AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

I

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.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF CONTENTS.

(a) SHORT TITLE.—This Act may be cited as the ''Next Generation Nuclear Advancement Act of 2020''.

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

SEC. 2. INTEGRATED ENERGY SYSTEMS PROGRAM.

(a) DEFINITIONS.—In this section:

(1) PROGRAM.—The term ''program'' means the Integrated Energy Systems Program established under subsection (b)(1).

(2) SECRETARY.—The term ''Secretary'' means the Secretary of Energy.

(b) ESTABLISHMENT.—

(1) IN GENERAL.—The Secretary shall establish a program, to be known as the ''Integrated Energy Systems Program''—

(A) to maximize energy production and efficiency;

(B) to develop energy systems involving the integration of nuclear energy with renewable energy, fossil energy, and energy storage; and

(C) to expand the use of emissions-reducing energy technologies into nonelectric sectors to achieve significant reductions in environmental emissions.

(2) PROGRAM ADMINISTRATION; PARTNERS.—The program shall be carried out by the Undersecretary of Energy, in partnership with—

(A) relevant offices within the Department of Energy;

(B) National Laboratories;

(C) institutions of higher education; and

(D) the private sector.

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

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

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

(A) effectively leveraging multiple energy sources;

(B) enhancing and streamlining engineering design;

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

(D) streamlining regulatory review;

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

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

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

(5) more effective thermal energy use, transport, and storage;

(6) the demonstration of nuclear energy delivery for—

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

(B) the capture, use, and storage of carbon;

(C) renewable integration with an integrated energy system; and

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

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

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

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

(8) any other area that, as determined by the Secretary, meets the purpose and goals of the program.

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

SEC. 3. REPORT ON DUPLICATIVE PROGRAMS.

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

SEC. 4. LIGHT WATER REACTOR SUSTAINABILITY PROGRAM.

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

''(b) LIGHT WATER REACTOR SUSTAINABILITY PROGRAM.—The Secretary shall carry out a light water reactor sustainability program—

''(1) to ensure the achievement of maximum benefits from existing nuclear generation;

''(2) to accommodate the increase in applications for nuclear power plant license renewals expected as of the date of enactment of this subsection;

''(3) to enable the continued operation of existing nuclear power plants through technology development;

''(4) to improve the performance and reduce the operation and maintenance costs of nuclear power plants;

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

''(6) to coordinate with other research and development programs of the Office of Nuclear Energy to ensure that developed technologies and capabilities are part of an integrated investment strategy, the overall focus of which is improving the safety, security, reliability, and economics of operating nuclear power plants; and

''(7) to focus on—

''(A) new capabilities relating to nuclear energy research and development;

''(B) enabling technologies beyond individual programs;

''(C) coordinating capabilities among the research and development programs of the Office of Nuclear Energy;

''(D) examining new classes of materials not considered for nuclear applications;

''(E) high-risk research, which could potentially overcome technological limitations; and

''(F) the potential for industry partnerships to develop technologies relating to storage, hydrogen production, high-temperature process heat, and other relevant areas.''.

SEC. 5. NUCLEAR ENERGY STRATEGIC PLAN.

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

''SEC. 959A. NUCLEAR ENERGY STRATEGIC PLAN.

''(a) IN GENERAL.—Not later than 1 year after the date of enactment of this Act, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committees on Energy and Commerce and Science, Space, and Technology of the House of Representatives a 10-year strategic plan for the Office of Nuclear Energy of the Department, in accordance with this section.

''(b) REQUIREMENTS.—In developing the strategic plan under this section, the Secretary shall specify expected timelines for, as applicable—

''(1) the accomplishment of relevant objectives under current programs of the Department; or

''(2) the commencement of new programs to accomplish those objectives.

''(c) UPDATES.—Not less frequently than once every 2 years, the Secretary shall submit to the Committee on Energy and Natural Resources of the Senate and the Committees on Energy and Commerce and Science, Space, and Technology of the House of Representatives an updated 10-year strategic plan in accordance with subsection (b), which shall identify, and provide a justification for, any major deviation from a previous strategic plan submitted under this section.''.

(b) TABLE OF CONTENTS.—Section 1(b) of the Energy Policy Act of 2005 (42 U.S.C. 15801 note) is amended in the table of contents by inserting after the item relating to section 959 the following:

''Sec. 959A. Nuclear energy strategic plan.''.

○