



## **SOLAR PANEL SYSTEM PERMITS**

### **REQUIRED APPLICATION MATERIALS:**

- Complete unrestricted PDF File permit submittal of all documents to [permits@southbarrington.org](mailto:permits@southbarrington.org)
  - Hard copy permit submittal of all documents to include:
    - Permit Application Form ([www.southbarrington.org](http://www.southbarrington.org), Government, Building & Engineering)
    - Roof Mounting Information Form (attached)
    - Compliance with Village Zoning Ordinance Title 10, Chapter 2-10 (attached)
    - Total estimated cost of installation of roof-mounted solar energy system
    - 2017 NEC Compliance for plans
    - Two (2) hard copies showing location, size of panels, electrical diagram, specification sheets and electrical equations for the following:
      - a) OCPD
      - b) Ampacity
      - c) Conduit Sizing
      - d) Voltage Drop
    - One copy of Installation Manual
    - Homeowners Association (HOA) Approval
    - \$ 150.00 Application Fee (No credit cards)
    - \$ 500.00 Deposit toward Plan Review Fee (No credit cards)
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### **SEPTIC AREA PROTECTION:**

Absolutely no construction traffic, stockpiling of materials, etc. shall occur over any portion of the septic field areas.

### **INSPECTIONS:**

- Final Electric
- Final Building

### **PERFORMANCE BOND DEPOSIT:**

Performance bond deposits (cash or check) are required from both the general contractor and the property owner at the time the permit is issued. In the event that damage occurs to village streets, easements, etc. from any construction or landscaping work, the deposits will be retained until the problem is resolved to the satisfaction of the Village Building Department. "Request for Release of Performance Bond Deposit" forms are available at [www.southbarrington.org](http://www.southbarrington.org).

## ROOF MOUNTING INFORMATION FORM

1. Is the roofing type lightweight (Yes = composition, lightweight masonry, metal, etc.)

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*If No, submit completed worksheet for roof structure WKS1 (No = heavy masonry, slate, etc.)*

2. Does the roof have a single roof covering?  Yes or  No

*If No, submit completed worksheet for roof structure WKS1*

3. Provide method and type of weatherproofing roof penetrations (e.g. flashing, caulk, etc.)
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## MOUNTING SYSTEM INFORMATION

1. Is the mounting structure an engineered product designed to mount PV modules with no more than an 18" gap beneath the module frames?  Yes or  No

*If No, provide details of structural attachment certified by a design professional.*

2. For manufactured mounting systems, fill out information on the mounting system below:

- a. Mounting System manufacturer \_\_\_\_\_ Product Name/Model # \_\_\_\_\_
- b. Total Weight of PV Modules and Rails \_\_\_\_\_ lbs
- c. Total Number of Attachment Points \_\_\_\_\_
- d. Weight per Attachment Point (b ÷ c) \_\_\_\_\_ lbs (if greater than 45 lbs, see WKS1)
- e. Maximum Spacing Between Attachment Points on a Rail \_\_\_\_\_ inches (see product manual for maximum spacing allowed based on maximum design wind speed)
- f. Total Surface Area of PV Modules (square feet) \_\_\_\_\_ ft<sup>2</sup>
- g. Distributed Weight of PV Module on Roof (b ÷ f) \_\_\_\_\_ lbs/ft<sup>2</sup>

*If distributed weight of the PV system is greater than 5 lbs/ft<sup>2</sup>, see WKS1*

## STRUCTURE WORKSHEET – WKS1

1. Roof construction:  Rafters  Trusses  Other: \_\_\_\_\_

2. Describe site-built rafter or site-built truss systems:

- a. Rafter Size: \_\_\_\_\_ x \_\_\_\_\_ inches
- b. Rafter Spacing: \_\_\_\_\_ inches
- c. Maximum unsupported span: \_\_\_\_\_ feet, \_\_\_\_\_ inches
- d. Are the rafters over-spanned? (see the IRC span tables in B.2.)  Yes or  No
- e. If Yes, complete the rest of this section.

3. If the roof system has:

- a. Over-spanned rafters or trusses,
- b. The array of 5 lbs/ft<sup>2</sup> on any roof construction, or
- c. The attachments with a dead load exceeding 45 lbs per attachment

It is recommended that you provide one of the following:

- i. A framing plan that shows details for how you will strengthen the rafters using the supplied span tables in B.2.
- ii. Confirmation certified by a design professional that the roof structure will support the array.

## **2-10: ALTERNATIVE ENERGY SYSTEMS:**

### **A. Scope Of Regulations:**

1. Regulations: It shall be unlawful to install any form of alternate energy source other than one permitted by the terms of this ordinance in the zoning district wherein such premises, building or structure is located.
2. Building Permit Required: A building permit issuance shall be required prior to the installation of any alternate energy source equipment installation.
3. Location And Manner Of Installation: All alternate energy source equipment shall be installed in a location and manner so as not to be objectionable to the property occupants, adjoining property and owners. Objectionable criteria shall include:
  - a. Appearance: Shall be integrated in architecture of building.
  - b. Sound: Audible projection not to exceed fifty (50) dB at lot line.
  - c. Odor: No noxious odor detectable at lot line.
  - d. Discharge: No toxic discharge and all other waste products to be diluted in accordance with IEPA and OSHA rules and regulations.
  - e. Particulate Emission: Not to exceed that similar to flue gases emanating from combustion of natural gas.
  - f. Vibration: No measurable vibration at lot line.
  - g. Documentation: Compliance with above criteria shall be provided by acceptable scientific and engineering data and/or reports and shall be subject to verification testing by village of South Barrington and/or its authorized agent.
4. Inoperable Or Damaged Equipment: When any alternate energy source equipment has become inoperable or damaged for a period of one hundred eighty (180) days, or otherwise violates the requirements of this ordinance, it shall be deemed by the village to be abandoned. The owner of said alternate energy source equipment shall remove the alternate energy source equipment within thirty (30) days following the mailing of written notice that removal is required. If the abandoned facility is not removed within the time period required the village may remove all structures at the owner's expense. In the case of said removal the village has the right to file a lien for reimbursement, for any and all expenses incurred by the village, without limitation, including attorney fees and accrued interest. Upon removal the site shall be restored to a prealternate energy condition.
5. Violation And Penalty: Any violation of any provision of this section shall constitute a municipal civil infraction subject to the remedies specified in title 1, chapter 4, "General Penalty", of the South Barrington village code.

### **B. Solar Energy Collection Panels And Solar Water Heating Systems (Solar Panels):**

1. Solar systems shall be allowed on side or rear roof surfaces as set forth herein in any zoning district as permitted accessory uses. No freestanding and/or ground mounted solar panels and panel arrays shall be allowed in any zoning district.
2. Solar systems shall be flush with the roof and not extend beyond the roofline, integrated with the structure's architecture. Solar panels shall not be located on a front facing roof surface (facing the principal street).
3. Solar surfaces shall be permitted to cover any amount of a side or rear roof surface, provided that they are incorporated into and made to appear as part of the roof, continuous in area without gaps, and do not cause glare to reflect onto neighboring properties.

4. All frame and visible structural parts of a solar panel shall coordinate with the roof color.

5. No solar systems shall be artificially lighted.

6. A building permit shall be required prior to erecting any solar collector system. Mounting for such solar systems shall be in conformance with all electrical codes and building codes to ensure wind and weight loading requirements are met. Plans shall be prepared and stamped by a licensed architect, professional engineer or structural engineer (SE), and inspected by the building officer or his designee.

7. An emergency direct current (DC) disconnect switch shall be provided in a location accessible outside near the electric meter to shut off such system in the event of an emergency.

8. Solar systems shall be used primarily to generate energy for the property where it is located. This provision is not intended to restrict connection to or providing excess electricity to the utility provider.

C. Ground Source Heat Pump Systems (Geothermal System):

1. Definitions: The following definitions shall apply to this section:

**CLOSED HORIZONTAL LOOP GEOTHERMAL SYSTEM:** A geothermal system that consists of the following basic elements: underground loops of piping; heat transfer fluid; a heat pump, and an air distribution system. An opening is made in the earth. A series of pipes are installed into the opening and connected to a heat exchange system in the building. The pipes form a "closed loop" and are filled with a heat transfer fluid. The fluid is circulated through the piping from the opening into the heat exchanger and back. The system functions in the same manner as the open loop system except there is no pumping of groundwater. A horizontal closed loop geothermal system shall be no more than twenty feet (20') deep.

**CLOSED VERTICAL LOOP GEOTHERMAL SYSTEM:** A geothermal system in which a borehole extends beneath the surface. Pipes are installed with U-bends at the bottom of the borehole. The pipes are connected to the heat exchanger and heat transfer fluid is circulated through the pipes.

**GEOTHERMAL SYSTEM:** A system for heating and/or cooling buildings using the earth's thermal properties in conjunction with electricity.

**HEAT TRANSFER FLUID:** Any nontoxic liquid, such as food grade antifreeze, used especially for the purpose of transferring thermal energy from the heat source to another location.

**OPEN LOOP GEOTHERMAL SYSTEM:** A geothermal system in which groundwater is pumped from a well into a heat exchanger located in a surface building. The water drawn from the earth is then pumped back into the aquifer through a different well or in some cases the same well (commonly referred to as "re injection"). Alternatively, the groundwater could be discharged to a surface water body (also known as "pump and dump"). In the heating mode, cooler water is returned to the earth, while in the cooling mode, warmer water is returned to the surface water body.

2. Open Loop Systems: Open loop systems are prohibited.

3. Vertical Closed Loop Systems: Vertical closed loop systems are limited to a depth no deeper than twenty feet (20') below grade.

4. System Testing: Pipes for geothermal systems permitted under this section shall be tested hydrostatically at one and one-half ( $1\frac{1}{2}$ ) times the maximum system design pressure, but not less than one hundred (100) psi (689 kPa), for a duration of not less than fifteen (15) minutes. All geothermal systems must be pressure checked by a licensed geothermal system contractor every five (5) years from the date of its initial successful test. Results shall be filed with the Building Officer. If the

test results show the system fails to meet these requirements, system shutdown and repairs shall be made at the direction of the Building Officer.

5. Drilling: Any and all drilling associated with the installation of a ground source heat pump system shall be performed by a certified geothermal drill operator.

D. Special Uses: Subject to the conditions and requirements of this section and of section 11-5 of this ordinance other future alternative energy systems may be considered. (Ord. 2012-973, 9-13-2012; amd. Ord. 2020-1225, 2-13-2020; Ord. 2021-1280, 5-13-2021)