

**DOCKETED**

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## **Limitation of air-cooled chillers**

Sections of the Building Energy Efficiency Standards (BEES) 140.4(j) and 170.2(H) reference limitations of air-cooled chillers to 300 tons, with exceptions. With the influx of renewable energy generation that peaks between the hours of 0900 and 1800 is great progress for the state's energy transition but also creates challenges when the generation drops off and the demand remains high. Two primary solutions include shifting the time-of-use consumption to middle-of-day, and/or shift the energy storage for use in later evening. This proposition will focus on the shifting use to middle-of-day while significantly decreasing our state's water consumption. Expanding the use of air-cooled chillers provide a few benefits;

- Air-cooled equipment energy penalty is often not as high as initially thought with California's relatively mild climate where the dry bulb (air-cooled) and wet bulb (water-cooled equipment) temperatures often approach one another.
- Air-cooled equipment may incorporate adiabatic / evaporative-cooled media to mitigate the 'design day' high dry bulb challenges.
- Air-cooled equipment continues to increase its efficiency through greater heat exchanger surface areas.
- Air-cooled equipment will save the state millions and millions, or billions or more, water consumption, annually.
- The capital cost of an air-cooled system is less expensive than water-cooled.
- Legionella is a concern with water-cooled equipment.

I would offer the following suggestions for incorporation into the upcoming code cycles;

- Increase the air-cooled chiller limitation to 1000 tons, while keeping the exceptions.
- Exclude any air-cooled equipment that uses adiabatic and/or evaporative-assist media pads.
- Exclude any heat recovery equipment, including air-cooled heat recovery chillers, or air-water-water heat pumps