

## **GUIDELINES FOR INSTALLATION OF SOLAR ENERGY DEVICES FOR SURPRISE FARMS**

### **I. OVERVIEW**

The following Guidelines are for the sole use by the Design Review Committee (“Committee”) in assisting the Committee in ruling upon an architectural application for the installation of a Solar Energy Device as defined by A.R.S. § 44-1761(4), or alternatively, by the Board of Directors in reviewing the Committee’s ruling upon any appeal. These Guidelines are intended to comply with A.R.S. 33-1816. Devices not qualifying as a Solar Energy Device under A.R.S. §§ 33-1816 and 44-1761(4) are not the subject of these Guidelines and may be prohibited by the Committee in its discretion. The Committee, or alternatively the Board, has sole discretion in interpreting the language and intent of these Guidelines, including resolving ambiguities or inferring meanings, and applying these Guidelines to any application for the installation of a Solar Energy Device.

### **II. DEFINITIONS**

Where used in these Guidelines, the capitalized terms will be defined as follows:

- “Collector” means a component of a solar energy device that is used to absorb solar radiation, convert it to heat or electricity and transfer the heat to a heat transfer fluid or to storage. A.R.S. § 44-1761(1).
- “Heat Exchanger” means a component of a solar energy device that is used to transfer heat from one fluid to another. A.R.S. § 44-1761(2).
- “Solar Day Lighting” means a device specifically designed to capture and redirect the visible portion of the solar beam spectrum, while controlling the infrared portion, for use in illuminating interior building spaces in lieu of artificial lighting. A.R.S. § 44-1761(3).
- “Solar Energy Device” means a system of series of mechanisms designed primarily to provide heating, to provide cooling, to produce electrical power, to produce mechanical power, to provide solar daylighting or to provide any combination of the foregoing by means of collecting and transferring solar generated energy into such uses either by active or passive means. Such systems may also have the capability of

storing such energy for future utilization. Passive systems shall clearly be designed as a solar energy device such as a Trombe wall and not merely a part of a normal structure such as a window. A.R.S. § 44-1761(4).

- “Solar Energy Device” does not include heat pumps, evaporative coolers, conventional windows and window treatments (dual pane, low-e, shade screens, reflective or dark coatings, awnings, interior shades, drapes and blinds), conventional skylights, reflective roof coatings, insulation, “outsulation”, radiant barriers, misting systems, and vegetation (shade trees, shrubs and grass).
- “Storage Unit” means a component of a solar energy device that is used to store solar generated electricity or heat for later use. A.R.S. § 44-1761(5).

### III. APPLICATION REQUIREMENTS

- The application for a Solar Energy Device must be submitted with professional quality scaled drawings showing construction details, and clearly showing elevations, location of the Solar Energy Device, location and routing of all associated plumbing or electrical runs to and from the Solar Energy Device, and all associated components (pumps, filters, meters, tanks, utility disconnects, electrical control/safety devices). Product literature for the proposed Solar Energy Device and associated components must be submitted with the drawing package. The color of the Solar Energy Device and associated components (including electrical and plumbing runs) must be included.
- The application must be accompanied by documentation showing compliance with A.R.S. § 44-1762 including a written statement of performance data for the Solar Energy Device pursuant to A.R.S. § 44-1762(B) and proof of licensing of the installer of the Solar Energy Device pursuant to A.R.S. § 44-1762(E).
- The Committee may request additional information or documents, which must be supplied before the application is deemed complete.

### IV. APPROVAL STANDARDS

- The entire Solar Energy Device installation, including all associated components, must be acceptable to the Committee and be approved in writing by the Committee prior to commencement of installation.
- Solar Energy Devices, their installation and use, shall comply with A.R.S. § 44-1762. That statute applies to all Solar Energy Devices sold or installed in the State of Arizona and requires among other things, (1) prescribed warranty periods given by the seller or installer, (2) a written statement of performance data of the Solar Energy Device provided by the seller or installer, (3) a certificate of compliance with the statute provided by the seller or installer, (4) compliance of the Solar Energy Device

with any consumer protection, rating, certification, performance, marketing, installation, and safety standards adopted by the State of Arizona, (5) proper licensing of installers of Solar Energy Devices, and (6) installation requirements of Solar Energy Devices, including satisfying all applicable fire, safety, and building code, and consumer protection standards.

- Collectors or “solar panels” shall be mounted to minimize visual impact and shall comply with the following criteria.
  1. Collectors shall be mounted or located so as not to be seen from the ground level of common areas, neighboring properties, or the streets unless such location prevents the installation, impairs the functioning, or restricts the use of the Solar Energy Device or adversely affects the cost or efficiency of the device. For example, Collectors which can be hidden behind a parapet wall or a flat roof are preferable to Collectors located on a pitched roof.



**(PV panels (collectors) hidden behind a parapet wall on a flat roof)**

2. If installation on a pitched roof is necessary, mounting of Collectors on the street-side of the home should be avoided if possible. If the street-side pitched roof has a southern exposure, mounting on other roof faces must be considered. For example, reverse pitched mounting on the roof face toward the back of the house is preferred over street-side mounting.

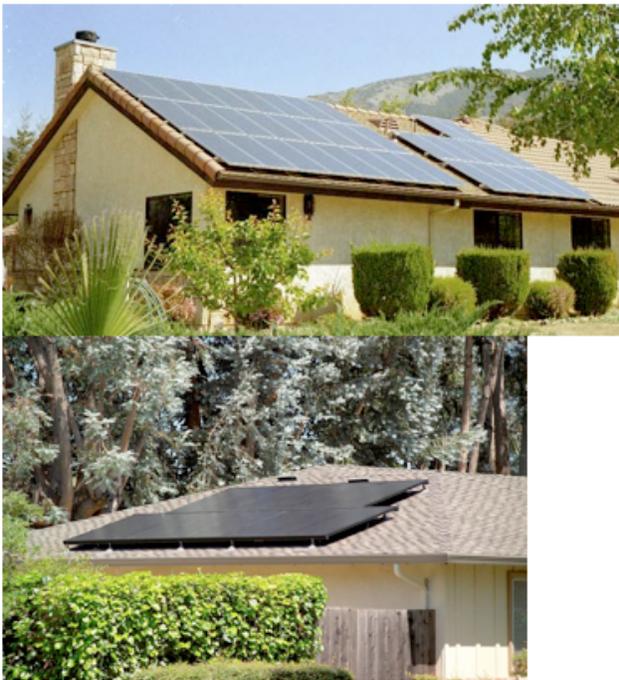


**(Reverse Pitched System prior to screening.)**

3. If street-side mounting is necessary on a house with a southern exposure, side roof areas must be considered (with collectors grouped away from the street side as much as possible to reduce the visibility of the collectors from the street-side).
  4. Collectors must be mounted flush to the roof unless pitched collectors will reduce the visibility of the collectors from the street-side of the home (such as in the case of a reverse pitched system). Where pitched Collectors are used, the degree of pitch should be minimized to avoid visibility as much as possible.
  5. The Committee may consider screening as a method to further reduce the visual impact of Collectors or other components of a Solar Energy Device.
- Components of Solar Energy Devices other than Collectors should be installed inside the structure of the home or completely out of view unless such placements prevents the installation, impairs the functioning, or restricts the functioning of the Solar Energy Device or adversely affects the cost or efficiency of the device. For a photovoltaic electric system, for example, unless there is an impairment to the system, no major components should be installed on the exterior of the home except for Collectors, roof mounted combiner box, photovoltaic dedicated meter, and photovoltaic system utility disconnect switch.
  - All components of a Solar Energy Device which are required to be mounted or grouped with existing utility boxes, such as photovoltaic dedicated meters or photovoltaic system utility disconnects, shall match the color of the existing utility boxes unless otherwise specified by the Committee.
  - All exterior components of the Solar Energy Device must match the color of the roof or wall to which they are attached unless the solar technology requires a transparent top surface (superstrate) or other non-paintable surface. For example, all photovoltaic modules or solar thermal collectors with a glass top surface may be black or dark

blue, since they require a transparent top surface to properly collect the sun's energy. All other components of the systems (e.g., mounting assemblies, rails, solar panel edges, tilt legs, electrical and plumbing runs, combiner boxes) must match the color of the roof or wall to which they are attached or adjacent to.

- Wires, conduit, pipe, tanks and other associated components shall be hidden from view unless such placement prevents the installation, impairs the functioning or restricts the use of the Solar Energy Device or adversely affects the cost or efficiency of the device . If it is not practicable to hide such items from view, they shall follow the architectural lines of the residential structure, be placed to minimize the visual impact of the component, and/or match the color of the adjacent surface of the home as determined by the Committee.
- Collectors must be of a contiguous color with no metallic details or connections on or in the panels available to be seen from the street view. White spaces on panels and electrical connection ribbon must not show below.
- Collectors must be placed on the roof in a manner where the equipment has a balanced look and symmetry.
- All hardware and electrical connections shall be turned in as to be invisible even up close.



**(Non compliant street side roofs with exposed and metallic mounting hardware and lack of symmetry in application of equipment.)**



**(Street Side applications with metallic look and exposed mounting hardware).**