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SENATE

{ REPORT
116-145

ENERGY EFFICIENT GOVERNMENT TECHNOLOGY ACT

OCTOBER 23, 2019.—Ordered to be printed

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

R E P O R T

[To accompany H.R. 1420]

[Including cost estimate of the Congressional Budget Office]

The Committee on Energy and Natural Resources, to which was referred the bill H.R. 1420, to amend the Energy Independence and Security Act of 2007 to promote energy efficiency via information and computing technologies, and for other purposes, having considered the same, reports favorably thereon without amendment, and recommends that the bill do pass.

PURPOSE

The purpose of H.R. 1420 is to amend the Energy Independence and Security Act of 2007 (EISA, Public Law 110-140) to promote energy efficiency through information and computing technologies.

BACKGROUND AND NEED

According to the Department of Energy (DOE), with more than 350,000 buildings and 600,000 fleet vehicles, the Federal Government is our nation's largest energy consumer. By ensuring accountability at the Office of Management and Budget (OMB) level, H.R. 1420 aims for all Federal agencies to take concrete steps to reduce energy consumption of Federal data centers.

According to the Lawrence Berkeley National Laboratory Center of Expertise for Energy Efficiency in Data Centers, Federal data centers alone consume more than six billion kilowatt hours of energy each year, and the total cost to supply that energy surpasses \$600 million per year. The surging demand for data storage has led

to data centers making up two percent of U.S. electricity consumption.

Implementing efficiency plans for Federal data centers can lead to hundreds of millions in savings for U.S. taxpayers. This legislation requires the Federal Government to develop a metric for data center energy efficiency in order to develop plans to reduce energy consumption in data centers. It also requires the Secretary of Energy (Secretary) and the Director of OMB (Director) to maintain a data center energy practitioner program and an open data initiative for Federal data center energy usage.

LEGISLATIVE HISTORY

H.R. 1420 was introduced in the House of Representatives by Representatives Anna Eshoo (D–CA), Adam Kinzinger (R–IL), Peter Welch (D–VT), and Paul Tonko (D–NY) on February 28, 2019. Representatives David McKinley (R–WV) and Brian Fitzpatrick (R–PA) were later added as cosponsors.

In the 115th Congress, similar language was included 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, Rep. Eshoo introduced a similar measure, H.R. 1268, which passed the House on March 14, 2016, and was referred to the Committee. A similar bill, S. 1706, was introduced in the Senate by Senators Risch and Heinrich on July 7, 2015. The text of S. 1706 was included 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.

In the 113th Congress, Rep. Eshoo introduced a similar measure, H.R. 540, on February 6, 2013. Senators Mark Udall introduced a similar bill, S. 1261, on June 27, 2013, which Senators Risch and Heinrich cosponsored.

The Senate Committee on Energy and Natural Resources met in open business session on September 25, 2019, and ordered H.R. 1420 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 H.R. 1420. Senator Lee asked to be recorded as voting no.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title

Section 1 provides a short title.

Section 2. Energy-efficient and energy-saving information technologies

Section 2(a) amends subtitle C of title V of EISA by adding a new section 530, titled “Energy-Efficient and Energy-Saving Information Technologies.”

The new section 530 is entitled “Energy-efficient and energy-saving information technologies.

The new section 530(a) provides key definitions.

The new section 530(b) directs each Federal agency to coordinate with the Director, the Secretary, and the Administrator of the Environmental Protection Agency (Administrator) to develop an implementation strategy for the maintenance, purchase, and use of energy-efficient and energy-saving information technologies within one year of enactment.

The new section 530(c) outlines areas each Federal agency must consider in developing an implementation strategy, including advanced metering infrastructure; advanced power management tools; and building information modeling.

The new section 530(d) requires the Director to establish performance goals for evaluating the efforts of Federal agencies in improving the maintenance, purchase and use of energy-efficient and energy-savings information technology. It also requires the Chief Information Officers Council to recommend best practices to achieve the performance goals.

The new section 530(e) requires each Federal agency to include a description of the efforts and results in the report required under section 527. It also requires the Director to include a description of the efforts and results of Federal agencies in the annual report and scorecard required under section 528.

Subsection (b) provides for a conforming amendment to EISA’s table of contents.

Section 3. Energy efficient data centers

Section 3 amends section 453 of EISA to update the Voluntary National Information Program.

The revised subsection (c) directs the Secretary and the Administrator to carry out section 453(b) in collaboration with information technology industry and other key stakeholders, with particular attention to be given to organizations: (1) with expertise in energy efficiency; (2) that obtain input from National Laboratories, institutions of higher education, and other relevant groups; (3) that follow commonly accepted procedures for specification development and accredited standards development processes; and (4) have a mission to promote energy efficiency for data centers and information technology.

The revised subsection (d) requires the Secretary and the Administrator to assess the adequacy of specifications and measurements described in subsection (b) for use by the Federal Energy Management Program, the Energy Star Program, and other efficiency programs within DOE or the Environmental Protection Agency.

The revised subsection (e) directs the Secretary and the Administrator, within four years of enactment, to complete and make publicly available an update to the June 2016 Lawrence Berkeley National Laboratory report entitled “United States Data Center Energy Usage Report.”

The revised subsection (f) requires the Secretary to collaborate with key stakeholders and the Director to maintain a data center energy practitioner program.

The revised subsection (g) directs the Secretary to collaborate with key stakeholders and the Director to establish an open data

initiative relating to energy usage at Federally owned and operated data centers.

The new subsection (h) requires the Secretary to collaborate with key stakeholders to actively participate in efforts to harmonize global specifications and metrics for data center energy and water efficiency.

The new subsection (i) requires the Secretary to collaborate with key stakeholders to develop an efficiency metric that measures the energy efficiency of a data center.

The new subsection (j) prohibits the Secretary and the Administrator from disclosing any proprietary information or trade secrets provided by any individual company for the purposes of carrying out this section.

Section 4. Determination of budgetary effects

Section 4 provides for complying with the Statutory Pay-As-You-Go Act of 2010.

COST AND BUDGETARY CONSIDERATIONS

The following estimate of the costs of this measure has been provided by the Congressional Budget Office:

H.R. 1420, Energy Efficient Government Technology Act			
As ordered reported by the Senate Committee on Energy and Natural Resources on September 25, 2019			
By Fiscal Year, Millions of Dollars	2020	2020-2024	2020-2029
Direct Spending (Outlays)	*	*	*
Revenues	0	0	0
Increase in the Deficit	*	*	*
Spending Subject to Appropriation (Outlays)	*	*	not estimated
Statutory pay-as-you-go procedures apply?	Yes	Mandate Effects	
Increases on-budget deficits in any of the four consecutive 10-year periods beginning in 2030?	No	Contains intergovernmental mandate?	No
		Contains private-sector mandate?	No
* = between zero and \$500,000.			

H.R. 1420 would require federal agencies, in consultation with the Office of Management and Budget, the Department of Energy (DOE), and the Environmental Protection Agency, to implement strategies to acquire, use, and maintain information technologies expected to increase energy efficiency. The act also would direct agencies to pursue activities to enhance the energy efficiency of data centers and would specify administrative and reporting requirements.

Using information from DOE and other agencies, CBO estimates that implementing H.R. 1420 would not significantly affect the fed-

eral budget. The act's requirements are largely consistent with existing policy and are unlikely to result in significant changes in overall federal spending related to energy-efficient technologies. CBO estimates that any increased costs associated with reporting and administrative requirements under H.R. 1420, which would be subject to the availability of appropriated funds, would not be significant in any year and over the 2020–2024 period.

H.R. 1420 could affect direct spending if agencies procure energy-efficient technologies using long-term contracts known as energy savings performance contracts (ESPCs).¹ However, because H.R. 1420 would not change those contracts' scope or the ability of agencies to enter into them, CBO estimates that any incremental increase in direct spending stemming from increased use of such contracts under the act would not be significant.

The CBO staff contact for this estimate is Aaron Krupkin. The estimate was reviewed by H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

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 H.R. 1420. The Act is not a regulatory measure in the sense of imposing 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 H.R. 1420, as ordered reported.

CONGRESSIONALLY DIRECTED SPENDING

H.R. 1420, 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 H.R. 1420 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 changes in existing law made by H.R. 1420, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

¹In CBO's judgment, agencies that enter into ESPCs make an obligation—a commitment of federal resources—on behalf of the government to cover the full cost of the equipment to be acquired, but without the necessary appropriations. Therefore, legislation authorizing ESPCs creates the authority to make such obligations, and in the absence of appropriations sufficient to cover the contractual costs, that authority is a form of mandatory rather than discretionary spending. See Congressional Budget Office, *Using ESPCs to Finance Federal Investments in Energy-Efficient Equipment* (February 2015), www.cbo.gov/publication/49869.

ENERGY INDEPENDENCE AND SECURITY ACT OF 2007

Public Law 110–40, as Amended

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SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

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(b) TABLE OF CONTENTS.—The table of contents is as follows:

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TITLE V—ENERGY SAVINGS IN GOVERNMENT AND PUBLIC INSTITUTIONS

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Subtitle C—Energy Efficiency in Federal Agencies

Sec. 521. Installation of photovoltaic system at Department of Energy headquarters building.

Sec. 522. Prohibition on incandescent lamps by Coast Guard.

Sec. 523. Standard relating to solar hot water heaters.

Sec. 524. Federally-procured appliances with standby power.

Sec. 525. Federal procurement of energy efficient products.

Sec. 526. Procurement and acquisition of alternative fuels.

Sec. 527. Government efficiency status reports.

Sec. 528. OMB government efficiency reports and scorecards.

Sec. 529. Electricity sector demand response.

Sec. 530. *Energy-efficient and energy-saving information technologies.*

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TITLE IV—ENERGY SAVINGS IN BUILDINGS AND INDUSTRY

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Subtitle D—Industrial Energy Efficiency

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SEC. 453. ENERGY EFFICIENCY FOR DATA CENTER BUILDINGS.

(a) DEFINITIONS.—In this section:

(1) DATA CENTER.—The term “data center” means any facility that primarily contains electronic equipment used to process, store, and transmit digital information, which may be—

(A) a free-standing structure; or

(B) a facility within a larger structure, that uses environmental control equipment to maintain the proper conditions for the operation of electronic equipment.

(2) DATA CENTER OPERATOR.—The term “data center operator” means any person or government entity that builds or operates a data center or purchases data center services, equipment, and facilities.

(b) VOLUNTARY NATIONAL INFORMATION PROGRAM.—

(1) IN GENERAL.—Not later than 90 days after the date of enactment of this Act, the Secretary and the Administrator of the Environmental Protection Agency shall, after consulting with information technology industry and other interested parties, initiate a voluntary national information program for those

types of data centers and data center equipment and facilities that are widely used and for which there is a potential for significant data center energy savings as a result of the program.

(2) REQUIREMENTS.—The program described in paragraph (1) shall—

(A) address data center efficiency holistically, reflecting the total energy consumption of data centers as whole systems, including both equipment and facilities;

(B) consider prior work and studies undertaken in this area, including by the Environmental Protection Agency and the Department of Energy;

(C) consistent with the objectives described in paragraph (1), determine the type of data center and data center equipment and facilities to be covered under the program;

(D) produce specifications, measurements, best practices, and benchmarks that will enable data center operators to make more informed decisions about the energy efficiency and costs of data centers, and that take into account—

(i) the performance and use of servers, data storage devices, and other information technology equipment;

(ii) the efficiency of heating, ventilation, and air conditioning, cooling, and power conditioning systems, provided that no modification shall be required of a standard then in effect under the Energy Policy and Conservation Act (42 U.S.C. 6201 et seq.) for any covered heating, ventilation, air-conditioning, cooling or power-conditioning product;

(iii) energy savings from the adoption of software and data management techniques; and

(iv) other factors **【determined by the organization】** *proposed by the stakeholders* described in subsection (c);

(E) allow for creation of separate specifications, measurements, and benchmarks based on data center size and function, as well as other appropriate characteristics;

(F) advance the design and implementation of efficiency technologies to the maximum extent economically practical;

(G) provide to data center operators in the private sector and the Federal Government information about best practices and purchasing decisions that reduce the energy consumption of data centers; and

(H) publish the information described in subparagraph (G), which may be disseminated through catalogs, trade publications, the Internet, or other mechanisms, that will allow data center operators to assess the energy consumption and potential cost savings of alternative data centers and data center equipment and facilities.

【(3) PROCEDURES.—The program described in paragraph (1) shall be developed in consultation with and coordinated by the organization described in subsection (c) according to commonly accepted procedures for the development of specifications, measurements, and benchmarks.】

【(c) DATA CENTER EFFICIENCY ORGANIZATION.—

[(1) IN GENERAL.—After the establishment of the program described in subsection (b), the Secretary and the Administrator shall jointly designate an information technology industry organization to consult with and to coordinate the program.

[(2) REQUIREMENTS.—The organization designated under paragraph (1), whether preexisting or formed specifically for the purposes of subsection (b), shall—

[(A) consist of interested parties that have expertise in energy efficiency and in the development, operation, and functionality of computer data centers, information technology equipment, and software, as well as representatives of hardware manufacturers, data center operators, and facility managers;

[(B) obtain and address input from Department of Energy National Laboratories or any college, university, research institution, industry association, company, or public interest group with applicable expertise in any of the areas listed in paragraph (1);

[(C) follow commonly accepted procedures for the development of specifications and accredited standards development processes;

[(D) have a mission to develop and promote energy efficiency for data centers and information technology; and

[(E) have the primary responsibility to consult in the development and publishing of the information, measurements, and benchmarks described in subsection (b) and transmission of the information to the Secretary and the Administrator for consideration under subsection (d).

[(d) MEASUREMENTS AND SPECIFICATIONS.—

[(1) IN GENERAL.—The Secretary and the Administrator shall consider the specifications, measurements, and benchmarks described in subsection (b) for use by the Federal Energy Management Program, the Energy Star Program, and other efficiency programs of the Department of Energy and Environmental Protection Agency, respectively.

[(2) REJECTIONS.—If the Secretary or the Administrator rejects 1 or more specifications, measurements, or benchmarks described in subsection (b), the rejection shall be made consistent with section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note; Public Law 104–113).

[(3) DETERMINATION OF IMPRACTICABILITY.—A determination that a specification, measurement, or benchmark described in subsection (b) is impractical may include consideration of the maximum efficiency that is technologically feasible and economically justified.

[(e) MONITORING.—The Secretary and the Administrator shall—

(1) monitor and evaluate the efforts to develop the program described in subsection (b); and

(2) not later than 3 years after the date of enactment of this Act, make a determination as to whether the program is consistent with the objectives of subsection (b).

[(f) ALTERNATIVE SYSTEM.—If the Secretary and the Administrator make a determination under subsection (e) that a voluntary national information program for data centers consistent with the

objectives of subsection (b) has not been developed, the Secretary and the Administrator shall, after consultation with the National Institute of Standards and Technology and not later than 2 years after the determination, develop and implement the program under subsection (b).

[(g) PROTECTION OF PROPRIETARY INFORMATION.—The Secretary, the Administrator, or the data center efficiency organization shall not disclose any proprietary information or trade secrets provided by any individual or company for the purposes of carrying out this section or the program established under this section.]

(c) *STAKEHOLDER INVOLVEMENT.*—*The Secretary and the Administrator shall carry out subsection (b) in collaboration with information technology industry and other key stakeholders, with the goal of producing results that accurately reflect the most relevant and useful information. In such collaboration, the Secretary and the Administrator shall pay particular attention to organizations that—*

(1) *have members with expertise in energy efficiency and in the development, operation, and functionality of data centers, information technology equipment, and software, such as representatives of hardware manufacturers, data center operators, and facility managers;*

(2) *obtain and address input from Department of Energy National Laboratories or any college, university, research institution, industry association, company, or public interest group with applicable expertise;*

(3) *follow—*

(A) *commonly accepted procedures for the development of specifications; and*

(B) *accredited standards development processes; and*

(4) *have a mission to promote energy efficiency for data centers and information technology.*

(d) *MEASUREMENTS AND SPECIFICATIONS.*—*The Secretary and the Administrator shall consider and assess the adequacy of the specifications, measurements, best practices, and benchmarks described in subsection (b) for use by the Federal Energy Management Program, the Energy Star Program, and other efficiency programs of the Department of Energy or the Environmental Protection Agency.*

(e) *STUDY.*—*The Secretary, in collaboration with the Administrator, shall, not later than 4 years after the date of enactment of the Energy Efficient Government Technology Act, make available to the public an update to the report of the Lawrence Berkeley National Laboratory entitled ‘United States Data Center Energy Usage Report’ and dated June, 2016 (prepared as an update to the Report to Congress on Server and Data Center Energy Efficiency, published on August 2, 2007, under section 1 of Public Law 109–431 (120 Stat. 2920)), that includes—*

(1) *a comparison and gap analysis of the estimates and projections contained in the report with new data regarding the period from 2015 through 2019;*

(2) *an analysis considering the impact of information technologies, including virtualization and cloud computing, in the public and private sectors;*

(3) *an evaluation of the impact of the combination of cloud platforms, mobile devices, social media, and big data on data center energy usage;*

(4) an evaluation of water usage in data centers and recommendations for reductions in such water usage; and

(5) updated projections and recommendations for best practices through fiscal year 2025.

(f) DATA CENTER ENERGY PRACTITIONER PROGRAM.—The Secretary, in collaboration with key stakeholders and the Director of the Office of Management and Budget, shall maintain a data center energy practitioner program that leads to the certification of energy practitioners qualified to evaluate the energy usage and efficiency opportunities in federally owned and operated data centers. Each Federal agency shall consider having the data centers of the agency evaluated every 4 years, in accordance with section 543(f) of the National Energy Conservation Policy Act, by energy practitioners certified pursuant to such program.

(g) OPEN DATA INITIATIVE.—The Secretary, in collaboration with key stakeholders and the Office of Management and Budget, shall establish an open data initiative relating to energy usage at federally owned and operated data centers, with the purpose of making such data available and accessible in a manner that encourages further data center innovation, optimization, and consolidation. In establishing the initiative, the Secretary shall consider the use of the online Data Center Maturity Model.

(h) INTERNATIONAL SPECIFICATIONS AND METRICS.—The Secretary, in collaboration with key stakeholders, shall actively participate in efforts to harmonize global specifications and metrics for data center energy and water efficiency.

(i) DATA CENTER UTILIZATION METRIC.—The Secretary, in collaboration with key stakeholders, shall facilitate in the development of an efficiency metric that measures the energy efficiency of a data center (including equipment and facilities).

(j) PROTECTION OF PROPRIETARY INFORMATION.—The Secretary and the Administrator shall not disclose any proprietary information or trade secrets provided by any individual or company for the purposes of carrying out this section or the programs and initiatives established under this section.

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TITLE V—ENERGY SAVINGS IN GOVERNMENT AND PUBLIC INSTITUTIONS

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Subtitle C—Energy Efficiency in Federal Agencies

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SEC. 530. ENERGY-EFFICIENT AND ENERGY-SAVING INFORMATION TECHNOLOGIES.

(a) DEFINITIONS.—In this section:

(1) DIRECTOR.—The term ‘Director’ means the Director of the Office of Management and Budget.

(2) INFORMATION TECHNOLOGY.—The term ‘information technology’ has the meaning given that term in section 11101 of title 40, United States Code.

(b) *DEVELOPMENT OF IMPLEMENTATION STRATEGY.*—Not later than 1 year after the date of enactment of this section, each Federal agency shall coordinate with the Director, the Secretary, and the Administrator of the Environmental Protection Agency to develop an implementation strategy (that includes best practices and measurement and verification techniques) for the maintenance, purchase, and use by the Federal agency of energy-efficient and energy-saving information technologies at or for federally owned and operated facilities, taking into consideration the performance goals established under subsection (d).

(c) *ADMINISTRATION.*—In developing an implementation strategy under subsection (b), each Federal agency shall consider—

- (1) advanced metering infrastructure;
- (2) energy-efficient data center strategies and methods of increasing asset and infrastructure utilization;
- (3) advanced power management tools;
- (4) building information modeling, including building energy management;
- (5) secure telework and travel substitution tools; and
- (6) mechanisms to ensure that the agency realizes the energy cost savings brought about through increased efficiency and utilization.

(d) *PERFORMANCE GOALS.*—

(1) *IN GENERAL.*—Not later than 180 days after the date of enactment of this section, the Director, in consultation with the Secretary, shall establish performance goals for evaluating the efforts of Federal agencies in improving the maintenance, purchase, and use of energy-efficient and energy-saving information technology at or for federally owned and operated facilities.

(2) *BEST PRACTICES.*—The Chief Information Officers Council established under section 3603 of title 44, United States Code, shall recommend best practices for the attainment of the performance goals, which shall include Federal agency consideration of, to the extent applicable by law, the use of—

- (A) energy savings performance contracting; and
- (B) utility energy services contracting.

(e) *REPORTS.*—

(1) *AGENCY REPORTS.*—Each Federal agency shall include in the report of the agency under section 527 a description of the efforts and results of the agency under this section.

(2) *OMB GOVERNMENT EFFICIENCY REPORTS AND SCORECARDS.*—Effective beginning not later than October 1, 2019, the Director shall include in the annual report and scorecard of the Director required under section 528 a description of the efforts and results of Federal agencies under this section.

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