



Nuclear Information and Resource Service
6930 Carroll Ave., Suite 340 • Takoma Park, MD 20912
(301) 270-NIRS (6477) • nirs@nirs.org • www.nirs.org
FB: nirsnet • Twitter: @nirsnet • IG: @nirs_net

TO: Interested Parties
FROM: Nuclear Information and Resource Service
SUBJECT: Cost of Proposed Nuclear Energy Subsidies: Inflation Reduction Act of 2022
DATE: July 28, 2022
CC:

The Inflation Reduction Act of 2022 (IRA), announced on July 27, 2022, is reported to contain a total of \$369 billion in programs related to energy and climate protection. One of the major provisions in the bill is Section 13105, the “Zero-Emission Nuclear Power Production Credit” (Nuclear PTC), similar in most ways to an identically-titled provision in the Build Back Better Act (BBBA, or H.R. 5376) as proposed in 2021.

NIRS has updated our analysis of the projected costs and implications of the Nuclear PTC in the published draft of IRA. Previous memos detailed the costs in successive drafts of BBBA and a similar, but separate subsidy, in the Infrastructure Investment and Jobs Act (IIJA) enacted in 2021. The only significant change to the Nuclear PTC in the IRA is the duration of the program, which is extended to nine years from the five or six years in various drafts of BBBA.

On net, the cost of the credits has correspondingly increased. Our analysis of the Nuclear PTC in BBBA projected the cost of the Nuclear PTC at [\\$35.3 billion over six years \(202-2027\)](#). *We conservatively project the cost of the Nuclear PTC in IRA at \$53.5 billion through 2032--more than a 50% increase from BBBA.*

Tax Credit Eligibility

The credit could be claimed by any owner of a commercial nuclear power reactor which is generating electricity prior to the enactment of IRA. A separate provision of the bill (Sect. 13801, “Special Rules”) would permit tax-exempt entities, including municipal utilities, rural electric cooperatives, and the Tennessee Valley Authority, to claim direct payment of the credits for which they would be eligible.

Tax Credit Structure

The Nuclear PTC would be calculated by a complex formula, making it much more complicated than some other energy tax credits, such as the PTC for renewable energy sources and the investment tax credit (ITC) for solar and battery storage facilities. The primary factors determining the value of the credit a reactor owner can claim are:

- **Base Credit Amount:** 0.3 cents per kilowatt-hour (kWh), or \$3 per megawatt-hour (MWh), multiplied by the amount of electricity the reactor generated in the applicable tax year.
- **Reduction Amount:** 80% of the difference between (1) the revenue the reactor generated from electricity sales in the tax year (including other state or federal “zero-emissions” subsidies and (2) the product of 2.5 cents/kWh (\$25/MWh) and the amount of electricity the reactor sold in the tax year.
- **Amount of Credit:** The Reduction Amount is subtracted from the Base Credit Amount.

- **Wage Standard Increase:** If the reactor owner meets prevailing wage standards in employing contractors, the Amount of Credit is multiplied by a factor of 5.

This formula would enable most, if not all, reactors that operate in competitive wholesale markets and satisfy the prevailing wage standard to claim a credit of 1.5 cents/kWh (\$15/MWh), under market conditions that prevailed over the decade prior to 2022.

The Reduction Amount would likely zero out the credit for many reactors owned by investor-owned utility companies (IOUs). The Nuclear Energy Institute reports that the average annual operating cost for utility-owned reactors was \$31.02/MWh in 2020, so they likely charge their customers more than the \$28.75/MWh rate at which the credit would reduce to zero. However, some utility reactor owners may still be able to claim the credit, depending on how much of their revenue they attribute to each reactor's electricity sales. Based on cost variations reported by NEI, and assuming they meet the prevailing wage requirement, we estimate that utility reactor owners could claim the Nuclear PTC at an average value of around \$3/MWh.

This would result in a projected cost of \$53.5 billion over nine years (2024 through 2032): \$40.6 billion for merchant reactors and \$12.9 billion for utility-owned reactors.

These taxpayer dollars would accrue to a very small number of large power corporations and utility holding companies. Over 85% of the total would be claimed by 12 companies. Even within those numbers, the cost would be highly concentrated. Over 37% of the total revenue (\$20.0 billion) would be claimed by one corporation, **Constellation**, which owns 21 merchant reactors. Two other merchant reactor owners—**Energy Harbor** and **PSEG**—would accrue another 12.5% of the total amount (\$4.0 billion and \$2.7 billion, respectively).

Environmental Justice Impacts

President Biden and Congressional leaders have charted a different course since 2021, committing to investing 40% of federal spending to benefit Black, Indigenous, and People of Color communities. The Nuclear PTC would provide no funding or investment that would meet the criteria of the Justice40 framework.

The operation of nuclear reactors has significant environmental justice impacts. Every stage in the nuclear fuel chain produces significant amounts of radioactive and toxic wastes, pollutes the environment, and leads to disease and death: mining, milling, conversion, and enrichment of uranium; routine operation of the reactors themselves, including generation of irradiated (“spent”) fuel that is harmful for a million years; and decommissioning reactors and disposing of their wastes. Indigenous peoples, Black and Latinx communities, and low-wealth, rural communities disproportionately bear the harms of nuclear pollution. For these reasons, the White House Environmental Justice Advisory Council identified nuclear power as harmful to communities.

The Nuclear PTC would thereby divert billions of dollars from investments that would advance environmental, racial, and economic justice, while contributing directly to environmental injustice by subsidizing the consumption of uranium that disproportionately pollutes Indigenous communities and the production of radioactive wastes that are currently dumped in Black, Indigenous, and Latinx communities.

High Costs and Low Climate Benefits

Beyond the high costs and inequity of the Nuclear PTC, it would have little to no positive public benefit:

- no impact on power sector greenhouse emissions
- no net increases in employment
- divert resources away from cost-effective climate and environmental justice solutions.

Dedicating a large portion of total spending in the IRA to subsidizing existing nuclear power plants would amount to a policy failure with real world consequences: undermining progress on climate, failing to create good jobs in new industries, and preventing investments in Justice40 and remedies to environmental injustice.

The primary policy rationale for the Nuclear PTC is to support power sector reductions in greenhouse gas emissions by preventing uneconomical reactors from closing and being replaced with fossil fuel generation. As detailed in a July 2021 report published by the [Institute for Energy and Environment of Vermont School of Law](#), there are far more cost-effective and environmentally just ways of achieving that objective.

In practical terms, there are very few reactors likely to close before 2032 which a Nuclear PTC would help to avert. Utility-owned reactors – accounting for 53 of the 92 currently operating – have no need for such a subsidy. Their owners recover their costs and a margin of profit through state-regulated utility rates. If state utility commissions were to decide that continued investment in uneconomical nuclear reactors were imprudent and that more cost-effective generation, efficiency, and/or storage options would be more practical, it would be counterproductive for the federal government to tilt the scales with a federal subsidy.

Only two reactors are slated to be retired well in advance of 2030: Diablo Canyon 1 and 2, in 2024 and 2025, respectively. Those reactors are closing when their federal operating licenses expire, under a 2016 phaseout and just transition agreement between their owner, Pacific Gas & Electric, and constituency groups, including environmental organizations and labor unions. The California Public Utility Commission (CPUC) has issued orders to PG&E and all other utilities and load-serving entities in California to develop more than 20,000 MW of renewable energy and storage resources by the time Diablo Canyon closes – several times more electricity and generation capacity than the reactors provide. Further, under state law, utilities and the CPUC must guarantee that the closure of Diablo Canyon does not result in emissions increases.

Of the other 90 currently operating reactors, ten have federal operating licenses that are scheduled to expire before the Nuclear PTC would run out in 2032. The provision of the subsidy will have little to no impact on their continued operation or greenhouse gas emissions. Of those ten, four reactors' owners have already announced their intention to seek federal license extensions from the Nuclear Regulatory Commission, implying their intent to continue operating even without a federal subsidy; one of these is a utility-owned reactor, which is planned to continue operating until 2040. The owner of a fifth reactor has already filed a license extension application.

Of the remaining five, one is a utility-owned reactor which will have its costs for relicensing, capital investments, and continued operation covered if the state utility commission determines it is a prudent investment. The other four have licenses that expire between 2029 and 2031. All are currently profitable because they are receiving subsidies through state programs intended to keep

them operational for several more years. It is not likely that a federal subsidy available for only 1-3 additional years would be a decisive factor for their owner in pursuing a 20-year license extension. All four are located in states (Illinois and New York) with robust renewable energy and emissions reduction programs.

Even if a Nuclear PTC would help avoid a few as-yet-unannounced reactor closures, the vast majority of the funds would have no discernible impact – amounting to a massive waste of taxpayer dollars. Because the availability of funds under the IRA is limited to the amount of revenue increases in the bill, the wastefulness of the Nuclear PTC would have climate impacts. The US could achieve greater emissions reductions more rapidly if the \$53.5 billion this program would cost were allocated to additional renewable energy, energy efficiency, and other zero-emissions resources. This would enable the US either to meet President Biden’s goal of 50% emissions reductions by 2030, or certainly to come much closer than the 40% reduction currently projected for IRA.