

Addressing Non-Standard Fuel Switching Through Heat Pump Incentives in Rural, Northern California

Redwood Coast Energy Authority

Quick Start Grant Final Report

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REDWOOD COAST
EnergyAuthority



Executive Summary

In rural Humboldt County, many residents still need to heat their homes with non-regulated fuels, such as propane or wood. These fuels are inefficient, with high-carbon emissions creating poor indoor air quality, as well as sustaining subpar economic conditions for many residents.

To address this barrier, Redwood Coast Energy Authority (RCEA) partnered with TECH Clean California to provide rebates for twenty projects to convert space heating and water heating systems that use non-regulated fuels to electric heat pump technology. These customers also layered incentives with RCEA's locally funded heat pump rebate program, increasing access for households by lowering upfront costs.

Not only are some Humboldt County residents hesitant to fully electrify their utilities, but more rural residents also face the barrier of high upfront costs for heat pumps and water heating. However, these rural, isolated residents tend to have a lower range of income while also being subject to higher fuel costs, adverse health impacts from poor air quality, and greater difficulty in acquiring and maintaining an adequate supply of fuel. Many of these customers have lost trust in utilities and/or have never connected to the system, making them ineligible to receive incentives funded by utility ratepayers.

Together, RCEA and TECH Clean California addressed a gap in rebate accessibility for efficient heat pump equipment by targeting customers within the investor-owned utility (IOU) service area, who are not connected to the gas grid. By installing heat pump technologies, the pilot aims to reduce heating costs for households living with limited financial resources, as well as avoid future service line extensions.

In addition, RCEA will layer rebates to reduce upfront costs for customers and provide a dedicated new community outreach staff, connecting customers and contractors while building trust with the program. Furthermore, this effort will improve indoor as well as outdoor air quality by reducing the use of carbon emissions from propane, kerosene, fuel oil, and wood.

RCEA discovered that the limited availability of rebates prevented some customers from moving forward, while others saw it as a motivator to act immediately. Due to a lack of trust in public provided utilities, some customers were hesitant to electrify. Past experiences with prolonged or frequent power outages were a catalyst in this distrust leaving residents unable to heat their home. However, local contractors proved to be significant drivers of adoption as RCEA navigated how to engage and support the community's needs and win back their trust.

Moving forward, an expanded, more consistent stream of incentive funding for heat pumps is necessary to support customers with non-regulated fuel in small, rural communities. Furthermore, by allocating a percentage of funding for programs in rural communities, local, part-time administrative staff can utilize these funds for resource support, and engagement to actively promote the program at public events to educate the community on clean heating and HVAC options.

Project Team

RCEA is a Joint Powers Agency of Humboldt County jurisdictions, established in 2003 to provide energy efficiency services to its member agencies and community. Being part of the rural community provides RCEA with a unique perspective on their needs and how to communicate the values of fuel substitution and energy efficiency in terms meaningful to a hard-to-reach customer base. RCEA has established mutually beneficial partnerships with the local contractors who were instrumental in achieving success and providing lessons learned from this project.

Market Barrier

A major market barrier is the high upfront cost for heat pump space and water heating projects, particularly in more rural parts of Humboldt County where homeowners rely on propane, cordwood, and other non-IOU regulated fuels. These customers, who tend to be more rural, isolated, and lower than average income, are subject to higher fuel costs, adverse health impacts from poorer indoor air quality, and greater difficulty in acquiring and maintaining an adequate supply of fuel. While these households are within the gas service territory, they have never been connected to the gas system and are thus ineligible to receive incentives funded by and only available to utility ratepayers.

Proposed Solution

The project addresses a gap in accessing rebates for efficient heat pump equipment by targeting customers within the IOU gas service territory who are not connected to the natural gas grid and use heating fuels such as propane, kerosene, fuel oil, and cordwood for appliance replacement. From a participant's perspective, this project aimed to reduce heating costs for households living with limited financial resources. Furthermore, by switching to electric heat pump systems, the utility avoids future gas service line extensions. RCEA will layer rebates to reduce upfront costs and dedicate new community outreach staff to connect customers and contractors within the program.

Theory of Change and Scalability

RCEA tested the effectiveness and accessibility of a rebate program that combines midstream contractor rebates with downstream customer rebates to lower the upfront costs of heat pump projects. This program will provide lessons learned for other utilities offering electrification programs to rural customers who are not on utility natural gas. The customer downstream rebate program has already been scaled up beyond the scope of this grant through RCEA's existing programs. The pathway to scale a midstream rebate program could potentially follow the same steps.

Program Changes and Evolution

Initially, RCEA planned to conduct heat pump installations for space air conditioning. The scope of the pilot was expanded to include heat pump water heaters after customers and contractors expressed interest and need for both systems. In addition, a greater emphasis was placed on contractor outreach and engagement as it became apparent that this pathway was more effective to secure projects than direct customer outreach.

Project Goals and Achievements

Summary of Project Goals and Achievements

KPI/Goal	Metric	Data Source	Project Total
Customer identification through data search of eligible low income, non-standard heating fuel customers	Number of Customers	Spreadsheet of potential customers and contact information	>500
Project completion of heat pump installations	Number of Total Installed Heat Pumps	Projects submitted through the TECH Clean California incentive portal	19

Customer and Contractor Outreach

In the initial two months of the project, RCEA compiled a list of over 1,500 California Alternate Rates for Energy (CARE) and Family Electric Rate Assistance Program (FERA) customers deemed most likely to use propane or wood as fuel. Their locations were compared from their geographic location, relative to known natural gas infrastructure locations. A public-facing flyer was distributed by mail and public facing events were held at the local builder's exchange. By having a series of in-person meetings, RCEA coordinated with contractors to help align their outreach and messaging to their customers with RCEA rebate program requirements. This helped establish partnerships and good communication, which led to a steady project pipeline.

Heat Pump Installations

Midway through the project, contractor partners had eight projects identified and underway. RCEA supported these efforts by engaging directly with two local, TECH Clean California-certified contractors. As a designated applicant, RCEA was able to assist several other contractors by submitting project details and claims on their behalf to the online application portal for rebate approval. This reduced the administrative burden for small contractors that do not have the staff resources available to participate. However, the delay between project submission and incentive remittance placed a significant financial burden on contractors that have small quantities of installations overall. RCEA found this to be a barrier for some contractors' ongoing participation in TECH Clean California.

By the end of the grant period, RCEA had successfully completed 19 heat pump installations with the final 20th project scheduled soon after. Qualitatively, communication with contractors indicated that this is a substantial increase in heat pump installations for non-natural gas users prior to the project, and RCEA collected data to support this claim.



TIMELINE:

February 2022 -
March 2023



HOUSING TYPE:

Residential
Single Family



EQUITY SEGMENT:

Hard-to-Reach
Communities



TECHNOLOGY:

Heat Pump
Water Heater
Heat Pump HVAC



LOCATION:

Humboldt Co.,
California

Key publications

Figure 1 below show the Heat Pump Rebate Postcard that was sent to over 500 customers and was distributed at several of RCEA's community events.



Figure 1: RCEA Outreach Postcard Front & Back

Key events

RCEA presented at public events and featured TECH Clean California on PowerPoint slides to promote the program. Here is a list of these events and their dates:

- Fortuna Sunrise Rotary on March 16, 2023
- Mad River Rotary on March 17, 2023
- Area 1 Agency on Aging on April 12, 2023
- Rotary Club Old Town Eureka on August 9, 2023
- McKinleyville Senior Center on August 17, 2023
- Rotary Club Arcata Sunrise on August 19, 2023
- Humboldt Senior Resource Center on August 29, 2023
- Rotary Club Southwest Eureka on October 10, 2023

RCEA also hosted a contractor workshop in 2022 to review TECH Clean California and RCEA programs with local contractors. The goal of this workshop was to maintain lines of communication with contractors, answer questions related to RCEA's Quick Start Grant, and offer general support to maintain an incoming project pipeline. Following the workshop, additional contractors signed up to participate in TECH Clean California.

Customers and partners experience

Customer Feedback:

Below are excerpts of customer feedback on the program. Customers generally indicated that the rebates were a deciding factor to move forward with their projects:

- “The \$3,100 was instrumental in us installing the heat pump. We would not have done it (probably) without the rebate.”
- “Receiving updates on the status of our application and timely email/phone responses to our questions was super helpful.”
- Regarding heat pump rebate and tax credit information: “Centralizing this information and continually updating it on a single Internet site would be really useful.”
- “We would have gotten the heat pump even without the rebate, because we’re really trying to do our part to help with the climate crisis, but the rebate just makes the transition that much more attractive, and with the tough economy we’re currently in, some enticement helps a lot!”
- “The rebate was a huge factor in our decision to finally install a heat pump 40 years after building our house. As retirees we are careful with large expenditures but feel like this was a wise decision for us and for the environment.”

Contractor Feedback:

Below are quotes from participating contractors. Small companies experienced difficulties with the system, but appreciated RCEA’s assistance and one commented that things improved by the end:

- “My customer was the one who told me about the program and the generous rebate available if she were to eliminate the propane service to her home. The [TECH Clean California] rebate made the project possible.”
- “As a sole proprietor without a lot of computer skills, I found [TECH Clean California’s] online presence to be huge and hard to navigate.... Without RCEA helping me to file my claim, my efforts to do the same would have taken a lot of time.”
- “Because I’m a small company, the delay in receiving the rebate was a bit of a squeeze.”
- “The final stretch was better than the initial stretch due to the TECH Grant having email difficulties on their end and basically losing track of me for a few months.”

Key Learnings

Overall, the program has been a success! Upon the completion of the final report in 2023 and the completion of the final heat pump project, the program will have supported the conversion of eight wood fired stoves, two propane water heaters, and ten propane furnaces to heat pump technology. RCEA found that the limited availability of rebates prevented some customers from moving forward, while others saw it as an opportunity to act immediately. Other customers were hesitant to electrify due to past experiences with prolonged or frequent power outages that would take away their ability to heat their home. Local contractors proved to be significant drivers of adoption as RCEA navigated ways to engage and support their participation needs.

Upfront costs of heat pumps restrict low-income households from electrifying. One of the most important takeaways is the lack of low-income CARE/FERA customer participation. Only one out of 19 of the projects completed were with customers that are actively enrolled in CARE. While it may be the case that some of the other customers are eligible but not actively enrolled in CARE or FERA, the lack of traction RCEA found from identified low-income customers indicates that any upfront costs, regardless of deep discounts and long-term savings, prove to be an insurmountable financial barrier. This is especially true for homes that require additional electrical infrastructure or remediation work prior to heat pump installation.

Successful customer outreach is conducted through multiple channels. RCEA initially scoped out nearly 1,500 customers that met the non-regulated fuel and low-income criteria. However, the project team quickly determined that blanket customer outreach alone is not necessarily the most effective path for engaging with rural, hard-to-reach customers. The team found great success in working directly with contractors to support their outreach efforts and helping their customers understand how to best leverage available incentives. Scaling beyond the 20 installations of the pilot, both (blanket and one-on-one) approaches must operate in tandem. Continually educating the community about ongoing programs and targeting specific customers through direct contractor engagement were effective joint methods to drive interest in heat pumps. Though many rural contractors are small in size, they exist by functioning as a trusted community resource. As such, they can play a pivotal role in supporting rural electrification efforts.

A program liaison for contractors drives participation in rural areas. Streamlining enrollment for TECH Clean California and other incentive programs must be prioritized for rural contractor participation, which can be facilitated by organizations such as RCEA. Throughout the project, contractor engagement posed a challenge. The multitude of community events and training hosted by RCEA would generate interest in the program that would ultimately falter during the enrollment process. Uncertainty regarding the longevity of funding availability and reimbursement schedules proved to be a setback for participation from contractors who were unable to invest time into what may be a brief engagement.

Working with contractors to lower project costs on the front end can help, but rebate programs must be reliable and easy for contractors to navigate to make it worth the extra time and effort. This is especially true for rural contractors that may have a lower profit margin and a limited, dispersed customer base. The project team found small contractors became highly engaged when RCEA provided the flexibility and support of navigating the rebate process.

In addition to streamlining access, rural areas need to be provided with technical assistance on demand. A central resource to assist with accessing multiple program offers is crucial for both contractor and customer participation. This type of technical assistance is often seen in federal incentive programs. RCEA routinely works with their customers to show what incentives can be layered through their role as energy advisors. The quick start grant expanded this benefit directly to contractors, providing the flexibility and support needed to significantly boost participation. Moving forward, establishing communication channels to expedite responses to program-specific questions would be an improvement. The RCEA team's experience highlights the critical importance of planning and effective communication for ramping up a large-scale incentive program and for layering incentive programs to minimize costs to customers.

Rural, hard-to-reach communities inherently require more effortful engagement. Rural communities experience many barriers to electrification and adopting cleaner technology that require more time, resources, and training than other parts of the state. This realization shifts the focus of outreach from generating awareness to developing a programmatic understanding of holistic needs of an area to reduce barriers. This is particularly true for non-regulated fuel users. Rebates and incentives can help, but this project demonstrated that up-front costs, reliability, and copays can make it difficult to increase participation among the lower income or disadvantaged customers. Many rural areas are in need of infrastructure improvements to increase reliability and capacity to support electrification measures. Further work is required to ensure that rural, disadvantaged customers are able to participate in California's electrification efforts as RCEA continues to be committed to finding innovative solutions to this challenge.

Recommended Next Steps

Provide an expanded and thus more consistent stream of incentive funding for heat pumps that support the non-regulated fuel customer's transition in small, rural communities. Customers in these areas generally tend to have a slower uptake of new programs, technology, and overall interact with programs less frequently. To accommodate, funding should be projected to last at least two years for heat pump water heater and HVAC heat pump installation projects.

A percentage of funding for programs in rural communities should be used for local, part-time administrative staff, resource support, and engagement needs to actively promote the program with presentations at public events. This type of local support is needed because many local contractors are one-person-shop type of businesses and do not have the time or familiarity to work through online incentive claim processing systems. Funds could be directed to local utility jurisdictions and trusted community partners like Redwood Coast Energy Authority for both administrative support needs and engagement, as well as local contractor incentive claim support.



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-solutions.com.