



RESIDENTIAL LIGHTING, SWITCHES AND RECEPTACLES

1. PERMIT INFORMATION:

- The repair of or installation of new lighting, switches or receptacles requires an electrical permit.
- A Building Permit may be issued only to a State of California Licensed Contractor or the Homeowner.
- If the work is performed by the Homeowner personally or by his/her workers, and an inspection indicates the work cannot be completed satisfactorily, then a licensed contractor must perform the work.
- If the Homeowner hires workers, State Law requires the Homeowner to obtain Worker's Compensation Insurance. Proof of this insurance is required prior to inspection.

2. INSTALLATION REQUIREMENTS:

- Building Codes:** All work must comply with the 2010 California Building Code (CBC), 2010 California Residential Code (CRC), 2010 California Electrical Code (CEC), 2010 California Energy Code based upon 2008 Building Energy Efficiency Standards (CEnc) and 2011 Milpitas Municipal Code (MMC).
- Equipment must be installed in accordance with it's listing and the manufacturer's installation instructions.
- New lighting or receptacles may not overload existing circuits.
- Branch circuits shall be designed in accordance with CEC Article 210.
- If new circuits or additional loads are being added, including adding new outlets, and the service is less than 100 amps, the service panel must be upgraded to a minimum 100 amps, 3-wire [CEC 230.79(C)].
- LIGHTING:
 - Exterior lighting shall be shielded to prevent glare or direct illumination on public streets or adjacent properties (MMC XI-10-54.17).
 - All fixtures installed in wet locations shall be marked "Suitable for Wet Locations. All fixtures installed in damp locations shall be marked "Suitable for Wet Locations" or "Suitable for Damp Locations". [CEC 410.10(A)]
 - Cord-connected fixtures, chain, cable or cord-suspended fixtures, lighting track, pendants, or ceiling-suspended (paddle) fans shall not be located within a zone measured 3 feet horizontally and 8 feet vertically from the top of the bathtub rim or shower stall threshold. This zone is all encompassing and includes the zone directly over the tub or shower stall. Fixtures located within the actual outside dimension of the bathtub or shower to a height of 8 feet vertically from the top of the bathtub rim or shower threshold shall be marked for damp locations, or marked for wet locations where subject to shower spray. [CEC 410.10(D)]

- Fixtures installed in clothes closets shall comply with the following: (CEC 410.16)
 - Fixtures shall be listed and one of the following types:
 - ◆ A surface-mounted or recessed incandescent fixture with a completely enclosed lamp.
 - ◆ A surface-mounted or recessed fluorescent fixture.
 - ◆ Surface-mounted fluorescent or LED fixtures identified as suitable for installation within the storage area.
 - Incandescent fixtures with open or partially enclosed lamps and pendant fixtures or lampholders shall not be permitted.
 - The minimum clearance between fixtures installed in clothes closets and the nearest point of a storage space shall be as follows:
 - ◆ 12 inches for surface-mounted incandescent or LED fixtures with a completely enclosed light source installed on the wall above the door or on the ceiling.
 - ◆ 6 inches for surface-mounted fluorescent fixtures installed on the wall above the door or on the ceiling.
 - ◆ 6 inches for recessed incandescent or LED fixtures with a completely enclosed light source installed in the wall or ceiling.
 - ◆ 6 inches for recessed fluorescent fixtures installed in the wall or the ceiling.
 - ◆ Surface-mounted fluorescent or LED fixtures shall be permitted to be installed within the storage space where identified for this use.

□ RECEPTACLES:

- In every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area of dwelling units, receptacle outlets shall be installed so that no point along the floor line in any wall space is more than 6 feet, measured horizontally, from an outlet in that space. Wall space shall include the following: [CEC 210.52(A)]
 - Any wall 2 feet or more in width (including space measured around corners) and unbroken along the floor line by doorways, fireplaces, and similar openings.
 - The space occupied by fixed panels in exterior walls, excluding sliding panels.
 - The space afforded by fixed room dividers such as freestanding bar-type counters or railings.
 - Receptacles in floors shall not be counted as part of the required number of receptacle outlets unless located within 18 inches of the wall.
 - See page 3 for a plan view of the location of dwelling unit receptacles in a typical room meeting the requirements of CEC Section 210.52(A).
- Receptacles installed in the following locations must be GFI protected: [CEC 210.8(A)]
 - Bathrooms.
 - Garages, and also accessory buildings not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use.

- Outdoors.
- Crawl spaces.
- Kitchens where the receptacles are installed to serve countertop surfaces.
- Laundry, utility and wet bar sinks where the receptacles are installed within 6 feet of the outside edge of the sink.
- Outlets (including receptacles, switches, lights, and hard-wired smoke detectors) installed in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas of dwelling units shall be protected by a listed arc-fault circuit interrupter, combination-type, installed to provide protection of the branch circuit [210.12(B)].
 - Exception #1: Where RMC, IMC, EMT or steel armored cable, Type AC, meeting the requirements of CEC 250.118 using metal outlet and junction boxes is installed for the portion of the branch circuit between the branch-circuit overcurrent device and the first outlet, it shall be permitted to install a combination AFCI at the first outlet to provide protection for the remaining portion of the branch circuit.
 - Exception #2: Where a branch circuit to a fire alarm system installed in accordance with CEC 760.41(B) and 760.121(B) is installed in RMC, IMC, EMT, or steel armored cable, Type AC, meeting the requirements of CEC 250.118, with metal outlet and junction boxes, AFCI protection shall be permitted to be omitted.
- See Kitchen Remodel and Bathroom Remodel handouts for additional information regarding electrical work in these rooms.

3. ENERGY REQUIREMENTS:

- All lighting must comply with all applicable mandatory measures of the California Energy Code. Refer to the attached form MF-1R for a list of the mandatory requirements.
- Outdoor lighting permanently mounted to the building shall be high efficacy fixtures (e.g. fluorescent) or controlled by a motion sensor in addition to one of the following: a photocontrol, astronomical time clock or Energy management control system (EMCS). Photocontrol, astronomical clock and EMCS shall not have an override or bypass switch (CEnC Section 150(k)).
- If adding or replacing lighting in the kitchen, a minimum of 50% of the total rated lighting wattage (based on the maximum allowed for each fixture) shall be high efficacy fixtures (e.g. fluorescent) switched separately from any low efficacy lighting.
- If adding or replacing lighting in garages, laundry & utility rooms, closets over 70 square feet or bathrooms, the lighting shall be high efficacy fixtures (e.g. fluorescent) or be controlled by a manual-on occupant sensor complying with CEnC Section 119(j). Such occupant sensor shall not have a control that allows the luminaire to be turned on automatically or that has an override allowing the luminaire to be always on. Permanently installed luminaries, that are not high efficacy luminaries, shall be allowed in closets less than 70 square feet.
- If adding or replacing lighting in other rooms (hallways, dining rooms, family rooms, living rooms and bedrooms), the lighting shall be high efficacy fixtures (e.g. fluorescent) or a controlled by a manual-on occupant sensor complying with CEnC Section 119(j) or dimmer switch complying with CEnC Section 119(k). Such motion sensor shall not have a control that allows the luminaire to be turned on automatically or that has an override allowing the luminaire to be always on.

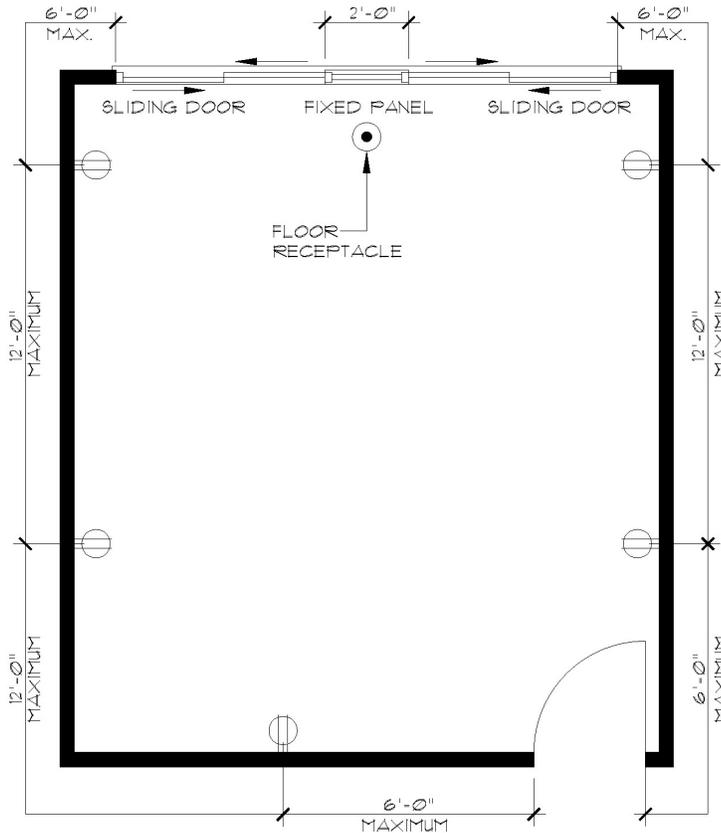
- ❑ Recessed lighting in insulated ceilings must be rated for direct insulation contact (IC), certified as airtight construction (AT), and must have a sealed gasket or caulking between the housing and ceiling to prevent the flow of heated or cooled air out of the living areas and into the ceiling cavity (CEnC 150(k)12).
- ❑ **Title 24 Energy Compliance Reports:** The following forms must be filled out and attached to the permit prior to inspection:
 - Mandatory Measures form MF-1R.
 - Installation Certificate CF-6R-LTG-01.

4. INSPECTION PROCEDURES:

- ❑ At least two inspections are required. The rough inspection should be scheduled when the new fixtures are located, but before power is supplied to them AND before any wiring inside walls/ceilings are covered. The final inspection should be scheduled after all the work is complete. For each inspection, the Permit Card with the Energy Compliance Report forms completely filled and out attached, and the Approved Job Copy of the Drawings (if any) must be presented to the inspector. Permits expire 180 days after issuance or last inspection passed, whichever is the latest.

5. QUESTIONS:

- ❑ If you have any questions regarding your project contact the Building & Safety Department at (408) 586-3240.



SAMPLE RECEPTACLES SPACING

Mandatory Measures Summary	Lighting Only	MF-1R
Residential		
Site Address:	Enforcement Agency: City of Milpitas	Date:

Residential Lighting Measures:
§150(k)1: High efficacy luminaires or LED Light Engine with Integral Heat Sink has an efficacy that is no lower than the efficacies contained in Table 150-C and is not a low efficacy luminaire as specified by §150(k)2.
§150(k)3: The wattage of permanently installed luminaires shall be determined as specified by §130(d).
§150(k)4: Ballasts for fluorescent lamps rated 13 Watts or greater shall be electronic and shall have an output frequency no less than 20 kHz.
§150(k)5: Permanently installed night lights and night lights integral to a permanently installed luminaire or exhaust fan shall contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and shall not contain a line-voltage socket or line-voltage lamp holder; OR shall be rated to consume no more than five watts of power as determined by §130(d), and shall not contain a medium screw-base socket.
§150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, shall meet the applicable requirements of §150(k).
§150(k)7: All switching devices and controls shall meet the requirements of §150(k)7.
§150(k)8: A minimum of 50 percent of the total rated wattage of permanently installed lighting in kitchens shall be high efficacy. EXCEPTION: Up to 50 watts for dwelling units less than or equal to 2,500 ft ² or 100 watts for dwelling units larger than 2,500 ft ² may be exempt from the 50% high efficacy requirement when: all low efficacy luminaires in the kitchen are controlled by a manual on occupant sensor, dimmer, energy management system (EMCS), or a multi-scene programmable control system; and all permanently installed luminaries in garages, laundry rooms, closets greater than 70 square feet, and utility rooms are high efficacy and controlled by a manual-on occupant sensor.
§150(k)9: Permanently installed lighting that is internal to cabinets shall use no more than 20 watts of power per linear foot of illuminated cabinet.
§150(k)10: Permanently installed luminaires in bathrooms, attached and detached garages, laundry rooms, closets and utility rooms shall be high efficacy. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by a manual-on occupant sensor certified to comply with the applicable requirements of §119. EXCEPTION 2: Permanently installed low efficacy luminaires in closets less than 70 square feet are not required to be controlled by a manual-on occupant sensor.
§150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms shall be high efficacy luminaires. EXCEPTION 1: Permanently installed low efficacy luminaires shall be allowed provided they are controlled by either a dimmer switch that complies with the applicable requirements of §119, or by a manual-on occupant sensor that complies with the applicable requirements of §119. EXCEPTION 2: Lighting in detached storage building less than 1000 square feet located on a residential site is not required to comply with §150(k)11.
§150(k)12: Luminaires recessed into insulated ceilings shall be listed for zero clearance insulation contact (IC) by Underwriters Laboratories or other nationally recognized testing/rating laboratory; and have a label that certifies the luminaire is airtight with air leakage less than 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283; and be sealed with a gasket or caulk between the luminaire housing and ceiling.
§150(k)13: Luminaires providing outdoor lighting, including lighting for private patios in low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, which are permanently mounted to a residential building or to other buildings on the same lot shall be high efficacy. EXCEPTION 1: Permanently installed outdoor low efficacy luminaires shall be allowed provided that they are controlled by a manual on/off switch, a motion sensor not having an override or bypass switch that disables the motion sensor, and one of the following controls: a photocontrol not having an override or bypass switch that disables the photocontrol; OR an astronomical time clock not having an override or bypass switch that disables the astronomical time clock; OR an energy management control system (EMCS) not having an override or bypass switch that allows the luminaire to be always on EXCEPTION 2: Outdoor luminaires used to comply with Exception 1 to §150(k)13 may be controlled by a temporary override switch which bypasses the motion sensing function provided that the motion sensor is automatically reactivated within six hours. EXCEPTION 3: Permanently installed luminaires in or around swimming pool, water features, or other location subject to Article 680 of the California Electric Code need not be high efficacy luminaires.
§150(k)14: Internally illuminated address signs shall comply with Section 148; OR not contain a screw-base socket, and consume no more than five watts of power as determined according to §130(d).
§150(k)15: Lighting for parking lots and carports with a total of for 8 or more vehicles per site shall comply with the applicable requirements in Sections 130, 132, 134, and 147. Lighting for parking garages for 8 or more vehicles shall comply with the applicable requirements of Sections 130, 131, 134, and 146
§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires. EXCEPTION: Permanently installed low efficacy luminaires shall be allowed provided that they are controlled by an occupant sensor(s) certified to comply with the applicable requirements of §119.

Residential Lighting

Site Address:	Enforcement Agency:	Permit Number:
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1. Kitchen Lighting

Does project include kitchen lighting?

<input type="checkbox"/> Yes, complete section 1 <input type="checkbox"/> No, go on to section 2	
<input type="checkbox"/> Yes §150(k)3: The wattage of permanently installed luminaires (lighting fixtures) has been determined as specified by §130(d).	
<input type="checkbox"/> Yes <input type="checkbox"/> No §150(k)3: In the kitchen, are there electrical boxes finished with a blank cover or where no electrical equipment has been installed, and where the electrical box can be used for a luminaire or a surface mounted ceiling fan? If yes, the following row must also be yes:	
<input type="checkbox"/> Yes <input type="checkbox"/> NA Wattage has been calculated as 180 watts of low efficacy lighting per blank electrical box.	

§150(k)8 Kitchen Lighting must comply with either method (a), (b), or (c) below:

(a) All high efficacy luminaires

<input type="checkbox"/> Yes, complies because only high efficacy luminaires have been installed in the kitchen.
<input type="checkbox"/> No, complies with method (b) or (c).

(b) ≥ 50% watts used by high efficacy luminaires

<input type="checkbox"/> Yes, complies because at least 50% of the installed watts are from permanently installed high efficacy luminaires as demonstrated in the table below: Total A ≥ Total B.
<input type="checkbox"/> No, complies with method (a) or (c).

Fill out the following table if complying with either method (b) or (c).

Table (b)

Luminaire Type	Efficacy		Watts	x	Quantity	=	High Efficacy Watts	or	Low Efficacy Watts
	High	Low							
	<input type="checkbox"/>	<input type="checkbox"/>		x		=		or	
	<input type="checkbox"/>	<input type="checkbox"/>		x		=		or	
	<input type="checkbox"/>	<input type="checkbox"/>		x		=		or	
	<input type="checkbox"/>	<input type="checkbox"/>		x		=		or	
	<input type="checkbox"/>	<input type="checkbox"/>		x		=		or	
Complies with method (b) if $A \geq B$							Total: A:	\geq	B:

(c) Additional Kitchen Low Efficacy Lighting

<input type="checkbox"/> Yes, complies because the kitchen lighting qualifies for additional low efficacy lighting and as demonstrated in table in (b) (above) and the table in (c) (below) that $(A + C) \geq B$
<input type="checkbox"/> No, complies with method (a) or (b).

Additional kitchen low efficacy lighting is available only if all of the following are true:

<input type="checkbox"/> Yes. All low efficacy luminaires in the kitchen are controlled by a vacancy sensor Dimmer energy management control system (EMCS) or a multi-scene programmable control system.
<input type="checkbox"/> Yes. Permanently installed luminaires in garages laundry rooms closets greater than 70 square feet and utility rooms are high efficacy luminaires AND are controlled by a vacancy sensor.

Table (c)

From the Table in (b)		Use 50 W for dwelling units $\leq 2,500 \text{ ft}^2$ Use 100 W for dwelling units $> 2,500 \text{ ft}^2$	Add	Yes/No ?
A	B	C	A + C	Is $(A+C) \geq B$?

2. Lighting Internal to Cabinets

Does project includes lighting internal to cabinets?

<input type="checkbox"/> Yes, complete section 2 <input type="checkbox"/> No, go on to section 3
<input type="checkbox"/> Yes, §150(k)9: Permanently installed lighting internal to cabinets uses ≤ 20 watts of power per linear foot of illuminated cabinet.

Residential Lighting

Site Address:

Enforcement Agency:

Permit Number:

3. Installed Devices and Components Have Been Certified to the Energy Commission

Does the project include any of the devices or components listed below? Yes, complete section 3 No, go on to section 4

Yes
 §119 and §150(k)7(F): Any of the following devices and components which have been installed have been certified to the Energy Commission according to the applicable provisions of §119: All LED lighting systems that are classified as high efficacy, ballasts used in recessed luminaires, vacancy sensors (automatic off/manual on occupant sensors), dimmers, track lighting integral current limiters, and outdoor motion sensors.

4. Lighting Controls Complete section 4

- Yes NA §150(k)7A: Permanently installed low efficacy luminaires are controlled by switches separate from those controlling high efficacy luminaires.
- Yes NA §150(k)7B: Exhaust fans with integral lighting systems are switched separately from lighting systems, OR have a lighting system that can be manually turned on and off while allowing the fan to continue to operate for an extended period of time.
- Yes NA §150(k)7C: All permanently installed luminaires are switched with readily accessible controls that permit the luminaires to be manually switched on and off.
- Yes NA §150(k)7D: All lighting controls have been installed in accordance with the manufacturer’s instructions.
- Yes NA §150(k)7E: All lighting circuits that are controlled by more than one switch, where a dimmer or vacancy sensor has been installed to comply with §150(k), no controls bypass the dimmer or vacancy sensor functions.

5. Luminaires (Lighting Fixtures)

Does the project include the installation of any luminaires (indoor or outdoor)?

- Yes, complete section 5 No, go on to section 6
- Yes, high efficacy luminaire classification has been determined according to §150(k)1, and low efficacy luminaire classification has been determined according to §150(k)2.
- Yes NA §150(k)4: Fluorescent lamps rated 13 watts or greater have an electronic ballasts having an output frequency no less than 20 kHz.
- Yes NA §150(k)5: Permanently installed night lights, and night lights integral to permanently installed luminaires or exhaust fans, contain only high efficacy lamps meeting the minimum efficacies contained in Table 150-C and do not contain a line-voltage socket or line voltage lamp holder, OR the night light is rated to consume no more than 5 watts of power and does not contain a medium screw-base socket.
- Yes NA §150(k)6: Lighting integral to exhaust fans, in rooms other than kitchens, meet the applicable requirements of §150(k).
- Yes NA Any electrical box finished with a blank cover or where no electrical equipment has been installed, and where the electrical box can be used for a luminaire or a surface mounted ceiling fan, has been treated as low efficacy luminaires for compliance with §150(k).

Does the project include any luminaires that are recessed into insulated ceilings?

- Yes, complete the rest of section 5 No, go on to section 6
- Yes, §150(k)12: Luminaires that are recessed into insulated ceilings meet all of the following conditions:
 - Yes, are listed, as defined in §101, for zero clearance insulation contact (IC) by UL or other nationally recognized testing/rating laboratory, and
 - Yes, have labels that certify the luminaires are airtight with air leakage less than 2.0 CFM at 75 Pascals when tested in accordance with ASTM E283 (Exhaust fan housings are not required to be certified airtight), and
 - Yes, are sealed with a gasket or caulk between luminaire housings and the ceiling, and all air leak paths between conditioned and unconditioned spaces have been sealed with a gasket or caulk. (including all exhaust fan housings), and
 - Yes, allows ballast maintenance and replacement to be readily accessible to building occupants from below the ceiling without requiring the cutting of holes in the ceiling.

6. Indoor Lighting (any indoor room that is not a kitchen)

Does the project include permanently installed luminaires in any room that is not a kitchen?

- Yes, complete section 6 No, go on to section 7
- Yes NA §150(k)10: Permanently installed luminaires in bathrooms, garages, laundry rooms, closets > 70 ft², and utility rooms are high efficacy luminaires OR are controlled by a vacancy sensor.
- Yes NA §150(k)11: Permanently installed luminaires located in rooms or areas other than in kitchens, bathrooms, garages, laundry rooms, closets, and utility rooms are high efficacy luminaires, OR are controlled by a dimmer switch OR are controlled by a vacancy sensor.

Residential Lighting

Site Address:	Enforcement Agency:	Permit Number:
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7. Outdoor Lighting

Does the project include any permanently installed outdoor lighting?

<input type="checkbox"/> Yes, complete section 7 <input type="checkbox"/> No, go on to section 8	
<input type="checkbox"/> Yes <input type="checkbox"/> NA	§150(k)13: Luminaires providing outdoor lighting, including outdoor lighting for private patios on low-rise residential buildings with four or more dwelling units, entrances, balconies, and porches, and which are permanently mounted to a residential building or to other buildings on the same lot are high efficacy luminaires OR are controlled by a manual on/off switch, plus a motion sensor not having an override or bypass switch that disables the motion sensor, plus one of the following three additional control methods:
	a. A photocontrol that does not have an override or bypass switch that disables the photocontrol; or
	b. An astronomical time clock not having an override or bypass switch that disables the astronomical time clock; or
	c. Energy management controls systems (EMCS) not having an override or bypass switch that allows the luminaire to be always on.
<input type="checkbox"/> Yes <input type="checkbox"/> NA	Exception 2: Low efficacy outdoor luminaires used to comply with Exception 1 to §150(k)13 are controlled by an override switch which temporarily bypasses the motion sensing function, and the motion sensor is automatically reactivated within six hours. The luminaire is controlled by a photocontrol, astronomical time clock, or EMCS as required by Exception 1 to §150(k)13.
<input type="checkbox"/> Yes <input type="checkbox"/> NA	Exception 3: There are permanently installed luminaires in or around swimming pools, water features, or other locations subject to Article 680 of the California Electric Code which do not need to be high efficacy luminaires.
<input type="checkbox"/> Yes <input type="checkbox"/> NA	§150(k)14: Internally illuminated address signs comply with §148, OR do not contain a screw-base socket and consume no more than 5 watts of power as determined according to §130(d).
<input type="checkbox"/> Yes <input type="checkbox"/> NA	§150(k)15 Lighting for parking lots and carports with a total of 8 or more vehicles per site have lighting that complies with §130,132, 134, and 147. Lighting for parking garages for 8 or more vehicles comply with §130, 131, 134, and 146. If yes, the Nonresidential compliance forms must be submitted

8. Common areas of low-rise residential buildings

Does the project include the installation of any luminaires in common areas of low-rise residential buildings?

<input type="checkbox"/> Yes, complete section 8 <input type="checkbox"/> No, go on to section 9	
<input type="checkbox"/> Yes	§150(k)16: Permanently installed lighting in the enclosed, non-dwelling spaces of low-rise residential buildings with four or more dwelling units shall be high efficacy luminaires OR are controlled by occupant sensor(s) certified to comply with §119(d).

DECLARATION STATEMENT

- I certify under penalty of perjury, under the laws of the State of California, the information provided on this form is true and correct.
- I am eligible under Division 3 of the Business and Professions Code to accept responsibility for construction, or an authorized representative of the person responsible for construction (responsible person).
- I certify that the installed features, materials, components, or manufactured devices identified on this certificate (the installation) conforms to all applicable codes and regulations, and the installation is consistent with the plans and specifications approved by the enforcement agency.
- I reviewed a copy of the Certificate of Compliance (CF-1R) form approved by the enforcement agency that identifies the specific requirements for the installation. I certify that the requirements detailed on the CF-1R that apply to the installation have been met.
- **I will ensure that a completed, signed copy of this Installation Certificate shall be posted, or made available with the building permit(s) issued for the building, and made available to the enforcement agency for all applicable inspections. I understand that a signed copy of this Installation Certificate is required to be included with the documentation the builder provides to the building owner at occupancy.**

Company Name: (Installing Subcontractor or General Contractor or Builder/Owner)		
Responsible Person's Name:	Responsible Person's Signature:	
CSLB License:	Date Signed:	Position With Company (Title):

CITY OF MILPITAS

Building & Safety Department
455 E. Calaveras Blvd.
Milpitas, CA 95035
408-586-3240

www.ci.milpitas.ca.gov



RESIDENTIAL ELECTRICAL PANEL (SERVICE OR SUBPANEL)

1. PERMIT INFORMATION:

- The installation of a new electrical panel or modifications to an existing panel requires an electrical permit.
- The new electrical panel must be installed in the same general location as the current electrical panel, otherwise plans must be submitted and approved and the permit obtained in person from the Permit Center, Building & Safety Department, 455 E. Calaveras Blvd.
- If the new electrical panel exceeds 200 amps, plans must be submitted and approved and the permit obtained in person from the Permit Center.
- A Building Permit may be issued only to a State of California Licensed Contractor or the Homeowner.
- If the work is performed by the Homeowner personally or by his/her workers, and an inspection indicates the work cannot be completed satisfactorily, then a licensed contractor must perform the work.
- If the Homeowner hires workers, State Law requires the Homeowner to obtain Worker's Compensation Insurance. Proof of this insurance is required prior to inspection.

2. INSTALLATION REQUIREMENTS

- Building Codes:** All work must comply with the 2010 California Building Code (CBC), 2010 California Residential Code (CRC), 2010 California Electrical Code (CEC), 2010 California Energy Code based upon 2008 Building Energy Efficiency Standards (CEnc), 2011 Milpitas Municipal Code (MMC) and P.G.&E installation standards.
- Equipment must be installed in accordance with it's listing and the manufacturer's installation instructions [CEC 110.3(B)].
- If a new panel is being installed and the service is less than 100 amps, the service panel must be upgraded to a minimum 100 amps [CEC 230.79(C)].
- Disconnecting means and overcurrent protection shall be installed in accordance with CEC Article 230.70, and Article 240.24.
- The service disconnecting means shall be installed at a readily accessible location (as defined in CEC Article 100) either inside or outside of a building or structure or inside nearest the point of entrance of the service conductors [CEC 230.70(A)(1)].
- The building main service disconnect and/or disconnects shall be installed on the first floor level of the building [MMC II-6-2.03(4)].
- Panels shall not be installed in bathrooms [(CEC 230.70(A)(2) and 240.24(E)].
- Panels must be protected from physical damage (garages) [CEC 240.24(C)].

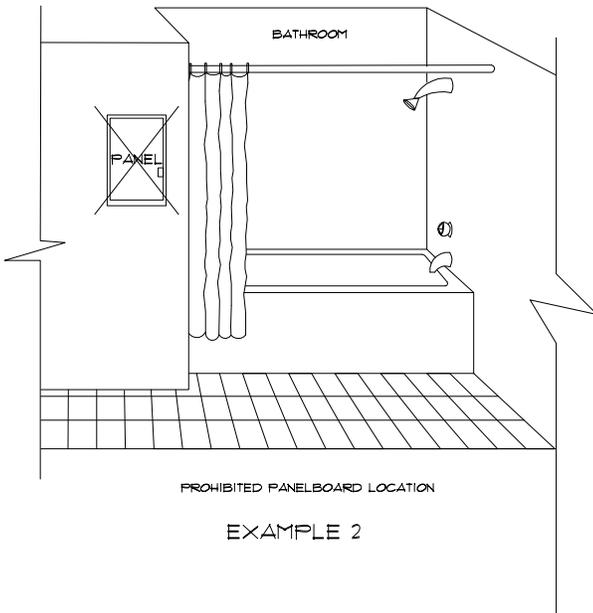
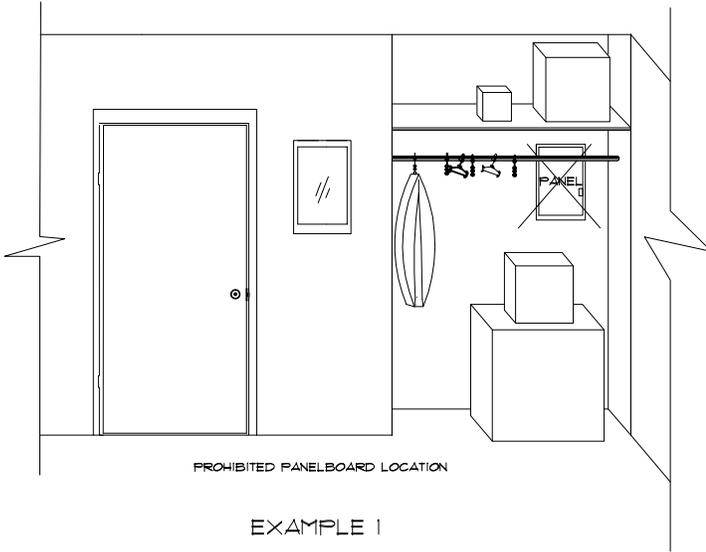
- Panels are not to be installed in vicinity of easily ignitable material, such as inside clothes closets [CEC 240.24(D)].
- There shall be a min. 30" wide x 36" deep clear working space in front of the panel [CEC 110.26].
- New circuit breakers must be listed and approved for installation in the panel [CEC 110.3(B)].
- Each circuit in the panel must be identified with a circuit directory that is located on the face or inside of the panel door [CEC 408.4].
- Grounding and bonding of the electrical service is required when the water piping is replaced. Grounding and bonding shall comply with the California Electric Code. Grounding shall consist of a continuous grounding electrode conductor ran from the service panel to a grounding electrode and to the cold water pipe. **The underground water service shall not be used as the sole grounding system; it must be supplemented with an additional electrode** (CEC 250.53(D)(2)). Grounding of the main water line must occur within the first 5 feet of water piping into the building. All grounding electrodes that are present at each building served shall be bonded together (CEC 250.50).
- In conformance with CEC Section 210.12(B), listed arc-fault circuit interrupters, combination type, shall be installed for all 120 volt, single phase, 15 and 20 amp branch circuits supplying outlets installed in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas when:
 - Any electrical service panel containing branch circuits supplying any of the above areas is being replaced.
 - Any electrical subpanel containing branch circuits supplying any of the above areas is being replaced.
 - Any alteration or extension is made to the branch circuits that supply any of the above areas.

3. INSPECTION PROCEDURES

- A minimum of two inspections are required, a utility release and a final. The utility release inspection should be scheduled when the new panel is installed and ready to be hooked by PG&E. A wire lath inspection is required for stucco repairs. A final inspection should be scheduled after all of the work is complete. For each inspection, the Permit Card and the Approved Job Copy of the Drawings (if any) must be presented to the inspector. Permits expire 180 days after issuance or last inspection passed, whichever is the latest.

4. QUESTIONS:

- If you have any questions regarding your project contact the Building & Safety Department at (408) 586-3240.



**LOCATION OF ENCLOSURES &
OVERCURRENT DEVICES**

(a) Readily Accessible (See Example 1)

1. Service equipment shall be installed at a readily accessible location outside of the building.

2. Overcurrent devices (breakers) shall be readily accessible (either inside or outside) and shall be installed such that the center of the grip of the handle of the switch / breaker is not more than 6'7" above the floor or working platform.

(b) Occupant To Have Ready Access

Each occupant shall have ready access to all overcurrent devices protecting the conductors supplying that occupancy.

Exception : Multiple-occupancy building if electrical maintenance provided by management under continuous management supervision.

(c) Not Be Exposed To Physical Damage
Refer to CEC 240.24C

(d) Not Installed In Vicinity Of Easily Ignitable Material example: Clothes closets
CEC 240.24D

(e) Distribution Panels In Bathrooms
Refer to CEC 240.24E

1. Commercial Applications

Electrical distribution equipment with overcurrent protection is permitted to be located in a bathroom provided all the clearances required in CEC 110.26 are met.

2. Dwelling Units, Hotels and Motels

Overcurrent devices shall not be located in bathrooms.

REV.	DATE	BY:	SCALE:
			N.T.S
			DATE:
			June 2009
			DRAWN BY:
			H.R.

City of Milpitas
BUILDING AND SAFETY
LOCATION OF PANEL ENCLOSURES
WITH OVERCURRENT DEVICE

SHEET
1
 OF 1 SHEETS