Overview of 2022 Title 24, Part 6 Changes

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California's Title 24, Part 6 Building Energy Code

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A new version of California's Title 24, Part 6 Building Energy Code is approved. While titled the 2022 code, it has an implementation date of January 1, 2023. All projects going for permit on, or after this date are required to comply with this new version of the code.

While all energy codes are moving toward a goal of net zero energy consumption buildings, the target date for that goal varies (most adopt either a 2030, or 2050 goal). California is aiming for the more aggressive target date of 2030 for commercial projects (the residential target is 2020).

Specifically, the Title 24 code's goal is for all new commercial construction, and 50% of commercial buildings retrofits to achieve Net Zero Energy Consumption by 2030 (the state building target is 2025).

To achieve incremental movement toward this goal, changes in the 2022 code are numerous, and aggressive. This article will highlight most of the changes.

The first change we will address is structural within in the code. In the past, multi-family buildings have had hybrid requirements, with some coming from the Residential Code, and others from the Non-Residential Code.

Now all multi-family buildings have their own separate code section, and requirements (160.0-180.4). Hotel, Motel & Nonresidential Buildings still share a common set of requirements (120.0-140.9).

For the remainder of the document, we will provide an overview of the code changes for each discipline, and point the reader toward the code section where these changes are found.

Envelope:

These are what we feel are the most significant changes to the Title 24 code regarding Envelope assemblies.

- Vertical fenestration must be an NFRC tested product (other than Field-fabricated), and their performance attributes now vary according to Climate Zone (previously they were the same across climate zones.) NA6 formulas are only used for skylights ≤ 200 sf. (110.6(a))
- Metal-framed walls now have lower maximum U-factor requirements. (Table 140.3-B)
- Air barriers are now required in most climate zones. (Table 140.3-B & C)
- Steep Sloped Roofs have higher reflectance and emittance rating requirements. (Table 140.3-B)
- Fenestration U-value and RSHGC for vertical glazing and storefronts are now Climate Zone specific. (Table 140.3-B)

Mechanical:

- There are updated prescriptive requirements for economizers. They are required for air handlers, with a cooling capacity > 33,000 BTUH. This may require larger envelope openings and duct sizes, if roof-mounted equipment is not used.) When combined with a DOAS (with exhaust air heat recovery), units with a cooling capacity <54, 000 are allowed. (140.4(e))
- Enhanced duct leakage testing requirements (<6%), with new HERS testing requirements for commercial systems. (120.4(g))
- Prescriptive requirements for DOAS design are added to the 2022 Energy Code (140.4(p))
- There are also prescriptive requirement for exhaust air heat recovery, based on Climate Zone, percent of outdoor air, and the number of operating hours per year. (Table 140.4-J, and Table 140.4-K) Exemptions for specific climate zones are available. (140.4(q))
- All mechanical ventilation, and space conditioning systems must be tested, to ensure that they operate within 10% of the designed minimum outside air rate. Testing is now required for all systems (constant, and variable volume). (120.1(c)3, & 120.1(f))
- In general, there is a greater emphasis on Decarbonization, and the implementation of heat pumps, over gas heating systems, in most zones. (140.4(a)2)
- Mandatory efficiency increases for many cooling systems, cooling towers, furnaces, and boilers. (110.2(a)) Additionally, all the minimum efficiency requirement tables are updated. (Tables 110.2-A – 110.2-N)

- New efficiency tables for DOAS, Computer Rooms, heat pumps, and heat recovery chillers. (110.2, and Tables 110.2-A – 110.2-N)
- Changes in the mandatory ventilation rates calculations. (120.1(c)3, & 120.1(f))
- There are additional prescriptive requirements for laboratory and factory exhaust systems. (140.9(c))
- The types of rooms in which mandatory occupant sensor ventilation controls is expanded (120.2)
- For fans ≥ 1kW, new prescriptive fan power allowances are based on system type, CFM, floors served, and quality of filtration. (140.4(c)1(B))
- Additionally, Table 140.4-F defines the efficiency improvements required for eliminating an economizer
- The 2022 Energy Code defines new prescriptive requirements for boilers – 90% efficiency is required for most zones. (140.4(k)8)
- Additional fan power allowances are available for altered/replaced HVAC systems. (141.0(b)2)
- The 2022 Energy Code contains mandatory refrigeration requirements, including automatic door closers in refrigerated warehouses. (120.6(a-b))
- The code defines new mandatory Process Boiler, Compressed Air, and Steam Trap requirements. (120.6(d,e,i))
- Mandatory indoor growing requirements, for Controlled Environmental Horticulture are part of the 2022 Energy Code. (120.6(h))
- New mandatory requirements for space-conditioning serving a computer room, for reheat, recooling, humidification, and variable fan controls. (120.6(j), and 140.9(a))
- The code defines new prescriptive requirements for Heat Pump Water Heating and/or instantaneous electric water heating, in some school buildings (based on size), in most climate zones. (140.5) Similar requirements apply to most dwelling units, depending on climate zone. (170.2(d)1)
- For nonresidential occupancies, prescriptive requirements call for all water heaters greater than 1,000,000 Btu/hr, to be 90% efficient. (140.5(c))
- Likewise, central systems, serving multiple dwelling units, must be 90% efficient if gas or propane is used. Additionally, solar water heating systems have new prescriptive minimum solar savings fractions. (170.2(d)3)
- Domestic hot water alterations must meet the same prescriptive equipment requirements, as new equipment (except for solar water heating requirements.) (141.0(b)2N, referencing 140.5(a)2 and §140.5(b))

Indoor Lighting:

- Receptacles must be connected to the demand-responsive lighting controls, when both technologies are present/required on the project. (110.12(e))

- Control requirements are changing under the 2022 code. (130.1)
  - Manual area control locations have additional exceptions.
  - Shutoff controls for offices, have new lower mandatory thresholds.
  - Automatic Daylighting controls are now mandatory in secondary daylit zones.
  - Power Adjustment Factors related to controls have been reduced. (Table 140.6-A)

- Healthcare Facilities, and Museum Buildings are added to the Complete Building lighting allowance table. Many other allowances in the table are reduced. (Table 140.6-B)

- The Area Category Lighting, and Additional Lighting Power Allowances tables have numerous changes. Many have decreased but there have been increases, as well, in both allowed lighting power densities, and additional allowances. (Table 140.6-C) Additionally, the lighting power density allowances for the Complete Building Method have been updated.

- Likewise, the 2022 code made numerous reductions to Tailored Method allowances, in Wall Display, Floor Display/Task, and Decorative/Special Effect lighting. All Room Cavity Ration allowances are reduced, as well. (Table 140.6-D)

- There are new exceptions to the UPS efficiency requirements, when serving a computer room. (140.9(a)4, and Table 140.9-B)

- Indoor lighting alterations complying with section 141.0(b)2, are exempt from the new occupancy sensor requirements for offices greater than 250 sf. (130.1(c)6D)

Outdoor Lighting:

- Outdoor lighting zone definitions have changed. Most projects will now fall in LZ2, or LZ3. (Table 10-114-A)

- All hardscape Lighting allowances are all reduced. No allowances is given for Zone 0, but a single 15w luminaires are allowed for specific applications. Allowances differences for asphalt, and concrete are eliminated. (140.7) Additionally, the term “Cutoff”, is replaced with the term “Shielding: for code purposes.

- New Application Specific, additional lighting power allowances for Security Cameras, are added to the 2022 code. (Table 140.7-B)

Photovoltaic and Battery:

- New buildings (with specific occupancies – *see below**) must comply with the new Solar Access Roof Area (SARA) requirements. Additional exceptions are defined under the 2022 code. (140.10(a))

- All buildings required to have a PV system, must also have a properly sized battery system. Again, there are new exceptions defined under the code. (140.10(a), and Table 140.10-A)

- Under certain conditions, common shared systems are allowed to meet solar, and battery requirements. (10-115)

* *Auditorium*
Convention Center
Grocery
Financial Institutions
High Rise Multifamily
Hotel/Motel
Library
Medical Office Building/Clinic
Office
Restaurant
Retail
School
Theater
Unleased Tenant Space
Warehouse
- Or a mixed occupancy building where one, or more, of the above occupancies constitute at least 80% of the building floor area.