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## **We urge the CEC to review and amend or remove the prescriptive HVAC types in Section 140**

Regarding the updates to Section 140.4(a)3 addressing multi-zone space conditioning systems for schools and offices, and prescribing four pipe fan coils supplied by an air to water heat pump space-heating hot water loop which complies with Section 140.4(a)3C: This infers that other methods for supplying hot water, for example gas-fired boilers, are not allowed. We take exception to this. While air to water heat pumps may be more efficient than gas-fired boilers, please consider that air to water heat pumps are also 5-10 times more expensive than equivalent capacity gas-fired boilers. Air to water heat pumps also require additional backup sources, that should be designed for full capacity of design heat demand/load, to supply hot water during days/times of cold outdoor air temperatures when the air to water heat pump's performance degrades or is inoperable, which also significantly increases first cost. Air to water heat pumps also require a significant increase in the electrical service needed in these types of commercial buildings (both in terms of generation and distribution). These areas need additional review for impact on the economic viability of these prescriptive requirements. We request this section be removed and reviewed. Also, regarding the updates to Section 140.4(a)3, and specifically 140.4(a)3.C. "If chilled water produced by an AWHP is used for space-cooling it shall only be used when the AWHP is simultaneously supplying space-heating hot water equal to the AWHP's space-heating hot water demand." We take exception to this requirement and recommend it be removed. The section would prohibit the use of two-pipe AWHPs, which are designed to provide either heating or cooling, but not simultaneously. The actual difference between four-pipe and two-pipe AWHPs is one of packaging, with little difference in cost per capacity or efficiency. Prohibiting one style over the other imposes undue limitation and options for designing and selecting the appropriate components for delivering hot and chilled water to the system.