

115TH CONGRESS
1ST SESSION

S. 512

To modernize the regulation of nuclear energy.

IN THE SENATE OF THE UNITED STATES

MARCH 2, 2017

Mr. BARRASSO (for himself, Mr. WHITEHOUSE, Mr. INHOFE, Mr. BOOKER, Mr. CRAPO, Mrs. FISCHER, Mrs. CAPITO, and Mr. MANCHIN) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

A BILL

To modernize the regulation of nuclear energy.

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 “Nuclear Energy Innovation and Modernization Act”.

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. Findings.
- Sec. 3. Purpose.
- Sec. 4. Definitions.

TITLE I—ADVANCED NUCLEAR REACTORS AND USER FEES

- Sec. 101. Nuclear Regulatory Commission user fees and annual charges through fiscal year 2019.
- Sec. 102. Nuclear Regulatory Commission user fees and annual charges for fiscal year 2020 and each fiscal year thereafter.
- Sec. 103. Advanced nuclear reactor program.
- Sec. 104. Advanced nuclear energy licensing cost-share grant program.
- Sec. 105. Baffle-former bolt guidance.
- Sec. 106. Evacuation report.

TITLE II—URANIUM

- Sec. 201. Uranium recovery report.
- Sec. 202. Pilot program for uranium recovery fees.
- Sec. 203. Uranium transfers and sales.

1 **SEC. 2. FINDINGS.**

2 Congress finds that—

3 (1) the safe and secure operation of nuclear re-
 4 actors in the United States must remain the para-
 5 mount focus of the Nuclear Regulatory Commission;

6 (2) the existing fleet of nuclear reactors in the
 7 United States is operating safely and securely;

8 (3) nuclear energy is the largest source of af-
 9 fordable, reliable, emissions-free energy in the
 10 United States, providing approximately 20 percent
 11 of the electricity consumed in the United States and
 12 60 percent of emissions-free electricity generation in
 13 the United States;

14 (4) a 1,000-megawatt nuclear plant—

15 (A) provides approximately 500 permanent
 16 jobs;

17 (B) pays approximately \$40,000,000 annu-
 18 ally in wages;

1 (C) generates approximately \$470,000,000
2 annually in goods and services in the local com-
3 munity; and

4 (D) pays approximately \$83,000,000 annu-
5 ally in Federal, State, and local taxes;

6 (5) nuclear energy is of critical importance to
7 United States energy security and worldwide influ-
8 ence on nonproliferation;

9 (6) nuclear energy uses widely available fuel re-
10 sources to enable scientific progress, emissions-free
11 and reliable electricity generation, heat generation
12 for industrial applications, and power for deep space
13 exploration;

14 (7) the private sector, the National Labora-
15 tories (as defined in section 2 of the Energy Policy
16 Act of 2005 (42 U.S.C. 15801)), and institutions of
17 higher education are pursuing innovations in nuclear
18 energy technology that will play a crucial role in—

19 (A) the future global and United States
20 energy supply; and

21 (B) the exports, manufacturing, and econ-
22 omy of the United States;

23 (8) eventual deployment of commercial ad-
24 vanced nuclear reactors will require—

1 (A) modernizing the regulatory framework;
2 and

3 (B) making other necessary changes to fa-
4 cilitate the efficient, predictable, and affordable
5 deployment of advanced nuclear reactor tech-
6 nologies;

7 (9) 2 impediments to the commercialization of
8 advanced nuclear reactors are the high costs and
9 long durations associated with applying the existing
10 nuclear regulatory framework to advanced nuclear
11 reactors;

12 (10) license application reviews should be as
13 predictable and efficient as practicable without com-
14 promising safety or security;

15 (11) the development of advanced nuclear reac-
16 tors would benefit from the early identification of
17 policy issues for timely consideration and resolution
18 by the Commission to improve the efficient develop-
19 ment of designs as well as preparing for design re-
20 view and licensing;

21 (12) the existing nuclear regulatory framework
22 and the requirements of that framework have not
23 adapted to advances in scientific understanding or
24 the features and performance characteristics of ad-
25 vanced nuclear reactor designs;

1 (13) the existing nuclear reactor licensing proc-
2 ess does not provide iterative feedback to manage
3 risk as needed for typical technology development
4 and investment cycles;

5 (14) a staged licensing structure that provides
6 clear and periodic feedback to applicants on an
7 agreed schedule will help to enable the commer-
8 cialization of safer and innovative technologies that
9 will benefit the economy, national security, and envi-
10 ronment of the United States;

11 (15) a technology-inclusive Commission regu-
12 latory framework will—

13 (A) allow greater technological innovation;
14 and

15 (B) enable inventors, scientists, engineers,
16 and students to pursue licensing advanced reac-
17 tor concepts;

18 (16) further preparation by the Commission of
19 the research and test reactor licensing process will
20 enable the Commission to more efficiently process
21 applications for research and test reactors when the
22 applications are received;

23 (17) it is incumbent on the Commission—

24 (A) to budget appropriate resources to un-
25 dertake an active role in design familiarization

activities with potential applicants with advanced reactor designs;

(B) to budget for adequate resources to conduct licensing reviews and other work requested by licensees and applicants; and

(C) to preserve those budgeted funds to ensure responsiveness to licensees and applicants in recognition of the dependence of the licensees and applicants on Commission approval before the benefits of the technology of the licensees and applicants can be realized; and

(18) both prospective advanced nuclear reactor applicants and the existing fleet of nuclear reactors in the United States would benefit from modernizing the outdated fee recovery structure of the Commission to better manage fluctuations in workload and the number of licensees in a fair and equitable manner.

SEC. 3. PURPOSE.

The purpose of this Act is to provide—

(1) a program to develop the expertise and regulatory processes necessary to allow innovation and the commercialization of advanced nuclear reactors;

(2) a revised fee recovery structure to ensure the availability of resources to meet industry needs

1 without burdening existing licensees unfairly for in-
2 accurate workload projections or premature existing
3 reactor closures; and

4 (3) more efficient regulation of uranium recov-
5 ery.

6 **SEC. 4. DEFINITIONS.**

7 In this Act:

8 (1) **ADVANCED NUCLEAR REACTOR.**—The term
9 “advanced nuclear reactor” means a nuclear fission
10 or fusion reactor, including a prototype plant (as de-
11 fined in sections 50.2 and 52.1 of title 10, Code of
12 Federal Regulations (as in effect on the date of en-
13 actment of this Act)), with significant improvements
14 compared to commercial nuclear reactors under con-
15 struction as of the date of enactment of this Act, in-
16 cluding improvements such as—

17 (A) additional inherent safety features;

18 (B) significantly lower levelized cost of
19 electricity;

20 (C) lower waste yields;

21 (D) greater fuel utilization;

22 (E) enhanced reliability;

23 (F) increased proliferation resistance;

24 (G) increased thermal efficiency; or

1 (H) ability to integrate into electric and
2 nonelectric applications.

3 (2) ADVANCED NUCLEAR REACTOR FUEL.—The
4 term “advanced nuclear reactor fuel” means fuel for
5 use in an advanced nuclear reactor or a research
6 and test reactor, including fuel with a low uranium
7 enrichment level of not greater than 20 percent.

8 (3) AGREEMENT STATE.—The term “Agree-
9 ment State” means any State with which the Com-
10 mission has entered into an effective agreement
11 under section 274 b. of the Atomic Energy Act of
12 1954 (42 U.S.C. 2021(b)).

13 (4) APPLICANT.—The term “applicant” means
14 an applicant for a license, certification, permit, or
15 other form of approval from the Commission for a
16 commercial advanced nuclear reactor or a research
17 and test reactor.

18 (5) APPROPRIATE CONGRESSIONAL COMMIT-
19 TEES.—The term “appropriate congressional com-
20 mittees” means the Committee on Environment and
21 Public Works of the Senate and the Committee on
22 Energy and Commerce of the House of Representa-
23 tives.

24 (6) COMMISSION.—The term “Commission”
25 means the Nuclear Regulatory Commission.

1 (7) CONCEPTUAL DESIGN ASSESSMENT.—The
2 term “conceptual design assessment” means an
3 early-stage review by the Commission that—

4 (A) assesses preliminary design informa-
5 tion for consistency with applicable regulatory
6 requirements of the Commission;

7 (B) is performed on a set of topic areas
8 agreed to in the licensing project plan; and

9 (C) is performed at a cost and schedule
10 agreed to in the licensing project plan.

11 (8) CORPORATE SUPPORT COSTS.—The term
12 “corporate support costs” means expenditures for
13 acquisitions, administrative services, financial man-
14 agement, human resource management, information
15 management, information technology, policy support,
16 outreach, and training, as those categories are de-
17 scribed and calculated in Appendix A of the Con-
18 gressional Budget Justification for Fiscal Year 2017
19 of the Commission.

20 (9) LICENSING PROJECT PLAN.—The term “li-
21 censing project plan” means a plan that describes—

22 (A) the interactions between an applicant
23 and the Commission; and

24 (B) project schedules and deliverables in
25 specific detail to support long-range resource

1 planning undertaken by the Commission and an
2 applicant.

3 (10) REGULATORY FRAMEWORK.—The term
4 “regulatory framework” means the framework for
5 reviewing requests for certifications, permits, ap-
6 provals, and licenses for nuclear power plants.

7 (11) REQUESTED ACTIVITY OF THE COMMIS-
8 SION.—The term “requested activity of the Commis-
9 sion” means—

10 (A) the processing of applications for—

11 (i) design certifications or approvals;

12 (ii) licenses;

13 (iii) permits;

14 (iv) license amendments;

15 (v) license renewals;

16 (vi) certificates of compliance; and

17 (vii) power uprates; and

18 (B) any other activity requested by a li-
19 censee or applicant.

20 (12) RESEARCH AND TEST REACTOR.—

21 (A) IN GENERAL.—The term “research
22 and test reactor” means a reactor that—

23 (i) falls within the licensing and re-
24 lated regulatory authority of the Commis-
25 sion under section 202 of the Energy Reor-

ganization Act of 1974 (42 U.S.C. 5842);

and

(ii) is useful in the conduct of research and development activities as licensed under section 104 c. of the Atomic Energy Act (42 U.S.C. 2134(c)).

(B) EXCLUSION.—The term “research and test reactor” does not include a commercial advanced nuclear reactor.

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

(14) STANDARD DESIGN APPROVAL.—The term “standard design approval” means the approval of a final standard design or a major portion of a final design standard as described in subpart E of part 52 of title 10, Code of Federal Regulations (as in effect on the date of enactment of this Act).

(15) TECHNOLOGY-INCLUSIVE REGULATORY FRAMEWORK.—The term “technology-inclusive regulatory framework” means a regulatory framework developed using methods of evaluation that are flexible and practicable for application to a variety of reactor technologies, including, where appropriate, the use of risk-informed and performance-based techniques and other tools and methods.

1 (16) TOPICAL REPORT.—The term “topical re-
 2 port” means a document submitted to the Commis-
 3 sion that addresses a technical topic related to nu-
 4 clear power plant safety or design.

5 **TITLE I—ADVANCED NUCLEAR**
 6 **REACTORS AND USER FEES**

7 **SEC. 101. NUCLEAR REGULATORY COMMISSION USER FEES**
 8 **AND ANNUAL CHARGES THROUGH FISCAL**
 9 **YEAR 2019.**

10 (a) IN GENERAL.—Section 6101(c)(2)(A) of the Om-
 11 nibus Budget Reconciliation Act of 1990 (42 U.S.C.
 12 2214(c)(2)(A)) is amended—

13 (1) in clause (iii), by striking “and” at the end;

14 (2) in clause (iv), by striking the period at the
 15 end and inserting “; and”; and

16 (3) by adding at the end the following:

17 “(v) amounts appropriated to the
 18 Commission for the fiscal year for activi-
 19 ties related to the development of a regu-
 20 latory framework for advanced nuclear re-
 21 actor technologies, including activities re-
 22 quired under section 103 of the Nuclear
 23 Energy Innovation and Modernization
 24 Act.”.

1 (b) REPEAL.—Effective October 1, 2019, section
 2 6101 of the Omnibus Budget Reconciliation Act of 1990
 3 (42 U.S.C. 2214) is repealed.

4 **SEC. 102. NUCLEAR REGULATORY COMMISSION USER FEES**
 5 **AND ANNUAL CHARGES FOR FISCAL YEAR**
 6 **2020 AND EACH FISCAL YEAR THEREAFTER.**

7 (a) ANNUAL BUDGET JUSTIFICATION.—

8 (1) IN GENERAL.—In the annual budget jus-
 9 tification submitted by the Commission to Congress,
 10 the Commission shall expressly identify anticipated
 11 expenditures necessary for completion of the re-
 12 quested activities of the Commission anticipated to
 13 occur during the applicable fiscal year.

14 (2) RESTRICTION.—Budget authority granted
 15 to the Commission for purposes of the requested ac-
 16 tivities of the Commission shall be used, to the max-
 17 imum extent practicable, solely for conducting re-
 18 quested activities of the Commission.

19 (3) LIMITATION ON CORPORATE SUPPORT
 20 COSTS.—With respect to the annual budget justifica-
 21 tion submitted to Congress, corporate support costs,
 22 to the maximum extent practicable, shall not exceed
 23 the following percentages of the total budget author-
 24 ity of the Commission requested in the annual budg-
 25 et justification:

1 (A) 30 percent for each of fiscal years
2 2020 and 2021.

3 (B) 29 percent for each of fiscal years
4 2022 and 2023.

5 (C) 28 percent for fiscal year 2024 and
6 each fiscal year thereafter.

7 (b) FEES AND CHARGES.—

8 (1) ANNUAL ASSESSMENT.—

9 (A) IN GENERAL.—Each fiscal year, the
10 Commission shall assess and collect fees and
11 charges in accordance with paragraphs (2) and
12 (3) in a manner that ensures that, to the max-
13 imum extent practicable, the amount collected
14 is equal to an amount that approximates—

15 (i) the total budget authority of the
16 Commission for that fiscal year; less

17 (ii) the budget authority of the Com-
18 mission for the activities described in sub-
19 paragraph (B).

20 (B) EXCLUDED ACTIVITIES DESCRIBED.—

21 The activities referred to in subparagraph
22 (A)(ii) are the following:

23 (i) An activity not attributable to an
24 existing NRC licensee or class of licensee
25 as identified by the Commission in Table

1 III of the final rule of the Commission en-
2 titled “Revision of Fee Schedules; Fee Re-
3 covery for Fiscal Year 2015” (80 Fed.
4 Reg. 37432 (June 30, 2015)).

5 (ii) Amounts appropriated for a fiscal
6 year to the Commission—

7 (I) from the Nuclear Waste Fund
8 established under section 302(c) of
9 the Nuclear Waste Policy Act of 1982
10 (42 U.S.C. 10222(c));

11 (II) for implementation of section
12 3116 of the Ronald W. Reagan Na-
13 tional Defense Authorization Act for
14 Fiscal Year 2005 (50 U.S.C. 2601
15 note; Public Law 108–375);

16 (III) for the homeland security
17 activities of the Commission (other
18 than for the costs of fingerprinting
19 and background checks required
20 under section 149 of the Atomic En-
21 ergy Act of 1954 (42 U.S.C. 2169)
22 and the costs of conducting security
23 inspections);

24 (IV) for the Inspector General
25 services of the Commission provided

1 to the Defense Nuclear Facilities
2 Safety Board;

3 (V) for research and development
4 at universities in areas relevant to the
5 mission of the applicable university;

6 (VI) for a nuclear science and en-
7 gineering grant program that will sup-
8 port multiyear projects that do not
9 align with programmatic missions but
10 are critical to maintaining the dis-
11 cipline of nuclear science and engi-
12 neering; and

13 (VII) for any other fee-relief ac-
14 tivity described in the final rule of the
15 Commission entitled “Revision of Fee
16 Schedules; Fee Recovery for Fiscal
17 Year 2015” (80 Fed. Reg. 37432
18 (June 30, 2015)).

19 (iii) Costs for activities related to the
20 development of regulatory infrastructure
21 for advanced nuclear reactor technologies,
22 including activities required under section
23 103.

1 (C) EXCEPTION.—The exclusion described
2 in subparagraph (B)(iii) shall cease to be effec-
3 tive on January 1, 2031.

4 (D) REPORT.—Not later than December
5 31, 2029, the Commission shall submit to the
6 Committee on Appropriations and the Com-
7 mittee on Environment and Public Works of the
8 Senate and the Committee on Appropriations
9 and the Committee on Energy and Commerce
10 of the House of Representatives a report de-
11 scribing the views of the Commission on the
12 continued appropriateness and necessity of the
13 funding described in subparagraph (B)(iii).

14 (2) FEES FOR SERVICE OR THING OF VALUE.—
15 In accordance with section 9701 of title 31, United
16 States Code, the Commission shall charge fees to
17 any person who receives a service or thing of value
18 from the Commission to cover the costs to the Com-
19 mission of providing the service or thing of value.

20 (3) ANNUAL FEES.—

21 (A) IN GENERAL.—Subject to subpara-
22 graph (B) and except as provided in subpara-
23 graph (D), the Commission may charge to any
24 licensee or certificate holder of the Commission
25 an annual fee.

1 (B) CAP ON ANNUAL FEES OF CERTAIN LI-
2 CENSEES.—

3 (i) IN GENERAL.—The annual fee
4 under subparagraph (A) charged to an op-
5 erating reactor licensee, to the maximum
6 extent practicable, shall not exceed the an-
7 nual fee amount per operating reactor li-
8 censee established in the final rule of the
9 Commission entitled “Revision of Fee
10 Schedules; Fee Recovery for Fiscal Year
11 2015” (80 Fed. Reg. 37432 (June 30,
12 2015)), as may be adjusted annually by
13 the Commission to reflect changes in the
14 Consumer Price Index published by the
15 Bureau of Labor Statistics of the Depart-
16 ment of Labor.

17 (ii) WAIVER.—The Commission may
18 waive, for a period of 1 year, the cap on
19 annual fees described in clause (i) if the
20 Commission submits to the Committee on
21 Appropriations and the Committee on En-
22 vironment and Public Works of the Senate
23 and the Committee on Appropriations and
24 the Committee on Energy and Commerce
25 of the House of Representatives a written

determination that the cap on annual fees may compromise the safety and security mission of the Commission.

(C) AMOUNT PER LICENSEE.—

(i) IN GENERAL.—The Commission shall establish by rule a schedule of fees fairly and equitably allocating the aggregate amount of charges described in subparagraph (A) among licensees and certificate holders.

(ii) REQUIREMENT.—The schedule of fees under clause (i)—

(I) to the maximum extent practicable, shall be based on the cost of providing regulatory services; and

(II) may be based on the allocation of the resources of the Commission among licensees or certificate holders or classes of licensees or certificate holders.

(D) EXEMPTION.—

(i) DEFINITION OF RESEARCH REACTOR.—In this subparagraph, the term “research reactor” means a nuclear reactor that—

1 (I) is licensed by the Commission
 2 under section 104 c. of the Atomic
 3 Energy Act of 1954 (42 U.S.C.
 4 2134(c)) for operation at a thermal
 5 power level of not more than 10
 6 megawatts; and

7 (II) if licensed under subclause
 8 (I) for operation at a thermal power
 9 level of more than 1 megawatt, does
 10 not contain—

11 (aa) a circulating loop
 12 through the core in which the li-
 13 censee conducts fuel experiments;

14 (bb) a liquid fuel loading; or

15 (cc) an experimental facility
 16 in the core in excess of 16 square
 17 inches in cross-section.

18 (ii) EXEMPTION.—Subparagraph (A)
 19 shall not apply to the holder of any license
 20 for a federally owned research reactor used
 21 primarily for educational training and aca-
 22 demic research purposes.

23 (c) PERFORMANCE AND REPORTING.—

24 (1) IN GENERAL.—Not later than 180 days
 25 after the date of enactment of this Act, the Commis-

1 sion shall develop for the requested activities of the
2 Commission—

3 (A) performance metrics; and

4 (B) on each request, milestone schedules.

5 (2) DELAYS IN ISSUANCE OF FINAL SAFETY
6 EVALUATION.—The Executive Director for Oper-
7 ations of the Commission shall inform the Commis-
8 sion of a delay in issuance of the final safety evalua-
9 tion for a requested activity of the Commission by
10 the completion date required by the performance
11 metrics or milestone schedule under paragraph (1)
12 by not later than 30 days after the completion date.

13 (3) DELAYS IN ISSUANCE OF FINAL SAFETY
14 EVALUATION EXCEEDING 180 DAYS.—If the final
15 safety evaluation for the requested activity of the
16 Commission described in paragraph (2) is not com-
17 pleted by the date that is 180 days after the comple-
18 tion date required by the performance metrics or
19 milestone schedule under paragraph (1), the Com-
20 mission shall submit to the appropriate congres-
21 sional committees a timely report describing the
22 delay, including a detailed explanation accounting
23 for the delay and a plan for timely completion of the
24 final safety evaluation.

1 (d) ACCURATE INVOICING.—With respect to invoices
2 for fees and charges described in subsection (b)(2), the
3 Commission shall—

4 (1) ensure appropriate management review and
5 concurrence prior to the issuance of invoices;

6 (2) develop and implement processes to audit
7 invoices to ensure accuracy, transparency, and fair-
8 ness; and

9 (3) modify regulations to ensure fair and appro-
10 priate processes to provide licensees and applicants
11 an opportunity to efficiently dispute or otherwise
12 seek review and correction of errors in invoices for
13 fees and charges.

14 (e) REPORT.—Not later than September 30, 2021,
15 the Commission shall submit to the Committee on Appro-
16 priations and the Committee on Environment and Public
17 Works of the Senate and the Committee on Appropria-
18 tions and the Committee on Energy and Commerce of the
19 House of Representatives a report describing the imple-
20 mentation of this section, including any impacts and rec-
21 ommendations for improvement.

22 (f) EFFECTIVE DATE.—Except as provided in sub-
23 section (e), this section takes effect on October 1, 2019.

1 **SEC. 103. ADVANCED NUCLEAR REACTOR PROGRAM.**

2 (a) LICENSING OF COMMERCIAL ADVANCED NU-
3 CLEAR REACTORS.—

4 (1) STAGED LICENSING.—For the purpose of
5 predictable, efficient, and timely reviews, not later
6 than 270 days after the date of enactment of this
7 Act, the Commission shall develop and implement,
8 within the existing regulatory framework, strategies
9 for—

10 (A) establishing stages in the licensing
11 process for commercial advanced nuclear reac-
12 tors; and

13 (B) developing procedures and processes
14 for—

15 (i) using a licensing project plan; and

16 (ii) optional use of a conceptual de-
17 sign assessment.

18 (2) RISK-INFORMED LICENSING.—Not later
19 than 2 years after the date of enactment of this Act,
20 the Commission shall develop and implement, where
21 appropriate, strategies for the increased use of risk-
22 informed, performance-based licensing evaluation
23 techniques and guidance for commercial advanced
24 nuclear reactors within existing regulatory frame-
25 works, including evaluation techniques and guidance
26 for the resolution of the following:

1 (A) Applicable policy issues identified dur-
2 ing the course of review by the Commission of
3 a commercial advanced nuclear reactor licensing
4 application.

5 (B) The issues described in SECY-93-092
6 and SECY-15-077, including—

7 (i) licensing basis event selection and
8 evaluation;

9 (ii) source terms;

10 (iii) containment performance; and

11 (iv) emergency preparedness.

12 (3) RESEARCH AND TEST REACTOR LICENS-
13 ING.—For the purpose of predictable, efficient, and
14 timely reviews, not later than 2 years after the date
15 of enactment of this Act, the Commission shall de-
16 velop and implement strategies within the existing
17 regulatory framework for licensing research and test
18 reactors, including the issuance of guidance.

19 (4) TECHNOLOGY-INCLUSIVE REGULATORY
20 FRAMEWORK.—Not later than December 31, 2024,
21 the Commission shall complete a rulemaking to es-
22 tablish a technology-inclusive, regulatory framework
23 for optional use by commercial advanced nuclear re-
24 actor applicants for new reactor license applications.

1 (5) TRAINING AND EXPERTISE.—As soon as
 2 practicable after the date of enactment of this Act,
 3 the Commission shall provide for staff training or
 4 the hiring of experts, as necessary—

5 (A) to support the activities described in
 6 paragraphs (1) through (4); and

7 (B) to support preparations—

8 (i) to conduct pre-application inter-
 9 actions; and

10 (ii) to review commercial advanced nu-
 11 clear reactor license applications.

12 (6) AUTHORIZATION OF APPROPRIATIONS.—

13 There are authorized to be appropriated to the Com-
 14 mission to carry out this subsection such sums as
 15 are necessary.

16 (b) REPORT TO ESTABLISH STAGES IN THE COM-
 17 MERCIAL ADVANCED NUCLEAR REACTOR LICENSING
 18 PROCESS.—

19 (1) REPORT REQUIRED.—Not later than 180
 20 days after the date of enactment of this Act, the
 21 Commission shall submit to the appropriate congres-
 22 sional committees a report for expediting and estab-
 23 lishing stages in the licensing process for commercial
 24 advanced nuclear reactors that will allow implemen-
 25 tation of the licensing process by not later than 2

1 years after the date of enactment of this Act (re-
 2 ferred to in this subsection as the “report”).

3 (2) COORDINATION AND STAKEHOLDER
 4 INPUT.—In developing the report, the Commission
 5 shall seek input from the Secretary, the nuclear en-
 6 ergy industry, a diverse set of technology developers,
 7 and other public stakeholders.

8 (3) COST AND SCHEDULE ESTIMATES.—The re-
 9 port shall include proposed cost estimates, budgets,
 10 and timeframes for implementing strategies to estab-
 11 lish stages in the licensing process for commercial
 12 advanced nuclear reactor technologies.

13 (4) REQUIRED EVALUATIONS.—Consistent with
 14 the role of the Commission in protecting public
 15 health and safety and common defense and security,
 16 the report shall evaluate—

17 (A)(i) the unique aspects of commercial
 18 advanced nuclear reactor licensing, including
 19 the use of alternative coolants, operation at or
 20 near atmospheric pressure, and the use of pas-
 21 sive safety strategies;

22 (ii) strategies for the qualification of ad-
 23 vanced nuclear reactor fuel, including the use of
 24 computer modeling and simulation and experi-
 25 mental validation; and

1 (iii) for the purposes of predictable, effi-
2 cient, and timely reviews, any associated legal,
3 regulatory, and policy issues the Commission
4 should address with regard to the licensing of
5 commercial advanced nuclear reactor tech-
6 nologies;

7 (B) options for licensing commercial ad-
8 vanced nuclear reactors under the regulations
9 of the Commission contained in title 10, Code
10 of Federal Regulations (as in effect on the date
11 of enactment of this Act), including—

12 (i) the development and use under the
13 regulatory framework of the Commission
14 in effect on the date of enactment of this
15 Act of a licensing project plan that could
16 establish—

17 (I) milestones that—

18 (aa) correspond to stages of
19 a licensing process for the spe-
20 cific situation of a commercial
21 advanced nuclear reactor project;
22 and

23 (bb) use knowledge of the
24 ability of the Commission to re-
25 view certain design aspects; and

1 (II) guidelines defining the roles
2 and responsibilities between the Com-
3 mission and the applicant at the onset
4 of the interaction—

5 (aa) to provide the founda-
6 tion for effective communication
7 and effective project manage-
8 ment; and

9 (bb) to ensure efficient
10 progress;

11 (ii) the use of topical reports, stand-
12 ard design approval, and other appropriate
13 mechanisms as tools to introduce stages
14 into the commercial advanced nuclear reac-
15 tor licensing process, including how the li-
16 censing project plan might structure the
17 use of those mechanisms;

18 (iii) collaboration with standards-set-
19 ting organizations to identify specific tech-
20 nical areas for which new or updated
21 standards are needed and providing assist-
22 ance if appropriate to ensure the new or
23 updated standards are developed and final-
24 ized in a timely fashion;

1 (iv) the incorporation of consensus-
2 based codes and standards developed under
3 clause (iii) into the regulatory frame-
4 work—

5 (I) to provide predictability for
6 the regulatory processes of the Com-
7 mission; and

8 (II) to ensure timely completion
9 of specific licensing actions;

10 (v) the development of a process for,
11 and the use of, conceptual design assess-
12 ments; and

13 (vi) identification of any policies and
14 guidance for staff that will be needed to
15 implement clauses (i) and (ii);

16 (C) options for improving the efficiency,
17 timeliness, and cost-effectiveness of licensing re-
18 views of commercial advanced nuclear reactors,
19 including opportunities to minimize the delays
20 that may result from any necessary amendment
21 or supplement to an application;

22 (D) options for improving the predictability
23 of the commercial advanced nuclear reactor li-
24 censing process, including the evaluation of op-
25 portunities to improve the process by which ap-

1 plication review milestones are established and
2 met; and

3 (E) the extent to which Commission action
4 or modification of policy is needed to implement
5 any part of the report.

6 (c) REPORT TO INCREASE THE USE OF RISK-IN-
7 FORMED AND PERFORMANCE-BASED EVALUATION TECH-
8 NIQUEs AND REGULATORY GUIDANCE.—

9 (1) REPORT REQUIRED.—Not later than 180
10 days after the date of enactment of this Act, the
11 Commission shall submit to the appropriate congres-
12 sional committees a report for increasing, where ap-
13 propriate, the use of risk-informed and performance-
14 based evaluation techniques and regulatory guidance
15 in licensing commercial advanced nuclear reactors
16 within the existing regulatory framework (referred to
17 in this subsection as the “report”).

18 (2) COORDINATION AND STAKEHOLDER
19 INPUT.—In developing the report, the Commission
20 shall seek input from the Secretary, the nuclear en-
21 ergy industry, technology developers, and other pub-
22 lic stakeholders.

23 (3) COST AND SCHEDULE ESTIMATE.—The re-
24 port shall include proposed cost estimates, budgets,
25 and timeframes for implementing a strategy to in-

1 crease the use of risk-informed and performance-
2 based evaluation techniques and regulatory guidance
3 in licensing commercial advanced nuclear reactors.

4 (4) REQUIRED EVALUATIONS.—Consistent with
5 the role of the Commission in protecting public
6 health and safety and common defense and security,
7 the report shall evaluate—

8 (A) the ability of the Commission to de-
9 velop and implement, where appropriate, risk-
10 informed and performance-based licensing eval-
11 uation techniques and guidance for commercial
12 advanced nuclear reactors within existing regu-
13 latory frameworks not later than 2 years after
14 the date of enactment of this Act, including
15 policies and guidance for the resolution of—

16 (i) issues relating to—

17 (I) licensing basis event selection
18 and evaluation;

19 (II) use of mechanistic source
20 terms;

21 (III) containment performance;

22 (IV) emergency preparedness;

23 and

24 (V) the qualification of advanced
25 nuclear reactor fuel; and

1 (ii) other policy issues previously iden-
 2 tified; and

3 (B) the extent to which Commission action
 4 is needed to implement any part of the report.

5 (d) REPORT TO PREPARE THE RESEARCH AND TEST
 6 REACTOR LICENSING PROCESS.—

7 (1) REPORT REQUIRED.—Not later than 1 year
 8 after the date of enactment of this Act, the Commis-
 9 sion shall submit to the appropriate congressional
 10 committees a report for preparing the licensing proc-
 11 ess for research and test reactors within the existing
 12 regulatory framework (referred to in this subsection
 13 as the “report”).

14 (2) COORDINATION AND STAKEHOLDER
 15 INPUT.—In developing the report, the Commission
 16 shall seek input from the Secretary, the nuclear en-
 17 ergy industry, a diverse set of technology developers,
 18 and other public stakeholders.

19 (3) COST AND SCHEDULE ESTIMATES.—The re-
 20 port shall include proposed cost estimates, budgets,
 21 and timeframes for preparing the licensing process
 22 for research and test reactors.

23 (4) REQUIRED EVALUATIONS.—Consistent with
 24 the role of the Commission in protecting public

1 health and safety and common defense and security,
 2 the report shall evaluate—

3 (A) the unique aspects of research and test
 4 reactor licensing and any associated legal, regu-
 5 latory, and policy issues the Commission should
 6 address to prepare the licensing process for re-
 7 search and test reactors;

8 (B) the feasibility of developing guidelines
 9 for advanced reactor demonstrations to support
 10 the review process for advanced reactors de-
 11 signs, including designs that use alternative
 12 coolants or alternative fuels, operate at or near
 13 atmospheric pressure, and use passive safety
 14 strategies; and

15 (C) the extent to which Commission action
 16 or modification of policy is needed to implement
 17 any part of the report.

18 (e) REPORT TO COMPLETE A RULEMAKING TO ES-
 19 TABLISH A TECHNOLOGY-INCLUSIVE REGULATORY
 20 FRAMEWORK FOR OPTIONAL USE BY COMMERCIAL AD-
 21 VANCED NUCLEAR REACTOR TECHNOLOGIES IN NEW RE-
 22 ACTOR LICENSE APPLICATIONS AND TO ENHANCE COM-
 23 MISSION EXPERTISE RELATING TO ADVANCED NUCLEAR
 24 REACTOR TECHNOLOGIES.—

1 (1) REPORT REQUIRED.—Not later than 30
2 months after the date of enactment of this Act, the
3 Commission shall submit to the appropriate congressional
4 committees a report (referred to in this subsection
5 as the “report”) for—

6 (A) completing a rulemaking to establish a
7 technology-inclusive regulatory framework for
8 optional use by applicants in licensing commercial
9 advanced nuclear reactor technologies in
10 new reactor license applications; and

11 (B) ensuring that the Commission has adequate
12 expertise, modeling, and simulation capabilities,
13 or access to those capabilities, to support the
14 evaluation of advanced reactor license applications,
15 including the qualification of advanced nuclear reactor
16 fuel.

17 (2) COORDINATION AND STAKEHOLDER
18 INPUT.—In developing the report, the Commission
19 shall seek input from the Secretary, the nuclear energy
20 industry, a diverse set of technology developers,
21 and other public stakeholders.

22 (3) COST AND SCHEDULE ESTIMATE.—The report
23 shall include proposed cost estimates, budgets,
24 and timeframes for developing and implementing a
25 technology-inclusive regulatory framework for licens-

1 ing commercial advanced nuclear reactor tech-
2 nologies, including completion of a rulemaking.

3 (4) REQUIRED EVALUATIONS.—Consistent with
4 the role of the Commission in protecting public
5 health and safety and common defense and security,
6 the report shall evaluate—

7 (A) the ability of the Commission to com-
8 plete a rulemaking to establish a technology-in-
9 clusive regulatory framework for licensing com-
10 mercial advanced nuclear reactor technologies
11 by December 31, 2024;

12 (B) the extent to which additional legisla-
13 tion, or Commission action or modification of
14 policy, is needed to implement any part of the
15 new regulatory framework;

16 (C) the need for additional Commission ex-
17 pertise, modeling, and simulation capabilities,
18 or access to those capabilities, to support the
19 evaluation of licensing applications for commer-
20 cial advanced nuclear reactors and research and
21 test reactors, including applications that use al-
22 ternative coolants or alternative fuels, operate
23 at or near atmospheric pressure, and use pas-
24 sive safety strategies; and

1 (D) the budgets and timeframes for ac-
 2 quiring or accessing the necessary expertise to
 3 support the evaluation of license applications
 4 for commercial advanced nuclear reactors and
 5 research and test reactors.

6 **SEC. 104. ADVANCED NUCLEAR ENERGY LICENSING COST-**
 7 **SHARE GRANT PROGRAM.**

8 (a) ESTABLISHMENT.—The Secretary shall establish
 9 a grant program to be known as the “Advanced Nuclear
 10 Energy Cost-Share Grant Program” (referred to in this
 11 section as the “program”), under which the Secretary
 12 shall make cost-share grants to applicants for the purpose
 13 of funding a portion of the Commission fees of the appli-
 14 cant for pre-application and application review activities.

15 (b) REQUIREMENT.—The Secretary shall seek out
 16 technology diversity in making grants under the program.

17 (c) COST-SHARE AMOUNT.—The Secretary shall de-
 18 termine the cost-share amount for each grant.

19 (d) USE OF FUNDS.—Recipients of grants under the
 20 program may use the grant funds to cover Commission
 21 fees, including those fees associated with—

- 22 (1) developing a licensing project plan;
- 23 (2) obtaining a conceptual design assessment;
- 24 (3) reviewing topical reports; and

1 (4) other pre-application and application review
2 activities and interactions with the Commission.

3 (e) AUTHORIZATION OF APPROPRIATIONS.—There
4 are authorized to be appropriated to the Secretary to carry
5 out this section such sums as are necessary.

6 **SEC. 105. BAFFLE-FORMER BOLT GUIDANCE.**

7 (a) REVISIONS TO GUIDANCE.—Not later than Sep-
8 tember 30, 2017, the Commission shall publish any nec-
9 essary revisions to the guidance on the baseline examina-
10 tion schedule and subsequent examination frequency for
11 baffle-former bolts in pressurized water reactors with
12 down-flow configurations.

13 (b) REPORT.—Not later than September 30, 2017,
14 the Commission shall submit to the appropriate congres-
15 sional committees—

16 (1) a report explaining any revisions made to
17 the guidance described in subsection (a); or

18 (2) if no revisions were made, a report explain-
19 ing why the guidance, as in effect on the date of
20 submission of the report, is sufficient.

21 **SEC. 106. EVACUATION REPORT.**

22 (a) IN GENERAL.—Not later than 90 days after the
23 date of enactment of this Act, the Commission shall sub-
24 mit to the appropriate congressional committees a report
25 describing the actions the Commission has taken, or plans

1 to take, to consider lessons learned since September 11,
 2 2001, Superstorm Sandy, Fukushima, and other recent
 3 natural disasters regarding directed or spontaneous evacu-
 4 ations in densely populated urban and suburban areas.

5 (b) INCLUSIONS.—The report under subsection (a)
 6 shall—

7 (1) describe the actions of the Commission—

8 (A) to consider the results from—

9 (i) the State-of-the-Art Reactor Con-
 10 sequence Analyses project; and

11 (ii) the current examination by the
 12 Commission of emergency planning zones
 13 for small modular reactors and advanced
 14 nuclear reactors; and

15 (B) to monitor international reviews, in-
 16 cluding reviews conducted by—

17 (i) the United Nations Scientific Com-
 18 mittee on the Effects of Atomic Radiation;

19 (ii) the World Health Organization;
 20 and

21 (iii) the Fukushima Health Manage-
 22 ment Survey; and

23 (2) with respect to a disaster similar to a dis-
 24 aster described in subsection (a), include information
 25 about—

1 (A) potential shadow evacuations in re-
 2 sponse to the disaster; and

3 (B) what levels of self-evacuation should be
 4 expected during the disaster, including outside
 5 the 10-mile evacuation zone.

6 (c) CONSULTATION REQUIRED.—The report under
 7 subsection (a) shall be prepared after consultation with—

8 (1) the Federal Radiological Preparedness Co-
 9 ordinating Committee;

10 (2) State emergency planning officials from
 11 States that the Commission determines to be rel-
 12 evant to the report; and

13 (3) experts in analyzing human behavior and
 14 probable responses to a radiological emission event.

15 **TITLE II—URANIUM**

16 **SEC. 201. URANIUM RECOVERY REPORT.**

17 Not later than December 31, 2017, the Commission
 18 shall submit to the appropriate congressional committees
 19 a report describing—

20 (1) the safety and feasibility of extending the
 21 duration of uranium recovery licenses from 10 to 20
 22 years, including any potential benefits of the exten-
 23 sion;

24 (2) the duration of uranium recovery license
 25 issuance and amendment reviews; and

1 (3) recommendations to improve efficiency and
 2 transparency of uranium recovery license issuance
 3 and amendment reviews.

4 **SEC. 202. PILOT PROGRAM FOR URANIUM RECOVERY FEES.**

5 Not later than July 31, 2018, the Commission
 6 shall—

7 (1) complete a voluntary pilot initiative to de-
 8 termine the feasibility of the establishment of a flat
 9 fee structure for routine licensing matters relating to
 10 uranium recovery; and

11 (2) provide to the appropriate congressional
 12 committees a report describing the results of the
 13 pilot initiative under paragraph (1).

14 **SEC. 203. URANIUM TRANSFERS AND SALES.**

15 Section 3112 of the USEC Privatization Act (42
 16 U.S.C. 2297h–10) is amended—

17 (1) by redesignating subsections (b) through (f)
 18 as subsections (d) through (h), respectively;

19 (2) by striking subsection (a) and inserting the
 20 following:

21 “(a) DEFINITIONS.—In this section:

22 “(1) DEPLETED URANIUM.—The term ‘depleted
 23 uranium’ means uranium having an assay less than
 24 the assay for—

25 “(A) natural uranium; or

1 “(B) 0.711 percent of the uranium-235
2 isotope.

3 “(2) HIGHLY ENRICHED URANIUM.—The term
4 ‘highly enriched uranium’ means uranium having an
5 assay of 20 percent or greater of the uranium-235
6 isotope.

7 “(3) LOW-ENRICHED URANIUM.—The term
8 ‘low-enriched uranium’ means uranium having an
9 assay greater than 0.711 percent but less than 20
10 percent of the uranium-235 isotope.

11 “(4) METRIC TON OF URANIUM.—The term
12 ‘metric ton of uranium’ means 1,000 kilograms of
13 uranium.

14 “(5) NATURAL URANIUM.—The term ‘natural
15 uranium’ means uranium having an assay of 0.711
16 percent of the uranium-235 isotope.

17 “(6) OFF-SPEC URANIUM.—The term ‘off-spec
18 uranium’ means uranium in any form, including de-
19 pleted uranium, highly enriched uranium, low-en-
20 riched uranium, natural uranium, UF₆, and any by-
21 product of uranium processing, that does not meet
22 the specification for commercial material (as defined
23 by the standards of the American Society for Test-
24 ing and Materials).

1 “(7) URANIUM.—Other than in subsection (c),
2 the term ‘uranium’ includes natural uranium, ura-
3 nium hexafluoride, highly enriched uranium, low-en-
4 riched uranium, depleted uranium, and any byprod-
5 uct of uranium processing.

6 “(8) URANIUM HEXAFLUORIDE; UF₆.—The
7 terms ‘uranium hexafluoride’ and ‘UF₆’ mean ura-
8 nium that has been combined with fluorine, to form
9 a compound that, dependent on temperature and
10 pressure, can be a solid, liquid, or gas.

11 “(b) TRANSFERS AND SALES BY THE SECRETARY.—
12 The Secretary shall not provide enrichment services, or
13 transfer, sell or otherwise provide any uranium to any per-
14 son except in accordance with this section.

15 “(c) DEVELOPMENT OF FEDERAL EXCESS URANIUM
16 MANAGEMENT PLAN.—

17 “(1) IN GENERAL.—Beginning on January 1,
18 2018, and not less frequently than once every 10
19 years thereafter, the Secretary shall issue a long-
20 term Federal excess uranium inventory management
21 plan (referred to in this section as the ‘plan’) that
22 details the management of the excess uranium inven-
23 tories of the Department of Energy and covers a pe-
24 riod of not fewer than 10 years.

25 “(2) CONTENT.—

1 “(A) IN GENERAL.—The plan shall cover
2 all forms of uranium within the excess uranium
3 inventory of the Department of Energy, includ-
4 ing depleted uranium, highly enriched uranium,
5 low-enriched uranium, natural uranium, off-
6 spec uranium, and UF₆.

7 “(B) REDUCING IMPACT ON DOMESTIC IN-
8 DUSTRY.—The plan shall outline steps the Sec-
9 retary will take to minimize the impact of
10 transferring, selling, or otherwise providing ura-
11 nium on the domestic uranium mining, conver-
12 sion, and enrichment industries, including any
13 actions for which the Secretary would require
14 new authority.

15 “(C) MAXIMIZING BENEFITS TO THE FED-
16 ERAL GOVERNMENT.—The plan shall outline
17 steps the Secretary shall take to ensure that the
18 Federal Government maximizes the potential
19 value of uranium for the Federal Government.

20 “(3) PROPOSED PLAN.—Before issuing the final
21 plan, the Secretary shall publish a proposed plan in
22 the Federal Register pursuant to a rulemaking
23 under section 553 of title 5, United States Code.

24 “(4) DEADLINES FOR SUBMISSION.—The Sec-
25 retary shall issue—

1 “(A) a proposed plan for public comment
 2 under paragraph (3) not later than 180 days
 3 after the date of enactment of this paragraph;
 4 and

5 “(B) a final plan not later than 1 year
 6 after the date of enactment of this paragraph.”;

7 (3) in subsection (d) (as redesignated by para-
 8 graph (1))—

9 (A) in the sixth sentence of paragraph (3),
 10 by striking “subsections (b)(5), (b)(6) and
 11 (b)(7) of this section” and inserting “para-
 12 graphs (5), (6), and (7)”;

13 (B) in paragraph (8), by striking “(b)”;
 14 (4) in subsection (e)(1) (as redesignated by
 15 paragraph (1)), by striking “subsection (c)(2)” and
 16 inserting “paragraph (2)”;

17 (5) in subsection (f) (as redesignated by para-
 18 graph (1))—

19 (A) by striking paragraph (1) and insert-
 20 ing the following:

21 “(1) IN GENERAL.—Notwithstanding the trans-
 22 fers authorized under subsections (e) and (g), the
 23 Secretary may transfer, sell, or otherwise provide
 24 any uranium from the stockpile of the Department
 25 of Energy, subject to the following limitations:

1 “(A) Effective for the period of calendar
2 years 2017 through 2025, and notwithstanding
3 any other provision of law, the Secretary shall
4 not transfer, sell, or otherwise provide more
5 than 2,100 metric tons of natural uranium
6 equivalent annually in any form, including de-
7 pleted uranium, highly enriched uranium, low-
8 enriched uranium, natural uranium, off-spec
9 uranium, and UF6.

10 “(B) Effective beginning on January 1,
11 2026, and notwithstanding any other provision
12 of law, the Secretary shall not transfer, sell, or
13 otherwise provide more than 2,700 metric tons
14 of natural uranium equivalent annually in any
15 form, including depleted uranium, highly en-
16 riched uranium, low-enriched uranium, natural
17 uranium, off-spec uranium, and UF6.”;

18 (B) in paragraph (2), in the matter pre-
19 ceding subparagraph (A), by striking “(2) Ex-
20 cept as provided in subsections (b), (c), and
21 (e)” and inserting the following:

22 “(2) DETERMINATIONS.—Except as provided in
23 subsections (d), (e), and (g), and subject to para-
24 graph (3)”;

25 (C) by adding at the end the following:

1 “(3) REQUIREMENTS FOR DETERMINATIONS.—

2 “(A) PROPOSED DETERMINATION.—Before
3 making a determination under paragraph
4 (2)(B), the Secretary shall publish a proposed
5 determination in the Federal Register pursuant
6 to a rulemaking under section 553 of title 5,
7 United States Code.

8 “(B) QUALITY OF MARKET ANALYSIS.—
9 Any market analysis that is prepared by the
10 Department of Energy, or that the Department
11 of Energy commissions for the Secretary as
12 part of the determination process under para-
13 graph (2)(B), shall be subject to a peer review
14 process consistent with the guidelines of the Of-
15 fice of Management and Budget published at
16 67 Fed. Reg. 8452–8460 (February 22, 2002)
17 (or successor guidelines), to ensure and maxi-
18 mize the quality, objectivity, utility, and integ-
19 rity of information disseminated by Federal
20 agencies.

21 “(C) WAIVER OF SECRETARIAL DETER-
22 MINATION.—Beginning on January 1, 2023, the
23 requirement for a determination by the Sec-
24 retary under paragraph (2)(B) shall be waived
25 for transferring, selling, or otherwise providing

1 uranium by the Secretary if the uranium has
2 been identified in the updated long-term Fed-
3 eral excess uranium inventory management plan
4 under subsection (c)(1).”; and
5 (6) in subsection (g) (as redesignated by para-
6 graph (1)), in the matter preceding paragraph (1),
7 by striking “(d)(2)” and inserting “(f)(2)”.

○