

Section 45Y: Clean Electricity Production Tax Credit

Section 45Y of the Internal Revenue Code (I.R.C.), or the Clean Electricity Production Tax Credit (PTC), offers a technology-neutral per-kilowatt-hour (kWh) tax credit for the production of electricity from qualified sources with a greenhouse gas (GHG) emissions rate of no greater than zero. The credit is available for a period of ten years starting from the date a qualified facility is placed in service.

Legislative History

The PTC was created by the Inflation Reduction Act and will be in effect starting in 2025, replacing the old renewable energy production tax credit (Section 45), which is eligible for facilities placed in service before 2025 and can be claimed for 10 years — so until the end of 2034. Unlike its predecessor, the new PTC is technology-neutral.

Eligibility

The PTC can be claimed by qualified facilities that are placed in service after December 31, 2024 and generate electricity with a GHG emissions rate of no greater than zero. The GHG emissions rate is calculated as grams of CO₂ equivalent per kilowatt hour (kWh) of electricity produced, considering lifecycle GHG emissions as defined by Section 211(o)(1)(H) of the Clean Air Act.¹ Facilities claiming other credits are not eligible for 45Y.²

Credit Amount

The base credit amount is \$0.003/kWh, which can be increased if specific construction requirements are met (up to +\$0.0275/kWh) or if the facility is located in an energy community (up to +\$0.0275/kWh). The credit is set to phase out over four years following the latter of 2032 or the year in which GHG emissions from the U.S. electricity sector decrease by 75% compared to 2022 levels. The credit amount will be adjusted for inflation annually.

¹ Section 211(o)(1)(H) of the Clean Air Act accounts for “all stages of fuel and feedstock production and distribution, from feedstock generation or extraction through the distribution and delivery and use of the finished fuel to the ultimate consumer, where the mass values for all greenhouse gases are adjusted to account for their relative global warming potential.”

² Sections 45 (the former Renewable Energy Production Tax Credit), 45J (Advanced Nuclear Production Tax Credit), 45Q (Carbon Oxide Sequestration Tax Credit), 45U (Zero Emission Nuclear Production Tax Credit), 48 (the original Investment Tax Credit for specific energy facilities), and 48E (new Investment Tax Credit for Clean Electricity Investment), and 48A (Advanced Coal Project Credit).

	If Wage and Apprenticeship Requirements are Not Met	If Wage and Apprenticeship Requirements are Met
Facilities Placed in Service 2025-2032*	\$0.003/kwh	\$0.015/kwh
Facilities Placed in Service 2033	100% of applicable credit amount	100% of applicable credit amount
Facilities Placed in Service 2034	75% of applicable credit amount	75% of applicable credit amount
Facilities Placed in Service 2035	50% applicable of credit amount	50% of applicable credit amount
Facilities Placed in Service 2036	0% of applicable credit amount	0% of applicable credit amount

*Or the calendar year in which GHG emissions from electricity production in the U.S. is \leq 25% of the annual emissions from electricity in 2022, whichever is later.

Taxpayer Costs

The Joint Committee on Taxation (JCT) estimates that the new 45Y will cost taxpayers \$11.2 billion from FY2022 to FY2031.

Taxpayer Concerns

Section 45Y Clean Electricity Production Credit is designed to incentivize the production of zero-emission electricity, a critical effort to combat climate change. By reducing greenhouse gas emissions, these credits have the potential to save taxpayers from long-term climate liability costs. However, if not implemented properly, the 45Y credit also has the potential to undermine the transition to a clean economy. Without stringent guidelines, there is a risk that these incentives could be misused, costing taxpayers potential tax revenue without providing real climate benefits.

- GHG-intensive energy sources that also create other environmental and fiscal liabilities must not be eligible:** Depending on how certain emissions are treated and the GHG baseline used, certain energy sources like biomass and biogas could qualify for 45Y. However, biomass energy cannot be assumed to be carbon neutral. And in practice, subsidizing burning wood pellets for electricity generation has led to increased carbon emissions, negatively impacted air quality, and created other long-term liabilities. Other energy sources like biogas from livestock manure produce tremendous GHG emissions throughout its full lifecycle and cannot be cancelled out by methane capture.
- Double dipping 45Y and the 45V hydrogen production tax credit provides perverse incentives:** If determined to have a zero emissions rate for the purposes of 45Y or 48E, generating hydrogen from electricity could receive two tax credits, 45V and either 45Y or 48E. Furthermore, if the electrolyzer is directly connected with a clean generator and produced hydrogen is later used to produce electricity, the final production of electricity could receive three tax credits: the 45Y or 48E credit twice and the 45V hydrogen production tax credit once. But generating hydrogen from electricity and using that hydrogen to generate electricity is extremely inefficient and makes no economic sense absent of these tax incentives. But allowing double dipping of these credits will create the perverse incentive to set up electrolyzes only to double or triple these credits without providing real climate benefits. And if zero-emissions electricity being diverted to produce hydrogen and new electricity being added to the grid to fill the gap for consumer

demand is not zero-emissions, then hydrogen production is diverting resources away from one of the most effective emissions reduction measures—making our grid zero-emissions.

- **Book and Claim (B&C) System Cannot be Used to Track Emissions Reduction:** The B&C system allows administrative record flow to be disconnected from the physical delivery of materials, fuels, and electricity. If certain fuel sources were to be treated as having zero or negative emissions, a power plant could purchase certificates or credits under the B&C system from a fuel producer that has “booked” a certain amount of negative emissions without physical use of such fuels while claiming zero GHG emissions. Currently, there is no established independent, reliable, and publicly accessible B&C registry that can ensure robust and accurate bookkeeping that can verify the emissions reduction claims made in corporate sustainability reports. Without a robust and universally recognized registry, there is a risk of double-counting, if tradeable credits and certificates were sold to multiple buyers, each claiming the associated tax credits.