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
What do Multifamily Buildings Look Like?

Multifamily Building Distribution

Source: CoStar Property Database
Roughly 12% of existing multifamily building stock in the state is subject to some type of housing subsidy, vouchers, tax credits.

Number of Households Served by Affordable Housing Subsidies

- Low Income Housing Tax Credits
- USDA
- Elderly and Disabled
- Project-Based Section 8
- Public Housing
- Housing Choice Vouchers

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.
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

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
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
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

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
# Data Gaps and Outstanding Questions

<table>
<thead>
<tr>
<th>Question of scale</th>
<th>Leverage limited resources for maximum impact</th>
<th>Impact of and process for utility interconnect on electrification measures</th>
<th>Housing affordability</th>
<th>Inertia of existing processes</th>
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<tbody>
<tr>
<td>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</td>
<td>Electrification provides decarbonization and health benefits But, without energy efficiency upgrades may end us costing more to tenants</td>
<td>Upgrading electrical infrastructure 'to the building' a bigger challenge than upgrading electrical infrastructure 'within' the building</td>
<td>How to mitigate unintended impacts on tenants due to retrofits such as increased rents</td>
<td>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?</td>
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