

## Calendar No. 528

114TH CONGRESS }  
2d Session }

SENATE

{ REPORT  
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### NUCLEAR ENERGY INNOVATION AND MODERNIZATION ACT

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JUNE 23, 2016.—Ordered to be printed  
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Mr. INHOFE, from the Committee on Environment and Public  
Works, submitted the following

### R E P O R T

together with

### ADDITIONAL VIEWS

[To accompany S. 2795]

[Including cost estimate of the Congressional Budget Office]

The Committee on Environment and Public Works, to which was referred the bill (S. 2795) to modernize the regulation of nuclear energy, having considered the same, reports favorably thereon with an amendment and recommends that the bill, as amended, do pass.

#### GENERAL STATEMENT AND BACKGROUND

The Omnibus Budget and Reconciliation Act of 1990 as amended (OBRA-90) requires the Nuclear Regulatory Commission (NRC) to recover 90 percent of its budget through fees levied on their licensees including nuclear power reactors, research reactors, nuclear fuel producers, and radioactive materials users, e.g. for medical and industrial applications. The remaining 10 percent of the budget is funded by taxpayers to cover any work the NRC may do that is not attributable to its licensees. In addition to this 10 percent, funds are also appropriated to cover work for federal agencies such as Waste Incidental to Reprocessing, generic homeland security activities, and Inspector General services provided to the Defense Nu-

clear Facilities Safety Board.<sup>1</sup> Although the fee recovery percentage was altered in subsequent legislation,<sup>2</sup> OBRA-90 was the last significant legislative modification to the NRC's fee recovery structure.

To meet the mandate of 90 percent fee recovery, the NRC recovers fees in two ways. The first is governed by 10 CFR Part 170 under which the NRC bills for “. . . the costs of providing specific regulatory benefits to identifiable applicants and licensees.”<sup>3</sup> For example, Part 170 fees include review of new plant applications, license extensions, power uprates, uranium production permits, and license amendment reviews. The second way the NRC recovers fees is under 10 CFR Part 171 to “. . . recover generic regulatory costs that are not otherwise recovered through 10 CFR Part 170 fees.”<sup>4</sup>

Several problems arise from this structure. If the NRC overestimates the amount of revenue they expect to collect under Part 170, it must recover the resulting revenue shortfall through Part 171 fees in order to meet the OBRA-90 mandate for 90 percent fee recovery. One example of this dynamic was reported in the NRC's Fee Recovery Rule for FY 2014:

The annual fees for power reactors increase primarily as a result of: (1) Decreased Part 170 billings due to . . . delays in major design certification applications and combined license applications (This decline in 10 CFR Part 170 billings means that 10 CFR 171 fees need to increase to make up the difference and ensure that the NRC collects approximately 90% of its budget authority) . . .<sup>5</sup>

Operating power reactors paid additional fees because the NRC overestimated the amount of work in the Office of New Reactors in that year. This same dynamic occurred in FY 2015<sup>6</sup> and is likely to repeat itself in FY 2016 since the Office of New Reactors has once again overestimated by one-third the number of applications it will have under review<sup>7</sup>. This may simply reflect poor estimates of its workload. The end result is that operating power reactors are billed for non-existent Part 170 work in order to meet the 90 percent fee recovery mandate.

During this time, the NRC also developed a backlog in its review of licensing actions. Before modifying equipment or procedures, licensees must request the NRC's approval. As such, the timeliness of these reviews is crucial for licensees to operate efficiently. The backlog in these needed reviews, when considered in the context of the problems described in the preceding paragraph, highlight the need for the NRC to budget more accurately and recover fees for work that is actually conducted. S. 2795 addresses this problem by directing the NRC to expressly identify the funds necessary to conduct reviews requested by applicants and licensees and to preserve

<sup>1</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2015; Final Rule, June 30, 2015.

<sup>2</sup>Pub. Law 106-377 (2000) and Pub. Law 109-58 (2005).

<sup>3</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2015; Final Rule, June 30, 2015.

<sup>4</sup>Ibid.

<sup>5</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2014; Final Rule, June 30, 2014.

<sup>6</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2015; Final Rule, June 30, 2015.

<sup>7</sup>Nuclear Regulatory Commission Congressional Budget Justification, FY 2017.

any budget authority granted accordingly solely for the requested reviews. This approach should improve the accuracy of the NRC's budgeting and ensure that funds are available to efficiently complete reviews needed by applicants and licensees.

Another problem results from how the NRC recovers "generic regulatory costs" under Part 171. After the NRC has determined the level of Part 170 fees, the NRC sets the amount of Part 171 fees at a rate that is necessary to meet the 90 percent fee recovery mandate. Once it has established the total amount to be reimbursed under Part 171 fees, the NRC apportions that amount among the various classes of licensees and divides by the number of licensees in that class to determine how much each licensee must pay. Because the NRC fees are required to reimburse a statutorily mandated percent of the budget, the NRC has had difficulty adjusting to changing market conditions. An example of this perverse result can be seen within the operating reactors as reactors close:

The permanent shutdown of the Vermont Yankee reactor decreases the fleet of operating reactors, which subsequently increases the annual fees for the rest of the fleet.<sup>8</sup>

This same dynamic affected the annual fees for operating reactors in both 2013<sup>9</sup> and 2014<sup>10</sup> resulting from the closure of two reactors in each year. Thus, as the nuclear power industry shrinks, the NRC simply divides by a smaller number so that the remaining operating reactors make up the shortfall in order to meet the 90 percent fee recovery mandate. The NRC has not decreased the overall budget to correspond to the decrease in operating reactors. S. 2795 addresses this problem through the combination of removing the 90 percent mandate and capping the annual fee for operating reactors. In this manner, the annual fee will reflect the agency's workload. As reactors close and transition to decommissioning, the total revenue from annual fees will decrease accordingly. Conversely, as new reactors become operational, the total revenue will increase.

The annual fee cap for operating reactors is set at \$4.8 million in accordance with the most recent revision of the fee recovery rule: FY 2015.<sup>11</sup> This is a small decrease from the agency's all time highest fee of \$5.0 million in 2014. The cap was set at this abnormally high rate of spending to reflect the agency's costs to implement safety changes following the Fukushima nuclear accident in Japan. As the NRC's post-Fukushima implementation nears completion, the related workload continues to decline thus trending toward the more stable funding levels seen prior to the Fukushima accident. In this manner, the cap would allow for the NRC to increase fees in response to a potential future accident comparable to Fukushima. As an additional precaution, the NRC is given the authority to grant itself a one-time, one-year waiver of the cap if the

<sup>8</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2015; Final Rule, June 30, 2015.

<sup>9</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2013; Final Rule, July 1, 2013.

<sup>10</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2014; Final Rule, June 30, 2014.

<sup>11</sup>Nuclear Regulatory Commission: 10 CFR Parts 170 and 171 Revision of Fee Schedules and Fee Recovery for Fiscal Year 2015; Final Rule, June 30, 2015.

Commission concludes that adhering to the cap might compromise their ability to accomplish their safety and security mission. The NRC may also adjust the cap to account for inflation to prevent any artificial constraint in that respect. Lastly, this provision is to be executed to the “maximum extent practicable”, reflecting appropriators’ authority for implementation and any need they may have to make adjustments to address future unforeseen circumstances.

Another problem that results from the current budget and fee structure is the NRC’s limited ability to develop expertise in advance reactor technologies. To date, any work in this area is has been general and exploratory. The NRC dedicates few resources to the subject since it would be unfair to collect fees from current licensees, and consequently their ratepayers, to fund exploratory work. In addition, if appropriators provided funds directly to the NRC by increasing the amount of the 10 percent paid by the taxpayers, it would trigger an increase in the fee recovery under the 90 percent fee recovery mandate. For every \$1 million appropriators might fund for advanced reactors, licensees would need to be billed an additional \$9 million to pay the amount necessary to reach 90 percent of the NRC’s budget authority. S. 2795 provides authority for appropriators to fund the advanced reactor program in Sec. 7 in the same manner as other regulatory activities that are not attributable to a specific licensee or class of licensees. This will fund formation of the regulatory framework necessary to provide regulatory certainty and foster development of advanced reactor technologies.

S. 2795, the Nuclear Energy Innovation and Modernization Act, includes provisions to reform these structural deficiencies in the NRC’s budget and fee recovery authorities to instill greater transparency and accountability. Alleviating the problems described above requires eliminating the OBRA–90 mandate of 90 percent fee recovery and replacing it with a framework that maintains taxpayer funding for programs in the same manner as established in OBRA–90, but without use of an arbitrary percentage. Under this new structure, the NRC collects from licensees the fees necessary to fund its regulatory program as determined by its actual workload, rather than a percentage constraint. For example, the NRC’s collection of fees from operating reactors would increase as new reactors become operational or decrease as reactors shutdown and the workload decreases. Elimination of the 90 percent fee recovery mandate also allows appropriators to fund work on advanced reactors without penalizing existing licensees. Consistent with current practice, the taxpayer continues to pay only for the items explicitly outlined in the law as appropriated items and the rest of the NRC’s budget is to be recovered through fees. As such, the cost to the taxpayer is generally unaffected but the fee recovery will be determined by the agency’s workload rather than a mandated percentage.<sup>12</sup>

Another concern addressed within S. 2795 is the NRC’s spending on corporate support costs. As noted by the EY consulting firm, the NRC’s corporate support spending as a percentage of its budget is significantly higher than peer agencies: 37 percent at the NRC; 20,

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<sup>12</sup> Congressional Research Service Memorandum: *Nuclear Regulatory Commission Net Appropriations Under S. 2795 and Current Law*; June 10, 2016.

25, and 32 percent at 3 peer agencies.<sup>13</sup> Oversight of this spending has been complicated by numerous changes in how the agency defines and accounts for corporate support costs. S. 2795 directs the NRC to limit its requests for corporate support spending, to the maximum extent practicable, to 30 percent for FY 2019 and 2020, and declining to 28 percent for FY 2023 and thereafter. Twenty-eight percent is commensurate with the level of corporate support spending by the agency in FY 2006. As noted by the Congressional Research Service in its review of this provision: “The ultimate decision of the amount to be appropriated to the NRC, and the percentage of the total budget authority that may be made up by corporate support costs would be retained by Congress.”<sup>14</sup>

The NRC’s Principles of Good Regulation state: “The American taxpayer, the rate-paying consumer, and licensees are all entitled to the best possible management and administration of regulatory activities.” Considering that regulatory costs are ultimately passed on to consumers, the NRC must improve its financial transparency and accountability. S. 2795 provides necessary reforms to modernize the NRC’s budget structure and fee collection.

S. 2795 also includes provisions directing the NRC create new licensing processes suitable for advanced reactor technologies. In the near-term, the NRC will develop a licensing process from within its existing regulatory framework. This is intended to address the needs of technologies that may pursue design certification and licensing within the next several years. In the longer term, the NRC is directed to develop a more holistic, technology-inclusive process by 2023 as an optional approach for technologies that will be developed further into the future.

The NRC’s current regulatory framework has evolved to oversee light water reactor technologies and is not suitable for advanced technologies with unique characteristics that may warrant different safety requirements with regard to emergency planning zone sizes, emergency core cooling infrastructure, and fueling needs. The NRC’s current design certification and license approval processes require significant upfront investment without adequate predictability or transparency with regard to a schedule. The legislation addresses these two issues by directing the NRC to develop a new regulatory process with a staged structure to provide applicants with clear, early feedback consistent with a mutually agreed-upon schedule. This process will allow advanced reactor companies to seek investment as a design successfully completes each stage rather than attempting to raise \$1 to \$ 2 billion dollars at the start of the process without a predictable schedule.

S. 2795 also directs the NRC to use more risk-informed, performance-based licensing strategies, where appropriate, as a more comprehensive and holistic approach to regulation. This approach incorporates both modern methods of evaluating risks and consequences with traditional deterministic methods for a more exhaustive analysis of safety. Use of risk-informed, performance-based approaches will also allow the NRC to develop processes that are more flexible and applicable to the unique aspects of diverse technologies.

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<sup>13</sup> EY report “Overhead Assessment: Nuclear Regulatory Commission”; April 30, 2015.

<sup>14</sup> Todd Garvey, Congressional Research Service: “Interpretation of Section 6(a)(3) of S. 2795, the Nuclear Energy Innovation and Modernization Act”; May 10, 2016.

The need for a new licensing process for advanced reactor designs has been highlighted in several recent reports including GAO<sup>15</sup> and the Nuclear Innovation Alliance<sup>16</sup>. In addition to highlighting the need for a new licensing framework, these reports also discuss the need for cost-sharing programs to help early movers pay for some of the burden of licensing.

In response to these recommendations, S. 2795 directs the Department of Energy to develop a cost-share program similar to the previous “Nuclear Power 2010” program authorized in the Energy Policy Act of 2005 and a similar program for small modular reactors which received appropriations beginning in FY 2012.<sup>17 18</sup> This program will assist applicants by funding portions of the NRC’s fees for pre-application and application review activities. Reducing these up-front costs is important since they can be a barrier to new market entrants, discouraging innovation.

Lastly, S. 2795 directs the NRC to provide Congress with a report evaluating the feasibility and potential benefit of extending the duration of uranium recovery licenses from 10 to 20 years. License reviews and renewals can take up to five years to complete which appears disproportionately long in comparison to the license duration.

S. 2795 enjoys broad support as evidenced by numerous letters from companies, individuals, organizations, and universities.<sup>19</sup>

#### OBJECTIVES OF THE LEGISLATION

The objective of S. 2795 is to reform the Nuclear Regulatory Commission’s budget and fee recovery structure to increase transparency and accountability, to direct the Nuclear Regulatory Commission to develop regulations to enable the efficient licensing of advanced nuclear reactors, and to establish a DOE program to provide cost-shared grants to fund a portion of advanced reactor applicants’ pre-application and application review activities during licensing to reduce the cost burden of NRC licensing.

#### SECTION-BY-SECTION ANALYSIS

##### *Section 1. Short title*

The title of this legislation is the “Nuclear Energy Innovation and Modernization Act.”

<sup>15</sup> Nuclear Reactors: Status And Challenges In Development And Deployment Of New Commercial Concepts. GAO, July 2015: <http://www.gao.gov/assets/680/671686.pdf>

<sup>16</sup> Strategies for Advanced Reactor Licensing, Nuclear Innovation Alliance, Ashley Finan, April 2016: [http://media.wix.com/ugd/5b05b3\\_71d4011545234838aa27005ab7d757f1.pdf](http://media.wix.com/ugd/5b05b3_71d4011545234838aa27005ab7d757f1.pdf)

<sup>17</sup> Public Law 109–58; August 8, 2005.

<sup>18</sup> Report 112–331 to accompany H.R. 2055 “Military Construction and Veterans Affairs and Related Agencies Appropriations Act, 2012.”

<sup>19</sup> Letters of support on file with the Senate Committee on Environment and Public Works: American Nuclear Society; Boise State University; Center for Climate and Energy Solutions; Clean Air Task Force; Clear Path Action; Elysium Industries; Entergy Wholesale Commodities; Exelon; GE Hitachi Nuclear Energy; Gen4 Energy; Harvard Business School; Hybrid Power Technologies LLC; MIT Program in Atmospheres, Oceans and Climate; MIT Nuclear Science and Engineering; Next Generation Nuclear Plant Industry Alliance; Nuclear Energy Institute; NuScale Power; Rachel Pritzker; Ray A. Rothrock; Southern Nuclear Operating Company, Inc.; Terrestrial Energy USA; Third Way; Transatomic Power Corporation; Tri Alpha Power; United States Nuclear Infrastructure Council; UC Berkeley’s Nuclear Engineering Department; University of Idaho; University of Michigan Nuclear Engineering and Radiological Sciences; URENCO USA; and X Energy, LLC.

*Sec. 2. Findings*

This section identifies congressional findings that support enactment of this legislation.

*Sec. 3. Purposes*

The purpose of this Act is to modernize the Commission's functions by establishing new transparency and accountability measures on the Commission's budget and fee structure and developing the regulatory framework necessary to enable the licensing of advanced nuclear reactors.

*Sec. 4. Definitions*

This section provides definitions for terms used in the legislation.

*Sec. 5. Nuclear Regulatory Commission user fees and annual charges through fiscal year 2018*

(a) IN GENERAL.

Subsection (a) amends Section 6101 of the Omnibus Budget Reconciliation Act of 1990 to remove the amounts appropriated for the Advanced Reactor Program from the Nuclear Regulatory Commission's fee recovery requirement.

(b) REPEAL.

Subsection (b) repeals Section 6101 of the Omnibus Budget Reconciliation Act of 1990 effective October 1, 2018, to enable its replacement with the reformed budget and fee structure provided in Section 6.

*Sec. 6. Nuclear Regulatory Commission User fees and annual charges for fiscal year 2019 and each fiscal year thereafter*

(a) ANNUAL BUDGET JUSTIFICATION.

Subsection (a) directs the Commission to expressly identify the funds necessary to complete work on activities requested by applicants and licensees. Once budget authority is granted for those requested activities, it must be used solely for those activities. This is to ensure the Commission estimates this work accurately and ensures that adequate funds are preserved to complete this work efficiently. The Commission is also directed to limit its requests for budget authority to fund corporate support costs as a percentage of its total budget request: 30 percent in Fiscal Year 2019 and decreasing one percent every two years, until reaching 20 percent in Fiscal Year 2023 and subsequent years. The limits on the NRC's corporate support costs will ensure the Commission prioritizes spending on work that directly supports its safety and security mission.

(b) FEES AND CHARGES.

Subsection (b) directs the Commission to ensure the collection of fees is equal to the Commission's budget authority less programs excluded from fee recovery. The activities excluded from fee recovery are listed, capturing all activities that are currently excluded from fee recovery. The only new activity excluded from fee recovery is the Advanced Reactor Program authorized in Section 7, which expires in 2030.

Similar to Section 6101 of OBRA-90, the NRC is authorized to collect fees in two ways. The first is through fees for services that specifically benefit a particular person or entity. The second is

through annual fees to fund more generic regulatory costs including corporate support.

Subparagraph (b) places a cap on the amount of annual fee that may be charged to an operating reactor. The cap is set at the amount charged in FY 2015, \$4.8 million, not including the separate spent fuel and decommissioning fee, and may be adjusted to reflect changes in the consumer price index. This amount reflects the Commission's most recent final fee recovery rule in place at the time S. 2795 was introduced and a slight decrease from the all-time highest fee of \$5.0 million.<sup>20</sup> As such, the cap accounts for high levels of agency spending to address regulatory changes following the Fukushima, Japan, nuclear accident. The agency's annual fee is declining since the agency's generic post-Fukushima work is nearing conclusion.<sup>21 22</sup> If the Commission determines the annual fee cap may compromise its safety and security mission, the Commission may waive the cap for one year providing time to seek a remedy through the Congressional appropriations process.

Subparagraph (b) includes a research reactor fee exemption originally contained in OBRA-90. This provision was narrowly drafted to exempt a particular research reactor operated by the United States Geological Survey and does not alter the Commission's authority to recover fees from research reactors generally.

(c) PERFORMANCE AND REPORTING.

Subsection (c) directs the Commission to develop performance metrics and milestone schedules for activities requested by applicants and licensees. The increased use of metrics and schedules will improve transparency and accountability to ensure the agency is efficiently and predictably managing its workload.

(d) ACCURATE INVOICING.

Subsection (d) directs the Commission to establish processes for management review and auditing of invoices to ensure accuracy, transparency, and fairness. The Commission is also directed to develop a process for licensees and applicants to dispute and seek correction of any errors.

(e) REPORT.

Subsection (e) requires the Commission to report to Congress on the implementation of Section 6 including any impacts and recommendations for improvement.

(f) EFFECTIVE DATE.

Subsection (f) establishes an effective date for Section 6 of October 1, 2018. This date was selected to allow the Commission time to implement these provisions through the normal budget and appropriations process.

*Sec. 7. Advanced Nuclear Reactor Program*

(a) LICENSING OF COMMERCIAL ADVANCED NUCLEAR REACTORS.

Subsection (a) directs the Commission within two years to establish stages within the licensing process for new reactors including the optional use of a licensing feasibility statement. This change is intended to allow applicants to proceed through the licensing proc-

<sup>20</sup> Nuclear Regulatory Commission 10 CFR 170 and 171: Revision of Fee Schedules; Fee Recovery for Fiscal Year 2015; Final Rule; June 30, 2015; Table V.

<sup>21</sup> Nuclear Regulatory Commission 10 CFR 170 and 171: Revision of Fee Schedules; Fee Recovery for Fiscal Year 2015; Proposed Rule; March 23, 2016; Table V.

<sup>22</sup> Nuclear Regulatory Commission Congressional Budget Justification; Fiscal Year 2017; p. 42.

ess in smaller steps to allow greater transparency, which will foster investor confidence based on regulatory progress. The Commission should also institute the use of licensing project plans. Licensing project plans are agreements between the agency and applicants early in the application process that reflect mutual commitments on schedules and deliverables to support resource planning for both the agency and the applicant. The Commission is also directed to implement, where appropriate, increased use of risk-informed, performance-based license licensing, and to implement strategies for licensing advanced research and test reactors within the existing regulatory framework. Together, these provisions establish a regulatory framework for advanced reactor technologies that will seek licensing within the next several years.

Subsection (a) further directs the Commission to complete a rulemaking by the end of 2023 to establish a technology-inclusive regulatory framework for licensing advanced nuclear reactors. This rulemaking is a more holistic approach to a more flexible and efficient regulatory framework that will be available to advanced nuclear reactor applicants who will seek licensing further into the future.

The Commission is also directed to train staff and develop the expertise required to implement Subsection (a) activities including pre-application interactions and application reviews. Appropriations are authorized for Subsection (a) in such sums as are necessary.

**(b) REPORT TO ESTABLISH STAGES IN THE COMMERCIAL ADVANCED REACTOR LICENSING PROCESS.**

Subsection (b) directs the NRC to report to Congress within 180 days of enactment regarding implementation of stages in the licensing process within two years of enactment. The report is to include the following:

- Input from the Secretary of Energy, nuclear energy industry, technology developers, and public stakeholders;
- Cost and schedule estimates;
- Evaluation of the unique aspects of advanced nuclear reactors;
- Policy issues the Commission should address with regard to licensing;
- Options for licensing advanced nuclear reactors under the current regulatory framework including the optional use of licensing project plans;
  - Options for improving the efficiency and predictability of the licensing process; and
  - Any Commission action or modification of policy necessary to implement any part of the report.

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

Subsection (c) directs the NRC to report to Congress within 180 days of enactment regarding increasing, where appropriate, the use of risk-informed and performance-based techniques within the existing regulatory framework. The report is to include the following:

- Input from the Secretary of Energy, nuclear energy industry, technology developers, and public stakeholders;
- Cost and schedule estimates;

- The ability of the Commission to develop and implement, where appropriate, risk-informed and performance-based techniques within two years of the date of enactment; and
- Any Commission action needed to implement any part of the report.

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

Subsection (d) directs the NRC to report to Congress within one year of enactment regarding preparing the licensing process for research and test reactors within the existing licensing framework. The report is to include the following:

- Input from the Secretary of Energy, nuclear energy industry, technology developers, and public stakeholders;
- Cost and schedule estimates;
- Evaluation of the unique aspects of research and test reactor licensing;
- The feasibility of developing guidelines to support the license review process;
- Any Commission action needed to implement any part of the report.

(e) REPORT TO COMPLETE A RULEMAKING TO ESTABLISH A TECHNOLOGY-INCLUSIVE REGULATORY FRAMEWORK FOR OPTION USE BY COMMERCIAL ADVANCED NUCLEAR REACTOR TECHNOLOGIES IN NEW REACTOR LICENSE APPLICATIONS AND TO ENHANCE COMMISSION EXPERTISE RELATING TO ADVANCED NUCLEAR REACTOR TECHNOLOGIES.

Subsection (e) directs the NRC to report to Congress within 30 months of enactment regarding the completion of a rulemaking to establish a technology-inclusive licensing framework for advanced nuclear reactor technologies and developing the necessary expertise to review license applications. The report is to include the following:

- Input from the Secretary of Energy, nuclear energy industry, technology developers, and public stakeholders;
- Cost and schedule estimates;
- The ability of the Commission to complete the rulemaking by the end of 2023;
- The extent to which additional legislation or Commission action is necessary to implement any part of the framework; and
- The need for additional Commission expertise and the budget and timeframes necessary to acquire it.

*Sec. 8. Advanced Nuclear Energy Licensing Cost-Share Grant Program.*

(a) ESTABLISHMENT.

Subsection (a) directs the Secretary of Energy to establish a program to make cost-shared grants available to applicants to fund a portion of pre-application and application review activities.

(b) REQUIREMENT.

Subsection (b) directs the Secretary to seek out technology diversity in awarding grants.

(c) COST-SHARE AMOUNT.

Subsection (c) directs the Secretary to determine the cost-share amount for each grant.

## (d) USE OF FUNDS.

Subsection (d) stipulates that recipients may use grant funds to cover Commission fees associated with:

- Developing a licensing project plan;
- Obtaining a statement of licensing feasibility;
- Review of topical reports; and
- Other pre-application and application review activities and interactions with the Commission.

## (e) AUTHORIZATION OF APPROPRIATIONS.

Subsection (e) authorizes appropriations in such sums as may be necessary to carry out Section 8.

*Sec. 9. Uranium recovery report*

Section 9 directs the Commission to report to Congress within one year of the date of enactment regarding the safety and feasibility of extending the duration of uranium recovery licenses from 10 to 20 years.

## LEGISLATIVE HISTORY

- On April 13, 2016, Senators Inhofe, Booker, Whitehouse, and Crapo introduced S. 2795: the Nuclear Energy Innovation and Modernization Act.
- On April 21, 2016, the Senate Committee on Environment and Public Works Subcommittee on Clean Air and Nuclear Safety held a legislative hearing entitled, “Enabling Advanced Reactors and a Legislative Hearing on S. 2795, “the Nuclear Energy Innovation and Modernization Act.”
- On May 18, 2016, the Senate Committee on Environment and Public Works met to consider S. 2795 and ordered the bill favorably reported with a roll call vote of 17 ayes and 3 nays.

## HEARINGS

*April 15, 2015*

The Senate Committee on Environment and Public Works held an oversight hearing entitled, “The President’s FY 2016 Budget Request for the Nuclear Regulatory Commission.” Testimony was received from the Commission:

- Stephen Burns, Chairman
- Kristine Svinicki, Commissioner
- William Ostendorff, Commissioner
- Jeff Baran, Commissioner

*October 7, 2015*

The Senate Committee on Environment and Public Works held an oversight hearing entitled, “Oversight of the Nuclear Regulatory Commission.” Testimony was received from the Commission:

- Stephen Burns, Chairman
- Kristine Svinicki, Commissioner
- William Ostendorff, Commissioner
- Jeff Baran, Commissioner

*April 6, 2016*

The Senate Committee on Environment and Public Works held an oversight hearing entitled, “The President’s FY 2017 Budget Re-

quest for the Nuclear Regulatory Commission.” Testimony was received from the Commission:

- Stephen Burns, Chairman
- Kristine Svinicki, Commissioner
- William Ostendorff, Commissioner
- Jeff Baran, Commissioner APRIL 21, 2016

The Senate Committee on Environment and Public Works Subcommittee on Clean Air and Nuclear Safety held a legislative hearing entitled, “Enabling Advanced Reactors and a Legislative Hearing on S. 2795, “the Nuclear Energy Innovation and Modernization Act.” Testimony was received from the following witnesses:

- Victor McCree, Executive Director of Operations, Nuclear Regulatory Commission
- The Honorable Jeffrey S. Merrifield, Chairman, USNIC Advanced Reactor Task Force
- Maria Korsnick, Chief Operating Officer, Nuclear Energy Institute
- Dr. Ashley Finan, Ph.D., Project Director for Advanced Energy Systems, Clean Air Task Force
- Christina A. Back, Division Director, Inertial Fusion and Advanced Fission, General Atomics
- Edwin Lyman, PhD, Senior Scientist, Global Security Program, Union of Concerned Scientists

#### ROLLCALL VOTES

The Committee on Environment and Public Works met to consider S. 2795 on May 18, 2016. The Committee did not agree to an amendment offered by Sen. Gillibrand by a roll call vote of 9 ayes and 11 nays. Voting in favor were Senators Boxer, Carper, Cardin, Sanders, Whitehouse, Merkley, Gillibrand, Booker, and Markey. Voting against the amendment were Senators Inhofe, Vitter, Barrasso, Capito, Crapo, Boozman, Sessions, Wicker, Fischer, Rounds, and Sullivan. Subsequently, the bill was ordered reported favorably by a roll call vote of 17 ayes and 3 nays. Voting in favor were Senators Inhofe, Vitter, Barrasso, Capito, Crapo, Boozman, Sessions, Wicker, Fischer, Rounds, Sullivan, Carper, Cardin, Whitehouse, Merkley, Booker, and Markey. Voting against were Senators Boxer, Sanders, and Gillibrand.

#### REGULATORY IMPACT STATEMENT

In compliance with section 11(b) of rule XXVI of the Standing Rules of the Senate, the committee finds that S. 2795 does not create any additional regulatory burdens, nor will it cause any adverse impact on the personal privacy of individuals.

#### MANDATES ASSESSMENT

In compliance with the Unfunded Mandates Reform Act of 1995 (Public Law 104–4), the committee notes that the Congressional Budget Office has determined that S. 2795 contains no intergovernmental mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

COST OF LEGISLATION

Section 403 of the Congressional Budget and Impoundment Control Act requires that a statement of the cost of the reported bill, prepared by the Congressional Budget Office, be included in the report. That statement follows:

JUNE 22, 2016.

Hon. JIM INHOFE,  
*Chairman, Committee on Environment and Public Works,*  
*U.S. Senate, Washington, DC.*

DEAR MR. CHAIRMAN: The Congressional Budget Office has prepared the enclosed cost estimate for S. 2795, the Nuclear Energy Innovation and Modernization Act.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Megan Carroll.

Sincerely,

KEITH HALL.

Enclosure.

*S. 2795—Nuclear Energy Innovation and Modernization Act*

Summary: The Nuclear Regulatory Commission (NRC) licenses and regulates the use of radioactive materials at civilian facilities, including nuclear reactors. S. 2795 would direct the NRC to undertake certain activities related to establishing a regulatory framework for licensing advanced reactors with significant design improvements over existing commercial reactors. The bill also would modify the NRC’s authority to charge regulatory fees to entities that hold or apply for NRC licenses.

Based on information from the NRC, CBO estimates that implementing S. 2795 would cost \$47 million over the 2017–2021 period, assuming appropriation of the necessary amounts. Pay-as-you-go procedures do not apply to this legislation because enacting it would not affect direct spending or revenues. CBO estimates that enacting S. 2795 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2027.

S. 2795 contains no intergovernmental or private-sector mandates as defined in the Unfunded Mandates Reform Act (UMRA) and would impose no costs on state, local, or tribal governments.

Estimated cost to the Federal Government: The estimated budgetary effect of S. 2795 is shown in the following table. The costs of this legislation fall within budget function 270 (energy).

	By fiscal year, in millions of dollars—					
	2017	2018	2019	2020	2021	2017–2021
INCREASES IN SPENDING SUBJECT TO APPROPRIATION						
Estimated Authorization Level .....	10	10	10	10	10	50
Estimated Outlays .....	7	9	10	10	10	47

Basis of estimate: For this estimate, CBO assumes that S. 2795 will be enacted near the start of fiscal year 2017 and that amounts estimated to be necessary will be provided at the start of each year. Estimated outlays are based on historical spending patterns for NRC activities.

Funding for the NRC—which totals approximately \$1 billion in 2016—is provided in annual appropriation acts. Under current law, the agency is required to recover most of its funding through fees charged to licensees and applicants; CBO estimates that such fees, which are classified as discretionary offsetting collections, will total nearly \$900 million this year.

S. 2795 would require the NRC to complete a rulemaking, by December 31, 2023, to establish a regulatory framework for licensing advanced nuclear reactors, defined in the bill as reactors that involve significant technological improvements relative to those currently being constructed. The bill specifies that any funding provided to the NRC prior to January 1, 2030, for activities related to developing that framework would be excluded from the portion of the agency's budget that is offset by fees the NRC collects. In addition, starting in 2019, the bill would modify the existing formula used to determine the amount of such fees.

Based on information from the NRC about the anticipated costs involved with establishing the proposed licensing regime through a new rule, CBO estimates that implementing S. 2795 would cost \$47 million over the 2017–2021 period, mostly for salaries and expenses for technical experts required to develop the necessary analyses and regulations. Under the bill, such amounts would not be offset by regulatory fees.

In addition, CBO expects that the proposed change to the formula used to set regulatory fees charged by the NRC could change the amount of such fees collected in future years.

Under both current law and S. 2795, the amount of such fees would depend on the level of funding provided for a range of specific NRC activities. Because CBO has no basis for predicting how much funding will be provided for such activities in future years, CBO cannot determine whether the resulting fees would be higher or lower under S. 2795 than under current law.

Finally, S. 2795 would authorize the Department of Energy to provide grants to pay for a portion of the fees that the NRC would charge to entities that apply for licenses for advanced reactors. The potential cost of such grants is uncertain and would depend on the magnitude of fees charged by the NRC, which could vary widely based on the scope of work associated with individual projects. Based on information from the nuclear industry about the likely timeframe for processing applications for such licenses, CBO expects that any spending for such grants (which would be subject to appropriation) would occur after the 2017–2021 period covered by this estimate.

Pay-As-You-Go considerations: None.

Increase in long-term direct spending and deficits: CBO estimates that enacting S. 2795 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2027.

Intergovernmental and private-sector impact: S. 2795 contains no intergovernmental mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

Previous CBO estimate: On June 10, 2016, CBO transmitted a cost estimate for H.R. 4979, the Advanced Nuclear Technology Development Act of 2016, as ordered reported by the House Committee on Energy and Commerce on May 18, 2016. H.R. 4979

would require the NRC to develop, but not implement, a plan for establishing a regulatory framework for advanced reactors. Because S. 2795 also would require the agency to implement such a framework, our estimate of discretionary costs under the Senate bill is greater.

Estimate prepared by: Federal costs: Megan Carroll; Impact on state, local, and tribal governments: Jon Sperl; Impact on the private sector: Amy Petz.

Estimate approved by: H. Samuel Papenfuss, Deputy Assistant Director for Budget Analysis.

#### ADDITIONAL VIEWS OF SENATOR WHITEHOUSE

As an original cosponsor, I support the goals of S. 2795. I want to ensure the record reflects the position of the Union of Concerned Scientists communicated to me by Mr. Robert Cowin, Director of Government Affairs, Climate, and Energy as follows:

While we would not have taken the same approach towards the stated intent of modernizing the deployment of advanced nuclear reactors that is in S. 2795, the Nuclear Energy Innovation and Modernization Act, we do not believe the revised bill will have any major detrimental impact on public safety and transparency. The bill authors have done well to balance their desire to reform the licensing process without subjugating the Nuclear Regulatory Commission (NRC) to congressionally imposed mandates, allowing the NRC to retain the flexibility it needs to independently regulate in the public interest. The Union of Concerned Scientists therefore takes a neutral position on S. 2795.

I also want to ensure the record reflects that some of these new reactor technologies could actually help to reduce the amount of nuclear waste we've accumulated through the years by using that waste as fuel. That could alleviate a major challenge facing the industry.

SHELDON WHITEHOUSE.

CHANGES IN EXISTING LAW

In compliance with section 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill as reported are shown as follows: Existing law proposed to be omitted is enclosed in [black brackets], new matter is printed in *italic*, existing law in which no change is proposed is shown in roman:

\* \* \* \* \*

**OMNIBUS BUDGET RECONCILIATION ACT OF 1990 (Titles VI and XIII)**

[Public Law 101-508]

[As Amended Through P.L. 109-103, Enacted November 19, 2005]

**SECTION 1. SHORT TITLE.**

This Act may be cited as the “Omnibus Budget Reconciliation Act of 1990”.

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**TITLE VI—ENERGY AND ENVIRONMENTAL PROGRAMS**

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**SEC. 6101. NRC USER FEES AND ANNUAL CHARGES.**

(a) ANNUAL ASSESSMENT.—

(1) IN GENERAL.—The Nuclear Regulatory Commission (in this section referred to as the “Commission”) shall annually assess and collect such fees and charges as are described in subsections (b) and (c).

(2) FIRST ASSESSMENT.—The first assessment of fees under subsection (b) and annual charges under subsection (c) shall be made not later than September 30, 1991.

(b) FEES FOR SERVICE OR THING OF VALUE.—Pursuant to section 9701 of title 31, United States Code, any person who receives a service or thing of value from the Commission shall pay fees to cover the Commission’s costs in providing any such service or thing of value.

(c) POLICY REVIEW.—The Nuclear Regulatory Commission shall review its policy for assessment of annual charges under section 6101(c) of the Omnibus Budget Reconciliation Act of 1990, solicit public comment on the need for changes to such policy, and recommend to the Congress such changes in existing law as the Commission finds are needed to prevent the placement of an unfair burden on certain licensees of the Commission, in particular those that hold licenses to operate federally owned research reactors used primarily for educational training and academic research purposes.

(1) PERSONS SUBJECT TO CHARGE.—Except as provided in paragraph (4), any licensee or certificate holder of the Commission may be required to pay, in addition to the fees set forth in subsection (b), an annual charge.

(2) AGGREGATE AMOUNT OF CHARGES.—

(A) IN GENERAL.—The aggregate amount of the annual charges collected from all licensees and certificate holders in a fiscal year shall equal an amount that approximates the percentages of the budget authority of the Commission for the fiscal year stated in subparagraph (B), less—

(i) amounts collected under subsection (b) during the fiscal year;

(ii) amounts appropriated to the Commission from the Nuclear Waste Fund for the fiscal year;

(iii) amounts appropriated to the Commission for the fiscal year for implementation of section 3116 of the Ronald W. Reagan National Defense Authorization Act for Fiscal Year 2005; **[and]**

(iv) amounts appropriated to the Commission for homeland security activities of the Commission for the fiscal year, except for the costs of fingerprinting and background checks required by section 149 of the Atomic Energy Act of 1954 (42 U.S.C. 2169) and the costs of conducting security inspections~~...~~; and

*(v) amounts appropriated to the Commission for the fiscal year for activities related to the development of a regulatory framework for advanced nuclear reactor technologies, including activities required under section 7 of the Nuclear Energy Innovation and Modernization Act.*

\* \* \* \* \*

