

Oregon Business Energy Tax Credit

Application for Preliminary Certification for Solar Thermal Projects

Oregon businesses and others that invest in solar thermal projects can get a state tax credit. The tax credit for Solar Thermal Projects is 50 percent of eligible project costs. You file the credit over five years: 10 percent each year. For projects with eligible costs of \$20,000 or less, the tax credit may be taken in one year. Unused credits can be carried forward up to eight years.

Eligible Applicants

An eligible applicant (a project owner) must meet the following three requirements:

1. Be a trade, business or rental property owner of a business site in Oregon **or** Be an Oregon non-profit organization, tribe, or public entity that partners with an Oregon business or resident;
2. Own or be the contract buyer of the project; and
3. Use the equipment yourself or lease it to another person or business in Oregon.

Pass-through Option

Non-profit organizations, schools and other public entities that do not have an Oregon tax liability may participate in the Business Energy Tax Credit Program by using the Pass-through Option. Project owners may “pass-through” or transfer their 50 percent tax credit project eligibility to a pass-through partner in exchange for a lump-sum cash payment. The Oregon Department of Energy determines the rate that is used to calculate the cash payment. Both the project owner and pass-through partner must sign the Application for Final Certification for Pass-through Projects before a Final Certification is issued to the pass-through partner. The same review, rules and standards apply to projects approved under the Pass-through Option as those using the regular Business Energy Tax Credit Program. **Please note:** The Pass-through Option is also available to a project owner with an Oregon tax liability who chooses to transfer his or her tax credit. There may be tax implications to using the Pass-through Option. Please consult your tax preparer.

Timing

The Oregon Department of Energy must receive the Application for Preliminary Certification for Solar Thermal Projects **BEFORE** the project owner financially commits to start the energy project. For example, an owner must apply before purchasing equipment or signing a contract. If a project owner starts a project and then decides to apply for the tax credit, the owner must submit a written request for a waiver with the application. The waiver request and application must be sent within 90 days of the project start date and must demonstrate an extenuating business circumstance that caused the delay in the application. Under extraordinary circumstances, the Director of the Department of Energy may extend the waiver period.

The eligible cost for solar projects is equal to the lesser of the project cost or the maximum eligible cost calculated. The Oregon Department of Energy will periodically determine and adjust, if necessary, the maximum eligible cost to reflect changes in the marketplace. The pre-certified eligible costs will be recognized for 12 months, after which time the applicant would need to reapply for a new preliminary certification. Publicly owned facilities will be allowed 36 months to complete the project before being required to re-apply. A project owner must receive a Final Certificate before the credit can be claimed on an Oregon tax return.

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Confidential Information and Disclosure

The State of Oregon's Public Records Law (ORS 192.410 et seq.) (PRL) applies to tax credit applications submitted to the Oregon Department of Energy. The law states every person has a right to inspect any public record of a public body, subject to certain exceptions.

Trade secrets and confidential business records information may be exempt from disclosure. Certain information, including trade secrets (ORS 192.501(2) and confidential submissions (ORS 192.502(4)), may be exempt from disclosure under exemptions to the PRL. Please consult your legal counsel to determine whether these or other exemptions could apply to your application.

Mark on each page any information that you believe are trade secrets, business records or that is otherwise protected under the PRL and that you request to be kept confidential. Marking information does not guarantee that it will be kept confidential. The Director of the Oregon Department of Energy will make any decisions regarding public disclosure of information contained in this application in accordance with the Oregon Public Records Law.

Under certain circumstances, as set out in ORS 192.445 (1), the personal safety exemption to the PRL, the Oregon Department of Energy is authorized to withhold your address, phone number and electronic mail address. If you want to claim this exemption under the PRL, please contact the Oregon Department of Energy prior to sending in your application for a Business Energy Tax Credit. Please consult your legal counsel to determine whether this exemption applies to you.

The Oregon Department of Energy does not endorse any company that requests application information and does not sell this information as a mailing list.

Before the project begins:

1. A project owner must complete the Application for Preliminary Certification for Solar Thermal Projects. He or she must send the signed form, supporting documentation, and payment for review charges to the Oregon Department of Energy before the project begins. Incomplete applications will not be accepted. **Note:** If using Microsoft WORD version of the application, check the Web site to ensure the latest version is being used. (Dates are in the lower right-hand corner.)
2. A project owner may start the project when he or she receives a Preliminary Certificate. The Oregon Department of Energy usually takes four to six weeks to review an application provided all necessary information is submitted. Incomplete or inadequate information may result in a delay in approval or in denial of the application. Please note: A project owner may begin the project before receiving a Preliminary Certificate, however, there is no guarantee the project will be approved.
3. If vital characteristics of the project change after receiving the Preliminary Certificate, the project owner should submit a signed, written, detailed description of the changes to the project and energy savings estimates. An increase in cost only does not qualify as a project change. If the Department of Energy approves a project change, a project owner may be required to pay an additional review cost.

After the project is complete:

1. A project owner should apply to the Oregon Department of Energy for final certification when the project is completed. If project costs are \$50,000 or more, an owner must send a letter from a certified public accountant (not employed by the project owner) stating that he or she has reviewed the project costs. If project costs are less than \$50,000, the project owner should send copies of the dated invoices, canceled checks or receipts that are marked "paid."
2. The Oregon Department of Energy will review the final application and may issue a Final Certificate. Under no circumstances can the Oregon Department of Energy approve more than 10 percent above the amount of estimated project costs shown on the Preliminary Certificate unless the project was amended in writing and received approval before completion. The sum of all financial incentives and the tax credit may not exceed the total eligible project costs.
3. A tax credit recipient may file the tax credit over five years (10 percent per year). If the eligible project costs are \$20,000 or less, a tax credit recipient may file for the tax credit in one year. A tax credit recipient may begin claiming the tax credit the year the project is finished or the year the Oregon Department of Energy issues the Final Certificate.

Questions? For questions on claiming the tax credit, contact the Oregon Department of Revenue (www.oregon.gov/DOR) or call 1-800-356-4222. For questions concerning the energy project, call the Oregon Department of Energy at 1-800-221-8035 (toll-free in Oregon) or (503) 378-4040 (Salem) or visit our Web site (www.oregon.gov/energy).

Business Energy Tax Credit Application for Preliminary Certification

Solar Thermal Project

This application is for solar thermal (water heating) systems only. If the project contains additional conservation measures, they should be applied for separately using the Application for Preliminary Certification of Conservation Projects.

Are you eligible?	For office use only
<p>Yes No</p> <p><input type="checkbox"/> <input type="checkbox"/> Have you submitted this application before financially committing to start this energy project? (e.g. signing a contract, ordering equipment, etc.)</p> <p><input type="checkbox"/> <input type="checkbox"/> If no, have you attached a request for a waiver?</p> <p><input type="checkbox"/> <input type="checkbox"/> Are you interested in using the Pass-through Option?*</p> <p><small>*The Pass-through Option will allow you to transfer your tax credit project eligibility to another business or individual (a pass-through partner) in exchange for a lump-sum payment. The payment amount is calculated using the pass-through rate. To use the Pass-through Option, check the Yes box above, complete this application form and send the form to the Oregon Department of Energy. There may be tax implications to using the Pass-through Option. Please consult your tax preparer.</small></p>	<p>Application #:</p> <hr/> <p>Date received:</p>

1. Project owner information (We will send all correspondence to this person.)		
Project owner's name:		
Tax I.D. # or SSN*:		
Phone:	E-mail:	
Business name:		
Mailing address:		
City/state/zip:		
Principal business activity (or SIC, if known):		
Contact person for project (Who can answer technical questions about the project?):		
Title:	Phone:	E-mail:
Company/organization CPA or CFO: (If interested in Pass-through Option)		
Title:	Phone:	E-mail:

*OAR 330-090-0130 authorizes the Oregon Department of Energy to use your federal tax identification or social security number as an identification number in maintaining internal records and may be shared with the Department of Revenue to establish the identity of an individual in order to administer state tax law.

2. Architect, engineer, vendor or contractor for project	
Firm name of architect, engineer, vendor or contractor:	
Address:	Phone:
City/state/zip:	
Contact person:	E-mail:

3. Project site		
Site address:		
City:	County:	Zip:
Total square footage affected by this project :		

4. Estimated construction or installation dates	
Estimated start date:	Estimated completion date:

6. May the Oregon Department of Energy publicize your project to promote efficiency to other businesses?
<input type="checkbox"/> Yes <input type="checkbox"/> No

7. How did you learn of the Business Energy Tax Credit Program?
<input type="checkbox"/> Associate <input type="checkbox"/> Advertisement <input type="checkbox"/> Workshop <input type="checkbox"/> Utility <input type="checkbox"/> Vendor <input type="checkbox"/> Other:

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8. System Description

▶ Attach the following additional information:

- Technical data sheet for solar collector.
- OG-100 report for solar collector
- System plumbing diagram (show all components)

System Type

- Swimming Pool
- Closed Loop Glycol
- Closed Loop Drainback (water only)
- Closed Loop Drainback (glycol)
- Closed Loop Thermosyphon
- Integral Collector Storage (ICS)
- Open Loop Thermosyphon
- Other

What is heat used for

- domestic hot water
- pool heating
- process heating
- space heating

Collector

- a. SRCC OG-100 number¹: _____ (OG-100 certification is required)
- b. Manufacturer: _____
- c. Model: _____
- d. Gross Collector Area: _____ ft²

Determine collector performance under “standard Oregon conditions”. Fill in yellow sections of table below from OG-100 Test Data (available from www.solar-rating.org) be sure to attached

Thousands of Btu Per Panel Per Day			
Category (Ti - Ta)	CLEAR DAY 2000 Btu/ft ² -day	MILDLY CLOUDY 1500 Btu/ft ² -day	CLOUDY DAY 1000 Btu/ft ² -day
A -9 °F	n/a		n/a
B 9 °F	n/a		n/a
C 36 °F	n/a		n/a
D 90 °F	n/a		n/a
E -144 °F	n/a		n/a

$$\text{SOC} = 10\% \times A + 20\% \times B + 30\% \times C + 40\% \times D$$

e. 10% x _____ + 20% x _____ + 30% x _____ + 40% x _____ = kBtu/day

¹ Does not apply to solar pool collectors

Array of Collectors

f. Number of Collectors: _____
g. Total Area: _____ ft²

Solar Storage

Manufacturer: _____ Model: _____
Volume: _____ Volume/Area: _____ gal/ft²

Heat Exchanger (if used)

Type (e.g. flat plate, emersion, etc): _____ Surface area: _____ ft²

Backup Heat Equipment (if used)

Fuel Source: _____ Backup temperature: _____ °F

System Details

Briefly describe how each of the following functions will be provided by the system.

Controls sequence:

Freeze protection:

Overheat protection:

9. Solar Resource – Solar Thermal Sun Chart & Site Plan

- ▶ Attach the following additional information:
 - Sun charts used to determine TSRF of solar collectors

Attach sun chart(s) and calculate the annual effective Total Solar Resource Fraction (TSRF). Sun charts must be taken from a location on the array which best characterizes the annual shading impact. Projects must have a TSRF greater than 75% to be eligible for a tax credit.

a. TSRF =

Site plan drawing



Remember that local magnetic North faces 16-19 degrees East of true North – North magnetic arrow shown in red on compass above

10. Estimated Annual Energy savings

▶ Attach the following additional information:

- calculations, notes, software printout and billing data used

a. Describe method used to determine annual energy savings:

b. Load, Shading, and Savings

Month	Hot water Useage (gal/day)	Load (kBtu/mo)	Shading Fraction	Energy Savings (kBtu/mo)	Energy Savings (kWh/mo)
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Annual Total				c.	d.

11. Energy use without project (for building or facility)

Gather this information from historical energy bills, if project is new construction, then estimate the energy use that would have been present w/o the PV array.

Energy use for the past 12 months:

a.	Electricity	_____ kwh	x 0.003414	=	_____ MMBTU
b.	Natural Gas	_____ therms	x 0.100	=	_____ MMBTU
c.	Diesel	_____ gallons	x 0.140	=	_____ MMBTU
d.	Other (enter units)	_____	x _____	=	_____ MMBTU
TOTAL energy use				=	_____ MMBTU per year

e. Utilities (Electric, Gas, Oil, Other):

f. Fraction of electrical energy supplied by solar system (10c x 0.1 / 11a) = _____%

12. Estimated Project Cost	
Materials:	Estimated cost:
Labor:	Estimated cost:
Engineering:	Estimated cost:
Other: (Do not include Business Energy Tax Credit review costs.)	Estimated cost:
Total of Estimated Costs from above:	A. \$
Deduct any federal grants: Note: OAR 330-090-0110 (19) (n) The sum of any rebates or cash payments under ORS 469.631 to 469.645, 469.649 to 469.659, 469.673 to 469.683, or 757.612(5)(a), or from a public purpose organization and the Business Energy Tax Credit may not exceed eligible costs.	B. \$
Estimated Project Cost Take A and subtract B to get the total Estimated Project Cost (C)	C. \$

13. Eligible Project Cost	
<p>The Eligible Project Cost is the lesser of either the Maximum Eligible Cost or the Estimated Project Cost. The Maximum Eligible Cost is calculated using a spreadsheet that can be downloaded from the Oregon Department of Energy Web site. The Maximum Eligible Cost will decline as more systems are granted preliminary certifications. Applicants should use the spreadsheet on line to ensure they are using the most recent version.</p>	
a. Rated output of system (8e x 8f):	kBtu/day
b. Total Solar Resource Fraction (9a, TSRF):	%
c. Project to be on/serve a publicly owned facility (True/False):	
d. Maximum Eligible Cost (from ODOE spreadsheet):	
e. Eligible Project Cost (lesser of 12C (Estimated Project Cost) and 13 d (Maximum Eligible Cost):	

14. Business Energy Tax Credit review charge

Applications will **not** be reviewed until the review charge is paid in full.

Eligible Project Cost (See 13e) _____ x .0060 = \$ _____

Minimum payment required is \$30; the maximum payment required is \$35,000. Make check payable to the Oregon Department of Energy and include with this application. You may also pay by Visa or MasterCard.

I want to pay by Visa/MasterCard. Please contact me at this phone number: _____.

If all or a portion of your application is denied, or if a change in your project results in lower costs, a portion up to 75 percent of this payment may be refunded within two years of pre-certification. If you add to your approved project, you must send a written description of the additions and the costs to be eligible for a tax credit. If the Oregon Department of Energy approves the additional eligible costs, an additional payment may be required. For more information, see Oregon Administrative Rule 330-90-0150(2).

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16. Project Owner Preliminary Statement

1. I understand that Oregon Department of Energy approval and certification of my project is for tax credit purposes only. The Oregon Department of Energy does not guarantee or in any way ensure the performance of any equipment, the quality of any system or the reliability of any dealer.
2. I agree that the project will comply with all local, state and federal requirements. I will obtain all necessary permits. I will comply with the technical requirements for the project listed in the BETC Technical Requirement Guidelines (attached).
3. I will permit the Oregon Department of Energy or its agents to inspect the project at its discretion to make sure the project qualifies for the tax credit. I understand that if I give false information about the project, or if I refuse to permit the Oregon Department of Energy to inspect the project, I will not get the tax credit.
4. I understand that this tax credit application is a public record and that Oregon Department of Energy may be required by law to disclose information in this tax credit application to the public on request. I have marked any information that I request be kept confidential. I understand that marking information does not guarantee that it will be kept confidential and that the Director of the Oregon Department of Energy will make any decisions regarding public disclosure of information contained in this application in accordance with the Oregon Public Records Law.
5. I understand that the Oregon Department of Energy does not endorse any company that requests information on this application and does not sell information as a mailing list.
6. I hereby release the State of Oregon and its commissions, agencies, officers, employees, contractors, and agents, and agree to defend and indemnify the foregoing from and against any claims, demands, or costs (including attorney and expert witness fees at trial and on appeal) arising from or in any way related to the Oregon Department of Energy's issuance or failure to issue any pre-certification or final certification for a Business Energy Tax Credit, or any party's inability to obtain a Business Energy Tax Credit.
7. I understand that the sum of all financial incentives and the tax credit can not exceed the total eligible project cost.
8. I have enclosed a check to the Oregon Department of Energy or will pay by Visa or MasterCard for the review charge.
9. I verify that the project owner does not restrict membership, sales, or services on the basis of race, color, creed, religion, national origin, sexual preference or gender.
10. I have completed this form to the best of my knowledge.
11. I certify that I am the project owner or the authorized agent.

I have read and agree with the terms, conditions of the Project Owner Preliminary Statement.

Signature: _____ Title: _____

Print Name: _____ Date: _____

Send completed application with payment to: **Oregon Department of Energy, 625 Marion St. NE, Salem, OR 97301-3737.** If you have questions, call: **1-800-221-8035 (toll-free in Oregon).**



Solar Site Assessment

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)

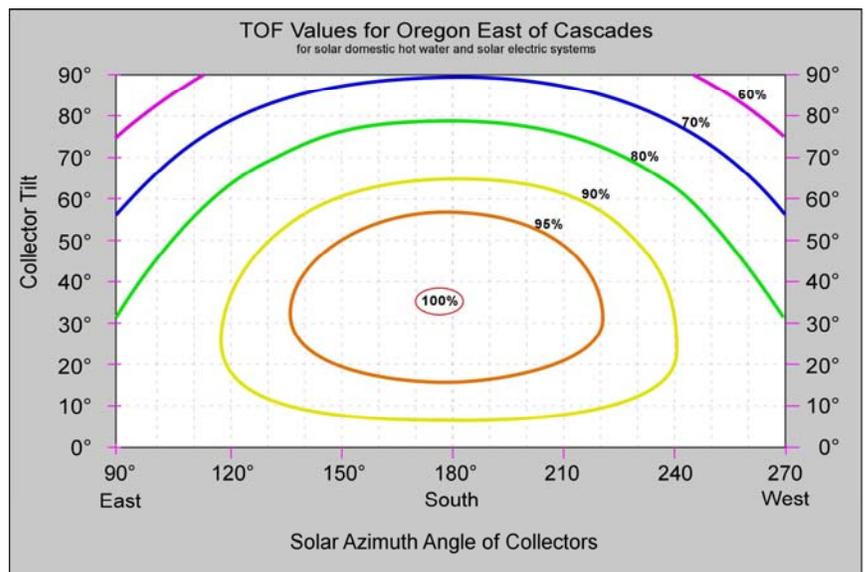
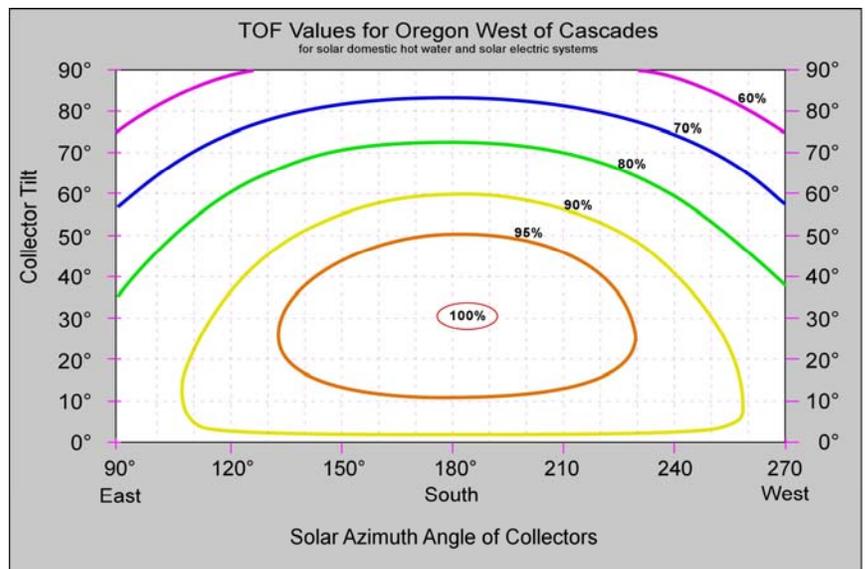
Use the upper graph if your system is installed West of the Cascades.
Use the lower graph if your system is installed East of the Cascades.

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)

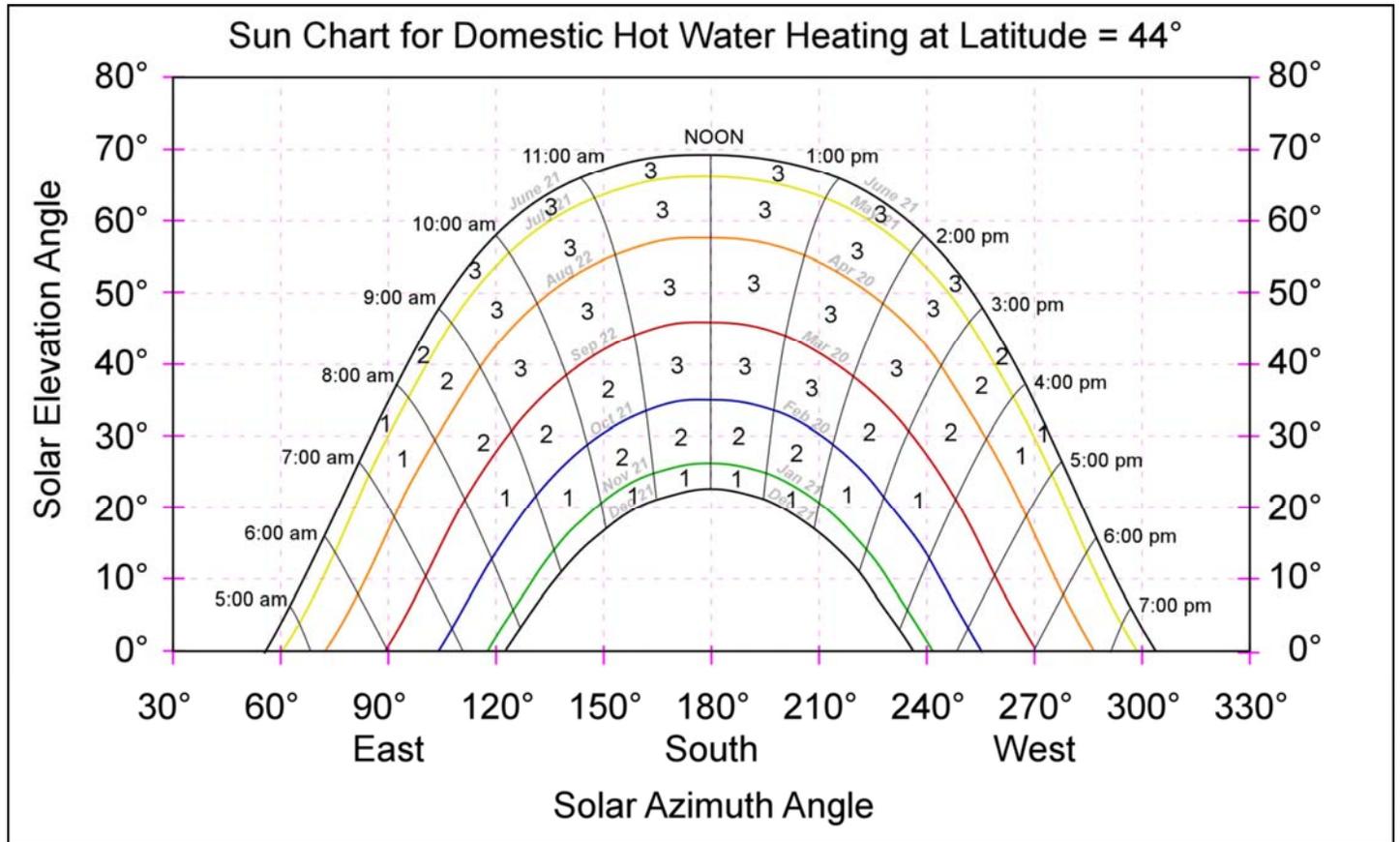
TOF = _____ %
(estimated from graph)



Sun Chart

For solar water heating and solar electric 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. A solar site assessment tool such as the Pathfinder™, or Solmetric Suneye is recommended for increased accuracy. Energy Trust of Oregon sun charts can be used in lieu of the sun chart below. Draw deciduous trees with a dotted outline and fill with light shading. Year-round obstructions like buildings, or evergreen 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. For solar electric systems, partial shading in one section must be counted fully (no fractional amounts). Any deciduous tree shading below the Sept 22/March 20 line can be counted at half value to account for the fact that some light will get through these obstructions when the trees lose their leaves. This sum of all these values divided by 100 is the “Shading Fraction”. It represents the percent of energy lost to external shading.

Shading Fraction = sum of obstructed areas ÷ 100 = _____

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

Total Solar Resource Fraction = TOF x (1 – Shading Fraction) = _____

BETC Technical Requirements for Solar Thermal Systems

All qualifying installations must meet the following minimum Solar Thermal specifications:

1. The facility must be designed to last a minimum of 20 years (with minimal maintenance) and deliver or exceed performance expectations of a well designed facility.
2. Installation must meet industry standards.
3. Facility must be permitted and in compliance with all applicable building and electrical, and plumbing codes.
4. All equipment must be rated for the temperature and exposure conditions in which it will operate continuously for 20 years or more.
5. All primary facility components must be new (collectors, tanks, controls, pumps).
6. Array mounting must not reduce the expected life or durability of the structure on which it is located.
7. The facility must be designed for optimal performance without sacrificing good aesthetics
8. The facility must include a customer manual.
9. A customer manual must contain the following information:
 - a. Facility documentation
 - i. As-built drawings that accurately describe the components installed including a valve chart.
 - ii. Facility site plan that indicates collector, controls and storage tank locations.
 - iii. Sun chart used to determine facility total solar resource fraction
 - iv. Operation and maintenance requirements including the name and phone number of person(s) or company to call in the case of a facility failure.
 - b. Warranties and installation documentation
 - i. A minimum two-year contractor warranty for materials and workmanship
 - ii. Manufacturer's warranty for collector, tanks, pumps and heat exchanger (if present) and any other components under warranty by manufacturer.
 - iii. Permit documentation
 - c. Manuals and Data Sheets
 - i. Bill of material listing all primary facility components including part model numbers
 - ii. Facility controller owner's manual
 - iii. Manufacturer data sheets for major components, including but not limited to: collectors, controllers, heat exchanger.
10. Facility is sized appropriate for load. The annual solar savings fraction not to exceed 0.70, without a means of rejecting heat once load is met.
11. Thermal storage is adequate to accommodate daily use pattern. For typical domestic load profiles this is defined as a minimum of 1.25 gallons per square foot of collector area. For facilities with loads that are coincident with solar generation this storage amount may be reduced if documentation is provided.

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12. Tank Insulation: All solar storage tanks must be insulated with not less than R15 insulation.
13. Pipe Insulation:
 - (a) Collector loop insulation must be rated for conditions in which it operates. Pipe insulation shall have a minimum R-value of 2.5. Closed loop facilities must be able to handle stagnation temperatures of the collector (300+ °F)
 - (b) Potable water pipe insulation must have a minimum R-value of 12 if located in a non-conditioned space. Pipe insulation must be protected if located in exposed conditions. U-V rate tape or pipe jacket is required. U-V paint is not sufficiently durable.
14. Anti-convective pipe loop or trap is required on the inlet and outlet of the storage tank. These loops or traps shall have a minimum 8-inch vertical drop to constitute an effective convective heat barrier. Heat trap nipples alone are not reliable in stopping heat migration, and will not meet this requirement.
15. Install thermometers on collector supply and return pipes. One movable thermometer for two wells is sufficient.
16. Install a BTU meter capable of measuring total delivered energy on all facilities with standard Oregon conditions rating greater than 250 kBtu/day.
17. Install a properly sized thermostatic mixing valve on the output of the domestic hot water system to ensure that delivered temperature does not exceed 140°F. If a tankless hot water heater is used as the back-up source, then the mixing valve should be placed on the output of the solar tank.
18. Solar thermal facilities must be installed in compliance with the Oregon Mechanical Specialty Code (Chapter 14 OSMC), the Oregon Residential Specialty Code (Chapter 23), the Oregon Plumbing Specialty Code and all other local regulations with jurisdiction.
19. Facilities must be designed and installed for complete automatic operation including protection from freeze damage and overheating of collectors.
20. Pressurized storage tanks must not be allowed to be heated above their manufacturer's specifications.
21. Pressure and temperature relief valves must be installed to protect all components according to manufacturer's recommendations.
22. System Total Solar Resource Fraction (TSRF) must be greater than 75%.