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## Highlights from California ENERGY STAR MFHR Program, Version 1.0

A California version of the ENERGY STAR Multifamily High Rise Program Version 1.0 guidelines has now been posted to the [ENERGY STAR website](http://ENERGY STAR website). Partners in California are permitted to use this version immediately, at their discretion, but must apply this Version to all Multifamily High Rise buildings with applications submitted on or after January 1, 2015.

To create the California version, the National Performance Path was revised to better align with the 2013 Title 24 Standards, rather than ASHRAE 90.1-2007. No other program documents were revised.

EPA strongly encourages partners to review the California Performance Path and the national Testing and Verification Protocols in addition to this document. The most substantial differences between ENERGY STAR MFHR Performance Path Prerequisites and 2013 Title 24 Mandatory requirements are summarized below:

### ENERGY STAR MFHR Performance Path Prerequisites that exceed 2013 Title 24 Mandatory requirements:

#### Appliances

- When provided in common areas and/or apartments, refrigerators, dishwashers, clothes washers, ceiling fans and vending machines must be ENERGY STAR certified.

#### Heating and Cooling Equipment

- Atmospherically vented gas furnaces and boilers shall not be specified.

#### Heating and Cooling Distribution

- Total duct leakage for in-unit systems shall be  $\leq 10\%$  of the nominal air handler airflow rate as confirmed through field verification and diagnostic testing, in accordance with the applicable procedures in 2013 Reference Nonresidential Appendices NA1 and NA2, even if ducts are located within conditioned space.
- Heating and cooling duct systems shall be sized and installed according to the latest editions of ACCA Manual D, ASHRAE Handbook of Fundamentals, or a substantively equivalent procedure.
- For in-unit forced air distribution systems, bedrooms must be pressure-balanced using any combination of transfer grills, jump ducts, dedicated return ducts, and/or undercut doors.
- Construction documents shall specify that piping and ductwork must be inspected before access is covered up to visually verify compliance with 2013 Title 24 Standards Sections 120.3 and 120.4, respectively.
- Hydronic systems must comply with 2013 Title 24 Section 140.4(k)1.

#### Envelope

- The following requirements are in addition to the 2013 Title 24 mandatory insulation requirements to not exceed the weighted average U-factors listed in 120.7(b). To reduce thermal bridging, for metal-framed and metal building walls, continuous exterior insulation ( $\geq R-3$ ) is required on above grade walls. Therefore, although continuous interior insulation would qualify for Title 24, it would not qualify for ENERGY STAR. For light mass or heavy mass walls with metal framing, continuous interior or exterior insulation ( $\geq R-3$ ) is required on above grade walls.
- To improve the quality of insulation installed, all roof, wall, floor, and slab insulation shall achieve compliance with Quality Insulation Installation (QII) as specified in the 2013 Reference Residential Appendix RA3.5 or, alternatively, contain a layer of continuous, air impermeable insulation ( $\geq R-3$  in CA CZ01-CZ15 and  $\geq R-5$  in CZ16). Therefore, only wood-frame construction that meets QII is permitted without continuous insulation.

#### Infiltration

- Apartments shall be sealed to reduce air exchange between the apartment and outside as well as the apartment and other adjacent spaces. A maximum air leakage rate of 0.30 CFM50 per square feet of enclosure is allowed. Sampling, blower door testing procedures, and tolerances are described in the 2013 Reference Residential Appendices RA2.6.3 and RA3.8.



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### Ventilation

- Apartment in-line and ceiling exhaust fans must be ENERGY STAR certified.
- Apartment ventilation and local exhaust systems shall be designed and tested to satisfy minimum requirements of ASHRAE 62.2-2007, without reliance on natural ventilation. Kitchen exhaust must vent directly to the outdoors or to a ventilation riser.
- Common area ventilation systems shall be designed and tested to satisfy minimum requirements for ventilation of 2013 Title 24 Section 120.1(a) through 120.1(e).
- Central exhaust systems that serve one or more apartments must be tested for duct leakage, before access is covered up, where the maximum leakage allowance is calculated as 5 CFM per register per shaft plus 5 CFM per floor per shaft.
- Construction documents shall specify that dwelling unit and common area ventilation ductwork must be inspected before access is covered up to visually verify compliance with Section 120.4.

### Domestic Water Heating

- Atmospherically vented gas water heaters, [tankless coils](#) and side-arm water heaters shall not be specified. Indirect water heaters, with or without storage, are acceptable.
- For central DWH, if storage is provided, the maximum storage tank capacity shall be specified based on occupancy and self-contained or electronic mixing valves shall be used to control hot water temperature if serving apartments.
- The average flow rate for all faucets must be  $\leq 2.0$  gallons per minute (rated at 80 psi).
- All showerheads and tank-type toilets must be WaterSense® labeled.
- The temperature setting of in-unit storage water heaters must not exceed 140°F. For both in-unit and central DHW systems, temperatures measured at faucets and showerheads must not exceed 125°F.

### Lighting

- 80% of installed light fixtures must be ENERGY STAR certified or have ENERGY STAR certified lamps installed. Alternatively, 100% of installed light fixtures must have high-efficacy lamps installed, as defined in 2013 Title 24 Table 150.0-A or B.
- At a minimum, interior lighting must be designed or measured to meet light levels (footcandles) by space type as recommended by the Illumination Engineering Society (IESNA) Lighting Handbook, 9<sup>th</sup> edition.
- In-Unit: Lighting power density in apartments cannot exceed 1.1 W/SF. No trade-offs in efficacy due to sensors.
- Common Area: Total specified lighting power for the combined common spaces must not exceed 2013 Title 24 allowances (Table 140.6-C) for those combined spaces by more than 20%. All exit signs shall be specified as LED (not to exceed 5W per face) or photo-luminescent and shall conform to local building code; fixtures located above stairwell doors and other forms of egress shall contain a battery back-up feature.
- Exterior: Actual outdoor lighting power must not exceed the allowed outdoor lighting power per 2013 Title 24 Section 140.7(d) by more than 20%.

### Pump Motor Efficiency

- All three-phase pump motors 1 horse-power or larger shall meet or exceed efficiency standards for NEMA Premium™ motors, where available.