

116TH CONGRESS  
1ST SESSION

**S.** \_\_\_\_\_

To direct the Secretary of Energy to establish certain demonstration grant programs relating to the demonstration of advanced distribution systems, smart water heaters, vehicle-to-grid integration, and granular retail electricity pricing, and for other purposes.

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IN THE SENATE OF THE UNITED STATES

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Mr. WYDEN introduced the following bill; which was read twice and referred to the Committee on \_\_\_\_\_

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**A BILL**

To direct the Secretary of Energy to establish certain demonstration grant programs relating to the demonstration of advanced distribution systems, smart water heaters, vehicle-to-grid integration, and granular retail electricity pricing, and for other purposes.

1       *Be it enacted by the Senate and House of Representa-*  
2 *tives of the United States of America in Congress assembled,*

3 **SECTION 1. SHORT TITLE; TABLE OF CONTENTS.**

4       (a) SHORT TITLE.—This Act may be cited as the  
5 “Distributed Energy Demonstration Act of 2019”.

6       (b) TABLE OF CONTENTS.—The table of contents for  
7 this Act is as follows:

- Sec. 1. Short title; table of contents.
- Sec. 2. Definitions.
- Sec. 3. Advanced distribution system grant program.
- Sec. 4. Smart water heater demonstration program.
- Sec. 5. Vehicle-to-Grid Integration (VGI) Demonstration Grant Program.
- Sec. 6. Granular retail electricity pricing grant program.
- Sec. 7. Federal matching fund for smart grid investment costs.
- Sec. 8. Personal protections for sensitive personal data.
- Sec. 9. General provisions.

1 **SEC. 2. DEFINITIONS.**

2 In this Act:

3 (1) COMMISSION.—The term “Commission”  
4 means the Federal Energy Regulatory Commission.

5 (2) DISTRIBUTED ENERGY RESOURCE.—

6 (A) IN GENERAL.—The term “distributed  
7 energy resource” means an electric device that  
8 can produce or consume energy that is lo-  
9 cated—

10 (i) on the distribution system or any  
11 subsystem of the distribution system; or

12 (ii) behind a customer meter.

13 (B) INCLUSIONS.—The term “distributed  
14 energy resource” includes—

15 (i) an energy storage resource;

16 (ii) an energy generation technology;

17 (iii) a demand response resource;

18 (iv) an energy efficiency resource;

19 (v) an electric vehicle and associated

20 supply equipment and systems; and

1                   (vi) aggregations and integrated con-  
2                   trol systems, including virtual power  
3                   plants, microgrids, and networks of  
4                   microgrid cells.

5                   (3) ELECTRIC CONSUMER; ELECTRIC UTILITY;  
6                   RATE; STATE REGULATORY AUTHORITY.—The terms  
7                   “electric consumer”, “electric utility”, “rate”, and  
8                   “State regulatory authority” have the meanings  
9                   given the terms in section 3 of the Public Utility  
10                  Regulatory Policies Act of 1978 (16 U.S.C. 2602).

11                  (4) ENERGY STORAGE.—The term “energy  
12                  storage” means equipment or facilities capable of  
13                  absorbing energy, storing energy for a period of  
14                  time, and dispatching the stored energy, that—

15                         (A) uses mechanical, electrochemical, hy-  
16                         droelectric, or thermal processes, as a single fa-  
17                         cility or as an aggregation of units, throughout  
18                         the electric grid, including behind the meter to  
19                         store energy generated at 1 time for use at a  
20                         later time;

21                         (B) uses mechanical, electrochemical, hy-  
22                         droelectric, or thermal processes, as a single fa-  
23                         cility or as an aggregation of units, throughout  
24                         the electric grid, including behind the meter to  
25                         store energy generated from mechanical proc-

1           esses that would otherwise be wasted for deliv-  
2           ery at a later time; or

3           (C) stores thermal energy for direct use for  
4           heating or cooling at a later time in a manner  
5           that avoids the need to use electricity at that  
6           later time.

7           (5) GRANULAR.—The term “granular”, with re-  
8           spect to a rate or other price for electricity, means  
9           that the rate or price is established based on precise  
10          accounting of the value, as determined by the time  
11          and location of the production or consumption of the  
12          electricity and the unique type of energy services  
13          being provided, of electrical energy, capacity, and  
14          ancillary services, including—

15                (A) time-of-use rates;

16                (B) peak-time rebates;

17                (C) critical peak pricing;

18                (D) real-time pricing;

19                (E) transactive energy approaches;

20                (F) inverted time-of-use rates;

21                (G) forward-looking charges;

22                (H) peak-coincident capacity network  
23          charges; and

24                (I) 3-part rates.

1           (6) GRID FLEXIBILITY.—The term “grid flexi-  
2           bility” means the ability of a power system—

3                   (A) from an operational perspective, to re-  
4                   spond to changes in supply and demand, such  
5                   as abrupt changes in load conditions or sharp  
6                   ramps in generation; and

7                   (B) from a long-term planning and invest-  
8                   ment perspective, to respond to changes in tech-  
9                   nology, markets and policy, without incurring  
10                  stranded assets.

11           (7) IOT.—The term “IoT” means a set of tech-  
12           nologies (including endpoint devices, such as sensors,  
13           actuators, management systems, user interfaces, ve-  
14           hicles, machinery, and household appliances) that—

15                   (A) are linked via communication networks  
16                   to enable advanced control and valuable serv-  
17                   ices; and

18                   (B) may provide real-time information and  
19                   actionable analytics, as appropriate.

20           (8) LIGHT-DUTY CONSUMER VEHICLE.—The  
21           term “light-duty consumer vehicle” has the meaning  
22           given the term “light-duty vehicle” in section  
23           1037.801 of title 40, Code of Federal Regulations  
24           (as in effect on the date of enactment of this Act).

1           (9) MICROGRID.—The term “microgrid” means  
2 a localized grid that can disconnect from the tradi-  
3 tional grid to operate autonomously and help miti-  
4 gate grid disturbances to strengthen grid resilience.

5           (10) NATIONAL LABORATORY.—The term “Na-  
6 tional Laboratory” has the meaning given the term  
7 in section 2 of the Energy Policy Act of 2005 (42  
8 U.S.C. 15801).

9           (11) SECRETARY.—The term “Secretary”  
10 means the Secretary of Energy.

11           (12) TRANSIT AGENCY.—The term “transit  
12 agency” has the meaning given the term in section  
13 630.3 of title 49, Code of Federal Regulations (as  
14 in effect on the date of enactment of this Act).

15           (13) TRANSIT VEHICLE.—The term “transit ve-  
16 hicle” has the meaning given the term “bus” in sec-  
17 tion 1192.3 of title 36, Code of Federal Regulations  
18 (as in effect on the date of enactment of this Act).

19 **SEC. 3. ADVANCED DISTRIBUTION SYSTEM GRANT PRO-**  
20 **GRAM.**

21 (a) DEFINITIONS.—In this section:

22           (1) ELIGIBLE ENTITY.—The term “eligible enti-  
23 ty” means an electric utility, such as—

24                   (A) an investor-owned electric utility;

25                   (B) a publicly owned utility; and

1 (C) an electric cooperative.

2 (2) PROGRAM.—The term “program” means  
3 the program established under subsection (b).

4 (b) ESTABLISHMENT.—The Secretary shall establish  
5 a program under which the Secretary shall provide grants  
6 to support projects designed to advance the integration  
7 and optimization of distributed energy resources.

8 (c) APPLICATIONS AND SELECTION.—

9 (1) IN GENERAL.—To be eligible to receive a  
10 grant under this section, an eligible entity shall sub-  
11 mit to the Secretary an application at such time, in  
12 such manner, and containing such information as  
13 the Secretary determines to be appropriate, includ-  
14 ing—

15 (A) an interoperability plan for the pro-  
16 posed project;

17 (B) a cybersecurity plan for the proposed  
18 project;

19 (C) a privacy plan for the proposed  
20 project, including a provision relating to—

21 (i) the protection of the privacy of in-  
22 dividual customer information;

23 (ii) the secure storage, handling, and  
24 destruction of data; and

1 (iii) the access of energy use data by  
2 third parties;

3 (D) the anticipated benefits of the pro-  
4 posed project, from a business perspective and  
5 the perspective of the customer;

6 (E) for a project proposed by an investor-  
7 owned electric utility, a formal approval of the  
8 project from the regulatory body of jurisdiction,  
9 such as a State public utility commission; and

10 (F) an assurance that, as a condition of  
11 receiving the grant, the eligible entity will par-  
12 ticipate in a working group in accordance with  
13 section 9(a), including with respect to prepara-  
14 tion of the report under section 9(b).

15 (2) PRIORITY.—In selecting recipients of grants  
16 under this section, the Secretary shall give priority  
17 to—

18 (A) a proposed project that is submitted by  
19 a multiutility partnership with a diverse cus-  
20 tomer profile;

21 (B) a proposed project that is submitted  
22 by a partnership that includes at least 1 Na-  
23 tional Laboratory or institution of higher edu-  
24 cation;



1 (C) a proposed project that promotes edu-  
2 cation and training in disciplines that are es-  
3 sential for distribution system development, as  
4 determined by the Secretary; and

5 (D) a proposed project that proposes a  
6 scaled deployment strategy for the technology  
7 and systems of the project, with an emphasis on  
8 achieving adoption of a standard for, and inter-  
9 operability among several manufacturers of, de-  
10 vices that create grid flexibility.

11 (d) PROGRAM GOALS.—The goals of the program  
12 are—

13 (1) to demonstrate innovative and cost-effective  
14 techniques for the integration and optimization of  
15 distributed energy resources, including microgrid  
16 and networked microgrid systems;

17 (2) to develop highly flexible, configurable, and  
18 interactive networks of utility, customer, and third-  
19 party systems with an IoT community enabling  
20 framework;

21 (3) to inform the creation of standards and reg-  
22 ulations; and

23 (4) to increase regulatory and utility confidence  
24 in technologies and systems that are instrumental to

1 the integration and optimization of distributed en-  
2 ergy resources, including integrated energy systems.

3 (e) USE OF FUNDS.—A grant provided under this  
4 section may be used for any project that implements meas-  
5 ures to advance the integration and optimization of dis-  
6 tributed energy resources, as determined by the Secretary,  
7 including a project—

8 (1) on advanced voltage control or optimization  
9 systems;

10 (2) addressing dynamic protection schemes to  
11 manage reverse power flows, communications, sen-  
12 sors, energy storage, switching, and smart-inverter  
13 networks;

14 (3) on advanced distribution management sys-  
15 tems, such as automated substations;

16 (4) on cybersecurity technologies and applica-  
17 tions;

18 (5) supporting nonrecurring engineering costs  
19 of adoption and implementation, among multiple  
20 manufacturers of grid-connected devices, of stand-  
21 ards that enhance interoperability and connectivity  
22 on electricity systems; and

23 (6) for manufacturers of grid-connected devices  
24 or electric utilities to establish full-time positions to

1 design and implement technologies that promote grid  
2 flexibility.

3 (f) AUTHORIZATION OF APPROPRIATIONS.—There is  
4 authorized to be appropriated to carry out this section  
5 \$50,000,000, to remain available for a period of 10 years  
6 following the fiscal year for which the amounts were ap-  
7 propriated.

8 **SEC. 4. SMART WATER HEATER DEMONSTRATION PRO-**  
9 **GRAM.**

10 (a) DEFINITIONS.—In this section:

11 (1) ELIGIBLE ENTITY.—The term “eligible enti-  
12 ty” means—

13 (A) an electric utility; and

14 (B) a retail service provider of electricity.

15 (2) PROGRAM.—The term “program” means  
16 the demonstration program established under sub-  
17 section (b)(1).

18 (b) DEMONSTRATION PROGRAM.—

19 (1) ESTABLISHMENT.—Not later than 1 year  
20 after the date of enactment of this Act, the Sec-  
21 retary, in consultation with the Director of the Na-  
22 tional Science Foundation, shall establish a dem-  
23 onstration program under which the Secretary shall  
24 provide grants to eligible entities to carry out

1 projects for the design and production of smart  
2 water heater optimization programs.

3 (2) PROGRAM GOALS.—The goals of the pro-  
4 gram are—

5 (A) to demonstrate large-scale implementa-  
6 tion of smart water heaters as an energy stor-  
7 age resource used on a regular basis as part of  
8 grid operation to improve the operational effi-  
9 ciency of the electric grid;

10 (B) to demonstrate control of water heat-  
11 ers to compensate for the intermittent nature of  
12 renewable energy resources;

13 (C) to diminish the market barriers to the  
14 broad adoption of smart water heaters;

15 (D) to provide funding to address non-  
16 recurring engineering costs; and

17 (E) to demonstrate best practices for—

18 (i) customer participation and satis-  
19 faction; and

20 (ii) maximizing customer benefits.

21 (3) APPLICATIONS.—

22 (A) IN GENERAL.—To be eligible to receive  
23 a grant under the program, an eligible entity  
24 shall submit to the Secretary an application at  
25 such time, in such manner, and containing such

1 information as the Secretary may require, in-  
2 cluding a proposal described in subparagraph  
3 (B).

4 (B) PROPOSAL REQUIREMENTS.—

5 (i) IN GENERAL.—An eligible entity  
6 shall submit as part of the application  
7 under subparagraph (A) a proposal that—

8 (I) demonstrates that the eligible  
9 entity will closely collaborate with 1 or  
10 more manufacturers of water heaters  
11 or water heater control equipment to  
12 coordinate sales and marketing across  
13 distribution channels;

14 (II) defines a specific geo-  
15 graphical area in which the smart  
16 water heaters will be available and in  
17 operation for a period of not less than  
18 1 year, but ideally for the full useful  
19 life of the smart water heaters;

20 (III) demonstrates that the 1 or  
21 more participating manufacturers of  
22 water heaters or water heater control  
23 equipment identified under subclause  
24 (I) support the standards described in  
25 clause (ii);

1 (IV) includes the stated intent  
2 and plan of the eligible entity to main-  
3 tain the project after the program  
4 ends;

5 (V) demonstrates the ability to  
6 execute control events on not fewer  
7 than 120 days per calendar year;

8 (VI) stipulates a plan for increas-  
9 ing the number of smart water heat-  
10 ers on the electric grid, including by  
11 retrofitting existing hot water heaters  
12 with controls; and

13 (VII) includes—

14 (aa) an interoperability plan  
15 for the proposed project;

16 (bb) a cybersecurity plan for  
17 the proposed project;

18 (cc) a privacy plan for the  
19 proposed project, including a pro-  
20 vision relating to the protection  
21 of the privacy of individual cus-  
22 tomer information, the secure  
23 storage, handling, and destruc-  
24 tion of data, and the access of

1 energy use data by third parties;  
2 and

3 (dd) a formal approval of  
4 the project from the regulatory  
5 body of jurisdiction, such as a  
6 State public utility commission.

7 (ii) STANDARDS DESCRIBED.—With  
8 respect to a water heater produced or ret-  
9 rofitted under a project receiving a grant  
10 under the program, the standards referred  
11 to in clause (i)(III) are the following:

12 (I) Water heaters or retrofit de-  
13 vices shall have—

14 (aa) an ANSI/CTA-2045  
15 communication interface; or

16 (bb) a communication inter-  
17 face using a standard or speci-  
18 fication for a nonproprietary  
19 communication interface from a  
20 recognized standards-based orga-  
21 nization.

22 (II) Water heaters shall support  
23 1 or more standard application proto-  
24 cols, such as—

25 (aa) OpenADR;

1 (bb) IEEE 2030.5; or  
2 (cc) the CTA–2045 applica-  
3 tion layer.

4 (4) GEOGRAPHICAL REQUIREMENT.—The Sec-  
5 retary shall provide grants under the program to eli-  
6 gible entities carrying out projects in diverse geo-  
7 graphical regions of the United States to ensure that  
8 projects are carried out in service territories with di-  
9 verse utility business models.

10 (5) AMOUNT OF GRANT.—The amount of a  
11 grant provided to an eligible entity under the pro-  
12 gram for a project shall be not less than \$500,000  
13 and not more than \$10,000,000.

14 (c) AUTHORIZATION OF APPROPRIATIONS.—There is  
15 authorized to be appropriated to carry out this section  
16 \$50,000,000, to remain available for a period of 10 years  
17 following the fiscal year for which the amounts were ap-  
18 propriated.

19 **SEC. 5. VEHICLE-TO-GRID INTEGRATION (VGI) DEMONSTRA-**  
20 **TION GRANT PROGRAM.**

21 (a) DEFINITIONS.—In this section:

22 (1) ELIGIBLE ENTITY.—The term “eligible enti-  
23 ty” means—

24 (A) an electric utility;



1 (B) a private commercial entity, including  
2 vehicle manufacturers;

3 (C) an institution of higher education;

4 (D) a unit of State or local government;

5 (E) a nonprofit organization; and

6 (F) a National Laboratory.

7 (2) PROGRAM.—The term “program” means  
8 the vehicle-to-grid demonstration grant program es-  
9 tablished under subsection (b)(1).

10 (b) ESTABLISHMENT OF PROGRAM.—

11 (1) IN GENERAL.—Not later than 1 year after  
12 the date of enactment of this Act, the Secretary, in  
13 cooperation with the Secretary of Transportation,  
14 shall establish a vehicle-to-grid integration dem-  
15 onstration grant program of research, development,  
16 and demonstration activities—

17 (A) to advance the co-optimization of elec-  
18 trified transportation and electricity systems,  
19 including by identifying ways to increase the re-  
20 siliency, efficiency, and environmental perform-  
21 ance of the electric grid and the transportation  
22 system;

23 (B) to advance the technical understanding  
24 of—

1 (i) the manner in which vehicle charg-  
2 ing systems are controlled and optimized,  
3 including by advancing vehicle and charg-  
4 ing station telemetry and embedded me-  
5 trology; and

6 (ii) the practices of transmitting se-  
7 cure data over the Internet, a utility sys-  
8 tem, or other mechanism, with a means for  
9 implementation, such as a standard;

10 (C) to optimize electric vehicles for the in-  
11 tegration of renewable energy technologies and  
12 the reduction of greenhouse gases and other  
13 pollutants;

14 (D) to investigate the technical, economic,  
15 and legal details of using fleet, transit, and mu-  
16 nicipal vehicle batteries for a range of electric  
17 grid services, including—

18 (i) demand response;

19 (ii) frequency regulation and other an-  
20 cillary services; and

21 (iii) energy output, or full-scale vehi-  
22 cle-to-electric grid, operations;

23 (E) to investigate the co-optimization of  
24 the electrification of transportation with ad-

1 vancements in autonomous vehicles and the use  
2 of vehicles for ride sharing, including by—

3 (i) studying consumer participation  
4 and other behavioral challenges, including  
5 incentives that promote co-optimization;  
6 and

7 (ii) researching challenges and oppor-  
8 tunities relating to the optimization of elec-  
9 tric grid operations in the context of au-  
10 tonomous vehicle and ride-sharing usage  
11 patterns, including the use of energy stor-  
12 age in charging systems;

13 (F) to investigate, in collaboration with the  
14 Commission, approaches to the aggregation,  
15 wholesale electricity marketing, and, to the  
16 maximum extent practicable, retail electricity  
17 marketing of electric grid services provided by  
18 electric vehicles, including research into the use  
19 of transactive energy systems as a means of en-  
20 abling vehicle-electric grid integration;

21 (G) to implement innovative consumer  
22 marketing and contracting models, including  
23 pricing approaches (including consumer access  
24 to wholesale market pricing signals), that co-op-  
25 timize transportation benefits and electric grid

1 benefits, including by maximizing the value of  
2 the vehicle services to the electric grid while  
3 also maximizing value to the consumer (includ-  
4 ing by maximizing the flexibility of use of the  
5 vehicle to the driver or rider);

6 (H) to investigate and implement user-  
7 friendly electric vehicle and related equipment  
8 financing models linked to the marketing of  
9 electric grid services, including the means by  
10 which the electric grid services provided by an  
11 electric vehicle can help finance the cost of the  
12 vehicle;

13 (I) to investigate and implement programs  
14 to improve the access to, and affordability of,  
15 electric vehicles for low-income populations;

16 (J)(i) to advance best practices for manu-  
17 facturers of electric vehicles, charging equip-  
18 ment, and systems; and

19 (ii) to embed those practices in programs  
20 and grant opportunities of the Department of  
21 Energy to leverage competitive market electric  
22 vehicle products and incentivize more rapid and  
23 widespread adoption;

1           (K) to assist electric utilities and transit  
2 agencies in collaboratively planning an elec-  
3 trified fleet;

4           (L) to investigate the use of fleet, transit,  
5 and municipal vehicle batteries as power  
6 sources for community shelter facilities during  
7 emergencies;

8           (M) to develop analytical tools and finan-  
9 cial models to assist electric utilities and transit  
10 agencies in assessing electric utility and infra-  
11 structure requirements to support selected tran-  
12 sit vehicle technologies and charging profiles,  
13 including analytic tools—

14           (i) to optimize the total cost of owner-  
15 ship;

16           (ii) to develop electrification route  
17 maps and transition plans, with quan-  
18 titative estimates of the population-weight-  
19 ed reductions in pollutant exposure from  
20 electrification of specific routes, including  
21 criteria pollutants and new pollutants of  
22 concern; and

23           (iii) to articulate the strategy and  
24 timelines for transitioning to zero-emission  
25 vehicles;

1 (N) to investigate scenarios for the sharing  
2 of battery assets for the purpose of maximizing  
3 cost-performance and battery use, including—  
4 (i) scenarios that optimize shared  
5 usage between transit agencies and electric  
6 utilities over the lifecycle of the battery;  
7 (ii) incentives for an entity (such as  
8 an electric utility) to provide funding to re-  
9 duce initial premium costs by—  
10 (I) owning the battery of a tran-  
11 sit agency transit vehicle; and  
12 (II) charging the battery using  
13 smart charging; and  
14 (iii) enabling the entity to reposition  
15 the battery into stationary use after the  
16 battery has served the expected life of the  
17 battery in mobility use;  
18 (O) to develop a methodology for modeling  
19 load increases expected from electrifying the  
20 transportation sector; and  
21 (P) to investigate the deployment of elec-  
22 tric vehicle technologies and charging infra-  
23 structure within scalable and integrated energy  
24 management systems as part of community en-  
25 ergy infrastructure development.

- 1           (2) CONSULTATION.—As soon as practicable  
2 after the date of enactment of this Act, in carrying  
3 out the activities under paragraph (1), the Secretary  
4 shall consult with stakeholders, including—
- 5           (A) vehicle manufacturers, including—
    - 6               (i) manufactures of light-, medium-,  
7 and heavy-duty vehicles; and
    - 8               (ii) transit vehicle manufacturers;
  - 9           (B) electric utilities, such as investor-  
10 owned electric utilities, publicly owned electric  
11 utilities, and electric cooperatives;
  - 12           (C) third-party energy service providers;
  - 13           (D) transit agencies;
  - 14           (E) fleet operators;
  - 15           (F) private companies, including energy  
16 technology manufacturers and battery manufac-  
17 turers;
  - 18           (G) other Federal agencies;
  - 19           (H) the National Laboratories;
  - 20           (I) States;
  - 21           (J) tribal governments;
  - 22           (K) units of local government;
  - 23           (L) nonprofit organizations;
  - 24           (M) institutions of higher education;

1 (N) electric vehicle supply equipment and  
2 charging infrastructure manufacturers; and

3 (O) battery manufacturers.

4 (3) REQUIREMENT.—The program shall include  
5 grants for projects relating to—

6 (A) light-duty consumer vehicles;

7 (B) fleet and municipal vehicles; and

8 (C) transit vehicles.

9 (c) APPLICATIONS.—

10 (1) IN GENERAL.—To be eligible to receive a  
11 grant under the program, an eligible entity shall  
12 submit to the Secretary an application at such time,  
13 in such manner, and containing such information as  
14 the Secretary may require, including a commitment  
15 by the eligible entity to participate in a working  
16 group in accordance with section 9(a) relating to  
17 light-duty consumer vehicles or fleet and municipal  
18 vehicles and transit vehicles, as appropriate.

19 (2) PROPOSAL REQUIREMENTS.—An eligible en-  
20 tity shall submit as part of the application required  
21 under paragraph (1) a proposal that includes—

22 (A) an interoperability plan for the pro-  
23 posed project;

24 (B) a cybersecurity plan for the proposed  
25 project;



1 (C) a privacy plan for the proposed  
2 project, including a provision relating to—

3 (i) the protection of the privacy of in-  
4 dividual customer information;

5 (ii) the secure storage, handling, and  
6 destruction of data; and

7 (iii) the access of energy use data by  
8 third parties; and

9 (D) a plan for leveraging existing market  
10 product offerings.

11 (d) AUTHORIZATION OF APPROPRIATIONS.—

12 (1) IN GENERAL.—There are authorized to be  
13 appropriated to carry out this section—

14 (A) for projects relating to light-duty con-  
15 sumer vehicles, \$20,000,000; and

16 (B) for projects relating to fleet and mu-  
17 nicipal vehicles and transit vehicles,  
18 \$20,000,000.

19 (2) AVAILABILITY.—Amounts made available  
20 under paragraph (1) shall remain available for a pe-  
21 riod of 10 years following the fiscal year for which  
22 the amounts were appropriated.

23 **SEC. 6. GRANULAR RETAIL ELECTRICITY PRICING GRANT**  
24 **PROGRAM.**

25 (a) DEFINITIONS.—In this section:

1           (1) ELIGIBLE ENTITY.—The term “eligible enti-  
2           ty” means an electric utility, such as—

3                   (A) an investor-owned electric utility;

4                   (B) a publicly owned utility; and

5                   (C) an electric cooperative.

6           (2) PROGRAM.—The term “program” means  
7           the granular retail electricity pricing grant program  
8           established under subsection (b)(1).

9           (b) ESTABLISHMENT.—

10           (1) IN GENERAL.—The Secretary shall establish  
11           a program under which the Secretary shall provide  
12           grants to support projects described in subsection  
13           (d) for the voluntary deployment of granular retail  
14           electricity pricing, with the goal of producing more  
15           efficient economic signals for transactions conducted  
16           on the electric grid.

17           (2) REQUIREMENT.—In developing the pro-  
18           gram, the Secretary shall take into consideration les-  
19           sons learned from granular electricity pricing dem-  
20           onstration and pilot projects, if any.

21           (c) APPLICATION AND SELECTION.—

22           (1) IN GENERAL.—To be eligible to receive a  
23           grant under the program, an eligible entity shall  
24           submit to the Secretary an application at such time,  
25           in such manner, and containing such information as

1 the Secretary determines to be appropriate, includ-  
2 ing—

3 (A) a description of the granular pricing  
4 mechanisms to be implemented;

5 (B) a description of any enabling tech-  
6 nology proposed to be used by the eligible enti-  
7 ty, which shall include, at a minimum, advanced  
8 metering infrastructure;

9 (C) the stated intent and plan of the eligi-  
10 ble entity to maintain scaled and sustained im-  
11 plementation of the granular rate structure  
12 after the program ends;

13 (D) a description of a consumer engage-  
14 ment and retention strategy; and

15 (E) if the eligible entity is an electric util-  
16 ity or an electricity retailer, a formal approval  
17 of the project from the regulatory body of juris-  
18 diction, such as a State public utility commis-  
19 sion.

20 (2) PRIORITY.—In awarding grants under the  
21 program, the Secretary shall give priority to pro-  
22 posed projects that—

23 (A) implement—

24 (i) transactive energy systems; or

1                   (ii) systems of real-time pricing, in  
2                   which prices are transmitted directly to de-  
3                   vices; and

4                   (B) maximize the use and incorporation of  
5                   technologies that create grid flexibility.

6           (d) USE OF FUNDS.—A grant provided under the  
7 program may be used for any project that implements  
8 granular retail rates, including a project—

9                   (1) to offset revenue-neutrality requirements es-  
10                  tablished by an applicable State regulatory author-  
11                  ity;

12                  (2) to study consumer behavior in response to  
13                  implemented granular retail electricity pricing; or

14                  (3) to educate and engage consumers regarding  
15                  rate design innovation, including by providing tech-  
16                  nical assistance and opportunities for comment.

17           (e) AUTHORIZATION OF APPROPRIATIONS.—There is  
18 authorized to be appropriated to carry out this section  
19 \$50,000,000, to remain available for a period of 10 years  
20 following the fiscal year for which the amounts were ap-  
21 propriated.

1 **SEC. 7. FEDERAL MATCHING FUND FOR SMART GRID IN-**  
2 **VESTMENT COSTS.**

3 (a) PURPOSE.—The purpose of this section is to sup-  
4 port the continued deployment of advanced metering infra-  
5 structure and other technologies.

6 (b) IMPROVEMENTS TO FEDERAL MATCHING  
7 FUND.—Section 1306 of the Energy Independence and  
8 Security Act of 2007 (42 U.S.C. 17386) is amended—

9 (1) in subsection (e)(1)—

10 (A) in the matter preceding subparagraph  
11 (A), by striking “within 60 days after the en-  
12 actment of the American Recovery and Rein-  
13 vestment Act of 2009” and inserting “not later  
14 than 60 days after the date of enactment of the  
15 DEMO Act”;

16 (B) in subparagraph (D), by striking  
17 “and” at the end;

18 (C) in subparagraph (E), by striking the  
19 period at the end and inserting “; and”; and

20 (D) by adding at the end the following:

21 “(F) require as a condition of receiving  
22 funding under this section that the recipient of  
23 a grant shall submit to the Secretary—

24 “(i) an interoperability plan described  
25 in subsection (f)(1); and

1                   “(ii) not later than 5 years after the  
2                   date on which the recipient first receives  
3                   funding under this section, an interoper-  
4                   ability report described in subsection  
5                   (f)(2).”;

6                   (2) by redesignating subsection (f) as sub-  
7                   section (g);

8                   (3) by inserting after subsection (e) the fol-  
9                   lowing:

10                  “(f) INTEROPERABILITY PLAN AND REPORT.—

11                   “(1) INTEROPERABILITY PLAN.—An interoper-  
12                   ability plan referred to in subsection (e)(1)(F)(i)  
13                   shall include—

14                   “(A) a demonstrated set of use cases;

15                   “(B) a plan for facilitating interaction be-  
16                   tween the project of the grant recipient and the  
17                   projects of not less than 3 other parties to dem-  
18                   onstrate how the project may work with the  
19                   projects of other parties;

20                   “(C) a protocol for measuring and  
21                   verifying interoperability performance;

22                   “(D) a methodology for evaluating overall  
23                   interoperability maturity, including the applica-  
24                   tion, if appropriate, of an interoperability matu-  
25                   rity model;

1 “(E) a list of deployed standards; and

2 “(F) the integration and testing ap-  
3 proaches for the project to ensure interoper-  
4 ability.

5 “(2) INTEROPERABILITY REPORT.—An inter-  
6 operability report referred to in subsection  
7 (e)(1)(F)(ii) shall include a description of a discus-  
8 sion, an analysis, data, or a combination thereof re-  
9 lating to—

10 “(A) the performance of the demonstrated  
11 set of use cases described in paragraph (1)(A);

12 “(B) the interaction between the project of  
13 the grant recipient and the projects of not less  
14 than 3 other parties, as described in paragraph  
15 (1)(B);

16 “(C) costs and benefits to—

17 “(i) consumers;

18 “(ii) electric utilities;

19 “(iii) appliance manufacturers;

20 “(iv) grid operators; and

21 “(v) other parties that the Secretary  
22 determines are relevant; and

23 “(D) performance, if appropriate, accord-  
24 ing to an interoperability maturity model, as  
25 described in paragraph (1)(D).”; and

1           (4) in subsection (g) (as redesignated by para-  
2           graph (2)), by striking “2012” and inserting  
3           “2025”.

4 **SEC. 8. PRIVACY.**

5           (a) PROTECTING PRIVACY AND SECURITY.—In car-  
6           rying out this Act, the Secretary, the Administrator of the  
7           Energy Information Administration, and the Secretary of  
8           Homeland Security shall identify, incorporate, and follow  
9           best practices for protecting the privacy of individuals and  
10          businesses and the respective sensitive data of the individ-  
11          uals and businesses, including by managing privacy risk  
12          and implementing the Fair Information Practice Prin-  
13          ciples of the Federal Trade Commission for the collection,  
14          use, disclosure, and retention of individual electric con-  
15          sumer information in accordance with the Office of Man-  
16          agement and Budget Circular A–130 (or successor circu-  
17          lars).

18          (b) PERSONAL PROTECTIONS FOR SENSITIVE PER-  
19          SONAL DATA.—No Federal entity shall request the cre-  
20          ation, recording, or collection of data identified to an indi-  
21          vidual person as a result of this Act.

22          (c) LAW ENFORCEMENT REQUIREMENTS.—

23                  (1) DEFINITIONS.—In this subsection:

24                          (A) GOVERNMENTAL ENTITY.—The term  
25                          “governmental entity” has the meaning given



1           that term in section 2711 of title 18, United  
2           States Code.

3           (B) JUDGE OF COMPETENT JURISDICTION;  
4           STATE.—The terms “judge of competent juris-  
5           diction” and “State” have the meanings given  
6           such terms in section 2510 of title 18, United  
7           States Code.

8           (2) CONSUMER INFORMATION.—A govern-  
9           mental entity may obtain from an electric utility,  
10          third party aggregator, or other nongovernmental  
11          entity under an administrative subpoena authorized  
12          by a Federal or State statute or a Federal or State  
13          grand jury or trial subpoena the—

14                 (A) name of an electric consumer;

15                 (B) address of an electric consumer;

16                 (C) length of service (including start date)  
17          of, and types of service used by, an electric con-  
18          sumer; and

19                 (D) means and source of payment for such  
20          service (including any credit card or bank ac-  
21          count number) of an electric consumer.

22          (3) ELECTRIC USAGE INFORMATION.—A gov-  
23          ernmental entity may only require the disclosure by  
24          an electric utility, third party aggregator, or other  
25          nongovernmental entity of information regarding the

1 use of electricity by an electric consumer (including  
2 monthly usage data, data at a greater level of detail  
3 or specificity, and information about electric use by  
4 specific appliances) pursuant to a warrant issued  
5 based on probable cause, using the procedures de-  
6 scribed in the Federal Rules of Criminal Procedure  
7 (or, in the case of a State court, issued using State  
8 warrant procedures) by a court of competent juris-  
9 diction.

10 (4) NOTICE.—

11 (A) IN GENERAL.—Not later than 30 days  
12 after obtaining a warrant for electric usage in-  
13 formation described in paragraph (3), a govern-  
14 mental entity shall notify each electric con-  
15 sumer whose information was obtained.

16 (B) DELAY OF NOTICE.—

17 (i) IN GENERAL.—Upon application  
18 by a governmental entity, a judge of com-  
19 petent jurisdiction may issue an order au-  
20 thORIZING the governmental entity to delay  
21 notice under subparagraph (A) for a period  
22 of not more than 180 days if the judge  
23 finds reason to believe notifying the elec-  
24 tric consumer of the order will result in—

1 (I) endangering the life or phys-  
2 ical safety of an individual;

3 (II) flight from prosecution;

4 (III) destroying of or tampering  
5 with evidence;

6 (IV) intimidation of potential wit-  
7 nesses; or

8 (V) otherwise seriously jeopard-  
9 izing an investigation or unduly delay-  
10 ing a trial.

11 (ii) UNLIMITED RENEWALS.—Upon  
12 application by a governmental entity, a  
13 judge of competent jurisdiction may renew  
14 an order delaying notice under clause (i)  
15 for additional periods of not longer than  
16 180 days if the judge makes a finding de-  
17 scribed in clause (ii).

18 (5) SUPPRESSION.—Any electric usage informa-  
19 tion described in paragraph (3), or evidence directly  
20 or indirectly derived from such information, may not  
21 be received in evidence in any trial, hearing, or other  
22 proceeding in or before any court, grand jury, de-  
23 partment, officer, agency, regulatory body, legislative  
24 committee, or other authority of the United States,  
25 a State, or a political subdivision thereof if the ob-

1 taining of the information was not conducted in ac-  
2 cordance with this subsection.

3 (6) REPORTING.—

4 (A) BY GOVERNMENTAL ENTITIES.—In  
5 January of each year, each governmental entity  
6 shall submit to the Administrative Office of the  
7 United States Courts information regarding any  
8 warrant described in paragraph (3) that was  
9 sought or obtained by the governmental entity  
10 during the previous year, including—

11 (i) the number of warrants described  
12 in paragraph (3) sought by the govern-  
13 mental entity;

14 (ii) the number of warrants described  
15 in paragraph (3) obtained by the govern-  
16 mental entity; and

17 (iii) for each warrant described in  
18 paragraph (3) sought or obtained by the  
19 governmental entity—

20 (I) the offense specified in the  
21 application; and

22 (II) the identity of the officer ap-  
23 plying for the warrant.

24 (B) REPORT TO CONGRESS.—As part of  
25 the report submitted under section 2519(3) of

1 title 18, United States Code, the Administrative  
2 Office of the United States Courts shall provide  
3 to Congress, with respect to the previous year—

4 (i) the number of warrants described  
5 in paragraph (3) sought by governmental  
6 entities;

7 (ii) the number of warrants described  
8 in paragraph (3) obtained by governmental  
9 entities; and

10 (iii) a summary and analysis of the  
11 data required to be filed with the Adminis-  
12 trative Office under subparagraph (A).

13 **SEC. 9. GENERAL PROVISIONS.**

14 (a) WORKING GROUP.—

15 (1) ESTABLISHMENT.—For each grant program  
16 established under this Act, the Secretary shall estab-  
17 lish a working group to be composed of representa-  
18 tives of each project selected to receive a grant  
19 under this Act.

20 (2) MEETINGS.—The working groups estab-  
21 lished under paragraph (1) shall meet not less fre-  
22 quently than once every 180 days.

23 (3) PARTICIPATION REQUIRED.—As a condition  
24 of receiving a grant under this Act, the recipient  
25 shall designate a representative of the relevant

1 project to serve as a member of the working group  
2 under this subsection, including by attending each  
3 meeting of the working group described under para-  
4 graph (2).

5 (b) REPORTS.—

6 (1) GRANT RECIPIENT REPORT.—Not later  
7 than 18 months after the date on which a grant is  
8 first provided to an eligible entity under a grant pro-  
9 gram established under this Act, the eligible entity  
10 shall submit to the Secretary a report describing the  
11 results of the project, including information on—

12 (A) technical findings from the project, in-  
13 cluding—

14 (i) cost savings;

15 (ii) the cybersecurity implications of  
16 implementing the project;

17 (iii) customer participation and satis-  
18 faction;

19 (iv) any customer benefits realized as  
20 a result of the program; and

21 (v) environmental performance;

22 (B) an accounting of project costs; and

23 (C) a description of how project findings  
24 will be implemented in the future.

1           (2) REPORTS TO CONGRESS.—Not later than 2  
2           years after the date on which the initial grants are  
3           provided under each program established under this  
4           Act, the Secretary shall submit to the appropriate  
5           committees of Congress a separate report relating to  
6           each program, including information such as—

7                   (A) the technical findings of the program;

8                   (B) the number of projects undertaken;

9                   (C) an analysis of costs and benefits of im-  
10           plementing the program; and

11                   (D) the total amount of funds distributed  
12           under the program, including a breakdown by  
13           State and by service territory.

14           (c) COST-SHARE.—The Federal share of the cost of  
15           a project that receives a grant under a program estab-  
16           lished under this Act shall not exceed 50 percent of the  
17           total cost of the project.