Driving the Heat Pump Transition Through Federal and State Action

NESCAUM

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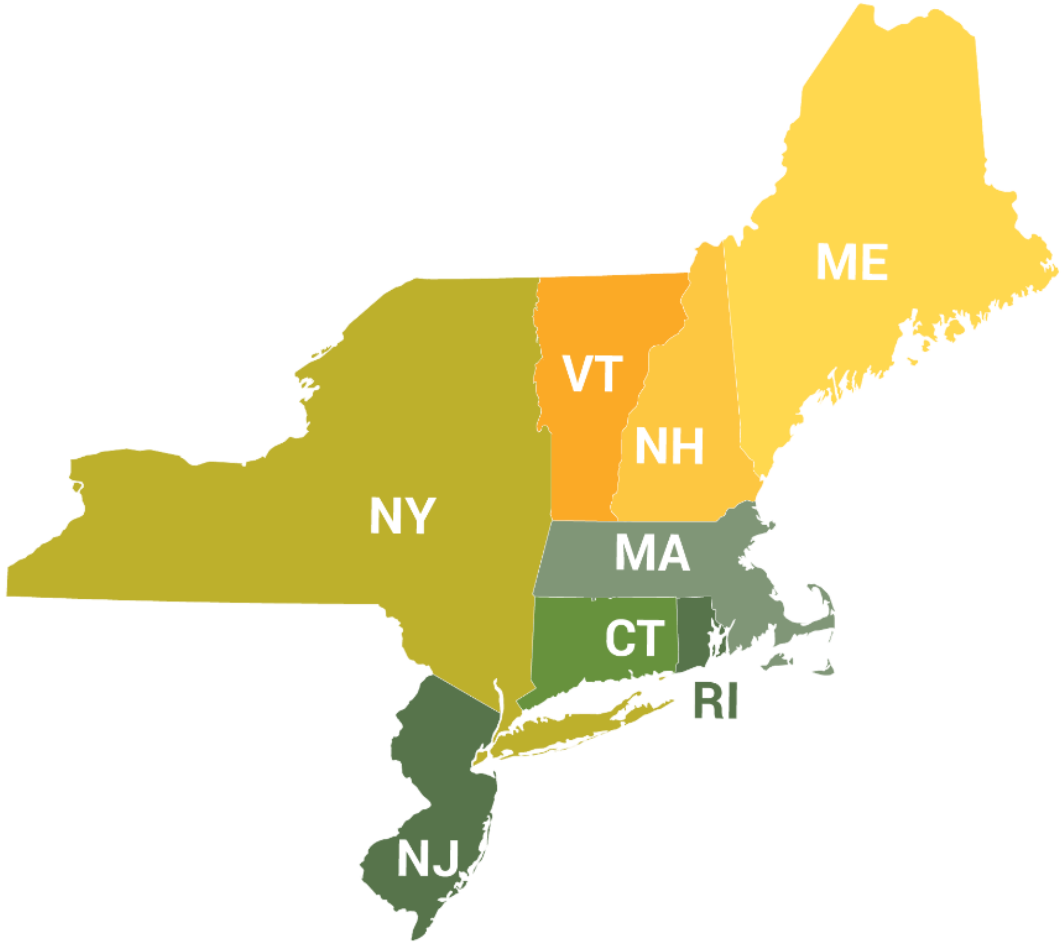
Northeast States for Coordinated Air Use Management (NESCAUM)

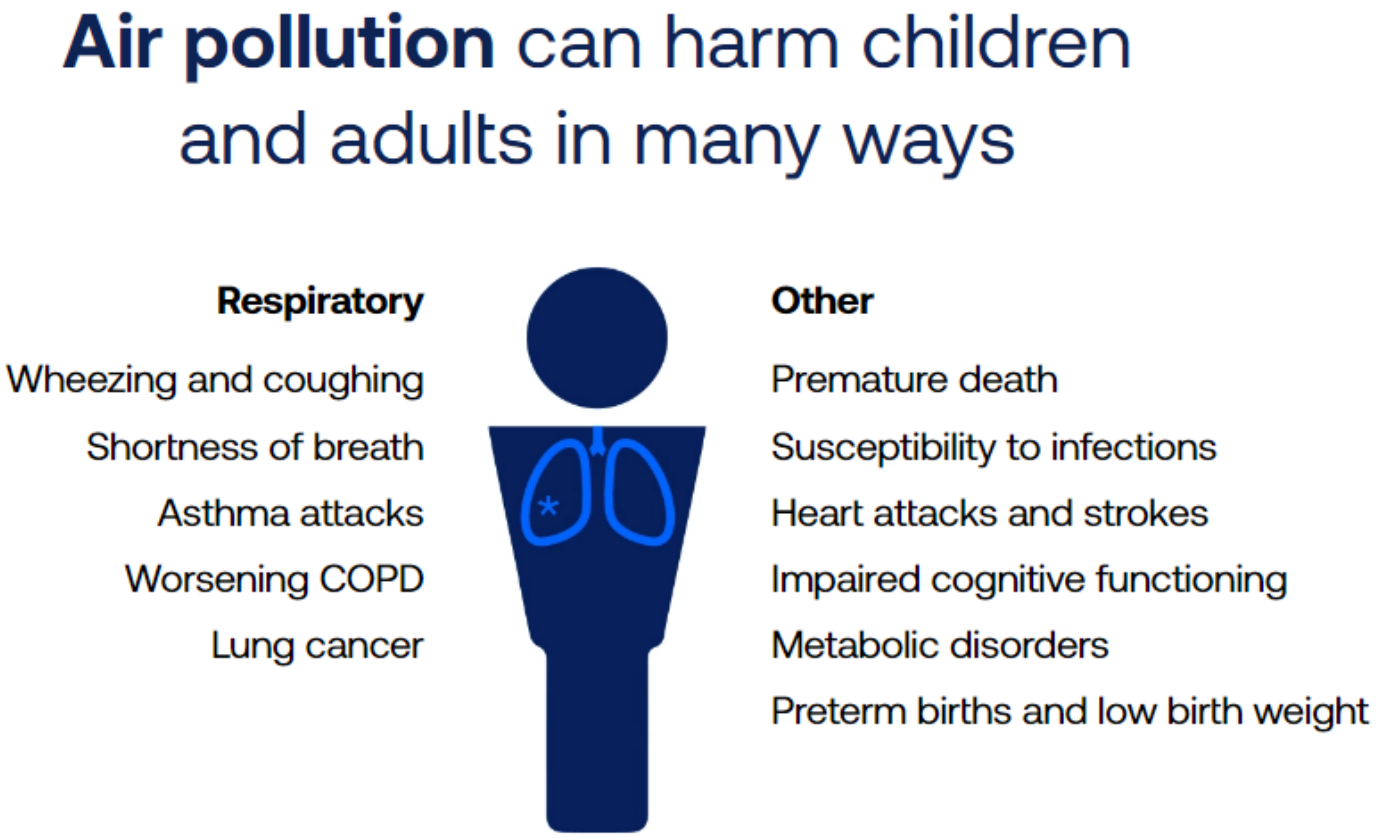
NESCAUM is the regional nonprofit association of state air quality and climate agencies in the Northeast. We:

- Assist member states in meeting their air quality, climate, and environmental justice goals
- Provide scientific, technical, analytical and policy support to states
- Collaborate with states outside the region to advance zero-emission buildings and vehicles



Outdoor Air Pollution from Fossil Fuel Combustion in Buildings

- Greenhouse gases (GHG):
  - CO2 from fossil fuel combustion
  - Methane from upstream gas leaks
- Criteria air pollutants:
  - NOx
  - PM2.5
  - Ozone



Source: https://www.lung.org/research/sota/health-risks

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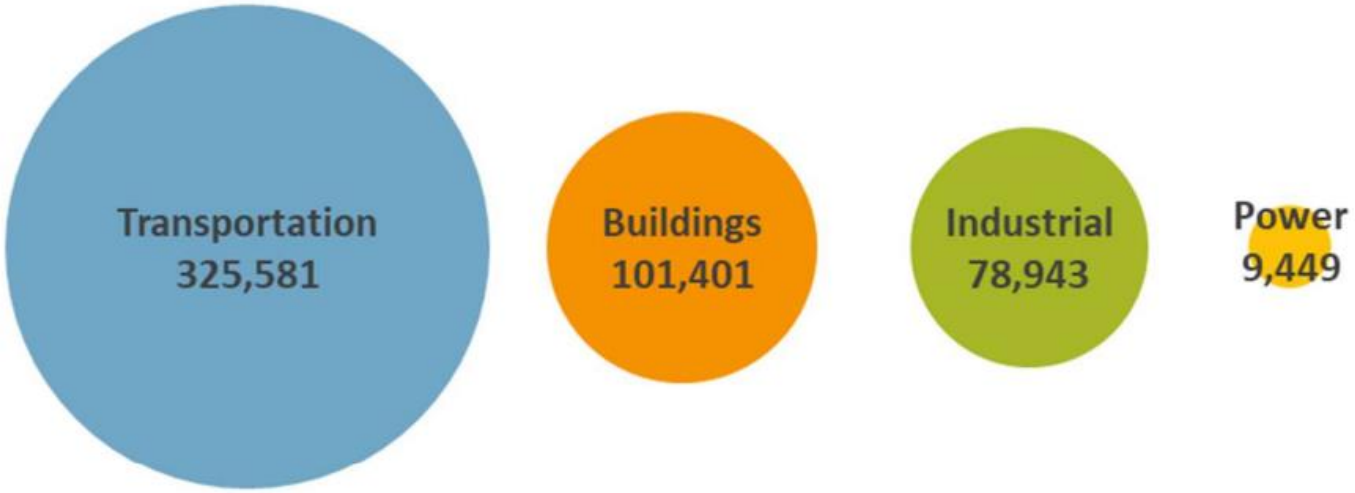
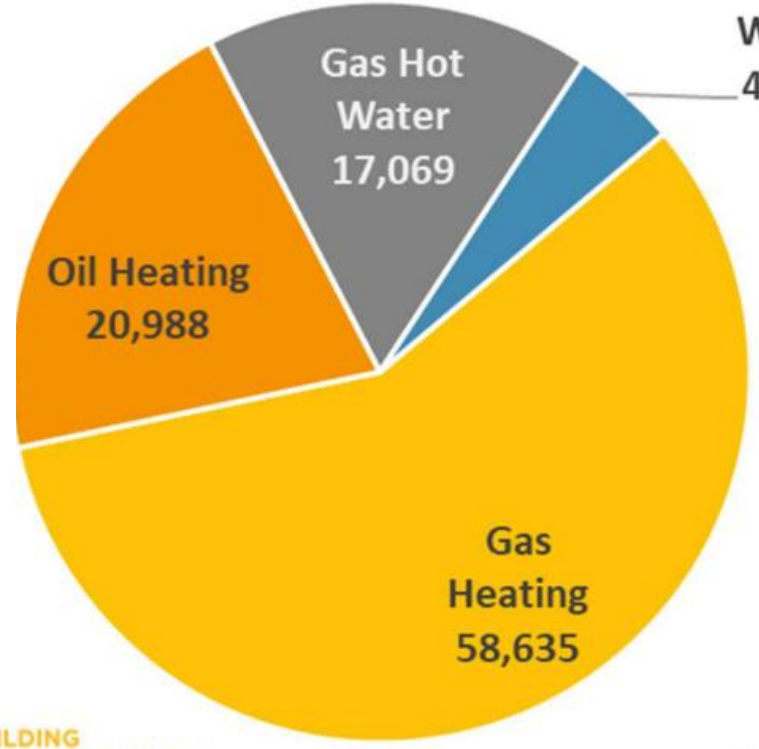
NOx Emissions (Tons) From Onsite Fossil Fuel Combustion in Residential Buildings in the Northeast



- Data shown for the NESCAUM region
- Buildings data excludes emissions associated with electricity generation

Breakdown of Building NOx Emissions by Equipment and Fuel Type



BUILDING DECARBONIZATION COALITION

Source: RECS, CBECS, AP42

Source: Building Decarbonization Coalition – EIA State Energy System Data (SEDS), AP42.

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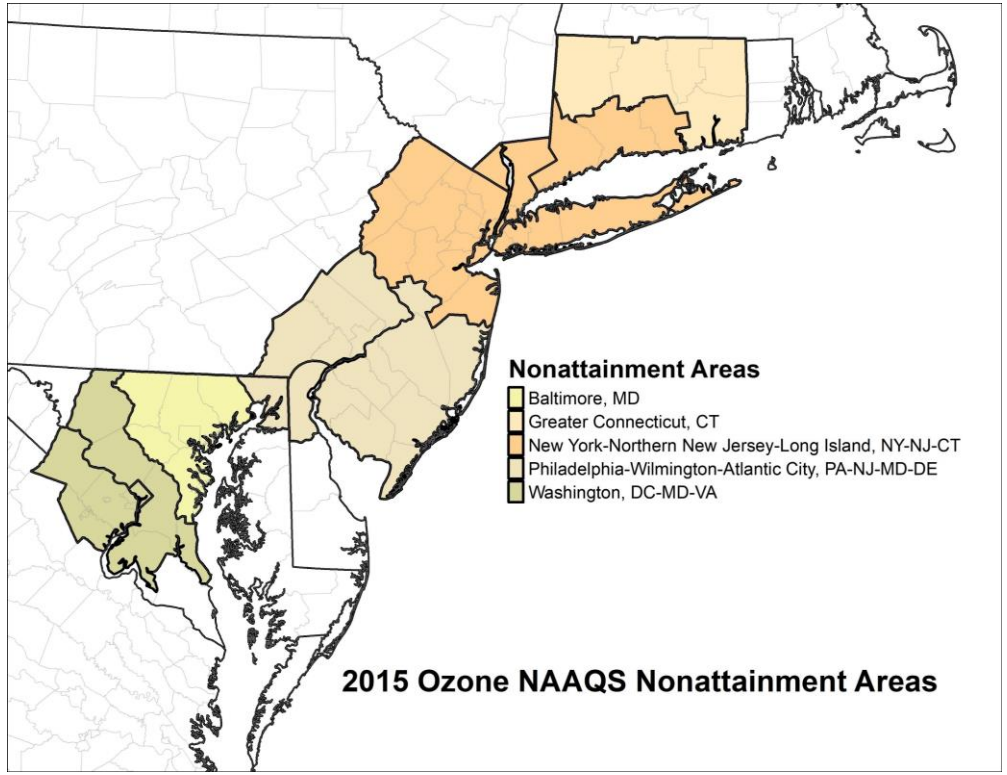
Ozone Nonattainment in the Northeast and Mid-Atlantic

- NOx emissions from burning fossil fuels in buildings contributes to ozone non-attainment in the region

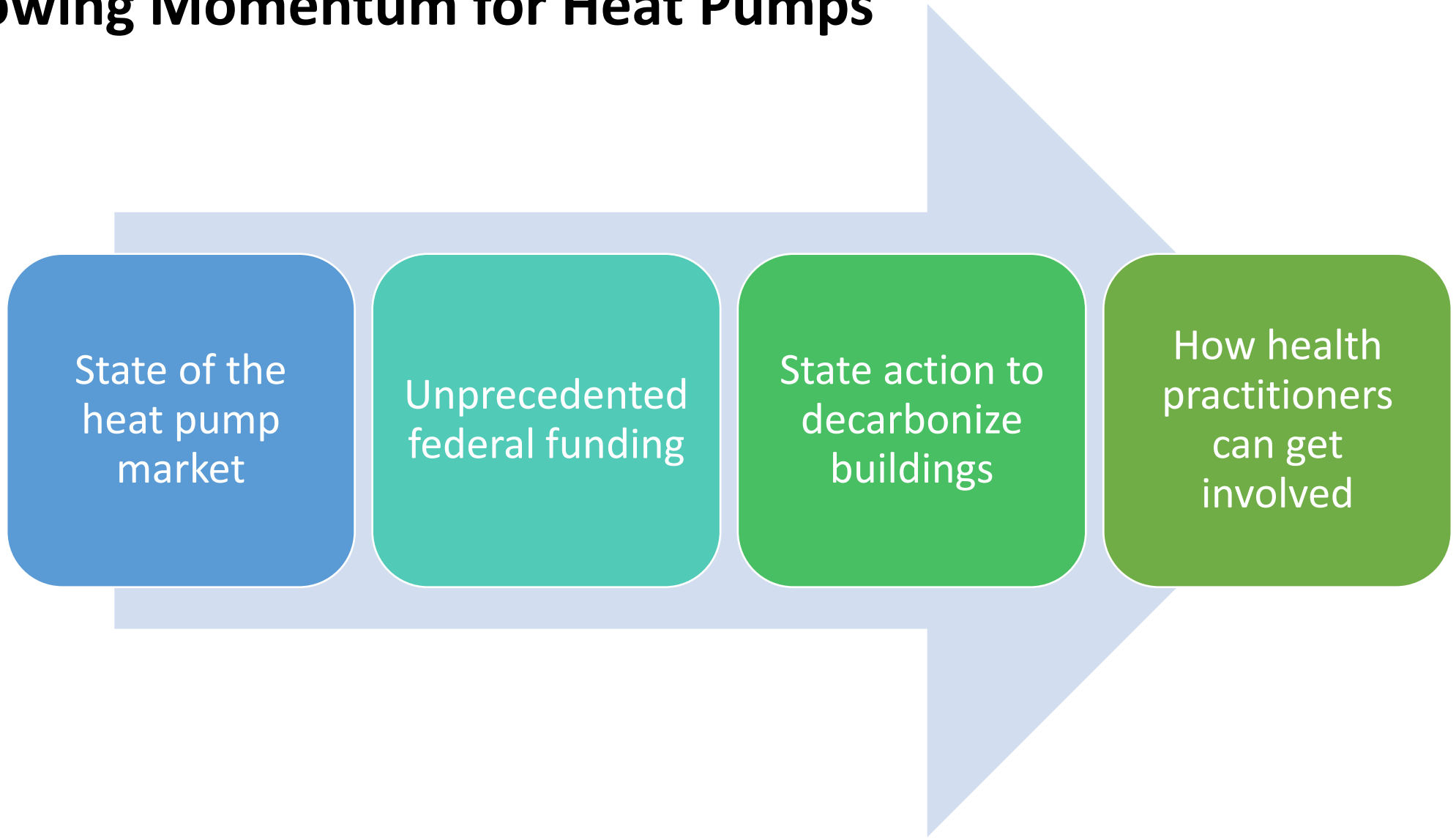
Nonattainment Area	Population	2015 NAAQS Status	2008 NAAQS Status
Greater Connecticut, CT	1,629,115	Marginal[a]	Serious
New York City, NY-NJ-CT	20,217,137	Moderate	Serious[b]
Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE	7,437,135	Marginal[a]	Marginal
Baltimore, MD	2,662,691	Marginal[a]	Moderate
Washington, DC-MD-VA	5,136,216	Marginal[a]	Maintenance

[1] EPA Air Quality Design Values, https://www.epa.gov/air-trends/air-quality-design-values#report. Accessed April 25, 2022.



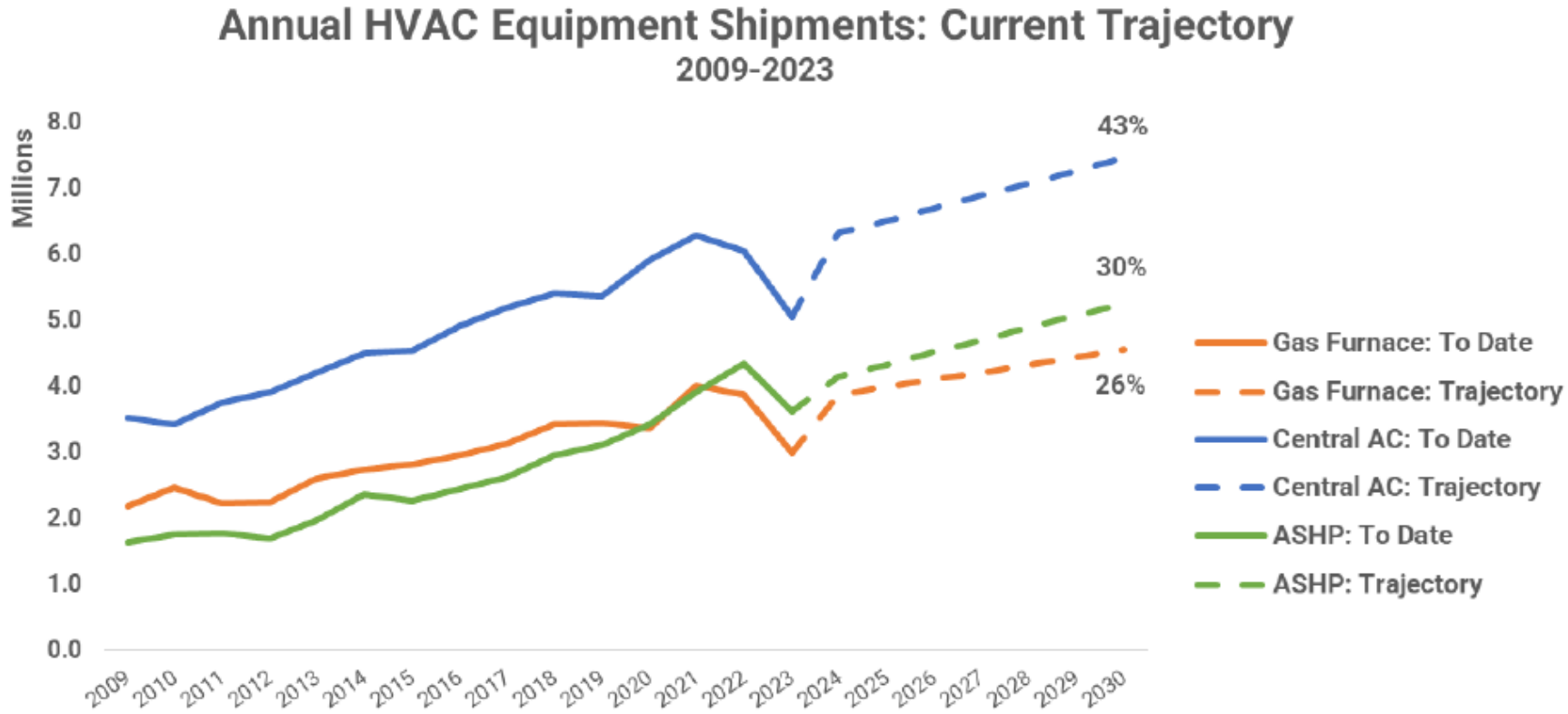
70 ppb 8-hr average ozone NAAQS (National Ambient Air Quality Standard)

Growing Momentum for Heat Pumps



Air Source Heat Pump (ASHP) Sales Trends

- Nationally, ASHPs are on track to make up 30% of sales by 2030
- ASHP sales recently surpassed gas furnaces
- Converting AC sales to 2-way heat pumps is a great first step



BDC

Source: AHRI

Inflation Reduction Act (IRA) and Bipartisan Infrastructure Law (BIL) are Jumpstarting the Heat Pump Market

Transforming the Market

- 10-year time horizon (through 2031-2032) is much longer than the 2009 Recovery Act
- Building electrification market will look very different in 2030

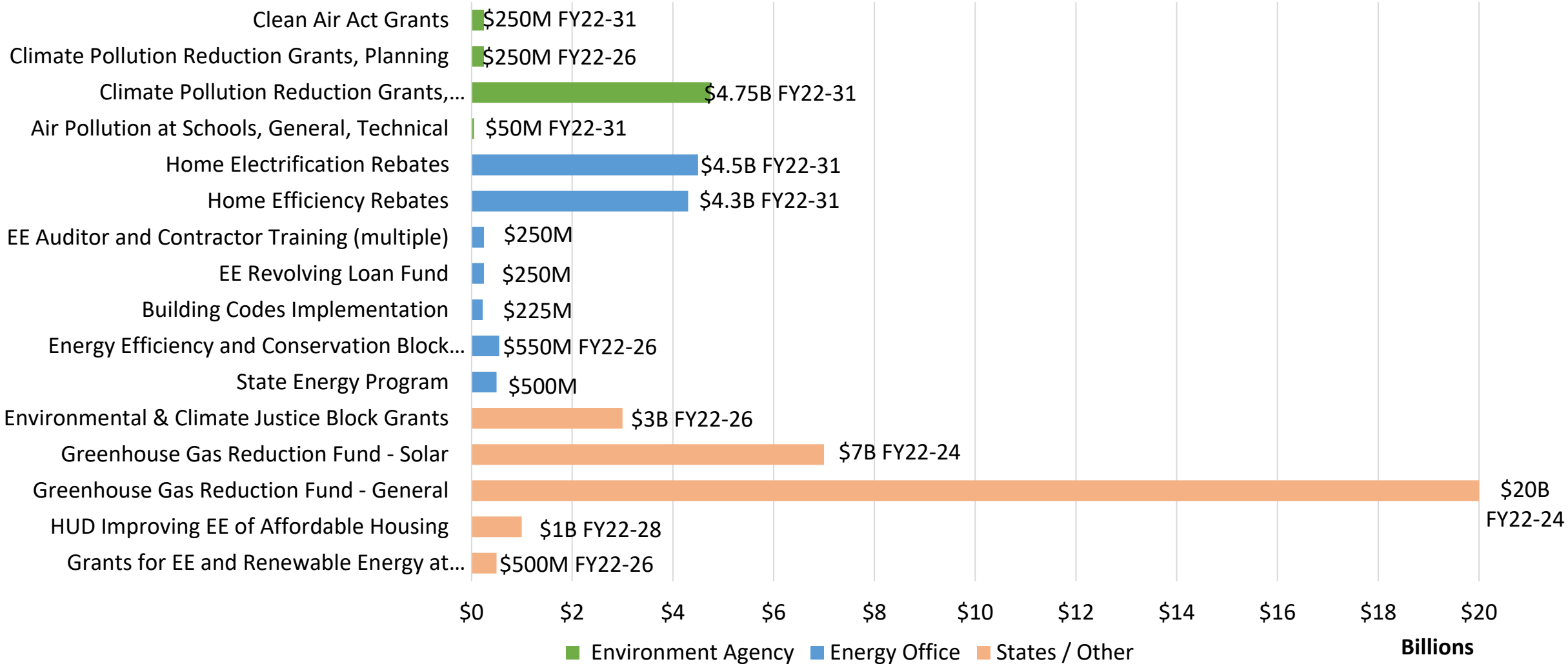
Unprecedented Funding

- Mostly carrots, few sticks
- Greenhouse Gas Reduction Fund alone is 3x EPA's annual budget

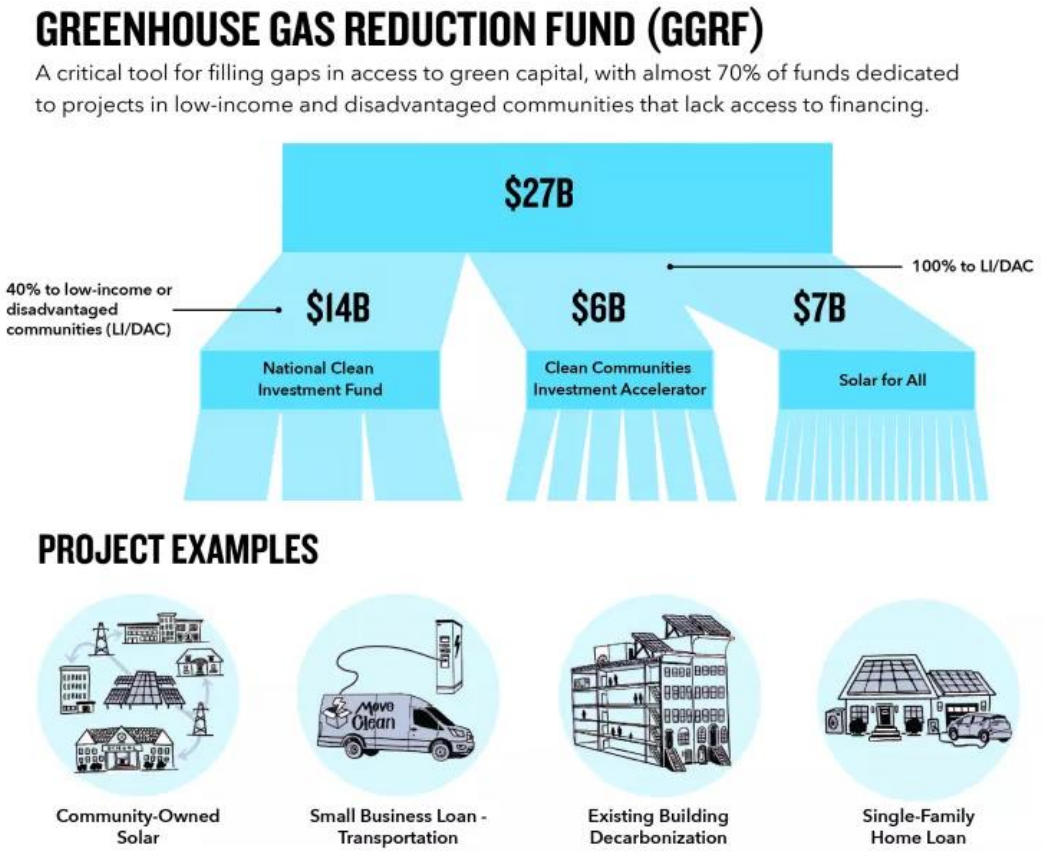
Time to Act is Now

- Much of the funding is administered by states
- Scramble to obligate funding before the election

Federal Funding for the Building Sector in BIL and IRA



Spotlight: Federal Funding for Building Electrification



Sources: NRDC, Rewiring America

Electrification Rebate Levels

For Qualified Electrification Projects

Income Eligibility and % Costs Covered

Low-income: <80% Area Median Income (AMI) % costs covered (including installation)	**100%**
Moderate-income: 80-150% AMI % costs covered (including installation)	**50%**

Overall Incentives

Max consumer rebate	**$14,000**
Max contractor rebate	**$500**

Rebates for Qualified Electrification Projects

Heat pump HVAC	**$8,000**
Heat pump water heater	**$1,750**
Electric stove/cooktop	**$840**
Heat pump clothes dryer	**$840**
Breaker box	**$4,000**
Electric wiring	**$2,500**
Weatherization insulation, air sealing, ventilation	**$1,600**

New Heat Pump Technologies Are Expanding Access

Source: Gradient

Department of Energy

DOE Announces Leading Heat Pump Manufacturers Successfully Develop Next-generation Prototypes to Withstand Subfreezing Weather

JANUARY 8, 2024

Rheem's heat pump was extensively tested by the Department of Energy in sub-zero temperatures and delivered dependable heat and exceptional efficiency.

U.S. Climate Alliance Heat Pump Announcement

https://usclimatealliance.org/press-releases/decarbonizing-americas-buildings-sep-2023/

Announced 9/21/23 at Climate Week

Member states:

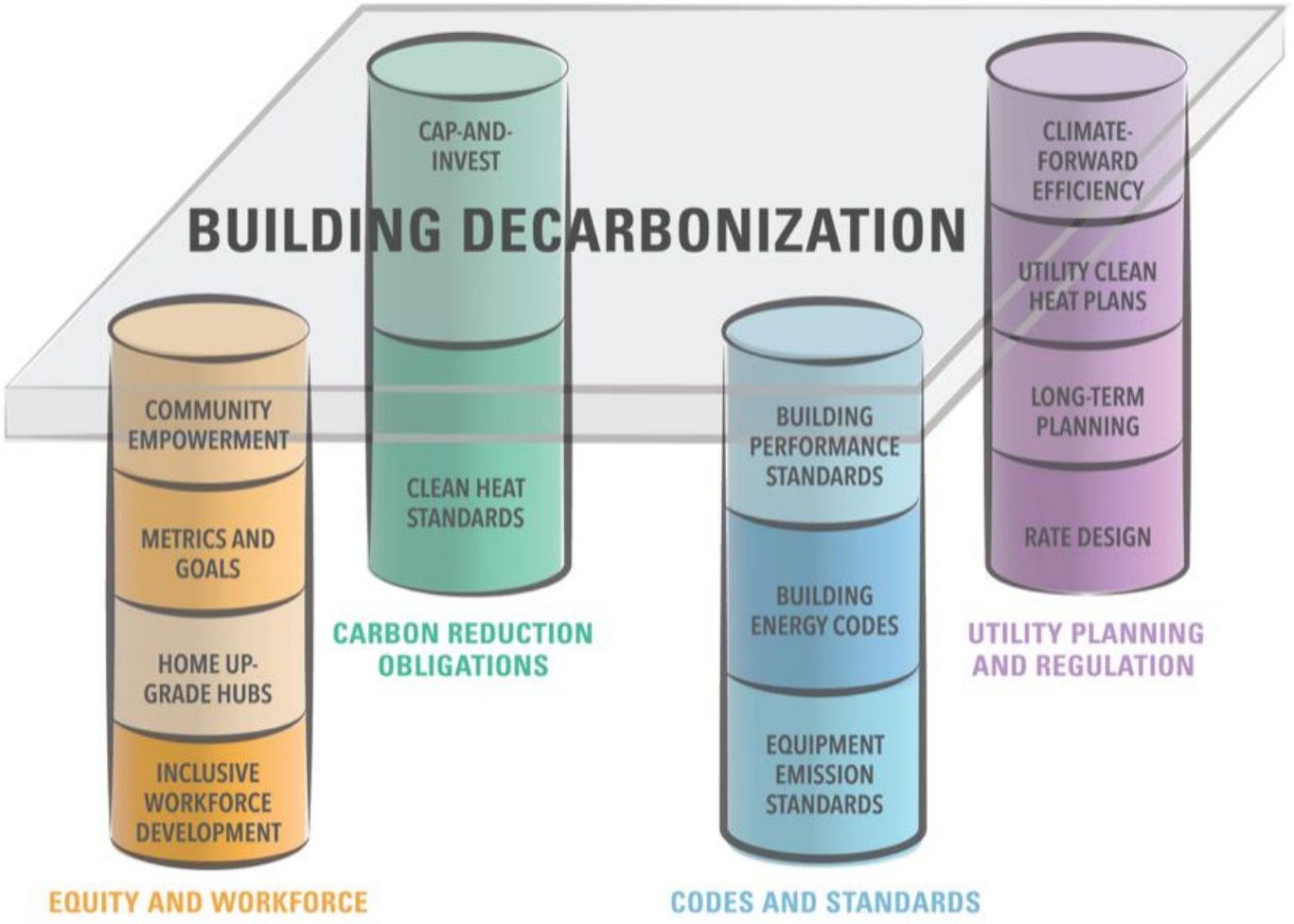
	Maine	Oregon
Arizona	Maryland	Pennsylvania
California	Massachusetts	Puerto Rico
Colorado	Michigan	Rhode Island
Connecticut	Minnesota	Vermont
Delaware	New Jersey	Washington
Guam	New Mexico	Wisconsin
Hawai'i	New York	
Illinois	North Carolina	

NESCAUM Multistate MOU: Accelerating the Transition to Zero-Emission Residential Buildings

- February 7, 2024 MOU and press release
- Supported by heat pump manufacturers and businesses
- Multistate collaboration accelerating the transition to zero-emission residential buildings through:
  - **Shared targets:** Across Signatory States, at least 65% of residential-scale HVAC and water heating equipment shipments will be zero-emission heat pump equipment by 2030 and 90% by 2040
  - **Tracking and reporting each state's progress** towards market share targets
  - **Development of a multistate action plan** to transform the market within 12 months

State Policy Options to Decarbonize Buildings

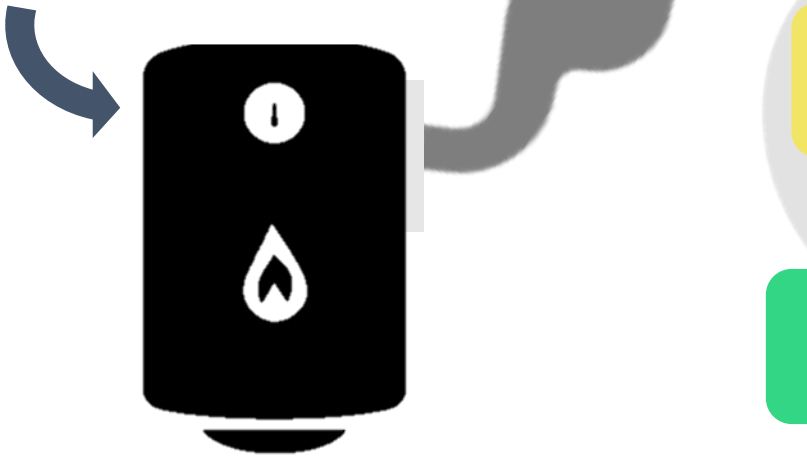
- Forthcoming policy brief *Decarbonizing Buildings: How States Can Set the Table for Success*
- Federal funding + state policy can accelerate heat pump adoption and reach 65% of sales by 2030



RAP® neep NESCAUM

Spotlight: Zero-Emission Standards for Building Equipment Sold or Installed in a Jurisdiction

Apply to
new equipment
such as space &
water heaters

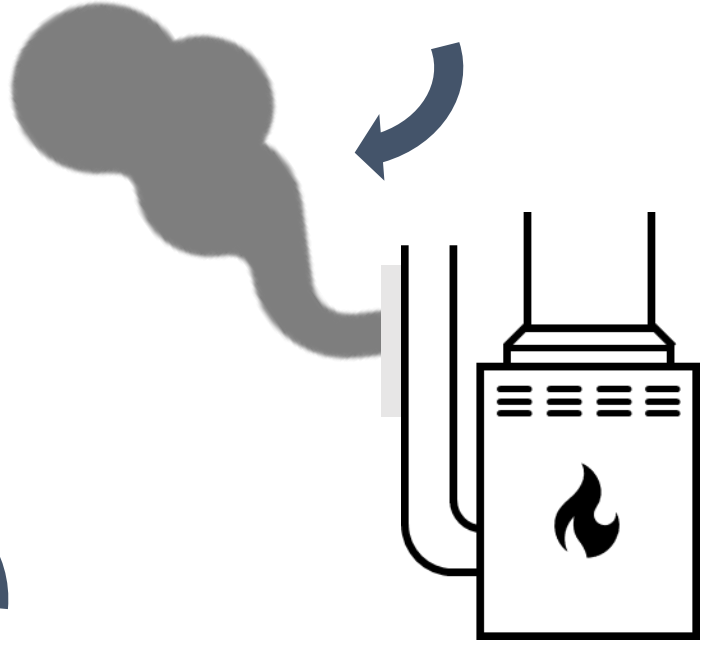


Low-NOx
≈ 40 ng/J

Ultra-Low-NOx
≈ 10-14 ng/J

Zero-NOx
= pollution-free

May target
NOx or CO2



Phase in over time, to
achieve zero emissions
by 2030 or 2035

Limit emissions
per unit of heat output

RMI
ENERGY. TRANSFORMED.

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Health Practitioners Are Important Electrification Advocates

- ✓ **Educate** colleagues and patients about the negative health effects of fossil fuel combustion and the benefits of electrification
- ✓ **Advocate** for legislative and regulatory solutions to reduce pollution through building electrification
- ✓ **Address health disparities** from building pollution that disproportionately impacts disadvantaged communities and people of color

Further information: https://rmi.org/wp-content/uploads/2022/02/health_professionals_factsheet.pdf

Source: Sustainable Energy for All

For More Information

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