

# CITY OF MILPITAS

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

[www.ci.milpitas.ca.gov](http://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, 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 Permit may be issued only to a State of California Licensed Contractor with the proper license classification 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 2016 California Residential Code (CRC) or 2016 California Building Code, 2016 California Electrical Code (CEC), 2016 California Mechanical Code (CMC), 2016 California Plumbing Code (CPC), 2016 California Energy Code, 2016 California Green Building Code and 2016 Milpitas Municipal Code (MMC).
- 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 existing 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(A), 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, kitchens, laundry areas, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, or similar rooms or areas when: (Policy BDP-EL05)
  - 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 modification is made to the branch circuits that supply any of the above areas.

### **3. SMOKE ALARMS, CARBON MONOXIDE ALARMS & SPARK ARRESTERS:**

- In single family and multi-family residences (including townhomes, condominiums and apartments), installation of smoke alarms, carbon monoxide alarms and spark arresters on all chimneys is required prior to the final inspection. Refer to the “*Smoke Alarm, Carbon Monoxide Alarm and Spark Arrester Certificate*” attached for detailed information.

### **4. WATER CONSERVING FIXTURES:**

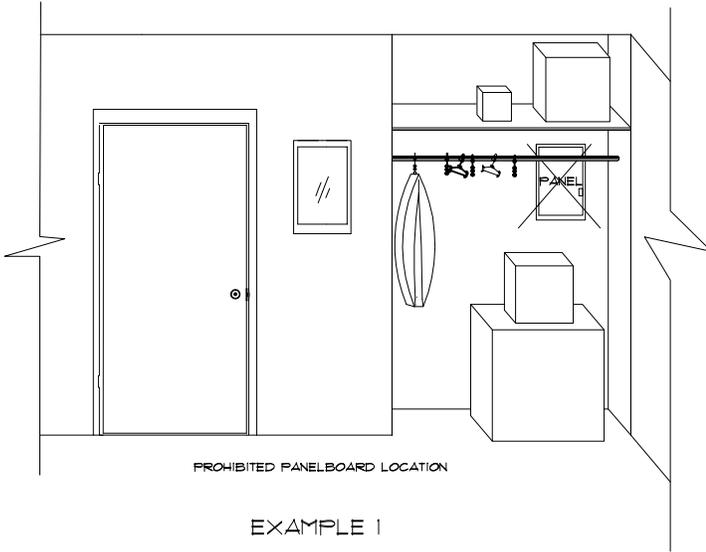
- When required, all non-compliant plumbing fixtures must be replaced. Refer to the attached “*Water Conserving Certificate of Compliance*” handout for details on when this is required.

### **5. INSPECTION PROCEDURES**

- Two inspections may be required, a rough if the panel is recessed and a final. The utility release inspection should be scheduled when the new panel is installed and ready to be connected by PG&E. 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.

### **6. 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 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

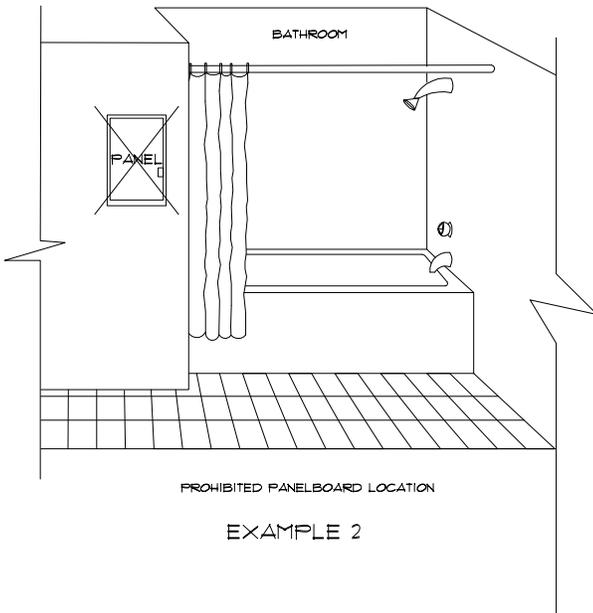
( e ) Distribution Panels In Bathrooms  
Refer to CEC 240.24E

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**



## SMOKE ALARM, CARBON MONOXIDE ALARM and SPARK ARRESTER CERTIFICATE

This "Certificate" can be signed by the property owner and provided to the Building Inspector prior to final inspection if access to the interior of the dwelling for inspection of the smoke and carbon monoxide alarms is not possible and the permitted is exterior only (such as re-roofing, re-siding, patio covers, swimming pools and the like).

In single family and multi-family residences (including townhomes, condominiums and apartments), installation of smoke alarms, carbon monoxide alarms and spark arresters is required prior to the final inspection as follows: (CRC R314 & R315 and CBC 907.2.11)

**Smoke Alarms** listed in accordance with UL 217, listed and approved by the California State Fire Marshal and tested & maintained in accordance with the manufacturer's instructions shall be installed in existing or new dwellings as follows: **in each sleeping room, outside each separate sleeping area in the immediate vicinity of the bedrooms and on each story of the dwelling.** In dwellings or dwelling units with split levels and without an intervening door between the adjacent levels, a smoke alarm installed on the upper level shall suffice for the adjacent lower level provided that the lower level is less than one full story below the upper level. Alarms that no longer function shall be replaced. New smoke alarms that are solely battery powered must have a non-replaceable and non-removable battery capable of powering the smoke alarm for at least 10 years. Fire alarm systems shall be permitted in lieu of smoke alarms if they comply with the provisions of NFPA 72. The installation of smoke alarms and smoke detectors shall also comply with the following requirements:

1. Smoke alarms shall not be located where ambient conditions, including humidity and temperature, are outside the limits specified by the manufacturer's published instructions.
2. Smoke alarms shall not be located within unfinished attics or garages or in other spaces where temperatures can fall below 40°F or exceed 100°F.
3. Where the mounting surface could become considerably warmer or cooler than the room, such as a poorly insulated ceiling below an unfinished attic or an exterior wall, alarms shall be mounted on an inside wall.
4. Smoke alarms shall be installed a minimum of 20 feet horizontal distance from a permanently installed cooking appliance, except Ionization smoke alarms with an alarm-silencing switch or Photoelectric smoke alarms shall be permitted to be installed 10 feet or greater from a permanently installed cooking appliance and Photoelectric smoke alarms shall be permitted to be installed greater than 6 feet from a permanently installed cooking appliance where the kitchen or cooking area and adjacent spaces have no clear interior partitions and the 10 foot distances would prohibit the placement of a required smoke alarm or smoke detector. Smoke alarms listed for use in close proximity to a permanently installed cooking appliance can be installed in accordance with their listing.
5. Smoke alarms shall be installed not less than a 3 foot horizontal distance from the door or opening of a bathroom that contains a bathtub or shower unless this would prevent placement of a smoke alarm required by the code.
6. Smoke alarms shall not be installed within a 36 inch horizontal path from the supply registers of a forced air heating or cooling system and shall be installed outside of the direct airflow from those registers.
7. Smoke alarms shall not be installed within a 36 inch horizontal path from the tip of the blade of a ceiling-suspended (paddle) fan.
8. Where stairs lead to other occupied levels, alarm shall be located so that smoke rising in the stairway cannot be prevented from reaching the alarm by an intervening door or obstruction.
9. For stairways leading up from a basement, alarms shall be located on the basement ceiling near the entry to the stairs.
10. For tray-shaped ceilings (coffered ceilings), alarms shall be installed on the highest portion of the ceiling or on the sloped portion of the ceiling within 12 inch vertically down from the highest point.
11. Smoke alarms installed in rooms with joists or beams shall comply with the requirements of NFPA 72.
12. Heat alarms and detectors installed in rooms with joists or beams shall comply with NFPA 72.

**Carbon Monoxide Alarms** listed in accordance with UL 2034, or combination carbon and smoke alarm listed in accordance with UL2034 and UL217, listed and approved by the California State Fire Marshal and installed and maintained in accordance with the manufacturer’s instructions shall be installed in existing or new dwellings having a fuel-fired appliance, fireplace or an attached garage with an opening communicating with the dwelling as follows: **outside each separate sleeping area in the immediate vicinity of bedroom(s) and on every occupiable level of a dwelling unit.** If there is a fuel-burning appliance located with a bedroom or its attached bathroom, an alarm shall be located within the bedroom.

**Power supply:** Smoke and carbon monoxide alarms shall receive their primary power from the building wiring and shall be equipped with a battery back-up. Wiring shall be permanent and without a disconnecting switch other than as required for overcurrent protection. Smoke and carbon monoxide alarms are permitted to be solely battery operated (carbon monoxide alarms can also be plug-in with battery back-up) in existing buildings where no construction is taking place; in existing areas of buildings undergoing alterations or repairs that do not result in the removal of interior walls or ceiling finishes exposing the structure unless there is an attic or crawl space available which could provide access for building wiring without the removal of interior finishes; where repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck; or when work is limited to the installation, alteration or repairs of plumbing or mechanical systems or the installation, alteration or repair of electrical systems which do not result in the removal of interior wall or ceiling finishes exposing the structure.

**Interconnection:** Where more than one smoke or carbon monoxide alarm is required to be installed within an individual dwelling or sleeping unit, the alarms shall be interconnected in such a manner that the activation of one alarm will activate all of the alarms in the individual unit, except interconnection is not required in buildings that are not undergoing alterations, repairs or construction of any kind; where alterations or repairs do not result in the removal of interior wall or ceiling finishes exposing the structure unless there is an attic or crawl space available which could provide access for interconnection without the removal of interior finishes; where repairs or alterations are limited to the exterior surfaces of dwellings, such as the replacement of roofing or siding, or the addition or replacement of windows or doors, or the addition of a porch or deck; or when work is limited to the installation, alteration or repairs of plumbing, mechanical or electrical systems which do not result in the removal of interior wall or ceiling finishes exposing the structure.

**Spark arresters:** When a permit has been issued and the value of the work exceeds \$1,000, a spark arrester must be installed on all fireplace chimneys if one does not already exist, per MMC Section II-3-2.06. Spark arresters shall be constructed in conformance with CRC Section 1003.9.2.

**\* CERTIFICATION \***

**I understand the above requirements and certify that I now have smoke alarms, carbon monoxide alarms and spark arrestors installed as required above.**

HOMEOWNERS NAME (please print): \_\_\_\_\_

ADDRESS: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

DATE: \_\_\_\_\_ PERMIT NO. \_\_\_\_\_



## WATER CONSERVING CERTIFICATE OF COMPLIANCE

Project Address: \_\_\_\_\_ Permit Number: \_\_\_\_\_

If the Building Inspector cannot physically inspect all plumbing fixtures in the building or cannot verify compliance due to lack of product markings or data, this Certificate of Compliance may be signed by the property owner(s) and given to the Building Inspector. The Building Inspector must inspect and verify all plumbing fixtures or receive this Certificate prior to final inspection.

California Civil Code Section 1101 requires the following. **Note this law applies only to properties built and available for use or occupancy on or before January 1, 1994.**

On or before January 1, 2017, for any **one and two family** residential building, all non-compliant plumbing fixtures shall be replaced with water-conserving plumbing fixtures (regardless of whether property undergoes alterations or improvement).

As of January 1, 2014, for any **multi-family** (more than two units) residential building and any **commercial** building, all non-compliant plumbing fixtures shall be replaced with water-conserving plumbing fixtures in the following circumstances:

1. Additions, if the sum of concurrent building permits by the same permit applicant would increase the floor area of the building by more than 10%, all non-compliant fixtures must be upgraded throughout the building. This includes all common area plumbing fixtures as well as fixtures in private individual units or tenant unit owned by the same owner.
2. Alterations or improvements, if total construction cost in the building permit exceeds \$150,000, all non-compliant fixtures that service the specific area of the alteration or improvement will be required to be upgraded.
3. Any alteration to a room that contains non-compliant plumbing fixtures will require all fixtures in that room to be upgraded.

On or before January 1, 2019, for any **multi-family** (more than two units) residential building and any **commercial** building, all non-compliant plumbing fixtures shall be replaced with water-conserving plumbing fixtures (regardless of whether property undergoes alterations or improvement).

The requirements of this law shall not apply to any of the following:

1. The requirements of this law shall be postponed one year from the date of issuance of a demolition permit for the building. If the building is not demolished after one year, the provision of this law shall apply even though the demolition permit is still in effect or a new demolition permit has been issued.
2. Registered historical sites.
3. Real property for which a licensed plumber certifies in writing that, due to the age or configuration of the property or its plumbing, installation of water-conserving plumbing fixtures is not technically feasible.
4. A building for which water service is permanently disconnected.
5. The property was built and available for use or occupancy after January 1, 1994.

I/We, the owner(s) of this property, certify under penalty of perjury:

- All existing plumbing fixtures meet the minimum requirements of water-conserving as noted below.
- All non-compliant plumbing fixtures have been replaced with water-conserving plumbing fixtures in accordance with Civil Code Sections 1101.1 through 1101.8, the current California Plumbing Code and California Green Building Standards Code, and manufacturer's installation requirements, and that the water-conserving plumbing fixtures comply with the requirements as noted below.
- I/We are exempt for reason #\_\_\_\_ listed above. If for reason #3, attached is a letter from a licensed plumber.

\_\_\_\_\_  
Signature of Property Owner(s)

\_\_\_\_\_  
Print Name(s)

Date: \_\_\_\_\_

The following non-compliant fixtures shall be replaced with water-conserving fixtures as noted: (CGBC 4.303 & 5.303)

- Existing water closets that exceed 1.6 gallons per flush shall be replaced with one that has an effective flush volume not to exceed **1.28 gallons per flush**. Tank-type water closets shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Tank-type toilets. The effective flush volume of dual flush toilets is defined as the composite, average flush volume of two reduced flushes and one full flush.
- Existing urinals that exceed 1.0 gallons per flush shall be replaced with one that uses not more than an average of **0.125 gallons per flush** (0.47 L) for wall mounted and **0.5 gallons** (1.89 L) for other types of urinals.
- Existing single shower heads that exceed 2.5 gallons per minute shall be replaced with one that has a maximum flow rate of not more than **2.0 gallons per minute** at 80 psi. Shower heads shall be certified to the performance criteria of the U.S. EPA WaterSense Specification for Showerheads.
- When a shower is served by more than one showerhead, the combined flow rate of all showerheads and/or other shower outlets controlled by a single valve shall not exceed **2.0 gallons per minute** at 80 psi, or the shower shall be designed to allow only one shower outlet to be in operation at a time. A hand-held shower shall be considered a showerhead.
- Existing residential lavatory faucets that exceed 2.2 gallons per minute shall be replaced with one that has a maximum flow rate not to exceed **1.2 gallons** (4.54 L) per minute at 60 psi. The minimum flow rate shall not be less than 0.8 gallons (3.03 L) per minute at 20 psi.
- Existing lavatory faucets in residential common and public use areas (outside of dwellings or sleeping units) and in commercial areas that exceed 2.2 gallons per minute shall be replaced with one that has a maximum flow rate not to exceed **0.5 gallons per minute** at 60 psi.
  - Metering faucets shall have a maximum flow rate of **0.20 gallons per cycle commercial** or **0.25 residential**.
- Existing kitchen faucets that exceed 2.2 gallons per minute shall be replaced with one that has a maximum flow rate not to exceed **1.8 gallons per minute** at 60 psi. Residential kitchen faucets may temporarily increase the flow above the maximum rate, but not to exceed 2.2 gallons per minute at 60 psi, and must default to a maximum flow rate of 1.8 gallons per minute at 60 psi.
  - Note: Where complying faucets are unavailable, aerators or other means may be used to achieve reduction.