



ECONOMICS OF A SOLAR PHOTOVOLTAIC PROJECT IN RURAL OREGON

USDA’s §9006 program provides grants (& loan guarantees) to rural small businesses & agricultural producers for up to 25% of the cost to purchase & install renewable energy generation systems & energy efficiency improvements. Many other incentives are also available in Oregon.

The myriad of programs offered can be confusing, so the following example of a small solar project is presented to demonstrate some of the factors involved in evaluating the viability of such a renewable energy project. The figures used are illustrative approximations & should not be relied on. Businesses will need to confirm and weigh all relevant factors for themselves before deciding whether and how to proceed.

Project

- A small **18 kW solar photovoltaic (PV) project** for a small business or farm on a fix-mounted platform situated on a favorably-oriented, engineered rooftop or small structure.
- The PV system will be “net metered” with the utility so that the owner offsets energy costs with the PV energy generation. In Oregon, net-metering is permitted for projects up to 25 kW, always subject to utility approval.
- The PV system has a 25-year materials warranty with a 5-year installation warranty.

Cost

PV panels	@~\$6,450/kW	18 kW x \$6,450 =	\$ 116,100
Installation	@17-23% of system	say 20% of \$116,100 =	23,400
Engineering, permits, etc.	@\$2,500-5,000	say...	4,500
Total Project Cost			\$ 144,000

Cash Sources of Funds (INTERIM – during construction)

Energy Trust (PGE & Pacific Power customers) or local utility incentives	Incentives vary. When available, they typically range is \$1-\$1.50/W	say \$1.25/W x 18,000 W = (paid upon completion)	\$ 22,500
Owner	using cash or financing		121,000
Total Interim Sources			\$ 144,000

Cash Sources of Funds (FINAL – after completion)

Energy Trust/utility incentives	See interim sources		\$ 22,500	15.6%
§9006 grant from USDA	25% of project cost	\$144,000 x .25 =	36,000	25.0%
BETC “pass-thru” option ** (Oregon Business Energy Tax Credit)	33.5% of (project cost – §9006 grant)	(\$144,000-36,000)x0.335 =	36,180	25.1%
Total Cash Incentives			\$ 94,680	65.8%
Owner’s share	using cash or financing for remainder			
e.g. Bank loan	85% loan guarantees avail. from USDA (§9006 GL)		\$ 34,920	24.3%
e.g. Owner cash-in			14,400	10.0%
Total Owner Funding			\$ 49,320	34.3%
Total Final Cash Sources			\$144,000	100%

Resulting Energy Generation

- Energy generation for solar projects depends on factors including region, site, surroundings, orientation, etc. – as well as the capacity of the PV system. Incentives require that site not have more than 25% total losses from tilt, orientation and shading. Consult a specialist for a site assessment.
- Energy production may range from 1.08 to 1.41 kWh/year for every installed Watt, providing the system is installed with no losses due to tilt, orientation and/or shading. In southern Oregon, our project might be expected produce roughly 1.3 x 18,000 Watts = 23,400 kWh per year.

Post-Completion Cash Benefits

Energy savings via net-metered energy generation	23,400 kW-hrs/yr @ \$0.07-.10/kWh	say \$0.08 x 23,400	\$1,872/year
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Post-Completion Tax Benefits *

** BETC – <i>only available if pass-thru option was not taken</i> (Oregon Business Energy Tax Credit)	50% of (project cost – \$9006 grant) used over 5-8 years	$(\$144,000 - 36,000) \times 0.5 =$ \$54,000 total BETC	\$10,800/year for 5-8 yrs
Federal Investment Tax Credit (but authority to expire 12/1/2008)	30% of project cost taken in 1 st year	$\$144,000 \times 0.3 =$	\$43,200 one-time tax credit
Federal Modified Accelerated Cost Recovery System (MARCS)	accelerated depreciation deduction		Ask your CPA
Oregon State Tax Depreciation	accelerated depreciation deduction		Ask your CPA
Oregon Property Tax Exemption			Ask your CPA

* This is not presented or intended as tax advice. Seek professional tax advice from your CPA.

* Incentives mentioned above (including \$9006 grants & BETC) may be taxable. Seek professional tax advice.

Payback Calculations

Simple payback of investment if no incentives	$\$144,000 \text{ cost} \div \$1,872/\text{year energy savings} =$	77 years
Simple payback of investment after all potential cash incentives (assuming BETC pass-thru option is used)	$(\$144,000 \text{ cost} - \$94,600 \text{ incentives}) \div \$1,872/\text{year energy savings} =$	27 years
Simple payback of investment after all potential cash, tax credits, & depreciation deduction incentives	Ask your CPA	4-5 years

- The payback period will be faster if electric rates rise.

System Equity & Value

A well-designed system will perform for decades with proper maintenance and care, providing an ongoing return in the form of rate-free power generation – immune from all rate increases.

Helpful links

USDA Rural Development’s \$9006 grant program: energy.ruralOregon.biz

Other Oregon funding incentives: www.oregon.gov/ENERGY/RENEW/programs.shtml

Energy Trust incentives (PGE & Pacific Power customers): www.energytrust.org/

Other utilities’ incentives: contact your utility for details.

For more information:

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