Contractor Needs for Supporting Building Electrification in the State of California

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- Methodology
- Research Objectives
- Results
- Recommendations

Introduction

- Aggressive **targets** for reducing **greenhouse gas emissions** in California.
- **Building electrification** is one important solution for meeting targets.
- Residential customers rely on **contractors** to **recommend and install** equipment.
- Building Decarbonization Coalition sponsored this **research to better understand contractors and their needs** associated with building electrification.
- Focused on:
  - Residential retrofits
  - Heat pump space-heating
  - Heat pump water-heating

Methodology

- TRC conducted 39 in-depth interviews with contractors across California, including:
  - 10 **HVAC** Contractors
  - 10 **Electrical** Contractors
  - 10 **General** Contractors
  - 9 **Plumbing** Contractors

This presentation also includes updates since 2019

- Interviews completed Oct – Dec 2019

Research Objectives

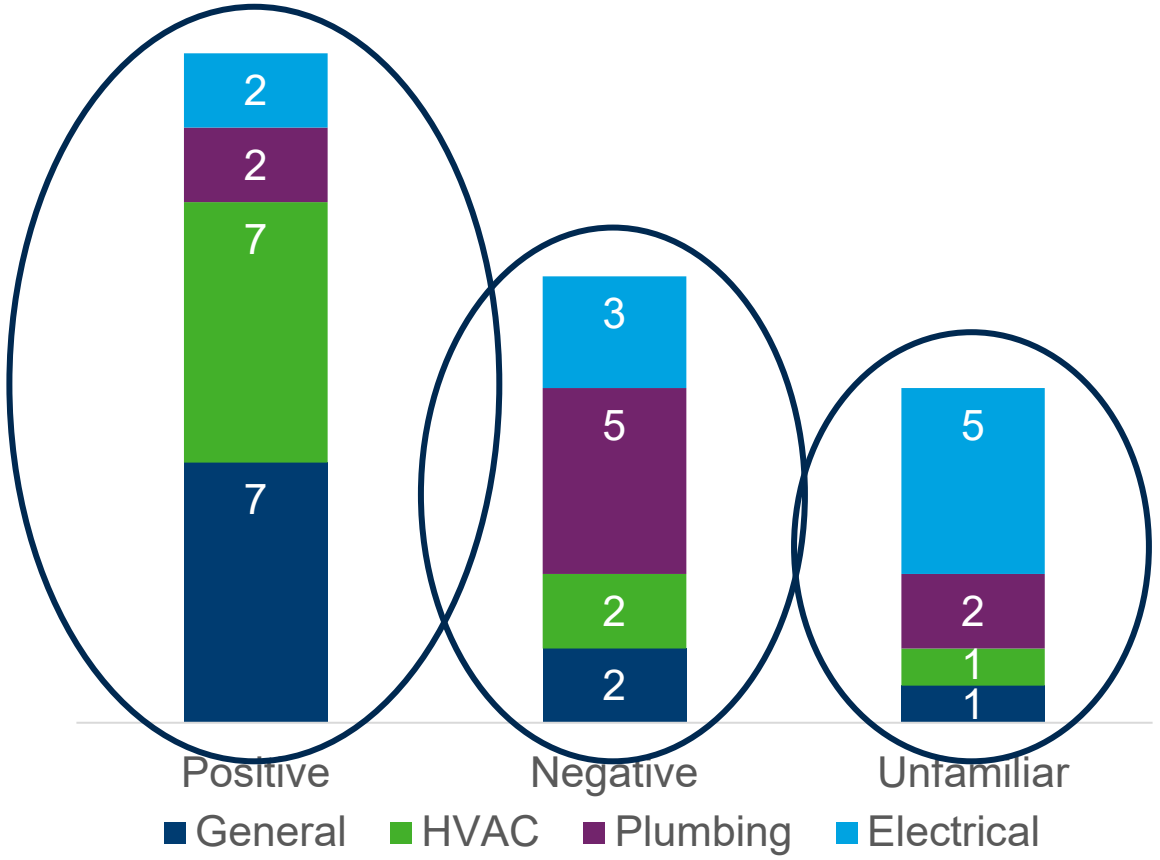
1. Identify and explore the **attitudes** of contractors towards target electric end-uses that can advance near-term and long-term building electrification in California.
   - Assess contractor **preferences** related to gas vs. electric technologies
   - Assess the current **awareness and perception** of electric equipment among contractors.
   - Identify the **drivers that influence** various contractors to recommend/install electric appliances over gas appliances (and vice versa).

2. Identify existing **barriers** to greater adoption among contractors.

3. Assess contractor **receptiveness** to policies and ideas that support electrification.

Results – Attitudes Toward Electrification

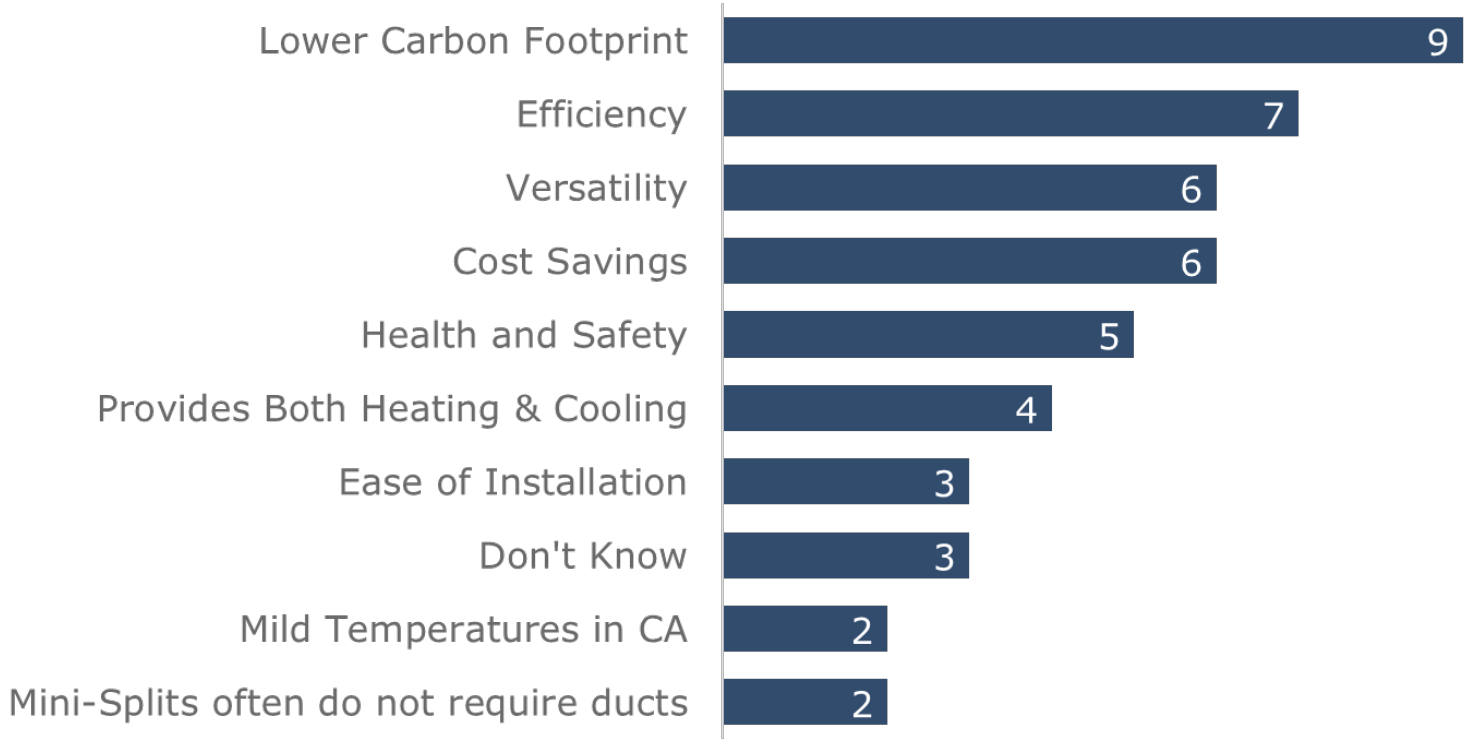
- Many respondents (46%) had positive associations with electrification.
  - **General contractors** & **HVAC contractors** most positive
- **Plumbers** had most negative associations with electrification.
  - Associate natural gas with lower cost and higher efficiency
- **Electricians** least familiar with electrification.



Results – Perceptions of Electric Equipment

Primary **benefits** of heat pumps:

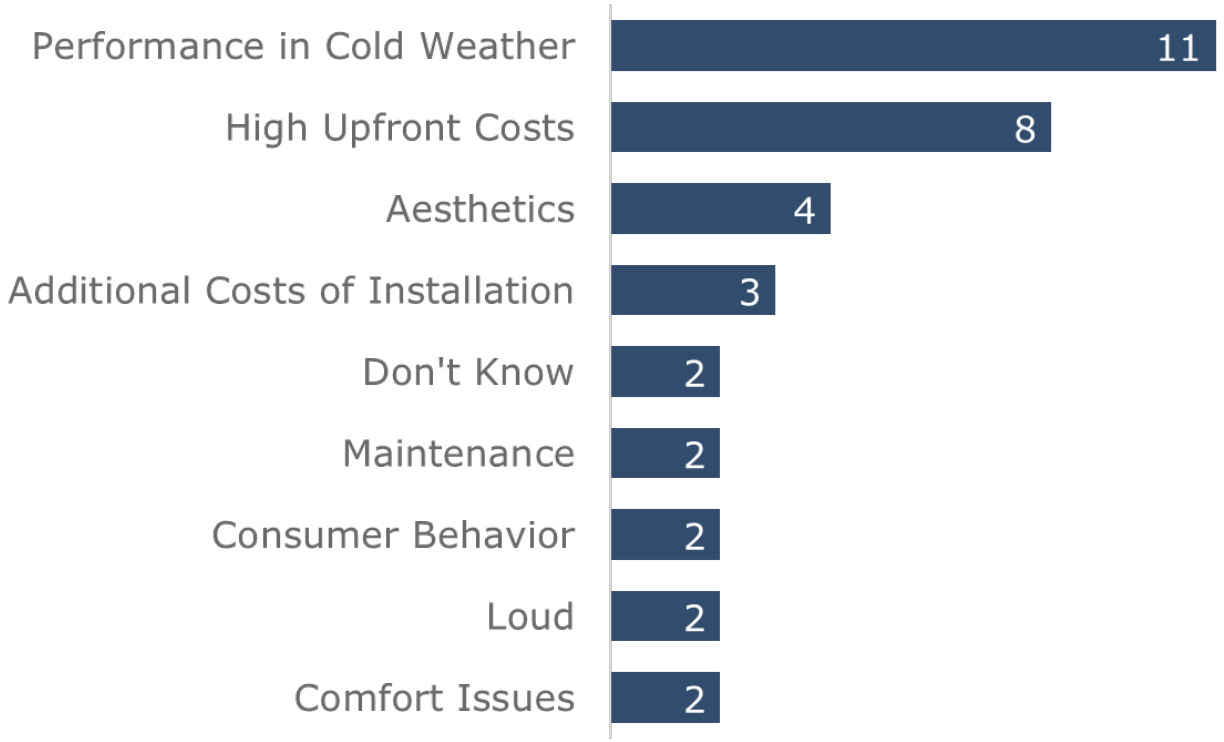
- Lower carbon footprint
- Energy efficiency



Results – Perceptions of Electric Equipment

Primary **drawbacks** of heat pumps:

- Performance concerns in cold weather
- High upfront costs



Results – Perceptions of Electric Equipment

CONCERNS ABOUT HEAT PUMP PERFORMANCE

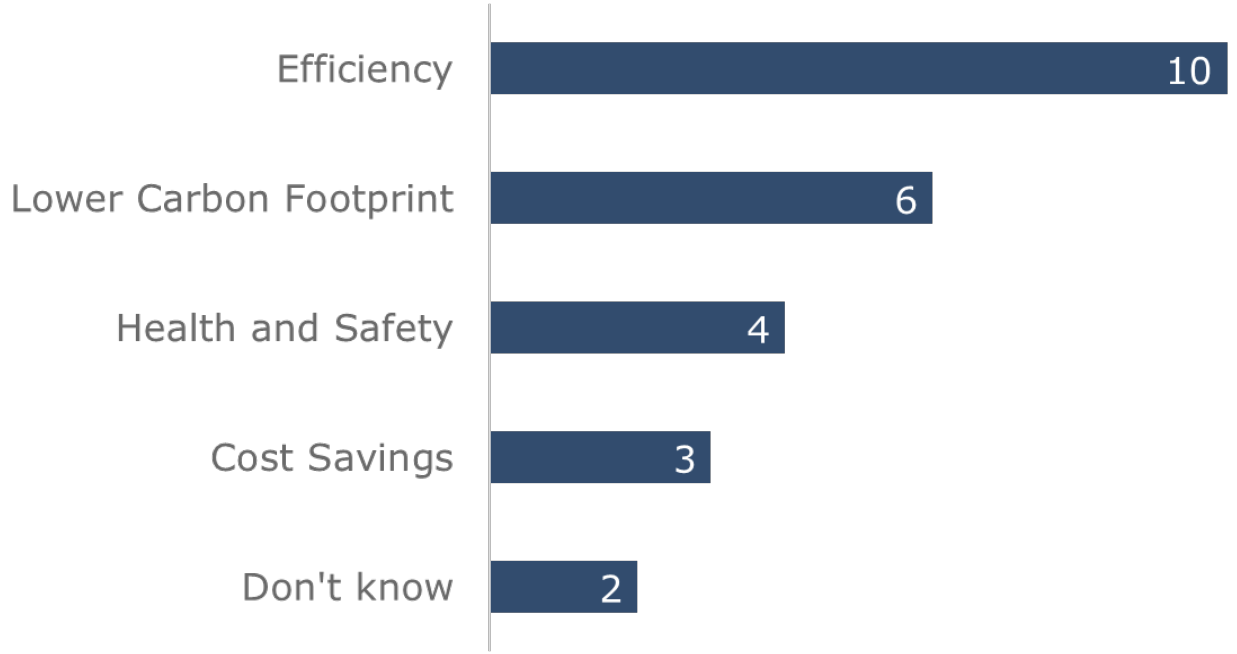
> *In our area, it would just be the fact that **the colder it gets outside, the worse [heat pumps] work** and that's when you need it most.*

- HVAC CONTRACTOR

Results – Perceptions of Electric Equipment

Primary **benefits** of heat pump water heaters:

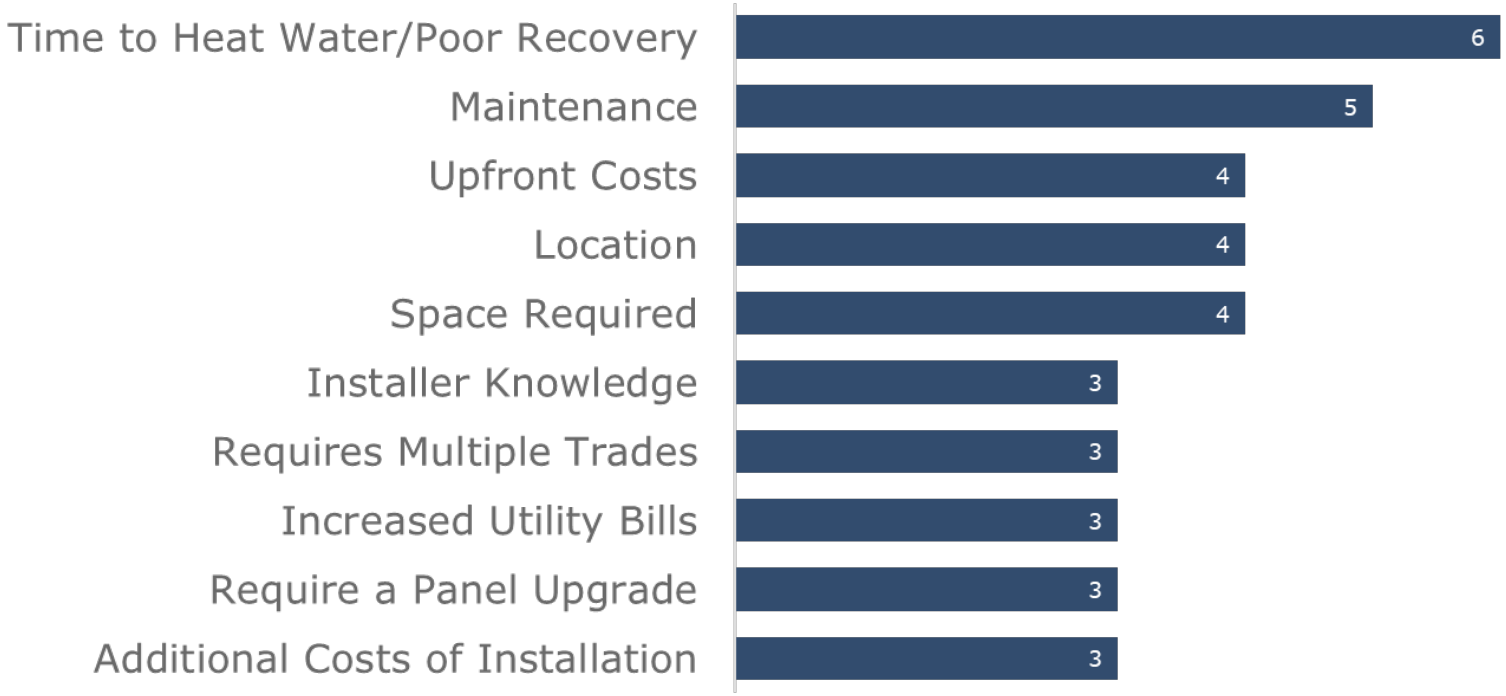
- Energy efficiency
- Lower carbon footprint



Results – Perceptions of Electric Equipment

Primary **drawbacks** of heat pump water heaters:

- Time required to heat water
- Maintenance needs



Results – Perceptions of Electric Equipment

LACK OF INSTALLER MOTIVATION

> *So why would [a plumber] want to learn something like [installation of heat pump water heaters] when he can **put in his normal water heater he's always put in, and get several done in a day** if he wanted to?*

- PLUMBER

Results – Receptiveness to Electrification Policies

Financing for Low-income & Disadvantaged Communities

64%

felt that financing ***would be useful*** in engaging low-income communities.

- Three said they would be useful if they were associated with low- or no-interest loans.
- Three of these respondents said providing incentives would be better than financing.

36%

did ***not*** feel financing would be useful in driving uptake for low-income communities.

- Four of these felt that low-income end users did not need to take on additional loans.
- Two respondents also mentioned that utility bill costs would also need to be reduced along with their upfront costs.

Results – Receptiveness to Electrification Policies

California's Carbon Reduction Goals

- Eleven respondents **(29%) not familiar** with California's carbon reduction goals
- Interest in trainings
  - Most respondents **(89%)** felt **training** on California's **decarbonization strategy would be useful.**
  - Training needs to be **convenient** and **make business sense.**

NEED FOR TRAINING

> *Until people are educated, they're going to **keep doing what they've always done**.*
>
> - PLUMBER

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Results – Receptiveness to Electrification Policies

California's Carbon Reduction Goals

Training type preferred:


In-person (50%)


Webinars (50%)

IN-PERSON TRAINING BENEFITS

> *I'd rather sit down in a classroom and have an instructor spelling it out. When it's done in that way, you have an opportunity not only to* ***learn from*** *the instructor, but* ***other people around you*** *that might already be involved in it that have ideas.*

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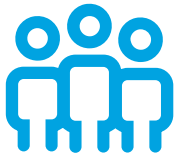
Study Limitations



Small sample size limits generalizability of findings.

- The research team targeted contractors throughout the state to gather a variety of perspectives across geographical regions.

Sample sources were generally limited to contact lists provided by Coalition members.

- This likely skewed results toward greater awareness of electrification and more positive views toward electrification and HP technologies.

While these limitations warrant interpreting results with caution, the findings are in line with other recent studies (see Appendix).

Recommendations

1. Support **rebates and incentives** for fuel switching and for upgrading to efficient electric equipment.

2. Promote **manufacturer training** to installers regarding proper installation and maintenance techniques.

3. Provide **education** to installers regarding how electrification and carbon reduction goals impact their business.

Recommendations, cont.

4. Educate **end-users** on the benefits of electrification and efficient electric technologies.

5. Provide **marketing** and **training materials** for sales staff and installers.

6. Provide low-interest or no-interest **financing options** to engage low-income end-users.

What Has Happened Since 2019?

- Utilities have **implemented many of the recommendations** suggested by this research.
- Many states allow **incentives for fuel switching** (including California)
- Sept 2021 – CPUC set **energy savings goals** that account for **fuel substitution**.
- Heat pump **technology continues to improve**.
- 2022 – **Inflation Reduction Act**

Thank You

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Interested in this topic?

Check out the
Sustainable Action Matters
Podcast

https://energytrainers.net/podcast

"All We All on Board for Electrification?" – two-part series

APPENDIX

Methodology Detail

- 45-minute interviews completed Oct – Dec 2019; $75 incentive
- Sample sources:
  - Tri-County REN
  - BayREN HomePlus Contractor List
  - Association for Energy Affordability
  - A handful of contacts from individual Coalition members
  - HVAC contacts from SCE programs
  - CSLB list – plumbers
  - Trade organizations/unions
  - Email blasts to members from SMACNA, Efficiency First

Examples of Utility Efforts to Support Customer & Contractor Education

SCE Heat Pump Water Heater (HPWH) Demand Response Lab

- Demonstrates energy consumption of HPWH technologies
- https://www.sce.com/business/energy-education-centers/energy-education-center-irwindale

PG&E Energy Education Classes

- Live webinars and on-demand training
- Overview of heat pumps and heat pump water heaters, energy cost estimations for heat pump water heater retrofits, and case studies for residential electrification
- https://pge.docebosaas.com/learn

Additional Studies with Similar Results

- Minnesota Commerce Department Energy Resources & CADMUS. 2021. *Understanding the Market Barriers and Opportunities for Cold Climate Air Source Heat Pumps in Minnesota Residential Households*. https://mn.gov/commerce_-stat/pdfs/20210316_card_cadmus_market_barrier_slide_deck.pdf

- Opinion Dynamics. 2022. *California Heat Pump Residential Market Characterization and Baseline Study*. https://pda.energydataweb.com/api/view/2625/OD-CPUC-Heat-Pump-Market-Study-Report_Final.pdf

- Van Clock, J., B. Tholl, L. Silver, and J. Fuller. 2022. *"Turning the wrenches of beneficial electrification: Understanding HVAC contractor decision-making." Proceedings of the 2022 Summer Study on Energy Efficiency in Buildings.* Pacific Grove, CA., August, 2022.

- Whitsett, D. 2019. "Customer barriers to residential building electrification as a means to reduce greenhouse gas emissions." *Proceedings of the 2019 Behavior, Energy, and Climate Change Conference.* Sacramento, CA, November, 2019. https://beccconference.org/wp-content/uploads/2019/11/whitsett_presentation.pdf