



Cheat Sheet: Solar Energy for your Farm or Business

COULD MY BUSINESS USE SOLAR ELECTRIC ENERGY?

Solar can be a smart business investment for your business depending on a few factors.

- Does your business property have a good southern exposure or a south-facing roof?
- Is your roof or property largely unshaded?
- Is the roof in good condition?

Assuming the answer is YES to these questions, it's worth your time to investigate solar PV as an investment.¹

DOES MY BUSINESS PAY A LOT OF FEDERAL INCOME TAXES?

Up to 30% of the cost of a solar PV installation qualifies for the Federal Business Energy Investment Tax Credit (the "ITC") in the year it is installed. This below-the-line income tax deduction off your business tax bill makes solar an attractive way to re-invest.

The ITC has a twenty-year carryforward and one-year carryback period which makes realizing the 30% income tax credit a possibility for most, even if the business is not in the 35% income tax bracket (*see* 26 U.S.C. §§ 39 and 48(a)(3)). Regardless, the sooner the full income tax credit amount can be realized, the faster the return on the solar PV investment.

Using round numbers as an example, a 20 kilowatt DC array costs roughly \$60,000 out of pocket at today's installation prices (September 2017). With the 30% ITC, this reduces the project cost to \$42,000 after realizing the tax benefit. The \$60,000 is paid upfront, but the tax benefit is realized later when taxes are due. Showing the math:

$$\$60,000 \times 30\% \text{ ITC} = \$18,000 \text{ ITC tax credit}$$

$$\$60,000 \text{ out-of-pocket cost} - \$18,000 \text{ tax credit} = \$42,000 \text{ after ITC credit}$$

Some installers provide a "tax benefit" loan during construction season to reduce the upfront cost by the dollar amount of the 30% tax credit, and then reclaim the dollar value of the 30% tax credit plus interest and fees when the ITC tax credit is settled after Tax Day in the spring.

Please note the 30% ITC steps down to 26% starting on January 1, 2020 and decreases down to 10% over the next several years.

¹ The information provided herein is NOT to be considered legal or tax advice. Proper legal counsel, along with IRS guidance, is required to definitively determine the tax ramifications of investing in a solar PV system for your business. CERTs provides the following information as a courtesy to help you evaluate whether a solar PV system is right for your business. Enjoy!



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CAN I DEPRECIATE A SOLAR ARRAY AS A BUSINESS INVESTMENT?

Yes. Solar PV is considered “energy property” by the Internal Revenue Service (see 26 U.S.C. §§ 168(e)(3)(B)(vi) and 48(a)(3)(A) and may be depreciated through two simultaneous methods:

- Bonus Depreciation, and
- Modified Accelerated Cost Recovery System (MACRS)

Generally speaking, depreciation is an annual income tax deduction that allows you to recover the cost or other basis of certain property over the time you use the property. To claim depreciation on property, you must use it in your business or income-producing activity. You cannot depreciate property that you use solely for personal activities. The IRS assigns solar arrays a 5-year depreciation schedule (see IRS Publication 946 (2016)).

WHAT IS BONUS DEPRECIATION AND HOW DOES IT APPLY TO SOLAR ARRAYS?

50% Bonus Depreciation allows for depreciation of 50% of the solar array’s “adjusted tax basis” in the year it is placed in service. Adjusted tax basis is the net cost of an asset after adjusting for various tax-related items.

For solar as energy property, the cost basis is reduced by half (50%) of the 30% ITC. In other words, 15% (see IRS Publication 3468 (2016)). In the 20 kW DC array example, the cost basis is \$60,000, but the adjusted tax basis for the purposes of depreciation reduces the \$60,000 by \$9,000.

Now that we have the adjusted tax basis of the solar array, the 50% Bonus Depreciation may be applied. Again, 50% Bonus Depreciation allows for depreciation of 50% of the adjusted tax basis in the year the solar array is installed. For our 20 kW DC array example, if the array is placed in service in 2017, the \$51,000 adjusted tax basis is depreciated by 50% or \$25,500. Showing the math:

$$\$60,000 \times (.30 \text{ ITC} / .50 \text{ reduction}) = \$9,000$$

$$\$60,000 - \$9,000 = \$51,000 \text{ adjusted tax basis}$$

$$\$51,000 \times .50 = \$25,500 \text{ bonus depreciation amount}$$

Please note bonus depreciation is on a phase-out schedule for the next several years on the following schedule: 2015-2017: 50% depreciation; 2018: 40%; 2019: 30%, 2020 and beyond: 0% (see The PATH Act of 2015, Public Law No.: 114-113, 129 Stat. 2242 (12/18/2015)).



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SO HOW DOES MACRS DEPRECIATION APPLY IN ADDITION TO BONUS DEPRECIATION?

MACRS, or the Modified Accelerated Cost Recovery System, operates on a depreciation schedule provided by the IRS (as noted in Depreciation % in the table below and in IRS Publication 946, Table A-14). As mentioned above, solar arrays are 5-year property according to the IRS depreciation schedule for properties in the 5-year class. MACRS depreciation, in combination with Bonus Depreciation for a 20 kW DC solar array with a turnkey project cost of \$60,000 looks like this with Year “0” being the year placed in service.

DEPRECIATION COST RECOVERY: 5-Year Property Schedule								
Full Cost	\$ 60,000.00							
Adjusted Basis	\$ 51,000.00							
		2016	2017	2018	2019	2020	2021	Total
Adjusted Basis (85% of full cost)	\$ 51,000.00							
Depreciation Basis	\$ 25,500.00	(after 50% bonus depreciation)						
Depreciation %		15.00%	25.50%	17.80%	16.60%	16.60%	8.50%	100%
Depreciation Expense	\$ 3,825.00	\$ 6,502.50	\$ 4,539.00	\$ 4,233.00	\$ 4,233.00	\$ 2,167.50		
Year 1 50% Bonus Depreciation	\$ 25,500.00							
Yearly Depreciation Tax Benefit	\$ 29,325.00	\$ 6,502.50	\$ 4,539.00	\$ 4,233.00	\$ 4,233.00	\$ 2,167.50	\$ 51,000.00	

WHAT WOULD THAT FINANCIAL PICTURE LOOK LIKE FOR MY BUSINESS?

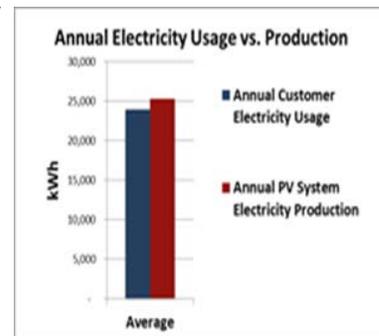
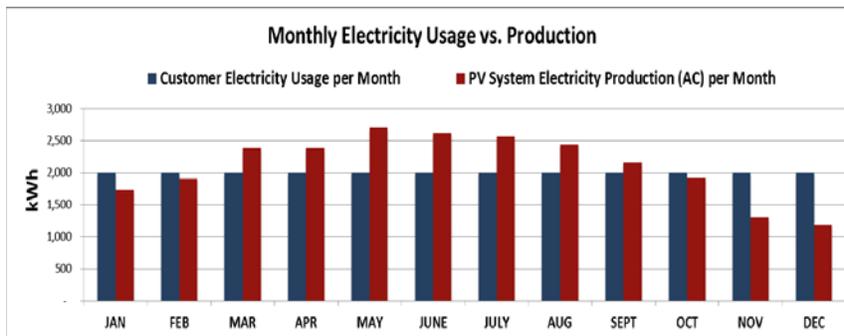
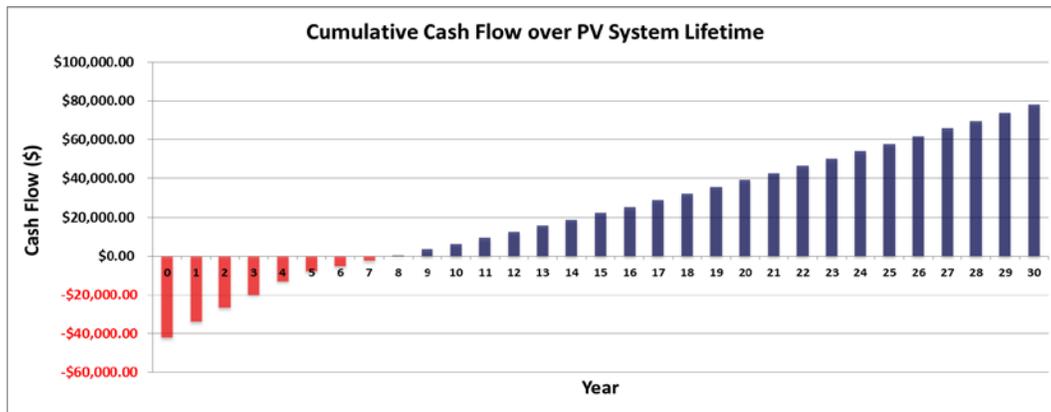
The cost recovery and rate of return on a solar array involve calculating the business’s average annual kilowatt-hour consumption, federal income tax liability, and incentives (if available) in your utility service territory.

For example, a business in Central Minnesota which consumes approximately 2,000 kilowatt-hours per month or 24,000 kilowatt-hours per year, has an unshaded 20 kilowatt DC solar installation (no tracking system), can access the 30% ITC and use the MACRS and bonus depreciation tax benefits would see a financial picture like the following:

Initial Cost of PV System (without incentives)	\$60,000
30% Federal Investment Tax Credit	<u>\$18,000</u>
Net Cost of PV System After 30% ITC Tax Credit	\$42,000
First Year Utility Bill Savings	\$2,528
Years to Cost Recovery ⁱ	8.0 Years
Simple Payback ⁱⁱ	16.6 Years
Net Present Value (NPV) of Solar Array ⁱⁱⁱ	\$24,145
Internal Rate of Return ^{iv}	10.78%
Profitability Index ^v	1.57
Cumulative Cash Flow	\$78,032.12



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ⁱ **Years to Cost Recovery** refers to the deduction of a portion of the cost of the solar array as an asset, used in the business for the production of income over its useful life through depreciation. Cost recovery for this calculation happens through income tax deductions. It includes bonus depreciation and the IRS's Modified Accelerated Cost Recovery System 5-year property depreciation schedule, and the remainder of the cost of the solar array in avoided utility costs

ⁱⁱ **Simple Payback** measures the time in years, it takes to recover the cost of an investment through the investment's annual returns. Here, annual returns are the annual utility bill savings (\$42,000 Net Cost ÷ \$2,528 Utility Bill Savings = 16.6 years)

ⁱⁱⁱ **Net Present Value** takes into account the initial investment cost of a solar array and the discounted cash flows the solar array returns in the future. A positive net present value indicates that the projected earnings (utility bill savings along with any excess energy generation sales revenues) generated by a solar array investment in present dollars exceeds the anticipated costs, also in present dollars. The net present value calculation in this example uses a 5% discount rate and 30 years' cash flow, the typical life span of a solar array.

^{iv} **Internal Rate of Return** measures the profitability of potential investments. It is a discount rate that makes the net present value of all cash flows from a solar array equal to zero. The higher the internal rate of return, the better the investment is.

^v **Profitability Index** measures the effectiveness of an investment by comparing the net present value of the returns on the investment to the initial investment itself. If the profitability index is greater than or equal to 1, then it is an effective investment