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SENATE

REPORT
116–83

VEHICLE INNOVATION ACT OF 2019

SEPTEMBER 10, 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 S. 1085]

[Including cost estimate of the Congressional Budget Office]

The Committee on Energy and Natural Resources, to which was referred the bill (S. 1085) to support research, development, and other activities to develop innovative vehicle 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 S. 1085 is to support research, development, and other activities to develop innovative vehicle technologies.

BACKGROUND AND NEED

The International Energy Agency's Global Electric Vehicle (EV) Outlook 2019 projects that in 2030 the world-wide light-duty EV stock could reach 129 million vehicles, up from 5.4 million in 2018, constituting a 24-fold increase in 12 years. The growth in electric vehicles has been propelled by a combination of falling lithium ion battery prices and EV subsidies and mandates around the world.

Other changes include the rapid growth in ride-sharing and car-sharing companies such as Uber and Lyft, and increasing interest in the development of autonomous technologies for vehicles. These significant changes require an update to authorizations around vehicle technology research to reflect modern transportation needs.

LEGISLATIVE HISTORY

S. 1085 was introduced by Senators Peters, Alexander, and Stabenow on April 9, 2019.

Similar legislation, H.R. 2170, was introduced in the House of Representatives by Representatives Dingell and Stevens on April 9, 2019, and referred to the Science, Space and Technology Committee and the Energy and Commerce Committee.

In the 115th Congress, Senator Peters (for himself and Senators Alexander, Stabenow, and Portman) introduced similar legislation, S. 1225, on May 24, 2017. Representative Dingell introduced companion legislation, H.R. 4050, in the House of Representatives on May 24, 2017, which was referred to the Science, Space and Technology Committee and the Energy and Commerce Committee.

In the 114th Congress, Senator Peters introduced similar legislation, S. 1408, on May 20, 2015. ENR conducted a legislative hearing on S. 1408 on June 9, 2015 (S. Hrg. 114–344). Representative Dingell introduced nearly identical legislation, H.R. 4106, in the House of Representatives on November 19, 2015, which was referred to the Science, Space and Technology Committee.

The Senate Committee on Energy and Natural Resources met in open business session on July 16, 2019, and ordered S. 1085 favorably reported.

COMMITTEE RECOMMENDATION

The Senate Committee on Energy and Natural Resources, in open business session on July 16, 2019, by a majority voice vote of a quorum present, recommends that the Senate pass S. 1085. Senators Barrasso, Risch, and Lee asked to be recorded as voting no.

SECTION-BY-SECTION ANALYSIS

Section 1. Short title

Section 1 provides a short title.

Sec. 2. Definitions

Section 2 provides key definitions.

Sec. 3. Objectives

Section 3 lays out the objectives of the bill.

Sec. 4. Coordination and nonduplication

Section 4 requires the Secretary of Energy (Secretary) to ensure, to the maximum extent practicable, that the activities authorized by S. 1085 are not duplicative of other programs.

Sec. 5. Authorization of appropriations

Section 5 authorizes appropriations through fiscal year 2024 (FY) for the Department of Energy's vehicle technologies program.

Sec. 6. Reporting

Section 6 requires the Secretary to submit a report to Congress within 18 months after the date of enactment on technologies developed as a result of activities authorized by this bill, and annually thereafter through FY 2024. The Secretary is further required

to report to relevant Congressional committees at the end of each FY, through FY 2024, on additional matters, including the status of public-private partnerships and a strategic plan for funding of activities across agencies.

Sec. 7. Vehicle research and development

Subsection (a) directs the Secretary to conduct a program of basic and applied research, development, engineering, demonstration, and commercial application activities for materials, technologies, and processes that could reduce petroleum use in passenger and commercial vehicles. This subsection further (1) specifies areas of activities; (2) ensures the continued support of transformation technologies; (3) directs industry participation; (4) requires interagency and intraagency coordination; (5) makes information available to Federal agency procurement programs; (6) requires intergovernmental coordination; (7) provides grant award criteria; and (8) requires secondary use applications.

Subsection (b) directs the Secretary to carry out a program of research, development, engineering, demonstration, and commercial application for advanced vehicle manufacturing technologies and practices and specifies innovative processes to include.

Sec. 8. Medium- and heavy-duty commercial and transit vehicles

Section 8 directs the Secretary to carry out a program of cooperative research, development, demonstration, and commercial application activities on advanced technologies for medium- to heavy-duty commercial, vocational, recreational, and transit vehicles.

Sec. 9. Class 8 truck and trailer systems demonstration

Section 9 directs the Secretary to conduct a competitive grant program to demonstrate the integration of multiple advanced technologies on Class 8 truck and trailer platforms.

Sec. 10. Technology testing and metrics

Section 10 directs the Secretary to coordinate with the interagency research program partners to develop standard testing procedures for evaluating the performance of advanced heavy vehicle technologies. This section also authorizes the construction of heavy duty truck and bus testing facilities.

Sec. 11. Nonroad systems pilot program

Section 11 directs the Secretary to undertake a pilot program of research, development, demonstration, and commercial application for technologies to improve total machine or system efficiency for nonroad mobile equipment.

Sec. 12. Repeal of existing authorities

Section 12 repeals a number of provisions within the Energy Policy Act of 2005 (Public Law 109–58) and makes technical and conforming changes.

COST AND BUDGETARY CONSIDERATIONS

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

S. 1085, Vehicle Innovation Act of 2019
As ordered reported by the Senate Committee on Energy and Natural Resources on July 16, 2019

By Fiscal Year, Millions of Dollars	2019	2019-2024	2019-2029
Direct Spending (Outlays)	0	0	0
Revenues	0	0	0
Increase or Decrease (-) in the Deficit	0	0	0
Spending Subject to Appropriation (Outlays)	0	1,102	1,698

		Mandate Effects	
Statutory pay-as-you-go procedures apply?	No		
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

S. 1085 would authorize the appropriation of $1,698 million over the 2020–2024 period for the Department of Energy to conduct research and development (R&D) on advanced energy technologies for vehicles. Under the bill, those R&D programs would focus on technologies that could reduce vehicle emissions and reliance on fossil fuels, including measures that may increase energy efficiency and support the use of alternative fuels, such as electricity, natural gas, and hydrogen. It also would authorize R&D on advanced manufacturing methods and practices for the production of batteries, fuel cells, materials, and storage systems.

Based on historical spending patterns for similar activities, and assuming appropriation of the authorized amounts, CBO estimates that implementing S. 1085 would cost $1,102 million over the 2019–2024 period. The costs of the legislation (detailed in Table 1) fall within budget function 270 (energy).

TABLE 1.—ESTIMATED INCREASES IN SPENDING SUBJECT TO APPROPRIATION UNDER S. 1085

	By fiscal year, millions of dollars—						
	2019	2020	2021	2022	2023	2024	2019–2024
Authorization	0	314	326	339	353	367	1,698
Estimated Outlays	0	63	159	244	301	335	1,102

Components may not sum to totals because of rounding.

The CBO staff contact for this estimate is Kathleen Gramp. The estimate was reviewed by Theresa A. Gullo, 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 S. 1085. The bill 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 S. 1085, as ordered reported.

CONGRESSIONALLY DIRECTED SPENDING

S. 1085, 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

The Committee did not request executive views on S. 1085.

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill S. 1085, as ordered 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 presented in roman):

THE ENERGY POLICY ACT OF 2005

Public Law 109–58, as Amended

AN ACT To ensure jobs for our future with secure, affordable, and reliable energy

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TITLE VII—VEHICLES AND FUELS

Subtitle A—Existing Programs

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[SEC. 706. JOINT FLEXIBLE FUEL/HYBRID VEHICLE COMMERCIALIZATION INITIATIVE.

[(a) DEFINITIONS.—In this section:

[(1) ELIGIBLE ENTITY.—The term "eligible entity" means—

[(A) a for-profit corporation;

[(B) a nonprofit corporation; or

[(C) an institution of higher education.

[(2) PROGRAM.—The term "program" means a program established under subsection (b).

[(b) ESTABLISHMENT.—The Secretary shall establish a program to improve technologies for the commercialization of—

[(1) a combination hybrid/flexible fuel vehicle; or

[(2) a plug-in hybrid/flexible fuel vehicle.

[(c) GRANTS.—In carrying out the program, the Secretary shall provide grants that give preference to proposals that—

[(1) achieve the greatest reduction in miles per gallon of petroleum fuel consumption;

[(2) achieve not less than 250 miles per gallon of petroleum fuel consumption; and

[(3) have the greatest potential of commercialization to the general public within 5 years.

[(d) VERIFICATION.—Not later than 90 days after August 8, 2005, the Secretary shall publish in the Federal Register procedures to verify—

[(1) the hybrid/flexible fuel vehicle technologies to be demonstrated; and

[(2) that grants are administered in accordance with this section.

[(e) REPORT.—Not later than 260 days after August 8, 2005, and annually thereafter, the Secretary shall submit to Congress a report that—

[(1) identifies the grant recipients;

[(2) describes the technologies to be funded under the program;

[(3) assesses the feasibility of the technologies described in paragraph (2) in meeting the goals described in subsection (c);

[(4) identifies applications submitted for the program that were not funded; and

[(5) makes recommendations for Federal legislation to achieve commercialization of the technology demonstrated.

[(f) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to carry out this section, to remain available until expended—

(1) $3,000,000 for fiscal year 2006;
(2) $7,000,000 for fiscal year 2007;
(3) $10,000,000 for fiscal year 2008; and
(4) $20,000,000 for fiscal year 2009.]

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Subtitle B—Hybrid Vehicles, Advanced Vehicles, and Fuel Cell Buses

Part 1—Hybrid Vehicles

[SEC. 711. HYBRID VEHICLES.

[The Secretary shall accelerate efforts directed toward the improvement of batteries and other rechargeable energy storage systems, power electronics, hybrid systems integration, and other technologies for use in hybrid vehicles.]

[SEC. 712. DOMESTIC MANUFACTURING CONVERSION GRANT PROGRAM.

[(a) PROGRAM.—

[(1) IN GENERAL.—The Secretary shall establish a program to encourage domestic production and sales of efficient hybrid and advanced diesel vehicles and components of those vehicles.

[(2) INCLUSIONS.—The program shall include grants and loan guarantees undersection 16513 of this titleto automobile manufacturers and suppliers and hybrid component manufacturers to encourage domestic production of efficient hybrid, plug-in electric hybrid, plug-in electric drive, and advanced diesel vehicles.

[(3) PRIORITY.—Priority shall be given to the refurbishment or retooling of manufacturing facilities that have recently ceased operation or will cease operation in the near future.

[(b) COORDINATION WITH STATE AND LOCAL PROGRAMS.—The Secretary may coordinate implementation of this section with State

and local programs designed to accomplish similar goals, including the retention and retraining of skilled workers from the manufacturing facilities, including by establishing matching grant arrangements.

[(c) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary such sums as may be necessary to carry out this section.]

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TITLE IX—RESEARCH AND DEVELOPMENT

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Subtitle A—Energy Efficiency

SEC. 911 ENERGY EFFICIENCY.

(a) IN GENERAL

(1) OBJECTIVES.—The Secretary shall conduct programs of energy efficiency research, development, demonstration, and commercial application, including activities described in this part. Such programs shall take into consideration the following objectives:

(A) Increasing the energy efficiency of buildings[vehicles, buildings,] and industrial processes.

(B) Reducing the demand of the United States for energy, especially energy from foreign sources.

(C) Reducing the cost of energy and making the economy more efficient and competitive.

(D) Improving the energy security of the United States.

(E) Reducing the environmental impact of energy-related activities.

(2) PROGRAMS.—Programs under this part shall include research, development, demonstration, and commercial application of—

[(A) advanced, cost-effective technologies to improve the energy efficiency and environmental performance of vehicles, including—

[(i) hybrid and electric propulsion systems;

[(ii) plug-in hybrid systems;

[(iii) advanced combustion engines;

[(iv) weight and drag reduction technologies;

[(v) whole-vehicle design optimization; and

[(vi) advanced drive trains;]

(A)[(B)] cost-effective technologies, for new construction and retrofit, to improve the energy efficiency and environmental performance of buildings, using a whole-buildings approach, including onsite renewable energy generation;

(B)[(C)] advanced technologies to improve the energy efficiency, environmental performance, and process efficiency of energy-intensive and waste-intensive industries;

(C)[(D)] advanced control devices to improve the energy efficiency of electric motors, including those used in industrial processes, heating, ventilation, and cooling; and

(D)[(E)] technologies to improve the energy efficiency of appliances and mechanical systems for buildings in cold

climates, including combined heat and power units and increased use of renewable resources, including fuel.

(b) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Secretary to carry out energy efficiency and conservation research, development, demonstration, and commercial application activities, including activities authorized under this part—

(1) $783,000,000 for fiscal year 2007;

(2) $865,000,000 for fiscal year 2008; and

(3) $952,000,000 for fiscal year 2009.

(c) ALLOCATIONS.—From amounts authorized under subsection (b), the following sums are authorized:

(1) For activities undersection 16192 of this title, $50,000,000 for each of fiscal years 2007 through 2009.

(2) For activities undersection 16195 of this title, $7,000,000 for each of fiscal years 2007 through 2009.

[(3) For activities under subsection (a)(2)(A)—

[(A) $200,000,000 for fiscal year 2007;

[(B) $270,000,000 for fiscal year 2008; and

[(C) $310,000,000 for fiscal year 2009.]

(3)[(4)] For activities under subsection (a)(2)(C)[(D)], $2,000,000 for each of fiscal years 2007 and 2008.

(d) EXTENDED AUTHORIZATION.—There are authorized to be appropriated to the Secretary to carry outsection 16192 of this title $50,000,000 for each of fiscal years 2010 through 2013.

(e) LIMITATIONS.—None of the funds authorized to be appropriated under this section may be used for—

(1) the issuance or implementation of energy efficiency regulations;

(2) the weatherization program established under part A of title IV of the Energy Conservation and Production Act (42 U.S.C. 6861 et seq.);

(3) a State energy conservation plan established under part D of title III of the Energy Policy and Conservation Act (42 U.S.C. 6321 et seq.); or

(4) a Federal energy management measure carried out under part 3 of title V of the National Energy Conservation Policy Act (42 U.S.C. 8251 et seq.).

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Subtitle C—Renewable Energy

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[SEC. 933. LOW COST RENEWABLE HYDROGEN AND INFRASTRUCTURE FOR VEHICLE PROPULSION.

The Secretary shall—

[(1) establish a research, development, and demonstration program to determine the feasibility of using hydrogen propulsion in light-weight vehicles and the integration of the associated hydrogen production infrastructure using off-the-shelf components; and

[(2) identify universities and institutions that

[(A) have expertise in researching and testing vehicles fueled by hydrogen, methane, and other fuels;

[(B) have expertise in integrating off-the-shelf components to minimize cost; and

[(C) within 2 years can test a vehicle based on an existing commercially available platform with a curb weight of not less than 2,000 pounds before modifications, that

[(i) operates solely on hydrogen;

[(ii) qualifies as a light-duty passenger vehicle; and

[(iii) uses hydrogen produced from water using only solar energy.]

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