BAAQMD's Building Decarbonization Leadership:

Rules 9-4 and 9-6 for Zero-Emission Appliances

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DRAW DOWN BAYAREA
REGIONAL SOLUTIONS to the GLOBAL CLIMATE CHALLENGE

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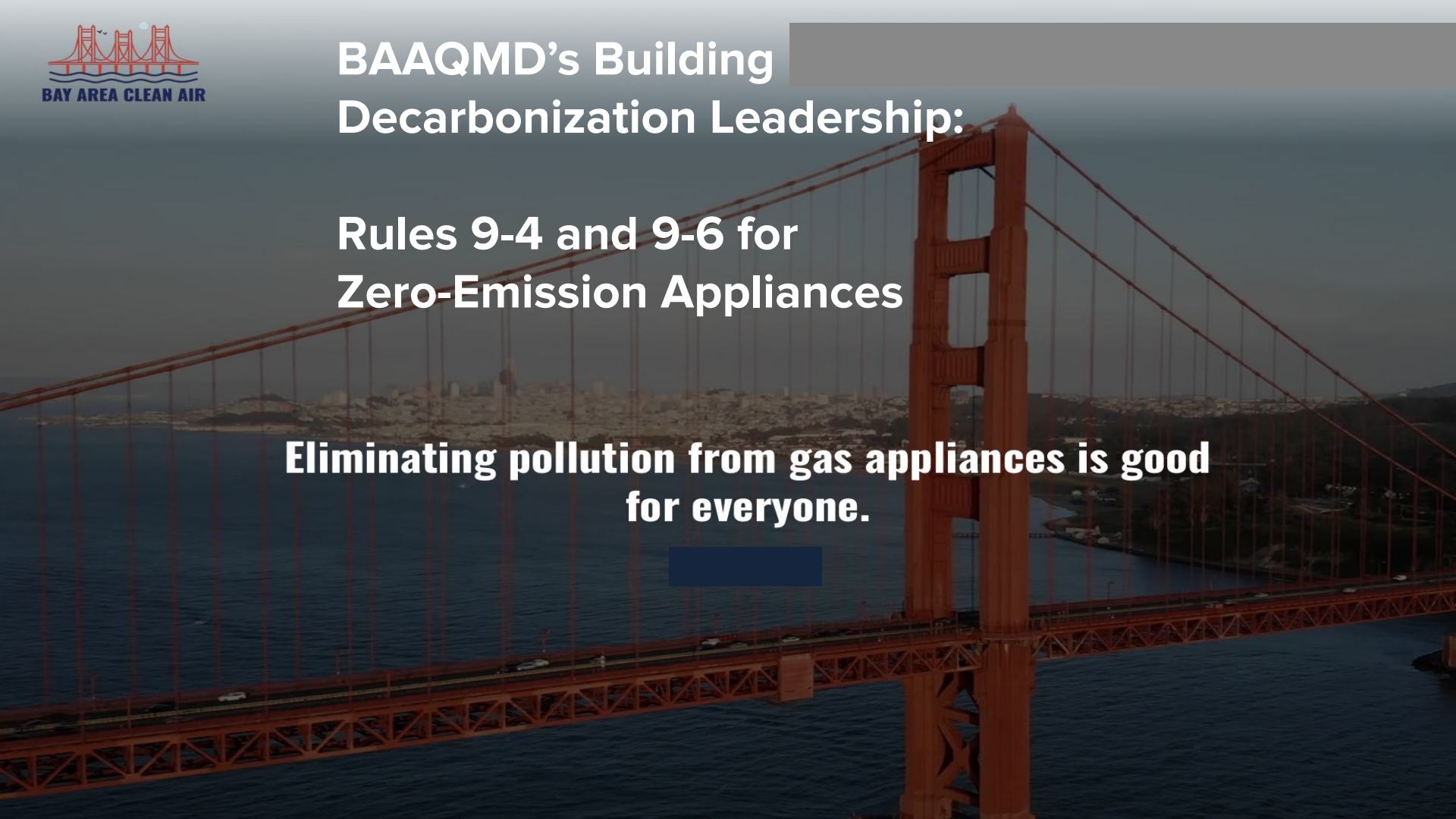

BAAQMD's Building Decarbonization Leadership:

Rules 9-4 and 9-6 for Zero-Emission Appliances

Eliminating pollution from gas appliances is good for everyone.

AGENDA

1. Electric appliances deliver health, air quality, and climate benefits
2. District can lead an equitable transition to healthy buildings
3. Discussion

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Climate, Air, and Health Impacts of Appliance Pollution

Swapping gas furnaces and water heaters for electric appliances will reduce communities' exposure to harmful pollutants

Air Quality Benefits

Electrifying Bay Area gas appliances would reduce **more health-harming nitrogen oxide (NOx) pollution** than electrifying all of the region's passenger cars

Health Benefits

Electrifying Bay Area gas appliances could help prevent **15,000 asthma symptom incidents** and avoid up to **85 premature deaths** every year

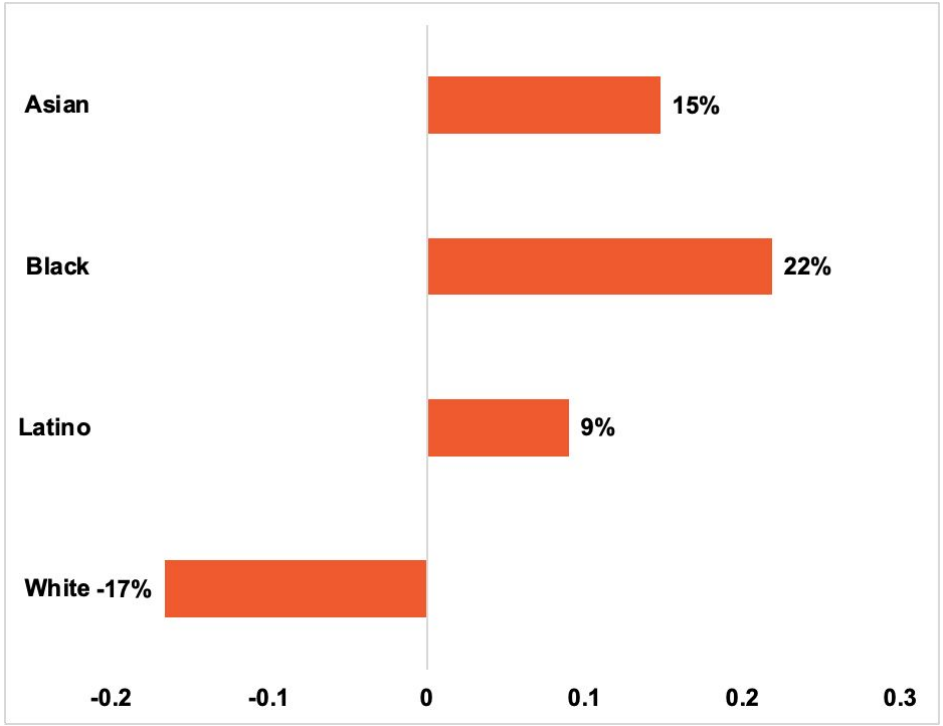
Climate Benefits

Electrifying Bay Area gas appliances could reduce **climate-warming emissions** from appliances **73%** by 2046

Source: Bay Area AQMD's Report on Proposed Amendments to Building Appliance Rules and Appendix E

People of Color are exposed to 32% more pollution from residential appliance combustion than Whites in California

Chart shows exposure to PM2.5 from residential gas combustion as percent difference from population mean by race in California.



Exposure from residential gas appliances is **32% higher** for POC than White residents, with Black exposure **46% higher**.*

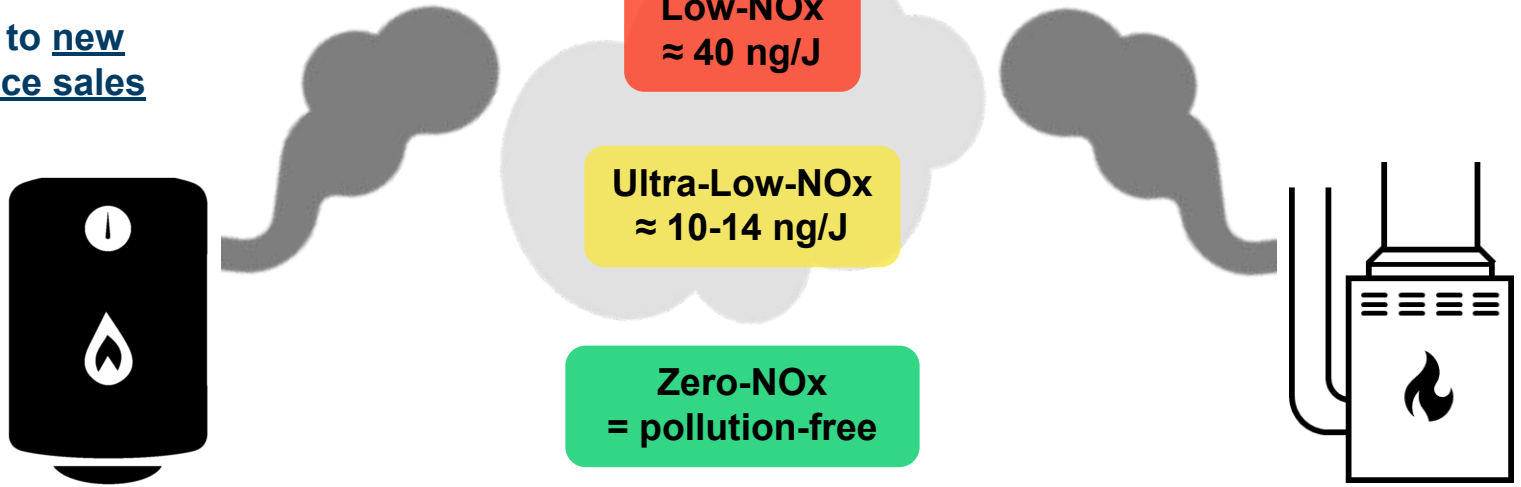
*National data Source: Christopher W. Tessum et al., $PM_{2.5}$ *Polluters Disproportionately and Systematically Affect People of Color in the United States*, 7 Sci. Adv. eabf4491 (2021).

Air District's role in decarbonizing buildings: zero-emission appliance standards

Appliance pollution standards regulate allowable pollutant levels from products that are sold or installed in a given geography

Usually target
Nitrogen Oxides (NOx)

Apply to new
appliance sales



Limit emissions
per unit of heat output

Appliance pollution standards have existed for decades, including in the Bay Area

Air District	Furnace NOx Standard (date enacted)	Water Heater NOx Standard (date enacted)
Bay Area AQMD	40 ng/J (1983)	10 ng/J (2007)
Sacramento Metro AQMD		10 ng/J (1996)
San Diego County APCD	40 ng/J (1998)	10 ng/J (2015)
San Joaquin Valley APCD	14 ng/J (2005)	0.024 lb/MMBTU (2005)
South Coast AQMD	14 ng/J (1978)	10 ng/J (1978)

Based on BAAQMD's leadership, CARB is also pursuing their own statewide zero-emission standards

CARB approved the following in their SIP and Scoping Plan:

	Residential Sector (implementation date)	Commercial Sector (implementation date)
80% of appliance sales zero-emission	2030	2030
100% of appliance sales zero-emission	2035	2045

The state also set the following statewide targets:

- 3 million all-electric and electric-ready homes by 2030
- 7 million all-electric and electric-ready homes by 2035
- 6 million heat pumps by 2030

BAAQMD is proposing zero-emission appliance standards that would enable widespread building decarbonization

BAAQMD's proposed standards:

Appliance	NOx Standard	Effective Date
Single-family residential water heaters	Zero-NOx	2027
Residential furnaces	"Ultra-low-NOx" (14 ng/J)	2023
	Zero-NOx	2029
Multi-family & commercial water heaters	Zero-NOx	2031

Zero-emission appliance standards can enable electrification:

- Directly address appliance pollution and resulting health impacts
- Apply to all newly installed appliances – existing buildings and new construction
- Apply when an appliance breaks and/or is newly installed

Standards must be designed equitably and accompanied by equity-focused policies.

BAAQMD's pursuit of equitable zero-emission standards includes 3 key design features:

Lead time: future implementation dates signal ahead that the transition is coming with time to enact equity-focused policies and increase investments

Conditional implementation: commitment to evaluate market conditions 2 years prior to the rules taking effect to ensure an equitable and affordable transition is feasible ("off-ramp" if needed)

Implementation working group: interdisciplinary stakeholder group to identify and implement equity protections before the rules take effect

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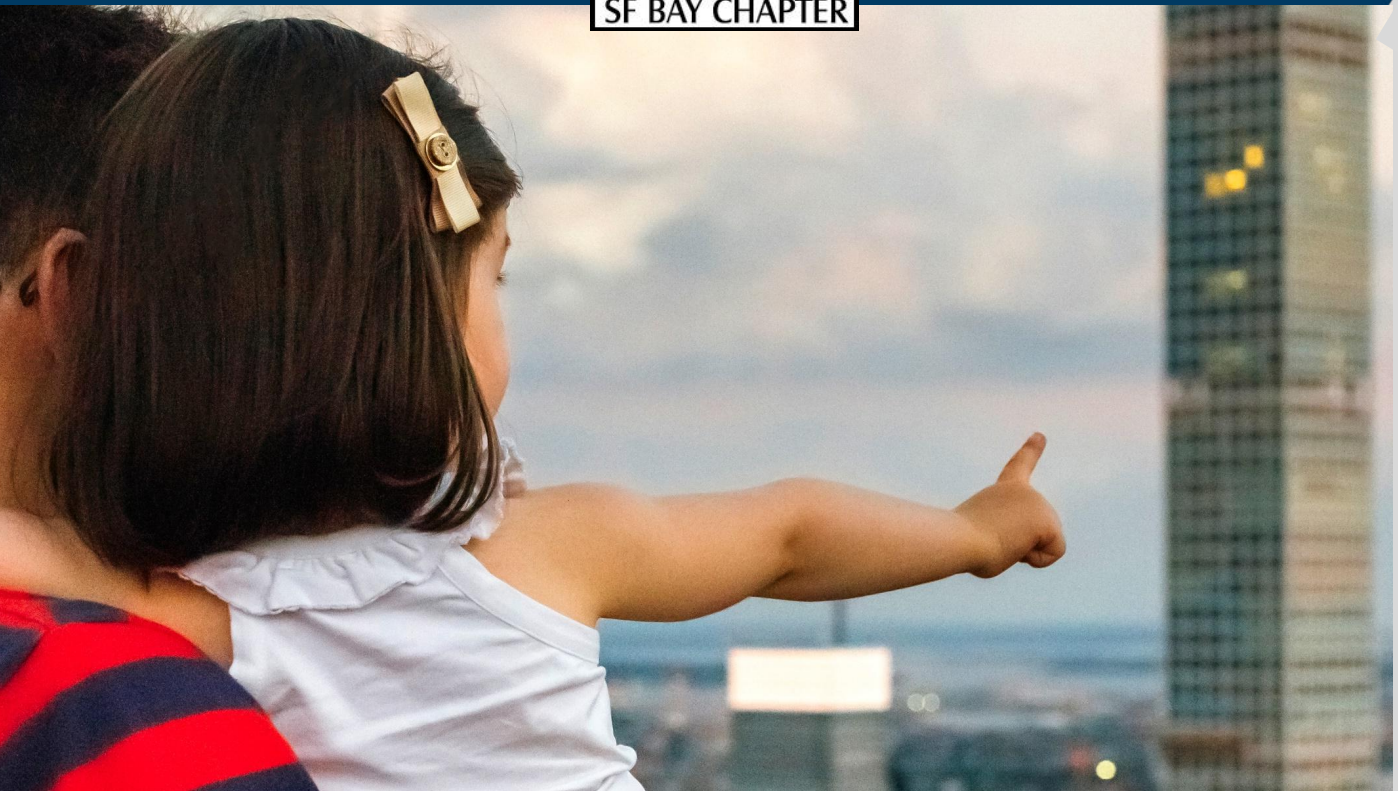

Thank you!

Draft slides for consideration below:

Rule 9 is grid gentle

Rule 9 slowly phases in new clean technology at the pace of water heaters (~15 years) and furnaces (~30 years) burning out or being remodeled away.

The zero NOx heat pump replacements for furnaces and water heaters will result in the use of modified refrigeration technology to heat and cool buildings (in place of furnaces and air conditioners). The zero NOx water heaters will use a reverse refrigeration cycle to efficiently gather heat to make hot water.

New utility programs help these devices run more when the grid needs them to run and run at low power when the grid needs less load.

SB68 (Senator Becker) has the CEC developing materials for even more grid gentle electrification design, like they did to make California an Energy Efficiency leader, it will become a power efficiency leader.

Rule 9 will help solar customer use more of their solar generation themselves in their new electric devices.

PG&E supports Rule 9 and building electrification!