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TO: Interested Parties
FROM: Nuclear Information and Resource Service
SUBJECT: Cost of Proposed Nuclear Energy Subsidies: Build Back Better Act and Bipartisan Infrastructure Bill
DATE: September 30, 2021
CC:

NIRS has updated the projected costs of the tax subsidies proposed for currently operating nuclear power plants, which is included in the Build Back Better Act. Sect. 136109 of the bill, “Zero-Emission Nuclear Power Production Credit” (Nuclear PTC) was amended during the markup process to include a termination date of December 31, 2026. This provision formally reduces the period of the subsidy to five years, from the ten year period specified in the previous version of the bill we analyzed. This does not change the annual cost of the tax credits (\$5.7 billion), but we have adjusted our estimate of the total cost accordingly: \$28.5 billion.

The top corporate beneficiaries from the Nuclear PTC would still be Exelon and Energy Harbor. They are estimated to receive \$11.3 billion and \$2.5 billion, respectively--nearly 50% of the total. These amounts would be on top of subsidies Exelon and Energy Harbor would likely receive through the Civil Nuclear Credit included in the bipartisan infrastructure bill, estimated at \$1.2 billion and \$1.8 billion, respectively. In total, these two corporations stand to receive \$13.5 billion and \$4.4 billion if Congress enacts both subsidies. Exelon and Energy Harbor are at the center of federal corruption cases involving nuclear subsidy legislation in Illinois and Ohio.

The Congressional Budget Office scored the Nuclear PTC at \$15 billion, significantly lower than the actual cost we project. CBO’s estimate is likely based on non-conservative assumptions about forward market prices for electricity and the revenues of utility-owned reactors. The Nuclear PTC provides for the value of the credit to be partially reduced to the extent that the power plant’s annual revenue exceeds \$25 per megawatt-hour (MWh), or 2.5 cents per kilowatt-hour (kWh). As we explained in our [prior memo](#), market prices for fossil gas and electricity have been in a sustained low-price trend for over a decade, and that is not expected to change in the coming years, particularly as renewable energy, storage, and energy efficiency ramp up, reducing demand for fossil gas declines and changing market pricing behavior. Particularly for budgeting purposes, it is reasonable to assume that merchant nuclear reactors would claim the full value of the credit (\$15/MWh) and that utilities will claim at least a partial value of the credit (averaging \$3/MWh).

While the total amount of the Nuclear PTC is lower than in the previous version of the bill, the subsidy remains wasteful and without practical justification. The primary policy rationale for the subsidy is to mitigate greenhouse gas emissions by preventing uneconomical reactors from closing and being replaced with fossil fuel generation. There are far more cost-effective and environmentally just ways of achieving that objective, as detailed in a [July 2021 report published by the Institute for Energy and Environment of Vermont School of Law](#).

Yet, in practical terms, there are no reactors likely to close before 2026 which a Nuclear PTC would help to avert. There are only two nuclear power plants that are slated to close between now and 2026: Palisades in Michigan (2022) and Diablo Canyon 1&2 in California (2024 and 2025). Neither plant's owner intends to change those plans if the Nuclear PTC is enacted. Entergy is closing Palisades because it decided to exit the merchant power generation business and to focus on its vertically-integrated utilities. It has already reached an agreement to sell Palisades to a nuclear waste company for decommissioning. PG&E decided in 2016 to close Diablo Canyon rather than extend its operating licenses because the plant's continued operation would have led to transmission problems and cost increases for its customers as solar generation expands in California. The company has made firm commitments to decommission Diablo Canyon and to ramp up energy efficiency programs and renewable energy procurements.

No other nuclear power plant closures have been announced, and Exelon has now canceled four previously announced reactor closures in Illinois, as a result of energy legislation enacted in September, which includes a \$700 million subsidy which will extend through 2026. Utilities recover the cost of their nuclear power plants through state-regulated rates, which typically include a margin of profit, through a rate of return on investment. A utility would not be forced to retire a nuclear power plant unless the state utility commission determines that it is no longer a prudent investment for ratepayers, making the Nuclear PTC irrelevant.

In light of these considerations, neither of the proposed subsidies for currently operating nuclear power plants--the Nuclear PTC nor the CNC--is justified. Should any merchant power corporations decide to retire a nuclear plant is not economical to operate, it would likely be eligible for the Civil Nuclear Credit in the bipartisan bill. The CNC would be targeted to support unprofitable nuclear reactors that would otherwise be retired within two years, and their retirement would lead to increased greenhouse gas emissions. The funding proposed in the bipartisan bill--\$6 billion over five years--would be enough to subsidize 12-14 reactors at rates equivalent to state-level nuclear subsidies enacted in recent years (approximately \$10/MWh). The Nuclear PTC is entirely redundant to the CNC and would only result in an enormous tax expenditure with no public benefit. Note that President Biden has committed to targeting 40% of federal spending to benefit Black, Indigenous, and People of Color communities, which the Nuclear PTC would not.

Through amendments made during the markup process, the cost of the Nuclear PTC has been reduced substantially, from nearly \$100 billion to around \$30 billion. Despite this reduction, the Nuclear PTC would be immensely wasteful. Congress should simply remove it. President Biden has committed to targeting 40% of federal spending to benefit Black, Indigenous, and People of Color communities. The Nuclear PTC and CNC would provide no funding or investment that would qualify under this Justice40 framework, thereby diverting billions of dollars from investments that would satisfy the Justice40 principles, while contributing to environmental injustice: subsidizing the consumption of uranium that disproportionately pollutes Indigenous communities and the production of radioactive waste that is currently dumped in Black, Indigenous, and Latino/a/x communities. These funds should be directed to healing racial and environmental injustices, per President Biden's Justice40 commitments.

Figure 1: Merchant Nuclear Reactors Likely Eligible for Nuclear Production Credits

State	Reactor	Controlling Owner	Capacity (MW)	Annual Gen., 2020 (MWh)	Annual Tax Credit (\$)	TOTAL (2022-2031)
CT	Millstone 2	Dominion	853	6,690,501	\$100,357,515	\$501,787,575
CT	Millstone 3	Dominion	1,220	9,024,354	\$135,365,310	\$676,826,550
IL	Braidwood 1	Exelon	1,183	10,604,454	\$159,066,810	\$795,334,050
IL	Braidwood 2	Exelon	1,154	9,767,222	\$146,508,330	\$732,541,650
IL	Byron 1	Exelon	1,164	9,853,735	\$147,806,025	\$739,030,125
IL	Byron 2	Exelon	1,136	9,671,159	\$145,067,385	\$725,336,925
IL	Clinton	Exelon	1,065	9,462,481	\$141,937,215	\$709,686,075
IL	Dresden 2	Exelon	902	7,966,534	\$119,498,010	\$597,490,050
IL	Dresden 3	Exelon	895	7,512,354	\$112,685,310	\$563,426,550
IL	LaSalle 1	Exelon	1,131	9,535,886	\$143,038,290	\$715,191,450
IL	LaSalle 2	Exelon	1,134	10,159,798	\$152,396,970	\$761,984,850
IL	Quad Cities 1	Exelon	908	8,075,967	\$121,139,505	\$605,697,525
IL	Quad Cities 2	Exelon	911	7,636,478	\$114,547,170	\$572,735,850
MD	Calvert Cliffs 1	Exelon	866	7,371,348	\$110,570,220	\$552,851,100
MD	Calvert Cliffs 2	Exelon	842	7,709,209	\$115,638,135	\$578,190,675
NH	Seabrook	NextEra	1,250	9,865,196	\$147,977,940	\$739,889,700
NJ	Hope Creek	PSEG	1,172	10,592,697	\$158,890,455	\$696,361,770
NJ	Salem 1	PSEG	1,153	7,142,172	\$107,132,580	\$675,254,175
NJ	Salem 2	PSEG	1,142	9,003,389	\$135,050,835	\$794,452,275
OH	Davis-Besse	Energy Harbor	894	7,228,063	\$108,420,945	\$1,084,209,450
OH	Perry	Energy Harbor	1,240	10,990,962	\$164,864,430	\$1,648,644,300
PA	Beaver Valley 1	Energy Harbor	907	8,047,731	\$120,715,965	\$1,207,159,650
PA	Beaver Valley 2	Energy Harbor	901	7,345,662	\$110,184,930	\$1,101,849,300
PA	Limerick 1	Exelon	1,120	9,133,195	\$136,997,925	\$1,369,979,250
PA	Limerick 2	Exelon	1,122	10,211,569	\$153,173,535	\$1,531,735,350
PA	Peach Bottom 2	Exelon	1,265	10,211,819	\$153,177,285	\$1,531,772,850
PA	Peach Bottom 3	Exelon	1,285	11,580,515	\$173,707,725	\$1,737,077,250
PA	Susquehanna 1	Talen	1,247	9,332,238	\$139,983,570	\$1,399,835,700
PA	Susquehanna 2	Talen	1,247	10,658,665	\$159,879,975	\$1,598,799,750
TX	Comanche Peak 1	Luminant	1,205	9,781,846	\$146,727,690	\$1,467,276,900
TX	Comanche Peak 2	Luminant	1,195	9,698,102	\$145,471,530	\$1,454,715,300
TX	South Texas Project 1	NRG	1,280	10,409,819	\$156,147,285	\$1,561,472,850
TX	South Texas Project 2	NRG	1,280	11,548,938	\$173,234,070	\$1,732,340,700
TOTAL			36,269	303,824,058	\$4,589,500,644\$	\$22,947,503,220\$