Current Federal Policy Tools to Support New Nuclear

The following is a list of current policy tools that could directly support the deployment of new nuclear, could potentially indirectly support the deployment or planning for new nuclear, and that currently support the deployment of new nuclear.

Programs that Could Directly Support Deployment of New Nuclear

Clean Electricity Production Credit – 45Y

The Inflation Reduction Act created a new technology-neutral tax credit for all clean electricity technologies, including advanced nuclear and power uprates that are placed into service in 2025 or after. The bill does not change the existing Advanced Nuclear Production Tax Credit but precludes credits from being claimed under both programs. The value of the credit will be at least $30 per megawatt-hour, depending on inflation, for the first ten years of plant operation. The credit phases out when carbon emissions from electricity production are 75 percent below the 2022 level. The following is a link to the statutory language.


Clean Electricity Investment Credit – 48E

As an alternative to the clean electricity PTC, the Inflation Reduction Act provided the option of claiming a clean electricity investment credit for zero-emissions facilities that is placed into service in 2025 or thereafter. This provides a credit of 30 percent of the investment in a new zero-carbon electricity facility, including nuclear plants. Like the other credits, this investment tax credit can be monetized. The ITC phases out under the same provisions as the clean electricity PTC.


Both the clean electricity PTC and ITC include a 10-percentage point bonus for facilities sited in certain energy communities such as those that have hosted coal plants. The following is a link to the statutory language.

Credit for Production from Advanced Nuclear Power Facilities – 45J

The nuclear production tax credit 26 USC 45J provides a credit of 1.8 cents per kilowatt/hour up to a maximum of $125 million per tax year for 8 years. Only the first 6000 MW of new capacity installed after 2005 for a design approved after 1993 are eligible for the tax credit. The credit does not include a direct pay provision, so the owner will need to have offsetting taxable income to claim the credit or transfer the credit to an eligible project partner. The following is a link to the statutory language.

**Loan Program Office**

The DOE Loan Program Office (LPO) has loan guarantees available for advanced nuclear projects. The loan guarantees can be for advanced nuclear reactors including small modular reactors, uprates and upgrades at existing facilities and front-end of the fuel cycle projects (conversion, enrichment and fuel fabrication). LPO can offer 100% guarantee of U.S. Treasury’s Federal Finance Bank (FFB) loans or partial guarantees of commercial loans.

The following are links to a slide deck providing an overview of LPO and a fact sheet on the advanced nuclear energy loan guarantees.

https://www.energy.gov/sites/default/files/2022-05/DOE-LPO22-PPTv02_LPO-Overview-Slides.pdf


**Advanced Energy Project Credit – 48C**

The Advanced Energy Project Credit focuses on re-equiping, expanding, or establishing an industrial or manufacturing facility for the production or recycling of clean energy related property or equipment. The total amounts of the credits are capped at $10 billion, with $4 billion required to be located in energy communities. A qualifying energy project is eligible for a 30-percent ITC under this section. The following is a link to the statutory language.


**Power Purchase Agreements**

Federal power purchase agreements (PPAs) could be, under the right circumstances, a meaningful method to spur the siting and deployment of nuclear power projects. However, PPAs have been difficult to implement in practice. Generally, federal agencies can enter into PPAs to obtain power from a reactor under the United States General Services Administration’s (“GSA”) authority set forth in 40 USC 501 (subject to applicable federal and state requirements relating to the provision of electricity). However, this GSA authority is currently limited to a maximum of ten years. Legislation has been introduced various times to increase the duration of PPAs but has not been enacted. The following is a link to the statutory language.


**Programs that Could Potentially Support Deployment of New Nuclear**

*Gateway for Accelerated Innovation in Nuclear (GAIN) Vouchers*

In support of nuclear energy innovation, GAIN administers a DOE Office of Nuclear Energy voucher program that provides funds to assist applicants seeking access to the world class expertise and capabilities available across the United States (U.S.) DOE Complex. The funding goes to a national laboratory for work agreed to by both parties. The maximum dollar amount is typically $500 thousand and an in-kind contribution from the company is typically required. In the past, most vouchers have been provided to advanced reactor developers or other companies focused on technology development.
However, other studies could be performed by national laboratories associated with deployment scenarios. For example, Eastman Chemical used a voucher for assistance in the conceptual design and analysis of an integrated nuclear hybrid energy system to replace the existing energy production infrastructure at their Kingsport, TN site. The goal of the NE Voucher program is to accelerate commercialization of innovative nuclear energy technologies.

More information can be found at: [https://gain.inl.gov/SitePages/Nuclear%20Energy%20Vouchers.aspx](https://gain.inl.gov/SitePages/Nuclear%20Energy%20Vouchers.aspx)

**Clean Energy Demonstration Program on Current and Former Mine Land**

The Infrastructure Investment and Jobs Act enacted in November 2021 establishes a demonstration program for Regional Clean Hydrogen Hubs (Sec. 40342 of H.R. 3684 in the 117th Congress or 42 USC 18761). The program will demonstrate the technical and economic viability of carrying out clean energy projects on current and former mine land. The program shall include not more than 5 clean energy projects, to be carried out in geographically diverse regions, at least 2 of which shall be solar projects.

The term "clean energy project" means a project that demonstrates 1 or more of the following technologies:

(A) Solar.
(B) Micro-grids.
(C) Geothermal.
(D) Direct air capture.
(E) Fossil-fueled electricity generation with carbon capture, utilization, and sequestration.
(F) Energy storage, including pumped storage hydropower and compressed air storage.
(G) Advanced nuclear technologies.

$500 million was appropriated for this program over the five-year period encompassing 2022 through 2026. The Office of Clean Energy Demonstration has not specified a date by when they will issue a funding opportunity. However, their website implies it will be issued in 2023.

The followings are links to additional information:

Article describing the Clean Energy Demonstration Program on Mine Lands

Statutory Language Establishing the Program

**Regional Hydrogen Hubs**

The Infrastructure Investment and Jobs Act enacted in November 2021 establishes a demonstration program for Regional Clean Hydrogen Hubs (Sec. 40314 of H.R. 3684 in the 117th Congress or 42 USC 16161a). At least one of the regional clean hydrogen hubs is required to demonstrate the production of clean hydrogen from nuclear energy. The bill appropriated $8 billion for the Clean Hydrogen Hubs program over the five-year period encompassing 2022 through 2026. DOE’s Office of Clean Energy
Demonstrations has issued a notice of intent (NOI) to issue a funding opportunity announcement (FOA). The NOI was issued on June 2 and it is expected that the FOA will be issued in the September/October timeframe. The following description is from the NOI.

“The anticipated FOA is expected to result in the selection of at least four clean H2Hubs in different regions of the U.S. The Bipartisan Infrastructure Law H2Hub statutory provisions require that to the maximum extent practicable DOE select proposals that cover the following characteristics:

- **Feedstock Diversity:** at least one H2Hub shall demonstrate the production of clean hydrogen from fossil fuels, one H2Hub from renewable energy, and one H2Hub from nuclear energy.
- **End-Use Diversity:** at least one H2Hub shall demonstrate the end-use of clean hydrogen in the electric power generation sector, one in the industrial sector, one in the residential and commercial heating sector, and one in the transportation sector.
- **Geographic Diversity:** each H2Hub will be located in a different region of the United States and leverage energy resources abundant to that region, including at least two H2Hubs in regions with abundant natural gas resources.
- **Employment:** DOE shall give priority to regional clean hydrogen hubs that are likely to create opportunities for skilled training and long-term employment to the greatest number of residents in the region.

The followings are links to additional information:

**Article describing the Hydrogen Hub Program**


**Statutory Language Establishing the Program**


**Notice of Intent**

[https://oced-exchange.energy.gov/Default.aspx#FoaId4e674498-618c-4f1a-9013-1a1ce56e5bd3](https://oced-exchange.energy.gov/Default.aspx#FoaId4e674498-618c-4f1a-9013-1a1ce56e5bd3)

**Programs that Could Potentially Support the Deployment of New Nuclear But Are Not Funded**

*Infrastructure Planning for Micro and Small Modular Nuclear Reactors*

The Infrastructure Investment and Jobs Act enacted in November 2021 authorizes the Secretary of Energy to provide financial and technical assistance for the siting of micro-reactors, small modular reactors and advanced nuclear reactors (Sec. 40321 of H.R. 3684 in the 117th Congress or 42 USC 18751). The bill states that the Secretary shall offer financial and technical assistance to entities to conduct feasibility studies for the purpose of identifying suitable locations for the deployment of micro-reactors, small modular reactors, and advanced nuclear reactors in isolated communities. It is stipulated that prior to providing financial and technical assistance, the Secretary shall conduct robust community
engagement and outreach for the purpose of identifying levels of interest in isolated communities. The bill does not specify the potential dollar amounts for financial assistance and does not provide details on potential technical assistance. In addition, to date appropriations has not been provided for the implementation of this program and DOE has not discussed executing the program. The following is a link to the statutory language.


**Advanced Nuclear Energy Licensing Cost-Share Grant Program**

The Nuclear Energy Innovation Capabilities Act of 2017 authorized the Secretary to establish an Advanced Nuclear Energy Licensing Cost-Share Grant Program (Section 3 of S.97 in the 115th Congress or 42 USC 16280) that shall make cost-share grants to applicants for the purpose of funding a portion of the Commission fees of the applicant for pre-application review activities and application review activities. In executing the program, the Secretary shall seek out technology diversity in making grants. The grant funds can be used to cover Commission fees including:

- developing a licensing project plan;
- obtaining a statement of licensing feasibility;
- reviewing topical reports; and
- other:
  - pre-application review activities;
  - application review activities; and
  - interactions with the Commission.

While this program is authorized, it has never been funded by Congress or implemented by DOE. The following is a link to the statutory language.


**Advanced Nuclear Technologies Federal Research, Development, and Demonstration Program**

The Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act (H.R. 4346) authorized this Department of Energy program to provide federal financial assistance to eligible entities to support research, development, and demonstration of advanced nuclear reactors. Eligible entities is broadly defined and includes states, Indian Tribes and Tribal organizations, local governmental units, electric utilities, DOE National Laboratories, institutions of higher education and private entities specializing in advanced nuclear technology, nuclear supply chains or nonelectric applications of nuclear technologies. The Department can enter into cost-sharing arrangements in support of this effort. Priority is given to sites with retiring fossil-fueled electric plants and to projects that plan to demonstrate non-electric applications. The following is a link to the statutory language.

Programs that Currently Support the Deployment of New Nuclear But Are Not Available to New Projects

DOE Advanced Reactor Demonstration Program and Advanced SMR RD&D Program

DOE’s Advanced Reactor Demonstration Program (ARDP) and the Advanced SMR RD&D Program both support the demonstration of advanced reactors through private-public cost-share partnerships (~50/50 cost shares). The ARPD program is supporting the commercial deployment and demonstration of the TerraPower Natrium reactor and the X-energy Xe-100 reactor while the Advanced SMR RD&D program is supporting the commercial deployment and demonstration of the NuScale VOYGR. All three reactors are planning to be operational between 2027 and 2030. The ARDP program is also supporting the development of other designs that could be demonstrated after 2030. Neither the ARDP program nor the Advanced SMR RD&D Program can support additional commercial deployments or demonstrations at this time.