

Welcome to the Statewide CASE Team's Utility-Sponsored
Stakeholder Meeting on Multifamily Topics!

We'll get started shortly. In the meantime,
please fill out the polls below.



2022 Title 24, Part 6 Code Cycle


First Stakeholder Meeting

Multifamily Topics

February 8, 2019

Welcome: Meeting Ground Rules

Audio – there are **three** options for connecting to the meeting audio:

To view options, click on the  icon on the top ribbon, then select *Connect My Audio*.

- 1 **Dial-out:** receive a call from the meeting. *Please note this feature requires a direct line.*
- 2 **Dial-in:** dial-in to the conference via phone. Conference phone number and room number code provided. *Please then identify your line by entering your unique user ID on your phone.*
- 3 Use the **microphone** from your computer/device.



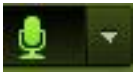
The image shows a 'Join Audio Conference' dialog box. It contains the question 'How would you like to join the meeting's audio conference?' and three radio button options: 'Dial-out [Receive a call from the meeting]', 'Dial-in to the Audio Conference via Phone', and 'Using Microphone (Computer/Device)'. The 'Dial-out' option is selected. Below it, there is a dropdown menu showing '+1 (USA)' and a text field labeled 'Phone Number'. At the bottom right, there are two buttons: 'Join' and 'Listen Only'.

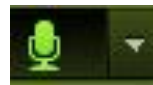
Above: audio conference settings pop-up box

Meeting Ground Rules

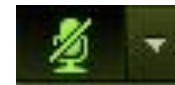
Once you turn on your preferred audio connection please **MUTE** your microphone.

- Please keep yourself **MUTED**.
- Wait for instructions and/or permission to unmute yourself during designated Q&A periods.

- **Phone users** – please mute your phone line.
- **Computer/device users** – please mute your microphone by clicking on the  icon on your top ribbon.



NOT MUTED



MUTED

Meeting Ground Rules

Meeting Feedback

- Provide live meeting feedback from the top toolbar drop-down

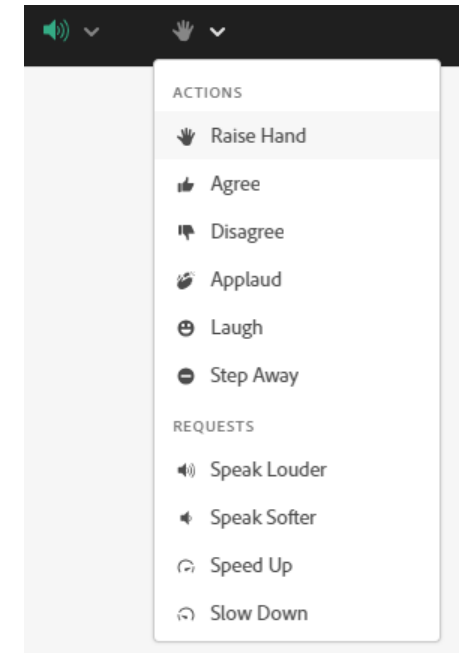
Questions

- Please submit all questions via the Chat window

Right: feedback view for Adobe Connect app users.



Below: feedback view for HTML users.



Meeting Ground Rules

We want to hear your thoughts

- Supporting and opposing viewpoints are welcome

When making comments

- Unmute yourself
- Clearly state your name and affiliation prior to speaking
- Speak loudly for phone audio
- Place yourself back on mute

Calls are recorded for note development, recordings will not be publicized

Notes and presentation material will be posted on

www.Title24Stakeholders.com

Meeting Agenda

Topic	Time	Presenter
Welcome	8:00 am – 8:05 am	Energy Solutions
Meeting Guidelines	8:05 am – 8:10 am	Energy Solutions
2022 Process Overview	8:10 am – 8:20 am	Energy Commission and Utility Team
Multifamily Proposal	8:20 am – 9:40 am	TRC
Multifamily Code Reorganization		
Definition of Multifamily		
Prototypes/Standard Design		
Proposed CASE Topics		
Wrap Up and Action Items	9:40 am – 9:50 am	Energy Solutions
Closing	9:50 am – 10:00 am	Energy Solutions

Policy Drivers: Building Standards



The following policy documents establish the goal for new building standards:

- **2008 CPUC/CEC Energy Action Plan** – ZNE for Residential buildings by 2020 and nonresidential buildings by 2030
- **SB 100** – Clean electricity by 2045
- **B-55-18** –Governor Jerry Brown’s Executive Order to achieve carbon neutrality
- **AB 3232** – Assess the potential for the state to reduce the emissions of greenhouse gases from the state’s residential and commercial building stock by at least 40% below 1990 levels by January 1, 2030

2022 Standards Schedule



ESTIMATED DATE	ACTIVITY OR MILESTONE
November 2018 - July 2019	TDV Development
November 2018 - July 2019	Measures Identified and Approved (Internal at the Energy Commission)
April 4, 2019	Pre TDV and Climate Data workshop and new Metrics
April 24, 2019	Adrian to present the Efficiency Measure Proposal Template for public to submit measures
June, 2019	Final TDV Workshop
July, 2019	Research Version of CBECC Available with new weather data files and updated TDV
July 2019 - March 2020	Utility-Sponsored Stakeholder Workshops
March, 2020	All Initial CASE/PUBLIC Reports Submitted to Commission
March - August 2020	Commission-Sponsored Workshops
July, 2020	All Final CASE/PUBLIC Reports Submitted to the Commission
July - September 2020	Express Terms Developed
January, 2021	45-day Language posted and set to list serve, Start of 45-day review/comment period
January, 2021	Lead Commissioner Hearing
April, 2021	Adoption of 2022 Standards at Business Meeting
May - November 2021	Staff work on Software, Compliance Manuals, Electronic Documents
May - November 2021	Final Statement of Reasons Drafted and Approved
October, 2021	Adoption CalGREEN (energy provisions) - Business Meeting
December, 2021	CBSC Approval Hearing
January, 2022	Software, Compliance Manuals, Electronic Documents Available to Industry
January - December 2022	Standards Training (provided by 3rd parties)
June 1, 2022	6 Month Statutory Wait Period Deadline
January 1, 2023	Effective Date

2022 Standards Contact Info



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Title 24 Overview

Stakeholder Meeting Objectives &
Utility Team Role

Comply With Me

Learn how to comply with California's building and appliance energy efficiency standards

www.EnergyCodeAce.com

offers **No-Cost**

Tools ♠ Training ♠ Resources
to help you decode Title 24, Part 6 and Title 20



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.



The **Codes and Standards Reach Codes Program** provides technical support to local jurisdictions considering adopting a local energy efficiency ordinance.

Support includes:

- Cost-effectiveness Studies, Model Language;
- Training;
- Presentation Templates, Implementation Guides, Handouts;
- Checklists; and
- Other Resources to facilitate ordinance adoption and implementation.

CALIFORNIA ENERGY CODES & STANDARDS
A STATEWIDE UTILITY PROGRAM

About Contact Us

Welcome to LocalEnergyCodes.com

Toolkit Resources Contact Us Search

The California Codes and Standards (C&S) Reach Codes program provides technical support to local governments considering adopting a local ordinance (reach code) intended to support meeting local and/or statewide energy and greenhouse gas reduction goals. The program facilitates adoption and implementation of the code, by providing resources such as cost-effectiveness studies, model language, sample findings, and other supporting documentation.

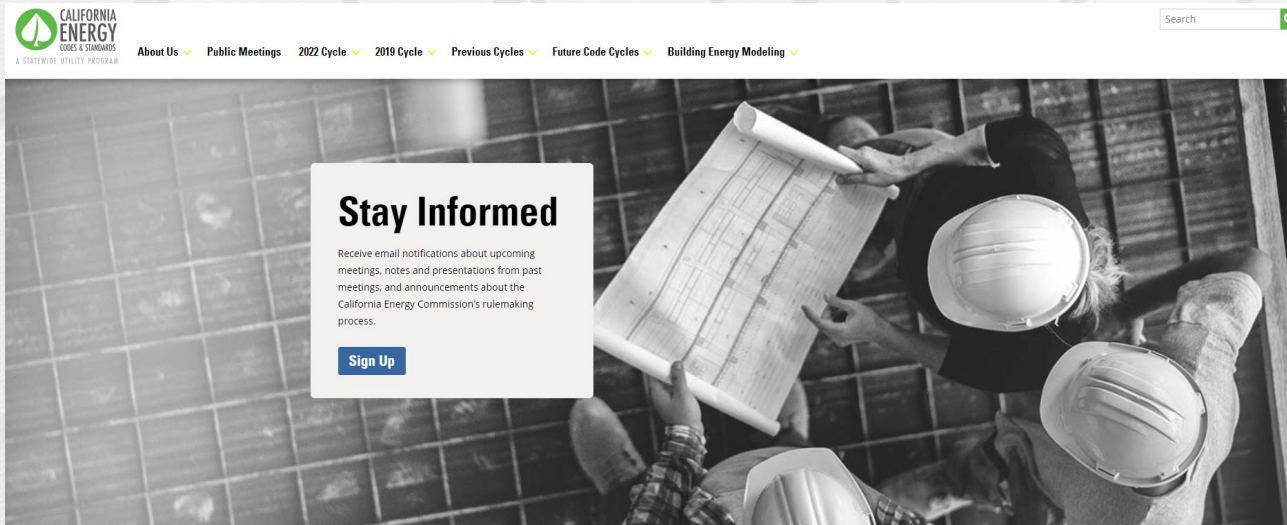
Local Government – Local Energy Ordinance Resources and Toolkit

Local energy ordinances require buildings to be more efficient than the existing statewide standards.

www.LocalEnergyCodes.com

Utility-Sponsored Stakeholder Meetings

- All meetings can be attended remotely
- Check www.Title24Stakeholders.com for information about meetings and topic updates
- Sign up to receive notifications



Statewide Utility C&S Team Support for the 2022 Title 24 Code Cycle

- The Statewide Utility Codes and Standards Team is **actively supporting the California Energy Commission** in developing the California Building Energy Efficiency Standards
- Their joint intent is to achieve significant energy savings through the development of **feasible, enforceable, cost-effective, and non-proprietary** code change proposals for the 2022 code update, and beyond
- We are hosting stakeholder meetings to get industry input and feedback on code proposals
- For more information on the Energy Commissions' rulemaking process, visit: <https://www.energy.ca.gov/title24/>

2022 Code Cycle Timeline

MILESTONE	DATES
CEC Develops 2019 TDV	In Progress
IOU Team Develops Code Change Proposals	Now – March 2020
IOUs Submit First Draft of CASE Reports to CEC	March 2020
IOUs Submit Final CASE Reports to CEC	July 2020
CEC Pre-rulemaking	September 2020 – January 2021
CEC Rulemaking	January 2021 – April 2021
2022 Standards Adopted	April 2021
2022 ACM Reference Manuals and Compliance Manuals Approved	Nov 2021
2022 Standards Effective	January 1, 2023

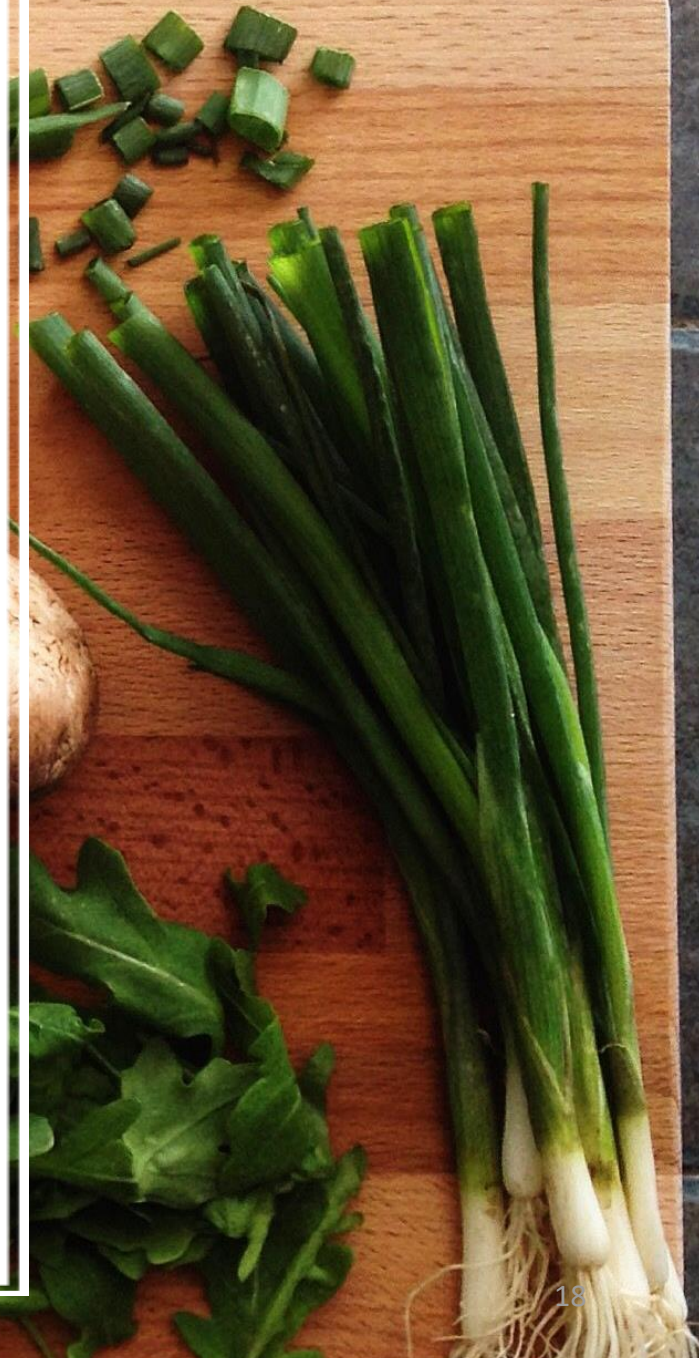
Requirements for a Successful Code Change Proposal

The Utilities support the California Energy Commission
by proposing changes to the Building Energy Efficiency Standards that are:

Feasible | Cost effective | Enforceable | Non-proprietary

Ingredients in Each Code Change Proposal

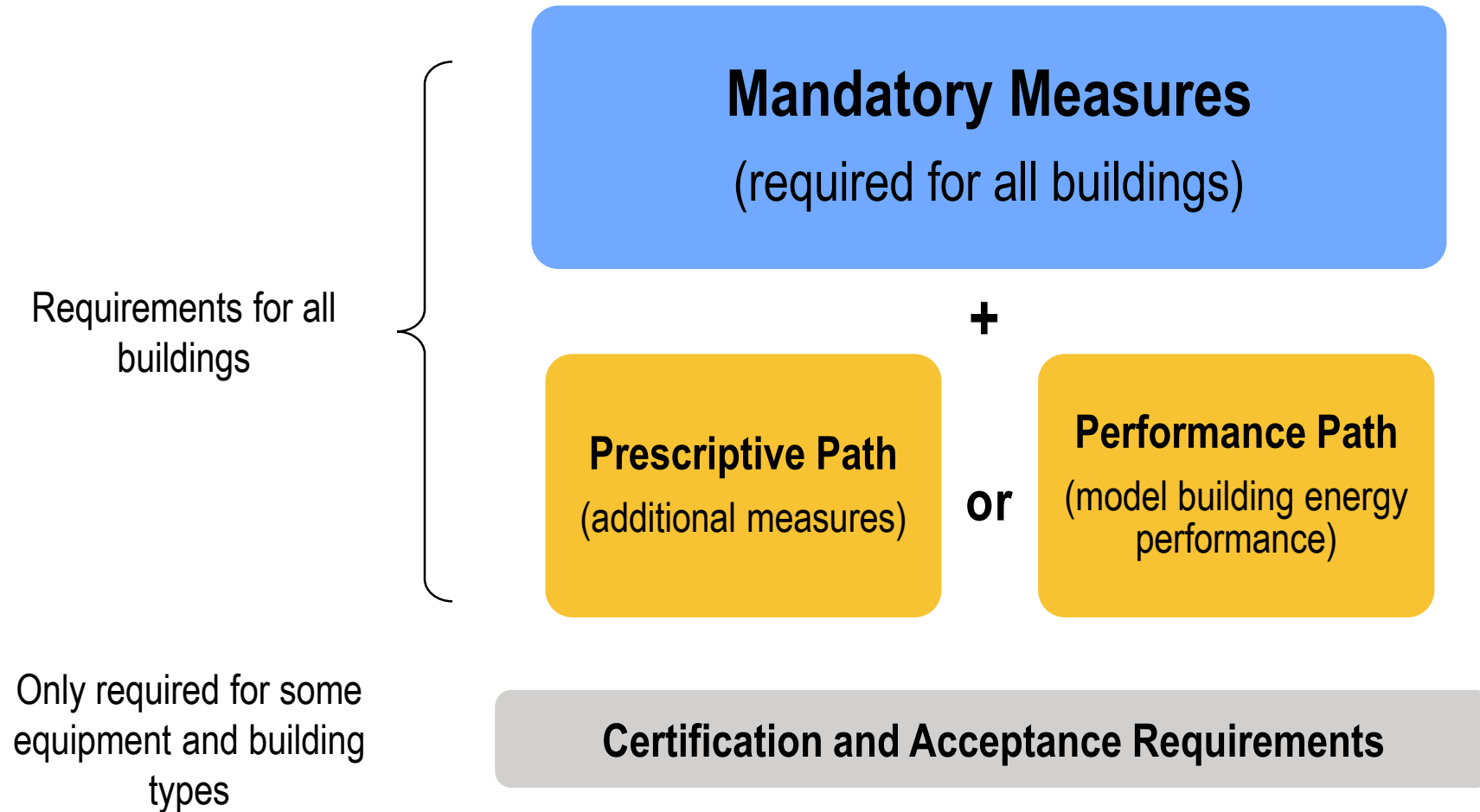
- Summary of proposed code changes
- Regulatory framework for each proposed change
 - If Title 24 Standard exists: 2016 Title 24 Standards
 - If no Title 24 Standard exists: current industry standard practices
 - Model codes (ASHRAE, IECC, Local Ordinances)
- Methodology and findings to date
 - Energy and demand impacts
 - Cost effectiveness
 - Key assumptions used in analyses
- Incremental Costs, relative to existing conditions
 - Incremental installation cost
 - Incremental maintenance cost
 - *Design cost and cost of code verification not included*

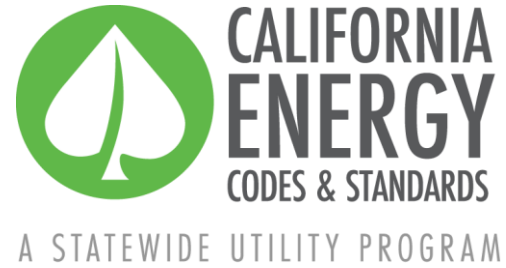


ASHRAE 90.1, IECC and Title 24

- Nonresidential state building efficiency standards must result in energy performance that is equal to or better than ASHRAE 90.1
- Low rise residential state building efficiency standards must result in energy performance that is equal to or better than the IECC national model code
- State building efficiency codes are compared against the national model codes as a whole, not measure by measure
- Some ASHRAE 90.1 and IECC standards are well-suited for California and are being considered for Title 24

General Structure of Title 24





Thank You

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Multifamily Topics



2022 Focus on Multifamily

- Assembly Bill 1088 specifically addresses the need for adjustments in multifamily codes and standards development, stating:
 - “The Commission shall perform analysis to support a compliance and performance-based pathway, including software, specific to multifamily residential properties in time for the 2022 update to the building energy efficiency standards for multifamily residential properties...”
- From May 9, 2018 CEC Business Meeting – Cm. McAllister:
 - “...multifamily... really deserves better treatment... Deserves more... consistent and organized treatment. We’re hearing that very strongly from the multifamily community.”



Multifamily Proposal

Title 24, Part 6

2022

Proposed Changes



Reorganize multifamily requirements into a standalone section within Title 24, Part 6



Increase uniformity across low-rise and high-rise requirements and other sections of the building code



Improve modeling accuracy through software improvements and revised prototypes



Streamline compliance through a multifamily compliance manual and compliance forms

Why a Multifamily Chapter?

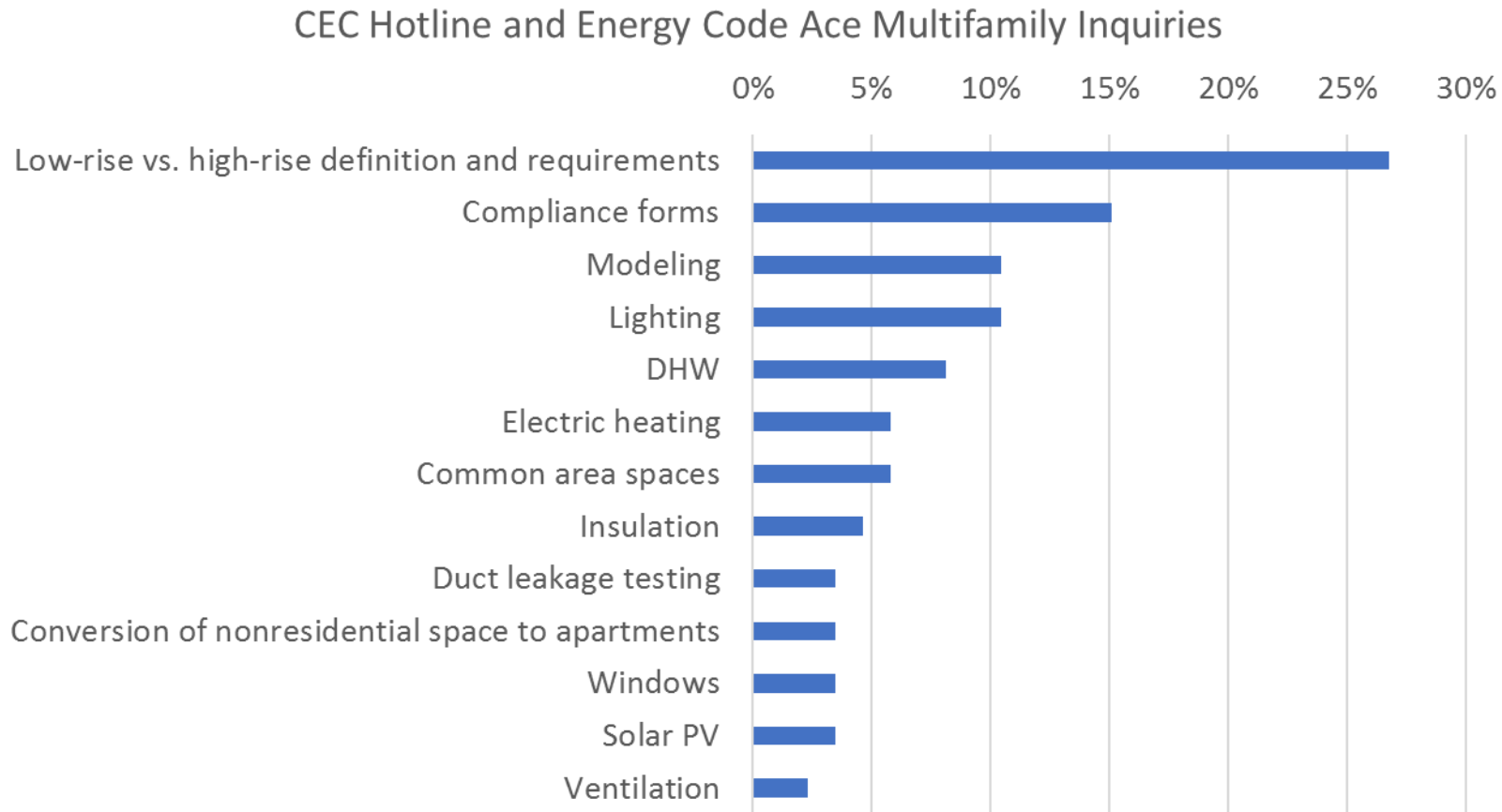
Simplification	Regulation by two different energy codes complicates code compliance and enforcement
Equity	3- and 4-story buildings (with identical characteristics) have different requirements
Justice	Neither the residential or nonresidential chapters were crafted to address the unique energy characteristics of multifamily building
Facilitation	Separating multifamily will make code development for all three building sectors more straightforward

Benefits to Stakeholders

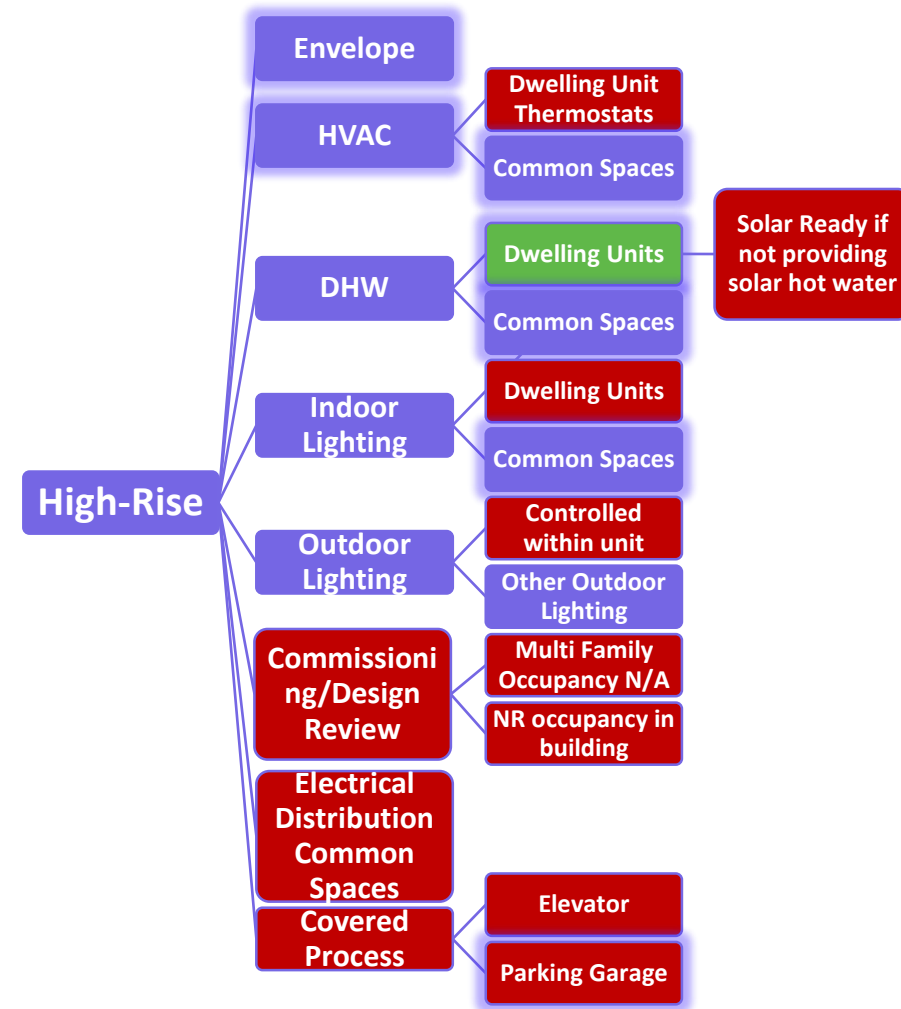
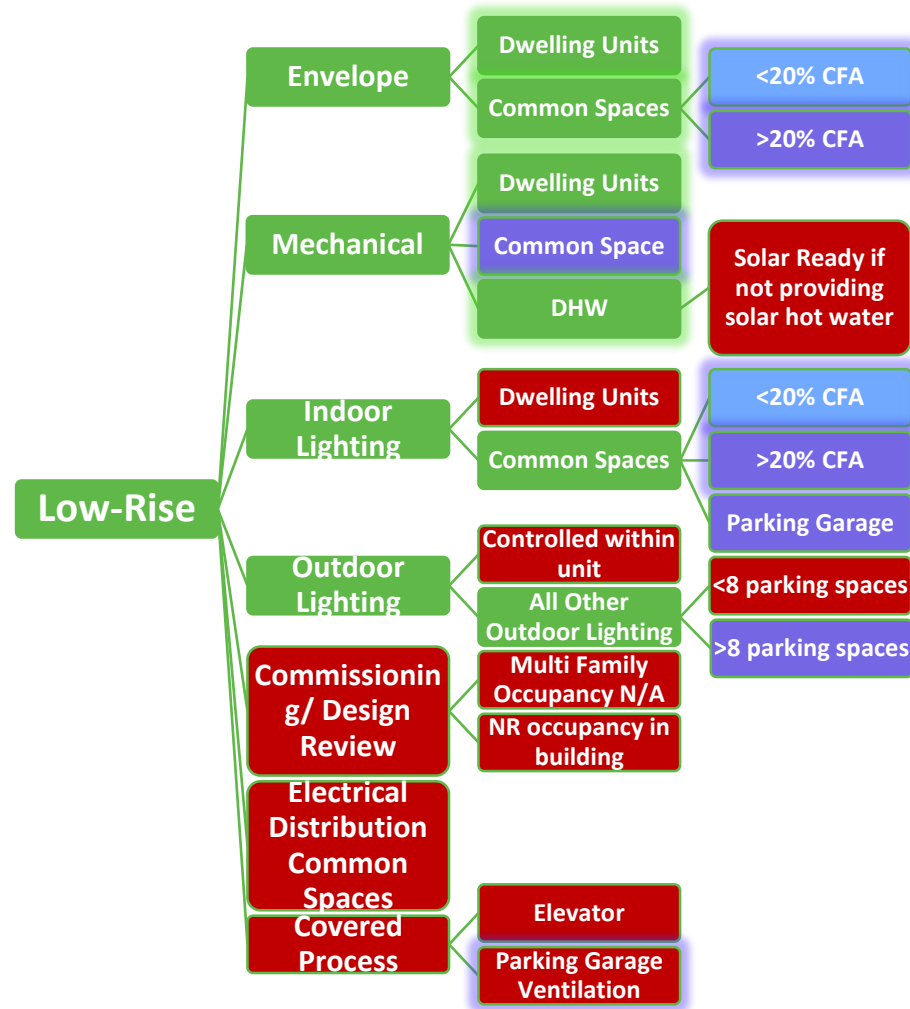
- Consistency in the analysis and compliance process
- Better enforcement of multifamily energy standard
- More targeted energy code requirements for multifamily buildings
- Consistency in incentive programs
- Increase in energy efficiency, comfort, and air quality for occupants



Evidence for Need: Code Compliance Confusion



Evidence for the Need – It is Complicated



Multifamily Code Reorganization

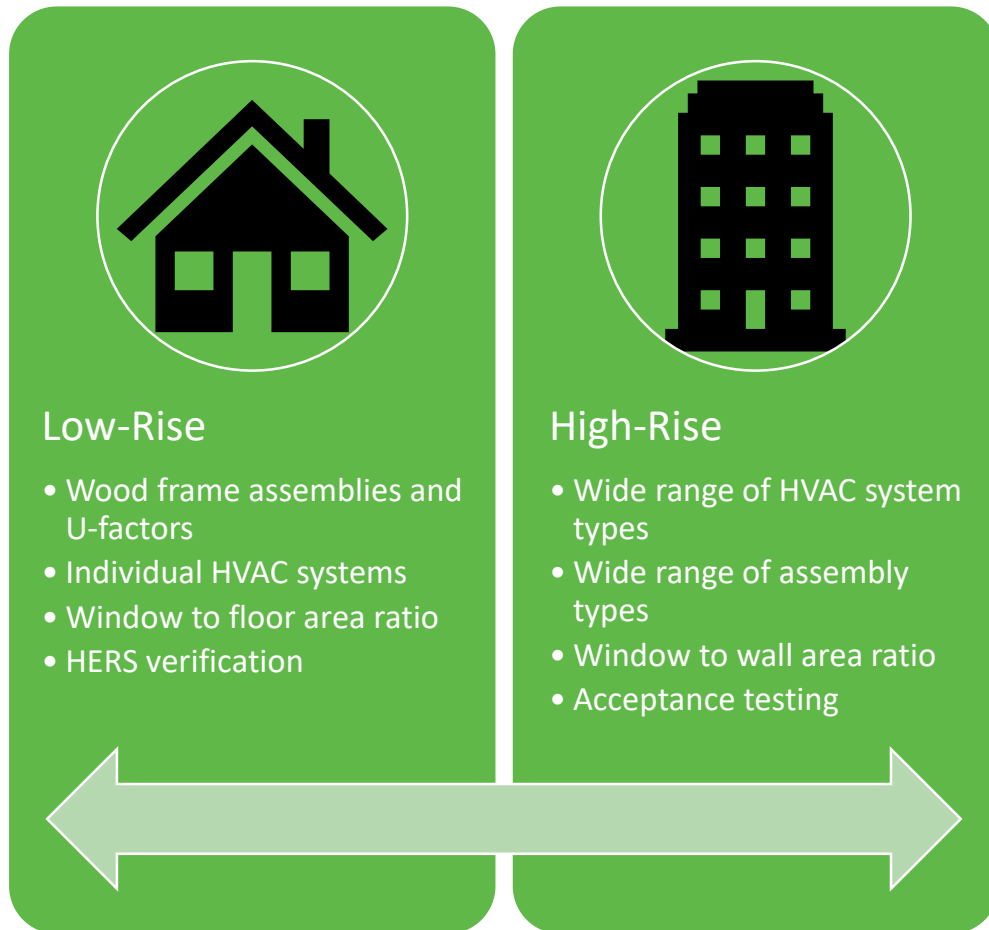
Title 24, Part 6 2022

Add Standalone Section for Multifamily Buildings

- Consistent structure with residential chapters, drawing appropriate content from low-rise and high-rise requirements
 - 160.0 Multifamily Buildings – Mandatory Features and Devices
 - 160.1 Multifamily Buildings – Performance and Prescriptive Compliance Approaches
 - 160.2 Multifamily Buildings – Additions and Alterations to Existing Buildings
- Inclusive of common area spaces shared by residents (hallways, lounges, recreation, laundry, fitness center, leasing office)
- Reference to
 - Section 110 for mandatory measures
 - Sections 120, 130, and 140 for nonresidential spaces within mixed use buildings, not exclusive to residents (retail, office, etc.)

2022 Building Energy Efficiency Standards	Page 257
SUBCHAPTER 10 MULTIFAMILY BUILDINGS – MANDATORY FEATURES AND DEVICES	
SECTION 160.0 – MANDATORY FEATURES AND DEVICES	
Multifamily buildings shall comply with the applicable requirements of Sections 160.0(a) through 160.0(r).	
NOTE: The requirements of Sections 160.0(a) through 160.0(r) apply to newly constructed buildings. Sections 160.2(a) and 160.2(b) specify which requirements of Sections 160.0(a) through 160.0(r) also apply to additions or alterations.	
(a) Ceiling and Rafter Roof Insulation. The opaque portions of ceilings and roofs separating conditioned spaces from unconditioned spaces or ambient air shall meet the requirements of Items 1 through 3 below:	
1. Shall be insulated to achieve a weighted average U-factor not exceeding U-0.043 or shall be insulated between wood-framing members with insulation resulting in an installed thermal resistance of R-22 or greater for the insulation alone. For vented attics, the mandatory insulation shall be installed at the ceiling level, for unvented attics, the mandatory insulation shall be placed at either ceiling or roof level, and	
EXCEPTION to Section 160.0(a): Ceilings and rafter roofs in an alteration shall be insulated to achieve a weighted average U-factor not exceeding 0.054 or shall be insulated between wood-framing members with insulation resulting in an installed thermal resistance of R-19 or greater.	
2. Attic access doors shall have permanently attached insulation using adhesive or mechanical fasteners. The attic access shall be gasketed to prevent air leakage; and	
3. Insulation shall be installed in direct contact with a continuous roof or ceiling which is sealed to limit infiltration and exfiltration as specified in Section 110.7, including but not limited to placing insulation either above or below the roof deck, or on top of a drywall ceiling.	
(b) Loose-fill Insulation. When loose-fill insulation is installed, the minimum installed weight per square foot shall conform with the insulation manufacturer's installed design weight per square foot at the manufacturer's labeled R-value.	
(c) Wall Insulation. Opaque portions of above grade walls separating conditioned spaces from unconditioned spaces or ambient air shall meet the following requirements:	
1. 2x4 inch framing shall have an overall assembly U-factor not exceeding U-0.102.	
EXCEPTION to Section 160.0(c): Existing walls already insulated to a U-factor not exceeding U-0.110 or already insulated between framing members with insulation having an installed thermal resistance of R-11 or greater.	
2. 2x6 inch or greater framing shall have an overall assembly U-factor not exceeding U-0.071.	
3. Opaque non-framed assemblies shall have an overall assembly U-factor not exceeding U-0.102.	
4. Bay or Bow Window roofs and floors shall be insulated to meet the wall insulation requirements of TABLE 150.1-A or B.	
5. Masonry walls shall be insulated to meet the wall insulation requirements of TABLE 150.1-A or B.	
6. In wood framed assemblies, compliance with U-factors may be demonstrated by installing wall insulation with an R-value of 13 in 2x4 assemblies, and 20 in 2x6 assemblies.	
(d) Raised-floor Insulation. Raised floors separating conditioned space from unconditioned space or ambient air shall have an overall assembly U-factor not exceeding U-0.037. In a wood framed assembly, compliance with the U-factor may be demonstrated by installing insulation with an R-value of 19 or greater.	
SECTION 160.0 – MANDATORY FEATURES AND DEVICES	

Harmonize Low-Rise and High-Rise Requirements

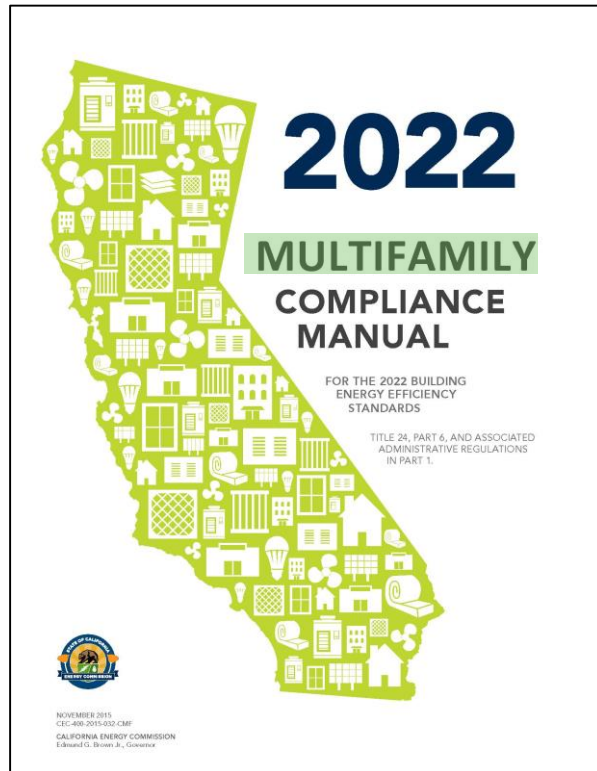


- Remove demarcation between low-rise and high-rise
- Apply requirements based on component type instead of building height
 - Envelope requirements based on assembly type (wood frame vs. steel frame)
 - HVAC and DHW requirements based on central vs. individual systems
 - Consistent verification/diagnostic (HERS) requirements with testing options that accommodate multifamily projects of all sizes/heights
 - Photovoltaic requirements based on available space (roof, parking, etc.)
- Consider closer alignment with other parts of the building code

Improve Modeling Accuracy

- Strive for a single interface to accurately model all multifamily spaces
- Update multifamily prototypes to align with building trends
 - Unit size and number of units
 - Envelope construction types
 - Common area spaces
 - Mixed use (commercial)
 - All electric option

Streamline Compliance



2022 ACM Approval Manual Appendix C	C-1
APPENDIX C. MULTIFAMILY CERTIFICATION TESTS	
The purpose of ACM testing is to demonstrate that candidate software submitted for approval successfully integrates Compliance Manager into the candidate software. This includes testing a variety of both inputs and reporting to ensure that buildings are being accurately modeled under the rules established by the Energy Commission.	
A test data set with specific description and details of the tests, inputs, and a spreadsheet of compliance results is available from the Energy Commission to assist vendors in preparing the certification tests. The tests are based on the Energy Commission multifamily new construction prototypes and the addition/alteration prototype described in Section F.	
A. Test Data Set (TDS) Descriptions	
The TDS runs are based on the prototypes described in Section F below. The exact details of the TDS runs are provided in the form of reference software input files, currently an .ribd format.	
Tests T01, T02, and T03 show that the compliance software matches the standard design in all climate zones for the three prototype buildings. The glass and walls are equally distributed, with no overhangs modeled. The prototype buildings (as shown in Table A-1) for these tests are named S2100, S2700 and S6960. The "S" indicates that the building is in the standard configuration.	
Tests T04, T05, and T06 run the prototype buildings using actual building features such as unequal glass and wall distribution, overhangs and other non-prescriptive requirements. The standard design for these tests will be equal to the standard design in Tests T01-T03. The prototype buildings for these tests are named P2100, P2700, and P6960. The "P" indicates that the building is in the proposed configuration.	
Tests T07, T08, T09, and T11 are based on a single prototype in a single climate zone - T01R12. Test T07 models common compliance measures and test T08 water heating variations. T09 test multiple orientations. T11 tests source energy calculations.	
Test T10 covers multifamily central water heating starting with on T03R12 inputs.	
Tests T12 and T13 cover existing plus addition plus alteration calculations using P1665 prototype for climate zone 12.	
Additional tests will be added as needed to reasonably test candidate software against the reference as features are added or changed. There will also be non-numeric tests added to verify that the candidate software can complete the compliance process by generating reports.	
Table A-1 contains a list of the tests.	
ACM Appendix C – Multifamily Certification Tests	

2022 Multifamily Appendices	MA1-1
Multifamily Appendix MA1	
Appendix MA1 – Multifamily HERS Verification, Testing, and Documentation Procedures	
Appendix MA1 – Multifamily HERS Verification, Testing, and Documentation Procedures.....1	
MA1.1 Purpose and Scope.....	2
MA1.2 Documentation and Communication Requirements for HERS Verification Compliance.....	2
MA1.2.1 Compliance Document Registration and Verification.....	3
MA1.2.2 Summary of Documentation and Communication Procedures.....	4
MA1.3 Summary of Responsibilities.....	5
MA1.3.1 Builder.....	5
MA1.3.2 HERS Provider and Rater.....	5
MA1.3.3 Third-Party Quality Control Program.....	6
MA1.3.4 Enforcement Agency.....	7
MA1.4 Installer Procedures –Certificate of Installation Documentation.....	7
MA1.5 Acceptance Procedures - Certificate of Acceptance Documentation.....	7
MA1.6 HERS Rater Procedures – Verification, Testing, and Sampling.....	8
MA1.6.1 HERS Procedures - General Requirements.....	8
MA1.6.2 HERS Procedures - Initial Field Verification and Diagnostic Testing.....	8
MA1.6.3 HERS Procedures – Group Sample Field Verification and Diagnostic Testing.....	8
MA1.6.4 HERS Procedures - Re-sampling, Full Testing and Corrective Action.....	10
MA1.7 Third Party Quality Control Programs.....	10
MA1.8 Installer Requirements and HERS Procedures for Alterations.....	11
Appendix MA1- Multifamily HERS Verification, Testing, and Documentation Procedures	

From which of the following would
you, your business, or your clients
benefit?

Definition of Multifamily

Title 24, Part 6 2022

Title 24 Definition of a Multifamily Building

Part 6

- **Low-Rise Residential Building:** R-2, multifamily, ≤ 3 habitable stories
- **High-Rise Residential Building:** *other than hotel/motel*, of Occupancy Group R-2 or R-4 ≥ 4 habitable stories

Part 2

- **Covered Multifamily Dwellings:** ≥ 4 condominium dwelling units or ≥ 3 apartment dwelling. Dwelling units within a structure separated by firewalls do not constitute separate buildings.
- **Common Use Areas:** Private use areas within multifamily residential facilities where use is limited exclusively to owners, residents and their guests. The areas may be defined as rooms or spaces or elements inside or outside of a building.

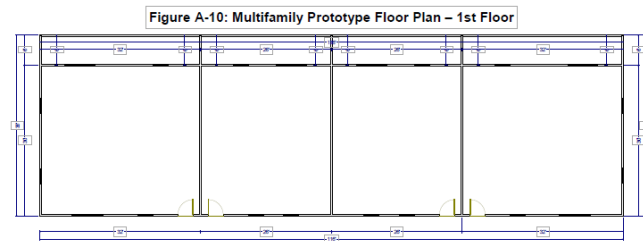
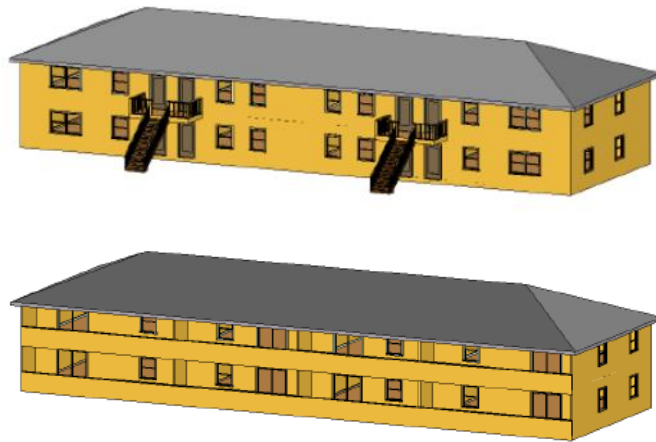
Occupancy Groups

- R-2: Residential occupancies containing sleeping units or >2 dwelling units where the occupants are permanent in nature
 - Apartment houses
 - Boarding houses >16 occupants
 - Congregate residences >16 occupants
 - Convents and monasteries
 - Dormitories, fraternities and sororities
 - Live/work units
 - Vacation timeshare properties
 - Efficiency dwelling units
- R-4: > 6 ambulatory clients, but ≤ 16 persons, who reside on a 24-hour basis in a supervised residential environment and receive custodial care
 - Assisted living facilities
 - Social rehabilitation facilities

Prototypes/Standard Design

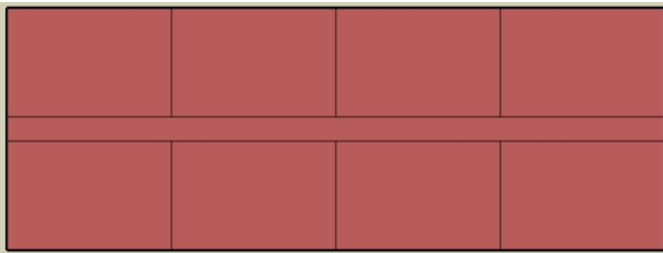
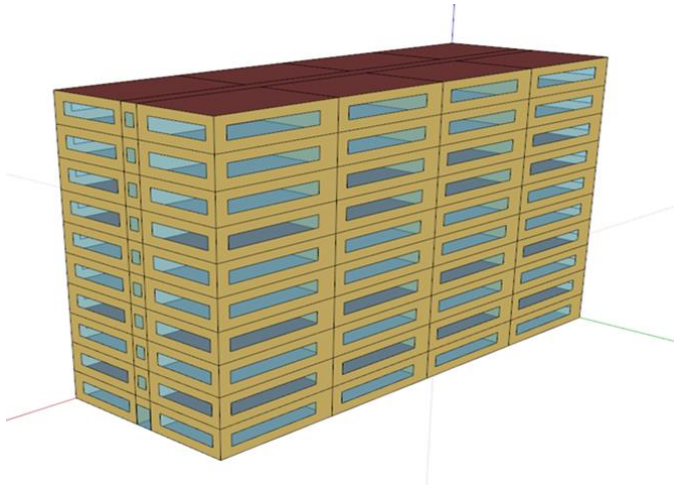
Title 24, Part 6 2022

Current Multifamily Prototype D: Low-Rise (Garden)



Stories	2
Conditioned Floor Area	6,960 ft ²
No. Units	8
Framing	Wood
Cladding	Stucco
Window to Wall Area Ratio	40%
Space Heating	Central gas furnace
Space Cooling	Split system A/C
Domestic Hot Water	Individual gas instantaneous
Foundation	Slab on grade

Current Multifamily Prototype: High-Rise Residential



Stories	10 (1 commercial, 9 residential)
Conditioned Floor Area	94,088 ft ²
No. Units	72
Framing	Steel
Cladding	Spandrel
Window to Floor Area Ratio	27%
Space Heating and Cooling	Four Pipe Fan Coil
Domestic Hot Water	Central
Foundation	Podium

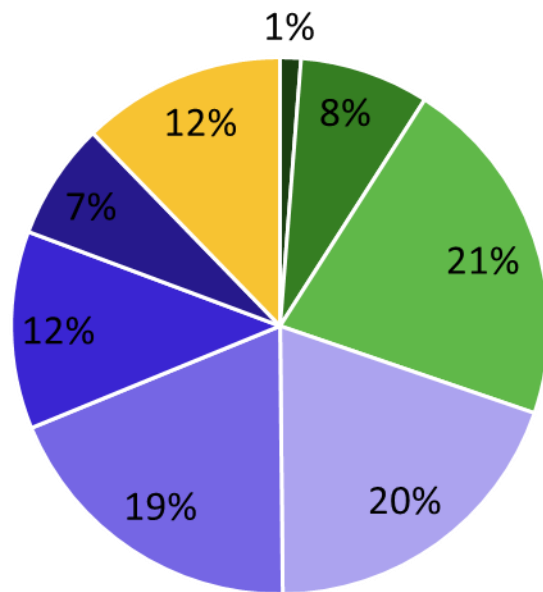
Multifamily New Construction Data Sources

	CalCERTS HERS Registry	California Multifamily New Homes (CMFNH) Program	CoStar
Database description	Residential energy efficiency code compliance	Participating project characteristics (Must exceed T24 by 15%)	Multifamily real estate characteristics
Region	California statewide	PG&E service territory	California statewide
Years Built	2015-2017	2015-2017	2014-2018
Low-Rise/High-Rise	Low-rise	Low-rise and high-rise	Low-rise and high-rise
No. Properties	unknown	60	1,395
No. Buildings	744	unknown	3,915
No. Dwelling Units	10,768	3,832	164,504

New Multifamily Construction in CA (2014-2018)

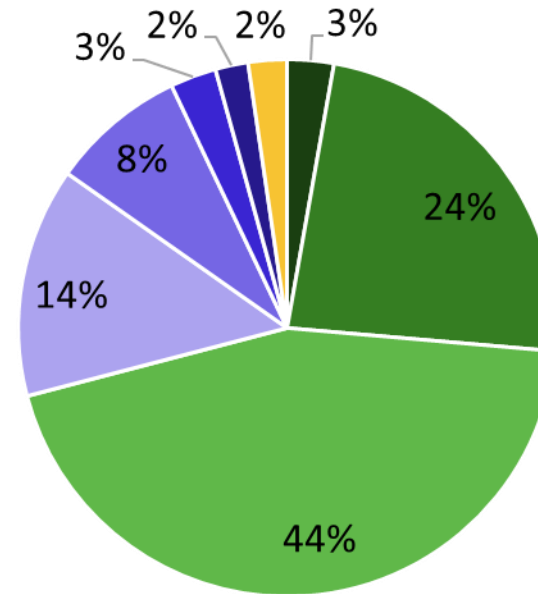
New Multifamily ***Dwelling Units*** by Number of Stories

■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8+



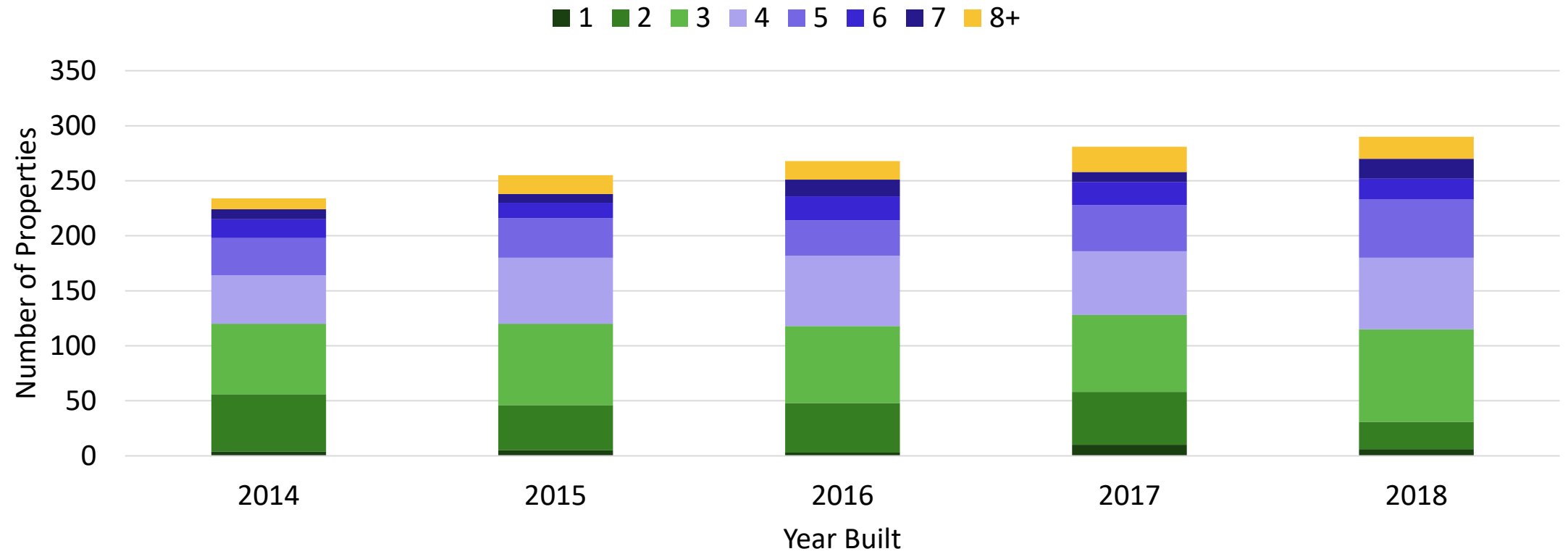
New Multifamily ***Buildings*** by Number of Stories

■ 1 ■ 2 ■ 3 ■ 4 ■ 5 ■ 6 ■ 7 ■ 8+

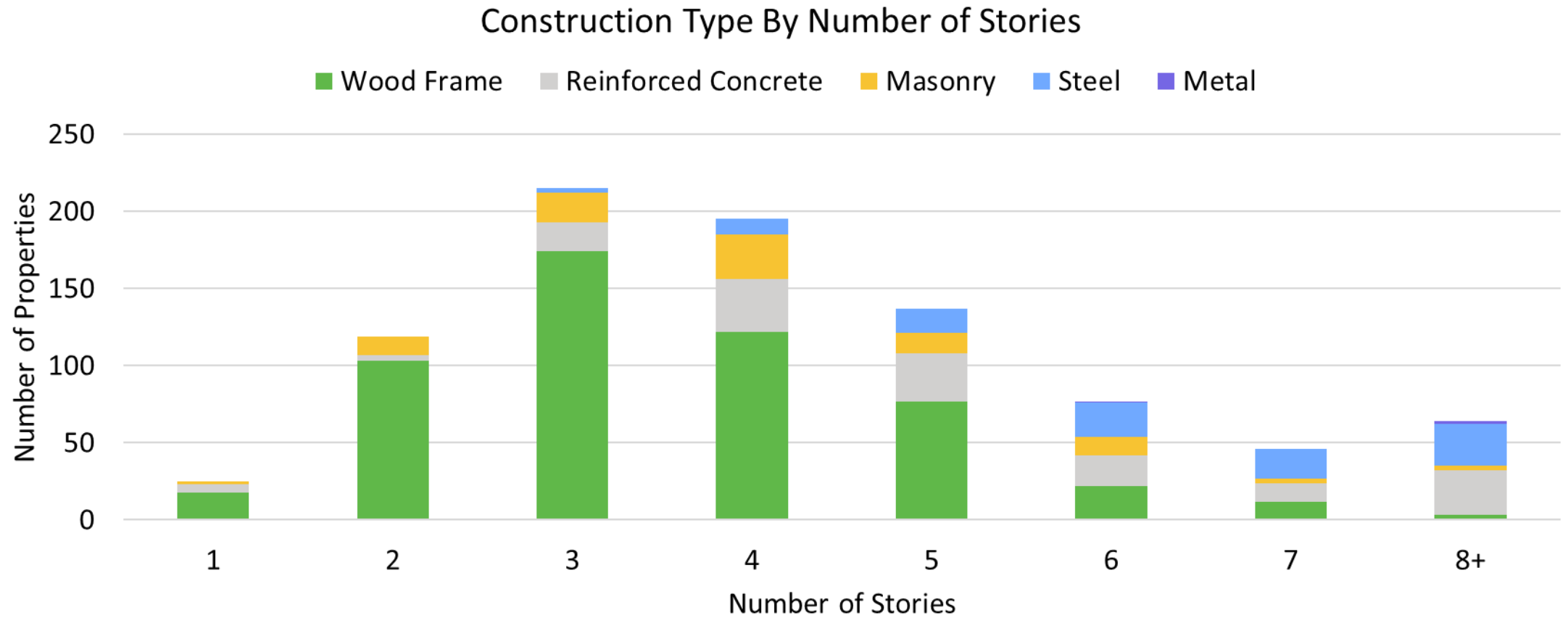


New Multifamily Construction in CA

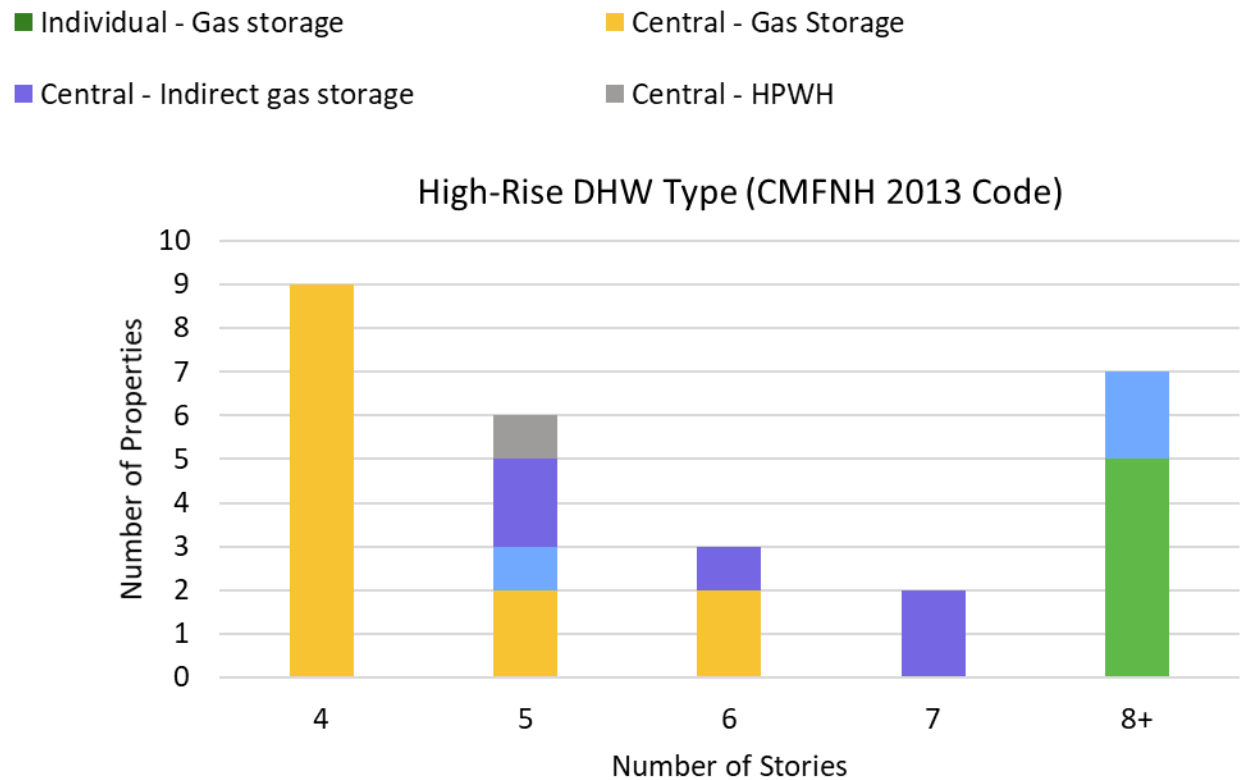
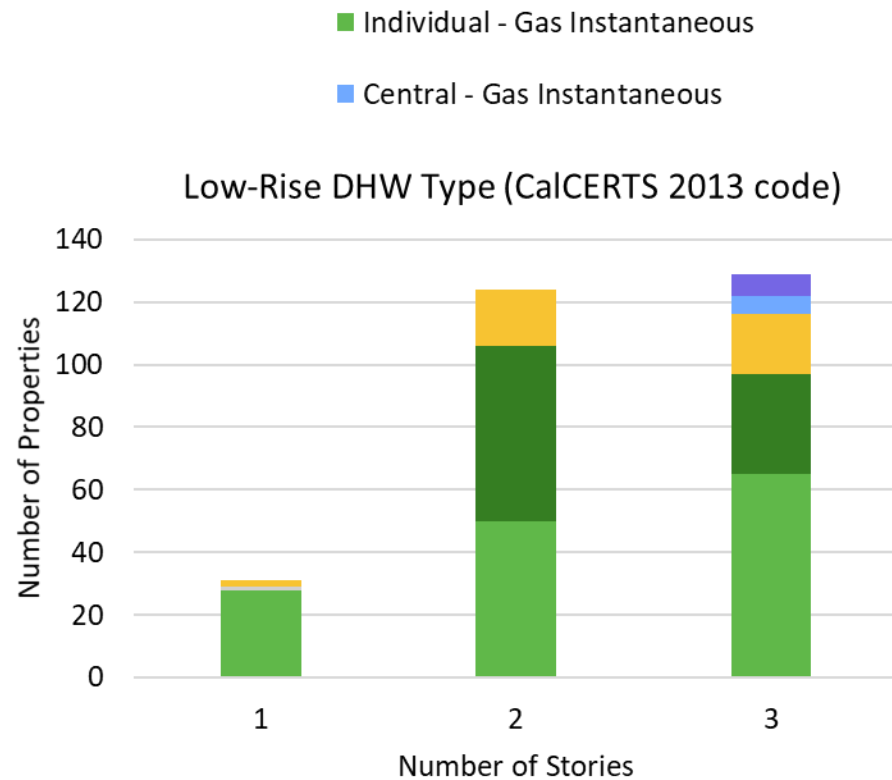
New Multifamily **Properties** per Year by Number of Stories



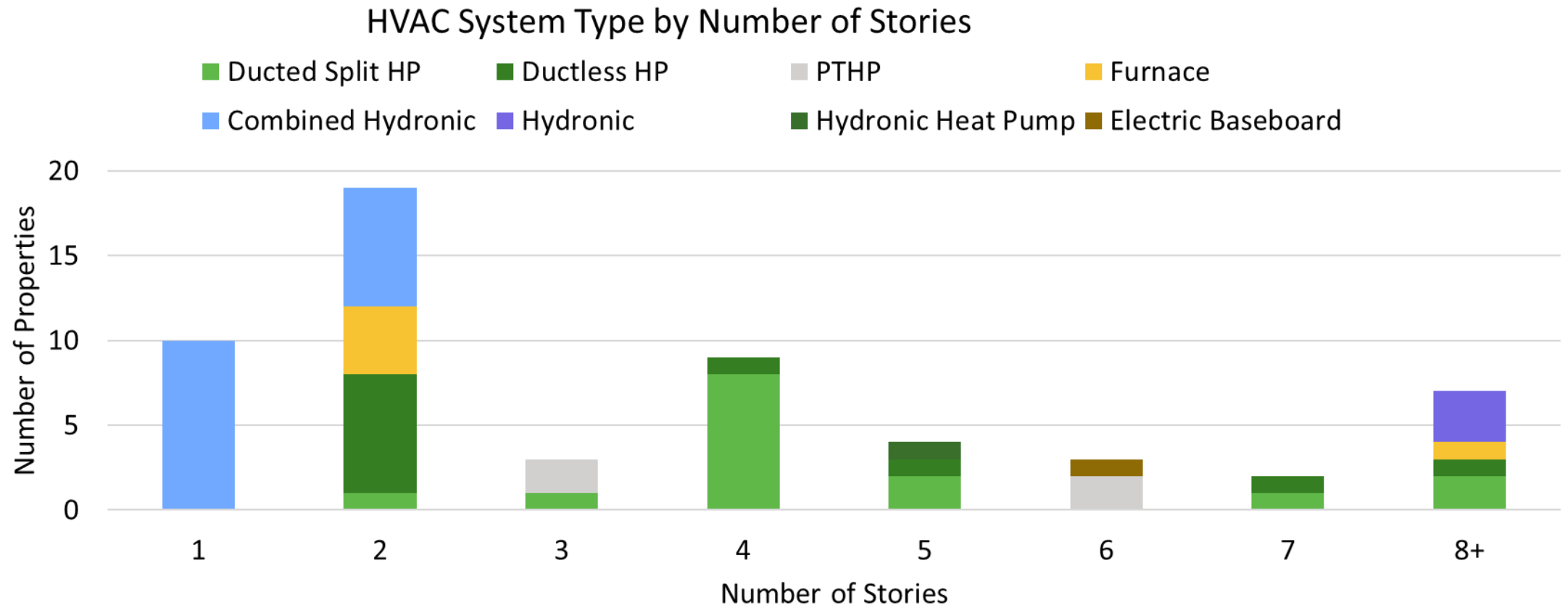
Construction Assembly Type



DHW System Type

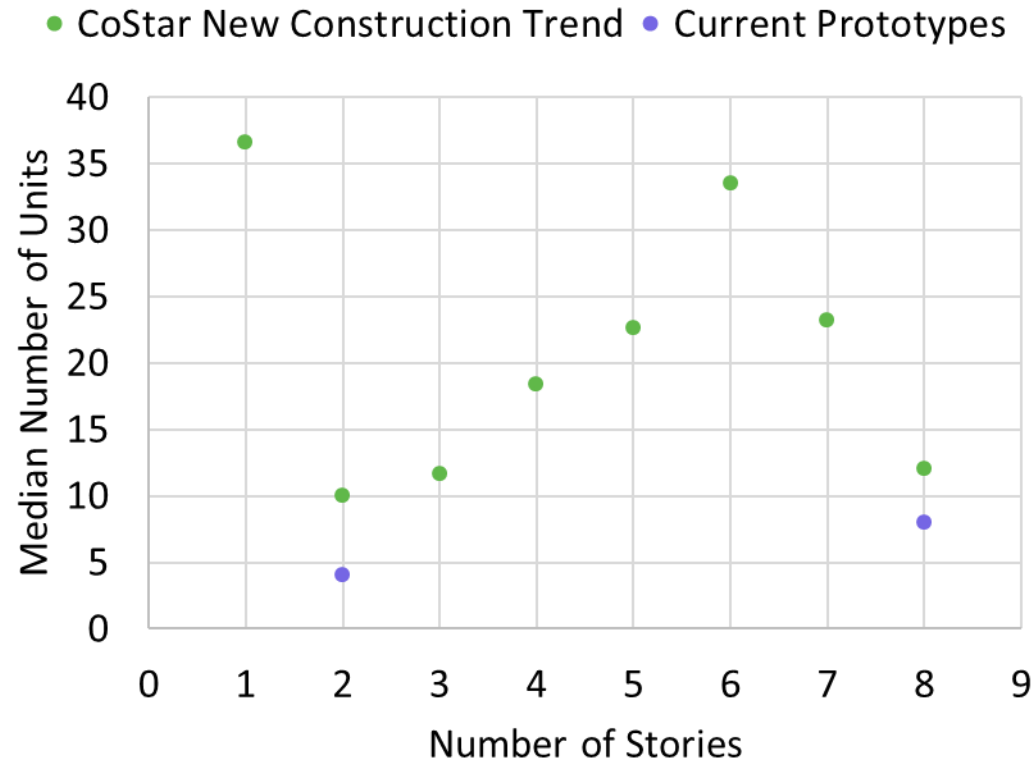


HVAC System Type

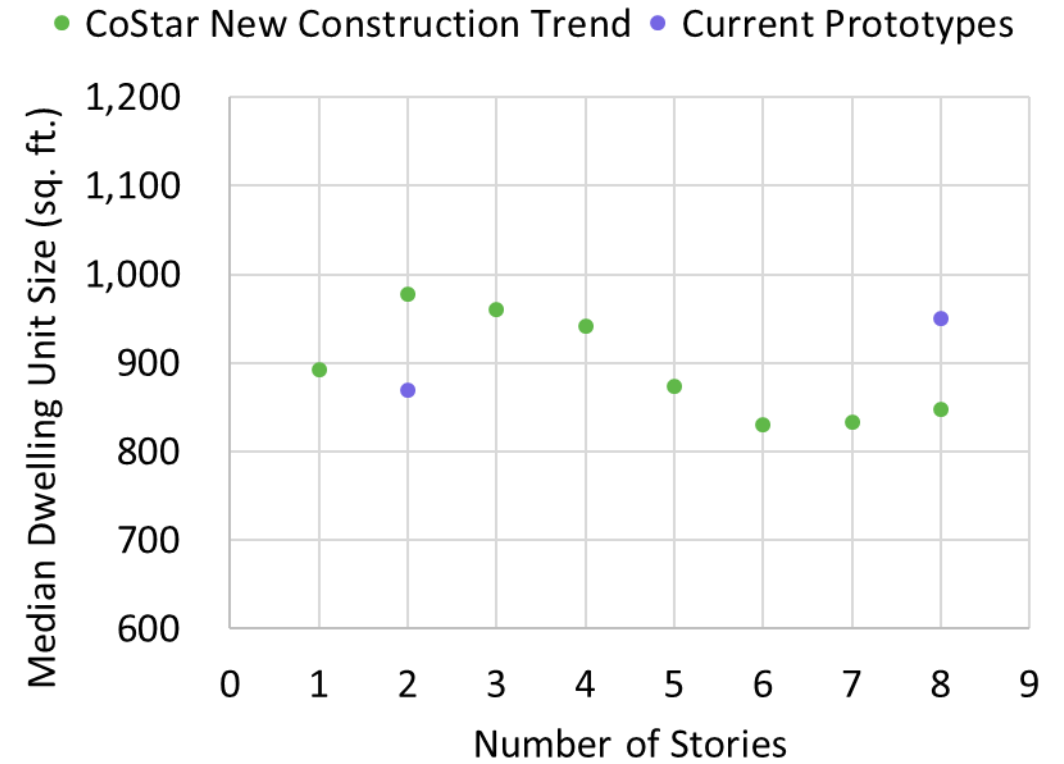


Prototype Sizes vs. New Construction Trends

Dwelling Units per Floor



Dwelling Unit Size



Proposed Prototype: Garden Low-Rise (Revised)

Stories	2 residential, exterior entry
No. Units	8 (2x4)
Average Dwelling Unit Size	870 960 sq. ft.
Conditioned Floor Area	6,960 7,680
Framing	Wood
Cladding	Stucco
Window to Floor Area	40% TBD
Space Heating/Cooling	Gas FAU, Split A/C
Domestic Hot Water	Individual gas instantaneous
Foundation	Slab on-grade



Proposed Prototype: Loaded Corridor (New)

Stories	3 residential, ground floor lobby, interior hallways and unit entry
No. Units	36 (3x12)
Average Dwelling Unit Size	960 sq. ft.
Conditioned Floor Area	40,000
Framing	Wood
Cladding	Stucco
Window to Floor Area	<i>TBD</i>
Space Heating/Cooling	<i>TBD</i>
Domestic Hot Water	Individual gas instantaneous
Foundation	Slab on-grade



Proposed Prototype: Mid-Rise Mixed Use (New)

Stories	5 (1 commercial, 4 residential)
No. Units	96 (4x24)
Average Dwelling Unit Size	870 sq. ft.
Conditioned Floor Area	115,200
Framing	Wood
Cladding	Siding
Window to Floor Area	<i>TBD</i>
Space Heating/Cooling	<i>TBD</i>
Domestic Hot Water	Central gas storage
Foundation	Podium



Proposed Prototype: High-Rise Mixed-Use (Revised)

Stories	10 (1 commercial, 9 residential)
No. Units	64 (8x8) 108 (9x12)
Average Dwelling Unit Size	950-850 sq. ft.
Conditioned Floor Area	94,088 230,400
Framing	Steel
Cladding	Spandrel
Window to Floor Area	W/WA 27% TBD
Space Heating/Cooling	FPFC
Domestic Hot Water	TBD
Foundation	Podium



What are your thoughts on updates
to the multifamily prototypes?

Proposed CASE Topics

Title 24, Part 6 2022

High-Priority Multifamily CASE Measures

Measure	Building Component	Change Type
All Electric Compliance Pathway	Multiple/Load Shifting	Prescriptive Compliance Option
Central Heat Pump Water Heating	DHW	Prescriptive Compliance Option
Hot Water Distribution Efficiency	DHW	Prescriptive
Drain Water Heat Recovery	DHW	Prescriptive
Solar Thermal Water Heating	DHW	Prescriptive
High Performance Thermal Envelope	Envelope	Prescriptive
Roof Alteration	Envelope	Prescriptive
Infiltration and Ventilation	Envelope/HVAC	Prescriptive Compliance Option
High Performance Heat Pump Space Heating	HVAC	Prescriptive Compliance Option
Operable Window Controls	HVAC	Prescriptive
Average Outdoor Lighting Power Allowance	Lighting	Mandatory
Pool Pumps and Pool Heating	Other	Mandatory

Multifamily All Electric Compliance Pathway

- Prescriptive compliance option for an all-electric multifamily building
- Package may include:
 - Heat pump water heaters
 - Heat pump space heating
 - High performance heat pump
 - Electric dryers
 - Electric stovetop/ranges
 - EE measures TBD for reduced loads



Central Heat Pump Water Heating

- Compliance option that includes sizing methodology and installation criteria for central heat pump water heater systems.
- Enhance DHW simulation model to enable compliance

Hot Water Distribution Efficiency

- Prescriptive compact DHW criteria
- Considerations:
 - Maximum recirculation loop length
 - Multiple recirculation loops
 - Point-of-use equipment



Drain Water Heat Recovery

- Prescriptive requirement to install DWHR in multifamily buildings
- Requirements may vary based on:
 - Building size
 - Hot water distribution type (central or by unit)
 - Heat recovery installation (balanced or unequal flow)

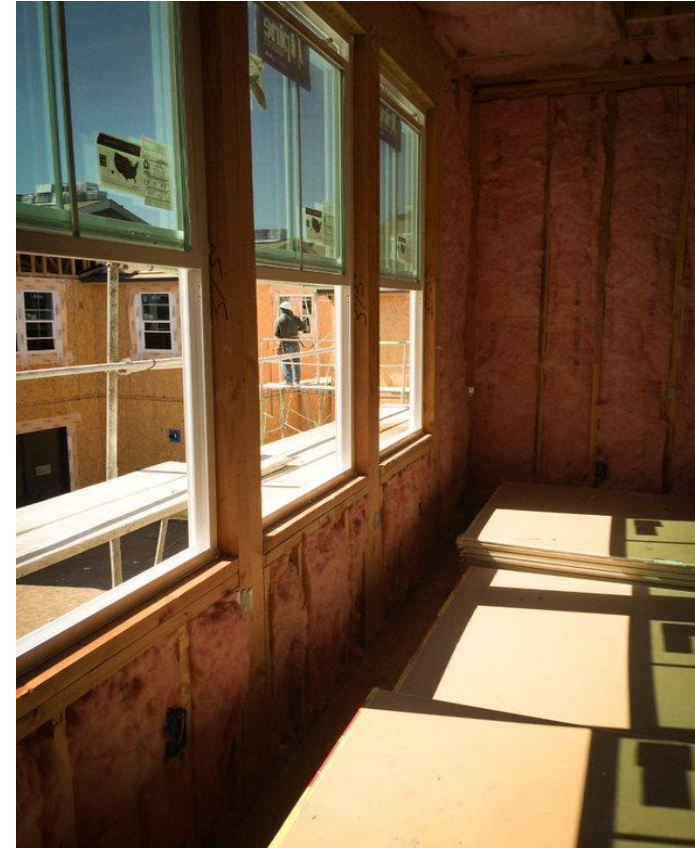
Solar Thermal Water Heating

- Extension of prescriptive solar thermal requirements to taller buildings



High Performance Thermal Envelope

- Reduced prescriptive U-factor for the thermal envelope through:
 - Improved wall assemblies
 - Improved fenestration
 - Improved window-to-wall area/window-to-floor area ratios
 - Reduce thermal bridging
 - QII requirements
- Harmonization across low-rise and high-rise requirements



Roof Alterations

- Prescriptive requirement to insulate altered roof to new construction standard



Infiltration and Ventilation

- Improve infiltration and compartmentalization requirements and develop testing methodology(ies) to address both
- Update modeling rules to allow credit for reduced infiltration, based on new methodology
- Examine balanced ventilation requirements and consider prescriptive ERV/HRV

High Performance Heat Pump Space Heating

- Prescriptive requirements when installing heat pump systems, which could include Variable Refrigerant Flow (VRF) or Variable Refrigerant Volume (VRV)
- Complements all-electric compliance pathway



Operable Window Controls

- Requirement that the HVAC system is turned off when a window is opened
- Based on the type of HVAC system being used



Average Outdoor Lighting Power Allowance (LPA)

- Reduce types of LPA to one average value, instead of layering approach
- Eliminate perimeter allowance, and other various adders in lieu of one average value determined by a weighted average method



Pool Pump and Pool Heater Efficiency

- New requirements for commercial pool pump and heater efficiency
- Address gas fired pool heater hydraulic efficiency in residential swimming pools
- Consider heat pump (electric) alternatives



Which of these measures are you likely to support?

Which of these measures are you less likely to support, and why?

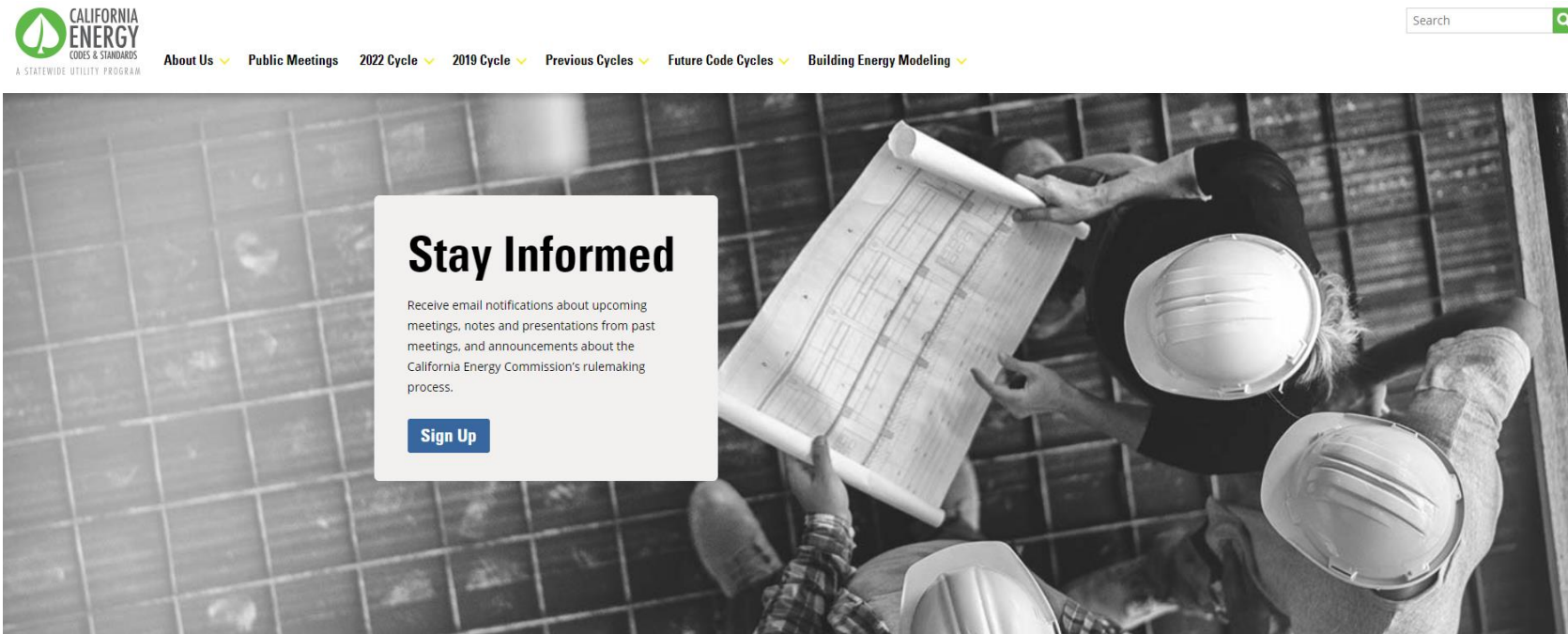
Wrap Up and Action Items

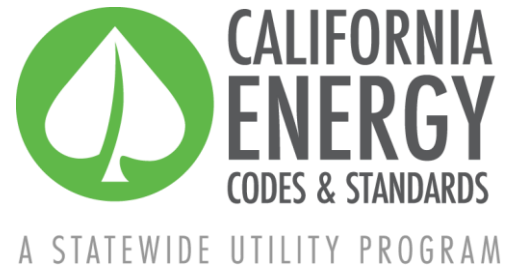
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Have an idea for a measure?

Contribute at:

<http://title24stakeholders.com/share-your-ideas/>





Thank You

Questions?

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