



Building A Resilient Community Through Electrification

February 11, 2025



Speakers



Travis Morgan
Heather Village
HOA Board



Mabell Garcia Paine
Viridis Consulting
Grant Administrator

Project Team



Kim LaFranchi
Heather Village
HOA Board



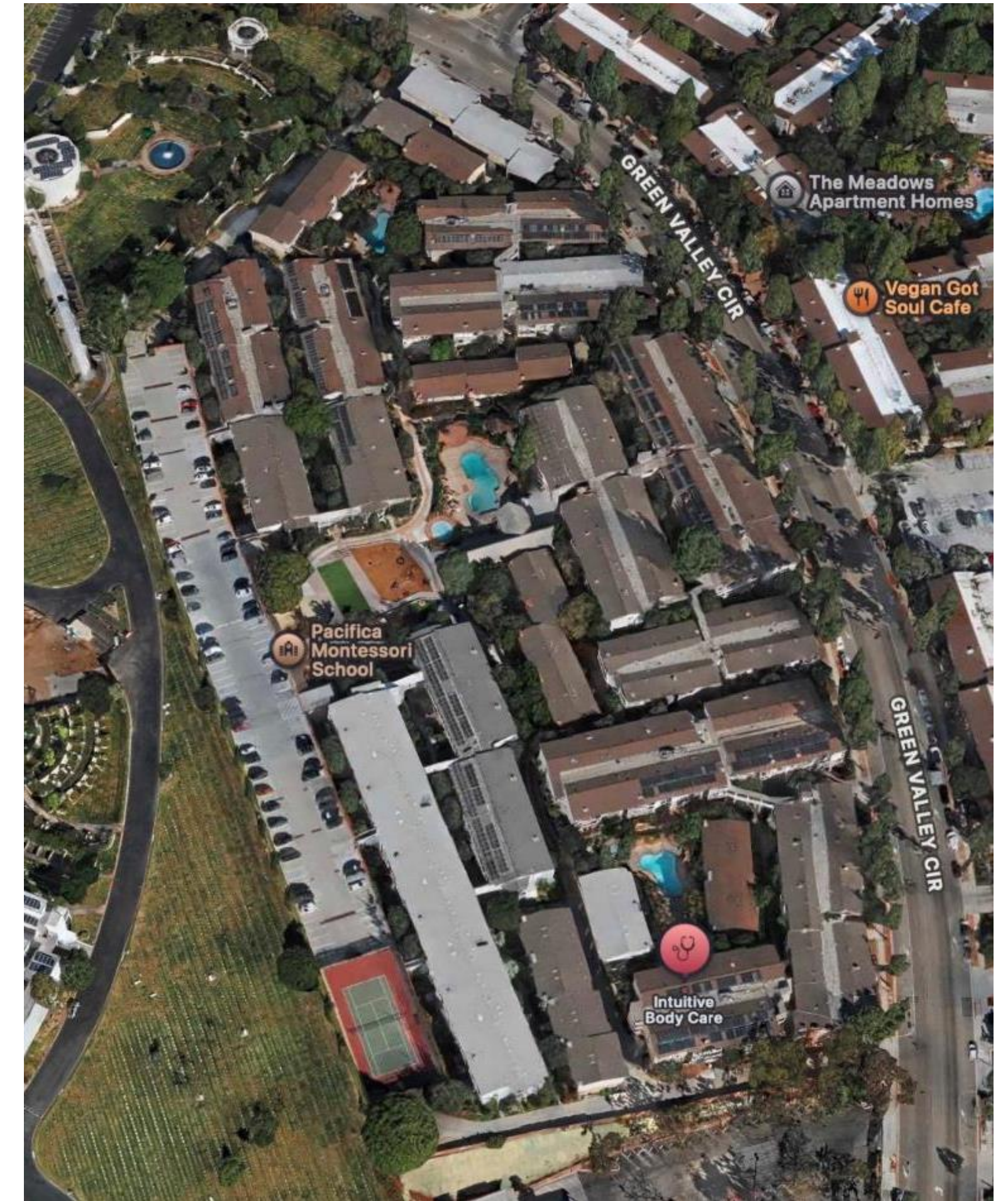
Greg Sherman
Carbon Zero Buildings
Installation Contractor



Tom Abram
Introba
Engineering Lead

Heather Village

- 404 units in 31 buildings on 12 acres
- Built in 1970 as an apartment complex; converted to condos in 1973
- About 1,200-1,500 residents
- Renters and owners: immigrant families, working professionals, fixed-income seniors, first-time home buyers
- In Culver City's Fox Hills neighborhood:
 - Most racially diverse
 - Economically diverse
 - Age diverse



Aerial view of Heather Village (2024), situated within 600 feet from the I-405 freeway, adjacent to communities such as Ladera Heights, South Los Angeles, and Inglewood.

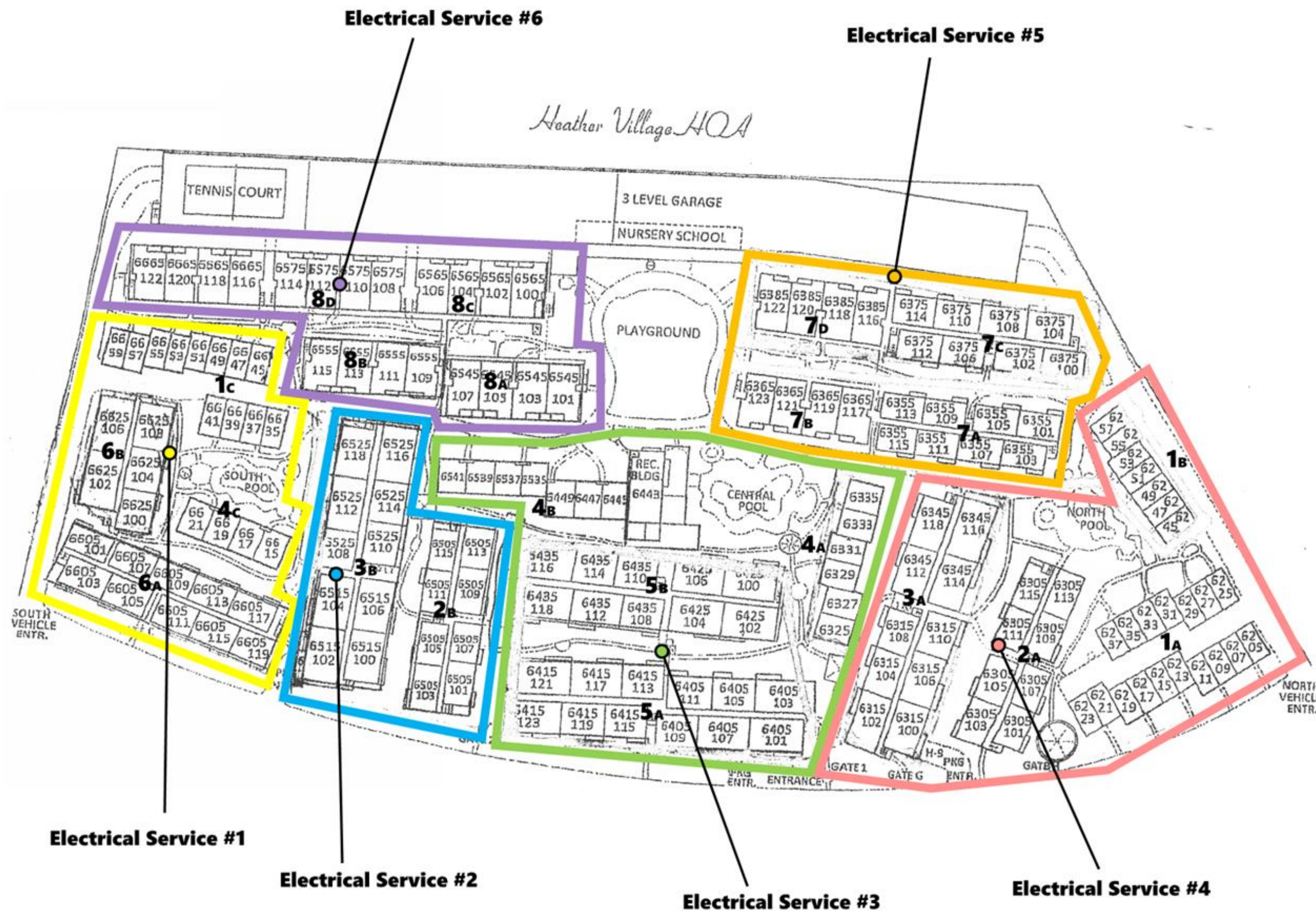
Existing Infrastructure



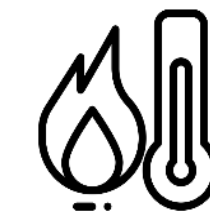
404 Residences

Common Areas

In-Unit



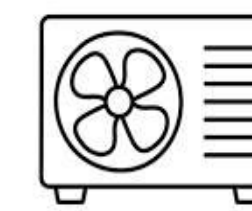
8 Hot Water Systems



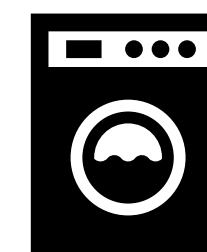
Gas Wall Heaters



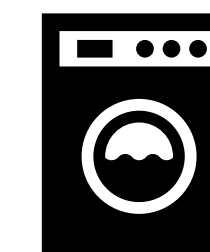
6 Electrical Services



No A/C



9 Laundry Rooms



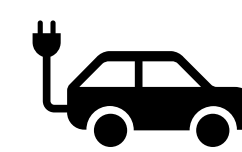
No In-Unit Washer/Dryer



3 Pools & 2 Jacuzzis



90A circuits per 3 units

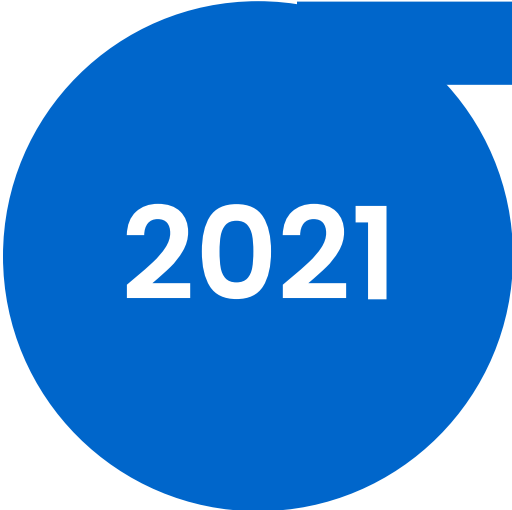


6 EV Car Chargers

Path to Electrification

Board Resolution

HOA Board passed a resolution to be carbon neutral by 2050



Failing Boilers

Pivoted from on-demand gas boilers to HPWHs.
Pursue newly available state grants

CA Quick Start Grant (\$300K)

- Feasibility Study
- Pilot system install costs
- Technical advisors



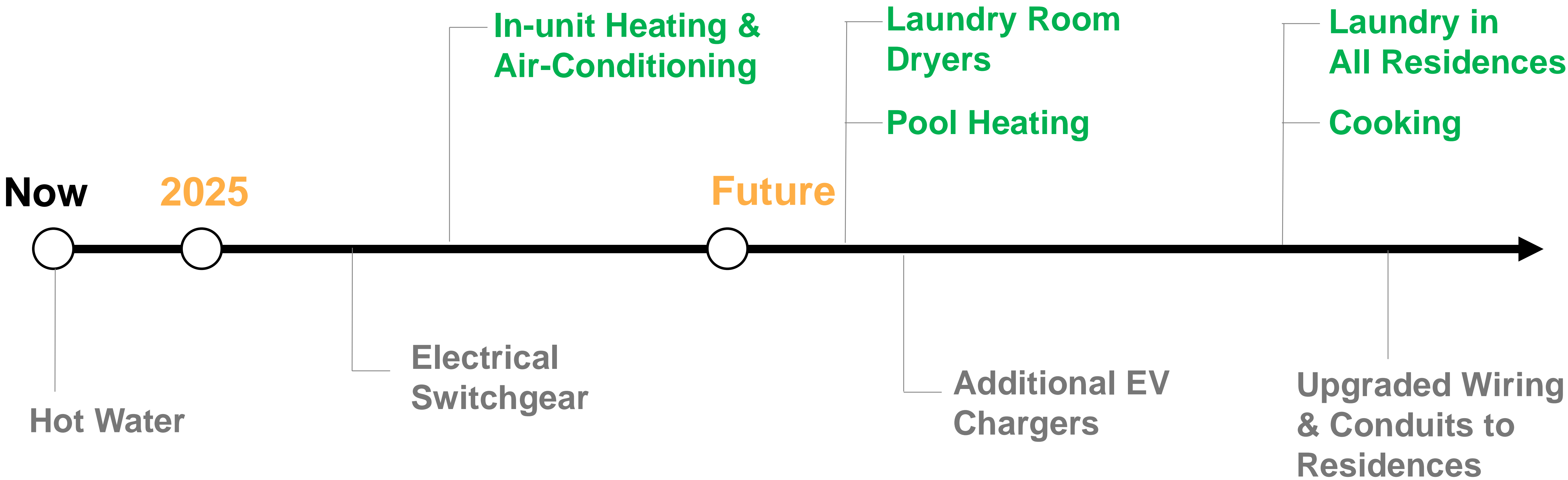
Pipeline of New Funding

- SoCalREN incentives
- CA TECH Clean CA incentives
- Quick Start add-on grant
- SCE On Bill Financing

Construction

- First pilot HPWH system installed May 2024
- 7 systems to be installed by end of Dec 2024

Beyond Water Heating



Our Gas Boiler Systems

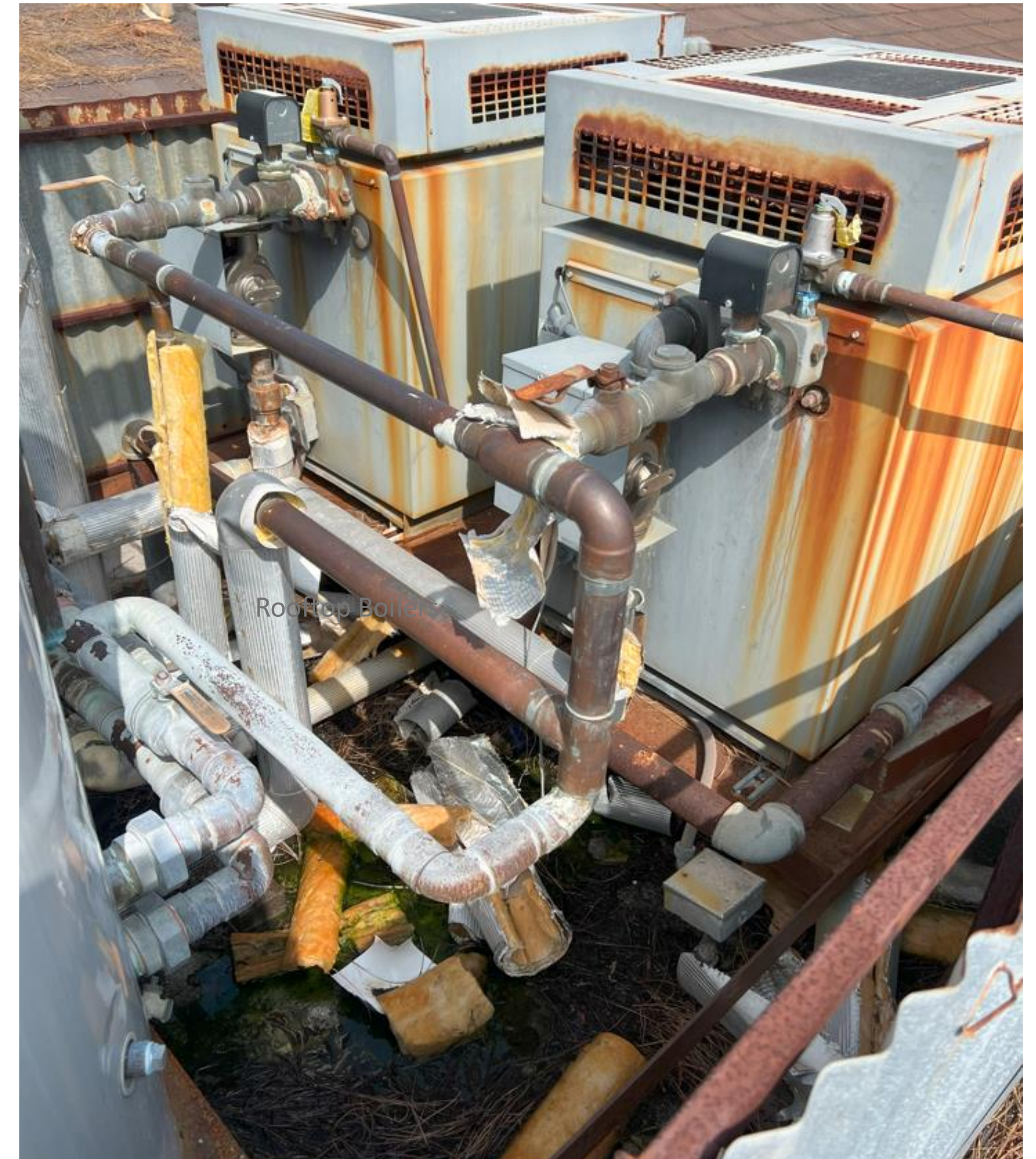
- Domestic hot water boilers located on roofs; near/at end-of-life
- 50+ year old, inefficient gas furnaces
- Natural gas distribution system has had leaks
- Future system-wide replacement would be very expensive



Uninsulated Pipes



Rooftop Storage Tanks



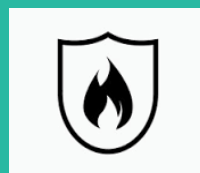
Electrical System Challenges

Electrical infrastructure upgrades have been extensive, expensive, onerous and ongoing. Scope is being phased to address cost impact of such a large capital outlay. No incentives for this extensive work were found.



Original In Use 50 years +

Originally designed for apartments:
unmetered rental units



**Insurance and Contractor
Concerns**

Switchgear, distribution panels and wiring
conditions needed to be changed before
electrification work could commence

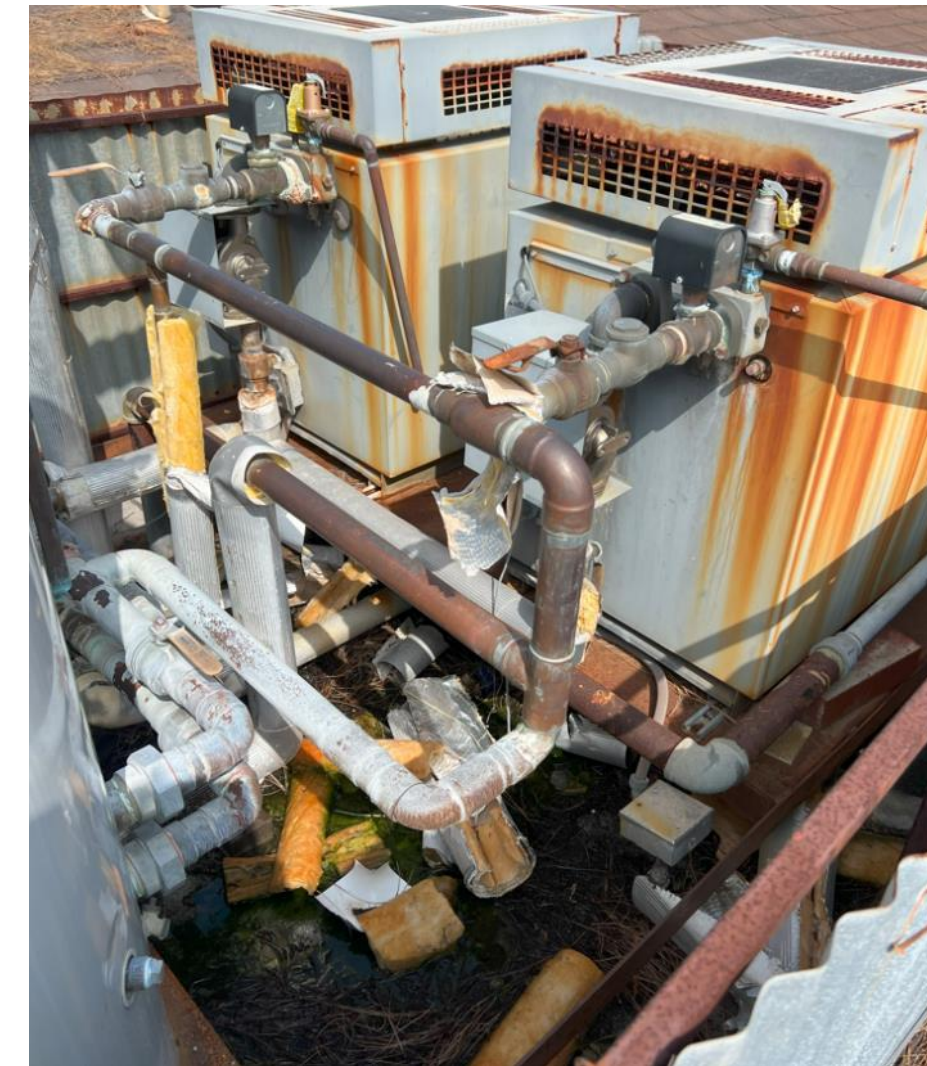


Unincentivized Costs

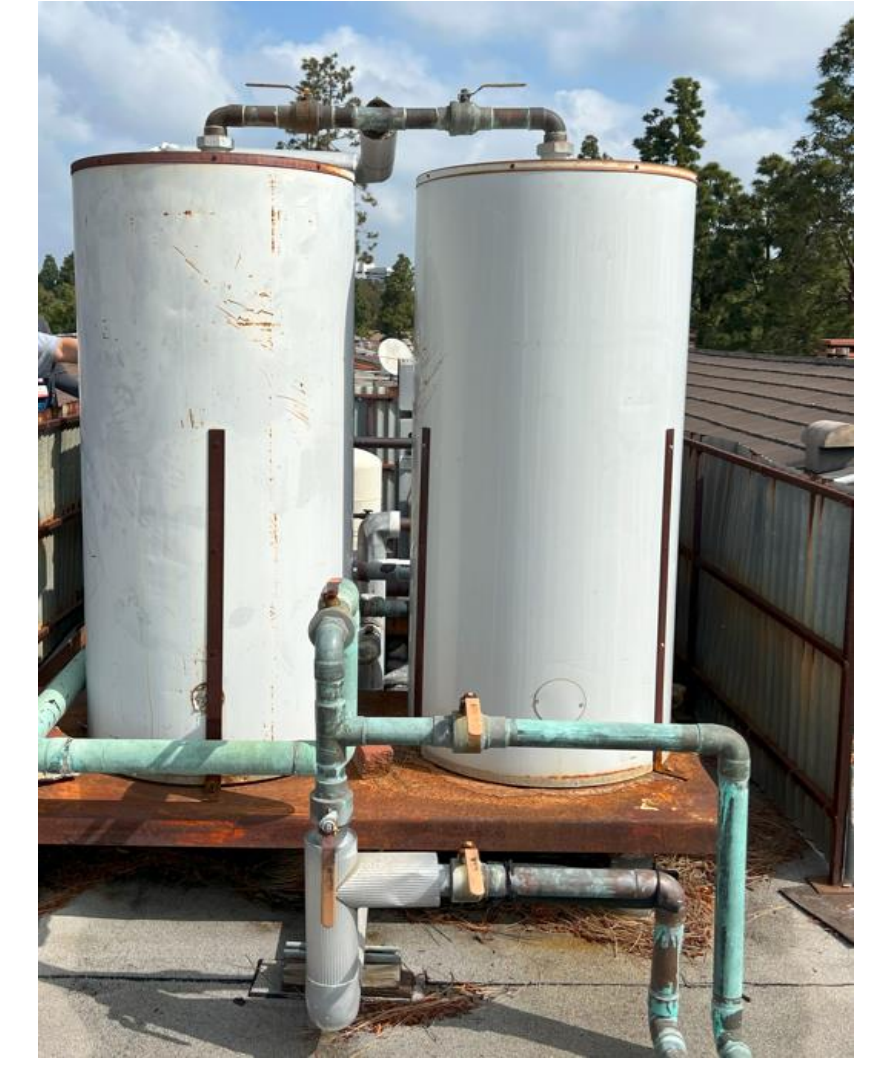
- Pre-work (\$749K)
- Installation (\$2.1M)
- Post-work (near term) \$690K

Why HPWHs & SanCO2

- HPWHs are 3-5x more efficient than gas boilers
- Heats water faster with less energy; pulls heat from the air to heat water
- Installed SanCO2: 30-40% higher efficiency than traditional HPWHs; uses environmentally friendly CO2 refrigerant
- HV using both custom-built and prefabricated systems; Phase 2 using WaterDrop Droplet skids for more efficient installation



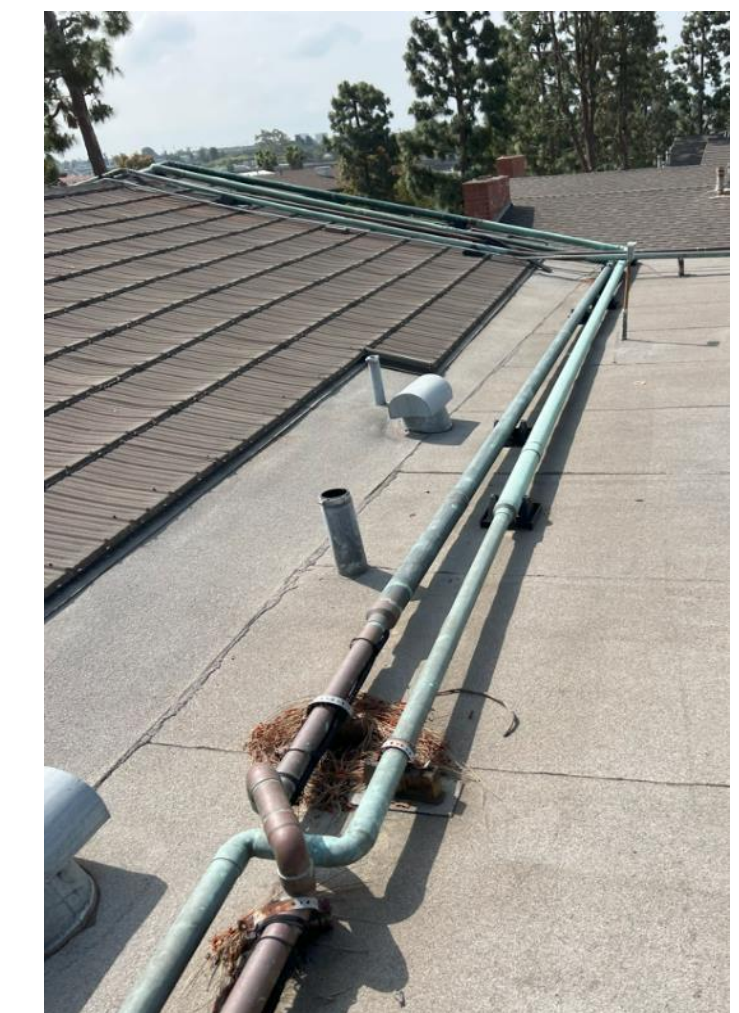
Rooftop Boilers



Rooftop Storage Tanks



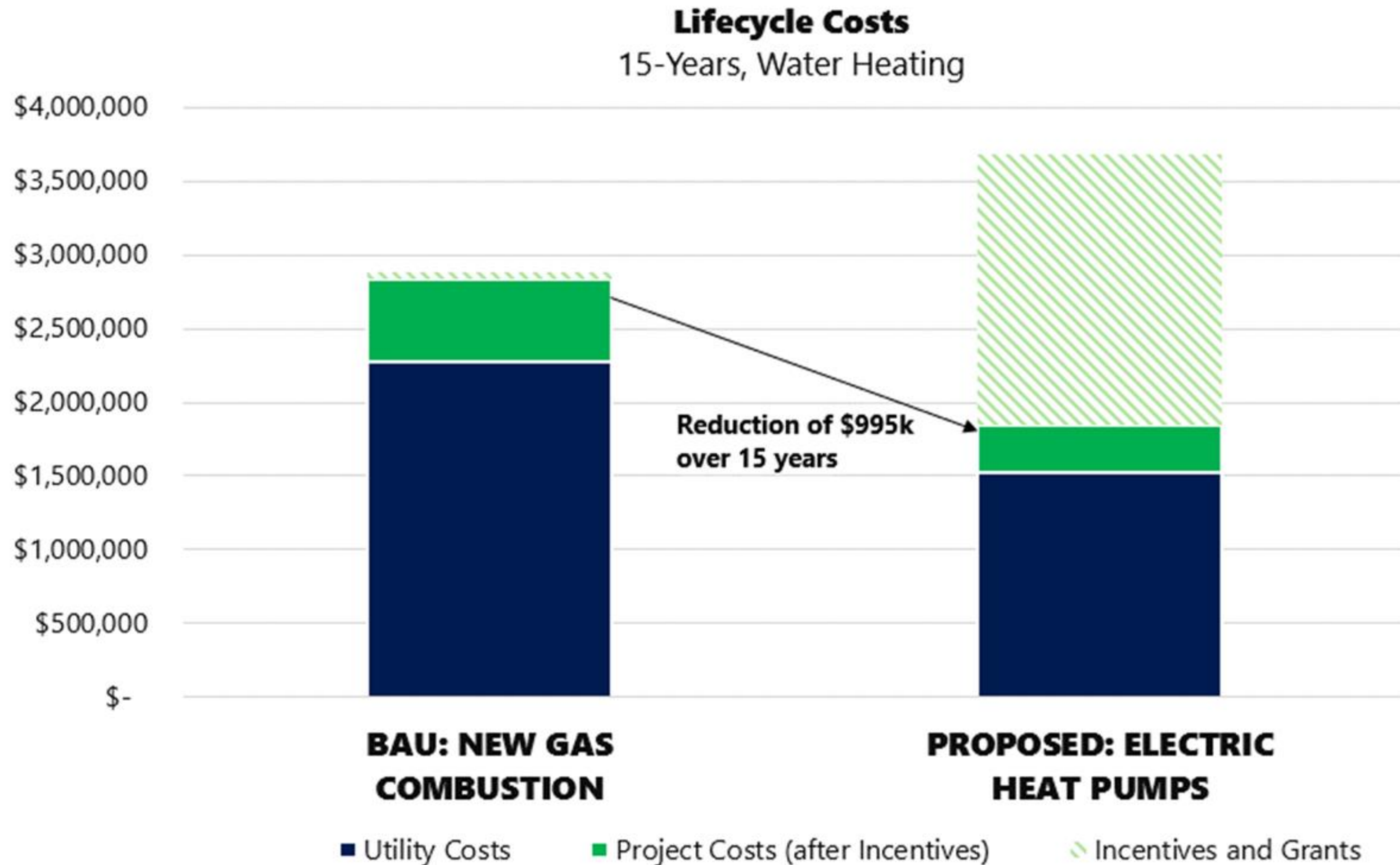
SanCO2 system



Uninsulated Pipes

Heat Pump Water Heater Lifecycle Cost

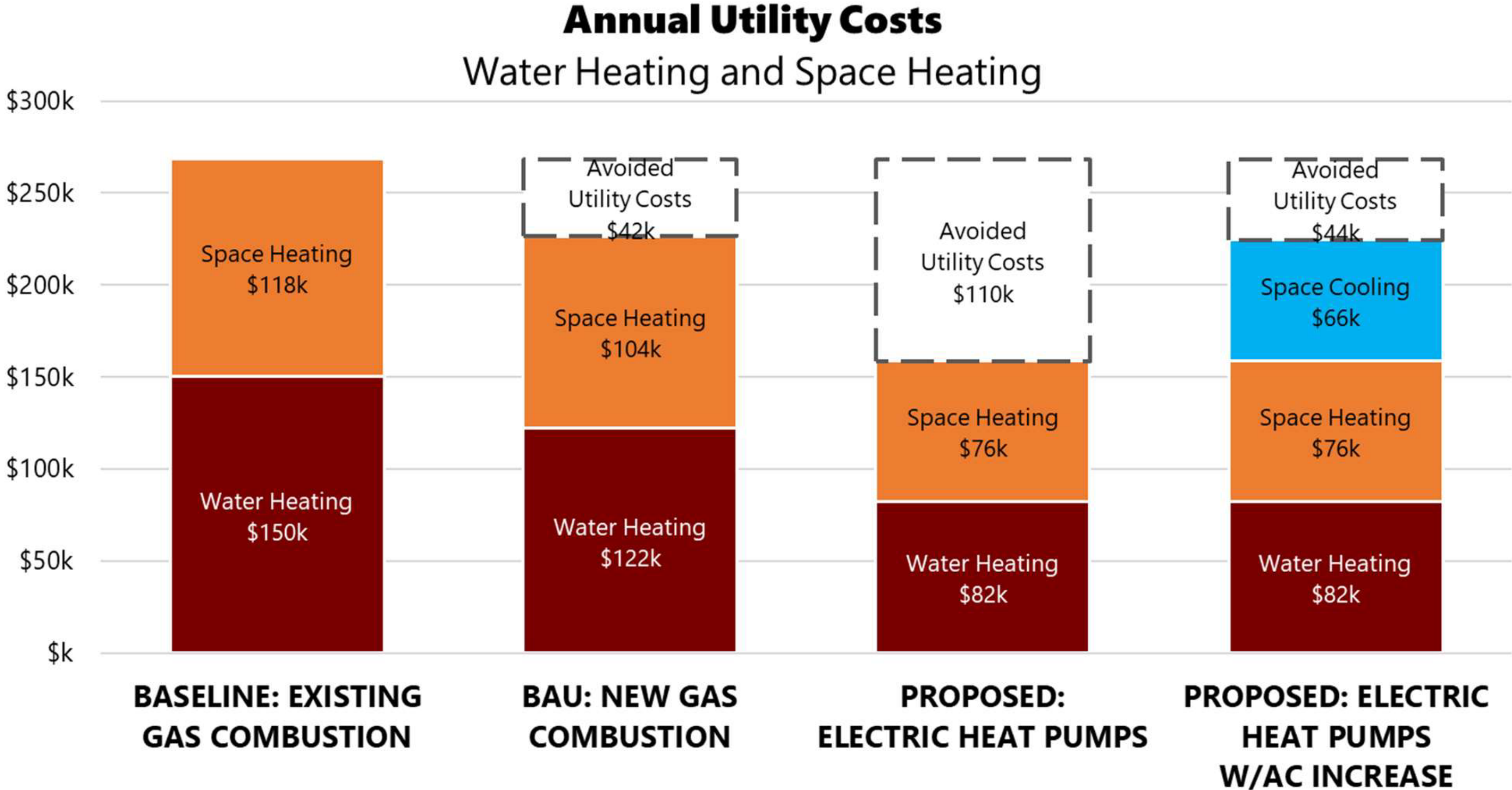
\$66,300 in Annual
Savings over 15 Years



Heat Pump Water Heater & HVAC

Utility Savings & Added Services

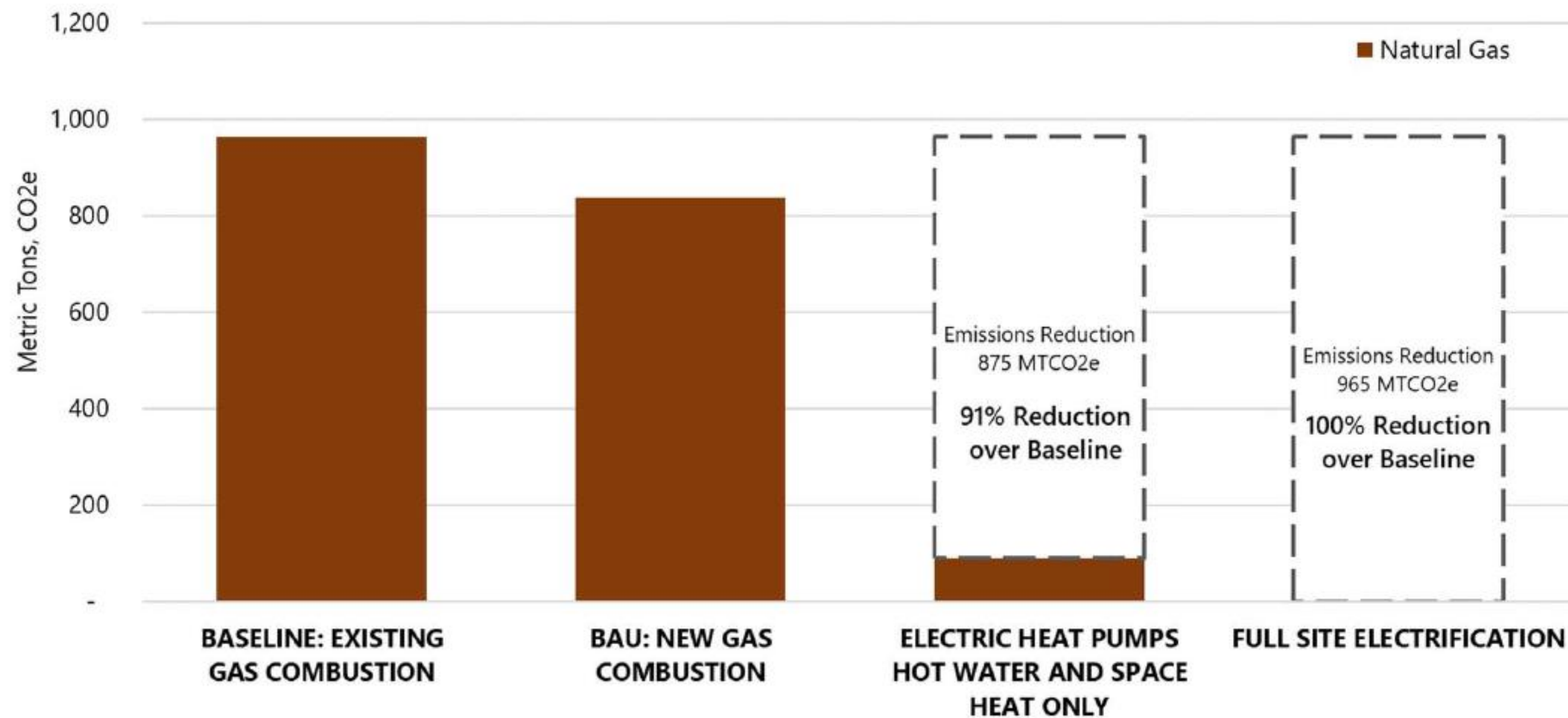
\$44,000 in Annual Utility Cost Savings Even With Adding NEW Space Cooling; Removes energy off HOA gas bills



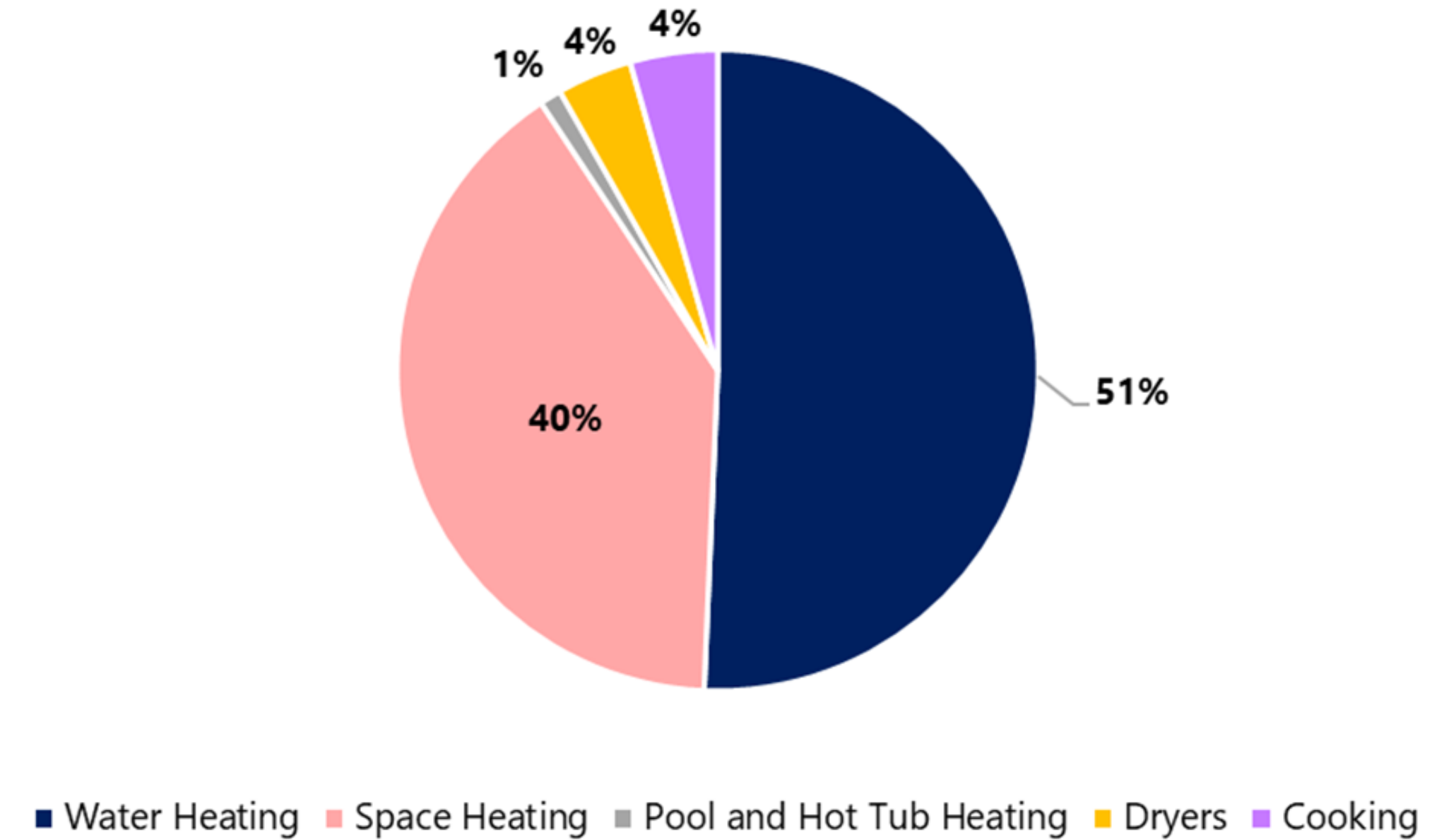
Heat Pump Water Heater GHG Reduction

Electrification of HPWH and HVAC estimated to reduce gas usage by 91% with an equivalent reduction in combustion-related GHG emissions

Annual GHG Emissions
Clean Power Alliance, 100% Green Power



Natural Gas Consumption, End Use Estimates
Average, 2020-2022



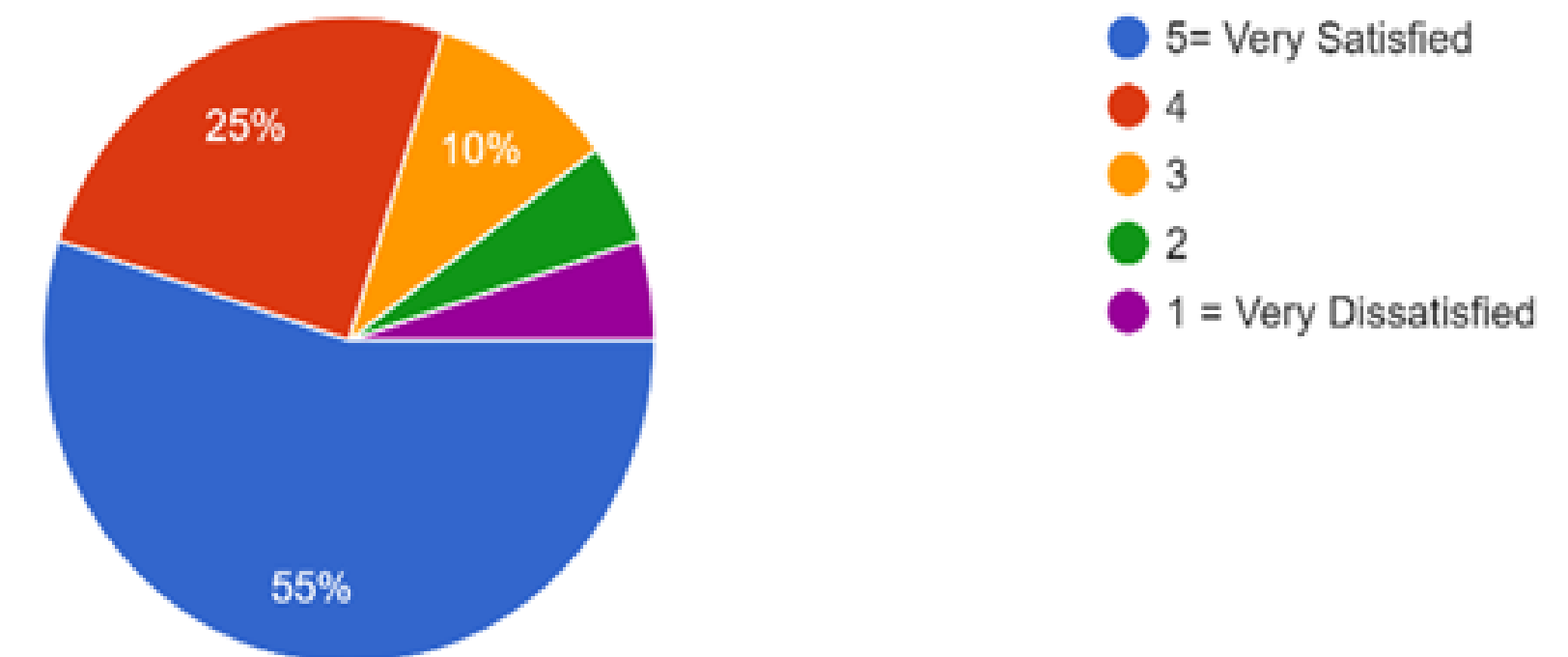
Phase I: Install & Feedback

- Phase I: May 2024, install of first centralized HPWH system serving 3 buildings (66 units)
- Pre- and post-install surveys (5); Feedback used to inform system adjustments/refinements
- Final shows high resident satisfaction & improved system reliability
- Process learnings will help in Phase II installations
- 2025: Crossover remediation
- Final analysis underway to learn the real cost, energy & carbon savings



Are you satisfied with the provision of hot water since Saturday, June 29th thru now, which is after this most recent system adjustments were completed? (5=very satisfied, 1=very dissatisfied)

20 responses



HV Challenges & Learnings

- **Feasibility Study:** This is the Roadmap for it all; it is constantly evolving. Without funding for this study/work, this project would not be possible.
- **HPWH Contractor:** It was very difficult to find contractors experienced on this technology.
- **Team of Experts:** Technical Advising needed throughout the process to navigate feasibility study, data analysis/forecasting, incentive applications, etc.
- **Incentive Ecosystem:** Electrification incentive information is fragmented on numerous portals, and program and vendors sites; Federal incentives (25c) are not suited to Multi-family housing situations.
- **Install vs. Full Electrical System Upgrades:** Many necessary electrical infrastructure upgrades required--onerous and expensive and ongoing. Full electrification has to be phased given the costs; limited or no incentives for this extensive work.

HPWH Project Costs

Water Heating & Electrical Upgrades

TOTAL PROJECT COST	\$2,600,000 - \$3,000,000
INCENTIVES	(\$1,990,000)
ON-BILL FINANCING	(\$600,000-1,000,000)

Without incentives and OBF, HOA would have needed to levy a ~\$6,000 per unit special assessment.

In a nutshell



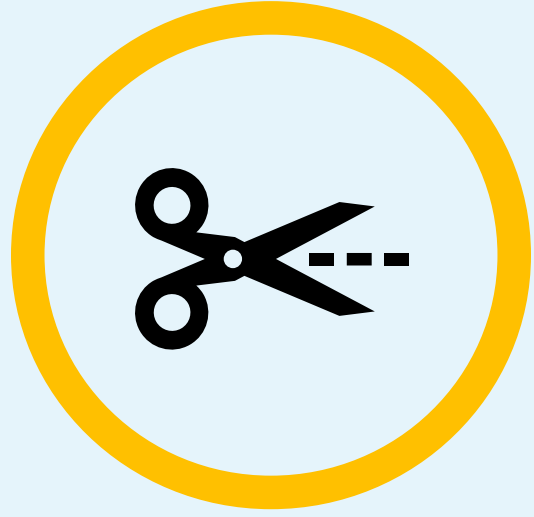
15

Aging gas boilers replaced with 7 high-efficiency heat pump systems



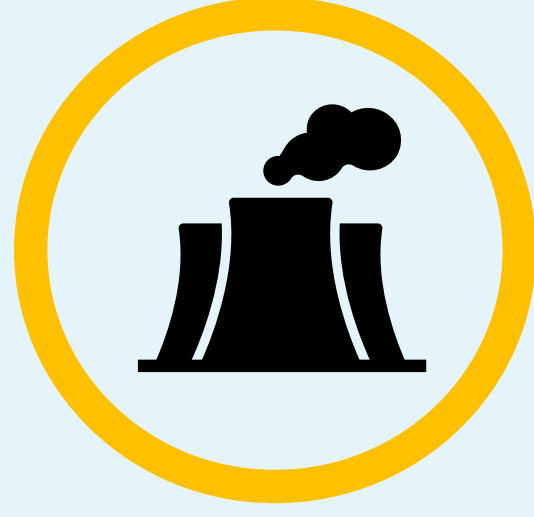
\$1.99M

Grants & incentives secured



\$66K

Projected annual utility bill savings



51%

Reduction in total CO2 emissions from the property

Thank you!