

116TH CONGRESS
2D SESSION

H. R. 8355

To establish and support advanced nuclear energy research and development programs at the Department of Energy, and for other purposes.

IN THE HOUSE OF REPRESENTATIVES

SEPTEMBER 23, 2020

Mr. FULCHER (for himself and Mr. SIMPSON) introduced the following bill;
which was referred to the Committee on Science, Space, and Technology

A BILL

To establish and support advanced nuclear energy research and development programs at the Department of Energy, 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 “Next Generation Nuclear Advancement Act of 2020”.

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. Integrated energy systems program.
- Sec. 3. Report on duplicative programs.
- Sec. 4. Light water reactor sustainability program.
- Sec. 5. Nuclear energy strategic plan.

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

2 (a) DEFINITIONS.—In this section:

3 (1) PROGRAM.—The term “program” means
4 the Integrated Energy Systems Program established
5 under subsection (b)(1).

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

8 (b) ESTABLISHMENT.—

9 (1) IN GENERAL.—The Secretary shall establish
10 a program, to be known as the “Integrated Energy
11 Systems Program”—

12 (A) to maximize energy production and ef-
13 ficiency;

14 (B) to develop energy systems involving
15 the integration of nuclear energy with renew-
16 able energy, fossil energy, and energy storage;
17 and

18 (C) to expand the use of emissions-reduc-
19 ing energy technologies into nonelectric sectors
20 to achieve significant reductions in environ-
21 mental emissions.

22 (2) PROGRAM ADMINISTRATION; PARTNERS.—
23 The program shall be carried out by the Undersecre-
24 tary of Energy, in partnership with—

25 (A) relevant offices within the Department
26 of Energy;

1 (B) National Laboratories;

2 (C) institutions of higher education; and

3 (D) the private sector.

4 (3) GOALS AND MILESTONES.—The Secretary
5 shall establish quantitative goals and milestones for
6 the program.

7 (c) RESEARCH AREAS.—Research areas under the
8 program may include—

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

12 (A) effectively leveraging multiple energy
13 sources;

14 (B) enhancing and streamlining engineering design;

16 (C) carrying out process demonstrations to
17 optimize performance; and

18 (D) streamlining regulatory review;

19 (2) advanced power cycles, energy extraction,
20 and processing of complex hydrocarbons to produce
21 high-value chemicals;

22 (3) efficient use of emissions-reducing energy
23 technologies for hydrogen production to support
24 transportation and industrial needs;

1 (4) enhancement and acceleration of domestic
2 manufacturing and desalinization technologies and
3 processes by optimally using clean energy sources;

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

6 (6) 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;

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

14 (D) conversion of carbon feedstock, such
15 as coal, biomass, natural gas, and refuse waste,
16 to higher value nonelectric commodities;

17 (7) the development of new analysis capabilities
18 to identify the best ways—

19 (A) to leverage multiple energy sources in
20 a given region; and

21 (B) to quantify the benefits of integrated
22 energy systems; and

23 (8) any other area that, as determined by the
24 Secretary, meets the purpose and goals of the pro-
25 gram.

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

3 **SEC. 3. REPORT ON DUPLICATIVE PROGRAMS.**

4 Not later than 1 year after the date of enactment
5 of this Act, and annually thereafter, the Secretary shall
6 submit to Congress a report identifying any program that
7 is duplicative of the program established under section
8 2(b)(1).

9 **SEC. 4. LIGHT WATER REACTOR SUSTAINABILITY PRO-**
10 **GRAM.**

11 Section 952 of the Energy Policy Act of 2005 (42
12 U.S.C. 16272) is amended by striking subsection (b) and
13 inserting the following:

14 “(b) LIGHT WATER REACTOR SUSTAINABILITY PRO-
15 GRAM.—The Secretary shall carry out a light water reac-
16 tor sustainability program—

17 “(1) to ensure the achievement of maximum
18 benefits from existing nuclear generation;

19 “(2) to accommodate the increase in applica-
20 tions for nuclear power plant license renewals ex-
21 pected as of the date of enactment of this sub-
22 section;

23 “(3) to enable the continued operation of exist-
24 ing nuclear power plants through technology devel-
25 opment;

1 “(4) to improve the performance and reduce the
2 operation and maintenance costs of nuclear power
3 plants;

4 “(5) to promote the use of high-performance
5 computing to simulate nuclear reactor processes;

6 “(6) to coordinate with other research and de-
7 velopment programs of the Office of Nuclear Energy
8 to ensure that developed technologies and capabili-
9 ties are part of an integrated investment strategy,
10 the overall focus of which is improving the safety,
11 security, reliability, and economics of operating nu-
12 clear power plants; and

13 “(7) to focus on—

14 “(A) new capabilities relating to nuclear
15 energy research and development;

16 “(B) enabling technologies beyond indi-
17 vidual programs;

18 “(C) coordinating capabilities among the
19 research and development programs of the Of-
20 fice of Nuclear Energy;

21 “(D) examining new classes of materials
22 not considered for nuclear applications;

23 “(E) high-risk research, which could poten-
24 tially overcome technological limitations; and

1 “(F) the potential for industry partner-
 2 ships to develop technologies relating to stor-
 3 age, hydrogen production, high-temperature
 4 process heat, and other relevant areas.”.

5 **SEC. 5. NUCLEAR ENERGY STRATEGIC PLAN.**

6 (a) IN GENERAL.—Subtitle E of title IX of the En-
 7 ergy Policy Act of 2005 (42 U.S.C. 16271 et seq.) is
 8 amended by adding at the end the following:

9 **“SEC. 959A. NUCLEAR ENERGY STRATEGIC PLAN.**

10 “(a) IN GENERAL.—Not later than 1 year after the
 11 date of enactment of this Act, the Secretary shall submit
 12 to the Committee on Energy and Natural Resources of
 13 the Senate and the Committees on Energy and Commerce
 14 and Science, Space, and Technology of the House of Rep-
 15 resentatives a 10-year strategic plan for the Office of Nu-
 16 clear Energy of the Department, in accordance with this
 17 section.

18 “(b) REQUIREMENTS.—In developing the strategic
 19 plan under this section, the Secretary shall specify ex-
 20 pected timelines for, as applicable—

21 “(1) the accomplishment of relevant objectives
 22 under current programs of the Department; or

23 “(2) the commencement of new programs to ac-
 24 complish those objectives.

1 “(c) UPDATES.—Not less frequently than once every
2 2 years, the Secretary shall submit to the Committee on
3 Energy and Natural Resources of the Senate and the
4 Committees on Energy and Commerce and Science, Space,
5 and Technology of the House of Representatives an up-
6 dated 10-year strategic plan in accordance with subsection
7 (b), which shall identify, and provide a justification for,
8 any major deviation from a previous strategic plan sub-
9 mitted under this section.”.

10 (b) TABLE OF CONTENTS.—Section 1(b) of the En-
11 ergy Policy Act of 2005 (42 U.S.C. 15801 note) is amend-
12 ed in the table of contents by inserting after the item re-
13 lating to section 959 the following:

“Sec. 959A. Nuclear energy strategic plan.”.

