

A Toolbox for Transitioning to Zero-Pollution Equipment

Five strategies and thirty actions policymakers and advocates can take to affordably, equitably, and smoothly transition off gas heating in buildings

Summary

Gas-powered space and water heating in homes and businesses is a significant driver of unhealthy air quality in the Bay Area, responsible for more lung-damaging nitrogen oxide pollution than the region's passenger cars. This pollution disproportionately burdens communities of color and low-income communities.

To improve air quality, the Bay Area Air Quality Management District passed an air standard in 2023 that will ensure that only pollution-free HVACs and water heaters can be sold or installed in Bay Area homes and businesses, starting in 2027 for residential water heaters and 2029 for residential HVAC systems. Other jurisdictions throughout California and the country are now actively considering similar standards.

In the years before the standard goes into effect, local, regional, and state policymakers have a critical window of opportunity to develop implementation strategies that will ensure the transition to pollution-free heating equipment advances as smoothly and equitably as possible.

The Toolbox was created to enable policymakers and advocacy groups to identify action steps they can take to support the successful implementation of the Bay Area's nation-leading air quality standard. The toolbox is also available for other jurisdictions outside of the Bay Area considering similar zero-pollution heating equipment standards.

The Toolbox

This toolbox offers five Strategies and thirty Actions for moving the ball forward toward 100% zero-pollution appliances. The combinations of Strategies and Actions that are best applicable in each situation, or geography, may differ. Organizations and jurisdictions should consider picking and choosing "the right tools" from the box. We do not intend for this to be a checklist. It is, rather, a list of approaches to choose from.

CARB: California Air Resources Board
CEC: California Energy Commission
CPUC: California Public Utilities Commission

CCAs: Community Choice Aggregators
RENs: Regional Energy Networks

Strategy 1. Transform the Market

Bring down the costs of installing and operating heat pumps by making them the default choice for space and water heating.

- » **1.1: Adopt strong state standards to create demand for heat pumps.**

Potential implementers: California Air Resources Board, regional Air Quality Management Districts.

- » **1.2: Use incentives to spur the market development of heat pumps.**

Potential implementers: The Legislature and Governor, the CEC, CPUC, CCAs, utilities, RENs, local governments.

- » **1.3: Help building owners avoid unnecessary electrical panel and service upsizing by ensuring that building codes and enforcement mechanisms do not unnecessarily encourage panel upgrades.**

Potential implementers: California Building Standards Commission, local governments.

- » **1.4: Help building owners with electrification planning, incentives, and contracting through websites like Switch is On, and high-tech concierge “help” services.**

Potential implementers: The RENs, CCAs.

- » **1.5: Require air conditioning (AC) to heat pump conversions at time of AC unit replacements in the next update to California’s Title 24 building energy efficiency standards.**

Potential implementers: CEC.

- » **1.6: Encourage customers to switch to the electrification-friendly rate structures offered by PG&E and Community Choice Energy providers, which will lower bills for many customers when electrifying. Consider deeper reforms on rate structures to neutralize bill impacts of electrification universally.**

Potential implementers: CCAs, utilities.

- » **1.7: Ensure incentive programs are easy for multifamily property owners and landlords to participate in.**

Potential implementers: CEC, CCAs, utilities, program administrators like TECH, private companies with easy-to-use customer platforms.

- » **1.8: Shift some of the costs for electrical service upsizing that are currently being paid by individual customers looking to adopt electric decarbonization technologies to ratepayer funds.**

Potential implementers: CPUC, utilities, CCAs.

- » **1.9: Adopt measures to ensure competitive pricing, such as preferred vendor lists, bulk-buy programs, direct install programs (see strategy 2.3), and publication of rebate data.**

Potential implementers: The CCAs, RENs, local governments.

Some Definitions

Concierge Services: Some energy providers are developing advanced help desks where residents seeking to electrify can get help accessing incentives, finding contractors, and planning for home electrification (Tactic 1.4).

Watt Diet: Building owners and contractors should consider “Watt Diet” panel optimization strategies, including using power efficient equipment, improving home efficiency, using circuit controllers to throttle or switch off loads, and taking a strategic approach to National Energy Code calculations of panel capacity (Tactic 1.3, relevant across multiple strategies).

PG&E Electrification friendly rate structures: If you’ve begun to electrify your home with electric heat pump for water heating or climate control, EV chargers, or battery systems, you can qualify for the E-ELEC plan, and likely save significantly on your electric bill (Tactic 1.5).

Income-Graduated Fixed Charges (IGFC) are one policy option being considered by the CPUC to ensure low-income households do not see rate increases from switching from gas to electric.

Strategy 2. Ensure Equity

Make zero-pollution equipment affordable especially for low-income residents and those living in disadvantaged communities.

- » **2.1: Establish funding and financing programs that cover the incremental cost difference between gas and electric equipment for households that are low-income, and rentals that house low-income families.**

Potential implementers: The CPUC, CCAs, RENs.

- » **2.2: Structure local, state, and federally-funded clean energy incentive programs so they are: stackable, offer upfront discounts, ensure cost parity with polluting appliances, are available for the foreseeable future, and reach the full spectrum of low-income households.**

Potential implementers: The CEC, CPUC, Legislature and Governor.

- » **2.3: Offer one-stop-shops and direct-install programs targeted at frontline and disadvantaged communities using best practices in engaging communities in the design and implementation of the program(s) (For example, see the National Renewable Energy Laboratory’s (NREL) report on [Community Energy Planning](#)).**

Potential implementers: The CEC, CPUC, Legislature and Governor.

- » **2.4: Maximize use of EPA’s Climate Pollution Reduction Grant (CPRG) to support the transition to zero-pollution equipment.**

Potential implementers: The CEC, CPUC, Legislature and Governor.

- » **2.5:** Increase the availability of financing options, such as on-bill financing options. Ensure financing is available for households who have poor credit or can't afford the risk of taking on debt, for example through inclusive utility investments or zero-interest financing.

Potential implementers: The CCAs, RENs, CPUC.

- » **2.6:** Target funding and financing programs, along with tenant protections, towards landlords who serve low-income tenants. For example, municipalities and rent boards can act to protect tenants from rent increases and “no-fault” just-cause evictions when zero-pollution equipment is installed, and pair those protections with incentive programs for landlords.

Potential implementers: Rent Boards, local governments, and the State Legislature.

Some Definitions

Cost parity: Incentives for low-income households can aim to ensure electric appliances are no more expensive to buy and install than their gas counterparts. In multifamily buildings, incentive programs can aim to cover all or most of electrification costs (Tactic 2.1).

Direct Install Programs: These programs use committed funding from utilities, community choice aggregators, or local and state governments, to ensure installations are complete, often by covering much or all of the costs to enrolled participants. Direct install programs can be designed to target frontline and disadvantaged communities, or they can be targeted more broadly to include all building owners (Tactic 2.3).



Golden Gate Bridge

Strategy 3. Improve Customer Experiences

Smooth the process of making homes electrification-ready and installing zero-pollution equipment

- » **3.1:** Make it easier to do panel and service upgrades, such as by reducing utility restrictions on panel placement and streamlining the process for approving electrical service upgrade applications.

Potential implementers: The CPUC, PG&E.

- » **3.2:** Streamline city and county permitting and inspections and amend local zoning and planning codes to reduce barriers to heat pump installation, including restrictions on available space.

Potential implementers: Local governments (planning and building departments, city councils), Potentially Legislature and Governor

- » **3.3:** Develop programs with oversight from building inspectors to allow licensed contractors to permit, inspect, and certify installations of zero-emission appliances.

Potential implementers: Local governments, (planning and building departments, city councils).

- » **3.4:** Ensure that contractors are legally able to offer temporary loaner gas furnaces and water heaters (or 120V heat pump water heaters) while permanent zero-pollution equipment is being installed.

Potential implementers: Regional Air Quality Management District, local governments.

- » **3.5:** Improve grid reliability including shorter timelines to restore power and fewer public safety power shutoffs.

Potential implementers: The CPUC, utilities

Some Definitions

Permit streamlining: Cities have pioneered efforts to simplify heat pump permitting, including removing permitting fees, fully digitizing application processes, and scheduling online inspection and approval processes.

City Codes: Zoning and planning codes can be revised to support heat pump siting, installation, and permitting. Examples include ensuring codes allow for electric equipment installations within property setbacks and in garages (Tactic 3.3).



Heat pump

Strategy 4. Develop the Workforce

Prepare the workforce and support high-road labor standards

- » **4.1: Train and prepare existing contractors on how to install heat pumps and best practices for thorny situations such as emergency replacements, space constraints, and low-capacity panels.**

Potential implementers: The CEC, utilities, manufacturers, local governments, community colleges, CCAs, RENs.

- » **4.2: Offer programs for diverse contractors (such as women-owned, minority-owned, and non-English speaking) to learn about installing heat pumps and becoming certified with large incentive programs.**

Potential implementers: The CEC, utilities, local governments, community colleges, CCAs, RENs.

- » **4.3: Use incentive programs to support contractors that pay family-supporting wages and build the skills of their workers.**

Potential implementers: The CEC, CPUC, CCAs, RENs, local governments.

- » **4.4: Grow the pipeline of new workers entering building electrification trades with better-funded workforce development programs that provide support services (such as childcare) for participants.**

Potential implementers: The CEC, utilities, local governments, community colleges, CCAs, RENs.

- » **4.5: Publicly funded decarbonization programs should prioritize hiring employers that follow high-road labor standards, and the programs should support employers to meet those standards.**

Potential implementers: The CCAs, RENs, CPUC.

Some Definitions

Training options: Consider training 1) employees in heat pump installation; 2) employers in how to integrate heat pumps into their businesses; 3) entrepreneurs in how to build firms around heat pump appliances (Tactic 4.1 and 4.4).

Strategy 5. Educate

Educate distributors, contractors, and residents about zero-pollution equipment

- » **5.1: Publicize clear pathways and advantages to installing zero-pollution equipment at low cost, including rules, incentives and other funding programs, technical considerations, potential bill savings, and local services.**

Potential implementers: Regional Air Quality Management District, CCAs, RENs, community-based organizations.

- » **5.2: Educate residents and business owners on the health and climate benefits of zero-emission appliances.**

Potential implementers: Regional Air Quality Management District, CCAs, RENs, community-based organizations.

- » **5.3: Increase awareness of heat pump funding programs and potential bill savings from upgrading to an efficient zero-emission heat pump.**

Potential implementers: Regional Air Quality Management District, CCAs, RENs, community-based organizations.

- » **5.4: Make sure communication efforts reach underserved populations.**

Potential implementers: Regional Air Quality Management District, CCAs, RENs, community-based organizations.

- » **5.5: Conduct outreach and education to tenants to make them aware of their rights during electrification renovation projects, as well as options for initiating effective electrification discussions with landlords.**

Potential implementers: Rent boards, CCAs, RENs, community-based organizations.



Heat pump installation

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