

## Notes from 2022 Title 24, Part 6 Code Cycle Utility Sponsored Stakeholder Meeting for Multifamily Restructuring & CASE Topics

Posted February 22, 2019

### Meeting Information

**Meeting Date:** Friday, February 8<sup>th</sup>, 2019  
**Meeting Time:** 8:00 am – 10:00 am PST  
**Meeting Host:** California Statewide Utility Codes and Standards Team

### Meeting Agenda

Time	Topic	Presenter
<b>10 minutes prior to call</b>	Live Attendee Poll	Energy Solutions
<b>8:00 – 8:10</b>	Welcome and Meeting Ground Rules	Energy Solutions
<b>8:10 – 8:20</b>	2022 Process Overview	California Energy Commission and Utility Team
<b>8:20 – 9:05</b>	Multifamily Proposals <ul style="list-style-type: none"> <li>• Overview of proposed changes</li> <li>• Recommendations               <ul style="list-style-type: none"> <li>○ Standalone chapter</li> <li>○ Harmonize low-rise and high-rise requirements</li> <li>○ Accurate modeling and streamlined compliance</li> </ul> </li> <li>• Definition of multifamily</li> <li>• Prototypes/standard design</li> <li>• Discussion</li> </ul>	TRC
<b>9:05 – 9:50</b>	Introduction to Proposed CASE Topics <ul style="list-style-type: none"> <li>• High/medium/low priority measures</li> <li>• Discussion</li> </ul>	TRC
<b>9:50 – 10:00</b>	Wrap up	Energy Solutions

## Attendees

First Name	Last Name	Email	Affiliation
<b>Statewide Utility Codes and Standards Team</b>			
<i>Utility Staff</i>			
Jeremy	Reefe	jmreefe@semprautilities.com	San Diego Gas & Electric
Jim	Kemper	James.Kemper@ladwp.com	Los Angeles Department of Water and Power
Kelly	Cunningham	kelly.cunningham@pge.com	Pacific Gas & Electric
<i>Codes and Standards Enhancement (CASE) Team Members</i>			
Alanna	Torres	atorres@energy-solution.com	Energy Solutions
Christopher	Uraine	curaine@energy-solution.com	Energy Solutions
Leslie	Nelson	lnelson@energy-solution.com	Energy Solutions
Nate	Dewart	ndewart@energy-solution.com	Energy Solutions
Rahul	Athalye	rathalye@energy-solution.com	Energy Solutions
Chris	Bradt	cbradt@frontierenergy.com	Frontier
Bill	Dakin	bdakin@frontierenergy.com	Frontier
Jon	McHugh	jon@mchughenergy.com	McHugh Consulting
Elizabeth	McCollum	emccollum@trcsolutions.com	TRC
Abhijeet	Pande	apande@trcsolutions.com	TRC
Matthew	Christie	mchristie@trcsolutions.com	TRC
Neil	Perry	NDPerry@trcsolutions.com	TRC
Cathy	Chappell	CChappell@trcsolutions.com	TRC
<b>California Energy Commission</b>			
Larry	Froess	larry.froess@energy.ca.gov	California Energy Commission
Payam	Bozorgchami	Payam.Bozorgchami@energy.ca.gov	California Energy Commission
Peter	Strait	Peter.Strait@energy.ca.gov	California Energy Commission
<b>Other</b>			
Pierre	Lopez		AERECO
Laura	Petrillo-Groh		AHRI
Chandra	Apperson		Apperson Energy Management
Judith	Porter		Arch Energy Inc.
Meg	Waltner		ARUP
Thomas	Culp		Birch Point Consulting
Matt	Shedd		Blue Rock Homes
Robert	Wolfer		Braford White Water Heaters
Chris	Mellen		Building Science Corporation
Andrew	Kosydar		California Building Industry Association
Bob	Raymer		California Building Industry Association
Amie	Brousseau		California Energy Commission
Chris	Olvera		California Energy Commission
Gabriel	Taylor		California Energy Commission
Michael	Shewmaker		California Energy Commission
Veronica	Olvera		California Energy Commission
Cory	Downs		Chula Vista CA Government
Megan	Cordes		ConSol
Sarah	Schneider		Cool Roof Rating Council
Katherine	Ackerly		David Baker Architects
Sally	Roth		David Baker Architects
Alyssa	Trebil		Duct Testers Inc.

Jeremiah	Ellis		Duct Testers Inc.
Tamara	Dias		Duct Testers Inc.
Tommy	Young		E3 CA Inc.
Armin	Hauer		Ebmpapst
Darryl	DeAngelis		Ebtron
Steve	Rosenstock		Edison Electric Institute
Eric	Sweet		Emerald Eco
Aqdus	Siddiqui		Energy Analytica
Carol	Roberts		g.r.e.g Consulting, Inc.
Gina	Rodda		Gabel Energy
Marina	Blanco		Gabel Energy
Joan	Crowe		GAF
Aniruddh	Roy		Goodman Manufacturing
Gary	Smith		GS Lighting and Design
James	Boldt		Home Ventilating Institute
Beth	Maynard		Housing Community Development California
Scott	Ziegenfus		Hubbell
Leslie	Villavicencio		ICF
Mark	Lessans		Ingersoll Rand
Jeff	Staller		Itron, Inc.
Ronnen	Levinson		Lawrence Berkeley National Laboratory
Bill	Holder		LGE Electrical Sales
Bruce	Wilcox		LMI.net
Brendan	Dineen		Malarkey Roofing Products
Chris	Primous		MaxLite
Misti	Bruceri		Misti Bruceri & Associates, LLC
Vincent	Lee		Mutsubishi Electric Trane US HVAC
Michael	Scalzo		National Lighting Contractors Association of America
Mike	Moore		Newport Ventures
Rebecca	Rice		NORESCO
Roger	Hedrick		NORESCO
Rolf	Bienert		OpenADR Alliance
Mark	Alatorre		Pacific Gas & Electric
Lucas	Morton		Pete Moffat Construction
Justin	Koscher		Polyisocyanurate Insulation Manufacturers Association
Andy	Llora		QC Manufacturing
Rick	Fayad		QC Manufacturing
Rod	Buchalter		RenewABILITY Energy Inc.
Diane	Jakobs		Rheem
Dave	Morgan		RTE
Evan	Frank		San Diego Gas & Electric
Henry	DeJesus		San Diego Gas & Electric
John	Barbour		San Diego Gas & Electric
Jose	Buendia		Southern California Edison
Kavita	Rodrigues		Southern California Edison
Chadwick	Collins		The Kellen Company
Christie	Kjellman		Unknown
Jenna	Bader		Unknown
John	Wilson		Unknown

Lindsey	Gaunt		Unknown
Mark	Gallant		Unknown
Milan	Jackson		Unknown
Rish	Ghatikar		Unknown
Glen	Folland		VCA Green
Wayne	Alldredge		VCA Green
Kelli	Fleming		Velux
Yanda	Zhang		ZYD Energy

## Resources

---

1. [Presentation Slides](#)
2. [Multifamily Code Reorganization Proposal](#)
3. [Multifamily Scoping Paper](#)
4. [Multifamily Flow Chart](#)
5. [Title24Stakeholders.com](#)
6. [EnergyCodeAce.com](#)
7. [LocalEnergyCodes.com](#)

## Key Takeaways and Action Items

---

### 1. Multifamily Proposal

- a. Multifamily buildings are a primary focus of the 2022 code cycle. Assembly Bill 1088 (Eggman 2017) prescribed a streamlined compliance and performance-based pathway for multifamily buildings.
- b. The multifamily proposal has four main objectives:
  - i. Reorganize multifamily requirements into a standalone section(s)
  - ii. Increase uniformity across low-rise and high-rise requirements
  - iii. Improve modeling accuracy
  - iv. Streamline compliance
- c. Proposed revisions:
  - i. Keep but revise the *Garden Low-Rise* building type prototype
  - ii. Include two new prototypes – *Loaded Corridor* and *Mid-Rise Mixed-Use*
  - iii. Revise *High-Rise Mixed-Use* building type prototype

### 2. Multifamily CASE Topics

- a. The Statewide CASE Team is working to finalize 12 high-priority multifamily CASE measures. Measure-specific stakeholder meetings will occur in Fall 2019.

## Meeting Notes

---

### Welcome and Meeting Ground Rules

- Alanna Torres (Statewide CASE Team) presented.

## 2022 Process Overview

- Payam Bozorgchami (California Energy Commission) presented.
- Kelly Cunningham (PG&E, Statewide Utility Codes & Standards Team) presented.

## Multifamily Topics

- Elizabeth McCollum (TRC, Statewide CASE Team) presented.
- Presentation available [here](#).

## Comments and Feedback

1. Multifamily Code Reorganization
  - a. *Poll: From which of the following would you, your business, or clients benefit? See **Figure 1** and **Figure 2** at the end of this document for a summary of results.*
2. Definition of Multifamily
  - a. Carol Roberts (g.r.e.g Consulting, Inc): Townhomes continue to cause confusion.
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): Townhouses are not included in the definition. Those are single family.
    - ii. Gina Rodda (Gabel Energy): Supportive of examining these definitions to improve clarity. The Statewide CASE Team should look at the questions coming into the Energy Commission hotline to better understand the confusion. Part of observed confusion is around occupancy types versus space types. How do we define a space and show compliance to a space (e.g., live-work units)?
    - iii. Chris Olvera (California Energy Commission): Due to occupancy classification in the California Building Code, townhouses can be R-2, or high-rise residential (based on number of habitable stories, four or more). If/when re-defining, we should consider which occupancies are included and whether we need to call out specific ones (e.g., townhouses).
3. Prototypes/Standard Design - Domestic Hot Water (DHW) System Type
  - a. Elizabeth McCollum (TRC, Statewide CASE Team): We are looking for DHW system type information for high-rise buildings, other than California Multifamily New Homes (CMFNH) 2013 Code data. If you have good data sources, please contact the Statewide CASE Team.
    - i. Matthew Christie (TRC, Statewide CASE Team): Selection bias in CMFNH data to be aware of, these buildings, by definition, are seeking above code incentives (high-performance buildings).
    - ii. Gina Rodda (Gabel Energy): Has information on many high-rise projects to share.
    - iii. Jon McHugh (McHugh Consulting, Statewide CASE Team): What about DHW greater than eight stories?
      1. Elizabeth McCollum (TRC, Statewide CASE Team): This data from CMFNH program suggests that individual gas instantaneous systems are most popular in buildings greater than eight stories.

Again, this is taken from a small sample size that needs to be addressed.

- iv. Steve Rosenstock (Edison Electric Institute): No individual electric heat pump water heaters (HPWH) or resistance?
  1. Elizabeth McCollum (TRC, Statewide CASE Team): We have not seen in the CMFNH data individual HPWH participation. This is 2013 code data, projects coming in today comply with the 2016 code and may have different characteristics.
4. Prototypes/Standard Design – HVAC System Type
  - a. Matthew Christie (TRC, Statewide CASE Team): Title 24 models do make it difficult to reach and exceed code.
  - b. Carol Roberts (g.r.e.g Consulting, Inc): Will window manufacturing limitations be examined?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): We will investigate this and the number of stories they will support.
  - c. Payam Bozorgchami (California Energy Commission): Why is electric baseboard heating only seen in six story buildings?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): Graph in presentation slides is just representing the data available to the Statewide CASE Team through CMFNH, only one project with electric baseboard heating participated in the program.
  - d. Steve Rosenstock (Edison Electric Institute): Are you assuming different HVAC and water heating for the commercial space on the first floor?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): We are still considering, no decision yet.
  - e. Katherine Ackerly (David Baker Architects): In the past few years, we have constructed three nine-story buildings. All have been concrete, not steel framing.
    - i. Gina Rodda (Gabel Energy): We have seen the opposite. This must depend on design/construction teams and location.
  - f. Aniruddh Roy (Goodman Manufacturing): Could you expand on four-pipe fan coil (FPFC)?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): Statewide CASE Team does not see a lot of FPFC in multifamily buildings. If you see otherwise, please share your data points with the Statewide CASE Team.
5. *Poll: What are your thoughts on updates to the multifamily prototypes? See **Figure 3** for results.*
6. Feedback from poll – opportunities for further exploration:
  - a. Dave Morgan (RTE): Baseline assumptions for occupancy schedules are important and should be reviewed.
  - b. Ronnen Levinson (Lawrence Berkeley National Laboratory): Distinguish between window-to-wall ratio versus window-to-floor ratio.
  - c. Carol Roberts (g.r.e.g Consulting, Inc): Suggest expanding the square footage data we have to capture market rate/luxury units. They are larger but may not be a

large percentage. Worried about the negative impact larger units might have on the model.

- i. Elizabeth McCollum (TRC, Statewide CASE Team): Statewide CASE Team looked at median. There were several outliers (very high unit sizes). From what was observed, there is some penalty to having a unit/dwelling that is on the larger size. Will look at that.
  - d. Bill Dakin (Frontier Energy, Statewide CASE Team): Besides interior versus exterior entry/loading, are the two low-rise prototypes different enough to justify unique prototypes?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): We will explore this through a modeling analysis.
  - e. Marina Blanco (Gabel Energy): Will dormitories be covered under the new multifamily section?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): Will depend on the final definition for multifamily. Currently, dorms are included in the definition. Might be that there is a need for a single-room occupancy (SRO) prototype. Would like to hear thoughts on that. Senior care would fall into this category as well.
  - f. Steve Rosenstock (Edison Electric Institute): If there is data available, we recommend a look at separate HVAC/WH/Lighting/Equipment for commercial spaces.
7. Proposed CASE Topics
  - a. Steve Rosenstock (Edison Electric Institute): Does high performance heat pump proposal include ground source/geothermal systems?
    - i. Elizabeth McCollum (TRC, Statewide CASE Team): The Statewide CASE Team was going to look at air source heat pumps but will further discuss. Additional thoughts welcome.
  - b. Carol Roberts (g.r.e.g Consulting, Inc): Operable window controls are in Nonresidential buildings, located on windows where a thermostat is located. Maybe not effective, needs better product options and research. Infiltration and ventilation, testing option for 2019 would be hard to pass without QII. Is there enough research on energy recovery ventilation (ERV) and heat recovery ventilation (HRV) systems that they will fit into these small units with limited drop ceiling space and cost?

Elizabeth McCollum (TRC, Statewide CASE Team): We will answer these questions during the CASE development process.
  - c. Dave Morgan (RTE): Need to consider HVAC efficiency based on equipment location, such as condensers on hot summer roofs.
    - ii. Elizabeth McCollum (TRC, Statewide CASE Team): We will include these in our consideration.
  - d. Wayne Alldredge (VCA Green): Larger developments might benefit from water source heat pumps.
    - iii. Elizabeth McCollum (TRC, Statewide CASE Team): We will include these in our consideration.



- e. Ronnen Levinson (Lawrence Berkeley National Laboratory): Solar-reflective cool walls are the simplest and most cost-effective (essentially free) way to boost thermal envelope performance. They are easier and cheaper than the measures to reduce wall thermal transmittance ("U-factor"). Also, completely enforceable for new construction and alterations that require permits (excluding repainting only improvements).
- f. Tommy Young (E3 CA Inc.): Has there ever been any assessment of real-world accuracy regarding our modeling software? Are our Title 24 runs anywhere near actual usage?
  - iv. Elizabeth McCollum (TRC, Statewide CASE Team): Has not been done at a large scale. Several barriers. We acknowledge as a need.
  - v. Kelly Cunningham (PG&E, Statewide Utility Codes & Standards Team): Smaller scale efforts are currently underway. We have a long history of gathering information on how things are performing. Several multifamily affordable, low-income housing projects are being funded through a California Energy Commission Electric Program Investment Charge (EPIC) project.
- g. Gary Smith (GS Lighting and Design): As we move forward in the 2022 revision, will you be evaluating the effectiveness of Joint Appendix 8 (JA8)?
  - vi. Kelly Cunningham (PG&E, Statewide Utility Codes & Standards Team): JA8 has not been selected as something that would become a complete CASE Proposal. We will be participating in discussions about how the JA8 could be improved. There are several efforts that are looking at this topic. Recommend reaching out to the Energy Commission.
- h. Chris Mellen (Building Science Corporation): Has any consideration been given to adding a benchmarking data sheet as part of the compliance forms?
  - vii. Elizabeth McCollum (TRC, Statewide CASE Team): Not yet. We would have to look into the feasibility of this.
- i. *Poll: Which of these measures are you likely to support? See **Error! Reference source not found.** for results of the poll.*
- j. Measure ideas are requested! Please submit by Friday, February 15th 2019 on <https://title24stakeholders.com/share-your-ideas/> .



## Poll Results

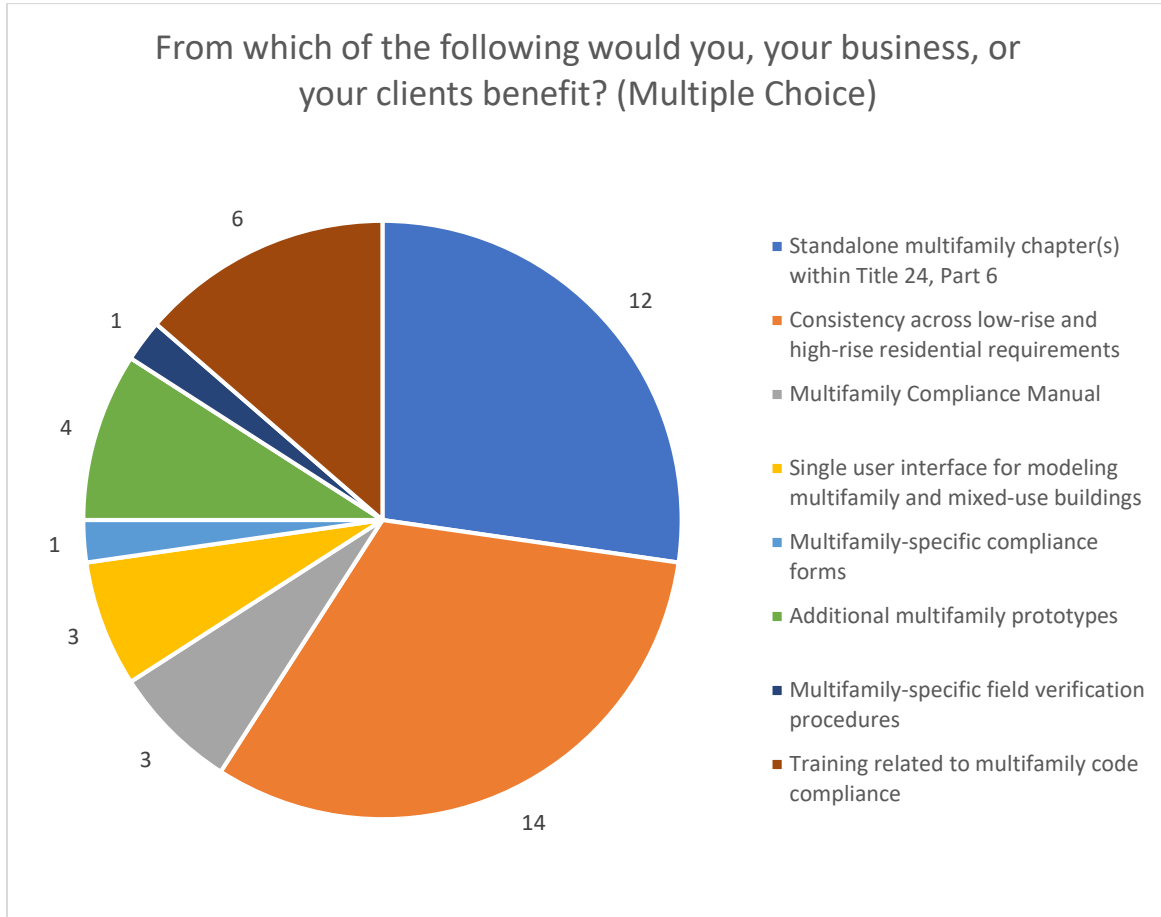


Figure 1: Results of Poll 1, Multiple Choice/Single Answer

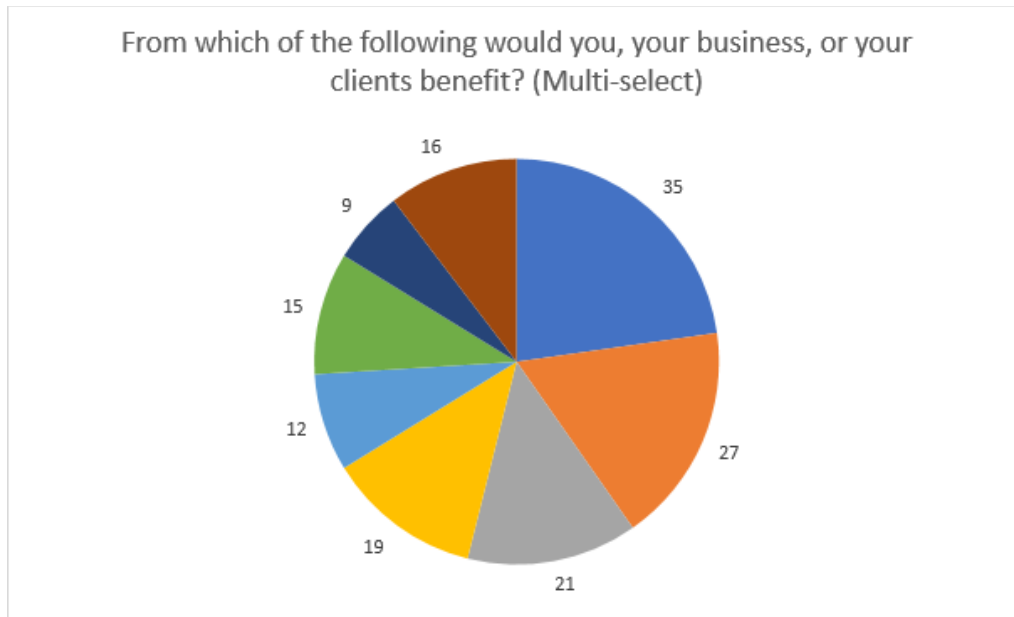
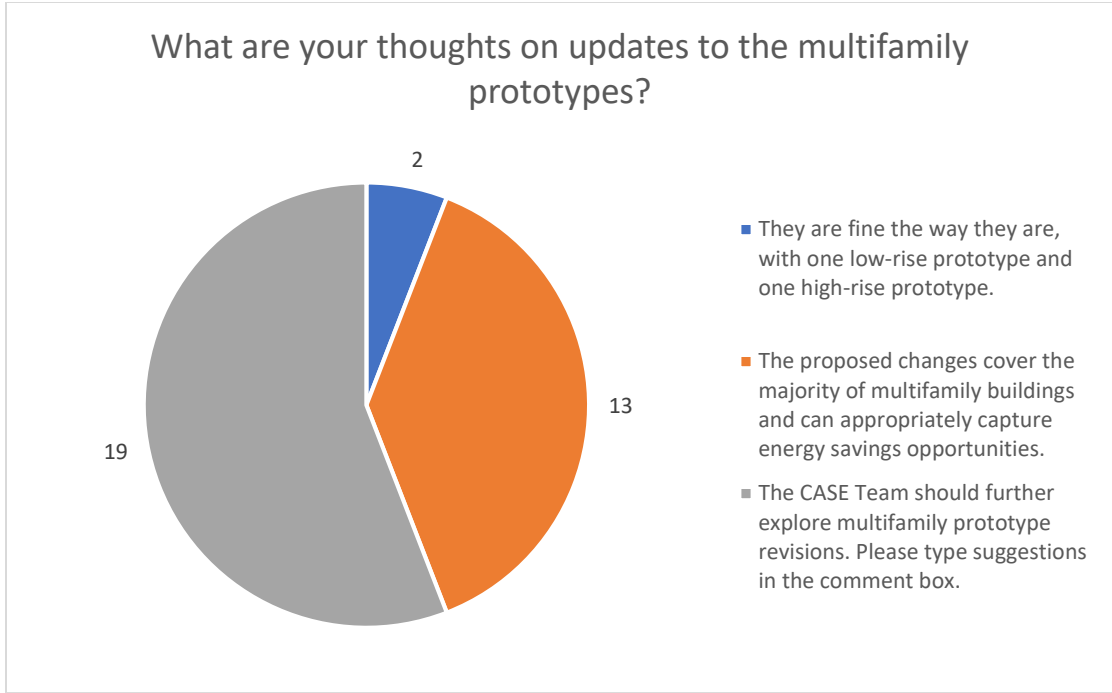
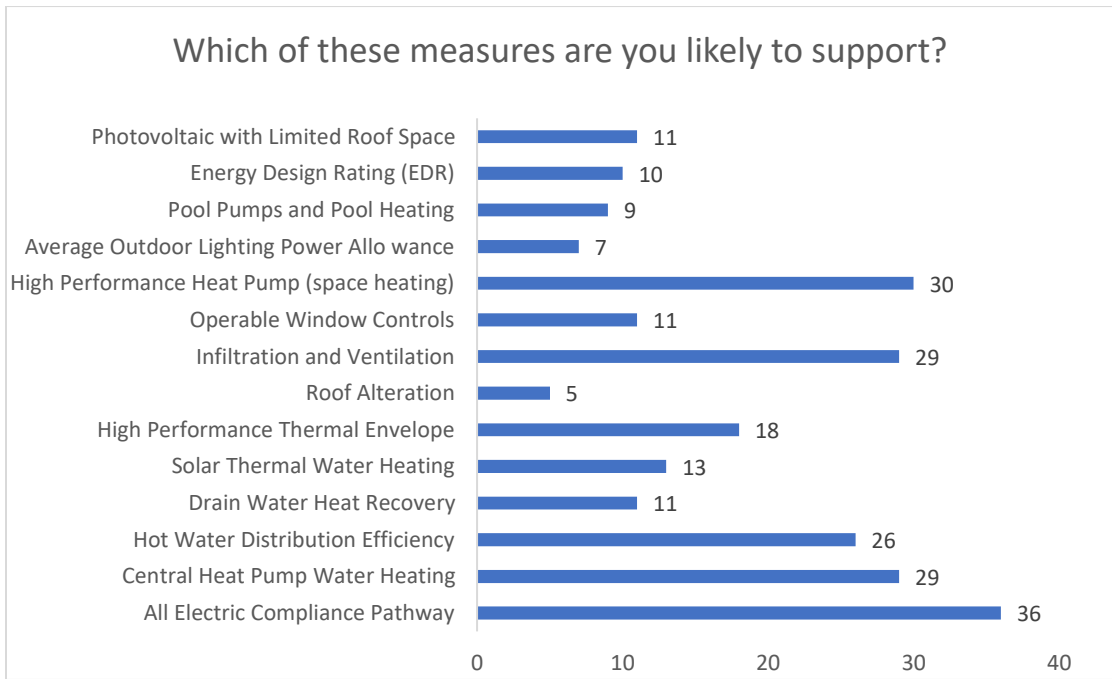


Figure 2: Results of Poll 1, Multi-select/Multiple Answer



**Figure 3: Results of Poll 2, Multiple Choice**



**Figure 4: Results of Poll 3, Multi-select**