



Multifamily Net Zero Retrofits

Getting to Zero Forum


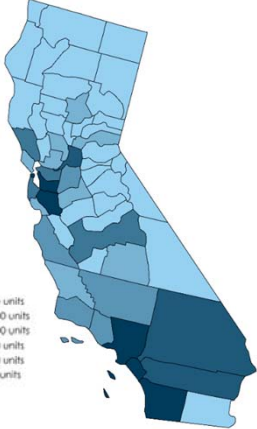
Abhijeet Pande

October 10, 2019

INTEGRATED
[RESILIENT]
SUSTAINABLE

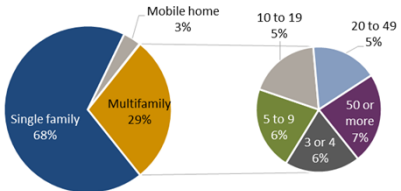
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Why Existing Multifamily Matters?

Roughly a third of California residential dwelling units are in multifamily buildings.

- ~4,006,580 units in total across California.
- ~35% of all multifamily units in Los Angeles County
- ~58% of all existing housing units in San Francisco County are multifamily



Source: United States Census Bureau, 2016 American Communities Survey

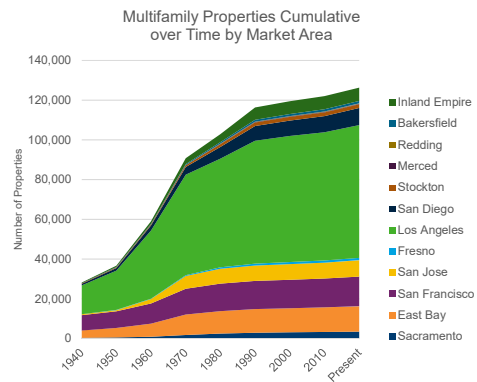
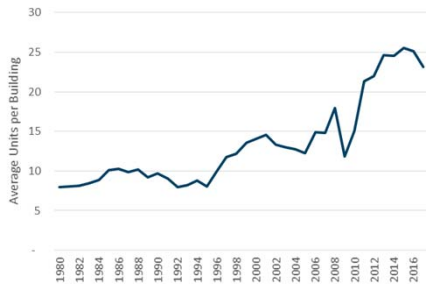
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What do Multifamily Buildings Look Like?



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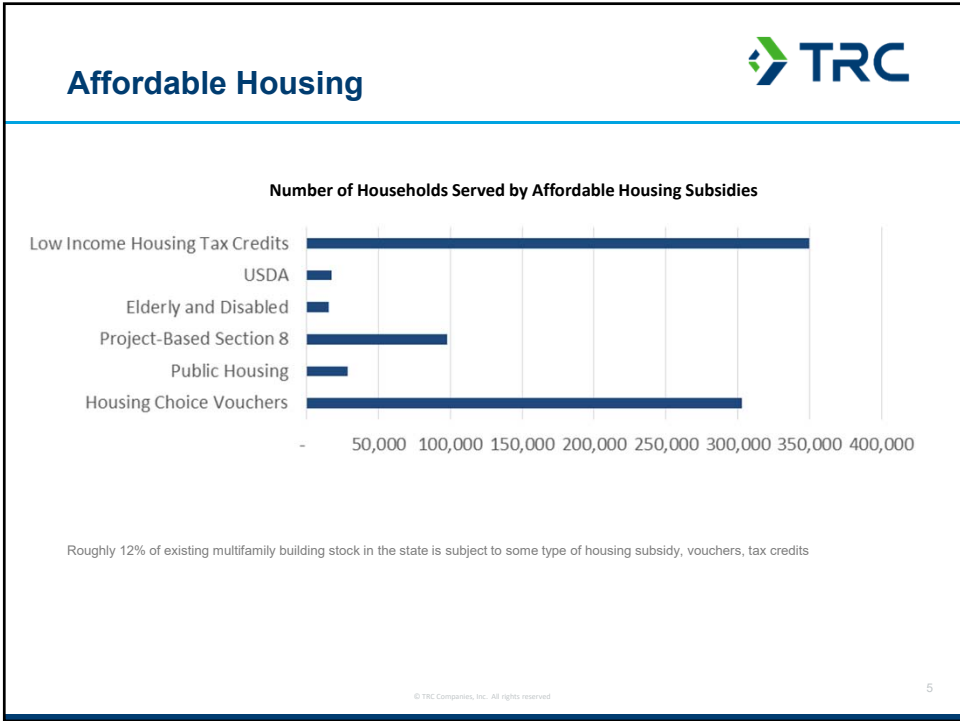
Multifamily Building Distribution



Source: CoStar Property Database

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PG&E Strategic ZNE Analysis: TRC Study Goals and Research Questions

Primary Study Goals:

- Define the questions building owners, regulators and utilities should address before making significant investments in multifamily net zero* retrofits
- Document recommended pathways for overcoming potential obstacles

Research Questions:

1. What is the current landscape for net zero*, electrification, deep energy efficiency retrofits for multifamily buildings?
2. What are the most common limitations or barriers?
3. What strategies are being used to address decarbonization?
4. How do these retrofits impact utility service delivery?

* Net Zero as used here includes various flavors of Net Zero including Zero Net Energy, Zero Net Carbon, Zero Net Source etc.

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Research Process

- Review existing program information, and legal and logistical issues
- In-depth interviews:
 - Portfolio building owners/developers
 - Designers/engineers/raters
 - Program implementers
- Review building stock and multifamily market data
- Roundtable discussion: net zero experts and advocates

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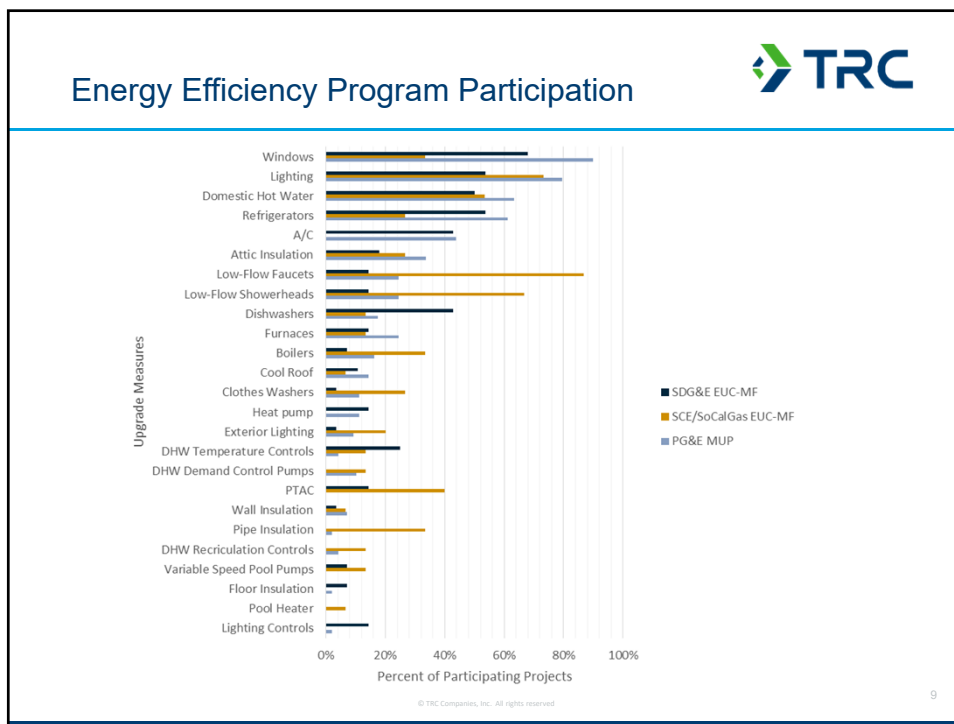
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Energy Efficiency Program Participation

- **California Tax Credit Allocation Committee (TCAC) tax credits**
 - Affordable, deed-restricted housing
 - Sets minimum efficiency requirements
 - Proposed changes for 2019 increase thresholds for energy efficiency and solar to get tax credits
- **Existing building programs at utilities**
 - Targeted end uses/appliances – e.g. rebates for water heaters, windows
 - Whole building retrofits – two of more measures spanning different end uses
 - Comprehensive, whole-building retrofit projects not representative of the average California building stock

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Interview Findings

Existing multifamily properties in California are diverse

Vintage, construction techniques, systems used, ownership/management structures

No silver bullet retrofit strategy

Common set of measures for a given portfolio of properties

Multifamily retrofits are common for non-energy reasons

Safety, aesthetics, comfort, repair and ownership/management turnover

Energy efficiency is often a small component of these retrofits


Funding is the main decision-making driver for all interviewees


Regular re-syndication cycles (tax credits) for deed-restricted properties presents regular opportunities for retrofits

With limited funding, efficiency efforts (beyond the minimum requirements) are typically lower priority than other building improvements

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Interview Findings






Inexperience and/or unfamiliarity with new technologies is a major barrier to electrification

Inertia of existing processes barrier to new technologies or practices

Developers who make electrification and aggressive energy efficiency part of their standard practices are able to overcome other barriers to keep projects successful




Electrical capacity issues can limit opportunities for electrification

Limited options for new electrical appliances to replace incumbent gas technologies in buildings with limited electrical capacity.

Upgrading wiring or replacing a panel in a unit is relatively easy

Increasing capacity or a service drop to a site is unlikely due to high costs and long lead times with the utilities.




Remediation of asbestos and lead are standard practices


For the owners/developers we spoke to, it is part of their regular due diligence, and not seen as a barrier

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Interview Findings






Owners/developers each take slightly different approaches to dealing with tenants

Some avoid relocating tenants at all

Others plan on short-term relocation as standard practice for deeper retrofits




Policy barriers to deep retrofits and electrification

TCAC could be more aggressive in requirements

Outdated assumptions in electrical code limit electrification

Utility rate structures may present barriers to electrification



External factors affecting multifamily retrofits

Housing affordability is an issue if retrofit costs increase rent or displace existing tenants


Climate change impacts the need for active cooling where previously not necessary, resulting in increased electricity consumption and bills


Climate change mitigation policies support electrification

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Data Gaps and Outstanding Questions






Question of scale

Are current efforts sufficient to meet aggressive climate goals?

Opportunity to do more with affordable, deed-restricted housing


Limited data on market rate housing barriers and opportunities



Leverage limited resources for maximum impact


Electrification provides decarbonization and health benefits

But, without energy efficiency upgrades may end up costing more to tenants




Impact of and process for utility interconnect on electrification measures

Upgrading electrical infrastructure to the building a bigger challenge than upgrading electrical infrastructure 'within' the building



Housing affordability

How to mitigate unintended impacts on tenants due to retrofits such as increased rents



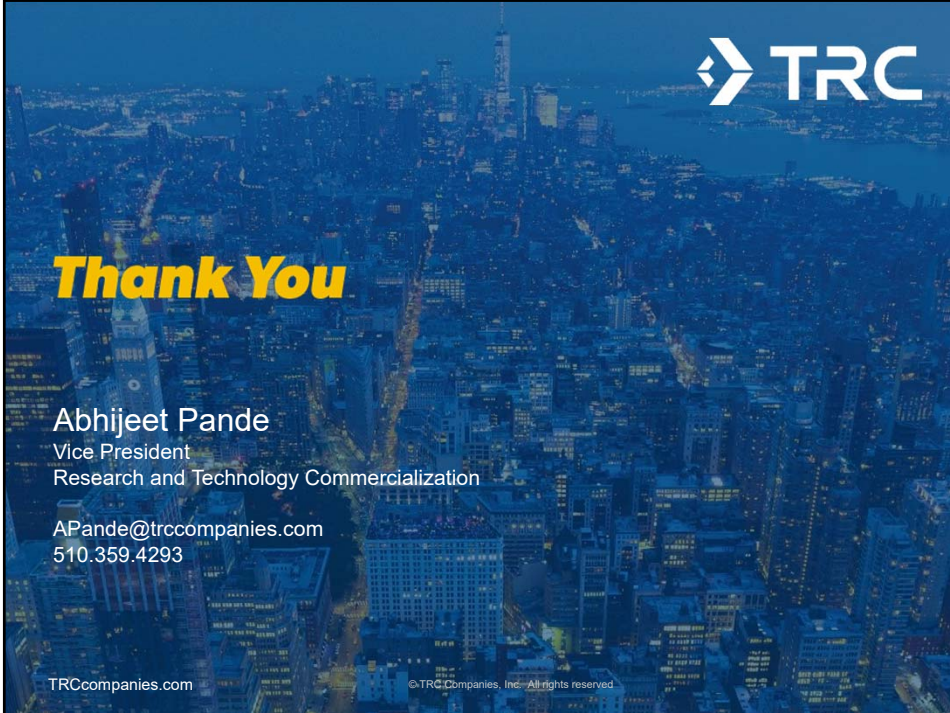
Inertia of existing processes


Supply chains and decision making processes tied to 'business as usual'

How to assist developers/ property managers develop new processes and make net zero, electrification, deep retrofits part of standard operating procedures?

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Thank You

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