

116TH CONGRESS
1ST SESSION

S. _____

To require the Secretary of Energy to establish an integrated energy systems research, development, and demonstration program, and for other purposes.

IN THE SENATE OF THE UNITED STATES

Mr. RISCH (for himself and Mr. MANCHIN) introduced the following bill; which was read twice and referred to the Committee on _____

A BILL

To require the Secretary of Energy to establish an integrated energy systems research, development, and demonstration program, 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.**

4 This Act may be cited as the “Integrated Energy Sys-
5 tems Act of 2019”.

6 **SEC. 2. INTEGRATED ENERGY SYSTEMS PROGRAM.**

7 (a) DEFINITIONS.—In this section:

8 (1) PROGRAM.—The term “program” means
9 the Integrated Energy Systems Program established
10 under subsection (b)(1).

1 (2) SECRETARY.—The term “Secretary” means
2 the Secretary of Energy.

3 (b) ESTABLISHMENT.—

4 (1) IN GENERAL.—The Secretary shall establish
5 a program within the Office of Nuclear Energy, to
6 be known as the “Integrated Energy Systems Pro-
7 gram”—

8 (A) to maximize energy production and ef-
9 ficiency;

10 (B) to provide reliable, competitive, and
11 environmentally sustainable electricity to the
12 grid;

13 (C) to expand the use of emissions-reduc-
14 ing energy technologies into nonelectric sectors
15 to achieve dramatic reductions in environmental
16 emissions; and

17 (D) to enable the energy infrastructure of
18 the United States to support the quantity, vari-
19 ability in type, and variability in size of genera-
20 tion devices and smart load devices.

21 (2) PROGRAM ADMINISTRATION; PARTNERS.—

22 The program shall be carried out by the Office of
23 Nuclear Energy, in partnership with—

24 (A) multiple offices of the Department of
25 Energy, including—

- 1 (i) the Office of Energy Efficiency
- 2 and Renewable Energy;
- 3 (ii) the Office of Fossil Energy;
- 4 (iii) the Office of Electricity; and
- 5 (iv) the Office of Cybersecurity, En-
- 6 ergy Security, and Emergency Response;
- 7 (B) National Laboratories;
- 8 (C) institutions of higher education; and
- 9 (D) the private sector.

10 (3) GOALS AND MILESTONES.—The Secretary
11 shall establish goals and milestones for the program,
12 including the goals of—

- 13 (A) expanding emissions-reducing energy
- 14 technologies to the transportation and indus-
- 15 trial sectors by leveraging—
 - 16 (i) the nuclear reactor fleet of the
 - 17 United States;
 - 18 (ii) advanced nuclear;
 - 19 (iii) renewable energy;
 - 20 (iv) carbon capture, use, and storage;
 - 21 and
 - 22 (v) the energy storage resources of the
 - 23 United States;

1 (B) ensuring the competitiveness of the
2 United States in best value, emissions-reducing
3 energy development;

4 (C) modernizing energy infrastructure with
5 emissions-reducing technology to promote—

6 (i) grid stability;

7 (ii) ramping load following;

8 (iii) rapid start;

9 (iv) intermittency; and

10 (v) resiliency;

11 (D) establishing a domestic supply chain
12 of—

13 (i) nuclear reactor and appurtenant
14 equipment; and

15 (ii) advanced coolants;

16 (E) enhancing and accelerating domestic
17 manufacturing and desalinization technologies
18 and processes by optimally using clean energy
19 sources; and

20 (F) mitigating vulnerability to—

21 (i) transmission congestion on the
22 power grid;

23 (ii) cyberattack;

24 (iii) physical attack; and

25 (iv) natural phenomena.

1 (c) RESEARCH GOALS.—Research goals under the
2 program shall include—

3 (1) technology innovation to further the expansion of emissions-reducing energy technologies to accommodate a modern, resilient grid system by—

6 (A) effectively leveraging multiple energy
7 sources;

8 (B) enhancing and streamlining engineering design;

10 (C) carrying out process demonstrations to optimize performance;

12 (D) addressing safety by design; and

13 (E) streamlining regulatory review;

14 (2) the most efficient use of emissions-reducing energy technologies for hydrogen production to support transportation and industrial needs;

17 (3) water processing and purification to support industrial and municipal potable and cooling water needs;

20 (4) conversion of carbon feedstock (such as coal, biomass, natural gas, and refuse waste) to higher value nonelectric commodities;

23 (5) the use of carbon dioxide in nonelectric commodities;

1 (6) advanced power cycles, extraction, and proc-
2 essing of complex hydrocarbons to produce high-
3 value chemicals;

4 (7) more effective thermal energy use, trans-
5 port, and storage;

6 (8) the demonstration of nuclear energy deliv-
7 ery for—

8 (A) the production of chemicals, metals,
9 and fuels;

10 (B) the capture, use, and storage of car-
11 bon; and

12 (C) renewable integration with an inte-
13 grated energy system; and

14 (9) the development of new analysis capabilities
15 to identify the best ways—

16 (A) to leverage multiple energy sources in
17 a given region; and

18 (B) to quantify the benefits of integrated
19 energy systems.

20 (d) GRANTS.—The Secretary may award grants
21 under the program to support the goals of the program.

22 (e) AUTHORIZATION OF APPROPRIATIONS.—There is
23 authorized to be appropriated to the Secretary to carry
24 out the program \$50,000,000 for each of fiscal years 2020
25 through 2029.