



# Rule 9-6: Flexibility and Affordability Amendments for Zero NOx Water Heaters

## Board of Directors Meeting

May 6, 2026

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Manager  
Regulatory Development Division



# Presentation Outline

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- I. Rule 9-6 Background and Overview
- II. Need for Flexibilities
- III. Summary of Potential 9-6 Amendments
- IV. Common Questions and Concerns
- V. Next Steps and Discussion

# Recommended Action

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Discuss and provide input on staff recommendations or alternative approaches.

# Abbreviations

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**AMI:** Area median income

**BTU/hr:** British thermal units per hour; measure of heat energy

**CARE:** California Alternate Rates for Energy

**CEC:** California Energy Commission

**CEQA:** California Environmental Quality Act

**CPUC:** California Public Utilities Commission

**FERA:** Family Electric Rate Assistance Program

**HPWH:** Heat pump water heater

**M:** Million

**NOx:** Nitrogen Oxides

**PG&E:** Pacific Gas and Electric

**PM:** Particulate matter

**PM<sub>2.5</sub>:** Fine particulate matter

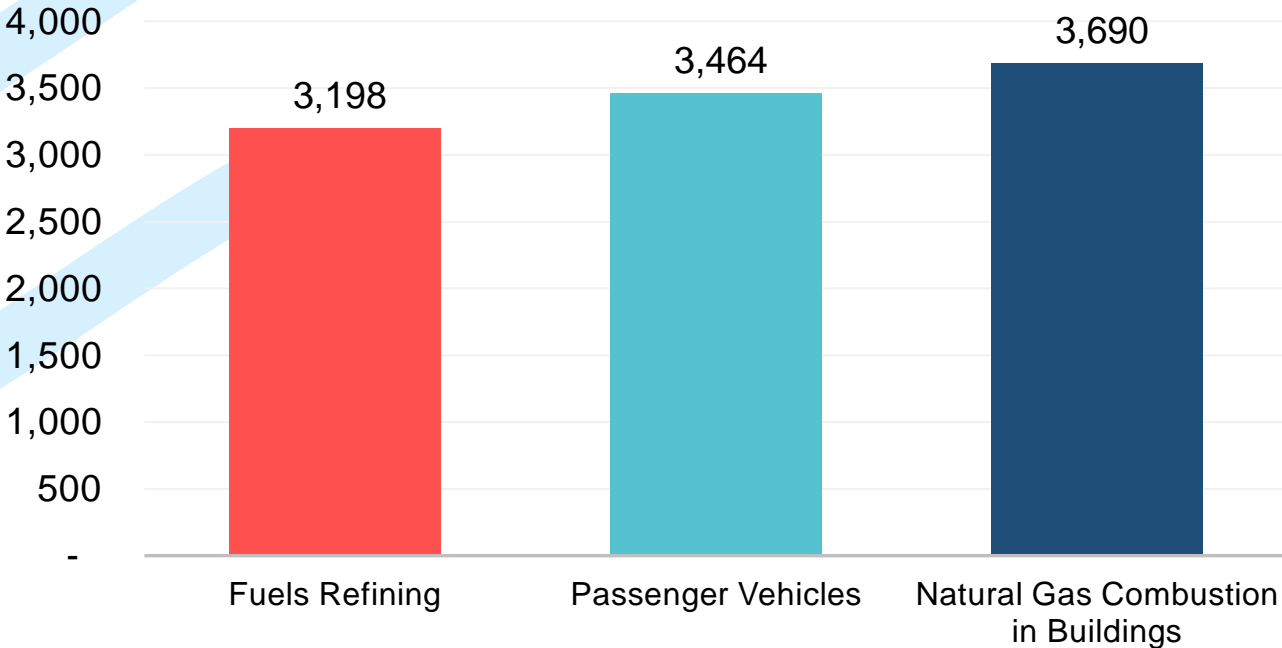
**WIC:** Women, Infants and Children (supplemental nutrition program)

**Part I. Why did Air  
District Board of  
Directors adopt zero NOx  
standards for furnaces  
and water heaters?**

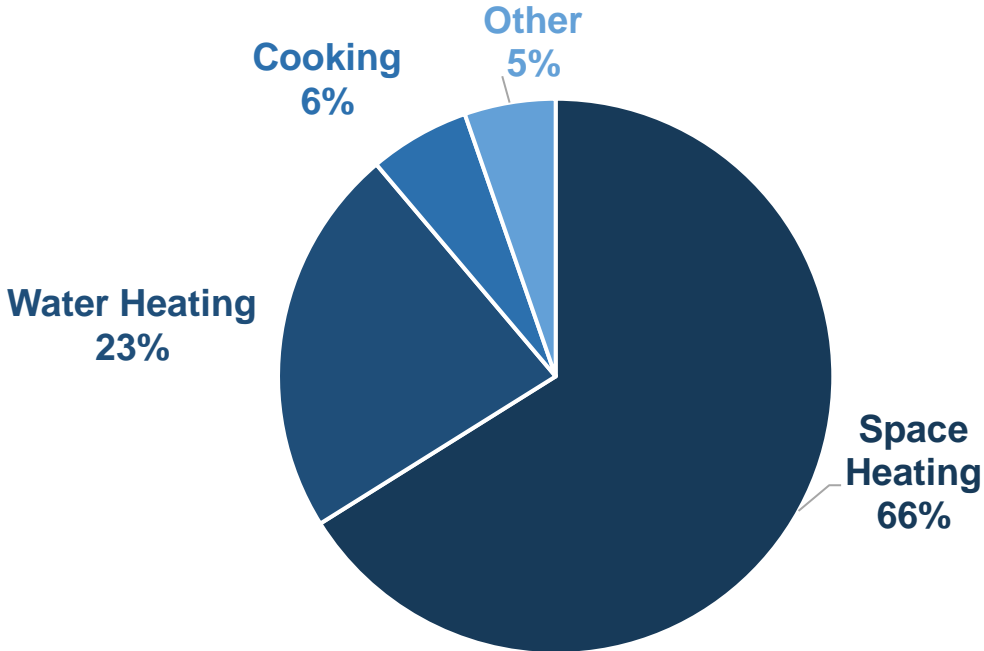


# NOx Emissions from Buildings

2019 Air District NOx Emissions (tons)



Air District Residential Natural Gas Combustion NOx Emissions (2019)

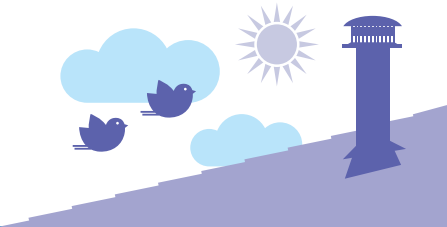


# Major Health Benefits from Rules 9-4 and 9-6

These appliance rules help improve regional air quality by reducing pollution from furnaces and water heaters.

## Cleaner outdoor air

Less NOx and PM<sub>2.5</sub> from venting



Lower pollution means lower exposure to fine particles (PM<sub>2.5</sub>).

## Cleaner Bay Area communities

Biggest PM<sub>2.5</sub> reductions in communities of color and overburdened neighborhoods



Reducing PM<sub>2.5</sub> and NOx exposure can prevent dozens of early deaths every year in the Bay Area.

**Up to 85 early deaths avoided**  
each year from cleaner air



Health improvements from cleaner air avert unnecessary costs from health impacts.

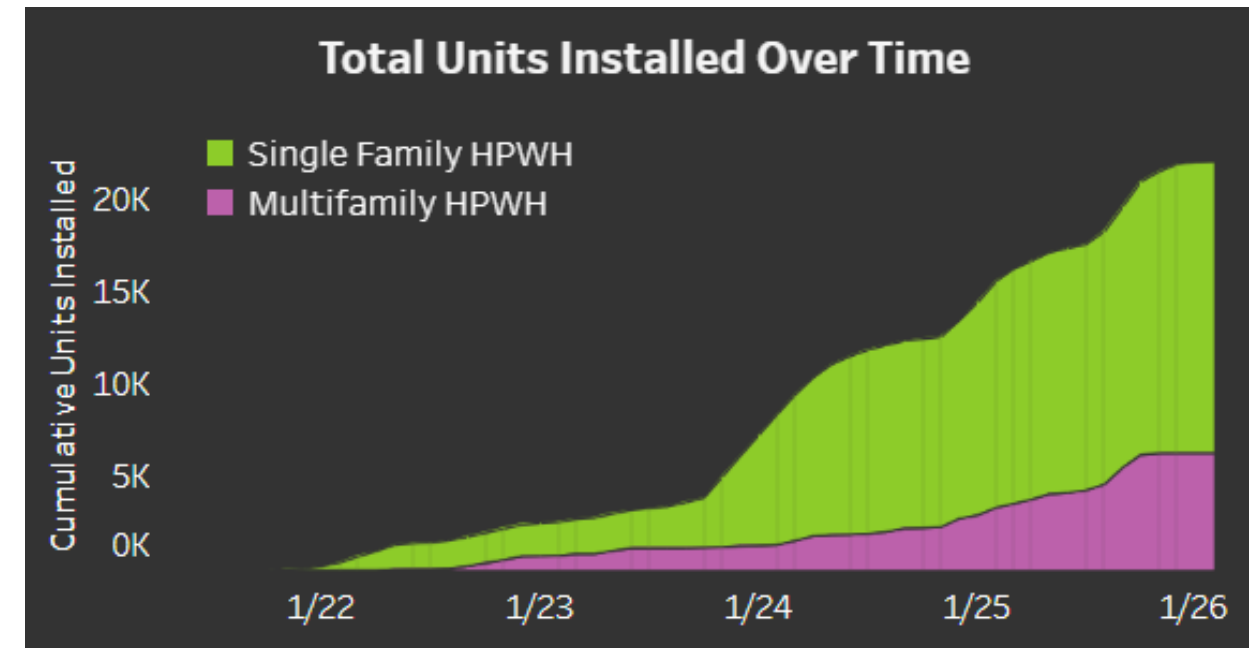
## Up to \$890M

Annual health benefits saved in avoided illnesses, hospital visits, and early deaths



# Zero NOx Water Heater Technology is Widely Available

- Diverse technology options available for installation
- 20,000+ units installed in the Bay Area and growing



Source: [TECH Public Reporting Heat Pump Data Visuals](#)

# Zero NOx Standards – 2023 Amendments

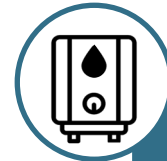
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- NOx standards within Rule 9-4 (furnaces) and Rule 9-6 (water heaters) have been in place for almost four decades
- Standards have **gradual phase-in**: all new sales or installations of units manufactured after compliance dates

<b>1/1/2027</b>	<b>Water heaters less than 75,000 BTU/hr</b>
1/1/2029	All applicable natural gas-fired furnaces (e.g., residential and commercial; including direct-vent units)
1/1/2031	Water heaters 75,000 to 2 million BTU/hr

- Staff update to the Board due two years prior to each compliance date

# Implementation Working Group Phase 1 Small Water Heaters



**Technical  
Readiness**



**Equitable  
Transition**

**40+ members**

**Environmental  
Justice and  
Community-  
Based  
Organizations**

**Subject Matter  
Experts on  
Energy,  
Buildings, and  
Technology**

**Regional/Local  
Government  
and State  
Agencies**

**Labor and  
Trade  
Organizations**

**Utilities and  
Community  
Choice  
Aggregators**

## Meetings

**6** Public  
Plenary

**5** Steering  
Committee

**5** Technical  
Subcommittee

**5** Equity  
Subcommittee

# Board and Committee Timeline

Date	Venue	Summary
March 15, 2023	Board of Directors	Adoption of zero NOx amendments to Rules 9-4 & 9-6 Board directed staff to come back with a Rule 9-6 implementation report in 2024
December 4, 2024	Board of Directors	Informational report on staff's research and a summary of IWG findings for Rule 9-6 implementation
October 24, 2025	Public Comment Period	Public Release of Rule 9-6 Concepts Paper (flexibility options) informed by Phase I of the IWG
December 10, 2025	Stationary Source Committee	Presentation on potential flexibility amendments based on affordability and availability issues for Rule 9-6 Committee directed staff to come back with information on possible exemptions for low-income property owners
February 11, 2026	Stationary Source Committee	Presentation on the definition of "low-income" including considerations for housing cost burden and how much it costs to help low-income households switch to zero NOx water heaters Committee directed staff to return in May 2026 with a full set of proposed changes so the full Board can give clear directions on how to proceed with the rule

# Release of the Regulatory Overview

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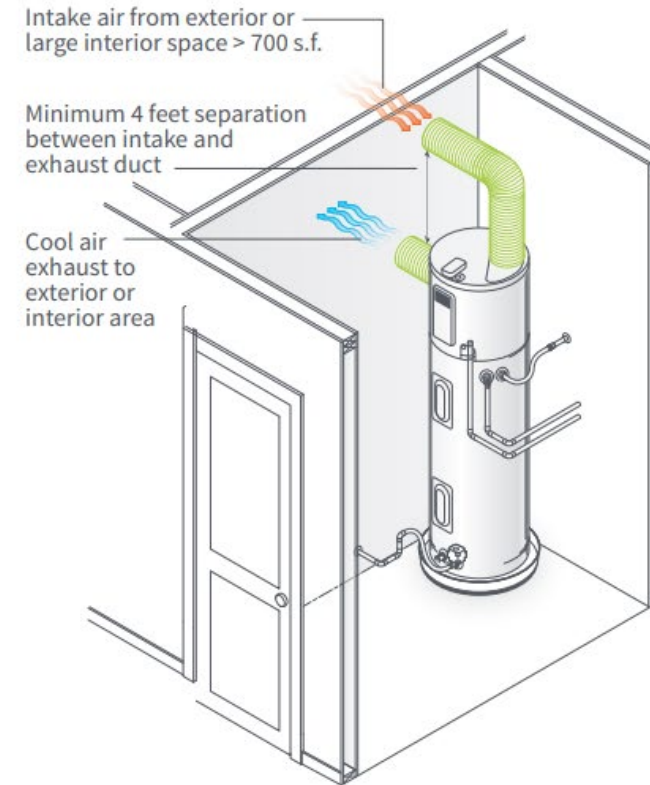
- Highlights steps taken since the adoption of the 2023 amendments to Rule 9-6
- Additional background information and details on flexibility and affordability amendments
- Released April 13, 2026

# Part II. Why do Rule 9-6 zero NOx standards for water heaters need flexibilities?

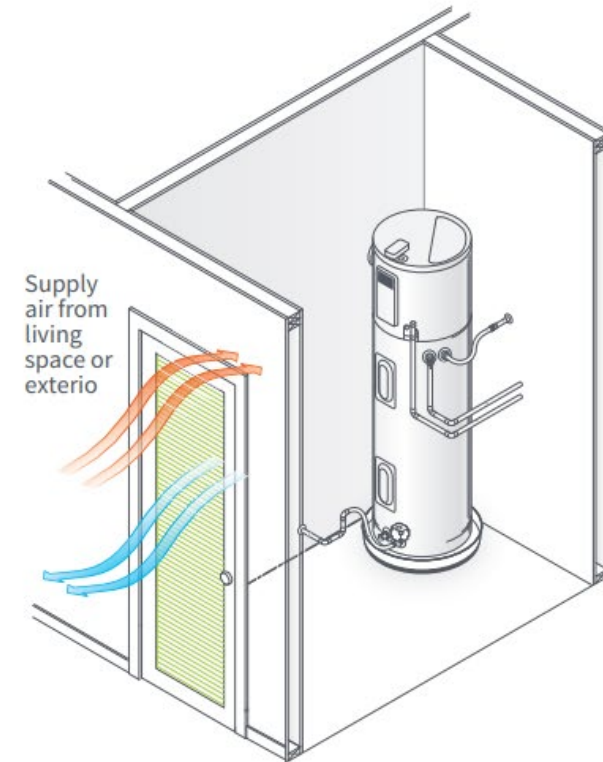


# Space Constraints

- HPWHs take up more space
  - *confined spaces (e.g. closets) may not physically fit the larger HPWH*
- HPWHs need sufficient air to pull heat from; most manufacturers recommend at least 700 ft<sup>3</sup> of space
  - *some installs can use venting measures to allow installs in smaller spaces*
- Smaller HPWH technology still under development



> Ventilate with air ducts

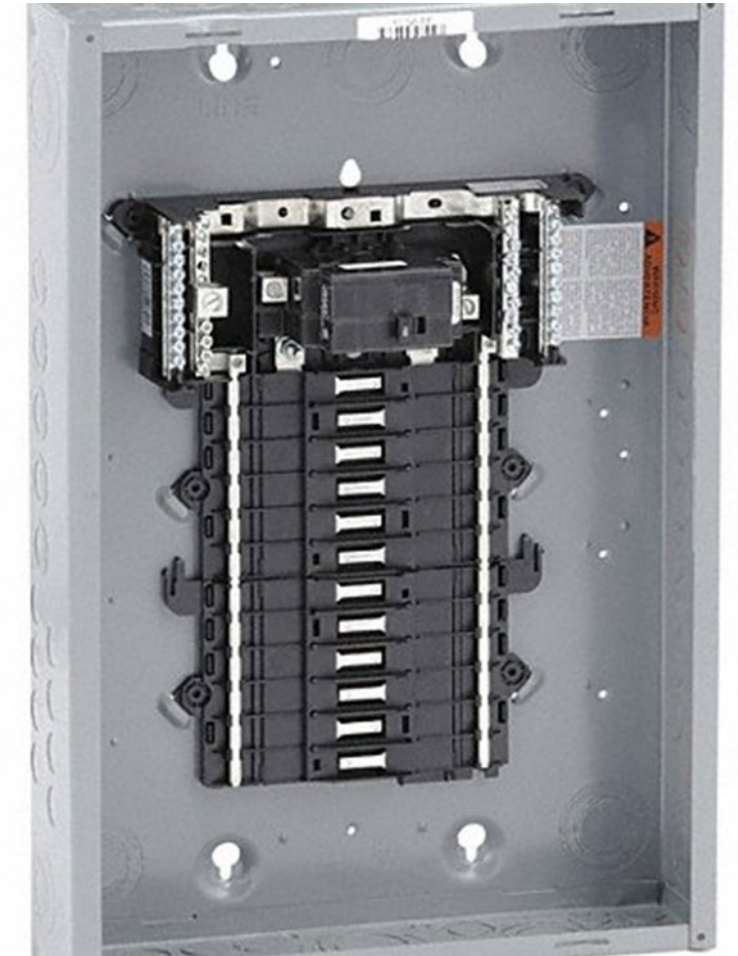


> Ventilate with louvered doors

Source: [www.peninsulacleanenergy.com](http://www.peninsulacleanenergy.com)

# Electrical Constraints

- In some cases, complex electrical work and panel and utility service upsizing can result in higher installation costs and long timelines
  - 120-volt plug-in HPWHs can help for some homes
- “Watt diet” or panel optimization strategies could be deployed in 32% of single-family homes and 59% of multi-family homes in California to avoid panel and service upsizing



Source: Granger.com

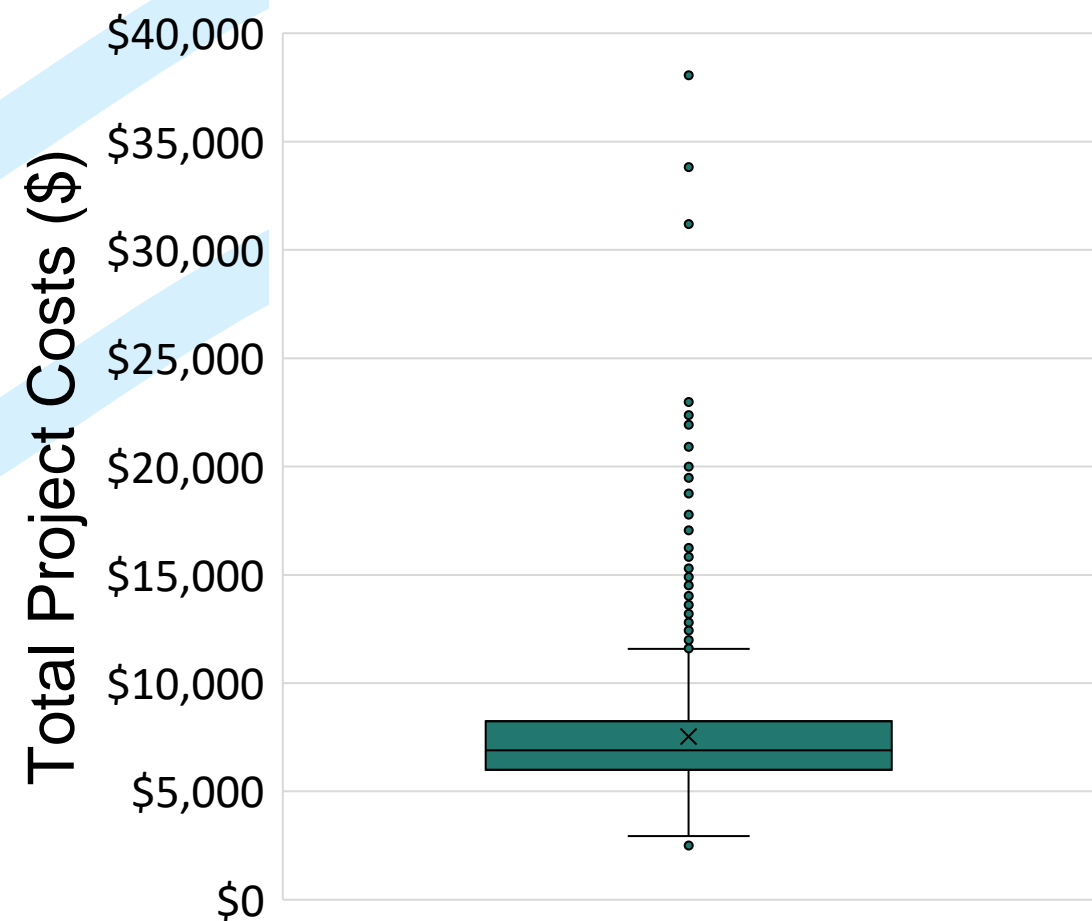
# Costs Associated with Implementation

## Zero NOx Average Additional (Incremental) Costs:

- Approximately \$3,500 (\$600-\$1,600 additional retail cost for equipment, plus installation)
- Rebates where available will offset some incremental costs
- Operational cost savings may offset some upfront incremental costs over time
- Median incremental costs are similar to the average



# Cost Distribution of Replacement Projects



Source: Appendix A of Staff Report: Informational Update on Rule 9-6 & TECH Clean CA  
December 2023

- Majority of ~4,000 Bay Area HPWH projects evaluated were close to the median and average of ~\$7,000 for total equipment and install costs
- Program data showed some outliers and high-cost projects due to:
  - Electrical upgrades
  - Water heater relocation

# Incentive Availability

- Federal, State and local incentives are currently available
- Not enough current funding to cover incremental costs for all Bay Area low-income homes beyond the next few years

The screenshot displays the 'THE SWITCH IS ON' website interface. At the top right is the logo and text 'THE SWITCH IS ON'. Below this is a search form with a 'Zipcode' input field and a dropdown menu currently showing 'Water Heating'. A dark green 'SEARCH' button is positioned below the form. A horizontal flow diagram follows, with a green arrow labeled 'SEARCH' containing the text 'for local incentives by location, specialty and more.', and a teal arrow labeled 'CONNECT' containing the text 'with trusted contractors, in our contractor directory'. Below the flow diagram is a dark green button with the text '(-) HEAT PUMP WATER HEATER'. On the left side of the screenshot, a dark teal box contains the text 'INCENTIVE LOOKUP FOR CUSTOMERS'. Below this box are four filter sections: 'INCENTIVE TYPE' with checkboxes for 'REBATE' and 'FINANCING'; 'EQUIPMENT TYPE' with a dropdown menu showing 'Heat Pump Water Heater'; and 'INCENTIVE PROVIDER'.

Source: [www.switchison.org](http://www.switchison.org)

# Part III. What are the proposed flexibility exemptions?



# Objectives of Exemptions

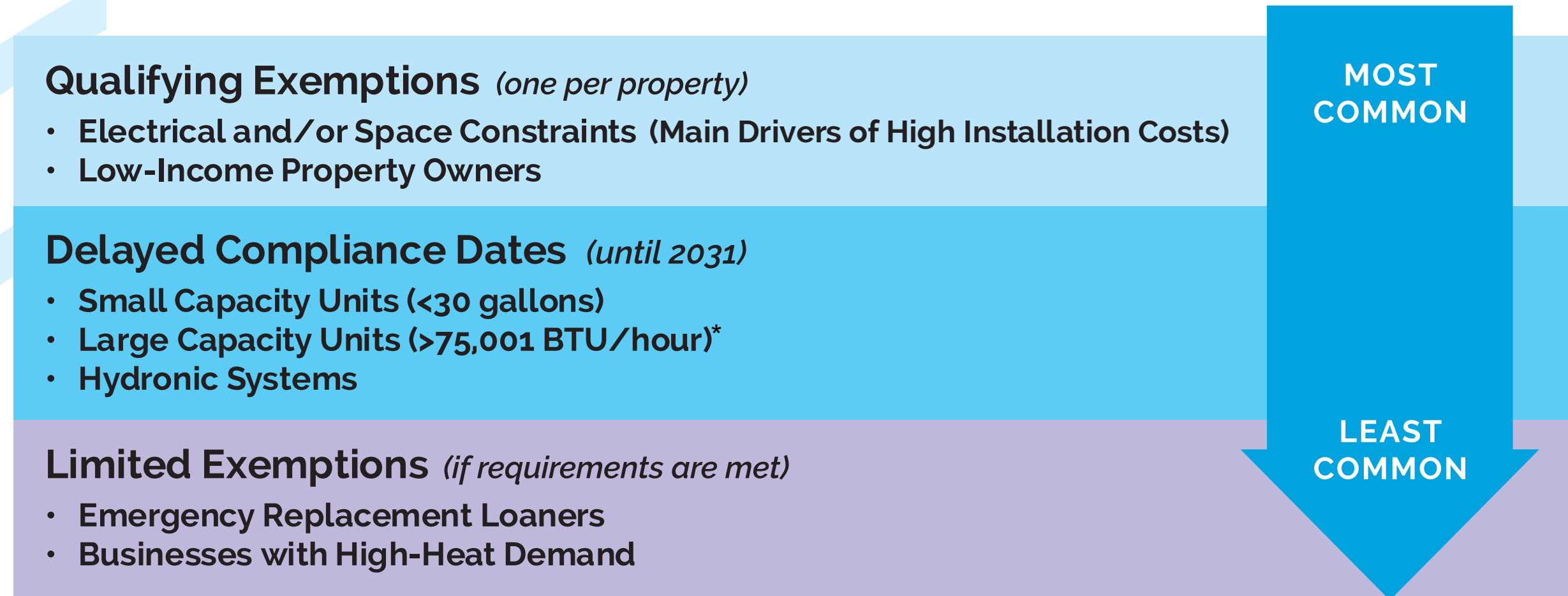
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1. Address **affordability** and the **drivers** of high cost
2. **Simple** and **automated** process
3. Continued sales for equipment lacking zero NOx options



Source: istockphoto.com

# Categories for Rule 9-6 Compliance



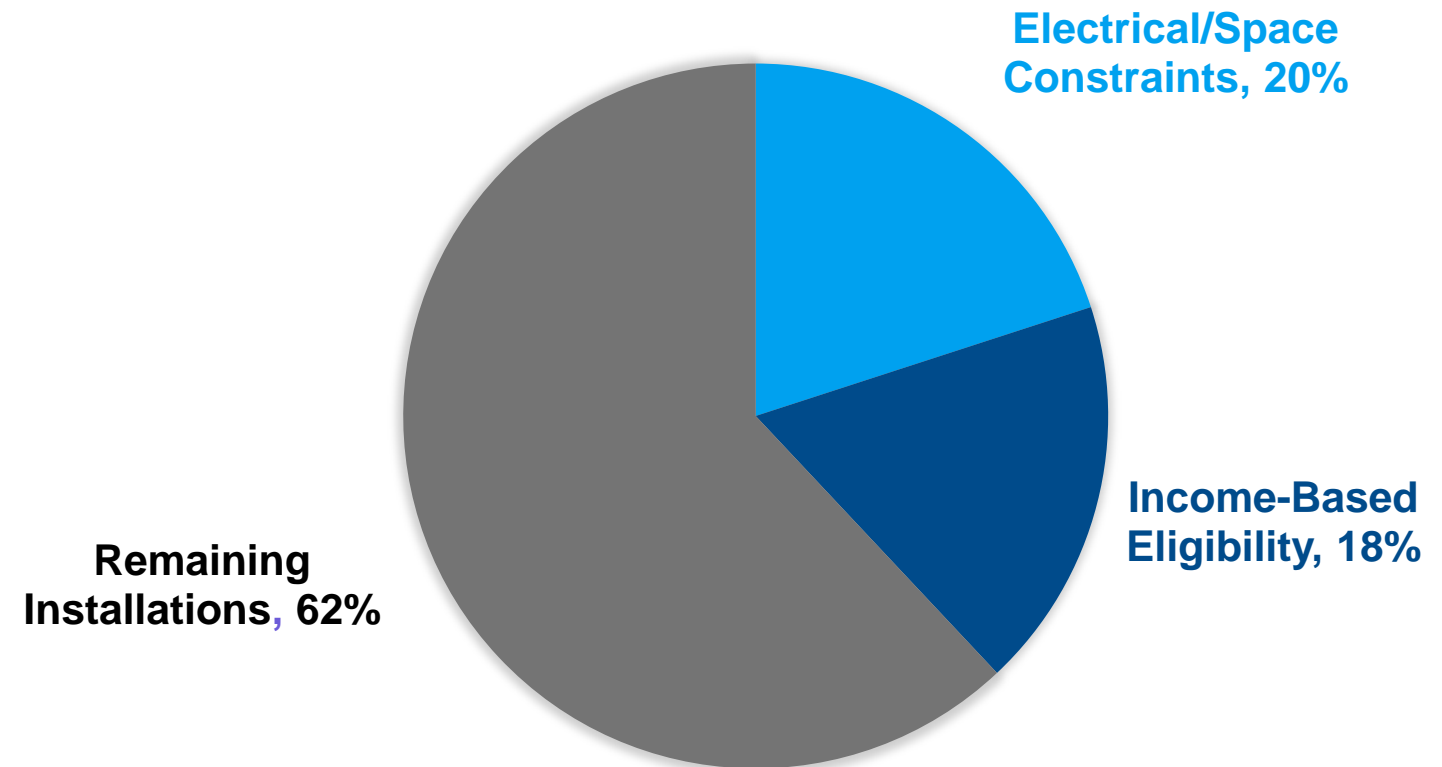
\*Note: Large capacity unit compliance date is existing requirement, not planned change

# Total Estimated Exemptions

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- Staff estimate up to 38% of water heater installations would qualify for exemptions

ESTIMATED ANNUAL DISTRIBUTION OF EXEMPTION PATHWAYS



# Project Cost Impacts

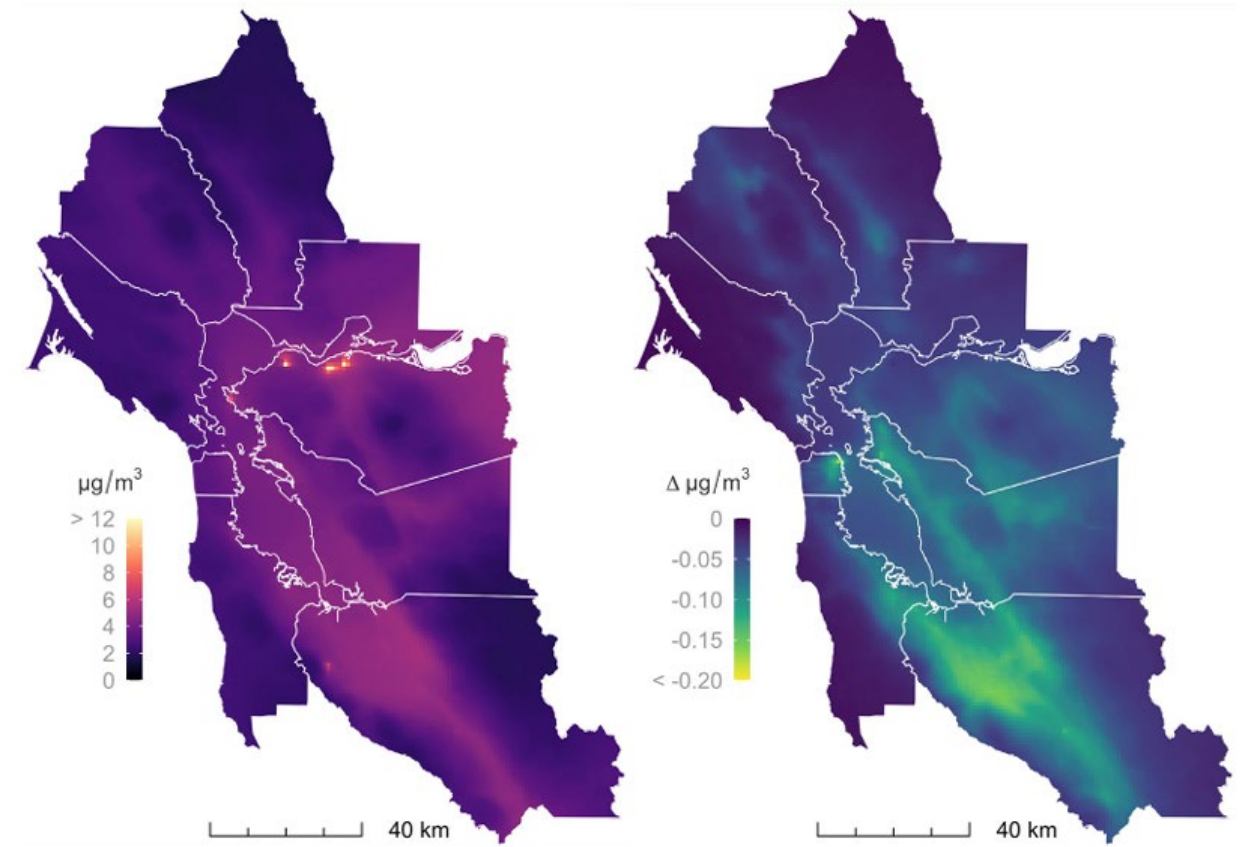
- Remaining projects will be “standard” installs
  - Incremental costs expected to remain ~\$3,500
- Majority of project costs due to extra labor required (new electrical and drain lines; cap gas line; etc.)



Source: [www.istockphoto.com](http://www.istockphoto.com)

# Public Health Impacts

- Exemption locations are uncertain at this time
- Maintains regional benefit due to the reduction on  $PM_{2.5}$
- Emissions reductions will take longer to achieve due to exemptions



Baseline concentrations (left) and reductions (right) for secondary  $PM_{2.5}$  (Source: 2023 Rule 9-6 Staff Report)

# Low-Income Qualified Property Owner

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## Defined as:

- Property owners that are either low-income program participants (250% Federal Poverty Guidelines) OR
- Housing cost burdened (annual mortgage and property taxes  $\geq$ 28% of gross income).

## Pros:

- Streamlines determination and customer experience (no annual county- or household-specific income thresholds)
- Provides relief for potential affordability issue
- Aligns with programs e.g. FERA, CARE, WIC

## Cons:

- Other designations e.g. 80% AMI more typically used by some HPWH incentive programs

# Project Specific Exemptions Require Contractor

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## **Pros:** Contractors will:

- Have knowledge needed to accurately evaluate technical options
- Be more capable of staying up-to-date on growing technology landscape

## **Cons:**

- May increase time and costs for property owners who may normally self-install



Source: istockphoto.com

# One-time Exemption Per Project Address

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## Pro:

- Provides building owner ~13 years to prepare for zero NOx installation for next water heater, starting from 2027

## Con:

- May still have high costs upon future installation



Source: istockphoto.com

# Processing Fee for Exemptions

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- No processing fee for low-income exemptions, only for project-specific exemptions
- Consideration of increased fee to fund low-income rebates

Cost recovery:

$$\begin{array}{ccc} \begin{array}{c} \text{Annual Implementation} \\ \text{Expenses} \\ \sim \$3 \text{ million} \end{array} & \div & \begin{array}{c} \text{Expected Annual Project} \\ \text{Specific Exemptions} \\ \sim 24,000 \end{array} & = & \begin{array}{c} \text{Processing Fee} \\ \$125 \end{array} \end{array}$$

# Delay to October 1, 2027 Effective Date

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**Pros:** Provides time for:

- Development and testing of exemption system
- Better alignment with retailers, manufacturers, distributors & contractors
- Increased training of staff & participating stakeholders
- More property owner outreach

**Cons:**

- Emissions benefits deferred 9 months



# Part IV. Common Questions and Concerns

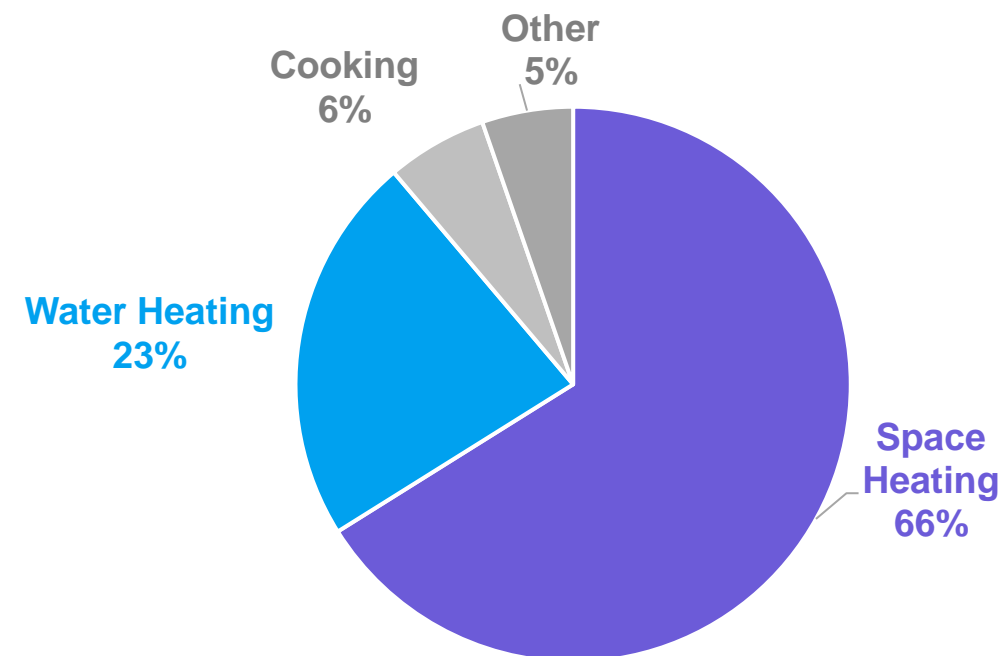


# Stoves or Whole Home Electrification?

Rules 9-4 and 9-6:

- DO NOT require immediate replacement of working appliances
- DO NOT affect stoves, clothes dryers, fireplaces, or any other gas appliance
- DO NOT require whole home electrification or discontinuing gas service
- DO focus on reducing NOx emissions that impact regional air quality

**Air District Residential Natural Gas Combustion NOx Emissions (2019)**



# Socioeconomic Impacts?

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- The Air District completed an extensive review of the socioeconomic, environmental, and electric grid impacts of the rules in 2022, including:

Direct impacts of increased compliance costs

Potential equity impacts at the household level

Potential shifts in consumer spending and job losses

Impacts to electric grid capacity, reliability and related costs

Air District costs to implement the proposals

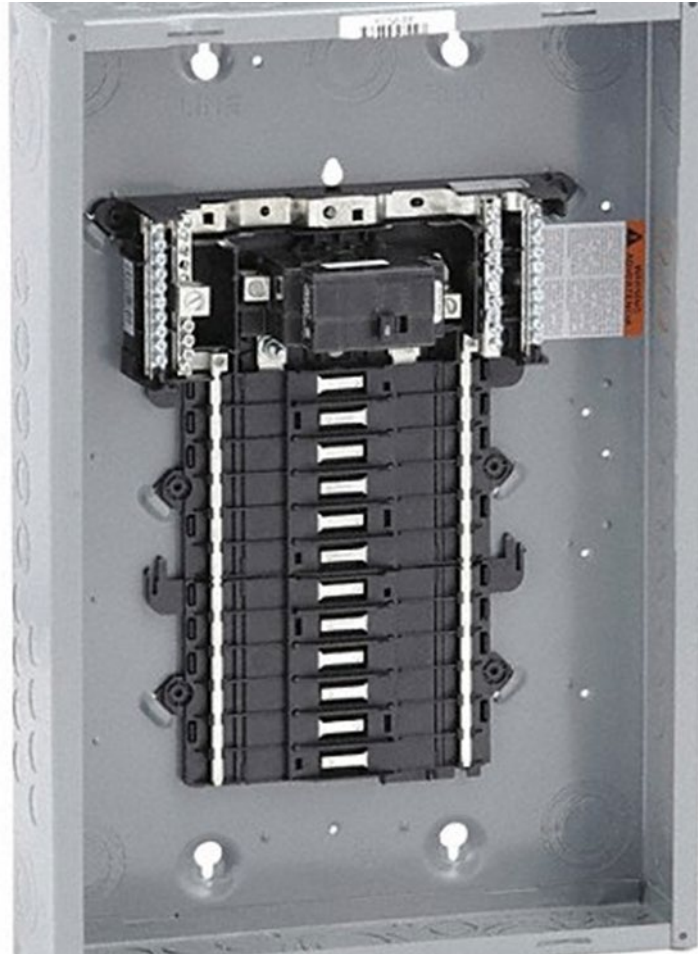
- Stakeholders consider this analysis to be a good model for enhanced regulatory analyses going forward
- We will update this analysis with new information for the affordability amendments

# High Expense to Property Owners?

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- Exemptions for space and electrical constraints are designed to avoid situations that would result in high-cost installations
  - The incremental cost is a one-time cost of \$3,500
  - Existing incentives and rebates will bring that cost down, especially for low-income property owners
- The low-income exemption is designed to help property owners who cannot afford these costs, even with available incentives
- Remaining non-exempted installations will be low or moderate cost and for those who can better afford it
- The health benefits from these one-time upgrades last forever

# Panel and Service Upsizing?



Source: Granger.com

## Requirements for Contractor Certified Exemption for Electrical Constraints:

- The home/building has knob-and-tube wiring.
- The electrical panel is <100 amps (single-family) or <60 amps (multi-family)
- The electrical panel does not have enough circuit or breaker space
- New 240v connection requires more than 50 feet of wiring/conduit
- Utility service upsizing is needed

# Housing Costs and Displacement Impacts?

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All-electric new construction is less expensive



Exemptions address all identified significant cost/affordability drivers



Cities where most renters live have strongest renter protections



Exemption pathways will limit need for large-scale renovations that could cause displacement

# Equity Concerns with Low-Income Exemption?

## Property Owners

- The exemption only applies to property owners; there will still be substantial conversion to clean equipment in overburdened communities

## Regional Benefit

- A large part of the health benefit from the rule is from NO<sub>x</sub> that converts to PM over time; these health benefits accrue regionally

## Rebate Availability

- Low-income households have greater access to rebates, and so many may not need to use the exemption. The exemption website will connect them with personalized information about available funding. We will continue to advocate for more rebate funding, especially for low-income property owners

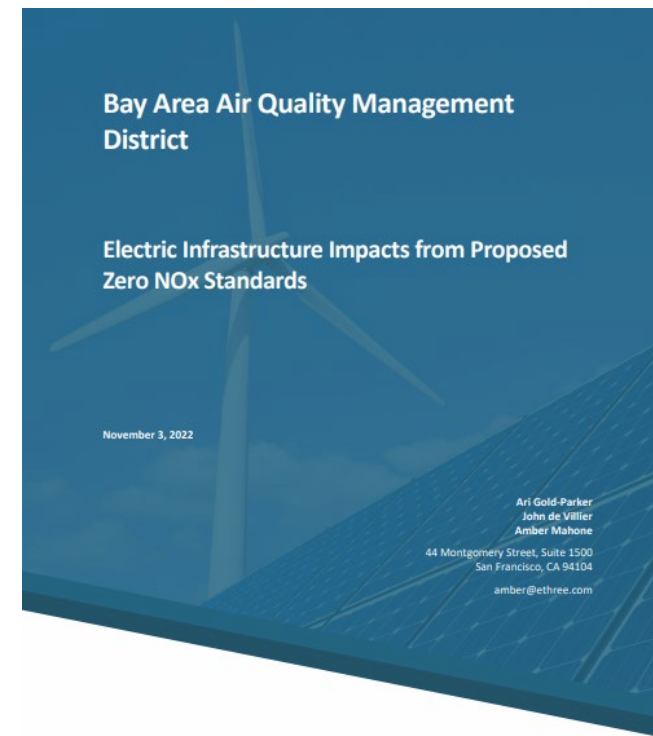
# Electric Grid Readiness and Reliability?

- CEC, CPUC and PG&E have accounted for added electric loads in their planning processes
- Appliance replacements will phase in over time
- HPWHs can store hot water and energy for several hours
- Like HPWHs, many new gas water heaters require electricity to operate
- Most outages are short-term and caused by weather disturbances



Grid Reliability and Interconnection Challenges

Bay Area Air Quality Management District



prepared by

Rincon Consultants, Inc.  
449 15th Street, Suite 303  
Oakland, California 94612

Energy + Environmental Economics (E3), Inc.  
44 Montgomery Street, Suite 1500  
San Francisco, California 94104

September 2024



# Major Health Benefits from Rules 9-4 and 9-6

These appliance rules help improve regional air quality by reducing pollution from furnaces and water heaters.

## Cleaner outdoor air

Less NOx and PM<sub>2.5</sub> from venting



Lower pollution means lower exposure to fine particles (PM<sub>2.5</sub>).

## Cleaner Bay Area communities

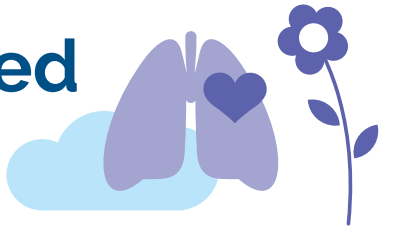
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## Up to 85 early deaths avoided

each year from cleaner air



Health improvements from cleaner air avert unnecessary costs from health impacts.

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# Part V. Next Steps and Discussion



# Public Awareness Campaign Overview

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- Campaign to increase awareness of the health impacts of NOx-emitting appliances, benefits of zero NOx alternatives, and key steps for replacement
- Multi-channel outreach: contractors, municipalities, media, property owners, small businesses, social media, and local advertising
- Baseline and tracking surveys to measure awareness of zero NOx appliances and Building Appliance Rules

# Public Awareness Campaign Timeline

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*Multi-phase communications plan to educate and engage all audiences*

## **Phase I – Now through fall**

- Develop clear, audience-specific messaging focused on benefits of switching to zero NOx appliances
- Conduct baseline awareness survey (April–June)
- Launch media, contractor, and social outreach

## **Phase II – Fall through early 2027 (post-Board action)**

- Launch local advertising campaign
- Expand outreach, including door-to-door, with clear timelines and calls to action

## **Phase III – 2027 and beyond**

- Continuation of advertising, public relations, stakeholder, and social media outreach

# Immediate Next Steps

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## Board Meeting for Vote October 2026 (*targeted*)

*In advance, Staff will release:*

- Proposed Rule Language
- Staff Report
- Updated CEQA Analysis
- Updated Socioeconomic Impacts Report

As compared to 2023 amendments

# Summary of Key Recommendations

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## **Discuss and provide input on staff recommendations:**

- Low-income exemption based on participation in income-qualified program or housing cost burden
- Project-specific exemptions requiring contractor participation
- One project-specific exemption per address
- Assess a moderate processing fee for project-specific exemptions to recover costs of the program
- Provide for a 9-month delay to develop exemption process and conduct outreach

# Conclusion

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**For more information:**

**[www.baaqmd.gov/buildingappliances](http://www.baaqmd.gov/buildingappliances)**