CITY OF SIMI VALLEY

BUILDING AND SAFETY DIVISION

Technical Bulletin

California Mechanical and Energy Code

SUBJECT: NON-RESIDENTIAL HVAC CHANGE-OUT FOR EXISTING PERMITTED EQUIPMENT - 2019 BUILDING ENERGY STANDARDS

EFFECTIVE DATE: 1/1/2020

A permit will be issued for each separate tenant space. Please provide the address and the suite number or tenant space at time of application.

Equipment change outs will be required to comply with the 2019 California Mechanical Code, 2019 Plumbing Code and the 2019 California Energy Code. Compliance with the California Energy Code can be met through a Performance or Prescriptive approach. Performance approach is modeled with Energy code compliance software by an energy consultant. Prescriptive approach can also be completed by an energy consultant or manually on the Energy Commissions website.
Note: regardless of method used for compliance, mandatory measures are always required.

Additional information regarding the California Energy Codes, Energy Efficiency Standards can be found at:

https://www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/2019-building-energy-efficiency.

Information regarding the mechanical and plumbing codes can be found at **https://www.iapmo.org/**.

In addition please bring the equipment listing/cut sheets so we can verify the energy efficiency, weight, electrical and or gas requirements.

The mechanical contractor is to verify that the new equipment does not exceed the weight of the existing approved equipment when doing a change-out. **This information is required with the permit application.**

The mechanical contractor must submit equipment anchorage information detailing location, size, and type of connectors; this is required to prevent equipment movement during seismic events. Equipment exceeding 400 pounds of weight requires a California licensed structural engineer's design. This is to include calculations for roof equipment support and attachment anchorage details (See California Mechanical Code section 1106.2, ASCE Chapter 13). **This information is required with permit application.**

All duct changes or modifications require mechanical plans to be submitted for plan check. **This information is required with permit application.**

If you have any additional questions regarding the installation of mechanical equipment please contact Simi Valley Building and Safety at 805 583-6723.

Nonresidential

Small Commercial HVAC – Alterations

Packaged Units — Single-zone, Direct Expansion (DX) — Split Systems

	Mandatory Requirements									Prescriptive Requirements						
Change This *(and nothing else)*	Tstat[B] §§110.2(c), 110.12(a), 120.2 (a), (b), (c) & (e)	Supply & Exhaust Dampers (ventilation provided by HVAC) §120.2(f)	Min. Cooling Efficiency §110.2(a)	Min. Heating Efficiency §110.2(a)	Ventil-ation Calcs[J] §120.1	Demand Control Ventil-ation[D, J] §§120.1(c) 3 & 4	Duct Insulation §120.4	Demand Shed Controls[E] §§110.2(c), 110.12(a), 110.12(b), 120.2(b), (h)	Occupant Sensor Ventilation Control[J] §120.1(d)5	Cooling Load Calcs §140.4(b)	Heating Load Calcs §140.4(b)	Equipment Sizing (per load calcs) §140.4(a)	Fan Power[F] §140.4(c)	Econo-mizer[G] §140.4(e)	Duct Seal & Test[H, J] §140.4(l)	Fan Control §140.4(m)
Whole Pkg Unit or Split System NO ALTERED DUCTS	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	no	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**[I]
Cooling Coil of Packaged System	**YES**	no	**YES**	no	no	no	no	**YES**	no	no	no	no	no	no	**YES**	no
Split System Outdoor Condensing Unit	**YES**	no	**YES**	**YES**[C]	no	no	no	**YES**	no	no	no	no	no	no	**YES**	no
Split System, Air Handler, or Cooling or Heating Coil	**YES**	no	**YES**	**YES**[C]	no	no	no	**YES**	no	no	no	no	**YES**	**YES**	**YES**	no
Ductwork[A]	no	no	no	no	no	no	**YES**	no	no	no	no	no	no	no	**YES**	no
New or Replacement Ducts and Whole Pkg Unit or Split System	**YES**	**YES**	**YES**	**YES**	**YES**[K]	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**[I]

NOTE: For Nonresidential HVAC systems, a change in blower motor, compressor or condenser coil is considered a repair and does not trigger the Energy Code. However, repairs must not increase the pre-existing energy consumption of the repaired component, system or equipment.

A Check with your local building department to see if changes to duct work only will require a permit.

B Thermostats also must comply with requirements of Reference Joint Reference Appendix 5 (JA5) per §120.2(b)4 (Mandatory for single zone air conditioners and heat pumps) and §141.0(b)2Ei (Prescriptive).

C If split system operates as a heat pump, heating efficiency must meet meet Mandatory requirements in §110.2(a) plus the supplemental electric resistance heater control requirements of §110.2(b).

D If the system has an airside economizer or modulating outside air control or a design flow rate >3,000 cfm and serves a high-density space (≥25 people per 1,000 ft^2).

E If the altered unit has DDC to the zone level, the requirements of §§110.12(a), 110.12(b) and 120.2(h) must be met. Otherwise, the altered unit's thermostatic controls must comply with JA5, which also includes demand shed control requirements.F If total system nameplate fan power power is >5 HP.

G If >54,000 Btu/h cooling capacity (4.5 tons).

H If system is Constant Air Volume (CAV) single-zone and serves <5,000 ft^2 conditioned floor area, and >25% of the duct surface is outdoors or in unconditioned space, including under a roof that has a U-factor greater than the U-factor of the ceiling, or does not meet current Prescriptive insulation requirements.

I DX cooling systems with ≥65,000 Btu/hr cooling capacity, and chilled water and evaporative systems with fan motors ≥1/4 hp require a minimum of 2 stages of fan control. Systems that include an air side economizer require a minimum of 2 stages of fan control during economizer operation. All systems required to control the space temperature by modulating the airflow to the space have fan power limits at half speed.

J Duct systems and ventilation systems serving healthcare facilities are exempt from this requirement and must instead be sealed in accordance with the California Mechanical Code.

K Requires a MERV 13 filter.

Acceptance Tests: Packaged Units — Single-zone, Constant Air Volume (CAV) — and Split Systems

Change This *(and nothing else)*	Form NRCA-MCH-02-A: Ventilation Systems Adequate OSA (when ventilation provided by HVAC)	Form NRCA-MCH-03-A: Constant-volume, Single-zone Unitary A/C and HP Temperature Scheduling & Controls for DX units Proper system temperature scheduling & controls for DX units	Form NRCA-MCH-04a-H Form NRCA-MCH-04b-A: Air Distribution Systems[C] Duct leakage rate	Form NRCA-MCH-05-A: Air Economizer Controls Proper operation of economizer controls	Form NRCA-MCH-06-A: Demand Control Ventilation Proper operation of DCV controls	Form NRCA-MCH-11-A: Demand Shed Controls Demand response[E]	Form 2019-NRCA-MCH-19-A: Occupancy Sensor Controls Proper operation of occupancy sensors
Whole Package Unit	**YES**	**YES**	**YES**	**YES[B]**	**YES[D]**	**YES**	**YES**
Air Handler, or Cooling or Heating Coil, or Outdoor Condensing Unit	no	**YES**	**YES**	no	no	**YES**	no
Entire Split System	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**	**YES**
Ductwork[A]	no	no	**YES**	no	no	no	no
New or Replacement Ducts and Whole Pkg Unit or Split System	**YES[B]**	**YES**	**YES**	**YES[B]**	**YES[D]**	**YES**	**YES**

NOTE: For Nonresidential HVAC systems, a change in blower motor, compressor or condenser coil is considered a repair and does not trigger the Energy Code. However, repairs must not increase the pre-existing energy consumption of the repaired component, system or equipment.

A Check with your local building department to see if changes to duct work only will require a permit.

B If the system has a factory-installed economizer that is certified operational by the manufacturer to the California Energy Commission's economizer quality control requirements, the in-field functional tests do not have to be conducted. Regardless of whether the economizer is field- or factory-installed, complete the construction inspection, including the compliance with high temperature lockout temperature setpoints.

C If ducts are for a single-zone CAV unit serving <5,000 ft^2 and if >25% duct surface area is in unconditioned space or outdoors. The NRCA-MCH-04a-H Air Distribution Duct Leakage form documents HERS verification and should be submitted to the HERS registry by a HERS provider. The NRCA-MCH-04b-A Air Distribution Duct Leakage form documents Acceptance Testing as performed by an Acceptance Test Technician.

D If system is single-zone with any controls or multi-zone with direct digital controls (DDC), and has airside economizer, and serves a high-density space (≥25 people per 1,000 ft^2).

E The acceptance test requirement only applies if the unit has DDC controls.

For More Information

Primary Sources

- Energy Code Section 110.2 – Mandatory Requirements for Space-Conditioning Equipment:
  energycodeace.com/site/custom/public/reference-ace-2019/Documents/section1102mandatoryrequirementsforspaceconditioningequipment.htm
- Energy Code Section 110.12 – Mandatory Requirements for Demand Management:
  energycodeace.com/site/custom/public/reference-ace-2019/index.html#!Documents/section11012mandatoryrequirementsfordemandmanagement.htm
- Energy Code Section 120.1 – Requirements for Ventilation:
  energycodeace.com/site/custom/public/reference-ace-2019/Documents/section1201requirementsforventilationandindoorairquality.htm
- Energy Code Section 120.2 – Required Controls for Space-Conditioning Systems:
  energycodeace.com/site/custom/public/reference-ace-2019/Documents/section1202requiredcontrolsforspaceconditioningsystems.htm
- Energy Code Section 120.4 – Requirements for Air Distribution System Ducts and Plenums:
  energycodeace.com/site/custom/public/reference-ace-2019/Documents/section1204requirementsforairdistributionsystemductsandplenums.htm
- Energy Code Section 140.4 – Prescriptive Requirements for Space Conditioning Systems:
  energycodeace.com/site/custom/public/reference-ace-2019/Documents/section1404prescriptiverequirementsforspaceconditioningsystems.htm
- Energy Code Joint Reference Appendix 5 (JA5) – Technical Specifications For Occupant Controlled Smart Thermostats
  energycodeace.com/site/custom/public/reference-ace-2019/Documents/appendixja5technicalspecificationsforoccupantcontrolledsmartther.htm

California Energy Commission Information & Services

- Energy Code Hotline: 1-800-772-3300 (Free) or Title24@energy.ca.gov
- Online Resource Center:
  www.energy.ca.gov/programs-and-topics/programs/building-energy-efficiency-standards/online-resource-center
  - The Energy Commission's main web portal for the Energy Code, including information, documents and historical information

Additional Resources

- Energy Code Ace:
  EnergyCodeAce.com
  - An online "one-stop-shop" providing free resources and training to help appliance and building industry professionals decode and comply with Title 24, Part 6 and Title 20. The site is administered by California's investor-owned utilities.

    Please register with the site and select an industry role for your profile in order to receive messages about all our free offerings!

This program is funded by California utility customers and administered by Pacific Gas and Electric Company (PG&E), San Diego Gas & Electric Company (SDG&E®), Southern California Edison Company (SCE), and Southern California Gas Company (SoCalGas®) under the auspices of the California Public Utilities Commission.
© 2019 PG&E, SDG&E, SoCalGas and SCE. All rights reserved, except that this document may be used, copied, and distributed without modification. Neither PG&E, SoCalGas, SDG&E, nor SCE — nor any of their employees makes any warranty, express or implied; or assumes any legal liability or responsibility for the accuracy, completeness or usefulness of any data, information, method, product, policy or process disclosed in this document; or represents that its use will not infringe any privately-owned rights including, but not limited to patents, trademarks or copyrights. Images used in this document are intended for illustrative purposes only. Any reference or appearance herein to any specific commercial products, processes or services by trade name, trademark, manufacturer or otherwise does not constitute or imply its endorsement, recommendation or favoring.