QUICK START GRANT **FINAL REPORT**

# Bridging the Gap to Heat Pump Adoption: Water Heater Loaner Program

## Barnett Plumbing & Water Heaters

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TECH CLEAN CALIFORNIA

# Executive Summary

Approximately 90 percent of water heater replacements performed by Barnett Plumbing are emergency replacements. The urgency to restore hot water to a home prioritizes expediency above all, often resulting in little opportunity to switch from gas to a heat pump water heater. Installing a heat pump water heater in a way that does not inconvenience customers is essential to capturing fuel-switching opportunities and moving California towards its carbon-neutral goals.

In 2022, Barnett Plumbing developed a heat pump water heater loaner program in which customers with a failed gas water heater were offered a no-cost, temporary gas water heater installation. This Quick Start Grant project provided same-day hot water restoration and created sufficient time to complete necessary electrical upgrades for the heat pump water heater installation. Once the heat pump water heater was installed, the gas equipment was removed, leaving the home with an efficient all-electric source of hot water.

Through the heat pump water heater loaner project, Barnett Plumbing increased the rate of customer conversion from gas water heaters to heat pump water heaters from less than one percent to 17.1 percent, installing 149 heat pump water heaters during the program period, including 127 gas loaners. In addition, Barnett developed an effective targeted marketing campaign and technician training program to support the project's success. Barnett reported extremely high customer satisfaction with the program, with customers stating that the technician service was "fast and professional."

The Quick Start Grant funds provided a supplemental contractor payment of approximately $975 to cover the added cost of the installation of the loaner gas water heater. Still, as the loaners were repurposed for multiple installations, no additional equipment costs were provided by the program. TECH Clean California is planning to use temporary replacement gas water heaters to serve low-to-moderate income customers.

Following the end of this project, Barnett Plumbing has continued to provide customers with loaners to bridge the gap in TECH Clean California funding for residential heat pump water heater incentives. In addition, Barnett has added new 120-volt (120V) plug-in heat pump water heaters as an alternative to the loaner option for customers in their service area. During the post-program period, Barnett reported an increased conversion rate of 52 percent with these combined strategies.

The loaner water heater approach eliminated the barrier of customers needing to be without hot water. At the same time, the retrofit work is completed allowing a heat pump water heater to be installed. The increased customer conversion achieved through the program confirmed that this barrier is significant and can be overcome by contractors, given the right structure and funding opportunities. Scaling this concept depends on building upon the pillars of cost, convenience, and trust—the facilitators of customer conversion.

# Project Description

## Project Team

Since 2005, Barnett Plumbing has provided residents in the Tri-Valley area with expert plumbing and water heating services. Working closely with more than 25,000 homeowners in a relatively small geographic area has allowed them to gain insights and develop processes that result in quick and effective emergency hot water system replacements.

## Market Barrier

Customers often cannot wait for the retrofit requirements that allow them to convert from a gas water heater to a heat pump water heater. The retrofit work typically requires an electrical contractor's supplemental permit and services to make the necessary upgrades and other alterations. This delay can take one to two weeks, a significant barrier when customers need their water heater back in service.

## Proposed Solution

To account for the immediate need to replace the hot water system, Barnett Plumbing offered customers the option to install a gas water heater on loan, at no cost, while the retrofit work took place. Providing the free loaner equipment allowed the time to pull necessary permits and complete any electrical upgrades needed without the customer going without hot water. The project also explored the role of a new 120V heat pump water heater as the product emerged on the market. The type of equipment installed depended on the household configuration, water consumption, and ease of replacement, justifying the loaner model system operating alongside emerging technologies. New and existing customers could participate in the program in Alameda, Contra Costa, Santa Clara, and San Mateo counties.

## Theory of Change and Scalability

Approximately 90 percent of hot water systems installed by Barnett Plumbing are emergency replacements. The need for quick restoration of hot water leaves little room for homeowners to consider the opportunity to fuel-switch. This project tested if offering a loaner system would increase customer conversion rates to efficient

**TIMELINE:**
January – December 2022

**HOUSING TYPE:**
Single Family

**EQUITY SEGMENT:**
N/A

**TECHNOLOGY:**
Heat Pump Water Heaters

**LOCATION:**
Alameda, Contra Costa, San Mateo and Santa Clara County, CA

heat pump water heaters in emergency replacement scenarios. Additionally, the project explored the impact of incentive availability and long-term cost savings between system types on conversion rates. Building the capacity of contractors to provide loaner systems and sell the benefits of heat pump water heaters is a crucial pathway in transforming the market.

### Program Changes and Evolution

This program continuously evolved alongside the funding landscape for single family residential heat pump water heaters in California. TECH Clean California incentives for heat pump water heaters were not consistently available throughout the project's term, so the offering was occasionally paused while TECH implementers searched for substitute funds. Despite a distinct loss of momentum due to the inconsistency of funding, the project's goals were achieved.

## Project Goals and Achievements

**Summary of Project Goals and Achievements**

| Goal | Metric | Data Source | Project Results |
|---|---|---|---|
| **Install 144 heat pump water heaters** | Number of heat pump water heater installations | Customer relationship manager software | 149 |
| **Increase gas boiler to heat pump water heater conversion rate to 18%** | Percentage of customers converting from gas systems | Historic sales and project installation data | 17.1% |
| **Educate customers on heat pump water heater benefits, programs, and incentives** | Percentage of customers receiving information | Customer relationship manager software | 95% |

### Installation Goal

The project exceeded its goal of installing 144 heat pump water heaters by installing 149. Success in large part can be attributed to the ability to avoid disrupting a customer's hot water supply during the installation. This goal was achieved despite the temporary disruption to incentives, showcasing the popularity of the loaner program.

### Heat Pump Water Heater Conversion Rate

Prior to the loaner water heater program, Barnett Plumbing's historical heat pump water heater conversion rate was below one percent. The provision of a loaner gas water heater increased the heat pump water heater conversion rate to 17.1 percent. With reliable incentive funding allowing Barnett to offer full heat pump water heater incentives throughout the project term, they believe the project would have far exceeded the conversion rate goal of 18 percent. The high conversion rate was due to the cumulative effect of several factors:

convenience through no loss of hot water, quick response time, and providing customer-centric solutions. Significantly subsidized installation costs from available incentives also played an important role.

### Customer Education

The target of educating 95 percent of customers on heat pump water heaters was achieved during the project through a multichannel approach that was layered into all customer interactions. Heat pump water heaters were presented to customers as an option that can save money and energy, while also reducing carbon emissions. During customer consultations, water heater specialists would discuss these benefits of fuel-switching along with a free onsite estimate from a technician. The technician would walk a customer through recommendations in a side-by-side comparison between a gas water heater and the benefits of switching fuels to a heat pump water heater. After installation, Barnett Plumbing would provide additional education on best practices for heat pump water heater operation.

## Customers' and Partners' Experiences

Customers were impressed by the information provided, the rapid response time, and the flexibility to have hot water while the new system was installed. A selection of reviews from heat pump water heater customers are included below:

> *"Wanted to replace our gas water heater with a new heat pump water heater. They provided all the information I needed to make an informed decision, and they were the lowest price and took care of all the rebates. Within a few days, they had scheduled a technician (Alex C.) to come over for the installation. It was estimated to be a two-day job, but Alex worked late to get it done in one day!"*
>
> **Mike B.**, Yelp

> *"Our water heater broke, and we contacted Barnett (Sunday evening). They were out the next day to replace it. As it turns out, we were perfect candidates for the new hybrid water heater, and with the huge rebate, it was the same cost as installing a replacement water heater (75 gallons). A temporary (gas water heater) was installed on Monday. They coordinated an electrician to come out to run the electrical and then install the new hybrid water heater. It was a big job but seamless to us. We were informed and communicated with every step of the way. We were impressed with everyone we dealt with (office staff and the guys who came out). We are lucky we chose them and will be our go-to plumber. We highly recommend them."*
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> **Sue T.**, Yelp

> *"Excellent service and friendly, professional techs. Our water heater died and needed to be replaced. We had a heat pump model installed, and Barnett installed a loaner unit at no cost while we waited for the electrician to make the necessary updates. They're great! We'll definitely work with them again when we need to."*
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> **Michael M.**, Yelp

> *I'm not sure if they are the cheapest, but I called, and they were out within an hour. They offered options and problem solved in order to save me money and aggravation. Offered a loaner gas water heater for free. Seamless and easy transaction. Could not be happier. My only plumber going forward."*
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> **Rudy G.**, Yelp

> *From my perspective, Barnett did a seamless and carefree installation of a new hybrid (heat-pump/electric) water heater for me today. They were very professional, and both the estimator and installer were willing and able to answer my questions and both quite friendly. I also especially like the fact that they are going to handle all the paperwork for the extensive rebates that my system qualifies for right now."*
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> **Doug M.**, Yelp

> *Thank you for the new pump heat water heater. Great service. Really appreciated the prompt communication and understanding of my situation. Jordan was great and fast to schedule the inspection and the job (one week turnaround). Rob was very friendly, knowledgeable, and experienced. He took the time to explain every little detail to me about the new water heater and how to care for it. Thank you, Barnett Plumbing."*
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> **Nader A.**, Yelp

> *What a great experience! Rob installed a heat pump for us on one day's notice when our gas water heater failed. This company was amazing, handling the rebates for the installation, signing all paperwork via Docusign, and completing the job professionally and on budget! Highly recommend!"*
>
> **Greg G.**, Yelp

## Key Publications

- BayREN. (2023, March 28). How Do You Heat Your Water? It May be Time for a Change! https://www.bayren.org/news/water-heating.
- Barnett Plumbing, BayREN & VEIC. (2023, April 14). Installing Heat Pump Water Heaters in Emergency Replacement Situations [Webinar]. https://www.youtube.com/watch?v=Su6c8cDNHyQ&ab_channel=BayAreaRegionalEnergyNetwork.

## Key Learnings

**Cost, convenience, and trust are three main pillars of creating an effective value proposition for fuel-switching.** While utility bill savings and available tax credits add to the benefits of a heat pump water heater, they carry little weight in customer decision-making relative to upfront installation costs. The heightened emotional context of emergency replacements further causes customers to be sensitive to costs. Customers chose to participate in the loaner model only if they did not have to pay more than gas equipment at the time of installation. Convenience, through immediate hot water restoration, streamlined incentive paperwork, and instant upfront rebates, was also crucial in swaying customers to fuel-switch. Having proficient heat pump water heater technicians instilling confidence in

customers that the right solution is being offered to them was essential to building trust. The complexity and variability of available incentives, however, impacted the ability of technicians to instill this confidence in customers.

**Reliable and stable funding to reduce costs of heat pump water heaters is crucial for installations to scale.** The disruption to incentive offerings from TECH Clean California caused a loss of momentum for the loaner program's marketing efforts, required alterations to the sales process, and made capacity planning unpredictable. Future programs must strategically assess how funding can be allocated for longer periods of time and sustained for the entire duration of the program. Future loaner programs should reserve incentive funds sufficient to meet installation goals.

**Currently, the application of the loaner model for natural market adoption is limited.** Many partners must be engaged in order for the loaner model to scale. First, achieving cost parity between gas and heat pump water heating systems is crucial for fuel-switching. There is potential for TECH Clean California to work directly with manufacturers to offer products to contractors at preferred prices for participating in the program. While this aligns with a natural market approach, it is less clear how structuring a program this way may evolve. Scaling the program must be done in a way that does not disrupt existing relationships contractors have with distributors and manufacturers.

Recycling existing gas water heaters as loaners may seem like another reasonable approach, however, leveraging systems with an appreciable remaining useful life has limited applications. Though this method would provide contractors with loaners at no cost, few homeowners proactively replace their systems. Those interested in decreasing waste or electrifying may be a demographic worth targeting if this approach were to be pursued. An early replacement incentive, such as supplying a loaner initiative with no- and low-cost equipment, may increase interest and participation in such a program. This type of program offering has not yet been tested, however, and more exploration would be necessary.

In either case, incentives must be offered to reduce the higher up-front costs of heat pump water heater systems relative to gas water heaters. Participation in the loaner program dropped dramatically when TECH Clean California incentives were no longer available. Partners supporting a loaner model must organize the existing patchwork of available funding to offset these costs so that they may be readily accessible to consumers.

Finally, scaling the loaner model would require additional logistics and coordination. A broader program would involve a significant amount of gas loaner equipment to be stored, beyond the space that contractors typically have available. In this sense, another partner would need to be brought in to host the loaner equipment that can be accessed or requested by multiple contractors. In addition, contractor adoption hinges on more technicians and installers available to perform the replacements. Barnett Plumbing found success in moving away from generalized technicians and toward training employees as skill-specific technicians that can sell, install, and service heat pump water heaters. Importantly, these training courses were

offered in-house as part of employee onboarding and did not take away from technician revenue generation.

**The effectiveness of the loaner program hinges on the ability to address common retrofit barriers.** Electrical panel capacity, space requirements, ventilation, and hot water capacity were often challenges to overcome for fuel-switching. The loaner program extends the timeframe to address these issues but does not eliminate them. A loaner program is one part of a broader set of tools to improve heat pump water heater adoption. It is important when bringing the loaner program to scale that it be executed in conjunction with an integrated solution that accounts for other barriers.

**The loaner model and emerging 120V heat pump water heater options are complementary solutions.** During the project, a 120V shared circuit heat pump water heater model came to market. The system's lower voltage overcomes the need for significant electrical infrastructure upgrades in most scenarios. This new heat pump water heater technology has shown great promise in national field validation efforts conducted by the New Buildings Institute and lab testing completed by Larson Energy Research. Barnett Plumbing began testing the application of this unit and how it might reduce the need for loaner gas water heaters. It was discovered that the loaner model and deployment of 120V units are each supportive strategies to address barriers of heat pump water heater adoption in specific customer segments. Households with limited available ampacity in the electrical panel may be good candidates for a 120V unit as an emergency replacement. However, if water usage is high, a plug-in system is not a viable option; gas loaners are supportive of these households that require the larger capacity 240V heat pump water heater systems. While the 120V heat pump water heater does not eliminate the need for a loaner water heater program, it should be considered when designing a loaner program.

## Recommended Next Steps

The loaner program dramatically increased previous conversion rates from gas water heating to a heat pump water heater, demonstrating that a loaner program is a successful way to increase heat pump water heater adoption in emergency replacement scenarios. Given the prevalence of emergency replacements for water heater systems, this model can be a useful tool for market transformation. Opportunities to scale this approach should be explored.

**Technician training focused specifically on heat pump water heater service and installations, offered in-house by contractors, can support the development of skilled technicians from all backgrounds.** External heat pump water heater trainings are often sparsely attended because contractors prioritize having technicians available for service calls and installations, the main source of revenue generation for contractors. Sending technicians for training takes away from the business's bottom line. Barnett Plumbing's approach is hiring unskilled workers and providing specialized training in-house. Further, Barnett Plumbing hones their technicians' specific skills, such as heat pump water heater service and installations, to effectively explain heat pump water heaters to customers and drive sales.

**Community Choice Aggregators (CCAs), regional energy networks, and municipal utilities are important partners in exploring how the loaner model may fit with their portfolio of decarbonization strategies.** Scaling the loaner model will require coordination between multiple market factors. The loaner equipment must be stored, the cost of installing the loaner equipment must be covered, and incentives must be offered to create cost parity between a heat pump water heater and the gas alternative. In the near term, this may require a patchwork of funding before a statewide program can cover pre-installation costs.

The loaner program itself could be modeled in one of two ways:

1. Offer a program where an incentive is available to all participating contractors when a loaner is installed prior to a heat pump water heater installation.
2. Specific contractors operate as the loaner providers that support other contractors performing the heat pump water heater installations.

Both approaches have many nuances that would need to be refined through local and regional programs before scaling to a statewide level.

Barnett Plumbing has had exploratory conversations and hosted two webinars on the loaner water heater program's usefulness, impact, and implementation experience.

**Incentives and funding opportunities must be streamlined.** Understanding how the program's layer by geographic region presents a barrier to contractor adoption. Contractors prioritize efficiently completing work; navigating complex funding structures will be met with resistance. Simplifying the process or guiding contractors through what funds they can access is an opportunity for improvement. Establishing a dedicated funding source for a loaner program may prove to be more effective than looking to contractors to follow the model independently. There is an opportunity to explore how funds from the Self-Generation Incentive Program (SGIP) may be utilized to support this streamlining effort. TECH Clean California will continue to research, explore, and collaborate with relevant stakeholders, such as CCAs, to ensure incentives are layered in a meaningful and understandable way.

**The gas loaner model could be incorporated into existing low-income appliance replacement programs offered by utilities.** For example, utility low-income appliance replacement programs and the Energy Saving Assistance (ESA) program may be ideal places to implement this concept for emergency and proactive retrofits. TECH Clean California and CalNEXT could be vital resources to see a loaner program evolve into the next iteration that is available to a larger population of contractors. Gathering more data at the regional level is crucial to statewide scalability. This may inform successful funding models and a better understanding of conversion drivers. Additionally, TECH Clean California and CalNEXT are well-positioned to coordinate with other programs to integrate the gas loaner model into existing efforts.

# Appendix: Customer Education Materials

Below is a sampling of the customer education collateral that was created over the course of the program. These were used in a combination of communication channels from direct mailers to emails and blog posts to sell sheets that were used in-person.



This program is part of the TECH Quick Start Grants (QSG) program, designed to fund targeted, innovative projects that test approaches to overcoming market barriers to heat pump space and water heating adoption.

If you have questions about this report's findings or seek additional support assessing lessons learned for scaling project concepts, please contact the TECH Clean California Team at tech.info@energy-solution.com.