Attachment C

Milpitas 2019 Energy Reach Codes

SUMMARY

ALL CONSTRUCTION MANDATORY

To provide for future electrification, all newly constructed mixed-fuel buildings and additions must comply with the following mandatory requirements:

- Water heating: 240V/30A circuit, condensate drain
  2019 California Energy Code (base code) requirement is for a 125V/20A circuit which would not be sufficient as currently available higher efficiency heat pump water heaters require a 240V/30A circuit.
- Clothes Drying: 240V/40A circuit
  No requirement in 2019 California Energy Code (base code).
- Cooking: 240V/50A circuit
  No requirement in 2019 California Energy Code (base code).
- Space-conditioning Equipment: Heat pump operation capability and / or 30Acircuit if only space heating provided
  No requirement in 2019 California Energy Code (base code).

RESIDENTIAL PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES

Explanatory Notes

1. The All-Electric Performance Paths given under item #1 below for all project types are not reach codes but new pathways for Energy Efficiency that have been made available per the 2019 California Energy Code.
2. Regarding Single, Two-Family, and Multi-Family construction of 3 stories or less, the Performance Path requirements for an energy budget are expressed as the EDR (Energy Design Rating) for the Proposed Design Building. All of the reach code EDR index numbers for the projects named below that are expressed in the following table represent higher efficiencies than the 2019 Energy Code Standard Design Building. These higher efficiency requirements were provided in the model reach code that Silicon Valley Clean Energy (SVCE) made available to local jurisdictions. These efficiency levels conform to requirements in the 2019 Cost-Effectiveness Study for Low-Rise Residential New Construction. Cost-effectiveness is one of two main criteria with which the California Energy Commission (CEC) uses to evaluate and approve reach codes. The other criteria that the CEC uses is that the reach codes must demonstrate higher levels of energy efficiency than the base 2019 California Energy Code.
3. Regarding Nonresidential construction, the Performance Path requirements are expressed as percentages of efficiency that are more than the base 2019 California Energy Code, instead of as an EDR. EDR is the required metric only for residential compliance starting Jan 1, 2020. So, to reflect that, the new code has to use EDR (as a number) rather than compliance margin (as a percentage) for residential requirements. Non-residential still uses compliance margin (in percentages).

Project Type and Size	Performance Path Requirements	Prescriptive Path Requirements
Single and Two-family New Construction	1. **All Electric.** Demonstrate that the proposed home will be all-electric, OR	**Build All Electric** and Meet 2019 California Energy Code.

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	2. **Electrically Heated Mixed Fuel Building (electric space and water heating).** Proposed Design Building shall be at least 2 EDR points less than the Energy Efficiency Design Rating calculated for the Standard Design Building	**Electrically Heated Mixed Fuel Building** a. Low leakage ducts in conditioned space PER 2019 Reference Appendices RA3.1.4.3.8. b. Install R-10 perimeter slab insulation at a depth of 16-inches. c. Compact hot water distribution per 2019 Reference Appendices RA4.4.6. d. Maximum fan efficacy of 0.35 Watts/cfm and verification by a HERS rater according to 2019 Reference Appendices RA3.3.
	3. **Mixed Fuel Building.** Proposed Design Building shall be at least 10 EDR points less than the Total Energy Design Rating calculated for the Standard Design Building, OR	**Mixed Fuel Building** a. Low leakage ducts in conditioned space PER 2019 Reference Appendices RA3.1.4.3.8. b. Install R-10 perimeter slab insulation at a depth of 16-inches. c. Compact hot water distribution per 2019 Reference Appendices RA4.4.6. d. Maximum fan efficacy of 0.35 Watts/cfm and verification by a HERS rater according to 2019 Reference Appendices RA3.3. e. Either 1) 5 kWh battery OR 2) A solar water heating system with a minimum solar savings fraction of 0.20.
Multifamily New Construction **3 stories or less**	1. **All Electric.** Demonstrate that the proposed building will be all-electric, OR	**Build All Electric** and Meet 2019 California Energy Code.
	2. **Electrically Heated Mixed Fuel Building (electric space and water heating).** Proposed Design Building be at least 1 EDR point less than the Energy Efficiency Design Rating calculated for the Standard Design Building,	**Electrically Heated Mixed Fuel Building** a. Install R-10 perimeter slab insulation at a depth of 16-inches. b. Compact hot water distribution per 2019 Reference Appendices RA4.4.6. c. Maximum fan efficacy of 0.35 Watts/cfm and verification by a HERS rater according to 2019 Reference Appendices RA3.3. d. Meet the requirements of Verified Low Leakage Ducts in Conditioned Space (VLLDCS) in the 2019 Reference Appendices RA3.1.4.3.8, with less than or equal to 25 cfm leakage to outside. e. Install a roofing product that's rated by the Cool Roof Rating Council to have an aged solar reflectance (ASR) of greater than or equal to 0.25.

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	3. **Mixed Fuel Buildings.** Proposed Design Building shall be at least 11 EDR points less than the Total Energy Design Rating calculated for the Standard Design Building, OR	**Mixed Fuel Building** a. Install R-10 perimeter slab insulation at a depth of 16-inches. b. Compact hot water distribution per 2019 Reference Appendices RA4.4.6. c. Maximum fan efficacy of 0.35 Watts/cfm and verification by a HERS rater according to 2019 Reference Appendices RA3.3. d. Either 1) 2.75 kWh battery per dwelling unit OR 2) A solar water heating system with a minimum solar savings fraction of 0.20. e. Meet the requirements of Verified Low Leakage Ducts in Conditioned Space (VLLDCS) in the 2019 Reference Appendices RA3.1.4.3.8, with less than or equal to 25 cfm leakage to outside. f. Install a roofing product that's rated by the Cool Roof Rating Council to have an aged solar reflectance (ASR) of greater than or equal to 0.25.
Low Rise Res Alterations	Meet 2019 California Energy Code.	Meet 2019 California Energy Code.
Low Rise Res Additions	Meet 2019 California Energy Code.	Meet 2019 California Energy Code, **including** shall meet the requirements of Sections 110.0 through 110.9, Sections 150.0(a) through (q) and 150.0(s), and either Section 150.2(a) 1 or 2.

NONRESIDENTIAL PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES

Nonresidential New Construction	**All Electric.** Demonstrate that the proposed building will be all-electric, OR	**Build All Electric** and Meet 2019 California Energy Code.
	Mixed Fuel Buildings, All Occupancies Except Group B (office) and M (mercantile). Demonstrate that the energy use of the proposed building is 6% more efficient than the 2019 California Energy Code.	**Mixed Fuel Building, All Occupancies Except Office and Mercantile, as applicable:** a. Install fenestration with a solar heat gain coefficient no greater than 0.22. b. Design Variable Air Volume (VAV) box minimum airflows to be equal to the zone ventilation minimums. c. Include economizers and staged fan control in air handlers with a mechanical cooling capacity ≥ 33,000 Btu/h. d. Reduce the lighting power density (Watts/ft2) by ten percent (10%) from that required from Table 140.6-C. e. In common areas, improve lighting: 1) Control to daylight dimming plus off per Section 140.6(a)2H 2) Perform Institutional Tuning per Section 140.6(a)2J f. Install one drain water heat recovery device per every three guest rooms that is field verified as specified in the Reference Appendix RA3.6.9.

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	Group B (office) and M (mercantile). Demonstrate that the energy use of the proposed building is 14% more efficient than the 2019 California Energy Code.	**Mixed Fuel Buildings, Office and Mercantile, as applicable:** a. Install fenestration with a solar heat gain coefficient no greater than 0.22. b. Limit the fenestration area on east-facing and west-facing walls to one-half of the average amount of north-facing and south-facing fenestration. c. Design Variable Air Volume (VAV) box minimum airflows to be equal to the zone ventilation minimums. d. Include economizers and staged fan control in air handlers with a mechanical cooling capacity ≥ 33,000 Btu/h. e. Reduce the lighting power density (Watts/ft2) by ten percent (10%) from that required from Table 140.6-C. f. Improve lighting: 1) Control to daylight dimming plus off per Section 140.6(a)2H 2) Install Occupant Sensing Controls in Large Open Plan Offices per Section 140.6(a)2I 3) Perform Institutional Tuning per Section 140.6(a)2J
Mixed Occupancy	For buildings that do not fall under the exceptions of 100.0(f) of the 2019 California Energy Code, the building must meet the performance requirements under the residential and nonresidential sections in this table based on a weighted-average by floor area.	Meet the appropriate prescriptive requirements under the residential and nonresidential elsewhere in this table, as applicable.
Nonresidential Additions and Alterations	Meet 2019 California Energy Code.	Meet 2019 California Energy Code.

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