CSD LIWP STANDARDS

FOR

HOT WATER FLOW RESTRICTOR, FAUCET RESTRICTOR – DRAFT

Category	Criteria
1. MEASURE	1.1. Faucet restrictors save water and energy. Fewer gallons of heated water mean greater energy savings. 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor license for purposes of the LIWP program.
3. FEASIBILITY CRITERIA	3.1. Install this measure when (ALL of the following shall apply): a. Faucets deliver heated water from a water heater. b. Existing faucet is a standard faucet (not flow-restricted) and uses more than 2.2 gpm or no existing restrictor is present. 3.2. Do NOT install this measure when: a. Existing faucet is not operable, or is operable and meets a low-flow of 2.2gpm or less as stamped on an existing restrictor. b. Standard-sized restrictor will not fit. c. Existing faucet or faucet threads are damaged, in poor shape, and leaky. d. Removal of existing restrictor will cause damage to existing restrictor or faucet. e. Faucet has special fitting for attaching appliances (e.g., a portable dishwasher).
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. None
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's instructions and specifications and local building code.
6. POST-INSTALLATION GUIDELINES	6.1. Operational Checks a. Installed faucet restrictors shall function properly. b. Threaded connections shall not leak.
7. MATERIAL SPECIFICATIONS	7.1. General Specifications a. Shall conform to ANSI/ASME A112.18.1. b. Shall be metal (e.g., chrome-plated brass). 7.2. Required Flow Rates a. Maximum flow rate: - Kitchen: 1.8 gpm with optional temporary flow of 2.2 gpm at 60 psi - Bath: 1.2 gpm at 60 psi. b. Minimum flow rate: 0.8 gpm at 20 psi
8. WARRANTY	8.1. Manufacturer Warranty – 3 years

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CSD LIWP STANDARDS

FOR

HOT WATER FLOW RESTRICTOR, LOW FLOW SHOWERHEAD – DRAFT

Category	Criteria
1. MEASURE	1.1. A low flow showerhead is designed to reduce the amount of water delivered to a shower. 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor license for purposes of the LIWP program.
3. FEASIBILITY CRITERIA	3.1. Install this measure when: a. Existing showerhead has a flow rate greater than 2.5 gallons per minute (gpm stamped on showerhead). 3.2. Do <u>NOT</u> install this measure when: a. Shower is not mechanically functional or is not used by occupant. b. Existing shower arm is made of plastic c. Existing shower arm is cracked, broken, missing, or it would require removal/replacement. d. Piping is in such poor condition that showerhead installation could cause issues or damage to the existing plumbing.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. House line pressure shall be within manufacturer's specifications for minimum and maximum water pressures.
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's standards and specifications and local building code. 5.2. Shower arms shall <u>not</u> be removed or replaced. 5.3. When a thermostatic shower valve (TSV) is installed in conjunction with an energy-saver showerhead, installation of the TSV (and adapter if used) shall be in compliance with LIWP standard for TSV.
6. POST-INSTALLATION GUIDELINES	6.1. Operational Checks a. Installed showerheads shall function properly b. Threaded connections shall not leak.
7. MATERIAL SPECIFICATIONS	7.1. General Specifications a. WaterSense® labeled. b. "Self-cleaning" or cleanable without being unscrewed from the shower arm. c. Features will be selected that meet any special needs of the occupant (e.g., shut off, swivel, handheld showers) 7.2. Required Flow Rates a. Maximum flow rate: 2.0 gpm at 80 psi. 7.3. Showerheads (Hand-Held) shall have: a. Hose: Minimum 48" length, capable of swiveling at both ends, and constructed

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	of flexible vinyl or PVC material, reinforced (e.g., with nylon). b. Mounting Bracket: Designed to attach to the shower arm (not wall), and constructed of heavy-duty thermoplastic (e.g., ABS) or equivalent, with all-metal swivel ball (e.g., chrome-plated brass). c. Attachment: Must fit standard-thread shower arms and standard adapters. d. An anti-siphon valve. 7.4. Showerheads (Wall-Mount) shall be/have: a. Non-aerating type. b. Ball joint shall be metal (e.g., chrome-plated brass).
8. WARRANTY	8.1. Manufacturer Warranty – 3 years

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CSD LIWP STANDARDS

FOR

LED BULB - DRAFT

Category	Criteria
1. MEASURE	1.1. Installation of LED bulbs is intended to replace incandescent or halogen lamps (bulbs) in order to reduce lighting load. 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor license for purposes of the LIWP program.
3. FEASIBILITY CRITERIA	3.1. Install this measure when (ALL of the following shall apply): a. The LED bulb is replacing an existing incandescent or halogen lamp (bulb), and b. Lamp/bulb is used more than 2 hours per day. 3.2. Do NOT install this measure when: a. Prohibited by the manufacturer of the LED or the fixture. b. CFLs or LEDs are already in place. c. The electrical circuit is controlled by a dimmer that is not compatible with LEDs. d. The electrical fixture (box, switch, wiring, or other circuit components) is damaged, degraded, or unsecured, with bare wires present or wire nuts missing (and repair is not feasible within the program scope). e. The fixture base is cracked or broken, or the fixture is supported only by wiring (*Note*: This item does not apply to pendant lighting that is designed to be suspended from the ceiling). f. An outdoor fixture where the LED would be installed is not labeled for use in the damp or the wet location. g. LEDs would not provide an adequate light level (lumens) to satisfy the client.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. Light Selection a. LEDs lamps shall be installed in a fixture whenever feasible instead of replacing an entire fixture. b. Installed LEDs must be appropriate to the type of fixture and to the total desired light level of the client (including specialty lighting such as: sconces, vanity lights, Hollywood Lights, ceiling fan light kits, or chandeliers). 4.2. *Note*: In some cases, CRI of 90 or higher will improve a client's perception of color "true-ness" and may improve client satisfaction with the measure
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's instructions and specifications, local building code, and 2016 CEC requirements. 5.2. Indoor Lighting a. Armed light fixtures (cluster lights) shall be level after installation of LEDs. 5.3. Outdoor Locations a. When LED bulbs are installed in outdoor locations, the LED bulb shall be rated for damp or wet locations (per manufacturer's instructions).
6. POST-INSTALLATION	6.1. Operational Checks a. Installers shall test all installed LED bulbs before leaving. b. No uninstalled LED bulbs shall be left with the client.

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7. MATERIAL SPECIFICATIONS

7.1. LED bulbs shall be:

a. ENERGY STAR® certified and selected in accordance with local code and manufacturer's specifications, based upon the intended usages described below:
- A-lamp LED bulbs for standard fixtures.
- R-lamp LED bulbs (reflector) for canister type fixtures.
- Marked "JA8-2016-E" (enclosed) for enclosed globes or fixtures.
- Identified by manufacturer as suitable for use in a ceiling fan light kit, when applicable.
- Dimmable, for those locations controlled with a dimming switch.
- Identified by manufacturer as suitable for photo sensors, vacancy sensors, or occupancy sensors.
- Rated for "Damp" or "Wet" installations as defined by the 2016 CEC..
- Identified as suitable for use in timers (mechanical or solid state).

b. Omni-directional (capable of at least 300° light direction)

c. Light Quality (Correlated Color Temperature or CCT) shall be:

Installation Location	Color Correlated Temperature (CCT)	Lighting Characteristic
Indoors	2700 Kelvin (K) to 3699K	Yellowish to natural white (daylight)
Outdoors	3700K to 5000K	Natural white (daylight) to bluish.

d. Color - Rendering Index or CRI: Shall be a minimum of 80.

e. Lumen - Wattage Equivalencies: LED Bulbs must provide light output (lumens) levels sufficient to maintain existing levels in accordance with client preference, and in accordance with the table on the following page, unless prohibited by fixture manufacturer.

Incandescent/Halogen Fixture Wattage	LED Equivalent Lumens
40 watts	450-799
60 watts	800-1,099
75 watts	1,100-1,599
100 watts	1,600-1,999
150 watts	2,000-2,549

8. WARRANTY

8.1. Manufacturer Warranty – 3 years

CSD LIWP STANDARDS

FOR

LED NIGHT LIGHT EXCHANGE - DRAFT

Category	Criteria
1. MEASURE	1.1. Replace existing incandescent night lights with LED night-lights 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor license for purposes of the LIWP program.
3. FEASIBILITY CRITERIA	3.1. Install this measure in: a. A safe, secure receptacle in an interior location. 3.2. Do <u>NOT</u> install this measure when: a. The receptacle is not properly secured, has defective wiring or other unsafe condition, or is nonfunctional, and the defect cannot be corrected. b. CFL or LED night-light is already present.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. Cover Plates: When the cover plate is damaged or missing at an acceptable night-light receptacle location, it must be replaced before the night-light is installed. 4.2. LED night-lights shall be exchanged in locations with existing incandescent night lights.
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's instructions and specifications, local building code and 2016 CEC requirements. 5.2. Devices unplugged for new night-light installation can be reused in an alternative location. 5.3. It is acceptable to position the LED night light upside down.
6. POST-INSTALLATION	6.1. Operational Checks a. All installed LED night-lights shall be tested for proper operation. b. No uninstalled LED night-lights shall be left with the client.
7. MATERIAL SPECIFICATIONS	7.1. All LED night-lights shall be: a. UL listed or equivalent b. Maximum wattage 0.5 watts. c. Equipped with an integrated sensor (automatic on/off) switch.
8. WARRANTY	8.1. Manufacturer Warranty – 1 year

CSD LIWP STANDARDS

FOR

T2 ADVANCED POWER STRIP- DRAFT

Category	Criteria
1. MEASURE	1.1. The purpose of a Tier 2 Advanced Power Strip (T2 APS) is to reduce energy waste by turning electronics off when they are sitting idle. 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor license for purposes of the LIWP program
3. FEASIBILITY CRITERIA	3.1. Install this measure when (ALL of the following shall apply): a. A television will be connected to the T2 APS. b. At least one peripheral device is present that can be connected to the switched outlets. 3.2. Do NOT install this measure when: a. An unsafe electrical condition or hazard is present at the receptacle or wiring in the location where the T2 APS must be plugged in, and the condition cannot be corrected. b. Heavy or delicate furniture cannot be moved to facilitate installation, and it will not be moved by the client.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. Prohibited Uses a. Only electronic equipment recommended by the T2 APS manufacturer shall be plugged into its outlets. b. The T2 APS shall not be used to power small appliances (heaters, lamps, toaster, coffee maker, etc.). - Devices such as computers, cable boxes, or DVR systems that would be damaged by power changes shall only be installed in the “always-on” outlets. c. An extension cord shall not be used, unless allowed by T2 APS manufacturer. If allowed, it must be: - A three-wire grounded extension cord. - No longer than the maximum recommended.
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer’s instructions and specifications and local building code. 5.2. Client shall be asked to power off any devices prior to any installation activities. 5.3. Allowed Devices: a. All T2 APS shall be installed in accordance with manufacturer’s instructions. - A TV must be present as the primary energy-consuming device. - T2 APS shall be installed in a location with good air circulation and no moisture sources. - Two or more T2 APS units shall not be plugged together in series (one into another), unless allowed by T2 APS manufacturer. 5.4. T2 APS Power Cord a. Power cords shall not be run through a wall or secured in place with staples, tacks, tape, etc. b. Excess length shall be safely secured out of the way (e.g., with cable ties).

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	5.5. Receptacle Requirements a. The receptacle must be in good, safe working condition. b. The receptacle must be 3-prong and grounded—an adapter is not allowed. c. A GFCI-protected receptacle (grounded or ungrounded) cannot be used.Only <u>one</u> T2 APS shall be plugged into a duplex receptacle.
6. POST-INSTALLATION GUIDELINES	6.1. Operational Checks a. The T2 APS shall be checked to confirm proper operation with the client present to observe the procedure. - Ensure that "always-on" devices are energized. - Use the television remote control to turn on the TV (controlling outlet) and switched outlets. - Turn on all peripheral devices plugged into the switched outlets to verify that they operate. - With TV and peripheral devices turned on, press power button on the TV remote control to turn off the TV. o All switched devices should automatically turn off within 5 minutes. o All always-on devices should remain on. b. If the T2 APS does not operate as designed, corrections shall be made in accordance with manufacturer's troubleshooting instructions. 6.2. Client Permission to Retain Existing Power Strip: Replaced power strip may be left with client upon request.
7. MATERIAL SPECIFICATIONS	7.1. All T2 APS shall be: a. UL listed to latest UL1449 standard. When corded, T2 APS shall also be UL listed to latest UL1363 standard. b. Infrared (IR) controlled, with a remote sensor that detects control signals (e.g., volume or channel changes) from the television remote control. c. Rated for 120 volts and 15 amps. d. 3-pronged right-angle corded <u>or</u> 3-prong direct wall plug-in. e. Resettable circuit breaker. 7.2. T2 APS shall be equipped with: a. Minimum 1,000 joules of surge protection for all outlets. b. "Smart" function that automatically turns off power to all switched devices within 5 minutes after the TV is turned off with its remote control. c. Adjustable Timer (Delay Period) - Factory preset to automatically turn off TV and switched outlets after a delay period of approximately 1 hour, when no activity is detected. - Can be manually programmed to turn off outlets after a longer delay. - Produces a warning signal to alert the user before power is turned off. d. Switched and Always-On Outlets: - Corded T2 APS shall have at least four switched (power-saving) outlets, one of which may be specified for the TV, and at least two always-on outlets. - Direct wall plug-in T2 APS shall have a least one switched outlet and at least two always-on outlets. - Visual indicator which verifies the unit is active and functioning.
8. WARRANTY	8.1. Manufacturer Warranty – 3 years 8.2. Contractor Warranty: Ancillary Materials – 90 days

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CSD LIWP STANDARDS

FOR

THERMOSTATIC SHOWER VALVE AND SHOWERHEAD - DRAFT

Category	Criteria
1. MEASURE	1.1. Installation of a thermostatic shower valve (TSV) or TSV-showerhead combination unit to temporarily reduce water flow when the water reaches a target temperature, saving water and heat energy, until a client is ready to enter the shower. 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor license for purposes of the LIWP program
3. FEASIBILITY CRITERIA	3.1. Install this measure when: a. The shower is functional and free of plumbing issues and physical defects. 3.2. Do <u>NOT</u> install this measure when: a. Water heater supplying the shower has a continuously-circulating system. b. Piping is in such poor condition that installation of a TSV, or TSV- showerhead combination unit, would damage plumbing. c. The existing shower arm: - Is made of plastic (including ball joint). - Is cracked, broken, or missing. - Requires removal or replacement. d. A shower arm adapter is needed, and standard metal adapters will not work. e. Hot water is provided by an on-demand (tankless) water heater.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. Thermostatic component options are: a. TSV only (existing showerhead is reinstalled). b. Combination TSV- showerhead (TSV and energy-saver showerhead is combined in a single showerhead unit). c. TSV plus energy-saver showerhead (TSV installed with a separate fixed or hand-held showerhead). - If the existing showerhead is already *<2.5 gpm*, addition of only a thermostatic shower valve (TSV) is required. - When the existing showerhead is *≥2.5 gpm,* it is required to: o Replace the showerhead with an energy-saver showerhead, and o Install a separate TSV. o *<u>Note</u>*: a combination thermostatic showerhead may be installed in the place of a separate showerhead and TSV.
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's instructions and specifications, and local building code. 5.2. Shower Arm Adapter a. A shower arm adapter shall be installed when required for installation of the TSV, or TSV and energy-saver showerhead. b. When showerhead is also installed, it shall be installed in compliance with LIWP standards for Low Flow Showerhead.

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6. POST-INSTALLATION GUIDELINES	6.1. Operational Checks a. Installed TSV, showerhead, and shower arm adapter shall function properly and without leaks.
7. MATERIAL SPECIFICATIONS	7.1. TSV units shall be compliant with Uniform Plumbing Code (IAPMO IGC 244) and: a. Automatically reduce flow in response to incoming water temperatures exceeding a preset actuation temperature. b. Designed to automatically reset after the valve cools down following completion of showering. c. Be easily reactivated with manual control. d. Threaded with a female 1/2" NPT to fit standard shower arms threaded with a male 1/2" NPT, in accordance with ANSI/ASME B1.20.1. - *Note*: When a thermostatic shower valve is installed in conjunction with an energy-saver showerhead, the showerhead (and adapter if used) shall be in compliance with the “Low Flow Showerhead” measure. e. If showerhead is a hand-held type, it must be equipped with an anti-siphon valve.
8. WARRANTY	8.1. Manufacturer Warranty – 1 year

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CSD LIWP STANDARDS

FOR

VACANCY SENSOR - DRAFT

Category	Criteria
1. MEASURE	1.1. Installation of a Vacancy Sensor saves energy by requiring the occupant to manually turn on the lights in a room. The vacancy sensor will automatically turn lights off after a preset time (when motion is not detected). 1.2. This measure is classified as a Basic Measure. 1.3. The following requirements are in addition to all applicable requirements found in the General Installation Guidelines.
2. LICENSING	2.1. This measure requires a Class B General Building Contractor or C-10 Electrical Contractor license for purposes of the LIWP program
3. FEASIBILITY CRITERIA	3.1. Install this measure when: a. Vacancy sensor shall be installed in intermittently occupied locations with incandescent or halogen lights that are not feasible for replacement with an LED or CFL. 3.2. Do <u>NOT</u> install this measure when: a. A functional vacancy sensor is already in place. b. LEDs or CFLs are already installed in the light sources controlled by the sensor (i.e., qualifying location, light, or circuit is not present). c. Load is not appropriate: - The switched load exceeds maximum specified by the manufacturer. - Load to be controlled is less than 50 watts, or is fluorescent or LED lighting. d. An electrical condition exists that cannot be corrected, such as: - The electrical box or wiring is in a deteriorated or unsafe condition. - Functional grounding conductor is not present (and cannot be installed) when required by the manufacturer. - Circuit or device(s) to be controlled is not operational. - Electrical box cannot physically contain the vacancy sensor. - Number of connectors exceeds NEC maximum in an electrical box. e. Physical risk may occur to occupant if the sensor fails (such as in a stairway). f. Physical limitations will impede occupant's ability to operate the sensor.
4. ADDITIONAL ASSESSMENT CRITERIA	4.1. Vacancy Sensor Acceptable Locations a. Vacancy sensor shall be in the same room as the light it controls. - *<u>Note</u>*: A vacancy sensor with an integral LED “night-light” feature may be installed where occupant requests nighttime illumination. 4.2. Prohibited Uses/Locations a. Lighting with CFL or LED bulbs. b. Bathroom exhaust fan - *<u>Note</u>*: A dual load vacancy sensor rated for the fan load may be installed when a bathroom exhaust fan is on a single circuit with a qualifying light fixture, and both are controlled with one switch. c. To control a ceiling fan, or in a location within 6 feet of a supply air register or ceiling fan. d. Switches that must remain "On" (such as switches controlling mechanical ventilators, medical equipment, etc.) e. Outdoor lighting f. In rooms that are continually occupied.

	g. Lighting in closets, unless the switch is located on the closet interior. h. Vacancy sensor shall <u>not</u> be installed on circuits of existing emergency lighting fixtures and any type of circuit not approved by the manufacturer. 4.3. Room Characteristics - Passive Infrared (PIR) vacancy sensor shall be installed only in locations with an unobstructed line-of-sight of the entire room. - Ultra Sound (US) vacancy sensor are allowed in rooms that may have obstructions and hard surfaces. - Dual Technology (Combination PIR/US) vacancy sensor are allowed in any location conforming to installation criteria. 4.4. Electrical Safety Requirements a. Electrical wiring must be safe, intact, and properly-sized with adequate overcurrent protection to support the installation of the vacancy sensor measure. b. The circuit to be controlled shall be - Grounded when required by local jurisdiction. - *Note*: If grounding is not required, a vacancy sensor without a ground or neutral shall be selected. c. When a light source is controlled by a 3-way switch set-up, both (all) of the standard switches must be replaced by multi-way vacancy sensor switches in order for the measure to be feasible. - *Note*: A 3-way switch is where 2 separate switches control a single light fixture
5. MINIMUM INSTALLATION GUIDELINES	5.1. Measure shall be installed in accordance with manufacturer's instructions and specifications, and local building code. 5.2. Special Use Vacancy Sensor a. For controlling a bathroom exhaust fan and light with one sensor, a dual load vacancy sensor rated to handle the fan load shall be installed. b. For three-way and four-way lighting circuits, vacancy sensor shall be a multi-way unit. c. For dimmable lighting circuits, vacancy sensor shall be designed for use in such circuits. 5.3. Two-Wire Switch Circuits a. Vacancy sensor installed in light switch boxes without a neutral conductor and/or equipment ground may require minimum circuit wattage to operate. b. A vacancy sensor shall <u>not</u> be installed in a lighting circuit that currently has, or can be retrofitted with, lamps/bulbs using a total wattage less than the minimum required to operate the sensor. 5.4. Circuit and Grounding Requirements a. Must be a 110 – 120 volt circuit located in a wall switch box. b. Connect vacancy sensor grounding lead to the system grounding conductor, when present. c. Vacancy sensor installed in light switch boxes without a neutral conductor and/or equipment ground also may require minimum circuit wattage to operate. 5.5. Fixture Wiring a. All connectors shall be new and properly sized. b. Aluminum and copper wires shall not be spliced together, except in accordance with manufacturer's instructions and code, utilizing AL/CU wire connectors (and anti-oxidant paste when required).
6. POST-INSTALLATION	6.1. Operational Checks a. Operational checks shall be performed by the installer and as prescribed by the manufacturer. - If unit does not operate as designed, manufacturer's troubleshooting

	procedures shall be followed. b. Time Delay and Sensitivity - Time delay shall be set based on conditions at residence. - Default delays: • 15 minutes for standard light controls. • 30 minutes for dual relay for a bathroom exhaust fan. c. When the vacancy sensor has a sensitivity setting, it shall be adjusted to optimal sensitivity based on household conditions.
7. MATERIAL SPECIFICATIONS	7.1. Vacancy sensor shall be: a. UL listed and designed for installation in a wall-mount switch box. b. Title 24 compliant and listed in the CEC's Appliance Efficiency Database. c. Adjustable time delay, maximum of 30-minutes. d. "Manual-On/Automatic-Off". e. Not convertible to an occupancy sensor (automatic-on). f. The same color to match the cover plate. 7.2. Vacancy sensor rating shall be: a. Rated for use with the incandescent or halogen lighting. b. Rated for total load, when installed on a single circuit that controls both a bathroom light and exhaust fan. c. Rated for use *without* an equipment ground when a grounding conductor is not present. d. Rated for use *without* a neutral conductor when a neutral conductor is not present in the switch box. 7.3. Sensor shall be selected to be appropriate for the location, either: a. Passive Infrared (PIR), or b. Ultra Sound (US), or c. Combination of both sensor types.
8. WARRANTY	8.1. Manufacturer warranty – 1 year