

Accounting for PV System Rebates

Until recently, I assumed that federal tax credits for PV systems were based on the net cost of the system after subtracting any utility rebates. But a newsletter I received indicates that the 30% investment tax credit is based on the total PV system cost, before subtracting the state incentive. Is this accurate?

This depends on whether your customer is a homeowner or a business. The distinction hinges on the terms *personal tax credit* and *investment tax credit*. The Database of State Incentives for Renewable Energy (DSIRE) makes this distinction, for example. On the DSIRE Web site (dsireusa.org), the “Residential Renewable Energy Tax Credit” is described as a personal tax credit, whereas the “Business Energy Investment Tax Credit” is identified as a corporate tax credit. Personal and corporate tax codes are quite different, specifically with regards to the way one accounts for utility rebates.

Homeowners. For most homeowners who purchase a grid-tied PV system, there are two principal financial incentives: a rebate and the federal tax credit. The rebate is usually available from the utility to which the system is connected. The federal tax credit takes the form of a personal tax credit (PTC) that is available to the homeowner.

When a rebate is available from the utility company, the rebate is treated as a purchase price reduction. This means that the value of the rebate is subtracted from the total purchase price, resulting in a net adjusted cost for the purposes of determining the value of the federal tax credit. So, for homeowners the value of the PTC is calculated as follows, where P is the purchase price and R is the rebate amount:

$$\text{PTC} = (P - R) \times 30\%$$

Prior to January 1, 2009, the federal tax credit for homeowners was capped at \$2,000. This made for pretty simple math, since this cap was reached on all but the smallest PV systems. For example, assuming a rebate of \$3.50 per watt, a purchase price of \$12,750 (\$8.50/watt) and a 2008 placed-in-service date, the \$2,000 cap for the Residential Renewable Energy Tax Credit is exceeded even on a 1.5 kW grid-direct PV system:

$$\text{PTC} = (\$12,750 - \$5,250) \times 30\%$$

$$\text{PTC} = \$7,500 \times 0.30$$

$$\text{PTC} = \$2,250 \geq \$2,000 \text{ cap}$$

With the passage of the Emergency Economic Stabilization Act of 2008, the \$2,000 cap on the PTC for PV systems was lifted, and tax credits for solar were extended for 8 years. Residential grid-tied PV systems installed between January 1, 2009 and December 31, 2016 qualify for a full 30% tax credit. For a 5.6 kW PV system with a purchase price of \$46,200 (\$8.25/watt) and a 2009 placed-in-service date, an additional \$5,980 PTC (\$7,980 - \$2,000) results compared to a 2008 placed-in-service date, under the same \$3.50 per watt rebate:

$$\text{PTC} = (\$46,200 - \$19,600) \times 30\%$$

$$\text{PTC} = \$26,600 \times 0.30$$

$$\text{PTC} = \$7,980$$

Two items are worth noting before we look at how the federal tax credit is calculated for businesses. First, according to version 2.0 of the Solar Energy Industries Association (SEIA) *Guide to Federal Tax Incentives for Solar Energy*, “Most rebates from state governments or non-profit organizations do not reduce the basis for the

federal credit.” So make sure you know where your rebate comes from and its tax classification. Second, dwelling units with a home office serve a dual residential and commercial purpose. So while depreciation in general is unavailable to homeowners, those with an in-home business may be able to depreciate the portion of the PV system that qualifies according to the IRS as commercial property, usually on the basis of a square foot determination.

Businesses. In addition to rebates and federal tax credits, commercial customers who purchase grid-tied PV systems are also entitled to a third major financial incentive: depreciation. Depreciation is a mechanism for spreading out the cost of acquiring large capital items over time. Solar projects, even though they have a 25-year service life, qualify for 5-year accelerated depreciation. Furthermore, systems placed in service in 2008 and 2009 also qualify for bonus depreciation. These PV systems are still depreciated over 5 years, but they can take 50% the first year and 12.5% in each of the succeeding 4 years. Originally, the bonus depreciation of 50% in year one was available only for systems placed in service in 2008, and it expired on January 1, 2009. But the American Recovery and Reinvestment Act, signed into law by President Obama on February 17, 2009, reinstates bonus depreciation for PV projects completed in 2009.

Unlike the PTC, the commercial tax credit—usually referred to as the investment tax credit (ITC)—can be calculated in two different ways. The first process is the rebate-first method, which is the same as for homeowners. In this case, the business subtracts the rebate amount from the purchase price of the PV system and uses the net difference

to determine the ITC amount. The second approach is the ITC-first method. In this case, commercial property owners apply the ITC to the full purchase price first and then treat the rebate as taxable income. This is the method mentioned in the newsletter you received. The formula for calculating the ITC in this case is simply to take 30% of the purchase price:

$$ITC = P \times 30\%$$

The ITC-first method results in a larger basis for the tax credit and for the 5-year accelerated depreciation plus bonus depreciation. If the business reduces the purchase cost of the PV system by the value of the utility rebate, then the depreciation is based on this adjusted value. If the business does not reduce the system cost by the value of the utility rebate, however, then depreciation is based on the nonadjusted purchase price. This results in a significantly larger depreciable basis.

In either case, before depreciation is calculated, it is necessary to first reduce the purchase price by one-half of the value of the federal tax credit. So using the rebate-first method of accounting—the purchase price reduction method—the depreciable basis (DB) for a 12.5 kW PV system sold to a business for \$100,000 (\$8.00/

watt) with a \$3.50 per watt rebate is calculated as follows:

$$DB = (P - R) - (0.5 \times ((P - R) \times 30\%))$$

$$DB = (\$100,000 - \$43,750) - (0.5 \times ((\$100,000 - \$43,750) \times 30\%))$$

$$DB = \$56,250 - (0.5 \times (\$56,250 \times 0.3))$$

$$DB = \$56,250 - (0.5 \times \$16,875)$$

$$DB = \$56,250 - 8,437.50$$

$$DB = \$47,812.50$$

Compare this to the depreciation basis using the ITC-first method of accounting:

$$DB = P - (0.5 \times (P \times 30\%))$$

$$DB = \$100,000 - (0.5 \times (\$100,000 \times 0.3))$$

$$DB = \$100,000 - (0.5 \times \$30,000)$$

$$DB = \$100,000 - \$15,000$$

$$DB = \$85,000$$

The ITC-first method results in a much more attractive basis for depreciation. It also leverages a larger federal tax credit. But does it actually provide the best financial return?

As illustrated in Table 1, the ITC-first method does indeed provide the most favorable return. This leverages a \$30,000 tax credit, as well as depreciation totaling \$22,848 (assuming a 28% marginal tax rate and a 4% discount rate.) This requires that the business

treat the \$43,750 rebate as taxable income, but the tax on the rebate is only \$12,250 (\$43,750 x 28%). Taking the rebate first leaves \$23,121 on the table ((\\$30,000 + \\$22,848) - (\\$16,875 + \\$12,852)). Therefore, taking the ITC first and taxing the rebate nets the business nearly \$11,000 in this example.

This is the reason that the newsletter you received recommends taking the ITC on the total PV system cost. In his excellent article “Payback and other Financial Tests for Solar Electric Systems,” Andy Black of OnGrid Solar (ongridsolar.com) confirms this approach. He notes, “While it might seem obvious to avoid the rebate tax ... it is actually financially more attractive to claim the rebate as taxable, pay the tax, then claim a higher basis for each of the federal tax credit and depreciation.”

Please note that this review of incentives is based on information contained in the Federal Tax Code and bills recently signed into law. This is not to be construed as tax advice. Always consult a tax professional. SEIA members can download the tax manual for free from its Web site at seia.org.

—Peter Parrish, Ph.D. / California Solar Engineering / Los Angeles, CA / calsolareng.com

The author wishes to thank Sue Kateley of CALSEIA for her input and review of this article.

Total Depreciation: Rebate First vs. ITC First

	Price	Rebate	ITC	Depreciable basis	Marginal tax rate	Total depreciation	1st Year	2nd Year	3rd Year	4th Year	5th Year
Rebate first	\$100,000	\$43,750	\$16,875	\$47,813	28%	\$13,388	\$6,694	\$1,673	\$1,673	\$1,673	\$1,673
Discounted (4%)						\$12,852	\$6,426	\$1,607	\$1,607	\$1,607	\$1,607
ITC first	\$100,000	\$43,750	\$30,000	\$85,000	28%	\$23,800	\$11,900	\$2,975	\$2,975	\$2,975	\$2,975
Discounted (4%)						\$22,848	\$11,424	\$2,856	\$2,856	\$2,856	\$2,856

Table 1 Taxing the rebate increases both the tax credit amount and the total depreciation. The net benefit to the customer is greater than the tax on the rebate.