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Catalyzing an equitable, zero-carbon building revolution

Zero Carbon Retrofit Technology Research and Development

Amy Egarter | RMI | June 22, 2021



REALIZE CA

Catalyzing an equitable, zero-carbon building revolution

REALIZE CA aims to accelerate building decarbonization by developing affordable streamlined solutions that make buildings healthier for people and the planet.

THEORY OF CHANGE



STANDARDIZE THE
RETROFIT PACKAGE

1



STREAMLINE
FINANCING

2



SCALE SOLUTIONS

3

REALIZE-CA Technologies



Multifamily Buildings Types to Scale REALIZE-CA



TOWNHOUSE
762,018 Units



GARDEN STYLE
647,511 Units



LOADED CORRIDOR
629,470 Units

- The REALIZE team identified 3 different buildings type geometries, that comprise 70% or roughly 2 million units out of ~2.9 million multifamily occupied units total in CA.
- Preliminary product development and program design will be targeted towards these typologies.



CA Low-rise Buildings are not Dutch Low-rise Buildings

California

- Wood-framed (light-weight, prone to damage)
- Seismic zone
- Stucco
- More complex geometry
- Heating and cooling, almost always with air



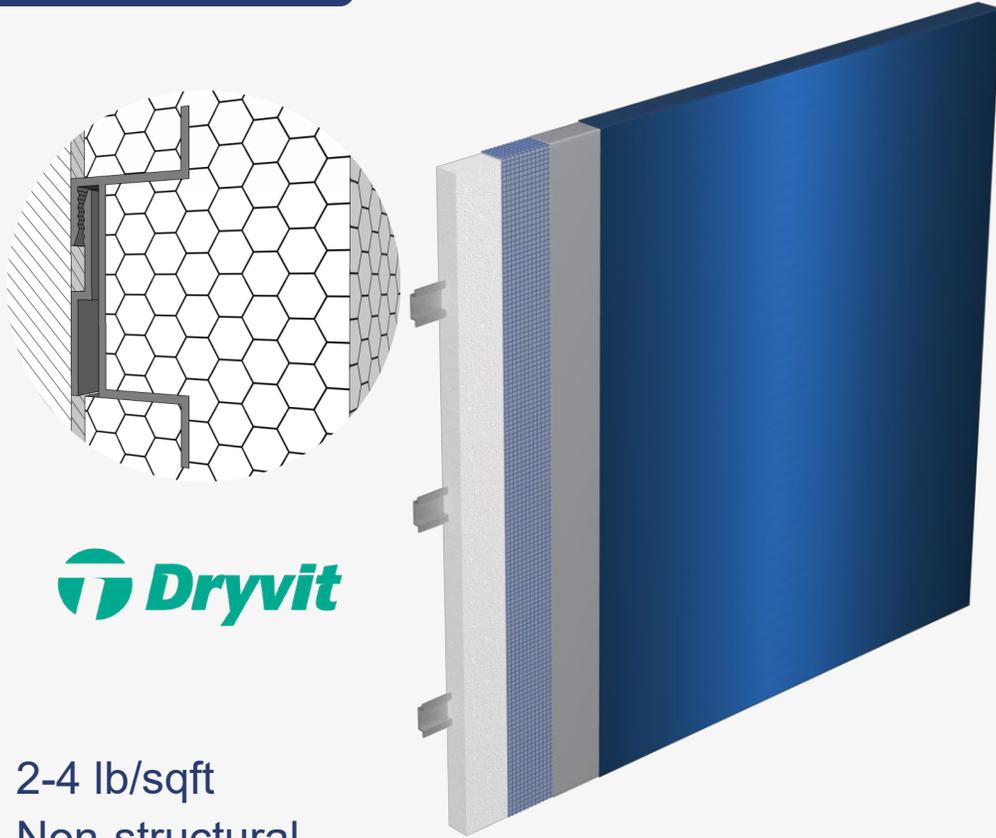
Netherlands

- Brick/masonry
- No additional cladding
- Relatively simple geometry across typology
- Heating only, with radiant heat



CA vs. NL Retrofit Panels

California



- 2-4 lb/sqft
- Non-structural
- Windows and doors not integrated (rough opening connections prefabbed)

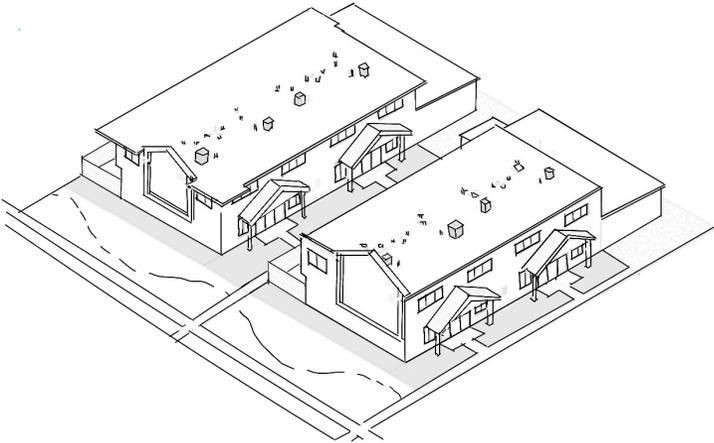
Netherlands



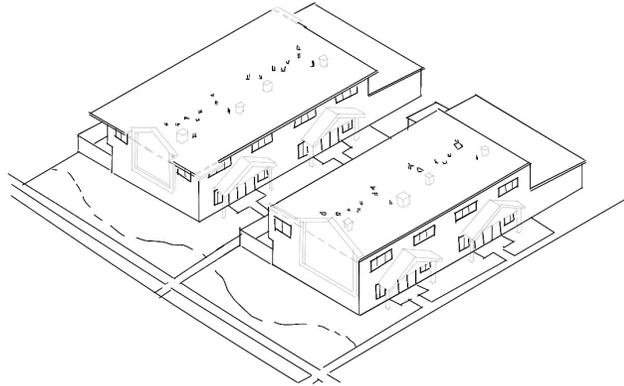
- 8-12 lb/sqft
- Structural
- Windows and doors integrated



Envelope Retrofit Process



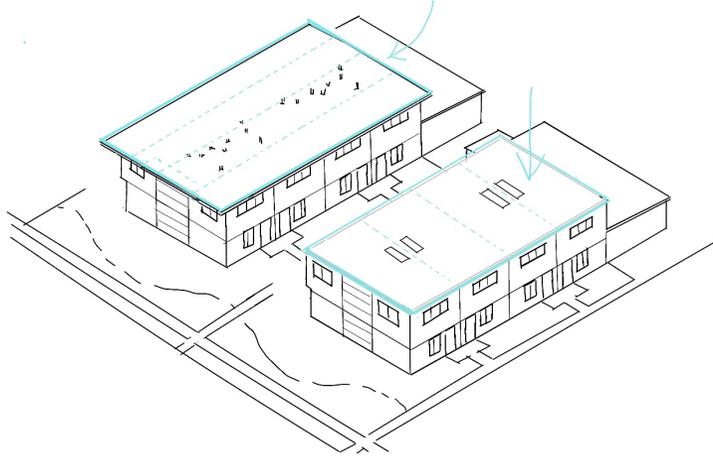
1_EXISTING BUILDINGS



2_DEMOLITION



3_REPLACE WINDOWS
INSTALL WALL PANELS



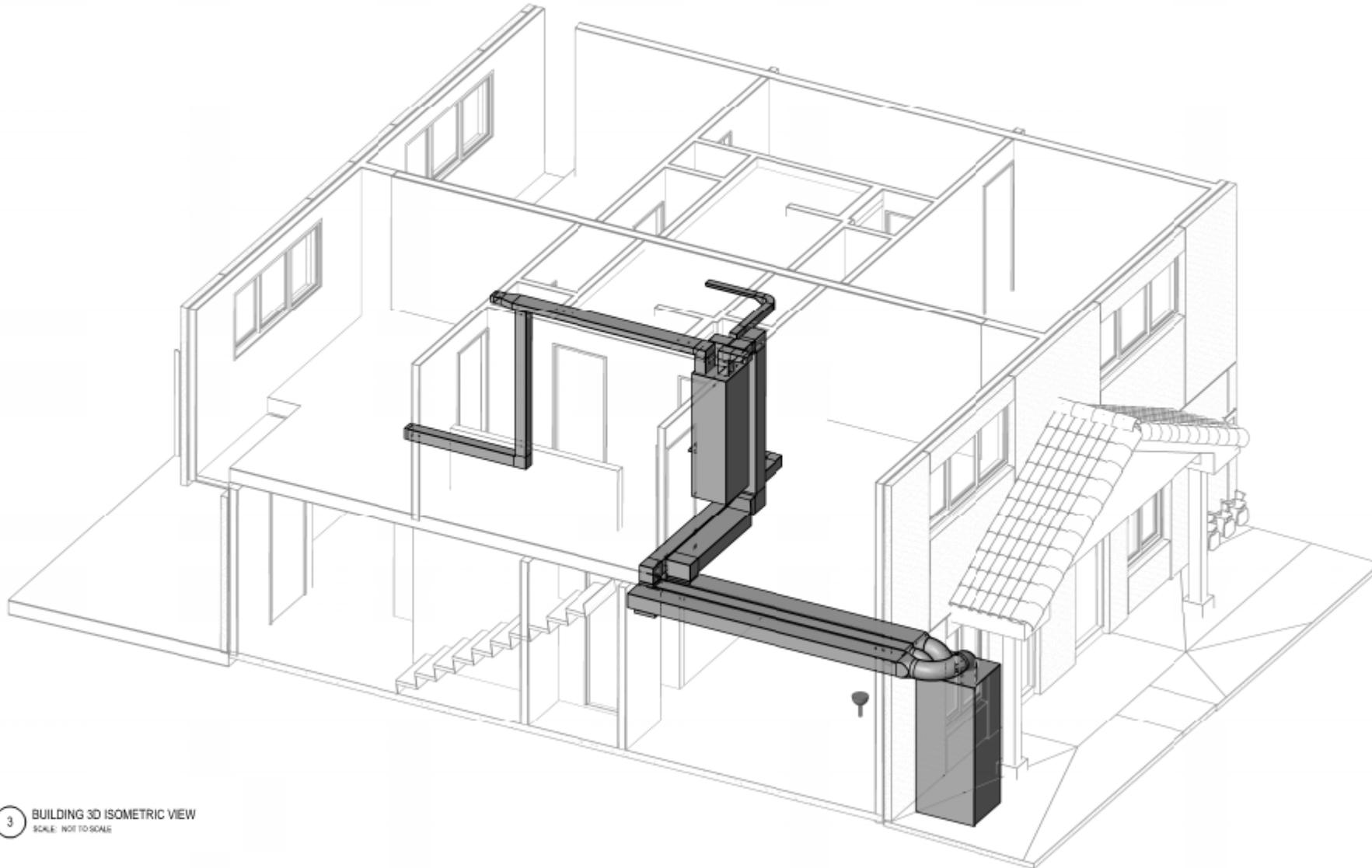
4_INSTALL NEW ROOF



5_NEW EXTERIOR FEATURES



HVAC Retrofit Process



3 BUILDING 3D ISOMETRIC VIEW
SCALE: NOT TO SCALE

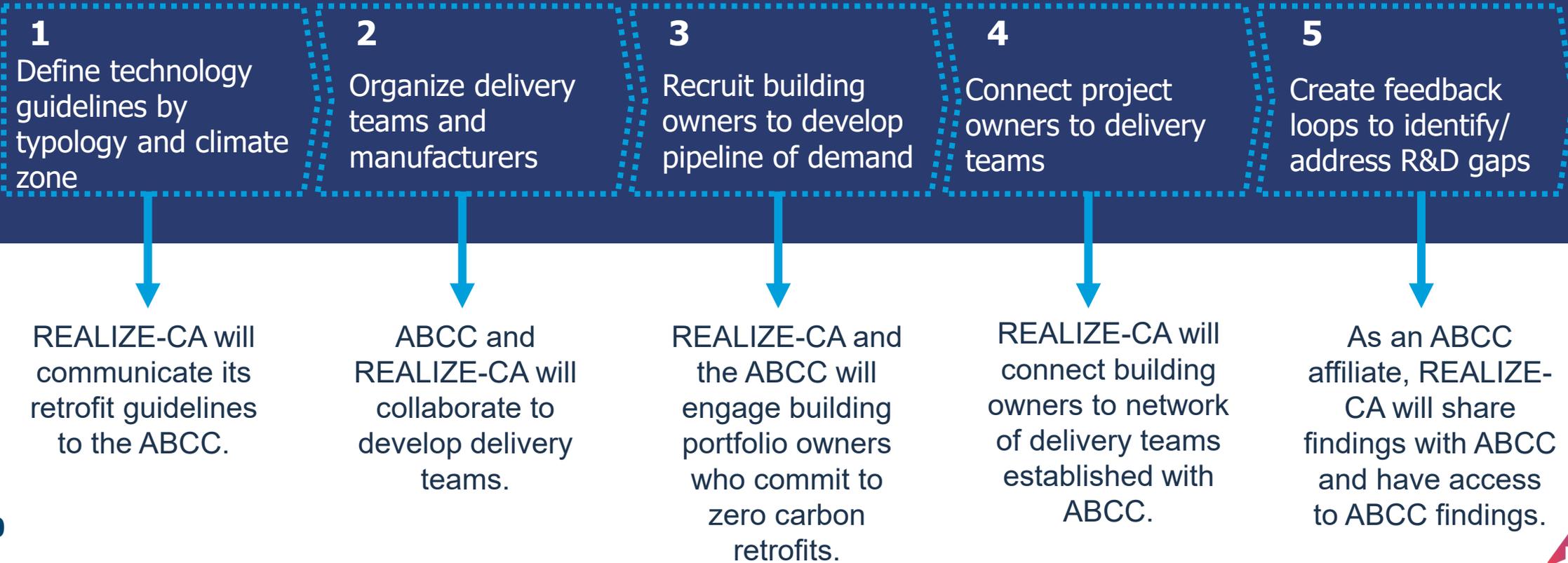
Finished Product



Activities to Scale Emerging Technologies

REALIZE-CA and the **DOE's Advanced Building Construction Collaborative (ABCC)** will work dynamically to scale emerging technologies that meet the goals of REALIZE-CA.

These interactions include:



Considerations For Future Policies

1. **Allow R&D funding sources to be flexible and promote commercial innovation.**

- Resources need to be structured to be fungible to industry needs.
- Use of funds should not cloud intellectual property or future royalties.

2. **Holistic solutions vs. equipment swap-outs must be prioritized.**

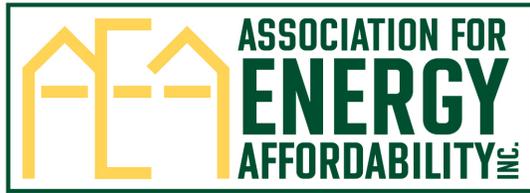
- Deferred maintenance, resilience, occupant health, and utility bill affordability can all be addressed in a program targeted towards the whole building.
- State incentives should be carbon-based to encourage the development of future low-carbon technologies.

3. **Expand existing efficiency programs for disadvantaged communities to ensure an equitable energy transition.**

- The Low-Income Weatherization Program has been successful but needs to provide more funding per ton of CO₂ to enable holistic, zero-carbon retrofits.



THANK YOU TO OUR PARTNERS



EMANANT SYSTEMS

SIGNETRON

SMITHGROUP

