TECH Clean California Public Reporting

Overview of available resources and upcoming additions

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TECH CLEAN CALIFORNIA

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Executive Summary

Publishing data is a lynchpin of the TECH Clean California market transformation vision because of its power to help stakeholders understand the California heat pump market and enable fuller predictions of heat pump installation outcomes. The TECH public reporting website at www.TECHCleanCA.com hosts a variety of data, including detailed individual project data for TECH-funded heat pump installations, TECH participating contractor project counts, and market baseline data gathered by Opinion Dynamics.

This document summarizes available data sources today and also lists the TECH Clean California implementation team's ("TECH team") planned enhancements to existing data sources as well as several new data types that will be added to the public reporting website starting in Q4 2022 and continuing through 2025. Currently, the TECH team is working to expand the TECH Working Data Set to include additional project types like low-income direct install projects and multifamily retrofit projects supported by TECH incentive funds. In Q4 2022, visitors to the public reporting website can also expect to see information about customer satisfaction and market baseline made available by Opinion Dynamics. In the next year, the TECH team will also be using the CalTRACK method to measure realized bill and energy savings for every home with a TECH-funded heat pump installation. These results will be published on the public reporting website by Q3 2023.

A variety of non-data elements, including helpful resources, events hosted by the TECH team, and information about quick start recipients and pilots were published on new webpages added to the public reporting website in October 2022. The Quick Start Grant page features a profile on every grant recipients from the 2021 cycle, and information on the 2022 recipients will be added later in Q4 2022.

The TECH team is currently migrating relevant information from the "TECH landing page" (www.energy-solution.com/tech/) to the TECH public reporting website. The TECH landing page will be retired and its link will be set to reroute to the public reporting website in Q4 2022.

What is the TECH Public Reporting Website?

The TECH public reporting website is an online space available for anyone to visit and learn from the findings of the TECH Clean California implementation team (the "TECH team"). It is hosted at the URL www.TECHCleanCA.com. It was launched in July 2022 and will continue to be updated with new data and information throughout the TECH implementation period (through June 2025), and potentially even longer.

The cornerstone of the TECH Clean California market transformation vision is to gather and publish data and key findings on the heat pump water heating ("HPWH") and heat pump heating, ventilation, and air-conditioning ("HP HVAC") markets in California, as well as the experience of people who install heat pumps and have heat pumps installed in their homes. As such, sharing data is a core purpose of the TECH public reporting website. All data available to be shared can be found at the URL www.TECHCleanCA.com/public-data/. Available data as of September 2022 is described below under Current Public Data Resources.

Public data sharing is part of the TECH Clean California implementation plan because of its power to catalyze a self-sustaining market. By making data on the costs and impacts of thousands of heat pump installations available, the TECH team intends to make outcomes of installing a heat pump more predictable. More predictable outcomes will generate more forecastable value streams, spurring more investment and competition and ultimately leading to more installations, from which the TECH team intends to capture even more data. An example of the success of public data sharing is the California Solar Initiative and its public data website, www.CaliforniaDGStats.ca.gov, which played a significant role in the maturation of the rooftop solar market in California in the 2000's and 2010's.
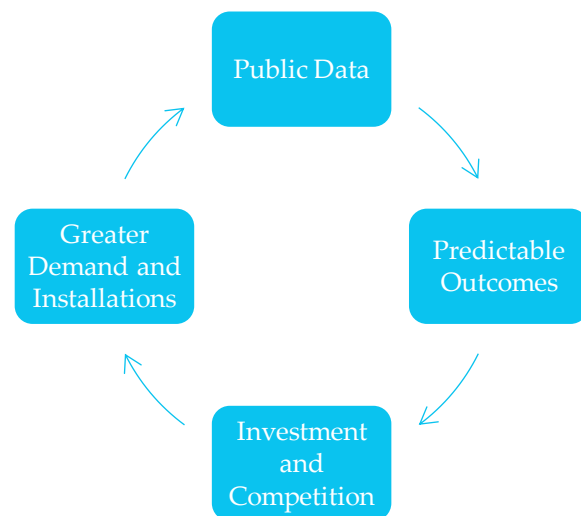
Figure 1: TECH public data virtuous cycle model

Current Public Data Resources

Data available on the public reporting website as of October 2022 falls into three categories:

1. Incentive application data
2. Contractor project count data
3. Preliminary evaluation and market baseline data

Table 1: Public TECH Data Resources as of October 2022

Data type	Details	Location on Website	Timeline for Enhancements
Per-project incentive application data	1. Project location labels (Gas IOU territory, CA Climate Zone, Disadvantaged Community, etc.) 2. Equipment type, efficiency rating, and capacity 3. Project cost 4. Total incentive received	1. Download Data webpage 2. Maps and Graphs webpage	Data available now for ~ 10,000 homes that participated in the TECH market-rate single-family incentive program. Data from low-income single-family direct install projects (in partnership with ESA) to be added starting Q4 2022. Data from multifamily building retrofit projects to be added starting Q1 2023.
Contractor project count data	1. Name of each participating contractor company and ZIP code of business address 2. Number of TECH-incented HPWH and HP HVAC installs performed by each contractor	Contractor Data webpage	Additional information on contractor service territory (beyond ZIP code of business address) will be added in 2023.
Evaluation data	1. Market baseline studies 2. TECH initiative evaluation reports	Evaluation Studies webpage	Findings from customer and contractor surveys will be made available as public reports when published by Opinion Dynamics.

Project-level Incentive Application Data

Project-level incentive application data is summarized in the TECH Working Data Set. This data set provides anonymous data gathered from TECH incentive applications and qualified product lists. This data is provided on a per-installation basis, so each row in this dataset represents a unique installation of either a HPWH or a HP HVAC system. Data fields provided for each installation include: gas investor-owned utility ("IOU") service territory, California Climate Zone, disadvantaged community ("DAC") status of the installation site, capacity and efficiency information for the installed and replaced equipment, total project cost, total incentive received, and quality installation measures performed by the installer.

The TECH Working Data Set can be found on the Download Data webpage. Interactive maps and graphs created using data from the TECH Working Data Set can be found on the Maps and Graphs webpage.

Contractor Project Count Data

The Contractor Data webpage features an interactive tool through which users can find TECH participating contractors who have performed installations near them. Using this interactive tool, users can search for contractors who performed HPWH or HP HVAC installations near any California ZIP code, such as that of the user's home address. The source data used to create the tool is also accessible as a downloadable data set on this webpage.

Evaluation Studies

The Evaluation Studies webpage presents data and information made available by Opinion Dynamics, the TECH Clean California initiative evaluator. As of October 2022, these materials include the Residential Building Decarbonization Technology Brief, the California Heat Pump Market Characterization Baseline Study, the TECH Evaluation Plan, and the TECH Baseline Market Assessment.

More Information

Additional detail on the current data contents of the public reporting website is given in a video recording of a walkthrough of the website given on August 11, 2022. That video can be accessed at this URL: https://player.vimeo.com/video/738793483.

Upcoming New Data Resources

Overview

While the TECH public reporting website already hosts a variety of data, existing data types available on the website will be enhanced and several additional data types will be added over the course of the TECH implementation period in order to construct a fuller picture of the California heat pump market and enable fuller predictions of heat pump installation outcomes. Currently, the TECH team is working to expand the TECH Working Data Set to include greater detail about geographic location and specific project type associated with each TECH installation. In the next quarter, viewers can also expect to see information about contractor and customer satisfaction with TECH based on surveys conducted in 2022 added to the site. In the next year, the TECH team will also be using the CalTRACK method to share realized bill and energy savings to the site.

A variety of non-data resources, including events hosted by the TECH team, helpful resources, and information about quick start recipients and TECH regional were published on the website in October 2022. The Quick Start Grant page features the grant recipients for 2021, with the 2022 recipients added later in Q4 of 2022.
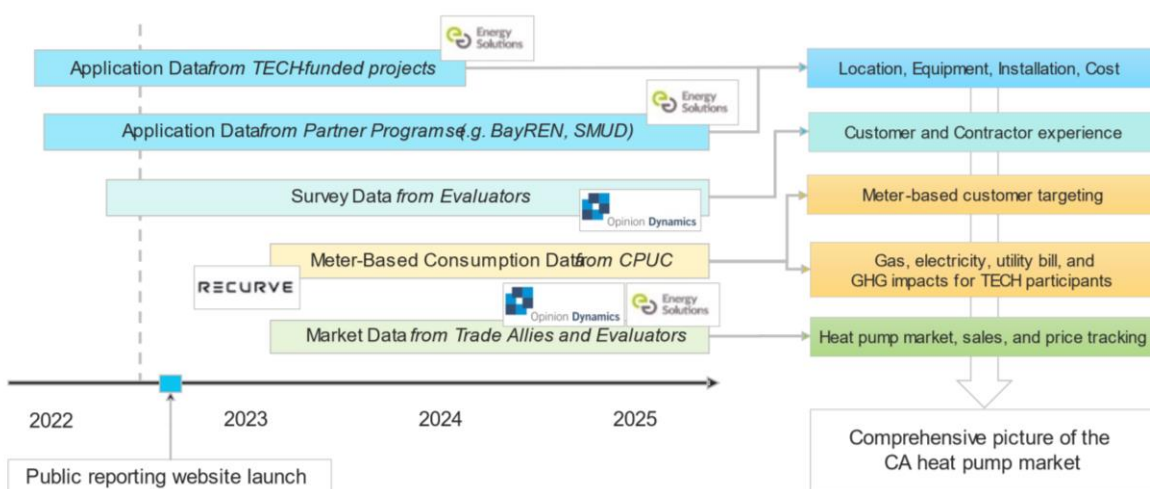

Figure 2: Availability Timeline and Major Use Cases for Core TECH Data Resources

Enhancements to Existing Data Resources

Project-level Incentive Application Data

The TECH team receives frequent requests for additions to the TECH Working Data Set and continues to explore the feasibility of adding these while maintaining strict anonymity of all people who install a TECH-incented heat pump. In addition to labeling each project with additional fields, another enhancement to project-level application data will come in the form of new project types added to the data set. These will include the addition of low-income single-family direct install projects (in partnership with the Energy Savings Assistance Program), which will be added starting Q4 2022. Additionally, data from multifamily building retrofit projects that received a TECH incentive to be added starting Q1 2023. The TECH team also intends to collaborate with the implementer of the Self Generation Incentive Program ("SGIP") HPWH incentive program in an effort to publish relevant data from the projects receiving the $80 million in HPWH incentives, in a manner as comparable to the data already on the TECH public reporting website as possible.

Finally, with $50 million in new funding allocated to TECH via Assembly Bill 179 and potential for up to $95 million more in future years, the project-level application data on the TECH public reporting website will continue to increase in scale as more incentives are paid.

Survey and Evaluation Data

As more data and information are shared with the TECH team by the TECH Evaluator, Opinion Dynamics, these will be added to the [Evaluation Studies webpage](#).

Two major data sources that Opinion Dynamics will share soon are the results of customer surveys and contractor surveys conducted in 2022. Customer surveys will include two groups: one group representing a sample of the general public, and one group who received a TECH-incented heat pump on a biweekly basis. The purpose of these surveys is to understand decision-making and gauge satisfaction among TECH customers with contractor and installation.

Another data source made available in 20222 is the TECH Baseline Market Assessment, in which Opinion Dynamics characterizes the residential retrofit, space- and water-heating market in California in 2021. They examine homeowner preferences and decision-making around equipment replacement, as well as their awareness of home upgrade financing and heat pump rebates. They also investigate the availability of a qualified workforce to sell and install heat pumps, including their experience and confidence with heat pumps, and their promotion of heat pump rebates and financing. Finally, they assess the size of the heat pump market in California, looking into shipments and sales.

Meter-Based Results

Using data made available by the California Public Utilities Commission ("CPUC"), the TECH team will measure pre- and post-installation electricity and gas use for each home in which a TECH-incented HPWH and/or HP HVAC system was installed. The TECH team will use the [CalTRACK methods](#) to disaggregate baseload, discretionary load, and temperature-driven in each residence and

measure how these change as a result of a heat pump installation. From these, the TECH team will calculate the resultant impacts on electricity use, gas use, greenhouse gas production, and customer utility bills resulting from each heat pump installation. Collectively, these are referred to herein as meter-based results.

Meter-based results will be published in multiple formats on the public reporting website. All data published on the website will anonymized and aggregated per the California Public Utility Commission (CPUC) guidelines in Decision 11-07-056 and Decision 14-05-016 – therefore, meter-based results will be aggregated into groups of no fewer than 15 customers. Meter-based results will be available in a downloadable format via the Greenhouse Gas Impacts Data Set, similar to the TECH Working Data Set but aggregated to groups of 15 customers. Additionally, meter-based impacts will be displayed via interactive dashboards akin to those on the Maps and Graphs webpage. Finally, the TECH team will publish in-depth analysis reports featuring meter-based impacts: the Electrification Value Stream Analysis, which focuses on value streams created by heat pumps from the perspective of a utility, and the Bill Impacts Analysis, which focuses on the financial implications of installing a heat pump from the customer perspective.

Deriving meter-based impact assessments requires at least a year of meter data both prior to and following the installation of a heat pump. The majority of the initial tranche of TECH-funded installations occurred in Q1 and Q2 2022, and thus meter-based results will be available no sooner than 12 months after these installations occurred. Preliminary meter-based results for HPWH installations will be published starting in Q2 2023, followed by meter-based results for HP HVAC installations in Q3 2023.

Pilots and Quick Start Grants

In addition to the statewide incentive programs through which the TECH team collects project-level incentive application data, there are also six regional pilot projects and many quick-start-grant recipient projects that can contribute valuable information to the TECH public reporting website. Pilot descriptions, progress reports, and case studies for each pilot will be published to a new section of the public reporting website starting October 2022. Separately, an overview of each year's quick start grant recipient will be hosted on the website. See https://techcleanca.com/pilots/ and https://techcleanca.com/quick-start-grants/.

Additional Website Updates

Events and Resources

While data is the cornerstone of the public reporting website, a variety of non-data resources, including upcoming and past events hosted by the TECH team, can offer great value to TECH's stakeholders. Starting in October 2022, the TECH team began posting Events and Resources to the public reporting website along with helpful links and recordings of virtual meetings. See https://techcleanca.com/events/ and https://techcleanca.com/resources/.

TECH Landing Page Migration

As of September 2022, a separate website called the "TECH landing page" is still in use by the TECH Clean California team at www.energy-solution.com/tech/. This website was developed in Q3 2021 in order to publish information necessary to participate in key TECH programs offering incentives. The contents of that website are in the process of being migrated to the TECH public reporting website, and in Q4 2022 the URL www.energy-solution.com/tech/ will be set to redirect to www.TECHCleanCA.com.