

Understanding Nuclear Subsidies – In Brief

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In the United States, the nuclear energy industry receives significant subsidies from federal taxpayers. These subsidies support the use of nuclear fuels from before raw uranium leaves the ground to the storage of spent fuel as waste material. Federal taxpayers also subsidize every part of nuclear power plants including their design, licensing, construction, electricity production, and insurance for accidents.

Below is brief overview of the current federal subsidies supporting civilian nuclear energy across the country. To limit the climate crisis, policymakers are considering how to cut emissions from our current energy mix. Before national policy adopts new and expanded nuclear initiatives, the current costs, inefficiencies, and existing suite of subsidies should be weighed against more affordable and lower risk options.

Summary of Federal Subsidies and Supports for Nuclear Energy

Subsidy	20-Year Cost (2020 dollars)	Explanation
Department of Energy Nuclear R&D Funding	\$9,307,619,000	FY2001-2020 - excludes fusion research
Percentage Depletion Allowance	\$2,620,686,884	FY2001-2020 - est. from rounded figures; includes subsidy to coal mines
Exploration & Development Costs Expensing	\$1,753,815,482	FY2001-2020 - est. from rounded figures; includes subsidy to coal mines
Special Tax Rate for Decommissioning Reserve Funds	\$10,560,181,768	FY2001-2020 - est. from rounded figures
Abandoned hardrock mining cleanup	\$5,236,652,068	FY1998-2017 - includes federal spending to reclaim all hardrock mines
Subsidy	Support Total	Explanation
Standby Support for Nuclear Plant Delays	\$2,000,000,000	- total coverage available for first six nuclear plants
DOE Loan Guarantee Program	\$12,030,060,422	- current value of loans guaranteed by DOE for nuclear projects
Nuclear Production Tax Credit	\$5,692,000,000	- est. of total credits claimed by new nuclear plants in the future
Uranium Enrichment Decontamination & Decommissioning	\$7,500,000,000	- est. of utilities' share of remaining cleanup at gaseous diffusion plants
Unquantified Item		
Royalty-free uranium mining on federal lands		
Price-Anderson Act accident liability cap		

Department of Energy (DOE) Research & Development (R&D) Spending

The current U.S. nuclear energy industry was built on federal spending. DOE nuclear energy research programs date back to the Manhattan Project. Between FY1948 and FY2000, roughly \$98 billion (\$2020) was spent developing nuclear energy. From FY2001 to FY2020, Congress appropriated another \$19 billion (\$2020), including \$9.3 billion for R&D alone.

Royalty-Free Uranium Mining and Abandoned Mine Lands

Except for one area in Colorado, uranium mining on federal lands is governed by the General Mining Act of 1872, which lets mining companies extract hardrock minerals like gold, silver, and uranium without paying any royalty. The \$0 in royalties taxpayers get from publicly owned uranium has subsidized nuclear fuel by billions of dollars over decades.

And when mining ends, companies have often abandoned toxic and radioactive mine sites, which taxpayers have to pay to clean up. Remediation for abandoned hardrock mines, including uranium, cost taxpayers \$5.2 billion between FY1998 and FY2017.

Tax Subsidies

Exploration & Development Cost Deduction & Percentage Depletion Allowance

Uranium miners can deduct their mining exploration and development costs immediately, a departure from common tax practice of deducting capital investment costs over time. Uranium miners can also deduct any other capital costs through percentage depletion, where the deduction is set at a flat percentage of gross income – 22%. There's no deduction cap, so it often exceeds the miner's actual capital costs. Together, the two tax breaks for uranium and coal mines will cost taxpayers \$1 billion over five years, according to the JCT.

Special Tax Rate for Decommissioning Reserve Funds

Nuclear plant operators contribute to Nuclear Decommissioning Reserve Funds to save up enough for clean-up after reactors shut down. Operators' contributions to and withdrawals from the funds are not taxed. The interest the fund accrues is taxable income, BUT it gets a special reduced rate – 20%. The JCT estimated the cost of the special tax rate at \$10.6 billion for FY2001-2020.

Nuclear Production Tax Credit

In the Energy Policy Act of 2005, Congress created a nuclear production tax credit (PTC). It offers 1.8 cents/kW of electricity produced by advanced nuclear reactors placed in service by 2021 over the first 8 years of operation. The production tax credits are worth a total of \$6 billion. By 2018, after plans to build a couple dozen new reactors fell flat, it was clear no plant would come online and qualify for the PTC before the 2021 deadline.

In February 2018, Congress expanded the credit to let entities that don't pay tax get the credit and transfer it to partners (enabling double-dipping), and eliminated the placed-in-service deadline, making the \$6 billion available for any new nuclear plant that might come online going forward.

Liability Protection: Price-Anderson Act

Congress enacted the Price-Anderson Act in 1957 and extended it most recently through December 31, 2025. Broadly, it limits the liability of the nuclear industry in the event of a nuclear accident, regardless of the cause or total cost. Currently, the liability cap is set at \$13 billion. There is no reliable estimate of potential damages from a nuclear accident, but one analysis put the impact for one type of accident – a fire in an on-site pool storing nuclear waste – at 143,000 cancer deaths and \$599 billion in property damage.

Treasury-Backed Loan Guarantees

The Energy Policy Act of 2005 created the DOE Loan Guarantee Program to subsidize financing for projects employing “innovative” technology that would “avoid, reduce or sequester” greenhouse gas emissions. Eventually, DOE was willing to guarantee \$22.5 billion in loans for nuclear power facilities, including \$4 billion for facilities at the “front-end” of the nuclear fuel cycle, i.e. enrichment plants. After several projects fell through, DOE offered \$8.3 billion in loan guarantees to just one project in 2014-2015. The agency charged the owners \$0 to cover the risk of default. In 2019, DOE finalized another \$3.7 billion in guarantees for the project that was more than five years behind schedule and \$14 billion over budget.

Nuclear subsidies waste taxpayer dollars and crowd out faster, cheaper, and lower risk options.

Despite the current and expensive suite of nuclear subsidies, efforts have been made to create more wasteful handouts for the nuclear industry. The American Nuclear Infrastructure Act of 2020, approved by the Senate Committee on Environment and Public Works in December 2020, proposed uncapped, two-year financial credits to nuclear plants at risk of shutting down along with other forms of subsidies. The FY2021 Omnibus Appropriations Bill included an appropriation for an unauthorized Strategic Uranium Reserve.

After decades of taxpayer support, the nuclear industry is still not able to stand on its own two feet and continues to rely on federal subsidies to remain competitive. **At a time when critical action needs to be taken swiftly and effectively to fight the climate crisis, policymakers cannot depend on nuclear energy.** By continuing to fund nuclear subsidies, policymakers run the risk of crowding out faster, cheaper, and lower risk options for low carbon energy.