

115TH CONGRESS
2D SESSION

S. 512

AN ACT

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,*

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

2 (a) SHORT TITLE.—This Act may be cited as the
3 “Nuclear Energy Innovation and Modernization Act”.

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

Sec. 1. Short title; table of contents.

Sec. 2. Purpose.

Sec. 3. Definitions.

TITLE I—ADVANCED NUCLEAR REACTORS AND USER FEES

Sec. 101. Nuclear Regulatory Commission user fees and annual charges
through fiscal year 2020.

Sec. 102. Nuclear Regulatory Commission user fees and annual charges for fis-
cal year 2021 and each fiscal year thereafter.

Sec. 103. Advanced nuclear reactor program.

Sec. 104. Baffle-former bolt guidance.

Sec. 105. Evacuation report.

Sec. 106. Encouraging private investment in research and test reactors.

Sec. 107. Commission report on accident tolerant fuel.

Sec. 108. Report identifying best practices for establishment and operation of
local community advisory boards.

Sec. 109. Report on study recommendations.

TITLE II—URANIUM

Sec. 201. Uranium recovery report.

Sec. 202. Pilot program for uranium recovery fees.

6 **SEC. 2. PURPOSE.**

7 The purpose of this Act is to provide—

- 8 (1) a program to develop the expertise and reg-
9 ulatory processes necessary to allow innovation and
10 the commercialization of advanced nuclear reactors;
11 (2) a revised fee recovery structure to ensure
12 the availability of resources to meet industry needs
13 without burdening existing licensees unfairly for in-
14 accurate workload projections or premature existing
15 reactor closures; and

1 (3) more efficient regulation of uranium recov-
 2 ery.

3 **SEC. 3. DEFINITIONS.**

4 In this Act:

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

- 14 (A) additional inherent safety features;
- 15 (B) significantly lower levelized cost of
- 16 electricity;
- 17 (C) lower waste yields;
- 18 (D) greater fuel utilization;
- 19 (E) enhanced reliability;
- 20 (F) increased proliferation resistance;
- 21 (G) increased thermal efficiency; or
- 22 (H) ability to integrate into electric and
- 23 nonelectric applications.

24 (2) **ADVANCED NUCLEAR REACTOR FUEL.**—The
 25 term “advanced nuclear reactor fuel” means fuel for

1 use in an advanced nuclear reactor or a research
2 and test reactor, including fuel with a low uranium
3 enrichment level of not greater than 20 percent.

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

9 (4) APPROPRIATE CONGRESSIONAL COMMIT-
10 TEES.—The term “appropriate congressional com-
11 mittees” means the Committee on Environment and
12 Public Works of the Senate and the Committee on
13 Energy and Commerce of the House of Representa-
14 tives.

15 (5) COMMISSION.—The term “Commission”
16 means the Nuclear Regulatory Commission.

17 (6) CONCEPTUAL DESIGN ASSESSMENT.—The
18 term “conceptual design assessment” means an
19 early-stage review by the Commission that—

20 (A) assesses preliminary design informa-
21 tion for consistency with applicable regulatory
22 requirements of the Commission;

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

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

3 (7) CORPORATE SUPPORT COSTS.—The term
4 “corporate support costs” means expenditures for
5 acquisitions, administrative services, financial man-
6 agement, human resource management, information
7 management, information technology, policy support,
8 outreach, and training, as those categories are de-
9 scribed and calculated in Appendix A of the Con-
10 gressional Budget Justification for Fiscal Year 2018
11 of the Commission.

12 (8) LICENSING PROJECT PLAN.—The term “li-
13 censing project plan” means a plan that describes—

14 (A) the interactions between an applicant
15 and the Commission; and

16 (B) project schedules and deliverables in
17 specific detail to support long-range resource
18 planning undertaken by the Commission and an
19 applicant.

20 (9) REGULATORY FRAMEWORK.—The term
21 “regulatory framework” means the framework for
22 reviewing requests for certifications, permits, ap-
23 provals, and licenses for nuclear reactors.

1 (10) REQUESTED ACTIVITY OF THE COMMIS-
2 SION.—The term “requested activity of the Commis-
3 sion” means—

4 (A) the processing of applications for—

5 (i) design certifications or approvals;

6 (ii) licenses;

7 (iii) permits;

8 (iv) license amendments;

9 (v) license renewals;

10 (vi) certificates of compliance; and

11 (vii) power uprates; and

12 (B) any other activity requested by a li-
13 censee or applicant.

14 (11) RESEARCH AND TEST REACTOR.—

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

17 (i) falls within the licensing and re-
18 lated regulatory authority of the Commis-
19 sion under section 202 of the Energy Reor-
20 ganization Act of 1974 (42 U.S.C. 5842);
21 and

22 (ii) is useful in the conduct of re-
23 search and development activities as li-
24 censed under section 104 c. of the Atomic
25 Energy Act (42 U.S.C. 2134(c)).

1 (B) EXCLUSION.—The term “research and
2 test reactor” does not include a commercial nu-
3 clear reactor.

4 (12) SECRETARY.—The term “Secretary”
5 means the Secretary of Energy.

6 (13) STANDARD DESIGN APPROVAL.—The term
7 “standard design approval” means the approval of a
8 final standard design or a major portion of a final
9 design standard as described in subpart E of part
10 52 of title 10, Code of Federal Regulations (as in ef-
11 fect on the date of enactment of this Act).

12 (14) TECHNOLOGY-INCLUSIVE REGULATORY
13 FRAMEWORK.—The term “technology-inclusive regu-
14 latory framework” means a regulatory framework
15 developed using methods of evaluation that are flexi-
16 ble and practicable for application to a variety of re-
17 actor technologies, including, where appropriate, the
18 use of risk-informed and performance-based tech-
19 niques and other tools and methods.

20 (15) TOPICAL REPORT.—The term “topical re-
21 port” means a document submitted to the Commis-
22 sion that addresses a technical topic related to nu-
23 clear reactor safety or design.

1 **TITLE I—ADVANCED NUCLEAR**
2 **REACTORS AND USER FEES**

3 **SEC. 101. NUCLEAR REGULATORY COMMISSION USER FEES**
4 **AND ANNUAL CHARGES THROUGH FISCAL**
5 **YEAR 2020.**

6 (a) IN GENERAL.—Section 6101(c)(2)(A) of the Om-
7 nibus Budget Reconciliation Act of 1990 (42 U.S.C.
8 2214(c)(2)(A)) is amended—

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

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

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

13 “(v) amounts appropriated to the
14 Commission for the fiscal year for activi-
15 ties related to the development of regu-
16 latory infrastructure for advanced nuclear
17 reactor technologies, including activities re-
18 quired under section 103 of the Nuclear
19 Energy Innovation and Modernization
20 Act.”.

21 (b) REPEAL.—Effective October 1, 2020, section
22 6101 of the Omnibus Budget Reconciliation Act of 1990
23 (42 U.S.C. 2214) is repealed.

1 **SEC. 102. NUCLEAR REGULATORY COMMISSION USER FEES**
2 **AND ANNUAL CHARGES FOR FISCAL YEAR**
3 **2021 AND EACH FISCAL YEAR THEREAFTER.**

4 (a) ANNUAL BUDGET JUSTIFICATION.—

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

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

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

23 (A) 30 percent for each of fiscal years
24 2021 and 2022.

25 (B) 29 percent for each of fiscal years
26 2023 and 2024.

1 (C) 28 percent for fiscal year 2025 and
 2 each fiscal year thereafter.

3 (b) FEES AND CHARGES.—

4 (1) ANNUAL ASSESSMENT.—

5 (A) IN GENERAL.—Each fiscal year, the
 6 Commission shall assess and collect fees and
 7 charges in accordance with paragraphs (2) and
 8 (3) in a manner that ensures that, to the max-
 9 imum extent practicable, the amount assessed
 10 and collected is equal to an amount that ap-
 11 proximates—

12 (i) the total budget authority of the
 13 Commission for that fiscal year; less

14 (ii) the budget authority of the Com-
 15 mission for the activities described in sub-
 16 paragraph (B).

17 (B) EXCLUDED ACTIVITIES DESCRIBED.—

18 The activities referred to in subparagraph
 19 (A)(ii) are the following:

20 (i) Any fee relief activity, as identified
 21 by the Commission.

22 (ii) Amounts appropriated for a fiscal
 23 year to the Commission—

24 (I) from the Nuclear Waste Fund
 25 established under section 302(c) of

1 the Nuclear Waste Policy Act of 1982
2 (42 U.S.C. 10222(c));

3 (II) for implementation of section
4 3116 of the Ronald W. Reagan Na-
5 tional Defense Authorization Act for
6 Fiscal Year 2005 (50 U.S.C. 2601
7 note; Public Law 108–375);

8 (III) for the homeland security
9 activities of the Commission (other
10 than for the costs of fingerprinting
11 and background checks required
12 under section 149 of the Atomic En-
13 ergy Act of 1954 (42 U.S.C. 2169)
14 and the costs of conducting security
15 inspections);

16 (IV) for the Inspector General
17 services of the Commission provided
18 to the Defense Nuclear Facilities
19 Safety Board;

20 (V) for research and development
21 at universities in areas relevant to the
22 mission of the Commission; and

23 (VI) for a nuclear science and en-
24 gineering grant program that will sup-
25 port multiyear projects that do not

1 align with programmatic missions but
2 are critical to maintaining the dis-
3 cipline of nuclear science and engi-
4 neering.

5 (iii) Costs for activities related to the
6 development of regulatory infrastructure
7 for advanced nuclear reactor technologies,
8 including activities required under section
9 103.

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

13 (D) REPORT.—Not later than December
14 31, 2029, the Commission shall submit to the
15 Committee on Appropriations and the Com-
16 mittee on Environment and Public Works of the
17 Senate and the Committee on Appropriations
18 and the Committee on Energy and Commerce
19 of the House of Representatives a report de-
20 scribing the views of the Commission on the
21 continued appropriateness and necessity of the
22 funding described in subparagraph (B)(iii).

23 (2) FEES FOR SERVICE OR THING OF VALUE.—
24 In accordance with section 9701 of title 31, United
25 States Code, the Commission shall assess and collect

1 fees from any person who receives a service or thing
2 of value from the Commission to cover the costs to
3 the Commission of providing the service or thing of
4 value.

5 (3) ANNUAL CHARGES.—

6 (A) IN GENERAL.—Subject to subpara-
7 graph (B) and except as provided in subpara-
8 graph (D), the Commission may charge to any
9 licensee or certificate holder of the Commission
10 an annual charge in addition to the fees as-
11 sessed and collected under paragraph (2).

12 (B) CAP ON ANNUAL CHARGES OF CER-
13 TAIN LICENSEES.—

14 (i) OPERATING REACTORS.—The an-
15 nual charge under subparagraph (A)
16 charged to an operating reactor licensee, to
17 the maximum extent practicable, shall not
18 exceed the annual fee amount per oper-
19 ating reactor licensee established in the
20 final rule of the Commission entitled “Re-
21 vision of Fee Schedules; Fee Recovery for
22 Fiscal Year 2015” (80 Fed. Reg. 37432
23 (June 30, 2015)), as may be adjusted an-
24 nually by the Commission to reflect
25 changes in the Consumer Price Index pub-

lished by the Bureau of Labor Statistics of
the Department of Labor.

(ii) WAIVER.—The Commission may
waive, for a period of 1 year, the cap on
annual charges described in clause (i) if
the Commission submits to the Committee
on Appropriations and the Committee on
Environment and Public Works of the Sen-
ate and the Committee on Appropriations
and the Committee on Energy and Com-
merce of the House of Representatives a
written determination that the cap on an-
nual charges 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 annual
charges fairly and equitably allocating the
aggregate amount of charges described in
subparagraph (A) among licensees and cer-
tificate holders.

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

(I) to the maximum extent prac-
ticable, shall be reasonably related to

1 the cost of providing regulatory serv-
 2 ices; and

3 (II) may be based on the alloca-
 4 tion of the resources of the Commis-
 5 sion among licensees or certificate
 6 holders or classes of licensees or cer-
 7 tificate holders.

8 (D) EXEMPTION.—

9 (i) DEFINITION OF RESEARCH REAC-
 10 TOR.—In this subparagraph, the term “re-
 11 search reactor” means a nuclear reactor
 12 that—

13 (I) is licensed by the Commission
 14 under section 104 c. of the Atomic
 15 Energy Act of 1954 (42 U.S.C.
 16 2134(c)) for operation at a thermal
 17 power level of not more than 10
 18 megawatts; and

19 (II) if licensed under subclause
 20 (I) for operation at a thermal power
 21 level of more than 1 megawatt, does
 22 not contain—

23 (aa) a circulating loop
 24 through the core in which the li-
 25 censee conducts fuel experiments;

1 (bb) a liquid fuel loading; or
2 (cc) an experimental facility
3 in the core in excess of 16 square
4 inches in cross-section.

5 (ii) EXEMPTION.—Subparagraph (A)
6 shall not apply to the holder of any license
7 for a federally owned research reactor used
8 primarily for educational training and aca-
9 demic research purposes.

10 (c) PERFORMANCE AND REPORTING.—

11 (1) IN GENERAL.—Not later than 180 days
12 after the date of enactment of this Act, the Commis-
13 sion shall develop for the requested activities of the
14 Commission—

15 (A) performance metrics; and

16 (B) milestone schedules.

17 (2) DELAYS IN ISSUANCE OF FINAL SAFETY
18 EVALUATION.—The Executive Director for Oper-
19 ations of the Commission shall inform the Commis-
20 sion of a delay in issuance of the final safety evalua-
21 tion for a requested activity of the Commission by
22 the completion date required by the performance
23 metrics or milestone schedule under paragraph (1)
24 by not later than 30 days after the completion date.

1 (3) DELAYS IN ISSUANCE OF FINAL SAFETY
2 EVALUATION EXCEEDING 180 DAYS.—If the final
3 safety evaluation for the requested activity of the
4 Commission described in paragraph (2) is not com-
5 pleted by the date that is 180 days after the comple-
6 tion date required by the performance metrics or
7 milestone schedule under paragraph (1), the Com-
8 mission shall submit to the appropriate congres-
9 sional committees a timely report describing the
10 delay, including a detailed explanation accounting
11 for the delay and a plan for timely completion of the
12 final safety evaluation.

13 (d) ACCURATE INVOICING.—With respect to invoices
14 for fees described in subsection (b)(2), the Commission
15 shall—

16 (1) ensure appropriate review and approval
17 prior to the issuance of invoices;

18 (2) develop and implement processes to audit
19 invoices to ensure accuracy, transparency, and fair-
20 ness; and

21 (3) modify regulations to ensure fair and appro-
22 priate processes to provide licensees and applicants
23 an opportunity to efficiently dispute or otherwise
24 seek review and correction of errors in invoices for
25 those fees.

1 (e) REPORT.—Not later than September 30, 2021,
 2 the Commission shall submit to the Committee on Appro-
 3 priations and the Committee on Environment and Public
 4 Works of the Senate and the Committee on Appropria-
 5 tions and the Committee on Energy and Commerce of the
 6 House of Representatives a report describing the imple-
 7 mentation of this section, including any impacts and rec-
 8 ommendations for improvement.

9 (f) EFFECTIVE DATE.—Except as provided in sub-
 10 section (c), this section takes effect on October 1, 2020.

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

12 (a) LICENSING.—

13 (1) STAGED LICENSING.—For the purpose of
 14 predictable, efficient, and timely reviews, not later
 15 than 270 days after the date of enactment of this
 16 Act, the Commission shall develop and implement,
 17 within the existing regulatory framework, strategies
 18 for—

19 (A) establishing stages in the licensing
 20 process for commercial advanced nuclear reac-
 21 tors; and

22 (B) developing procedures and processes
 23 for—

24 (i) using a licensing project plan; and

1 (ii) optional use of a conceptual de-
2 sign assessment.

3 (2) RISK-INFORMED LICENSING.—Not later
4 than 2 years after the date of enactment of this Act,
5 the Commission shall develop and implement, where
6 appropriate, strategies for the increased use of risk-
7 informed, performance-based licensing evaluation
8 techniques and guidance for commercial advanced
9 nuclear reactors within the existing regulatory
10 framework, including evaluation techniques and
11 guidance for the resolution of the following:

12 (A) Applicable policy issues identified dur-
13 ing the course of review by the Commission of
14 a commercial advanced nuclear reactor licensing
15 application.

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

18 (i) licensing basis event selection and
19 evaluation;

20 (ii) source terms;

21 (iii) containment performance; and

22 (iv) emergency preparedness.

23 (3) RESEARCH AND TEST REACTOR LICENS-
24 ING.—For the purpose of predictable, efficient, and
25 timely reviews, not later than 2 years after the date

1 of enactment of this Act, the Commission shall de-
2 velop and implement strategies within the existing
3 regulatory framework for licensing research and test
4 reactors, including the issuance of guidance.

5 (4) TECHNOLOGY-INCLUSIVE REGULATORY
6 FRAMEWORK.—Not later than December 31, 2027,
7 the Commission shall complete a rulemaking to es-
8 tablish a technology-inclusive, regulatory framework
9 for optional use by commercial advanced nuclear re-
10 actor applicants for new reactor license applications.

11 (5) TRAINING AND EXPERTISE.—As soon as
12 practicable after the date of enactment of this Act,
13 the Commission shall provide for staff training or
14 the hiring of experts, as necessary—

15 (A) to support the activities described in
16 paragraphs (1) through (4); and

17 (B) to support preparations—

18 (i) to conduct pre-application inter-
19 actions; and

20 (ii) to review commercial advanced nu-
21 clear reactor license applications.

22 (6) AUTHORIZATION OF APPROPRIATIONS.—
23 There is authorized to be appropriated to the Com-
24 mission to carry out this subsection \$14,420,000 for
25 each of fiscal years 2020 through 2024.

1 (b) REPORT TO ESTABLISH STAGES IN THE COM-
2 MERCIAL ADVANCED NUCLEAR REACTOR LICENSING
3 PROCESS.—

4 (1) REPORT REQUIRED.—Not later than 180
5 days after the date of enactment of this Act, the
6 Commission shall submit to the appropriate congres-
7 sional committees a report for expediting and estab-
8 lishing stages in the licensing process for commercial
9 advanced nuclear reactors that will allow implemen-
10 tation of the licensing process by not later than 2
11 years after the date of enactment of this Act (re-
12 ferred to in this subsection as the “report”).

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

18 (3) COST AND SCHEDULE ESTIMATES.—The re-
19 port shall include proposed cost estimates, budgets,
20 and timeframes for implementing strategies to estab-
21 lish stages in the licensing process for commercial
22 advanced nuclear reactor technologies.

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)(i) the unique aspects of commercial
4 advanced nuclear reactor licensing, including
5 the use of alternative coolants, operation at or
6 near atmospheric pressure, and the use of pas-
7 sive safety strategies;

8 (ii) strategies for the qualification of ad-
9 vanced nuclear reactor fuel, including the use of
10 computer modeling and simulation and experi-
11 mental validation; and

12 (iii) for the purposes of predictable, effi-
13 cient, and timely reviews, any associated legal,
14 regulatory, and policy issues the Commission
15 should address with regard to the licensing of
16 commercial advanced nuclear reactor tech-
17 nologies;

18 (B) options for licensing commercial ad-
19 vanced nuclear reactors under the regulations
20 of the Commission contained in title 10, Code
21 of Federal Regulations (as in effect on the date
22 of enactment of this Act), including—

23 (i) the development and use under the
24 regulatory framework of the Commission
25 in effect on the date of enactment of this

1 Act of a licensing project plan that could
2 establish—

3 (I) milestones that—

4 (aa) correspond to stages of
5 a licensing process for the spe-
6 cific situation of a commercial
7 advanced nuclear reactor project;
8 and

9 (bb) use knowledge of the
10 ability of the Commission to re-
11 view certain design aspects; and

12 (II) guidelines defining the roles
13 and responsibilities between the Com-
14 mission and the applicant at the onset
15 of the interaction—

16 (aa) to provide the founda-
17 tion for effective communication
18 and effective project manage-
19 ment; and

20 (bb) to ensure efficient
21 progress;

22 (ii) the use of topical reports, stand-
23 ard design approval, and other appropriate
24 mechanisms as tools to introduce stages
25 into the commercial advanced nuclear reac-

tor licensing process, including how the licensing project plan might structure the use of those mechanisms;

(iii) collaboration with standards-setting organizations to identify specific technical areas for which new or updated standards are needed and providing assistance if appropriate to ensure the new or updated standards are developed and finalized in a timely fashion;

(iv) the incorporation of consensus-based codes and standards developed under clause (iii) into the regulatory framework—

(I) to provide predictability for the regulatory processes of the Commission; and

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

(v) the development of a process for, and the use of, conceptual design assessments; and

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

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

(D) options for improving the predictability of the commercial advanced nuclear reactor licensing process, including the evaluation of opportunities to improve the process by which application review milestones are established and met; and

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

(c) REPORT TO INCREASE THE USE OF RISK-INFORMED AND PERFORMANCE-BASED EVALUATION TECHNIQUES AND REGULATORY GUIDANCE.—

(1) REPORT REQUIRED.—Not later than 180 days after the date of enactment of this Act, the Commission shall submit to the appropriate congressional committees a report for increasing, where appropriate, the use of risk-informed and performance-based evaluation techniques and regulatory guidance in licensing commercial advanced nuclear reactors

1 within the existing regulatory framework (referred to
2 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, technology developers, and other pub-
7 lic stakeholders.

8 (3) COST AND SCHEDULE ESTIMATE.—The re-
9 port shall include proposed cost estimates, budgets,
10 and timeframes for implementing a strategy to in-
11 crease the use of risk-informed and performance-
12 based evaluation techniques and regulatory guidance
13 in licensing commercial advanced nuclear reactors.

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

18 (A) the ability of the Commission to de-
19 velop and implement, where appropriate, risk-
20 informed and performance-based licensing eval-
21 uation techniques and guidance for commercial
22 advanced nuclear reactors within existing regu-
23 latory frameworks not later than 2 years after
24 the date of enactment of this Act, including
25 policies and guidance for the resolution of—

- 1 (i) issues relating to—
 2 (I) licensing basis event selection
 3 and evaluation;
 4 (II) use of mechanistic source
 5 terms;
 6 (III) containment performance;
 7 (IV) emergency preparedness;
 8 and
 9 (V) the qualification of advanced
 10 nuclear reactor fuel; and
 11 (ii) other policy issues previously iden-
 12 tified; and
 13 (B) the extent to which Commission action
 14 is needed to implement any part of the report.
- 15 (d) REPORT TO PREPARE THE RESEARCH AND TEST
 16 REACTOR LICENSING PROCESS.—
 17 (1) REPORT REQUIRED.—Not later than 1 year
 18 after the date of enactment of this Act, the Commis-
 19 sion shall submit to the appropriate congressional
 20 committees a report for preparing the licensing proc-
 21 ess for research and test reactors within the existing
 22 regulatory framework (referred to in this subsection
 23 as the “report”).
- 24 (2) COORDINATION AND STAKEHOLDER
 25 INPUT.—In developing the report, the Commission

1 shall seek input from the Secretary, the nuclear en-
2 ergy industry, a diverse set of technology developers,
3 and other public stakeholders.

4 (3) COST AND SCHEDULE ESTIMATES.—The re-
5 port shall include proposed cost estimates, budgets,
6 and timeframes for preparing the licensing process
7 for research and test reactors.

8 (4) REQUIRED EVALUATIONS.—Consistent with
9 the role of the Commission in protecting public
10 health and safety and common defense and security,
11 the report shall evaluate—

12 (A) the unique aspects of research and test
13 reactor licensing and any associated legal, regu-
14 latory, and policy issues the Commission should
15 address to prepare the licensing process for re-
16 search and test reactors;

17 (B) the feasibility of developing guidelines
18 for advanced reactor demonstrations and proto-
19 types to support the review process for ad-
20 vanced reactors designs, including designs that
21 use alternative coolants or alternative fuels, op-
22 erate at or near atmospheric pressure, and use
23 passive safety strategies; and

1 (C) the extent to which Commission action
 2 or modification of policy is needed to implement
 3 any part of the report.

4 (e) REPORT TO COMPLETE A RULEMAKING TO ES-
 5 TABLISH A TECHNOLOGY-INCLUSIVE REGULATORY
 6 FRAMEWORK FOR OPTIONAL USE BY COMMERCIAL AD-
 7 VANCED NUCLEAR REACTOR TECHNOLOGIES IN NEW RE-
 8 ACTOR LICENSE APPLICATIONS AND TO ENHANCE COM-
 9 MISSION EXPERTISE RELATING TO ADVANCED NUCLEAR
 10 REACTOR TECHNOLOGIES.—

11 (1) REPORT REQUIRED.—Not later than 30
 12 months after the date of enactment of this Act, the
 13 Commission shall submit to the appropriate congres-
 14 sional committees a report (referred to in this sub-
 15 section as the “report”) for—

16 (A) completing a rulemaking to establish a
 17 technology-inclusive regulatory framework for
 18 optional use by applicants in licensing commer-
 19 cial advanced nuclear reactor technologies in
 20 new reactor license applications; and

21 (B) ensuring that the Commission has ade-
 22 quate expertise, modeling, and simulation capa-
 23 bilities, or access to those capabilities, to sup-
 24 port the evaluation of commercial advanced re-

1 actor license applications, including the quali-
2 fication of advanced nuclear reactor fuel.

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 ESTIMATE.—The re-
9 port shall include proposed cost estimates, budgets,
10 and timeframes for developing and implementing a
11 technology-inclusive regulatory framework for licens-
12 ing commercial advanced nuclear reactor tech-
13 nologies, including completion of a rulemaking.

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

18 (A) the ability of the Commission to com-
19 plete a rulemaking to establish a technology-in-
20 clusive regulatory framework for licensing com-
21 mercial advanced nuclear reactor technologies
22 by December 31, 2027;

23 (B) the extent to which additional legisla-
24 tion, or Commission action or modification of

1 policy, is needed to implement any part of the
2 new regulatory framework;

3 (C) the need for additional Commission ex-
4 pertise, modeling, and simulation capabilities,
5 or access to those capabilities, to support the
6 evaluation of licensing applications for commer-
7 cial advanced nuclear reactors and research and
8 test reactors, including applications that use al-
9 ternative coolants or alternative fuels, operate
10 at or near atmospheric pressure, and use pas-
11 sive safety strategies; and

12 (D) the budgets and timeframes for ac-
13 quiring or accessing the necessary expertise to
14 support the evaluation of license applications
15 for commercial advanced nuclear reactors and
16 research and test reactors.

17 **SEC. 104. BAFFLE-FORMER BOLT GUIDANCE.**

18 (a) REVISIONS TO GUIDANCE.—Not later than 90
19 days after the date of enactment of this Act, the Commis-
20 sion shall publish any necessary revisions to the guidance
21 on the baseline examination schedule and subsequent ex-
22 amination frequency for baffle-former bolts in pressurized
23 water reactors with down-flow configurations.

1 (b) REPORT.—Not later than 90 days after the date
2 of enactment of this Act, the Commission shall submit to
3 the appropriate congressional committees—

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

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

9 **SEC. 105. EVACUATION REPORT.**

10 (a) IN GENERAL.—Not later than 180 days after the
11 date of enactment of this Act, the Commission shall sub-
12 mit to the appropriate congressional committees a report
13 describing the actions the Commission has taken, or plans
14 to take, to consider lessons learned since September 11,
15 2001, Superstorm Sandy, Fukushima, and other recent
16 natural disasters regarding directed or spontaneous evacu-
17 ations in densely populated urban and suburban areas.

18 (b) INCLUSIONS.—The report under subsection (a)
19 shall—

20 (1) describe the actions of the Commission—

21 (A) to consider the results from—

22 (i) the State-of-the-Art Reactor Con-
23 sequence Analyses project; and

24 (ii) the current examination by the
25 Commission of emergency planning zones

1 for small modular reactors and advanced
2 nuclear reactors; and

3 (B) to monitor international reviews, in-
4 cluding reviews conducted by—

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

7 (ii) the World Health Organization;
8 and

9 (iii) the Fukushima Health Manage-
10 ment Survey; and

11 (2) with respect to a disaster similar to a dis-
12 aster described in subsection (a), include information
13 about—

14 (A) potential shadow evacuations in re-
15 sponse to the disaster; and

16 (B) what levels of self-evacuation should be
17 expected during the disaster, including outside
18 the 10-mile evacuation zone.

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

21 (1) the Federal Radiological Preparedness Co-
22 ordinating Committee;

23 (2) State emergency planning officials from
24 States that the Commission determines to be rel-
25 evant to the report; and

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

3 **SEC. 106. ENCOURAGING PRIVATE INVESTMENT IN RE-**
4 **SEARCH AND TEST REACTORS.**

5 (a) PURPOSE.—The purpose of this section is to en-
6 courage private investment in research and test reactors.

7 (b) RESEARCH AND DEVELOPMENT ACTIVITIES.—
8 Section 104 c. of the Atomic Energy Act of 1954 (42
9 U.S.C. 2134(c)) is amended—

10 (1) in the first sentence, by striking “and which
11 are not facilities of the type specified in subsection
12 104 b.” and inserting a period; and

13 (2) by adding at the end the following: “The
14 Commission is authorized to issue licenses under this
15 section for utilization facilities useful in the conduct
16 of research and development activities of the types
17 specified in section 31 in which the licensee sells re-
18 search and testing services and energy to others,
19 subject to the condition that the licensee shall re-
20 cover not more than 75 percent of the annual costs
21 to the licensee of owning and operating the facility
22 through sales of nonenergy services, energy, or both,
23 other than research and development or education
24 and training, of which not more than 50 percent
25 may be through sales of energy.”.

1 **SEC. 107. COMMISSION REPORT ON ACCIDENT TOLERANT**
2 **FUEL.**

3 (a) DEFINITION OF ACCIDENT TOLERANT FUEL.—

4 In this section, the term “accident tolerant fuel” means
5 a new technology that—

6 (1) makes an existing commercial nuclear reac-
7 tor more resistant to a nuclear incident (as defined
8 in section 11 of the Atomic Energy Act of 1954 (42
9 U.S.C. 2014)); and

10 (2) lowers the cost of electricity over the li-
11 censed lifetime of an existing commercial nuclear re-
12 actor.

13 (b) REPORT TO CONGRESS.—Not later than 1 year
14 after the date of enactment of this Act, the Commission
15 shall submit to Congress a report describing the status
16 of the licensing process of the Commission for accident
17 tolerant fuel.

18 **SEC. 108. REPORT IDENTIFYING BEST PRACTICES FOR ES-**
19 **TABLISHMENT AND OPERATION OF LOCAL**
20 **COMMUNITY ADVISORY BOARDS.**

21 (a) BEST PRACTICES REPORT.—Not later than 18
22 months after the date of enactment of this Act, the Com-
23 mission shall submit to Congress, and make publicly avail-
24 able, a report identifying best practices with respect to the
25 establishment and operation of a local community advisory
26 board to foster communication and information exchange

1 between a licensee planning for and involved in decommis-
2 sioning activities and members of the community that de-
3 commissioning activities may affect, including lessons
4 learned from any such board in existence before the date
5 of enactment of this Act.

6 (b) CONTENTS.—The report described in subsection
7 (a) shall include—

8 (1) a description of—

9 (A) the topics that could be brought before
10 a local community advisory board;

11 (B) how such a board's input could be
12 used to inform the decision-making processes of
13 stakeholders for various decommissioning activi-
14 ties;

15 (C) what interactions such a board could
16 have with the Commission and other Federal
17 regulatory bodies to support the board mem-
18 bers' overall understanding of the decommis-
19 sioning process and promote dialogue between
20 the affected stakeholders and the licensee in-
21 volved in decommissioning activities; and

22 (D) how such a board could offer opportu-
23 nities for public engagement throughout all
24 phases of the decommissioning process;

1 (2) a discussion of the composition of a local
2 community advisory board; and

3 (3) best practices relating to the establishment
4 and operation of a local community advisory board,
5 including—

6 (A) the time of establishment of such a
7 board;

8 (B) the frequency of meetings of such a
9 board;

10 (C) the selection of board members;

11 (D) the term of board members;

12 (E) the responsibility for logistics required
13 to support such a board's meetings and other
14 routine activities; and

15 (F) any other best practices relating to
16 such a local community advisory board that are
17 identified by the Commission.

18 (c) CONSULTATION.—In developing the report de-
19 scribed under subsection (a), the Commission shall consult
20 with any host State, any community within the emergency
21 planning zone of an applicable nuclear power reactor, and
22 any existing local community advisory board.

23 (d) PUBLIC MEETINGS.—

24 (1) IN GENERAL.—The consultation required
25 under subsection (c) shall include public meetings.

1 (2) PUBLIC PARTICIPATION.—The public meet-
2 ings under paragraph (1) shall be conducted under
3 the requirements applicable to category 3 meetings
4 under the policy statement of the Commission enti-
5 tled “Enhancing Public Participation in NRC Meet-
6 ings; Policy Statement” (67 Fed. Reg. 36920 (May
7 28, 2002)) (or a successor policy statement).

8 (3) NUMBER OF MEETINGS.—

9 (A) IN GENERAL.—The Commission shall
10 conduct not less than 10 public meetings under
11 paragraph (1) in locations that ensure geo-
12 graphic diversity across the United States.

13 (B) PRIORITY.—In determining locations
14 in which to conduct a public meeting under sub-
15 paragraph (A), the Commission shall give pri-
16 ority to States that—

17 (i) have a nuclear power reactor cur-
18 rently undergoing the decommissioning
19 process; and

20 (ii) request a public meeting under
21 this paragraph.

22 (4) WRITTEN SUMMARY.—The report under
23 subsection (a) shall include a written summary of
24 the public meetings conducted under paragraph (1).

1 **SEC. 109. REPORT ON STUDY RECOMMENDATIONS.**

2 Not later than 90 days after the date of enactment
 3 of this Act, the Commission shall submit to Congress a
 4 report describing the status of addressing and imple-
 5 menting the recommendations contained in the memo-
 6 randum of the Executive Director of Operations of the
 7 Commission entitled “Tasking in Response to the Assess-
 8 ment of the Considerations Identified in a ‘Study of Re-
 9 prisal and Chilling Effect for Raising Mission-Related
 10 Concerns and Differing Views at the Nuclear Regulatory
 11 Commission’” and dated June 19, 2018 (ADAMS Acces-
 12 sion No.: ML18165A296).

13 **TITLE II—URANIUM**

14 **SEC. 201. URANIUM RECOVERY REPORT.**

15 Not later than 90 days after the date of enactment
 16 of this Act, the Commission shall submit to the appro-
 17 priate congressional committees a report describing—

- 18 (1) the duration of uranium recovery license
 19 issuance and amendment reviews; and
 20 (2) recommendations to improve efficiency and
 21 transparency of uranium recovery license issuance
 22 and amendment reviews.

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

24 Not later than 1 year after the date of enactment
 25 of this Act, the Commission shall—

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

5 (2) provide to the appropriate congressional
6 committees a report describing the results of the
7 pilot initiative under paragraph (1).

Passed the Senate December 20, 2018.

Attest:

Secretary.

115TH CONGRESS
2D SESSION

S. 512

AN ACT

To modernize the regulation of nuclear energy.