



Solar Pool Heating System

Oregon Department of Energy

The Oregon Residential Energy Tax Credit Program provides a tax credit for solar water heating systems based on estimated annual savings. The savings for each qualifying system is estimated using the collector area and where in the state it is located. The credit is based on \$0.20 per kWh of estimated savings. The maximum credit that can be claimed for any system is \$2,500 or 50 percent of the total system cost, whichever is less. The system cost is the cost to design, acquire, construct, install, permit and inspect the system. System cost does not include service contracts, rebates, or refunds. The amount of the tax credit may be reduced if the system has losses from sub-optimal tilt, orientation or external shading. The attached "sun chart" worksheet is used to determine the combined impact of tilt, orientation and external shading on system performance.

This tax credit is available to Oregon residents and is in addition to other utility or efficiency program rebates or incentives. The system(s) must be new and located in an Oregon dwelling that is your primary or secondary (vacation) residence. For details on who is eligible for the tax credit, see the next page.

SYSTEM VERIFICATION – Although NOT required for pool heating systems it is recommended that the system's performance and quality be verified by a tax-credit certified solar technician. A list of companies that employ tax-credit certified technicians can be found on the Oregon Department of Energy's Web site (www.oregon.gov/energy).

Don't wait to apply for the tax credit as processing may take several weeks. You will receive a certification card that you will need when you file your Oregon Tax Return.

Take the following steps to receive your tax credit:

1. **Submit a completed *Application and Verification Form for Tax Credit Certification Solar Pool Heating System*.** Your solar technician should complete the technical sections, sun chart, and the technician verification section of the form. Mail your application to the Oregon Department of Energy at the address listed on the back of the application. Include the sun chart, proof of payment (dated receipts, contracts, or invoices marked paid by your technician). We will review the application and send you a certification postcard indicating the qualifying tax credit amount.
2. **Claim the tax credit on your state income tax form.** The credit must be claimed for the tax year in which the alternative energy device was purchased (down payment) if the device is operational by April 1 of the next following tax year. Proof of purchase must be a contract or invoices dated in the year for which the applicant is claiming the credit.
3. **Keep your certification, a copy of your application, and proof of payment with your tax records.** Do not attach the certification post card to your tax return. Upon audit or examination, the information shall be made available to the Oregon Department of Revenue to verify any credit claimed. Tax credits not taken in the first tax year may be carried forward up to five years.

OVER

Eligibility for the Oregon Residential Energy Tax Credit:

To qualify for the Oregon Residential Energy tax credit, you must be an Oregon resident and the equipment must be located in an Oregon dwelling that is your primary or secondary (vacation) home. The solar pool heating system must be attached to real property associated with your primary or secondary residence. The collector must have a warranty of at least 10 years (copy of warranty is required). The collector area must exceed 40 percent of the pool area if a pool cover is present and 60 percent of the pool area if no pool cover is present. The tax credit is claimed when you file your state income tax. Systems must be installed according to state license and permitting laws.

The tax credit issued normally applies to the tax year the equipment was purchased or placed in service, as long as it is placed in service by April 1st of the following year and the Oregon Department of Energy has received your completed application by that date.

The Oregon Department of Energy certifies the energy efficiency of systems and equipment for the Oregon Residential Energy Tax Credit program. It is the applicant's responsibility to ensure compliance with all other eligibility requirements. If you have questions concerning claiming the credit on your Oregon tax return, contact the Oregon Department of Revenue at 1-800-356-4222 or (503) 378-4988.

Note: Your Social Security Number is required to process your tax credit application. It is used to establish your identity for tax purposes only and is authorized by Section 405, Title 42 of the United States Code. We cannot process your application without it.

Pass-through Option:

The Residential Energy Tax Credit Pass-through Option allows an individual, estate or trust subject to tax under ORS chapter 316 who purchases a qualifying device (a homeowner) to transfer their Residential Energy Tax Credit to another individual subject to Oregon personal income tax under ORS 316 (a pass-through partner). You and your pass-through partner (the tax credit recipient) will complete and sign the Pass-through Option Application and mail it to the Oregon Department of Energy. The pass-through option is a one-time transfer and is final. The Department of Energy will then issue the tax credit certification to the pass-through partner.

The pass-through option is a one-time transfer and is final. There may be tax implications. We advise you to consult with your tax preparer or call the Department of Revenue.

If you have questions concerning claiming the credit on your Oregon tax return, contact the Oregon Department of Revenue at 1-800-356-4222 or (503)378-4988.

If you have any questions about equipment eligibility or the tax credit application process, please see the Oregon Department of Energy Web site: www.oregon.gov/energy or call us toll-free: 1-800-221-8035. In Salem, please call (503) 378-4040.



Solar Pool Heating System

Oregon Department of Energy

For jobs
January-
December 2016

625 Marion St. NE
Salem, OR 97301-3737
Toll-free: 1-800-221-8035
Salem: (503) 378-4040 Fax (503) 373-7806
Web site: www.oregon.gov/energy

Don't forget...
...to sign your application
and include your receipt

1. Customer Information (Homeowner completes)		<i>Required to process*</i>	
Name:		Social Security No. *:	
Email address:			
Mailing address:		Daytime phone:	
City:	Oregon County:	State:	Zip:
Site address (if different):			
City:	Oregon County:	State:	Zip:
If different than mailing address, please explain:			
Name of electricity utility company:			
Name of natural gas utility company:			
Purchase date:		Operational Date:	
		Company Name/Phone #:	
Total Cost of system: \$			
The total cost is the applicant's cost for the design, acquisition, construction, installation, and permitting. Total cost does not include service contracts, rebates, or refunds.			
2. System Description			
Pool			
1. Pool Area	_____	ft ²	
2. Pool location (indoor/outdoor)	_____		
3. Pool side insulation (R-value)	_____	hr-ft ² -°F/Btu	
4. Pool insulation blanket (yes/no)	_____		

* The request for your Social Security Number is authorized by Section 405, Title 42, of the United States Code. You must provide this information. It is used to establish your identity for tax purposes only.

FOR OFFICE USE ONLY
File No.:
Date Received:
Tax Credit Amount:
Tax Year:

2. System Description (Continued)

Solar Equipment

5. Collector manufacturer: _____ Model: _____
6. Collector Area (each): _____ ft²
7. Number of Collectors: _____
8. Total Collector Area (line 6 x line 7): _____ ft²
9. Pool collector warranty period (**please attach a copy**) _____ years

3. System Performance Estimation

Tilt and Orientation Factor and External Shading

10. Tilt of collector surface degrees
11. Orientation of solar modules (0 = North, 90 = East, 180 = South, 270 = West) degrees
12. Tilt and Orientation Factor (from TOF graph) %

Shading Impact

13. Percent not shaded (From Sun Chart Worksheet) %

Total Solar Resource Fraction (TSRF)

14. Total Solar Resource Fraction (TSRF = line 12 x line 13) %

(example if TOF = 84% and percent not shaded = 95% then TSRF = 0.84 x 0.95 = 0.798 = 79.8%)

Estimated Annual Production

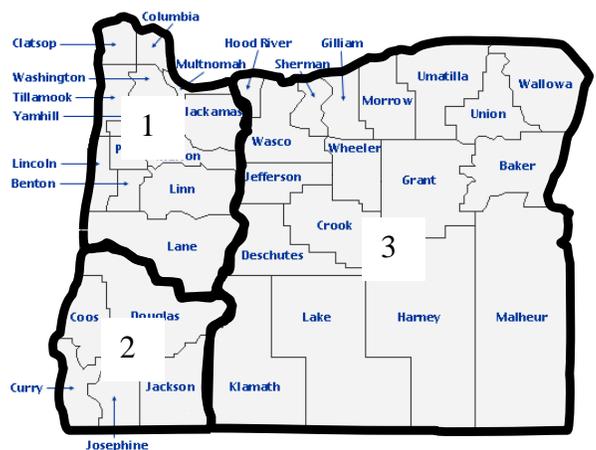
15. Solar Pool Output appropriate climate zone¹ kWh/ft²
16. Annual Yield (line 8 x line 15) kWh
17. Adjusted Annual Yield (line 16 x line 14) kWh

4. Tax Credit Calculation

If **TSRF** ≥ 75% Tax Credit = line 16 x \$0.20 = \$ _____

AMOUNT MAY NOT EXCEED \$2500

Tax credit amount may not exceed 50% of total system cost



¹ Solar CLIMATE ZONES Yields

- Zone 1 (Northwest Oregon)
- Zone 2 (Southwest Oregon)
- Zone 3 (Eastern Oregon)

- Solar Pool Output = 30 kwh/ft2
- Solar Pool Output = 30 kwh/ft2
- Solar Pool Output = 35 kwh/ft2

5. Pass-Through Option (Homeowner completes)

- I want to keep the full tax credit myself
 I want to transfer my tax credit to Oregon resident Oregon business

- If your tax credit is \$1,500 or less:
 - Your pass-through partner will pay you 95% of the certified tax credit amount
 - Your pass-through partner will receive 100% of the tax credit to be taken in one year
 - Your pass-through partner will receive 100% of the tax credit with a maximum amount of \$1,500 filed per year

The Residential Energy Tax Credit Pass-through Option allows an individual, estate or trust subject to tax under ORS chapter 316 who purchases a qualifying device (a homeowner) to transfer their Residential Energy Tax Credit to another individual subject to Oregon personal income tax under ORS 316 (a pass-through partner). You and your pass-through partner (the tax credit recipient) will complete and sign the Pass-through Option Application and mail it to the Oregon Department of Energy. **The pass-through option is a one-time transfer and is final.** The Department of Energy will then issue the tax credit certification to the pass-through partner.

Important: There may be tax implications for the pass through partner. We advise you to consult with your tax

6. Declarations and Installation Verification

I understand that the Oregon Department of Energy does not make any warranty concerning the performance, operation, installation or any other characteristic or feature of this system. Energy Department approval is only for purposes of obtaining the Oregon Residential Energy Tax Credit. I certify that I am the original owner of the system(s). I certify that the system(s) are not installed in a recreational vehicle or motor home. By signing below, I (we) certify that the system, described in this application is installed and that the information contained herein is accurate and true.

The Oregon Department of Energy does not sell information from this application as a mailing list. However, we may be required to disclose the name, address and phone number from your application under the Oregon Public Records law ORS 192.410 et seq. We can withhold the address and phone number following a written request explaining personal safety concerns, such as a temporary restraining order. The Oregon Department of Energy does not endorse any company that requests the information.

7. Verification (Technician completes if applicable, homeowner reviews)

Annual Energy Production and Savings

1. Estimated annual useful energy production of system: _____ kWh per year
2. Value of this energy at 8 cents per kWh = \$ _____ per year

System Documentation

3. The owner has received a system manual and instruction for the regular and emergency operation and required maintenance of the system.

System Quality and Longevity

4. The system is designed for optimal energy performance, safety and longevity.
5. The owner has received a written _____ month full warranty for the system. The Oregon Department of Energy requires a minimum 10-year warranty on a solar collector. (Attach a copy to application.)

I verify the above five items are true and that this system meets all the requirements of ORS 469.160 through 469.180 and complies with all local building code requirements. Should the Oregon Department of Energy require changes in the system to make it conform to ORS 469.160 through 469.180 and OAR 330-70-010 through 330-70-097, the installer/technician agrees to make such changes. By signing below, I certify that the system described in this application is installed and that **ALL the information contained herein is accurate and true.**

Technician's name (please print): _____

Installation company: _____

Installation company CCB no.: _____ Phone No.: _____

Installer's signature: _____ Date: _____

8. Homeowner Application Signature (Homeowner completes)

Please initial each statement below and sign at the bottom.

By signing below, I (we) certify that the system(s) described in this application is (are) installed and that the information contained herein is accurate and true.

_____ I give the Oregon Department of Energy permission to inspect this installation upon agency request.
Note: Refusing access for inspection may result in denial of this application.

_____ The solar technician and the technician's employer have provided me with an owner's manual, a written warranty and instructed me in its proper operation. Please review section 6 of this application to ensure you agree with technician's claims.

_____ I have attached proof of payment for this installation that includes an itemized parts list. (e.g. receipt of payment or a copy of the contract for the system marked "paid" and dated; or, for do-it-yourself systems, an itemized receipt of payment for materials).

_____ I have attached a copy of my minimum 10 year pool collector warranty.

What were you told the approximate savings by this system would be? \$ _____ per year

Signature of Purchaser: _____ Date: _____

Signature of Joint Purchaser: _____ Date: _____

Complete the following if two or more persons are purchasing this system **and** file separate tax returns.

Co Applicant:

Name: _____ Address: _____ % ownership: _____

Social Security Number: _____ Applicant Signature: _____ Date: _____

Name: _____ Address: _____ % ownership: _____

Social Security Number: _____ Applicant Signature: _____ Date: _____

Name: _____ Address: _____ % ownership: _____

Social Security Number: _____ Applicant Signature: _____ Date: _____

9. Mailing Instructions

Before mailing, be sure your application is complete. It should include:

- Application form with your Social Security Number and signature
- Copy of proof of payment for this installation that includes an itemized parts list. (e.g. receipt of payment or a copy of the contract for the system marked "paid" and dated; or, for do-it-yourself systems, an itemized receipt of payment for materials).

Photocopy all documents for your records and mail to the address below.

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Oregon Department of Energy
625 Marion St. NE, Salem, Oregon 97301-3737
Toll-free: 1-800-221-8035 Salem: (503) 378-4040 Fax (503) 373-7806



Solar Site Assessment Worksheet

A tool for estimating the impact of collector tilt, orientation and shading

To estimate the performance of a solar energy system we need to know how much solar energy is available for your collector. This worksheet is used to estimate the impact of tilt, orientation and external shading on how much solar energy your solar collectors can collect. The Total Solar Resource Fraction (TSRF) represents the fraction of energy a particular collector would receive when compared to one in the same city, but that has optimal tilt, orientation and no external shading. For example, a collector with a TSRF of 80 percent indicates that 80 percent of the solar energy at your location over a year will be available to the solar collector.

For simplicity we have separated calculating the TSRF into two parts. The first part is to determine the impact of collector tilt and orientation. This Tilt and Orientation Factor (TOF) is estimated using one of the following plots. The second part is to use a sun chart to estimate how much energy is lost on an annual basis from external shading from plants, buildings or other obstructions. The combination of these two effects will provide your collector's TSRF.

TOF graphs (right) show the impact of tilt, and orientation on annual performance of a solar collector. TOF values range from 100% (no loss) at the center of the inner circle to less than 60% (40% or more loss) in the upper left and right corners.

Azimuth angles are based on true polar orientation, adjusted for magnetic declination (16-20 degrees for most of Oregon)

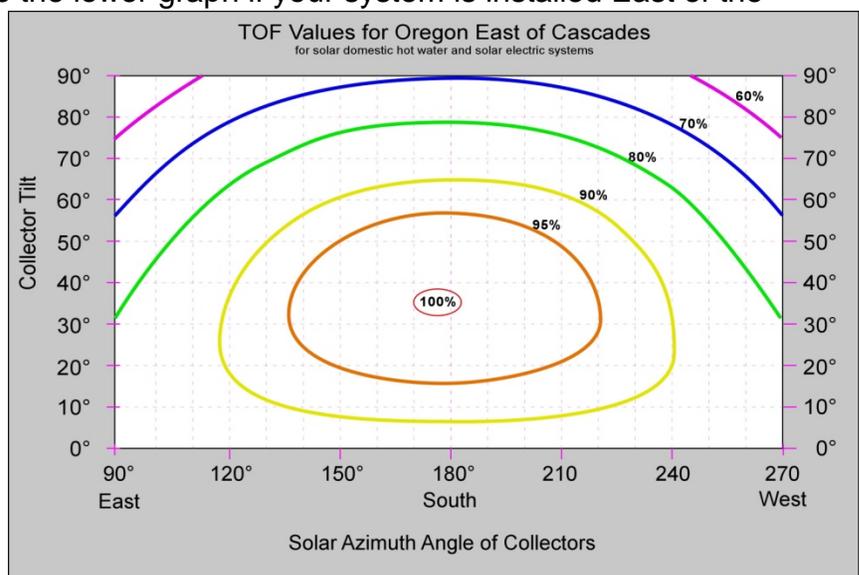
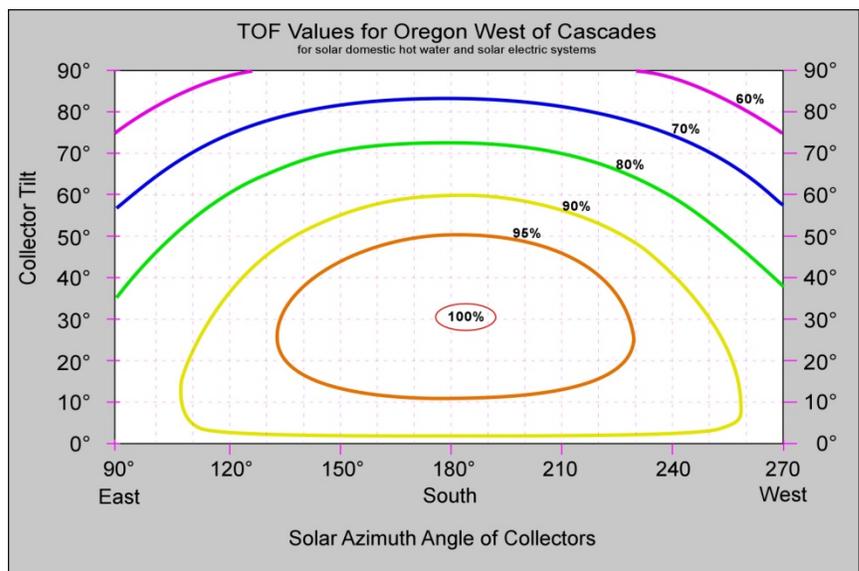
Use the upper graph if your system is installed West of the Cascades. Use the lower graph if your system is installed East of the Cascades.

Draw a dark X mark the graph for your collector's tilt and azimuth angle. Interpolate between the nearest two lines to estimate the TOF value to the nearest 1%.

Collector Tilt = _____ °
(angle from horizontal)

Solar Azimuth = _____ °
(collector orientation)

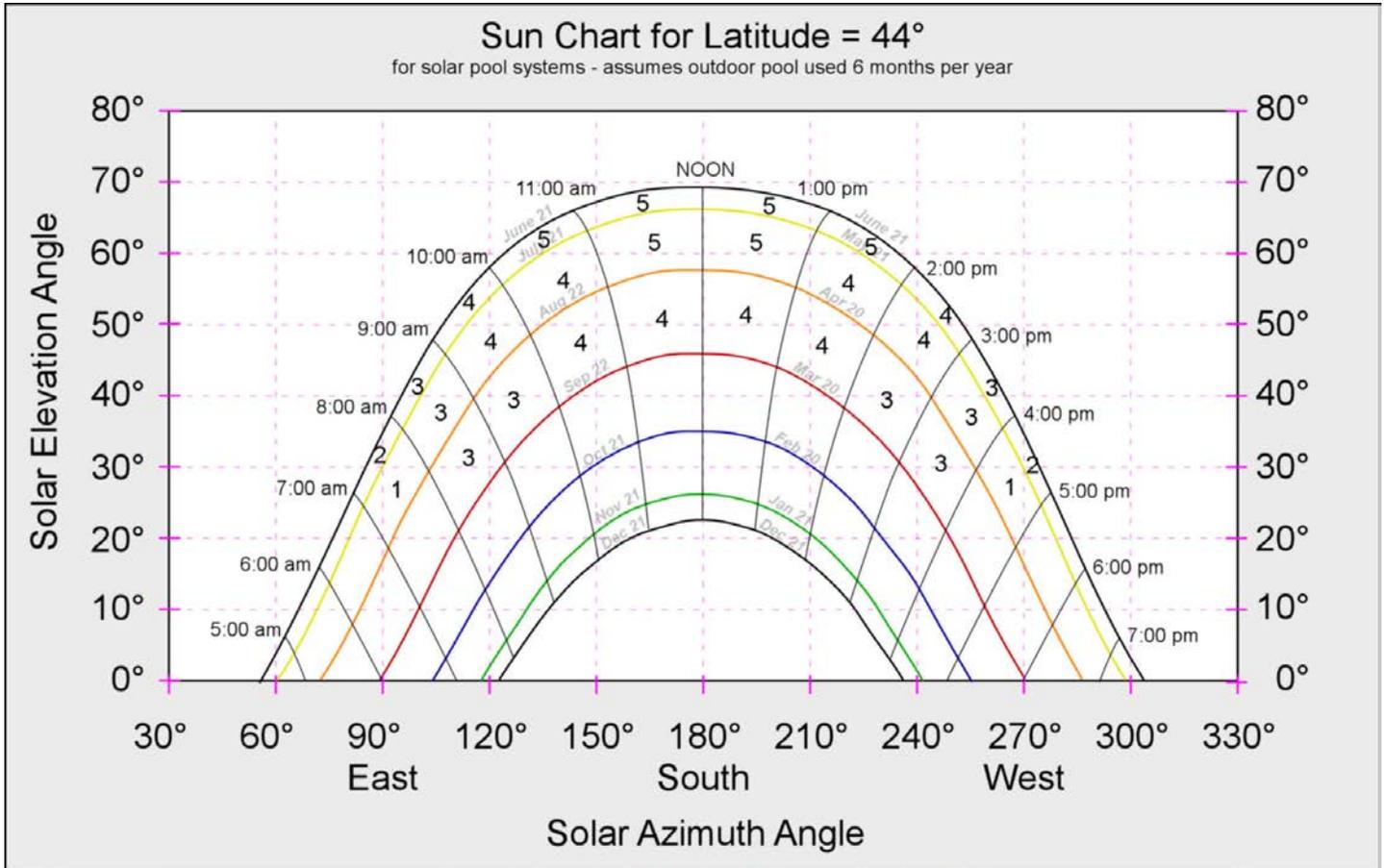
TOF = _____ %
(estimated from graph)



Solar Site Assessment Worksheet (continued)

For solar pool water heating systems

Step 1 – From the midpoint of the solar array, draw the skyline on the graph below. Use the elevation angles and solar azimuth angles to determine the location of the obstructions. Draw deciduous trees with a dotted outline and fill with light shading. Year-round (solid) obstructions like buildings, or conifer trees should be drawn with solid outlines and filled with heavy shading.



Step 2 – Add up the solar fraction numbers in the sections that have shading. The sum of all these values inside the obstructed areas is the percent of energy lost to external shading. Subtract this number from 100 percent to get the percent not shaded.

Percent Not Shaded = 100% - sum of obstructed areas = _____%

Step 3 – Calculate the Total Solar Resource Fraction using the following equation:

Total Solar Resource Fraction = TOF x Percent Not Shaded = _____%