(V) an entity generating electric power that is not affiliated with a transmission-owning public or nonpublic utility;

(VI) an entity generating electric power that provides power directly to wholesale or retail customers and is not affiliated with a transmission-owning public or nonpublic utility;

(VII) an environmental organization with expertise on the bulk electric system; and

(VIII) an institution of higher education with expertise on the bulk electric system;

(ii) not fewer than 2 designees of the National Association of Regulatory Utility Commissioners;

(iii) not fewer than 4 representatives from public utilities or electric utilities, regardless of whether the utility is in an area serviced by an Independent System Operator or a Regional Transmission Organization; and

(iv) not fewer than 2 representatives from private and nonprofit associations with expertise in the development, deployment, and use of advanced energy technologies.

(C) REPORTS.—Not later than 18 months after the date of enactment of this Act, and every 2 years thereafter for 10 years, the Advisory Committee shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a report on the Initiative, including the findings or recommendations of the Advisory Committee with respect to the matters described in clauses (i) through (vii) of subparagraph (A).

(D) TERMINATION OF AUTHORITY.—The Advisory Committee shall terminate on submission of the final report required under subparagraph (C).

(b) ADVANCED ENERGY TECHNOLOGY AND GRID SERVICES PROGRAM.—

(1) IN GENERAL.—Not later than 180 days after the date of enactment of this Act, the Secretary shall establish a competitive financial assistance program, to be known as the ''Advanced Energy Technology and Grid Services Program'', under which the Secretary shall enter into Federal financial assistance agreements with eligible entities described in paragraph (2) for the purpose of increasing the market penetration of advanced energy technology through advanced research and development and pilot demonstrations of—

(A) software upgrades, including upgrades to the software platforms used to operate wholesale energy markets;

(B) updated power system planning;

(C) new power system (including power market) modeling platforms;

(D) cybersecurity and physical security upgrades; and

(E) resilience upgrades.

(2) ELIGIBLE ENTITIES DESCRIBED.—An eligible entity referred to in paragraph (1) is—

(A) a grid operator;

(B) a State public utility commission;

(C) an energy cooperative;

(D) a municipality;

(E) an electric utility;

(F) a gas utility; or

(G) a State energy office.

(3) ELIGIBLE ACTIVITIES.—The Secretary may enter into a financial assistance agreement under this subsection for—

(A) software upgrades by grid operators;

(B) new power system (including power market) modeling platforms;

(C) enhancements to cybersecurity safeguards; or

(D) updated power system (including power market) planning, updated power system (including power market) modeling, or updated reliability planning and modeling by grid operators.

(4) COST SHARING.—In awarding Federal financial assistance (including grants, loans, and any

other form of financial assistance) to fund eligible activities under this subsection, the Secretary shall require cost sharing in accordance with section 988 of the Energy Policy Act of 2005 (42 U.S.C. 16352).

(5) COORDINATION.—In carrying out the Advanced Energy Technology and Grid Services Program established under this subsection, the Secretary, to the maximum extent practicable, shall coordinate with existing programs of the Department of Energy that focus on grid modernization efforts.

SEC. 33504. ADVANCED ENERGY AND GRID EFFICIENCY STUDIES AND REPORT.

(a) STUDIES.—

(1) ADVANCED ENERGY STUDY.—The Secretary, in coordination with the Commission, shall carry out a study of the costs and benefits to consumers of updating power system planning, modeling, and operational practices, including reliability-related planning, and energy market participation rules on advanced energy technologies and resources, including distributed energy technologies and resources, such as—

(A) energy storage technologies;

(B) energy efficiency and transmission efficiency technologies;

(C) distributed solar and wind energy generation;

(D) fuel cells;

(E) smart thermostats and smart building technologies;

(F) demand response technologies, including natural gas demand response technologies;

(G) advanced metering technologies;

(H) electric vehicles and electric vehicle charging infrastructure;

(I) any aggregation of the distributed energy technologies and resources described in subparagraph (A) or (C); and

(J) any other advanced energy technologies, as determined by the Secretary.

(2) GRID EFFICIENCY STUDY.—

(A) IN GENERAL.—The Secretary, in coordination with the Commission, shall carry out a study of the barriers and opportunities for advanced energy technologies that provide increased, more efficient, or more effective delivery over the existing transmission network.

(B) REQUIREMENTS.—The study under subparagraph (A) shall include—

(i) an examination of—

(I) the reliability, resilience, and economic benefits of technologies such as power flow control, topology optimization, and dynamic line ratings;

(II) the costs, benefits, and challenges associated with deployment of the advanced energy technologies described in subparagraph (A); and

(III) the impact of grid efficiency improvements on wholesale and retail electricity rates; and

(ii) an analysis of the benefits of performance-based financial and regulatory incentives in the deployment of advanced energy technologies relative to cost-of-service, as determined by the Secretary.

(b) REPORT.—Not later than 18 months after the date of enactment of this Act, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committee on Energy and Commerce of the House of Representatives a report describing the

results of the studies under paragraphs (1) and (2) of subsection (a).

SEC. 33505. INTERCONNECTION PROCESSES AND TRANSMISSION UPGRADES.

(a) PRIORITY OF FINANCIAL ASSISTANCE.—

(1) IN GENERAL.—The Secretary shall use the existing grant funding provided through relevant funding streams and programs of the Office of Electricity of the Department of Energy—

(A) to give priority to transmission and distribution utilities seeking to conduct pilot programs aimed at integrating advanced energy technologies into the bulk electric system; and

(B) to focus on escalating demand for advanced energy technology interconnections.

(2) REQUIREMENT.—In carrying out paragraph (1), the Secretary shall develop the design of and method for carrying out any funding opportunities identified pursuant to that paragraph.

(b) TRANSMISSION PLANNING AND SITING.—

(1) INDEPENDENT REPORT.—The Commission shall offer to enter into an agreement with the National Academy of Sciences to prepare a report on whether—

(A) existing regional and interregional transmission planning and siting processes are effectively supporting State resource planning objectives; and

(B) Federal regulators have the tools to effectively regulate the planning and siting of interregional transmission lines.

(2) REQUIREMENTS.—The report under paragraph (1) shall examine whether—

(A) there are deficiencies in transmission planning and siting that affect resource development for—

(i) interregional and regional energy generation;

(ii) interconnection queues; and

(iii) advanced energy technologies;

(B) the Commission has the programmatic and regulatory structure necessary to facilitate continued improvements in transmission planning, including planning with respect to transmission—

(i) across the boundaries of Independent System Operators and Regional Transmission Organizations; and

(ii) across boundaries that are not associated with Independent System Operators or Regional Transmission Organizations;

(C) State resource planning requirements are addressed in existing transmission planning processes;

(D) the Commission lacks tools with respect to the siting of transmission lines that could help States improve transmission planning to meet State resource planning objectives; and

(E) there are barriers to the inclusion and integration in the grid of any technology—

(i) to reduce transmission losses;

(ii) to improve the efficiency of the transmission and distribution systems;

(iii) that is connected to the distribution system and may—

(I) increase reliability or resilience; and

(II) avoid transmission and distribution system costs; and

(iv) to better understand the role of Federal regulators in the siting of technologies not directly connected to the grid.

(3) DEADLINE.—The report under paragraph (1) shall be submitted to the Commission, the Secretary, and the relevant committees of Congress not later than 1 year after the date of enactment of this Act.

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