City of Walnut Creek

Development Review Services
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Submittal Requirements for Energy Storage System (ESS) in One- and Two-Family Dwelling With Solar Photovoltaic System

This list contains the recommended minimum submittal requirements for electrical plan review of new interactive battery storage systems for one- and two-family dwellings with a solar photovoltaic system. The system must interconnect to a single-phase AC service panel of nominal 120/240VAC.

This list is not intended for integration with bipolar or hybrid PV systems. Systems must be in compliance with current California Building Standards Codes and local amendments of the City of Walnut Creek. Plans should be clear and legible.

General Information

- Minimum plan size is 11”x17”, 3 full sets of plans and 2 sets of supporting documents
- Include scope of work statement
- Denote whether battery storage system is AC-coupled or DC-coupled
- Show all markings and labels required for newly installed equipment per CEC 706.11
- A plaque shall be installed at the main service panel indicating type and location of all power sources on or in the building (CEC 705.10)
- General. Energy Storage Systems (ESS) shall comply with the provisions of CRC Section R327.
  Exception: ESS listed and labeled in accordance with UL 9540, installed per manufacture instruction and less than one Kilowatt hour (kWh)

- **Locations**: ESS shall be installed only in the following locations:
  1. Detached garages and detached accessory structures.
  2. Attached garages separated from the dwelling unit living space in accordance with CRC Section R302.6.
  3. Outdoors or on the exterior side of exterior walls located not less than 3 feet (914 mm) from doors and windows directly entering the dwelling unit.
  4. Enclosed utility closets, basements, storage or utility spaces within dwelling units with finished or noncombustible walls and ceilings. Walls and ceilings of

unfinished wood-framed construction shall be provided with not less than $^{5}/_{8}$ inch Type X gypsum wallboard.

5. ESS shall not be installed in sleeping rooms, closets, spaces opening directly into sleeping rooms or in habitable spaces of dwelling units.

- **ESS Spacing-**
  Individual units shall be separated from each other by not less than 3 feet (914 mm) except where smaller separation distances are documented to be adequate based on large-scale fire testing complying with Section 1206.1.5 of the California Fire Code. CRC R327.3.
- **Fire Detection-**
  Rooms and areas within dwelling units, basements, and attached garages in which ESS are installed shall be protected by smoke alarms in accordance with CRC Section R314. A listed heat alarm shall be installed in locations within dwelling units where smoke alarms cannot be installed based on their listing. CRC R327.7
- **Protection From Impact**-
  ESS installed in a location subjected o vehicle damage shall be protected by approved barriers. CRC R327.

Site Plan and Floor Plan

- Include a legend or key for site/floor plan equipment symbols
- Show locations of the following:
  - New equipment for the battery storage system
  - Existing equipment for interconnection (service equipment, distribution equipment, existing PV inverter(s) if connected, and other equipment providing power or receiving power to or from the battery storage system)
- Show required (indoor/outdoor) working clearances for new electrical equipment on floor plan
- Show whether equipment is to be installed indoors or outdoors
- Show method and location of required ventilation equipment (if required) for indoor installations
- Show physical clearances from combustibles on floor plan.
- Show method of protection from physical damage for battery storage system
- Show means of access to battery storage system
- Show location and/or method of rapid shutdown initiation of the storage battery system.
- Show conduit/cable routing of battery storage system, PV, and related circuits:
  - Show trench details if applicable
  - Show overhead runs if applicable
  - Denote whether conductors are routed indoors or outdoors.

Line Diagram

- Show grounding and bonding for battery storage system, including the ground return path.
- Show method of interconnection of battery storage system.
- Show overcurrent protection method and rating when required.
- Include detailed wiring information for all new circuits, including:
- Conductor size/type
- Number of conductors
- Conduit size
- Conduit type
- Show all disconnecting means.
- Show ratings (voltage, ampacity, environmental, etc.) for new and existing service equipment.

Calculations

- Show calculations for sizing of new conductors.
- Show calculations for overcurrent protection ratings.
- Show short circuit current calculations.
- Show open circuit voltage calculations.
- Show calculation for point of connection to service.
- Provide load calculations for new panel boards with loads (according to Article 220).

Equipment Information

- All energy storage system equipment shall be ***listed*** by a Nationally Recognized Testing Laboratory either individually or as a complete, self-contained system, according to a recognized standard-UL9540. Provide supporting documentation that verifies certification of the equipment.
- Provide specification sheets and installation instructions for the following equipment:
    - Inverter
    - Transformer or autotransformer
    - Transfer switch(es)
    - Battery
    - Battery support or racking
    - Converters
    - Combiner
    - Charge controller
    - Interconnecting cables and connectors
    - Recombiner