Technology and Equipment for Clean Heating (TECH)

Multifamily Stakeholder Meeting January 26, 2022





Introductions

Energy Solutions

TECH Clean California Initiative Prime Contractor

• Peter Florin, Project Manager

Association for Energy Affordability

TECH Multifamily Lead- Incentives, pilots, and training

- Amy Dryden, Pilot and training lead
- Nick Dirr, Incentive lead
- Heather Rosa, Program management

VEIC

TECH Pilots Manager

• Becky Schaaf, Lead





Agenda

- 1 TECH Overview
- 2 Multifamily Incentives
- 3 Multifamily Pilot Strategies
- 4 Training
- 5 Resources and Next Steps

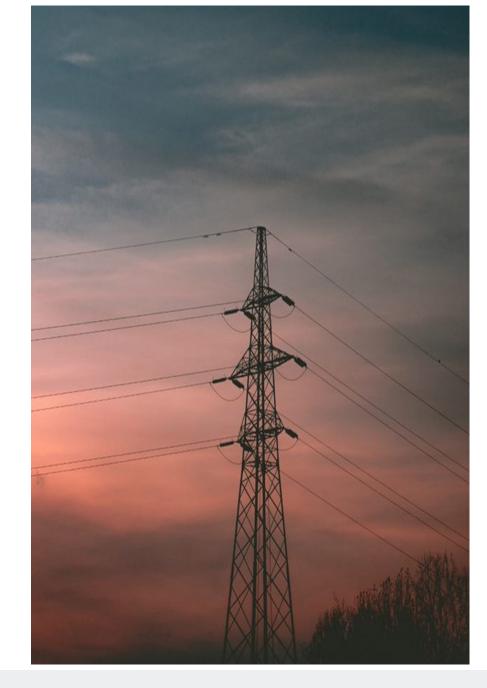


Questions

• Ask questions throughout by using raise hand function to ask a question verbally

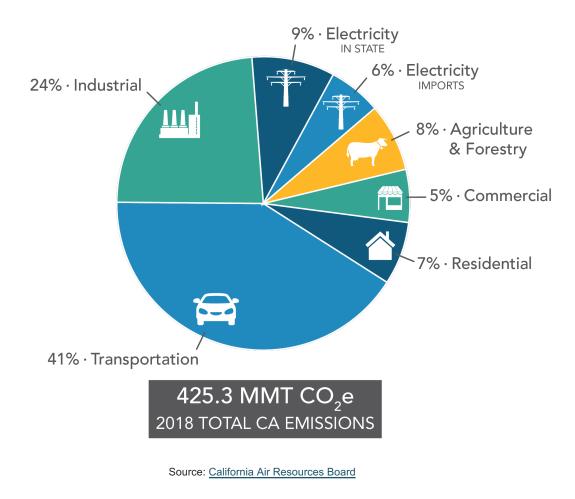
OR

• Type your question into the Q&A



TECH Overview

State of the California Heat Pump Market



Buildings account for 12% of California's GHG¹ emissions

- 85% of building emissions come from space and water heating²
- Heat pumps are critical to decarbonize residential space and water heating, but have <5% market share in California³

¹ GHG = greenhouse gas

² "Building Decarbonization and the CPUC," California Public Utilities Commission, May 2021

³ "The Building Electrification Technology Roadmap," New Buildings Institute, Jan 2021

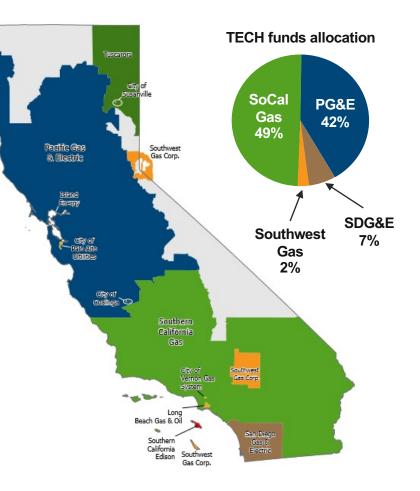
TECH Program Overview

What is TECH?

- CA's flagship heat pump market transformation program, designed to integrate and complement other existing offerings
- Our mission is to help put CA on a path to carbon-free homes by 2045 while striving for scale, equity, regulatory simplicity, and market transformation

Program Details

- 4-year midstream market transformation program, ~\$116M budget (\$72m in incentives)
- Eligible customers: SF and MF residences in gas IOU territory
- Funding allocated proportional to gas-IOU share of Cap-and-Trade allowances
- GHG and market transformation goals
- Existing buildings retrofits



Map source: https://cecgis-caenergy.opendata.arcgis.com/pages/pdf-maps

TECH Goals



Make installing heat pumps profitable and easy for contractors by streamlining incentive applications and expanding access to trainings



Demonstrate scalable solutions to key market barriers via regional pilot projects



Inform CA's decarbonization decision-making and magnify program impacts by leveraging sales and meter data from TECH installations

TECH Activities



Spur the clean heating market through statewide strategies

Motivate the supply chain

- Contractor incentives that make heat pumps profitable
- Incentive clearinghouse for contractors to make participation simple and straightforward
- Technical and sales training to help incorporate heat pumps into business model

Drive consumer demand

- Statewide marketing campaign to increase consumer awareness and proactive replacement
- Consumer-facing website with contractor and incentive lookups
- Statewide low-interest financing offering leveraging REEL¹
 - ¹ REEL = Residential Energy Efficiency Loan Program

Create scalable models through regional pilots

Improve targeting and project finance

- Improve targeting and encourage 3rd party business models
- Tariffed-on bill pilot with partner utility

Expand benefits to HTR customers

- Support low-income programs
- Multi-family pilots targeting property owners

Streamline installation

- Streamline permitting and installation costs
- Enable load-shifting

Encourage deployment innovation through quick start grants



Inform long-term building decarbonization framework

Develop public reporting site

- Graphics depicting price trends, deployment progress, meter-based impacts
- Downloadable, anonymized program datasets to support public research

Quantify decarbonization benefits

- Analysis of meter-based impacts to quantify:
 - Avoided costs (GHGs, NOx, loadshifting, etc.)
 - \circ Impacts of increased electrical load
 - \circ Customer bill impacts

Empower data-driven decisions

 Inform policy/rate proceedings (EE, IEPR, IRP, C&S, low-income, etc.)

Multifamily Incentives

Incentive Eligibility

- **Customer eligibility:** Customer is in **gas IOU territory** (PG&E, SoCalGas, SDG&E, Southwest Gas). Does not need to be served by gas utility.
- **Midstream incentives** primarily for contractors and requires enrollment (some incentives for distributors, may expand to retail)
- Integration: Matched incentives with existing programs to encourage continued investment
- Streamlined applications: Integrate application process for all major programs to simplify contractor experience (TECH, SGIP, BayREN, etc.)
- **Timeline**: Incentives available to contractor starting date sign participation agreement. Available December 2021- December 2024



Incentives: Single Family vs Multifamily

Customer Eligibility

- Single Family = properties with up to 4 dwelling units
- Multifamily = properties with 5 or more dwelling units on property
- HPWH/HP HVAC installed must be replacing an existing non-heat pump system

Measure Structure

- Single family and multifamily baseline incentives available throughout all Gas IOU territory
- Multifamily incentives tailored to layer on top of existing incentive programs
- For all, incentives are capped by the final measure cost

Multifamily Specifics

- Reservation form required to lock in incentive amount
- \$3 million incentive cap for an individual contractor or property owner
- Project must be completed with 12 months after reservation- possible to apply for extension
- December 31, 2023 deadline
- Provides general technical assistance (not onsite) and incentive submission support

Qualifying Equipment: Multifamily HPWH

Residential Tank and Split HPWH

- 240v Residential: NEEA Tier 3 and/or JA-13 Compliant
- 120v "Plug-In" Residential: all

Note: Thermostatic Mixing Valves are required on all HPWHs receiving multifamily incentives

Central HPWH Systems serving >1 dwelling

Meet standards listed for Residential Tank and Split OR

Meet the following requirements

- 100% electric, no energized fossil fuel auxiliary systems AND
- Be listed on NEEA v8 Advanced Water Heating Specification (only applies to reservation submissions after March 1, 2022)

Heat Pump Pool and Spa Heaters

100% electric systems, with COP >= 4.0 at 50F AT, 63% RH, and 80F WT (in accordance with AHRI Standard 1160)

Multifamily Incentives- HPWHs

System Type	Installation Scenario		Incentive for Individual Apartment Equipment (per Equipment)	Incentive for Equipment serving 2+ Apartments (per apartment served)
	Cac/Bronana to HBW/H	<55 gallons	\$1,400	n/a
Individual	Gas/Propane to HPWH	≥ 55 gallons	\$2,100	n/a
	Electric Resistance to HPWH	All	\$700	n/a
Control	All Non- Heat Pump	< 15 Gallons per Bedroom Served	n/a	\$1,200
Central	Systems	≥ 15 Gallons per Bedroom Served	n/a	\$1,800
Pool or Spa Heating	All Non- Heat Pump Systems	Commercial sized heat pump pool heating	n/a	\$2,500/equipment

Technology and Equipment for Clean Heating

Qualifying Equipment: Multifamily HP HVAC

Residential and Commercial HVAC serving multifamily dwelling units or common spaces

• Title 20 Code Minimum based on testing at relevant AHRI conditions

Multifamily Incentives- HVAC Serving Units

	T errol to see	Previous Space Heat	Systen	n Type	TECH Incentive (per
÷	Territory	y Source	Description	AHRI Test Standard	Equipment)
rtmen		Non-Heat Pump Systems	Split or Rooftop Heat Pump (ducted or ductless)	210/240	\$2,000
In-apa	All	All except PTHPs	PTHP, SPVHP, or unitary through the wall/ceiling Heat Pump	310/380, 390	\$500 (Single or Two Stage Compressor)\$1,000 (Variable Capacity/Inverter Driven)

itral	Territory	Previous Space Heat Source	System Type	TECH Incentive (per Apartment Served)
Cen	All	Non-Heat Pump Systems	HP HVAC equipment serving multiple apartments	\$1,000

Multifamily Incentives- HVAC Serving Common Areas

Territory	Previous Space Heat Source	System Type	TECH Incentive (per Equipment)
		Split or Rooftop Heat Pump (ducted or ductless)	\$1,800
All	Non-Heat Pump Systems	PTHP, SPVHP, or unitary through the wall/ceiling Heat	\$300 (Single or Two Stage Compressor)
		Pump	\$800 (Variable Capacity/Inverter Driven)

Multifamily Incentives- Electrical Upgrades

Territory	Previous Equipment	System Type	TECH Incentive (per Apartment Receiving Electrical Upgrade)
All	Undersized apartment electrical infrastructure that is upgraded as part of an apartment's HPWH or HP HVAC installation	Apartment Panel or Sub Panel Upgrades, Feeder Upgrades, or Service Disconnect Upgrades	\$1,400 Apartment unit must have received a TECH funded HP HVAC or HPWH and must be all- electric after the electrical upgrade

Process

Reserve

- Submit Reservation Form
- Signed by Owner AND Contractor
- Approved Form locks in funding
- Assistance from AEA where needed

Retrofit

- Complete measure installations
- Document scope
- Document meter info

Receive

- Contractor submits for incentive
- Contractor receives check from Energy Solutions

Reservation Form

- Total of 9 pages but only 4 pages to complete
- Includes T&Cs and equipment
 eligibility
- Information includes:
 - Property information
 - Leveraged Incentives
 - Equipment Selection
 - Pilot participation
 - Signature of Owner <u>AND</u> Contractor

https://energy-solution.com/wp-content/uploads/2021/12/TECH-Multifamily-Incentive-Reservation-Form-12-09-2021.pdf TECH CLEAN CALIFORNIA

Multifamily Incentive Reservation Form

Property Name	Property Address, City, Zip	Number of Dwelling Units
Property Owner Parent/Portfolio Con	npany	
Property Owner Primary Contact Name	Property Owner Primary Contact Email	Property Owner Primary Contact Phone
Section 2: Contractor Inform	ation (TECH Participating Trade Profes	
Section 2: Contractor Informe Contractor Company		sional) tate License Board (CSLB) Number
Contractor Company	Contractor S	ate License Board (CSLB) Number
Contractor Company	Contractor S Contractor Primary Contact Email	ate License Board (CSLB) Number
Contractor Company Contractor Primary Contact Name	Contractor S Contractor Primary Contact Email	ate License Board (CSLB) Number
Contractor Company Contractor Primary Contact Name Section 3: Property Meter Stru	Contractor S Contractor Primary Contact Email Contractor Primary Contact Email Lilities Paid By Tenant	ate License Board (CSLB) Number

Section 4: Anticipated Layered Incentive Programs

Proposed Domestic Hot Water Equipment Utilities Paid By Tena

List all additional incentives. Separate program names with commas

ECH MF Incentive Reservation Form v.2021.12.07

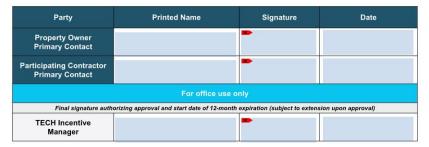
Reservation Form

	Section :	5: Reserved Qualifying Equ	ipment Scope of Work		
		5a. Heat Pump Water Hea	ater (HPWH)		
System Type	Previous Water	HPWH Tank Size	Incentive for Individual Apartment	Qty	Total Incentive
-,,	Heating Source		Per Equipment	,	
Individual	Gas/Propane to	< 55 Gallons	\$1,400		
HPWH	HPWH	≥ 55 Gallons	\$2,100		
(In-Apartment or Communal Spaces)	Electric Resistance to HPWH	All	\$700		
System Type	Previous Water Heating Source	HPWH Tank Size	Incentive for Equipment serving 2+ Apartments	Qty	Total Incentive
	_		Per Apartment Served		
	All Non-Heat	< 15 Gallons per Bedroom Served	\$1,200		
Central HPWH	Pump Systems	≥ 15 Gallons per Bedroom Served	\$1,800		
Pool or Spa Heating	All Non-Heat Pump Systems	Heat Pump Pool Heating	\$2,500 / equipment		
		5b. HVAC Heat Pu	mps		
System Type	Previous Space Heating Source	HVAC Type	Incentive for Individual Apartment	Qty	Total Incentive
	Non-Heat Pump Systems	Split or Rooftop Heat Pump (Ducted or Ductless)	Per Equipment \$2,000		
Individual Apartment HVAC	All except PTHPs	PTHP, SPVHP, or unitary	\$500 (Single or Two Stage Compressor)		
		through the wall/ceiling Heat Pump	\$1,000 (Variable Capacity/Inverter Driven)		
System Type	Previous Space Heating Source	HVAC Type	Incentive for Equipment serving 2+ Apartments	Qty	Total Incentive
			Per Apartment Served		
Central HVAC (2+ Apartments)	Non-Heat Pump Systems	HP HVAC equipment serving multiple apts	\$1,000		

Section 7: Miscellaneous Project Notes

Section 8: Signatures

By signing below, Property Owner and Contractor ("Reservation Parties") agree to use best efforts to implement each Qualifying Equipment listed in the Reserved Scope of Work above, and hereby agree to be bound by the TECH Standard Multifamily Incentive Reservation Terms and Conditions, attached and incorporated herein. Reservation Parties acknowledge that changes to the work scope may result in incentive changes or disqualification, and that measures must meet TECH Qualifying Equipment Requirements as outlined in Appendix A. Reservation Parties acknowledge and agree that TECH incentives will be paid to the TECH Participating Trade Professional ("Contractor") completing the TECH Incentive Application after the completion of Qualifying Equipment installation, in accordance with the TECH Trade Professional Participation Agreement executed by Contractor.



Next Steps

- 1. Coordinate with TECH Clean California representatives to complete reservation form, as needed
- Once completed and signed by Property Owner Primary Contact and Participating Contractor Primary Contact, submit completed reservation form to: TECH.incentives@energy-solution.com
- 3. TECH Incentive Manager will review the reservation form and either approve or respond to all parties with relevant comments needing to be addressed prior to approval
- 4. Once approved, the TECH Incentive Manager will send countersigned reservation form to all parties

Example Projects

Project A:

45-unit building

Existing: In-unit gas storage water heater and wall furnace Upgrade: 50 gallon (<55-gallon) HPWH and PTHP

Project A	
WH Incentive \$ /unit	\$1,400
Total WH Incentive \$	\$63,000
HVAC Incentive \$/unit	\$1,000
Total HVAC \$ Incentive	\$45,000
Electrical upgrade Incentive \$ /unit	\$1,400
Total Electrical upgrade Incentive \$	\$63,000
Total TECH Incentive \$	\$171,000
Leveraged Program \$	\$75,000
Total \$	\$246,000

Project B:

66-unit building

Existing: Central gas water heater and in -unit gas furnace Upgrade: Central heat pump water heater <15 gallons/bedroom and split heat pump

Project B	
WH Incentive \$/unit	\$1,800
Total WH Incentive \$	\$118,000
HVAC Incentive \$/unit	\$2,000
Total HVAC Incentive \$	\$132,000
Total TECH \$	\$250,800
Leveraged Program \$	\$125,000
Total \$	\$375,800

S Multifamily Pilot Strategies

Regional Pilots

- Two-year initiatives designed to address specific major adoption barriers and hard to reach segments of the market
- Results and best practices will inform future program development

Name	Goal
Tariffed On-bill	Demonstrate feasibility of tariffed on-bill structure to scale investments
Customer Targeting	Create scalable outreach strategies to drive demand for decarbonization among customers for which the value of clean heating is most compelling
Multifamily	Demonstrate value of electrification to MF property owners
Load Shifting	Identify best strategies to encourage customers to enroll in demand response programs upon installing heat pumps
Streamlining Permitting and Installation	Develop a single-day permit process for heat pump conversion projects and familiarize building department staff with key emerging technologies
Low Income	Make decarbonization measures standard practice in low-income programs
Quick-start Grants	Bolster high-leverage projects outside TECH scope (Recently approved grants include low- income and multifamily projects)

MF Pilots for Retrofits

WHAT

- Portfolio Level Electrification Roadmap
- Central Heat Pump Water Heater Technical Support
- Property Electrification Readiness Plan

HOW

- Submit an Interest Form
- Sign Pilot Participation Agreement (commitment of owner and staff, access to site and data, testimonials, case studies)
- Work with AEA to determine eligibility and fit
- Limited budget

WHEN

- Get engage now through June 2022
- Pilot completion December 2023

WHY

Test practices to inform program design strategies







Multifamily Interest Form

Interest Form

- Relatively high level and short
- Contact info
- Property/Portfolio info
- Interests and needs

https://energysolution.com/tech-multifamilyinterest-form/

Technology and Equipment for Clean Heating

First	Last	
Email *		
Phone Number *		
Primary Contact Type *		
Property Manager		~
How many properties are you cor	nsidering for participation? Enter information for	priority property. *
One property		~
Property Owner *		
Property Name*		
Project Full Address, City, State, a	and Zip Code *	

Definitions

As a market transformation program, targeting to support all markets.

Market Rate

• Unsubsidized and not serving a large share of low-income households.

Low-income property definition

 66% of units are equal to or less than 80% AMI OR within a disadvantaged community.

Naturally Occurring Low Income

 66% of the units meet either rent roll (30% of 80%AMI) OR qualify for CARE rate.



Portfolio Level Electrification Roadmap

INTENT:

Work with owners to develop Portfolio Level Electrification Roadmap to electrify existing building portfolio. Deep technical assistance on one project and extending to portfolio.

PARTICIPANT BENEFITS:

- Standard TECH Incentives
- Technical assistance to develop roadmap
- Deep technical assistance on one project

OUTCOME: Roadmap for property owner ESTIMATED PARTICIPATION: 10 Property Owners INCOME LEVEL: All income levels are eligible, with distribution across all income categories ELIGIBLE TECHNOLOGY: All TECH Clean California approved equipment. No additional equipment incentives included.

Central Heat Pump Water Heater Technical Support

INTENT:

Provide pre- and post-installation technical support and system monitoring to decrease some of the risk in converting to a central heat pump water heater.

PARTICIPANT BENEFITS:

- Standard TECH Incentives AND Enhanced incentives (up to \$3,000/unit capped at 90% of costs)
- Technical assistance for design, sizing, installation, and system commissioning
- Monitoring equipment and labor specified by AEA
- Electrical infrastructure support (up to \$40,000 capped at 90% of costs)

OUTCOME: Data to support CHPWH sizing and performance data. ESTIMATED PARTICIPATION: 5 properties (Targeting different configurations statewide) INCOME LEVEL: All income levels are eligible, with distribution across all income categories ELIGIBLE TECHNOLOGY: Existing central gas DHW or combined systems AGREEMENTS: Provide site for on-site field training

Property Electrification Readiness Plan

INTENT:

Adapt the upgrade-at-change-out approach typically used for refrigerators or other like for like appliances to address in-unit water heating and HVAC equipment

PARTICIPANT BENEFITS:

- Standard TECH Incentives AND Enhanced incentives (up to 10% of apartments receive additional \$500/apt)
- Deep technical assistance of electrical infrastructure and electrification upgrades to inform plan and incentives
- Electrical readiness infrastructure equipment and main service (up to \$25,000 capped at 90% of costs/property)

OUTCOME: Property-specific electrification readiness plan ESTIMATED PARTICIPATION: 8 properties (targeting different building types) INCOME LEVEL: All income levels are eligible, with distribution across all income categories ELIGIBLE TECHNOLOGY: Properties with in-unit gas water heating and HVAC AGREEMENTS: Provide site for on-site field training

How to Engage in Pilots?

• Submit an interest form

Multifamily Incentives



About Incentives v Quick Start Grants Permitting Pilot Tariffed On-Bill Pilot TECH Incentives Multifamily About the Utiliamily A

About Incentives - Quick Start Grants Permitting Pilot Tariffed On-Bill Pilot Sign Up for Updates

With 50% of Californians living in multifamily buildings, there is great opportunity to bring the benefits of healthier homes and clean energy to these residents. Yet, switching to heat pumps for space and water heating requires adopting new technologies, which may be unfamiliar to property owners, designers, or MEPS. Capital costs and electrical infrastructure needs can create additional challenges. TECH Clean California offers incentives, pilot activities, technical assistance, and training to address barriers associated with electrification and energy efficiency upgrades in multifamily properties. It aims to educate owners and design teams about electrification and reduce the risk to property owners who invest in new heat pump technologies.

Incentives

TECH Clean California multifamily incentives will be available to contractors installing heat pump HVAC systems and heat pump water heaters for qualifying customers throughout

Learn More

Want to learn more about the TECH Clean California incentives and pilot activities? Submit a **Multifamily Interest Form** (link coming soon) with basic information and electrification retrofit needs.

https://energy-solution.com/tech-incentives/multifamily/





Targeted Training & Business Model Support for MF & LI

Goals:

- Familiarize contractors and service staff with HVAC HP and HPWH technologies
- Equip contractors with knowledge, strategies, and resources to integrate electrification into their business model
- Additional support for contractors working on multi-family and low-income projects

TECH Solutions Team Partners:

- Association for Energy Affordability (AEA)
- The Ortiz Group

TECH Funded Offerings:

Trainings provided by industry-recognized trainers at no or low cost to participant

Targeted training, support, and resources for multifamily and low-income projects

Association for Energy Affordability: Multifamily

- Customized electrification trainings for multifamily retrofit industry stakeholders including such as, developers, mechanical, electrical, and plumbing contractors, architects, and general contractors serving multifamily
- Online reference library

The Ortiz Group: Low-Income

- Training recruitment efforts with CBOs and provide hands-on support to select ESA and HUBZone contractors to guide them through the licensing and training needed to install electrification measures
- Train the trainer model of training for contractors to have an inhouse, on demand "center of excellence" for the on boarding of new employees

Electrification Hub Training Platform

- Provide comprehensive trainings to transform market for electrification
- Package and customize trainings for different sectors to streamline participation
- Track completion
- Acknowledge accomplishments
- Leverage subject matter experts across all sectors and subjects
- Trainings: on –demand, live webinar, live classroom, live field



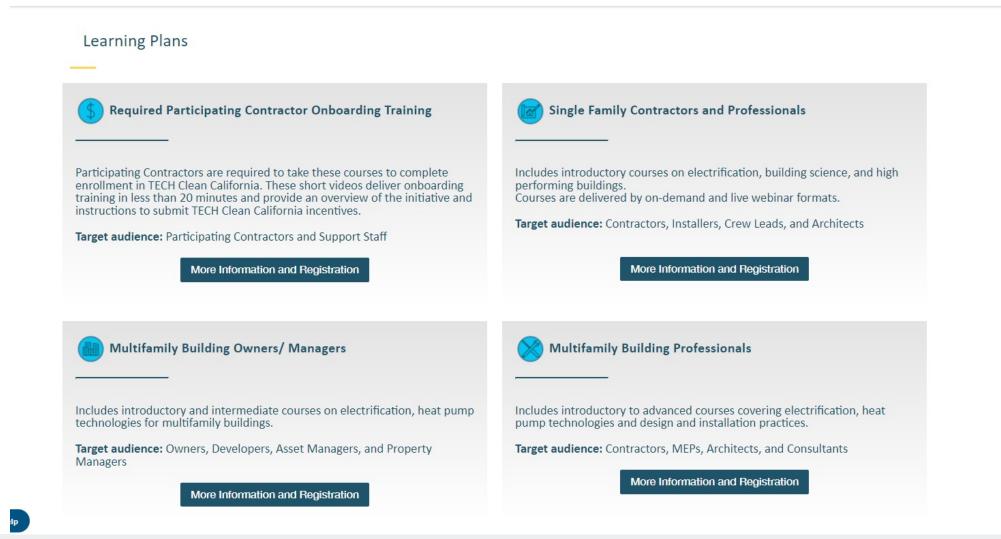
Targeted Sectors



Proprietary and confidential. Do not copy, distribute, or disclose.

Online Learning Management System

OUR WORK ABOUT US CONTACT US



Technology and Equipment for Clean Heating

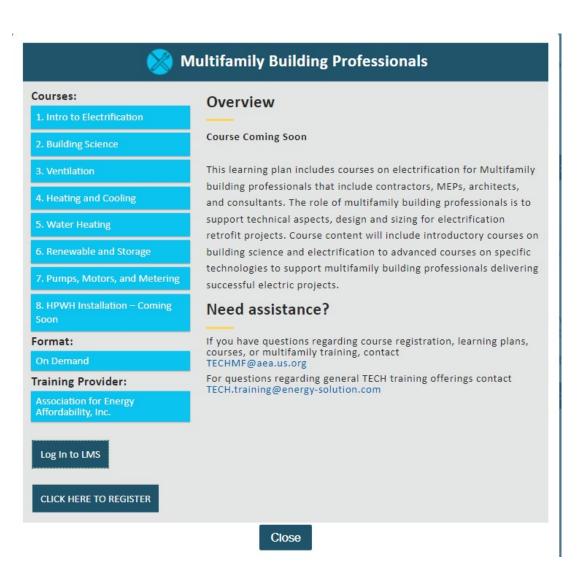
Examples of MF Courses

Introductory courses

- Whole Building Science (building science, ventilation, systems, etc)
- Multifamily Electrification 101

Intermediate

- MF retrofits
- Individual HPWHs and CPWHs
- Space Conditioning Design and Installation
 Advanced
- Field trainings



Upcoming Trainings

- Whole Building Science on demand
- Multifamily Electrification 101
 - February 10th 11:00am -12:30pm
 - June 9th 10:00am 11:30am
 - September 15th 10:am 11:30am

Registration Coming Soon...

- Individual HPWH Installation March
- MF Retrofits and Electrical Assessments- April
- MF Retrofits for Property Owners- May

Register here: https://aea.us.org/tech-electrification-knowledge-hub/

WELCOME TO THE ELECTRIFICATION KNOWLEDGE HUB! YOUR JOURNEY TO BUILD A SUSTAINABLE FUTURE BEGINS HERE

5 Resources and Next Steps

Want to Learn More?

Multifamily Incentives

About Incentives V Quick Start Grants Permitting Pilot Tariffed On-Bill Pilot Sign Up for Updates

With 50% of Californians living in multifamily buildings, there is great opportunity to bring the benefits of healthier homes and clean energy to these residents. Yet, switching to heat pumps for space and water heating requires adopting new technologies, which may be unfamiliar to property owners, designers, or MEPS. Capital costs and electrical infrastructure needs can create additional challenges. TECH Clean California offers incentives, pilot activities, technical assistance, and training to address barriers associated with electrification and energy efficiency upgrades in multifamily properties. It aims to educate owners and design teams about electrification and reduce the risk to property owners who invest in new heat pump technologies.

Incentives

TECH Clean California multifamily incentives will be available to contractors installing heat pump HVAC systems and heat pump water heaters for qualifying customers throughout California. Incentives are available for both in-unit and common area applications.

Pilot Activities

Learn More

Want to learn more about the TECH Clean California incentives and pilot activities? Submit a **Multifamily Interest Form** (link coming soon) with basic information and electrification retrofit needs.

Submit a Reservation Form

https://energy-solution.com/tech-incentives/multifamily/

How do Contractors Sign Up?

- Navigate to <u>www.energy-solution.com/tech-incentives</u>
- Download/sign the TECH Trade Professional Participation Agreement (TTPPA)
- Send agreement to <u>TECH.contractor@energy-solution.com</u> along with COIs as specified in TTPPA
- Once form is approved, watch onboarding videos totaling ~ 10 minutes

Resources

- TECH links
 - https://energy-solution.com/tech/
 - https://energy-solution.com/tech-incentives/multifamily/
- New Construction
 - BUILD
 - Low emissions new construction program
 - <u>https://www.energy.ca.gov/programs-and-topics/programs/building-initiative-low-emissions-development-program</u>
 - Technical Assistance Request through BUILD: https://www.tfaforms.com/4945354
 - Statewide IOU New Construction Programs
 - Low Rise MF: <u>caenergysmarthomes.com</u> (California Energy Smart Homes Program)
 - High Rise MF: <u>ceda.willdan.com</u> (California Energy Design Assistance Program)

Thank You

Association for Energy Affordability <u>TECHMF@aea.us.org</u>

Amy Dryden Heather Rosa Nick Dirr



