

**The Kentucky Solar Partnership
Solar Water Heater Loan Program
Site Assessment Form**

To be eligible for a loan through the Kentucky Solar Partnership's Solar Water Heater Program, the location for a proposed solar water heating system must be assessed for its suitability by the installation contractor selected by the loan applicant. Please submit this form with the loan application, signed by the contractor and applicant.

Numerous steps are required in determining that a site is suitable for the installation of a solar system. The site inspection should be conducted in the following order:

1. Solar access inspection
2. Roof inspection
3. Water heater inspection
4. Electrical inspection
5. Plumbing inspection

I. Solar Access Assessment

1. Does the residence have a suitable space on its roof for mounting solar collectors? Suitable roof locations would be within 45° west or east of due south, or oriented to allow collectors to face this direction using roof-mounting hardware. If the collectors will be mounted facing more than 45° from due south, a written explanation will be required with the loan application. Yes _____
No _____

2. Does solar collector mounting location have uninterrupted solar access in all seasons between the hours of 10 am and 2 pm? There should be no shading from trees, bushes, chimneys, fire walls, fences (if ground mounted) etc. on the collector during this time period. Potential vegetation growth leading to collector shading must also be considered. Keep in mind that the sun is lower during the winter months. Watch for trees in the horizon that may not create a shading problem in the summer months, but could do so in the winter. Yes _____
No _____

3. If ground mounting is preferable for the collectors, is there a suitable ground-level location that meets the requirements for Steps 1 and 2? Roof mounting is the standard and preferred location for mounting solar collectors. However, ground mounting may also be acceptable in certain circumstances. If suitable solar access is unavailable for roof mounting, or if roof mounting is undesirable or impossible due to structural considerations, conduct Steps 1 and 2 for the ground mount location. Yes _____
No _____

4. For ground-mount locations, can collectors be installed without creating safety hazards and without interfering with grounds maintenance or other needs (such as traffic flow, the view from windows, etc.)? Yes _____
No _____

II. Roof Assessment

The roof needs to be structurally and materially sound in order to support the weight of the solar collectors. Collector weights range from 80-150 pounds for each flat plate collector (approximately 5-lbs per sq. ft.). Assess the condition of the entire roof in addition to the specific location where the collector will be mounted. The need for roofing repair or replacement could prohibit the installation of a solar collector.

1. How old is the roof?

2. Has any re-roofing or repair work been done on the roof in the past? Yes _____
 No _____
If yes, when and what was done?

3. Is the roof leaking? Yes _____
Have roof or ceiling leaks ever occurred? No _____

Inspect inside of residence for evidence of leaks.

Check rafters and eaves to determine if water stains are evident on the rafters. (Keep in mind that water damage inside the house is not always caused by roof problems.)

5. Examine the roof visually. Are any of the following problems evident?

- Ridge deflection (sagging) _____
- Rafter deflection _____
- Sheathing deterioration _____
- Surface "springy" under load _____
- Inadequate internal support _____

6. Check roofing materials for problems. (Check any items that apply)

Asphalt shingles

- Missing or broken shingles _____
- Are they losing surface granules? _____
- Nails loose, missing, or rusted _____
- Torn shingles _____
- Split or curled shingles _____
- Worn areas _____
- Poorly applied shingles _____

Built-up roofing on flat or low-sloped roofs

- Bare spots in surfacing _____
- Separations and breaks in the felt _____
- Bubbles, blisters, cracks, or soft spots _____
- Water accumulation _____
- Gravel surface deteriorated _____

Metal Roofs

- Lifted metal panels _____
- Rusted roofing _____
- Nails loose, missing, or rusted _____

Tile Roofs

Broken or missing tiles _____

7. Attic space – Is there sufficient access for solar system installation personnel? **Yes** _____
No _____

8. What is the distance from collector location to water storage tank? Keep in mind the intent is to keep the pipe run between the collector and the water tank as short as possible.

9. If a drainback system is to be used, can a continuous down-hill slope be achieved from the collector location to a drainback tank that will be located within the building envelope? **Yes** _____
No _____

10. Is the condition of the roof suitable for the installation of the solar water heating system? **Yes** _____
No _____

III. Water Heater Assessment

The following inspection should be conducted to determine the condition of the existing conventional water heater.

1. What is the capacity of the existing water heater tank? _____ gallons

2. What type of water heater is presently used?
conventional electric _____ conventional gas _____
on-demand electric _____ on-demand gas _____

3. What is the age and condition of the water heater? Check around plumbing connections and valve connections for possible leaks. (Rust or white or greenish crusting of pipe, valves, or joints could indicate the presence of leaks.) Tanks over 10 years old or in poor condition should be replaced. The cost of a new tank can be included in the loan for the solar water heater.

4. How much insulation does the existing tank have? The tank's R-value can be learned by contacting the manufacturer or searching the internet, using the nameplate and model number.

4. Does the existing tank need to be replaced? **Yes** _____
No _____

5. Is the existing water heater accessible for replacement? **Yes** _____
No _____

6. Is there sufficient access and space for adding additional solar system equipment? Yes _____
No _____

7. If a drainback system is to be installed, is there space to install a drainback tank near the existing water heater or in another appropriate location? Yes _____
No _____

8. If the existing water heater uses gas, is there a flue damper? Yes _____
No _____

Has the installer explained to the homeowner the advantages of switching to an electric tank and using a timer to optimize use of solar energy? Yes _____
No _____

IV. Electrical Assessment

If an electric water heater is to be used, the following electrical inspection should be conducted to determine whether there are special electrical problems that could affect the installation of a solar water heating system.

1. Is there sufficient power for the new water heater if a replacement electric water heater is required? For example, if the electrical breaker/wiring for the old tank was suitable for a 20-amp capacity and the new tank requires a 30-amp capacity, the circuit will have to be upgraded. Yes _____
No _____

2. Check the water heater branch circuit wiring and conduit to the electric hot water heater.

Is the conduit rusty, split, etc? _____
Is exposed wiring insulation deteriorated, damaged, brittle, or crumbly? _____
Is there moisture in the conduit, on wires, or in the circuit panel? _____
Are all electrical connections secure? _____

3. Check the water heater electrical junction box. Are all wiring connections suitable? Yes _____
No _____

V. Plumbing Assessment

The following plumbing inspection should be conducted to determine whether there are any special plumbing problems that could adversely affect the installation of a solar water heating system. A thorough inspection of the existing water heating tank, piping, valves, and faucets should be conducted.

1. What is the pH of the water on site? If water is acidic (pH less than 7), the solar water heating system should be designed to prevent copper components from contacting household water. pH _____

2. What is the water source for the home?
City Water _____ Well _____ Cistern _____

3. Is there adequate water pressure? Check flow at several faucets to make sure. Low pressure may be the result of small service lines, calcification of water lines, poor pump operation on individual pressure tank water systems, etc. **Yes** _____
No _____

4. Do the shutoff valves at the service water entrance to the water heater operate properly? It is possible for these valves to become frozen due to age or infrequent use. **Yes** _____
No _____

6. Do any plumbing fixtures or faucets in the house have leaks or poor connections? Rust or white or greenish crusting around the valves, pipes or joints could indicate leaks. **Yes** _____
No _____

Summary

Do any site conditions exist that would prevent the installation of a solar water heater at this location? **Yes** _____
No _____

If yes, does the owner have specific plans for fixing those problems? **Yes** _____
No _____

Comments:

I certify that the above information is true and accurate to the best of my knowledge.		
_____ Installer Name, printed	_____ Signature	_____ Date
_____ Applicant/Homeowner	_____ Signature	_____ Date