Rural Training Center-Thailand: Technical Paper
ศูนย์ฝึกอบรมชนบท-ประเทศไทย: ทางเทคนิคกระดาษ

Determining the Available Sunlight for a Site

c/o S. Lee, 64 Moo 2 Ban Na Fa, Jompra, Thawangpha, Nan Province, Thailand 55140
www.neighborhoodlink.com/org/rtcth E-mail: rtc2k5@gmail.com

Community-based environmental education for the self-sufficiency and sustainability of small rural family farms
ชุมชนตามสิ่งแวดล้อมศึกษาเพื่อการพึ่งตัวเองและยั่งยืนชนบทขนาดเล็กครอบครัวฟาร์ม

You may post questions / comments about this paper to the Discussion area of our website

Follow the steps in the table below (except for info relevant for Thailand). Use the data with your and site power requirements solar PV panel specifications to plan your solar project.

[Note: Some items use Thawangpha as an example.]				
Location	Get site latitude, longitude, altitude	Measure from a map		If you are in mountainous terrain, you need to check to see if the local topography blocks the sun when the sun is lower to the horizon. You can get contour map data by clicking on the "terrain" option on this web link: http://f6fvy.free.fr/qthLocator/fullScreen.php Also consider any tall buildings or trees that may cast shadows on the location of your solar device.
		Use the internet	www.pointasia.com	
			http://earth.google.com/	
			http://maps.google.com/	
			http://maps.yahoo.com/	
		Use a GPS unit		
		Note: Record the lat/long in both deg/min/sec and decimal formats; use online converter		http://www.fcc.gov/mb/audio/bickel/DDDMMSS-decimal.html
		To convert altitude units (m to ft)		http://www.convert-me.com/en/convert/length
Scale	Level of detail	General	4 days of the year: Dec 21, Mar 21, June 21, Sep 21 (the solstices and equinoxes)	
		Intermediate	6 days of the year: the 4 days mentioned above and May 14 and Jul 28 (when the noon day sun is directly over 19N (the latitude for Thawangpha)	
		Specific	Every day of the year	
Time	General	Hour and minutes of sunrise and sunset		http://www.usno.navy.mil/USNO/astronomical-applications/data-services/alt-az-world
	Specific	Sunrise	Solar Azimuth	
			Solar Altitude	
		Local Noon	Solar Azimuth	
			Solar Altitude	
		Sunset	Solar Azimuth	
			Solar Altitude	
Calculate	Photoperiod	Before noon	Subtract the time of sunrise from 12 noon.	Record result in hrs and mins
		Afternoon	Count the hours and minutes from 12 noon until sunset.	
		Total Daily	Add the two photoperiods together to get the total for the day.	
		Notes: • Sunlight is more intense in the afternoon than before noon. • Isopleth diagrams are nearly symmetric about the midday point. On the average, about 70% of the day's total insolation is received between 10 a.m. and 3 p.m. local apparent time. • Do these calculations for each of the days listed in the "Scale" section of this reference table. Note: For the average person, the difference between the general vs. specific measurements may not be noticeable. However, if fine tuning a solar PV panel (or array of panels) for optimum efficiency, the more specific the solar data the better.		