City of Vacaville
Community Development
Building Division

Residential Photovoltaic Submittal Requirements

Prior to submitting the application, the applicant shall verify, through the use of standard engineering and electrical engineering evaluation techniques, that:

- The support structure for the small residential rooftop solar energy system is stable and adequate to transfer all wind, seismic, dead and live loads associated with the system to the building foundation.

- The existing electrical system including the existing line, load, ground and bond wiring as well as the main panel and subpanel sizes are adequately sized based on the existing electrical system's current use, to carry all new photovoltaic electrical loads.

These verifications are at the applicant's cost.

Roof Mount Systems:

- Roof Plan –
    - Identify the location of the panels on the roof of the structure. Please provide the location of the street as it relates to the front of the parcel to provide orientation of the panel installation.
    - Identify setbacks from the roof edges, roof ridges, valleys and second story windows. *Please note that our office also observes the setback requirements that are listed within the Cal Fire Solar Photovoltaic Installation Guidelines.*
    - Identify all roof zones 1, 2, and 3 and panel location within these designations. Please note that each wind zone may have a different rail spans/anchorage requirement as identified by the manufacturer.
    - List the percent (%) roof area coverage proposed by solar panel array.
    - Roof layout shall identify location of all roof vents and skylights.
- Electrical line diagram – Electrical line diagram must include amperage of existing main service panel, subpanel, main OCPD & proposed breaker sizes. If the main breaker is being derated, include electrical load calculations. All nameplate bus bar ratings shall also be identified within the line diagram. NOTE: Where the nameplate bus bar rating is no longer available, registered third party (i.e. UL) panel re-certification will be required. A letter from the third party confirming their evaluation and panel re-certification will need to be included with the plan submittal where this occurs. Alternatively, the service panel can be replaced as part of the scope of work.
- Manufacturer specifications for inverter.
- Manufacturer specifications for solar panels.
- System to roof connection details and manufacturer's installation manual (panels to rails, rails to attachment points, attachments points to roof).
    - Identify existing roof framing size and spacing. Identify if the roof system is manufactured trusses or rafters.
    - Identify max rail spans/anchorage based on wind zone location and manufacturer installation requirements (i.e., manufacturer rail span tables). Rail spans/anchorage shall be designed to meet the City's specific wind load requirements and should be noted on engineered span tables accompanying submittal either as an addendum from the manufacturer or as part of the manufacturer installation manual.

- Identify if system is flush mount or the degree of tilt proposed for the system. Please note that if the system is designed with a tilt, the anchoring/span tables noted above shall indicate that the rail spans/anchorage is applicable for that degree tilt. Most manufacturers will have a different span table based on the system design.
- Provide cross section identifying maximum height to top of panel. Identify all critical connections, including hardware proposed and minimum embedment into framing members.

Ground Mount Systems:

- Site plan – Identify the location of the solar array and underground electrical running to system. Include setbacks to all property lines and existing structures.
- Engineered Foundation Plan – Provide foundation cross section outlining the construction in detail (depth, diameter/thickness, rebar, etc.). Please note that the city has highly expansive soils and foundation should be designed based on these conditions.
- Elevations – provide elevation view outlining the finished height of solar array from grade to top of panel.
- Electrical line diagram – Electrical line diagram must include amperage of existing main service panel, subpanel, main OCPD and proposed breaker sizes. If the main breaker is being derated, include electrical load calculations. All nameplate bus bar ratings shall also be identified within the line diagram. NOTE: Where the nameplate bus bar rating is no longer available, registered third party (i.e. UL) panel re-certification will be required. A letter from the listing company confirming their evaluation and panel recertification of the panel will need to be included with the plan submittal where this occurs. Alternatively, the service panel can be replaced as part of the scope of work.
- Manufacturer specifications for inverter
- Manufacturer specifications for solar panels
- Connection details (panels to rails, rails to support, support to foundation) and manufacturer's installation manual.
    - Identify max rail spans/anchorage based on wind zone location and manufacturer installation requirements. Rail spans/anchorage shall be designed to meet the City's specific wind load requirements and should be noted on engineered span tables accompanying submittal either as an addendum from the manufacturer or as part of the manufacturer installation manual.
    - Identify if system is flush mount or the degree of tilt for the system. Please note that if the system is designed with a tilt, the anchoring/span tables noted above shall indicate that the rail spans/anchorage is applicable for that degree tilt. Most manufacturers will have a different span table based on the system design.

It is very important ensure that the products utilized are approved by the manufacturer. If the system is universal, our office expects the product specifications for <u>all</u> components to state that they are compatible with third party products. If it does not, the plans will not be accepted.

All ground mount systems must be reviewed and approved by the Planning Division before a building permit can be issued. Please contact the Planning Division at (707) 449-5140 to discuss zoning requirements.