

Renewable Energy Site Assessment Guidelines

Solar PV Site Assessment Procedure

Preview site using NREL In My Backyard (IMBY) or Google Earth to identify possible land or roof areas for solar PV systems.

- Identify roof areas with flat or south-facing surfaces with little or no equipment on the roof.
- Identify large, open land areas.
- Print off an overhead map of the site and mark these potential land and roof areas on the map for ease of location during site visit.
- Access the roof or land area being considered for PV systems. Note the tilt angle and orientation of the south-facing or flat roof area. Also note the type, condition, and age of the roof. If it is a land area, note the approximate grade and orientation of the land area.
- Identify the shade-free roof or land area. If there are no objects that could cause shading on the roof or land (such as trees, parapet walls, mechanical equipment, or buildings), measure the entire area and record the dimensions on the overhead map or image or draw the area.
- If there are likely shading issues, pick a large contiguous area and begin taking shade analysis measurements. If the measurement is less than 90% annual solar access for a particular location, move away from the shading object and take another measurement. Refine the location until you are able to achieve a measurement of 90% or better. Do this for the four potential “corners” of the system location. When four corners are identified with measurements of 90% or better, measure and note the location of these corners and the dimensions of the contained area.

- Identify the nearest location for housing the inverter bank. This must be shaded and in most instances is enclosed. Note the distance from the proposed PV system location to the inverter bank.
- Identify the nearest electrical panel and record the location and distance from the inverter bank to the electrical panel, the voltage (V) at interconnect, number of phases (one or three), capacity of main breaker (amps) and the capacity of the panel (amps).

Solar Hot Water Site Assessment Procedure

Work with site contact to identify buildings and applications with high solar hot water loads, including dormitories, cafeterias, laundry facilities, and swimming pools.

- Preview site using IMBY or Google Earth to identify which of these buildings have roof areas with flat or south-facing surfaces with little or no equipment on the roof or nearby open land areas.
- Print off an overhead map of the site and mark these potential land and roof areas on the map for ease of location during the site visit.
- Access the roof or land area being considered for solar hot water systems. Note the tilt angle and orientation of the south-facing or flat roof area. Also note the type, condition, and age of the roof. If it is a land area, note the approximate grade and orientation of the land area.
- Identify the shade-free roof or land area. If there are no objects that could cause shading on the roof or land (such as trees, parapet walls, mechanical equipment, or buildings), measure the entire area and record the dimensions on the overhead map or image or draw the area. If there are objects that will cause

shading, pick a large contiguous area and begin taking shade analysis measurements. If the measurement is less than 90% annual solar access for a particular location, move away from the shading object and take another measurement. Refine the location until you are able to achieve a measurement of 90% or better. Do this for the four potential “corners” of the system location. When four corners are identified with measurements of 90% or better, measure and note the location of these corners and the dimensions of the contained area. Also note locations of roof vents, drains, etc. on the map or drawing.

- Identify the location of the current hot water heating system. Note the nameplate data, fuel used, capacity, and efficiency, if possible. Also note the distance from the potential solar hot water location to the current hot water heating system location. Note the temperature of the incoming unheated water as well as the heated supply water temperature.
- Gather data to help quantify the hot water load. Note what types of applications or operations use hot water and the operational schedule of those applications or operations (i.e., hours per day, days per week, weeks per year). The following table can be used as a general estimate of hot water load for different applications.

Table 1. Hot Water Load Estimates Per Building Application¹

| Application | Hot Water Load | Unit |
|--------------|----------------|-----------------|
| Dormitory | 13 | gal/day/person |
| Motel | 20 | gal/day/unit |
| Hospital | 52 | gal/day/bed |
| Office | 1 | gal/day/person |
| Food Service | 2.4 | gal/meal |
| Fast Food | 1 | gal/meal |
| Residence | 40 | gal/day/person |
| School | 1.8 | gal/day/student |
| Apartment | 45 | gal/day/unit |
| Laundry | 46 | gal/day/machine |
| Car Wash | 9 | gal/car |

Source: RETScreen

¹ Hot water load estimates come from the RETScreen Solar Hot Water Module, available at www.retscreen.net/.