



## Solar SPECIFICATIONS, REQUIREMENTS and GUIDELINES

ADDRESS: \_\_\_\_\_

### SUBMIT THE FOLLOWING (*intake staff* to verify required submittal documents indicated below):

- Building Permit Application that is filled out and signed by contractor and owner
  - Contractor proposal (aka "cost estimate"), if utilizing a contractor
  - Solar Specification Sheet that is filled out and signed by contractor and owner
  - Solar Specification Sheet **and** Westmont Fire Department Solar Array Specification Requirements **indicated on a Site Plan**
  - Additional submittal documents as listed below, based on the type of solar system being installed
  - MINIMUM OF FOUR (4) SETS OF THE ABOVE DOCUMENTS
- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> <u>Photovoltaic</u></li> <li>a. Electrical Spec Sheet</li> <li>b. Four (4) sets of construction documents and plans</li> <li>c. Four (4) sets of roof plans indicating the location of the panel installations and setbacks</li> <li>d. Four (4) copies of one-line diagrams</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> <u>Solar Thermal</u></li> <li>a. Plumbing Spec Sheet</li> <li>b. Four (4) sets of construction documents and plans</li> <li>c. Four (4) sets of roof plans indicating the location of the panel installations and setbacks</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> <u>Hybrid System</u></li> <li>a. Plumbing Spec Sheet</li> <li>b. Electrical Spec Sheet</li> <li>c. Four (4) sets of construction documents and plans</li> <li>d. Four (4) sets of roof plans indicating the location of the panel installations and setbacks.</li> <li>e. Four (4) copies of 1-line diagrams</li> </ul> |
|---|---|---|

### Required Construction Documents and Plans

- For All Systems:
  - Report with structural calculations from an Illinois State Licensed Architect or Structural Engineer verifying that the roof structure can support all imposed loads. If the roof is found to be structurally inadequate, reinforcement drawings by an architect or an engineer, framing details, etc. are required.
  - Specification sheets and installation manuals for all components, such as recirculation pumps, panels, supporting frames and mounting.
  - Provide the attachment details, flashing details, construction design for the unit and any supporting frame members for the Wind Zone (90 MPH), additional loading, and any site conditions.
  - Site plan shall indicate installation location on property. Plan must also include modules, inverter(s), combiner boxes, all AC & DC disconnects, utility disconnect and meter(s), and service panelboard.
  - Provide a Plat of Survey for non-roof mounted units.
- Photovoltaic Systems:
  - 1-Line electric schematic of the PV array configuration, inverter, power supply, disconnect, overcurrent protection, electrical panel, meter and ground.
  - Electrical calculations showing that all wire sizing has been determined with proper ampacity, conduit fill and ambient derating factors.
  - Provide Manufacturer's Specifications for the battery backup systems (summarize the standby load) and written specifications for the inverter and power supply.
  - Proof of the system's compliance with NEC Article 690.
- Solar Thermal Systems:
  - Plumbing riser diagram showing the piping system schematic.
  - Specifications for the storage tank, heat exchanger (double wall), expansion tank, thermostatic mixing valve and controller module.
- Hybrid Photovoltaic-Thermal Systems:
  - *Please complete all of the above portions*

### Design Professional Requirements

Site plan, and/or construction plan must comply with adopted Village Codes, utility requirements and manufacturer specifications. Indicate all of the following on submitted documents:

- > Type of roof covering (asphalt, EDPM, steel, etc.), number of roofing layers (maximum of two layers permitted), type of roof framing (wood frame, steel, truss, etc.), roof anchoring method / detail
- > Per Table R301.2 (1), IRC, Climatic and Geographic Design Criteria minimums shall be: Ground Snow Load (Dead Load) = 25 psf; Wind Speed (MPH) = 90. **(PSF calculations for the array system shall be included and indicate that the dead load will maintain 25 psf after installation. Additionally, if installation requires additional construction to support this, indicate it on the plans.)**
- > Connection to Utility Grid (Provide ComEd Documentation), main load center (backfeed breaker, main panel breaker size), system grounding configuration (positive, negative, ungrounded), wire gauge and conduit size, if batteries are being installed, specify the location.



**Fire Department Requirements**

Westmont Fire Department (IFC) Solar Array Requirements:

- **MARKING:** Marking on all interior and exterior direct-current (DC) conduit, enclosures, raceways, cable assemblies, junction boxes, combiner boxes and disconnects.
  - Marking shall be reflective and weather resistant
  - Marking shall have all letters capitalized with a minimum height of 3/8 inch white on red background.
  - Marking shall contain the words "WARNING: PHOTOVOLTAIC POWER SOURCE"
  - Marking shall be placed on interior and exterior DC conduit, raceways, enclosures and cable assemblies every 10 feet, within 1 foot of turns or bends and within 1 foot above and below penetrations of roof/ceiling assemblies, walls or barriers.
  
- **MAIN SERVICE DISCONNECT MARKING:**
  - The marking shall be placed adjacent to the main service disconnect in a location clearly visible from the location where the disconnect is operated.
  - Location of the Main Service Disconnect shall be readily identifiable from the street side of the property.
  
- **LOCATION of DC CONDUCTORS:**
  - Conduit, wiring systems, and raceways for photovoltaic circuits shall be located as close as possible to the ridge or hip or valley and from the hip or valley as directly as possible to an outside wall to reduce trip hazards and maximize ventilation opportunities. Conduit runs between sub arrays and to DC combiner boxes shall be installed in a manner that minimizes the total amount of conduit on the roof by taking the shortest path from the array to the DC combiner box. The DC combiner boxes shall be located such that conduit runs are minimized in the pathways between arrays. DC wiring shall be installed in metallic conduit or raceways when located within enclosed spaces in a building. Conduit shall run along the bottom of load bearing members.
  
- **MAXIMUM SIZE OF ARRAYS:**
  - Each photovoltaic array shall be no greater than **150 feet by 150 feet** in either axis.
  
- **ROOF ACCESS POINTS FOR VENTILATION PURPOSES:**
  - Roof access points shall be located in areas that do not require the placement of ground ladders over openings such as windows or doors, and located at strong points of building construction in locations where the access point does not conflict with overhead obstructions such as tree limbs, wires, or signs.
  
- **LOCATION OF ARRAYS ON ROOFS:**
  - Arrays shall not be mounted within three (3) feet of any roof ridge line.
  - The access pathway shall be located at a structurally strong location on the building capable of supporting the live load of fire fighters accessing the roof. **(30 psf LIVE Load minimum)**
  - **Residential Buildings with Hip Roof Layouts**
    - Arrays shall be located in a manner that provides a **3-foot-wide** clear access pathway from the eave to the ridge on each roof slope where panels/modules are located.
  - **Residential Buildings with a Single Ridge**
    - Arrays shall be located in a manner that provides **two (2) 3-foot-wide** access pathways from the eave to the ridge on each roof slope where panels/modules are located.
  - **Residential Buildings with Roof Hips and Valleys**
    - Arrays shall be located no closer than **18 inches** to a hip or a valley where arrays are to be placed on both sides of a hip or valley. Where arrays are to be located on only one side of a hip or valley that is of equal length, the array shall be permitted to be placed directly adjacent to the hip or valley.

YOUR SIGNATURE BELOW ATTESTS THAT THE INFORMATION PROVIDED IS CORRECT AND COMPLIES WITH VILLAGE ADOPTED CODES

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**AGENT** Printed Name

\_\_\_\_\_  
Agent Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
**OWNER** Printed Name

\_\_\_\_\_  
Owner Signature

\_\_\_\_\_  
Date

*This document is provided in order to administer general information pertaining to your Permit Application. Additional requirements may be applicable to this project. Please refer to the Community Development Staff for additional information.*