



CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

June 12, 2017

S. 97 **Nuclear Energy Innovation Capabilities Act of 2017**

*As ordered reported by the Senate Committee on Energy and Natural Resources
on March 30, 2017*

SUMMARY

S. 97 would amend the objectives of Department of Energy (DOE) programs related to the research, development, demonstration, and commercial application of advanced nuclear technologies. Based on an analysis of information from DOE and the NRC, CBO estimates that implementing the bill would cost \$340 million over the 2018-2022 period, assuming appropriation of the necessary amounts.

In addition, enacting the bill could affect direct spending by the Tennessee Valley Authority (TVA) to the extent that that agency might participate in activities authorized under the bill. CBO estimates, however, that any such changes in that agency's net outlays would be negligible. Because S. 97 could affect direct spending, pay-as-you-go procedures apply. Enacting the bill would not affect or revenues.

CBO estimates that enacting S. 97 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

S. 97 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. 97 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- 2022
	2017	2018	2019	2020	2021	2022	
INCREASES IN SPENDING SUBJECT TO APPROPRIATION							
Estimated Authorization Level	0	87	88	90	92	93	450
Estimated Outlays	0	26	53	80	90	91	340

BASIS OF ESTIMATE

For this estimate, CBO assumes that S. 97 will be enacted near the start of fiscal year 2018 and that the estimated amounts will be appropriated each year. Estimated outlays are based on historical spending patterns for the affected activities.

S. 97 would authorize DOE to support the research and development of advanced reactor technologies and to provide grants to nonfederal developers of such technologies; those grants would cover a portion of the fees charged by the Nuclear Regulatory Commission (NRC) for certain costs related to licensing such technologies. In carrying out those activities, S. 97 would require DOE to collaborate with the national laboratories, other federal agencies, universities, and private firms. The bill would direct DOE to determine the need for a new test reactor to support research and development of advanced reactor systems and, if needed, direct the agency to construct such a facility by 2025. Finally S. 97 would authorize the agency to expand capabilities in the area of high-performance computation modeling and simulation techniques.

Under current law, DOE is already pursuing a variety of activities to expedite the development and commercial deployment of advanced nuclear technologies. Based on an analysis of information from the agency about the anticipated costs of those activities, CBO estimates that implementing the new activities under S. 97 would require appropriations totaling \$450 million over the 2018-2022 period. That estimate is in line with the total amount of funding provided by the Congress for a previous six-year effort, now largely completed, to support the development, certification, and licensing of small modular reactors (another type of advanced nuclear technology). Assuming appropriation of the estimated amounts, CBO estimates that outlays would total \$340 million over the 2018-2022 period and \$110 million after 2022.

This estimate does not include any costs related to constructing either a test reactor or an advanced nuclear reactor, which CBO estimates would total billions of dollars. In general, CBO expects that any federal spending related to such projects would be limited to a portion of the construction costs. Private firms would likely bear a significant portion of the

construction costs and any spending by DOE for such a project would be subject to appropriation. Based on information from DOE, NRC, and the nuclear industry about anticipated timeframes for developing underlying technologies and licensing advanced reactors, CBO expects that any spending to construct such facilities would be negligible over the 2018-2022 period covered by this estimate. Furthermore, based on an analysis of information from DOE, including reports issued by committees that advise the agency on issues related to nuclear energy, CBO expects the agency is unlikely to build a federally owned test reactor under current law.

PAY-AS-YOU-GO CONSIDERATIONS

CBO estimates that enacting S. 97 could affect direct spending by TVA, which owns nuclear assets and frequently participates in industry-led efforts to develop nuclear technologies. By law, TVA sells electricity at prices sufficient to recover any costs over the useful life of the investment or program. Based on an analysis of information from TVA, CBO expects that any spending for the advanced nuclear technology projects over 2018-2027 period would primarily be for research and development activities, which are treated as operating expenses and recovered quickly in TVA's rates. Thus, CBO estimates that the net effect on TVA's direct spending would be negligible over that period.

INCREASE IN LONG-TERM DIRECT SPENDING AND DEFICITS

CBO estimates that enacting S. 97 would not increase net direct spending or on-budget deficits in any of the four consecutive 10-year periods beginning in 2028.

INTERGOVERNMENTAL AND PRIVATE-SECTOR IMPACT

S. 97 contains no intergovernmental or private-sector mandates as defined in UMRA and would impose no costs on state, local, or tribal governments.

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