



The Issue Brief: Key Federal Policies Fueling Nuclear Innovation and Reinvestment

INTRODUCTION

Nuclear energy provides reliable, zero-emissions electricity and has the [highest capacity factor](#) of any power-generation source. In 2023, nuclear plants in the United States operated at full capacity more than [93 percent](#) of the time. Nuclear assets run 24/7, 365 days a year, providing clean, abundant and safe baseload power. In the U.S., demand for electricity is expected to grow by [4.71 percent](#) over the next five years, increasing the case for commercial nuclear. Today, the U.S. has roughly 13 proposed projects which could provide [10,500 MWe](#) onto the grid – with forecasts expecting these numbers to grow. For the first time in U.S. history, there is an economic case to [reopen previously decommissioned nuclear plants](#) and reopen previously decommissioned nuclear plants.

Renewed interest in nuclear power means Congress is examining federal policies to accelerate and support continued operations or new deployments. The recently passed [Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy \(ADVANCE\) Act](#) works to foster an environment for increased domestic nuclear investment. Additionally, limited and targeted federal incentives like the [Section 45U](#) zero-emissions nuclear power production tax credit, the [Section 45J](#) advanced nuclear production tax credit, as well as the [Section 45Y](#) clean electricity production tax credit (PTC) and the [Section 48E](#) clean electricity investment tax credit (ITC) will be key in ensuring that the U.S. maintains its leadership and operational excellence in the most reliable source of zero-emissions electricity.

Supportive tax incentives and legislative efforts will help the U.S. reassert its competitive edge in nuclear energy, which is currently overshadowed by nuclear buildout in countries like China, where [nearly 34 GW](#) of nuclear capacity is under construction. With continued policy support and investment, U.S. nuclear power is poised and ready to support a diverse, reliable domestic power-generation sector.

CORNERSTONE OF AN “ALL-OF-THE-ABOVE” APPROACH TO POWER GENERATION

The U.S. is the largest nuclear power generator in the world, with a total capacity of over [102 GW](#). Commercial nuclear facilities have provided nearly [20 percent](#) of U.S. electricity generation since 1990, with [94 reactors](#) at 54 power plants. They also provide nearly half ([48 percent](#)) of America’s carbon-free electricity. In 2023, these nuclear plants generated enough electricity to power more than [72 million homes](#) and employed [nearly 100,000](#) Americans. According to the Nuclear Energy Institute (NEI), U.S. nuclear generation avoids over [470 million metric tons \(MMT\)](#) of carbon dioxide emissions a year (the equivalent of nearly 10 percent of [U.S.](#) annual emissions).

A CRITICAL GEOPOLITICAL TOOL

U.S. nuclear energy technologies are among the safest, most reliable and innovative in the world, and the moment is ripe for the U.S. to revitalize its nuclear industry and reassert its global leadership in the sector. After years of soft-pedaling or decelerating nuclear investments, there is now a global trend for countries to ramp up their nuclear power generation. Demand for nuclear technology is growing, and many nations [desire to collaborate with the U.S.](#) on nuclear energy. Deepening collaboration on nuclear technology with other nations is not only good for U.S. competitiveness – it facilitates more stable commercial and diplomatic relations with other regions and ensures we remain competitive with geopolitical rivals such as Russia and China, which are [rapidly expanding](#) their nuclear energy capabilities both domestically and abroad. Cooperation agreements on nuclear energy can lead to a [deepening of long-term political and economic ties](#) with other nations. These ties can last as long as 100 years and can catalyze agreements or cooperation on other geopolitical issues.

Discussions on the value of nuclear energy are increasingly present in international forums such as the United Nations’ yearly climate conference, known as the Conference of the Parties or COP. Last year’s COP28 in Dubai was even dubbed by some as the “nuclear COP,” with over 20 countries launching a declaration to triple nuclear capacity, recognizing the key role of nuclear in decarbonization. The effort gained momentum at COP29 with [six](#) more countries endorsing the declaration, and the U.S. signing civil nuclear collaboration agreements with the [United Kingdom](#) and [Ukraine](#).

With this trend in mind, expanding American nuclear export capabilities by supporting the continued development of the U.S. nuclear sector would allow the U.S. to ensure [safe management of the technology](#) and remain competitive with nations such as China and Russia, which are expanding their influence by [building reactors in other countries](#).

A HISTORY OF BIPARTISAN NUCLEAR TAX INCENTIVES AND LEGISLATION

Tax credits such as 45U, 45J, 45Y and 45E provide support for continued growth in this geopolitically significant industry, with key bipartisan pieces of legislation like the

ADVANCE Act promising to accelerate next generation nuclear deployments and expedite all licensing timelines.

The Section 45U Tax Credit: Supporting Existing Nuclear

The new [Section 45U](#) zero-emissions nuclear power production tax credit (PTC) is a historically bipartisan tax incentive specifically aimed at nuclear electricity generation from existing facilities that recognizes the pivotal role nuclear assets will continue to play in our economy's decarbonization, as well as for meeting the ever-increasing demand for affordable electricity.

The primary goal of 45U is to [preserve the long-term operation and encourage reinvestment in existing nuclear power plants](#). It provides a credit of 0.3 cents/kWh, which increases up to 1.5 cents/kWh if certain requirements are met. The credit adjusts based on how much money the plant earns from selling electricity and phases out once earnings go above a certain threshold. See **Table 1** for more details on 45U provisions.

While this tax credit provides a promising opportunity to safely continue the operation of existing nuclear plants and encourage reinvestment, guidance on this nuclear tax credit is needed from the U.S. Department of the Treasury in order to unleash investments. Currently, there are 40 reactor licenses with a total capacity of over 38 GW [set to expire before 2040](#). Unfortunately, many utilities are unable to determine whether this credit would apply for their relicensing process as there is uncertainty as to what level of credit would be available to them without clear rules.

The Section 45J Tax Credit: Supporting Advanced Nuclear Development

The [Section 45J](#) advanced nuclear production tax credit (PTC) was created with the Republican-led, bipartisan [Energy Policy Act of 2005](#) and [extended and amended](#) in 2018 by the [Bipartisan Budget Act](#). Its purpose is to support the construction and operation of new advanced nuclear power facilities by providing a PTC for generated electricity.

It provides a 1.8 cent/kWh credit for electricity sold at [qualifying advanced nuclear facilities](#), which it defines as those with a reactor design approved after 12/31/1993 by the Nuclear Regulatory Commission (NRC). The availability of Section 45J reduced risk to developers of projects such as the [units 3 and 4 at the Vogtle nuclear plant](#) in Georgia, the [first newly constructed](#) nuclear reactors in the U.S. to be built in over 30 years. See **Table 1** for more details on 45J provisions.

Tax incentive	Section 45U	Section 45J
Credit type	Zero-Emission Nuclear Power Production Credit (PTC)	Advanced Nuclear Power Production Credit (PTC)
Credit amount	Base: 0.3 cents/kWh, can increase up to 1.5 cents/kWh if prevailing wage and apprenticeship (PW&A) requirements are met.	1.8 cents/kWh
Eligibility*	For electricity from qualified existing nuclear power facilities. Specifically excludes facilities that qualify for 45J.	For new, advanced nuclear power facilities (with a reactor design approved by the NRC after December 31, 1993)
Duration	Tax years beginning after 12/31/2023 and before 01/01/2033	8-year period from when the facility is placed in service
Reduction or phaseout of credit	Based on gross receipts over a threshold	National capacity limitation cap: credit awarded to advanced nuclear facilities until their total combined capacity reaches 6,000 MW
Transferability and direct pay	Eligible for direct pay and transferability	Allows transfer of credits to eligible project partners.
Legislative vehicle	Inflation Reduction Act of 2022	Energy Policy Act of 2005, and extended and amended in 2018 by the Bipartisan Budget Act

Table 1. Tax incentives available to support nuclear energy: Sections 45U and 45J.

* Note on eligibility: taxpayers may only claim one of the four credits available to nuclear energy (45U, 45J, 45Y and 48E). These are not “stackable.”

Source: Author’s illustration, based on materials from [JD Supra](#), [Internal Revenue Service \(IRS\)](#), the [White House](#), [Resources for the Future](#), [Baker Hostetler](#), [Biggins Lacy Shapiro & Co.](#)

The Section 45Y and Section 48E Technology-Neutral Tax Credits: Supporting Nuclear Power Generation

The [Section 45Y](#) clean electricity production tax credit (PTC) and the [Section 48E](#) clean electricity investment tax credit (ITC) created two new technology-neutral tax credits for zero-emissions electricity from any source. In 2025, they will replace the technology-specific Section 45 renewable electricity PTC and the Section 48 energy ITC, for which nuclear did not qualify. Sections 45Y and 48E modified the definition of “[qualified facility](#)” to include any zero-emissions plant placed into service after December 31, 2024, thereby [basing eligibility on emissions rates instead of generation technology](#), as was the case

with the Section 45 and 48 credits.

The Section 45Y credit provides a base credit is 0.3 cents/kWh and increases up to 1.5 cents/kWh when certain requirements are met. Section 48E provides a 6 percent credit of qualified investment, which can increase up to 30 percent. According to recent [analysis by the Rhodium Group](#), 45Y and 48E combined could deliver 300-400 million metric tons of emissions reductions in 2035, and consumer savings of up \$16-\$34 billion in 2035. See **Table 2** for more details on 45Y and 48E provisions related to nuclear.

Tax incentive	Section 45Y	Section 48E
Credit type	Technology-neutral Clean Electricity Production Tax Credit (PTC)	Technology-neutral Clean Electricity Investment Tax Credit (ITC)
Credit amount	Base: 0.3 cents/kWh, can increase up to 1.5 cents/kWh if PW&A requirements are met.	Base: 6 percent credit of qualified investment, can increase up to 30% if PW&A requirements are met.
Bonus	Domestic content bonus of up to 10 percent; additional energy community bonus of 10 percent.	
Eligibility*	Can be claimed for any zero-emissions electricity-generating technology, including nuclear. Facilities must be placed in service after 12/31/2024.	
Duration	Available for 10 years	Issued as single credit.
Reduction or phaseout of credit	Phases out over four years on the later of (a) 2033 or (b) when U.S. emissions are 25 percent of 2022 levels.	
Transferability and direct pay	Eligible for direct payment and transferability	
Legislative vehicle	Inflation Reduction Act of 2022	

Table 2. Tax incentives available to support nuclear energy: Sections 45Y and 48E.

* Note on eligibility: taxpayers may only claim one of the four credits available to nuclear energy (45U, 45J, 45Y and 48E). These are not “stackable.”

Source: Author’s illustration, based on materials from [JD Supra](#), [Internal Revenue Service \(IRS\)](#), the [White House](#), [Resources for the Future](#), [Baker Hostetler](#), [Akin Gump](#), [Biggins Lacy Shapiro & Co](#), [Holland & Knight](#).

Bipartisan Legislation

Over the past decade, growing recognition of nuclear energy's critical role in ensuring grid reliability has driven bipartisan efforts to pass legislation supporting nuclear innovation and deployment:

- **Nuclear Energy Innovation Capabilities Act (NEICA) of 2018** removed financial and technological barriers to nuclear innovation, fostering public-private partnerships to accelerate the deployment of advanced reactors.
- **Nuclear Energy Innovation and Modernization Act (NEIMA) of 2019** took steps [to streamline and modernize](#) the licensing process for advanced reactors, paving the way for faster and more efficient project approvals.
- **Energy Act of 2020** established the [Advanced Reactor Demonstration Program \(ARDP\)](#) and the high-assay low-enriched uranium [\(HALEU\) availability program](#).
- **Infrastructure, Investment and Jobs Act (IIJA) of 2021** provided [\\$2.5 billion](#) for the ARDP, reflecting Congress's strong commitment accelerating the deployment of next-generation nuclear technologies.
- **Accelerating Deployment of Versatile, Advanced Nuclear for Clean Energy (ADVANCE) Act of 2024** passed with overwhelming bipartisan support (88-2 in the Senate). This legislation builds on previous efforts to streamline licensing and regulatory processes. It aims to reduce regulatory costs, enhance the efficiency of the Nuclear Regulatory Commission (NRC) and accelerate the deployment of both new and existing nuclear technologies. It also bolsters U.S. global leadership by empowering the NRC to engage in international forums and directing the Department of Energy (DOE) to simplify the export process for American nuclear technology.

LOOKING FORWARD

Federal incentives such as the Section 45U, 45J, 45Y and 48E tax credits can support the continued operation of existing nuclear facilities, encourage the deployment of new facilities, as well as enable the restart of viable decommissioned nuclear plants. They will also be key in allowing the sector to reaffirm American leadership in nuclear energy.

Treasury should issue and finalize any pending guidance as soon as possible, so that companies can [make capital allocation and investment decisions and engage in credit transfer transactions](#). Final rules for these credits should capture benefits for as many nuclear facilities as possible, as these represent the most reliable source of zero-emissions electricity on the grid.

On the legislative side, the passage of the ADVANCE Act is a particularly momentous piece of bipartisan legislation that will hopefully signal a new chapter for nuclear energy development. Areas of opportunity for continued bipartisan collaboration in the next

Congress include increasing funding and expanding initiatives to ensure a reliable domestic fuel supply chain, continuing to streamline licensing timelines and costs for advanced reactors, and implementing robust workforce development initiatives for next-generation nuclear technologies that require highly skilled workers. The right balance of targeted and limited incentives and efforts to reduce barriers to deployment will be key in speeding up deployment and reasserting American leadership on nuclear energy on the global stage.