LEE'S SUMMIT MISSOURI

Photovoltaic System Permit Application and Checklist – For Residential Systems* ≤ 15 kW

Valuation: $ 40,067 (including parts & labor)

Project Address: 2071 NW O'Brien Rd., Lee's Summit, MO 64081

Applicant's Company Name: Essential Solar LLC Address: 2669 State Highway CC, Marshfield, MO 65706

Applicant's Contact: Kevin Benton Phone: 417-590-7543 Email: kevin@essentialsolarusa.com

Installing Contractor's Company Name: Essential Solar LLC Address: 2669 State Highway CC, Marshfield, MO 65706

Installing Contractor's Contact: Kevin Benton Phone: 417-590-7543 Email: kevin@essentialsolarusa.com

I, Kevin Benton have read the information below and acknowledge that all required documents have been provided. I understand that omissions in the required information will result in delays in the review process.

Signature: Kevin Benton Date: 7/2/25

How to complete this permit application:

A . Fill out basic permit form per jurisdiction (this will either be an electrical or a building permit form).

B. Complete Photovoltaic System Application and Checklist.

C. Include site plan showing location of major components on the property. This drawing need not be exactly to scale, but it should represent relative location of components and show elevation. The site plan must also show compliance with International Fire Code minimum access and pathways. *Additionally, include a photo that shows the proposed access point to verify compliance with IFC 605.11.3.1.*

D. Include electrical diagram showing PV array configuration, wiring system, overcurrent protection, inverter, disconnects, required signs, and AC connection to building.

E. Include specification sheets and installation manuals (if available) for all manufactured components including, but not limited to PV modules, inverter(s), combiner box, disconnects, and mounting system.

F. Inquire with the jurisdiction to find out the number of copies of components A-D should be submitted.

Steps to completing a photovoltaic project:

Step 1 | Concurrently submit this permit application (see all necessary components, above) and the Net Metering/Interconnection Application to electric utility.

Step 2 | Work can begin after the jurisdiction's permit is approved. Note: Some contractors will not begin work until the Net Metering/Interconnection Application is approved by the utility, although this is not a requirement.

Step 3 | Notify jurisdiction when ready for inspection.

Step 4 | Notify electric utility when inspection is passed.

Step 5 | Electric utility will schedule its inspection and meter exchange.

Step 6 | Electric utility will provide Permission to Operate (PTO)

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Structural Review of PV Array Mounting System:

Roof Information:

This section is for evaluating roof structural members that are site built. This includes rafter systems and site built trusses. Manufactured trusses and roof joist systems, when installed with proper spacing, meet the roof structure requirements as well.

1. Is the array to be mounted on a defined, permitted roof structure? ☑ Yes ☐ No
2. Roof Age: Structure: ☑ < 5 yrs ☐ 5-10 yrs ☐ 20-30 yrs ☐ 30+ yrs
   Covering: ☐ < 5 yrs ☐ 5-10 yrs ☐ 20-30 yrs ☐ 30+ yrs
3. Is the roofing type lightweight? Yes
   (Yes = composition, lightweight masonry, metal, etc...) (No = heavy masonry, slate, etc...)
4. Does the roof have a single covering? ☑ Yes ☐ No
5. Provide method and type of weatherproofing roof penetrations (e.g. flashing, caulk)
6. Roof Construction: ☑ Rafters ☐ Trusses ☐ Other: _____
7. Describe rafter or truss system.
   a. Rafter Size: 2 x 6 inches
   b. Rafter Spacing: 16 inches
   c. Maximum unsupported span: 12 feet, 0 inches
8. Are rafters or trusses in good condition, i.e. have not been adversely altered and no visible damage? ☑ Yes ☐ No
9. Is the rafter or truss design unusual or abnormal? ☐ Yes ☑ No
10. Are the rafters or trusses made out of non-standard materials? ☐ Yes ☑ No
11. Have the rafters or trusses been modified in any way (e.g. drilled holes, etc.)? ☐ Yes ☑ No

Need a structural engineer's stamp: *If you answered "No" to question #8 or "Yes" to any of the questions numbered 9 - 11, a structural engineer's stamp will be required by the local jurisdiction issuing the permit. A framing plan is also required if strengthening the rafters/trusses is necessary.*

(Structural Review of PV Array Mounting System—continued:)

Mounting System Information:

This section provides information on how the PV modules will be mounted to the roof. It is very important to have enough attachment points to adequately spread the dead load across as many roof-framing members as needed so that the point loads created at attachment points account for additional snow load (the Kansas City region has a 20 psf ground snow load).

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

Need a structural engineer's stamp: *If you answered "No" to question #12, a structural engineer's stamp will be required by the local jurisdiction issuing the permit. Must include design for uplift including system to rafter detail as well as a framing plan if strengthening the rafters/trusses is necessary.*

13. Fill out information on the mounting system below:
    a. Mounting System Manufacturer IronRidge Product Name & Model # XR-10
    b. Total Weight of PV Modules and Rails 1380.99 lbs
    c. Total Number of Attachment Points 56
    d. Weight Per Attachment Points (b÷c) 24.66 lbs
    e. Maximum Spacing Between Attachment Points on a Rail 48 inches. *See product manual for maximum spacing allowed based on maximum design wind speed*. To ensure proper weight distribution: *For each successive rail, attachment points should occur on rail ends and then should be staggered based on 16" or 24" on center rafter spacing.*
    f. Total Surface Are of PV Modules (square feet) 573.15 square feet
    g. Distributed Weight of PV Module on Roof (b÷f) 2.41 lbs/ft²
    h. Mounting Frame to Rafter Framing: ☐ Self-Ballasted ☑ Penetrating
    If penetrating, please provide for fasteners:
14. Type: Lag Bolt Size: 5/16 Number: 1
    Spacing: See Permit Set inches
15. Additionally, please attach a cross-section detail that shows rafter size, spacing, number of attachment points, span dimensions, and approximate roof slope. Attached

Electrical Review of PV System (Calculations for Electrical Diagram)

In order for a PV system be processed using this application, the following must be true:

1. PV modules, utility-interactive inverters, and combiner boxes are identified for use in PV systems.
2. The PV array is composed of four(4) series strings or less per inverter.
3. The AC interconnection point is on the load side of service disconnecting means (690.64(B))
4. A standard electrical diagram can be used to accurately represent the PV system.