

Federal Solar Tax Credits for Businesses

October 2022

Disclaimer

This resource from the U.S. Department of Energy (DOE) Solar Energy Technologies Office (SETO) provides an overview of the federal investment and production tax credits for businesses that own solar facilities, including both photovoltaic (PV) and concentrating solar-thermal power (CSP) energy generation technologies. It does not constitute professional tax advice or other professional financial guidance. It should not be used as the only source of information when making purchasing decisions, investment decisions, tax decisions, or when executing other binding agreements.

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Solar PV panels atop the Tulsa Central Library provide energy in downtown Tulsa, Oklahoma. Photo courtesy of Jared Heidemann.

Overview

There are two tax credits available for businesses that purchase solar energy systems (see the [Homeowner's Guide to the Federal Tax Credit for Solar Photovoltaics](#) for information for individuals):

- The investment tax credit (ITC) is a tax credit that reduces the federal income tax liability for a percentage of the cost of a solar system that is installed during the tax year.¹
- The production tax credit (PTC) is a per kilowatt-hour (kWh) tax credit for electricity generated by solar and other qualifying technologies for the first 10 years of a system's operation. It reduces the federal income tax liability and is adjusted annually for inflation.²

Generally, project owners cannot claim both the ITC and the PTC for the same property, although they could claim different credits for co-located systems, like solar and storage. Other types of renewable energy and storage technologies are also eligible for the ITC but are beyond the scope of this fact sheet.

Solar systems that are placed in service in 2022 or later and begin construction before 2033 are eligible for a 30% ITC or a 2.6 ¢/kWh³ PTC if they meet labor requirements issued by the Treasury Department⁴ or are under 1 megawatt (MW)⁵ in size.

Summary of Investment Tax Credit (ITC) and Production Tax Credit (PTC) Values Over Time

			Start of Construction						
			2006 to 2019	2020 to 2021	2022	2023 to 2033	The later of 2034 (or two years after applicable year ^a)	The later of 2035 (or three years after applicable year ^a)	The later of 2036 (or four years after applicable year ^a)
ITC	Full rate (if project meets labor requirements ^b)	Base Credit	30%	26%	30%	30%	22.5%	15%	0%
		Domestic Content Bonus				10%	7.5%	5%	0%
		Energy Community Bonus				10%	7.5%	5%	0%
	Base rate (if project does not meet labor requirements ^b)	Base Credit	30%	26%	6%	6%	4.5%	3%	0%
		Domestic Content Bonus				2%	1.5%	1%	0%
		Energy Community Bonus				2%	1.5%	1%	0%
	Low-income bonus (1.8 GW/yr cap)	<5 MW projects in LMI communities or Indian land				10%	10%	10%	10%
		Qualified low-income residential building project / Qualified low-income economic benefit project				20%	20%	20%	20%
	PTC for 10 years (\$2022)	Full rate (if project meets labor requirements ^b)	Base Credit			2.6 ¢	2.6 ¢	2.0 ¢	1.3 ¢
Domestic Content Bonus						0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
Energy Community Bonus						0.3 ¢	0.2 ¢	0.1 ¢	0.0 ¢
Base rate (if project does not meet labor requirements ^b)		Base Credit			0.5 ¢	0.5 ¢	0.4 ¢	0.3 ¢	0.0 ¢
		Domestic Content Bonus				0.1 ¢	0.0 ¢	0.0 ¢	0.0 ¢
		Energy Community Bonus				0.1 ¢	0.0 ¢	0.1 ¢	0.0 ¢

a “Applicable year” is defined as the later of (i) 2032 or (ii) the year the Treasury Secretary determines that there has been a 25% or more reduction in annual greenhouse gas emissions from the production of electricity in the United States as compared to the calendar year 2022.

b “Labor requirements” entail certain prevailing wage and apprenticeship conditions being met.

What projects are eligible for the ITC or PTC?

To be eligible for the business ITC or PTC, the solar system must be:

- Located in the United States or U.S. territories⁶
- Use new and limited previously used equipment⁷
- Not leased to a tax-exempt entity (e.g., a school), though tax exempt entities are eligible to receive the ITC themselves in the form of a direct payment.⁸

Which is right for me, the ITC or the PTC?

The ITC is an upfront tax credit that does not vary by system performance, while the PTC can provide a more attractive cash flow, as the tax credits are earned over time. Whether to choose the ITC or the PTC depends largely on the cost of the project, the amount of sunlight available, and whether it is eligible for any bonus tax credits. See an example calculation below.

In general, large-scale PV projects will receive more value if they opt for the PTC in sunny places, while projects located in less sunny areas, that incur high installation costs, or that qualify for bonus tax credits, are more likely to benefit from the ITC.

Smaller-scale PV projects and CSP projects generally receive more value utilizing the ITC, particularly if they can utilize a low-income bonus, which is not available with a PTC. However, as installed PV and CSP system costs reduce over time (or generate more electricity), the PTC may become more attractive for all sectors.

What expenses are eligible for the ITC?

While the PTC is calculated based on the electricity produced by a system, the ITC is calculated based on the cost of building the system, so understanding what expenses are eligible to include is important in determining how much of a tax credit the system is eligible for.

To calculate the ITC, you multiply the applicable tax credit percentage by the “tax basis,” or the amount spent on eligible property. Eligible property includes the following:

- Solar PV panels, inverters, racking, balance-of-system equipment, and sales and use taxes on the equipment;
- CSP equipment necessary to generate electricity, heat or cool a structure, or to provide solar process heat;
- Installation costs and certain prorated indirect costs;
- Step-up transformers, circuit breakers, and surge arrestors;
- Energy storage devices that have a capacity rating of 5 kilowatt hours or greater (even if not charged with solar)⁹
- For projects 5 MW or less, the tax basis can include the interconnection property costs spent by the project owner to enable distribution and transmission of the electricity produced or stored by the system—this can include costs that are incurred beyond the point at which the energy property interconnects to the distribution or transmission systems.¹⁰

The cost of a roof installation is generally *not* eligible, except for incremental costs, or the amount over what you would have spent if the roof was not used for solar.¹¹ These costs could include solar shingle, solar tiles, or the incremental cost of installing a reflective roof membrane that increases electricity generation.

Structures and Building-Integrated PV

Structures holding the solar PV system may be eligible for the ITC if the solar PV system is designed with the primary goal of electricity generation and other uses of the structure are merely incidental.¹² Though structural components typically do not qualify for the ITC, the IRS noted an exception for components “so specifically engineered that it is in essence part of the machinery or equipment with which it functions.”¹³ Therefore, building-integrated PV, like solar windows, shingles, or facades, which provide a dual function are eligible for the ITC.

What are the labor requirements for projects?

To qualify for the full ITC or PTC, projects must satisfy the Treasury Department’s labor requirements: all wages for construction, alteration and repair and maintenance work—for the first five years of the project for the ITC and the first ten years of the project for the PTC—must be paid at the prevailing rates of that location.¹⁴ In addition, a certain percentage of the total construction labor hours for a project must be performed by an apprentice. The percentage increases over time, starting at 10% for projects beginning construction in 2022, 12.5% for projects beginning construction in 2023, and 15% for projects beginning construction after 2023.

Projects can correct the prevailing wage requirements, if they were originally not satisfied, by paying the affected employees the difference in wages plus interest and paying a \$5,000 fee to the Labor Department for each impacted individual. The apprenticeship requirements also can be satisfied if a good faith effort was made to comply or if a penalty is paid to the Treasury in the amount of \$50/hour of non-compliance. Both penalties increase if the requirements are intentionally disregarded.¹⁵

What are the bonus credits?

The ITC and the PTC offer additional credits on top of the credits the project qualifies for based on their labor requirements.

Domestic Content Bonus

To qualify for the domestic content bonus, all steel or iron used must be produced in the United States and a “required percentage” of the total costs of manufactured products (including components) of the facility need to be mined, produced, or manufactured in the United States.

Projects that meet domestic content minimums¹⁶ are eligible for a 10 *percentage point* increase in value of the ITC (e.g. an additional 10% for a 30% ITC = 40%) or 10 *percent* increase in value of the PTC (e.g. an additional 0.3 ¢/kWh for a 2.6 ¢/kWh).

The “required percentage” of manufactured products starts at 40% for all projects beginning construction before 2025, increases to 45% for projects beginning construction in 2025, 50% for projects beginning construction in 2026, and 55% for projects beginning construction after 2026.¹⁷

Energy Community Bonus

An energy community is one of three things:

- 1) a brownfield site;
- 2) an area that, after 2009, had a 0.17% or more direct employment or 25% or more local tax revenues related to the extraction, processing, transport, or storage of coal, oil, or natural gas, and has an unemployment rate at or above the national average for the previous year; or
- 3) a census tract in which a coal mine closed after 1999 (including any adjoining census tract), or a coal-fired electric generating unit has retired after 2009.

Projects sited in an energy community are eligible for a 10-*percentage-point* increase in value of the ITC (e.g. an additional 10% for a 30% ITC = 40%) or 10 *percent* increase in value of the PTC.¹⁸

Low-Income Bonus

The low-income bonus is only available to projects using the ITC and is subject to a 1.8 GW program cap per year. This bonus provides projects that are under 5 MW either:

- 1) an additional 10% ITC for being located in a low-income community as defined by the New Markets Tax Credit¹⁹ or on Indian land; or
- 2) an additional 20% ITC for being classified as a “qualified low-income residential building project”²⁰ or “qualified low-income economic benefit project.”²¹ To qualify for the credit, the financial benefits of the solar facility must be allocated equitably between the residents.

The 1.8 GW program cap will be allocated to projects by the IRS, which can carry over any unused annual allocation for three years. Projects must be completed within four years after receipt of the allocation.

When do the ITC and PTC phase out?

Unless Congress decides to renew them, the ITC, PTC, and associated bonuses begin to phase out for projects that commence construction in 2032 or the year the Treasury Secretary determines that there has been a 75% or more reduction in annual greenhouse gas emissions from the production of electricity in the United States as compared to the calendar year 2022 (whichever is later).

- In 2033, the first year *after* the beginning year of the phaseout, the credits and bonuses for projects entering construction remain at 100% of their full value (with the exception of 1.8 GW low-income program, which ends).
- Projects entering construction in 2034, the second year after the beginning year of the phaseout, qualify for 75% of their full value. Example calculations:
 - ITC: $75\% \times 30\% = 22.5\%$
 - PTC: $75\% \times 2.6 \text{ ¢/kWh (inflation-adjusted)} = 2.0 \text{ ¢/kWh (inflation-adjusted)}$

- Projects entering construction in 2035, the third year, qualify for 50% of their full value.
- Projects entering construction after the third year are ineligible for the ITC and PTC.
- Systems greater than 1 MW that begin construction 60 days or more after Treasury’s labor guidance and do *not* meet the labor requirements are subject to an 80% reduction, including the domestic content and energy community bonuses. Example calculations:
- ITC: $(30\% + 10\%) / 5 = 8\%$
- PTC: $(2.6¢/kWh + 0.3¢/kWh) / 5 = 0.6¢/kWh$.

How can tax-exempt organizations benefit?

Organizations that don’t pay federal taxes, like non-profits or local governments, can take advantage of the tax credits through either direct pay or a transfer of credit.

- Direct pay option: Tax-exempt organizations (i.e. non-profits), states, municipalities, the Tennessee Valley Authority, Indian Tribal governments, any Alaskan Native Corporation, and any rural electric cooperative can receive a refund from the IRS for tax credits on projects placed in service after 2022.²² Projects starting construction in 2024 and 1 MW or above must meet domestic content requirements or may only receive a refund of 90% of the tax credit. This percentage lowers to 85% for projects starting construction in 2025 and 0% for projects starting construction after 2025. A penalty of 20% may apply where excess payments are requested and made by the IRS.²³ Individuals and for-profit corporations eligible for the ITC and PTC may only use them against federal taxes owed in a given year and therefore the credits are not refundable (though they may be rolled forward).
- Transfer of credit: Eligible taxpayers who are not eligible for direct payment, may sell all, or a portion, of the tax credits for a given year to an unrelated eligible taxpayer. Payments for the credit must be made in cash and are not considered gross income, for federal purposes (i.e. no federal taxes are owed on receiving the payment and no deduction is available to the tax credit buyer for making the payment). A penalty of 20% may apply where excess credits are claimed.²⁴
- A partnership between entities eligible for direct payments (e.g. non-profits) and those eligible for transfer of credit (e.g. for-profit companies) makes both parties lose their eligibility to transfer the credit or receive a direct payment.

What does “commence construction” mean?

A solar project is considered to have commenced construction if:

- At least 5% of final qualifying project costs are incurred. Expenses must be “integral” to generating electricity, and equipment and services must be delivered (or anticipated to be delivered within 3.5 months after payment); or
- “Physical work of significant nature” is commenced on the project site or on project equipment at the factory. Physical work must be “integral” to the project. Preliminary

activities on site (e.g., clearing the site or building a fence or an access road) do not count as “integral.”

Both tests require that the project makes continuous progress towards completion once construction has begun, which the IRS considers satisfied automatically if the project is **placed in service no later than four calendar years** (or ten years, for projects that meet the definition of being constructed on federal land²⁵) after the calendar year in which construction began (these four-and ten-year time periods are known as “continuity safe harbor”). Projects can still potentially satisfy the continuity safe harbor beyond four years, depending on their individual facts and circumstances, however, because this is not guaranteed, owners may bear additional risk.²⁶

Are there other incentives for solar purchases? How do they change tax credit calculations?

For information on incentives, including incentive-specific contact information, see the Database of State Incentives for Renewables and Efficiency (DSIRE) at www.dsireusa.org.

Electric Utility and State Government Rebates

Most solar system rebates provided by a utility or state government are considered taxable income and do not change the tax basis when calculating the ITC. For example, if the tax basis is \$1,000,000 for a PV system installed at a retail business that commenced construction in 2022, is placed in service within four years, and the state government gives a one-time rebate of \$100,000, the ITC would be calculated as follows:

$$0.3 * \$1,000,000 = \$300,000$$

One exception is a utility rebate for purchasing or installing solar PV at a residence.²⁷ In this case, the utility rebate is subtracted from the tax basis, reducing the amount of the ITC claimed; however, the rebate is not considered taxable income. For example, if the tax basis is \$1,000,000 for a PV system installed at an apartment complex and the utility gave a one-time rebate of \$100,000, the project commenced construction in 2022, and was placed in service within four years, the ITC would be calculated as follows:

$$0.3 * (\$1,000,000 - \$100,000) = \$270,000$$

Other Incentives

Solar incentives and policies that do not reduce the tax basis—although some may be considered taxable income— include:

- Revenue from the sale of renewable energy certificates or other environmental attributes²⁸
- Payments for a state performance- based incentive
- State and local income tax credits
- State and local property tax exemptions on the equipment

- Taxable state or nonprofit grants
- Loan guarantees
- Depreciation deductions (see below)

Accelerated Depreciation

Most taxpayers who claim the business solar ITC can use an accelerated depreciation schedule²⁹, which allows for a greater depreciation expense in the early years of the life of an asset, and effectively reducing the overall cost of a solar installation.³⁰ Depreciation is considered an expense, so having a larger amount to depreciate during the tax year results in a smaller overall tax liability.

Note that while the ITC is a tax *credit*—a dollar-for-dollar reduction in taxes owed—depreciation is a *deduction*, meaning it only reduces a business's taxes by the depreciation amount multiplied by the business's tax rate (see below for an example).

When the business ITC is claimed, accelerated depreciation rules allow the full tax basis minus half the ITC³¹ to be depreciated over a five-year depreciation schedule using a half-year convention.³² Any unused depreciation can be carried forward indefinitely.³³ Under the rules of this depreciation schedule, taxpayers are allowed to deduct a larger portion of this amount in earlier years, giving them the benefit of a greater immediate reduction in federal tax liability.

Bonus Depreciation

A business with a solar PV system placed in service between January 1, 2018, and December 31, 2022, can elect to claim a 100% bonus depreciation. Starting in 2023, the percentage of capital equipment that can be expensed immediately drops 20% per year (e.g., 80% in 2023 and 60% in 2024) until the provision drops to 0% in 2027.³⁴

Example Calculations

To illustrate how each incentive could be calculated and applied at a business, consider a business that commenced construction of a solar PV system in 2023, placed it in service in 2025, and uses the calendar year as its tax year. The 500-kW system cost \$1,000,000 and has a capacity factor of 20% in the first year. What is the net effect of claiming the ITC, bonus depreciation, and accelerated depreciation on its 2025 tax liability versus the PTC, bonus depreciation, and accelerated depreciation on its 2025 tax liability?

ITC Calculation

A solar PV property that commenced construction in 2023 is eligible for a 30% ITC, so when the tax basis is \$1,000,000, the 30% ITC reduces tax liability by \$300,000.

Bonus Depreciation Calculation

Because the business is claiming the ITC, its depreciable basis for the system after applying the ITC is 85% (100% - 30%/2) of the tax basis:

$$0.85 * \$1,000,000 = \$850,000$$

To calculate the bonus depreciation for a solar PV property placed in service in 2025, the business multiplies the depreciable basis by 40%:

$$0.4 * \$850,000 = \$340,000$$

Accelerated Depreciation Calculation

In the example, the business uses accelerated depreciation to determine what amount of depreciation it will deduct each year from 2025 to 2030. Assuming this five-year recovery period, a half-year convention, and a 200% declining balance method, IRS Publication 946 Table A-1 lists the depreciation rate as 20% for Year 1. The business calculates its accelerated depreciation deduction by taking the difference between the original depreciable basis and the amount claimed for the bonus depreciation and multiplying by the depreciation rate:

$$0.20 * (\$850,000 - \$340,000) = \$102,000$$

Total Impact on Tax Liability Assuming the business has a federal corporate tax rate of 21%, the net impact of depreciation deductions is calculated as:

$$0.21 * (\$340,000 + \$102,000) = \$92,820$$

Therefore, the total reduced tax liability for 2025 from depreciation deductions and the ITC is:

$$\$300,000 + \$92,820 = \$392,820$$

The business will continue to claim accelerated depreciation deductions for tax years 2026, 2027, 2028, 2029, and 2030—but the specific depreciation rate will vary by year.³⁵

PTC Calculation

A 500-kW solar PV property that commenced construction in 2023 is eligible for a 2.6 ¢/kWh PTC for the first ten years of a project. A first-year capacity factor of 20% would mean it generates 876,000 kWh in year one (500 kW x 24 hours/day x 365 days/year x 20% = 876,000). Therefore, in year one it generates \$22,776 in tax credits (876,000 x \$0.026/kWh = \$22,776).

Bonus Depreciation Calculation

Because the business is claiming the PTC, instead of the ITC, its depreciable basis for the system is not reduced.

To calculate the bonus depreciation for a solar PV property placed in service in 2025, the business multiplies the depreciable basis by 40%:

$$0.4 * \$1,000,000 = \$400,000$$

Accelerated Depreciation Calculation

In the example, the business uses accelerated depreciation to determine what amount of depreciation it will deduct each year from 2025 to 2030. Assuming this five-year recovery period, a half-year convention, and a 200% declining balance method, IRS Publication 946 Table A-1 lists the depreciation rate as 20% for Year 1. The business calculates its accelerated

depreciation deduction by taking the difference between the original depreciable basis and the amount claimed for the bonus depreciation and multiplying by the depreciation rate:

$$0.20 * (\$1,000,000 - \$400,000) = \$120,000$$

Total Impact on Tax Liability Assuming the business has a federal corporate tax rate of 21%, the net impact of depreciation deductions is calculated as:

$$0.21 * (\$400,000 + \$120,000) = \$109,200$$

Therefore, the total reduced tax liability for 2025 from depreciation deductions and the ITC is:

$$\$22,776 + \$120,000 = \$142,776$$

Comparison of ITC and PTC with bonus depreciation

The following provides a summary of the tax benefits associated with choosing either the ITC and depreciation or the PTC and depreciation for a utility-scale PV system. As noted above, system upfront cost, capacity factor (i.e. net energy generation), and discount rate, will be integral in determining which choice is best for a particular project.

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
ITC	ITC	\$300,000									
	Bonus depreciation	\$340,000									
	5-year MACRS	\$102,000	\$163,200	\$97,920	\$58,752	\$58,752	\$29,376				
	Net impact of depreciation deductions	\$92,820	\$34,272	\$20,563	\$12,338	\$12,338	\$6,169				
	Total Tax Benefits	\$392,820	\$34,272	\$20,563	\$12,338	\$12,338	\$6,169	\$0	\$0	\$0	\$0
PTC	Electricity generation (kWh) ^a	876,000	871,620	867,262	862,926	858,611	854,318	850,046	845,796	841,567	837,359
	PTC ^b	\$22,776	\$23,229	\$23,690	\$24,161	\$24,641	\$25,313	\$25,631	\$26,140	\$26,660	\$27,189
	Bonus depreciation	\$400,000									
	5-year MACRS	\$120,000	\$192,000	\$115,200	\$69,120	\$69,120	\$34,560				
	Net impact of depreciation deductions	\$109,200	\$40,320	\$24,192	\$14,515	\$14,515	\$7,258				
	Total Tax Benefits	\$131,976	\$63,549	\$47,882	\$38,676	\$39,157	\$32,389	\$25,631	\$26,140	\$26,660	\$27,189

a Assumes PV system performance degrades 0.5% per year.

b Assumes the PTC increases at an inflation rate of 2.5% per year.

What happens to unused tax credits?

Carryback and Carryforward Rules

Unused tax credits related to the project may be carried back three years and forward 22 years for projects placed in service in 2023 or later (projects placed in service before 2023 can carry the tax credits back one year and forward 20 years). After 20 or 22 years, one-half of any unused credit can be deducted, with the remaining amount expiring. Tax credits carried backward or forward are not eligible for “transferability” (i.e., cannot be sold).

Tax Equity Financing

If a business does not have a large tax liability, tax equity financing may allow the business to take full advantage of federal tax benefits for a solar system. The business can partner with a tax equity investor that has a relatively large tax appetite and can make use of the tax benefits. While solar developers can now transfer tax credits, a tax equity investor may help them take advantage of accelerated depreciation. There are two commonly used models, although the specific arrangements can be quite complicated:

- **Partnership Flips:** The developer and investor form a partnership, and the economic returns “flip” from the investor to the developer after the investor makes use of the tax benefits and achieves target yields.
- **Sale-Leasebacks:** The developer sells the solar system to a tax equity investor who leases the system back to the developer.

How does financing impact ITC calculations?

Eligible solar equipment purchased through debt financing qualifies for the ITC. However, individuals (including partnerships or limited liability companies), S corporations, and closely-held C corporations financing a solar project by borrowing on a “nonrecourse basis” face additional rules that may delay claiming of the ITC. Borrowing on a nonrecourse basis means the borrower is not personally liable to repay the loan, and the lender primarily relies on the solar project as collateral. In general, the portion of the solar project paid through nonrecourse financing is not immediately included when calculating the ITC (although several exceptions exist that are commonly satisfied³⁶); instead, in future tax years, the taxpayer can claim the ITC on the portion of the loan principal (but not the interest) as it is repaid.

The amount of both the PTC and ITC may be reduced by up to 15% if tax exempt bonds are used to finance a facility after August 17, 2022. The reduction is the lesser of: i) 15% or ii) the fraction of the proceeds of the tax-exempt bond used to provide financing for the facility over the aggregate amount of additions to the capital account for the qualified facility.³⁷

How do I claim the ITC and PTC?

To claim the ITC, a taxpayer must complete and attach IRS Form 3468 to their tax return. Instructions for completing the form are available at <http://www.irs.gov/pub/irs-pdf/i3468.pdf> (“Instructions for Form 3468,” IRS).

To claim the PTC, a taxpayer must complete and attach IRS Form 8962 to their tax return. Instructions for completing the form are available at <http://www.irs.gov/pub/irs-pdf/i8962.pdf> (“Instructions for Form 8962,” IRS).

A Note on Recapture Rules

Though the ITC can be claimed in full for the year in which the solar system is placed in service, the business claiming the ITC must retain ownership of the system until the sixth year of the system’s operation, or the business will be required to repay a portion of the tax credit. Because

the ITC “vests” at a rate of 20% per year over five years, any “unvested” portion is recaptured (i.e., repaid to the IRS if something happens during the five years that would have made the project ineligible for the ITC in the first place. For example, if the business claims the ITC and then sells the system a year later, after it has only vested 20%, it will have to repay 80% of the amount it claimed from the ITC to the IRS. PTCs are not subject to recapture.

More Information

Ask Questions

Internal Revenue Service (IRS), 1111 Constitution Avenue, N.W., Washington, D.C. 20224, (800) 829-1040.

Find Resources

The federal statutes regarding the ITC: 26 U.S.C. § 48 and § 48E. The federal statutes regarding the PTC: 26 U.S.C. § 45 and § 45Y at www.govinfo.gov.

Endnotes

¹ 26 U.S.C. § 48 & 48E. Projects must begin construction before January 1, 2025, to be eligible for the § 48 investment tax credit. Projects beginning construction on January 1, 2025 or later are only eligible for the § 48E Clean Electricity Investment Tax Credit (which is only available to projects placed in service after December 31, 2024).

² 26 U.S.C. § 45 & 45Y. Projects must begin construction before January 1, 2025 to be eligible for the § 45 production tax credit. Projects beginning construction on January 1, 2025 or later are only eligible for the § 45Y Clean Electricity Production Tax Credit (which is only available to projects placed in service after December 31, 2024).

³ The PTC, as written, has a full value of 1.5 ¢/kWh in 1992 dollars, but is adjusted each year using “GDP implicit price deflator” published by the Department of Commerce. The reduced “base rate” offered to solar systems that do not meet the prevailing wage and apprenticeship requirements has a value of 0.3 ¢/kWh in 1992 dollars. In the event of rounding, the 1.5 ¢/kWh rate is rounded to the nearest 0.1 cent, while the 0.3 ¢/kWh is rounded to the nearest 0.05 cent.

⁴ Projects are also eligible if they begin construction less than 60 days after the Treasury Department issues guidance on meeting prevailing wage and apprenticeship labor requirements. For more information see Section 13101(f) of the Inflation Reduction Act of 2022.

⁵ All megawatts and gigawatts numbers use AC.

⁶ The IRS has ruled the ITC can be claimed by U.S. corporations, citizens, or partnerships that own solar in U.S. territories; however, companies and individuals are not eligible to receive the tax benefits if they do not pay federal income tax, which means most Puerto Ricans and Puerto Rican companies are ineligible. Therefore, solar assets in U.S. territories would most likely need to be owned by outside U.S. investors to take advantage of the ITC (Farrell, Mac, Lindsay Cherry, Jeffrey Lepley, Astha Ummat, and Giovanni Pagan. 2018. Reimagining Grid Solutions: A Better Way Forward for Puerto Rico. Prepared for the Global Collaboratory Panel. https://sipa.columbia.edu/sites/default/files/embedded-media/Reimagining%20Grid%20Solutions_Final%20SIPA%20REPORT_0.pdf).

⁷ No more than 20% of the eligible value of the solar system can be classified as used equipment.

⁸ 26 U.S.C. § 50(b)(3).

⁹ 26 U.S.C. § 48(a)(6).

¹⁰ 26 U.S.C. § 48(a)(8).

¹¹ <https://www.irs.gov/pub/irs-wd/201523014.pdf>.

¹² Meehan, Chris. “Solar Carports, Incentives and the Investment Tax Credit: It’s Complicated, Kinda.” Solar-Estimate. Last updated August 1, 2019: <https://www.solar-estimate.org/news/solar-carports-incentives-investment-tax-credit-113017>.

¹³ IRS. 2010, October 29. IRS private letter ruling 201043023. <https://www.irs.gov/pub/irs-wd/1043023.pdf>.

¹⁴ As determined by the Secretary of Labor, in accordance with 40 U.S.C. § 3141-3148.

¹⁵ For more information see Section 13101(f) of the Inflation Reduction Act of 2022.

¹⁶ For more information see 26 U.S.C. § 45Y(g)(11)(C).

¹⁷ 26 U.S.C. § 45Y(g)(11)(C).

¹⁸ For more information, see 26 U.S.C. § 45(b) (11)(B).

¹⁹ See: <https://www.cdfifund.gov/sites/cdfi/files/documents/nmtc-target-areas-ga.pdf> for more information on New Markets Tax Credits definition of low-income communities.

²⁰ A “qualified low-income residential building project” is defined as a residential rental building which participates in a covered housing program (i.e. HUD-assisted housing for groups in need. See: 24 CFR § 5.2003 for the full definition).

²¹ A solar project is treated as a part of a “qualified low-income economic benefit project” if at least 50% of the financial benefits of the solar electricity are provided to households with incomes i) less than 200% of the poverty line (as defined in section 26 U.S. Code §36B(d)(3)(A)) applicable to a family of the size involved, or (ii) less than 80% of area median gross income (as determined under section 26 U.S. Code §142(d)(2)(B)).

²² 26 U.S.C. § 6417.

²³ An exemption to the domestic content provision applies if i) it would increase the cost of the system by more than 25%, ii) the project is under 1 MW in size, or iii) the domestic content is not produced in sufficient quantities or of a satisfactory quality.

²⁴ 26 U.S.C. § 6418. The transferee cannot further transfer any credits it received in the transfer.

²⁵ “Beginning of Construction for Sections 45 and 48; Extension of Continuity Safe Harbor for Offshore Projects and Federal Land Projects.” IRS. Notice 2021-05.

²⁶ “Beginning of Construction for the Investment Tax Credit under Section 48.” IRS. Notice 2018-59. <https://www.irs.gov/pub/irs-drop/n-18-59.pdf>. The IRS provided a one-year extension to the Continuity Safe Harbor for projects that began in 2016 or 2017, and a new safe harbor for satisfying the 3.5 month rule for property or services purchased after September 15, 2019 and received by the taxpayer no later than October 15, 2020. “Beginning of Construction for Sections 45 and 48; Extension of Continuity Safe Harbor to Address Delays Related to COVID-19.” IRS. Notice 2020-41. <https://www.irs.gov/pub/irs-drop/n-20-41.pdf>.

²⁷ 26 U.S.C. § 136(a) states that “gross income shall not include the value of any subsidy provided (directly or indirectly) by a public utility to a customer for the purchase or installation of any energy conservation measure.” Solar PV is considered an “energy conservation measure”, per 26 U.S.C. § 136(c)(1). <https://uscode.house.gov/view.xhtml?path=/prelim@title26/subtitleA/chapter1/subchapterB/part3&edition=prelim>.

²⁸ 19 IRS. 2010, September 3. IRS private letter ruling 201035003. <https://www.irs.gov/pub/irs-wd/1035003.pdf>.

²⁹ Generally, owners of property placed in service after 1986 use the Modified Accelerated Cost-Recovery System (MACRS) in the U.S. tax code to calculate asset depreciation.

³⁰ Stand-alone storage is not eligible for 5-year MACRS until 2025, but can qualify for bonus depreciation before then.

³¹ 26 U.S.C. § 168, <https://www.govinfo.gov/app/details/USCODE-2017-title26/USCODE-2017-title26-subtitleA-chap1-subchapB-partVI-sec168>.

³² A half-year convention is a tax principle that treats equipment as if it were installed in the middle of the tax year (regardless of when it was actually installed), allowing half a year's depreciation for the first tax year. The half-year convention effectively spreads the

five-year MACRS depreciation over six years, with the first year being calculated as half of the 200% declining-balance basis.

³³ Before 2018, any unused depreciation could be carried back 2 years and forward 20 years, but that changed with the passage of the Tax Cuts and Jobs Act of 2017 ("Who Needs Sec. 179 Expensing When 100% Bonus Depreciation is Available?" Thomson Reuters Tax and Accounting, October 5, 2018. <https://tax.thomsonreuters.com/news/who-needs-sec-179-expensing-when-100-bonus-depreciation-is-available/>).

³⁴ The bonus depreciation, after 2018, is available for purchased new and used equipment. (Martin, Keith. 2017, December. "How the US Tax Changes Affect Transactions." Norton Rose Fulbright Project Finance Newswire. <https://www.nortonrosefulbright.com/en-us/knowledge/publications/68becf68/how-the-us-tax-changes-affect-transactions>).

³⁵ IRS. 2015. How to Depreciate Property. Publication 946, Cat. No. 13081F. <http://www.irs.gov/pub/irs-pdf/p946.pdf>.

³⁶ 26 U.S.C. § 49.

³⁷ 26 U.S.C. §§ 45(b)(3), 48(a)(4).

