



CITY OF MONTE SERENO

18041 SARATOGA-LOS GATOS ROAD, MONTE SERENO, CA 95030
(408) 354-7635 • WWW.CITYOFMONTESERENO.ORG

RESIDENTIAL ENERGY STORAGE SYSTEMS (ESS)

BUILDING DIVISION REQUIREMENTS

A permit is required to install Energy Storage Systems (back-up batteries associated with a photovoltaic system). Permits are required prior to installation of the Energy Storage System. Following is a listing of the general requirements for permit applications based on the 2022 California Electrical Code, 2022 California Building Code, and 2022 California Residential Code. This brochure is intended to provide general information, contact the Building Department for any questions or additional information.

Installation Standards

- Energy Storage Systems (ESS) shall be installed by qualified persons. This is defined as a person who has skills and knowledge related to the construction and operation of the electrical equipment and installations and has received safety training to recognize and avoid the hazards involved. (CEC 690.4 (C))
- Energy Storage Systems shall be listed and labeled in accordance with UL 1741 or UL 9450 and installed in accordance with the manufacturer’s instructions.

Locations (CRC R328.4)

Energy Storage Systems shall be installed only in the following locations:

- Detached garages and detached accessory structures.
- Attached garages which are separated from the dwelling unit living space as follows:

Dwelling Garage/Carport Separation (CRC R302.6)	
Separation	Material
From the residence and attics	Not less than ½” gypsum board or equivalent applied to the garage side
From habitable rooms above the garage/carport	Not less than 5/8” Type X gypsum board or equivalent applied to the garage side
Structures supporting floor/ceiling assemblies used for separation required by this section	Not less than ½” gypsum board or equivalent
Garages located less than 3 feet from a dwelling unit on the same lot	Not less than ½” gypsum board or equivalent applied to the interior side of exterior walls

- Outdoors on exterior walls located a minimum of 3’ from doors and windows directly entering dwelling unit and not below and emergency escape or rescue openings (from a sleeping room).

- Enclosed utility closets, basements, storage, or utility spaces with walls and ceilings having a minimum 5/8” Type X gypsum board.
- Energy Storage Systems are not allowed in sleeping rooms, closets/spaces opening directly into a sleeping room, or other habitable spaces.

Additionally, Energy Storage Systems units shall be installed a minimum of 3’ away from each other or as required by the manufacturer of the units.

Total Combined Rating (CRC R328.5)

Individual Energy Storage Systems units shall have a maximum rating of 20 kWh. The aggregate rating of ESS in each location shall not exceed the following:

Maximum Aggregate Rating of ESS (CRC R328.5)	
Location	Maximum Aggregate Rating (kWh)
Within utility closets, basements, and storage/utility spaces within the dwelling	<ul style="list-style-type: none"> • 40
Inside attached garages	<ul style="list-style-type: none"> • 80
On or within 3’ of exterior walls of dwellings and attached garages	<ul style="list-style-type: none"> • 100 • 200 if exterior eaves are constructed of non-combustible surfaces extending as follows: <ul style="list-style-type: none"> ➤ Minimum of 5’ horizontally from edge of ESS ➤ Minimum of 1’ vertically from below the bottom edge of ESS ➤ Minimum 8’ vertically above the ESS or to a non-combustible eave, whichever is less
Inside detached garages and detached accessory structures	<ul style="list-style-type: none"> • 200 • 600 if detached garage/accessory structure is a minimum of 10’ from property line and other structures
Outdoors on the ground	<ul style="list-style-type: none"> • 200 if a minimum of 3’ from property line and dwelling • 600 if a minimum of 10’ from property line and dwelling

Vehicle Impact Protection (CRC R328.8)

Energy Storage Systems installed in a location that is subject to vehicle damage shall have bollards for vehicle impact protection, see diagram on the last page. ESS installed a minimum of 48” above the finished floor or on side walls of a garage (not in the normal driving path) are not considered to be in a location subject to vehicle damage and do not need the impact protection bollards.

Where required, vehicle impact protection shall be one of the following:

1. Bollard construction in accordance with the following:

- 1.1. Minimum, 48" length and 3" diameter Schedule 80 steel pipe embedded in a concrete pier that is a minimum of 12" deep and 6" in diameter. The pipe shall be filled with concrete and a minimum of 36" above the floor and spaced at 5' intervals. Bollards shall be a minimum of 6" from the ESS.
 - 1.2. Minimum 36" height and 3" diameter Schedule 80 steel pipe fully welded to a minimum 8" X ¼" thick steel plate and bolted to a concrete floor by means of a 4-1/2" concrete anchor with 3' minimum embedment. Pipe shall be spaced at 5' intervals and be a minimum of 6" from the ESS.
 - 1.3. Pre-manufactured steep pipe bollard filled with concrete and anchored in accordance with the manufacturer's installation instructions. Pipe shall be spaced at 5' intervals and be a minimum of 6" from the ESS.
2. Wheel barrier construction in accordance with one of the following:
 - 2.1. Four inches in height by 5" in width and a minimum of 70" in length wheel barrier made of concrete or polymer. Wheel barriers shall be anchored to the concrete floor at a maximum 36" intervals with a minimum 3-1/2" diameter concrete anchors with a minimum 3" embedment. Spacing between barrier shall be no more than 36" and barrier shall be a minimum of 54" from the ESS.
 - 2.2. Premanufactured wheel barriers anchored in accordance with the manufacturer's installation instructions
 3. Barriers design by a California Registered Structural/Civil engineer designed to resist 2,000 pound impact in the direction of travel at 24" above grade.

Smoke, Carbon Monoxide, and Heat Alarms (CBC 907.2.11.1, CRC R314 and R315, R328.7)

Smoke alarms shall be installed on the ceiling or wall (between 4" and 12" of the ceiling) in all sleeping rooms, each area/hallway adjacent to sleeping rooms, each story of the building, and in any basement. Smoke alarms shall be replaced 10 years after the date of manufacture listed on the alarm (if no date is listed the alarm shall be replaced). Newly installed smoke alarms shall have a 10-year battery.

Carbon monoxide (CO) alarms shall be installed on the ceiling or wall (above the door header) in each area/hallway adjacent to sleeping rooms, each occupiable story, and within a bedroom if the bedroom or attached bathroom contains a fuel-burning appliance. CO alarms are not required if there is no fuel-burning appliance or fireplace in the house and where the garage is detached from the house.

When Energy Storage Systems are installed in a garage, a listed heat alarm that is interconnected to the smoke alarms shall be installed in an attached garage. System Sensor models 5602 and 5622 are the only heat detectors approved/listed for use in unconditioned spaces.

PERMIT PROCESS

Building Permit Review

1. Permits can be obtained/submitted online at:
<https://epermits.montesereno.org/>.

Inspections

2. One final inspection is required after all the work has been completed.
A completed Smoke Alarm and Carbon Monoxide Alarm Certification Form shall be provided to the building inspector.

Building Permit Submittal Requirements

- Site plan showing the location of the building(s) on-site the location of the Energy Storage System batteries.
- Floor plan showing the location of the Energy Storage System batteries as well as smoke, carbon and heat alarms.
- Equipment brochure with installation requirements and UL listing. The installation must meet the manufacturer’s requirements.
- Electrical single line diagram showing the connection to the photovoltaic system and main electrical panel services.

