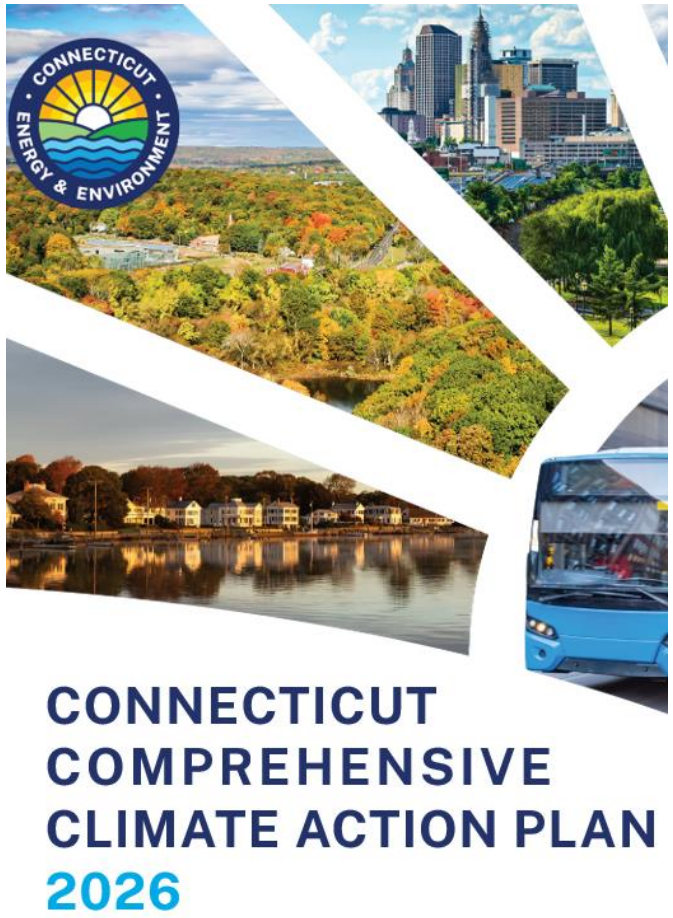
Connecticut CCAP: Benefits and Low-Income and Disadvantaged Communities Analysis

May 6, 2026

Climate Pollution Reduction Grants (CPRG) Overview



- Climate Pollution Reduction Grants (CPRG) program provides funding to develop and implement ambitious plans for reducing GHG emissions and other harmful air pollution
  - ✓ Priority Climate Action Plan (PCAP) that identified priority GHG reduction measures (2024)
  - ✓ Implementation Grant Awards for funding these measures (New England Heat Pump Accelerator and Clean Corridor Coalition) (2024)
  - ★ Comprehensive Climate Action Plan (CCAP) to identify mitigation strategies to reduce emissions consistent with Connecticut's statutory targets (2025–2026)

Polling Questions

Question 1: Before today, how familiar were you with Connecticut's Comprehensive Climate Action Plan (CCAP)?

- Very familiar – have been involved
- Somewhat familiar
- Heard of it but not familiar with details
- New to CCAP

Polling Questions

Question 2: Which perspective best describes how you engage with climate and air quality issues?

- State or regional agency
- Local government
- Community-based organization/advocacy
- Public health
- Industry/utility
- Resident/general interest
- Other

Overview of CCAP Requirements

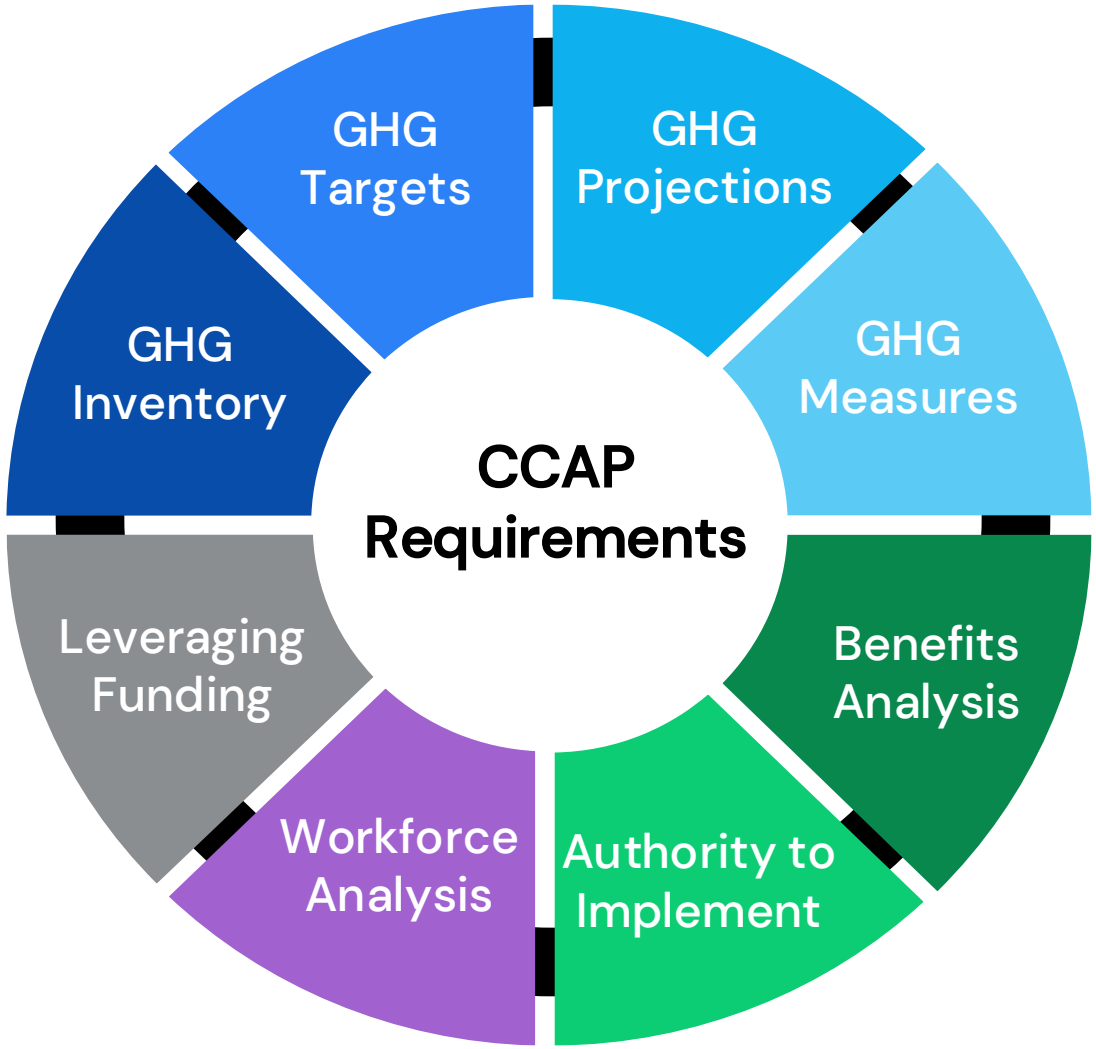
Statewide GHG Reduction Goals

- 2030: 45% reduction in gross emissions from 2001
- 2040: 65% reduction in gross emissions from 2001
- 2050: 80% reduction in gross emissions from 2001
- 2050: Net Zero emissions

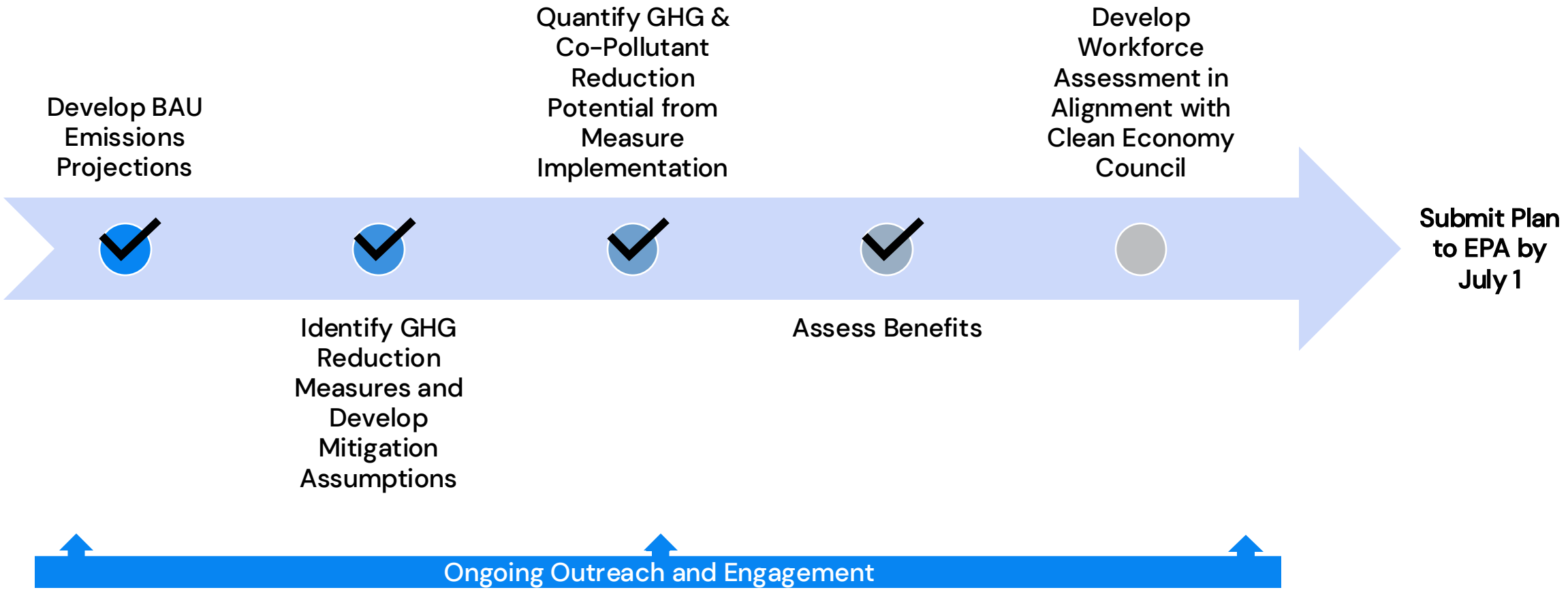
Sectoral Goals

- Power sector: all electricity consumed in the state met with zero-emission resources by 2040

Scenario Framing: "What Would It Take" to meet statewide GHG goals



CCAP Development



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CCAP Engagement Summary

Public Meetings

- 3 public meetings (June 13, 2025; October 8, 2025; January 13, 2026 – GC3)

Public Input Survey

- Climate Action Plan survey, 136 responses
- Goal: input on potential implementation actions

Sectoral Outreach

- 3 industrial stakeholder meetings
- Goal: better understanding challenges and opportunities to emissions reductions

Interagency/intergovernmental Coordination

- CT Council of Governments (COG) met regularly with DEEP
- DOT, OWS, DoAg
- CEEJAC

DEEP Work Plan: Co-Benefits Analysis

CCAP Requirements

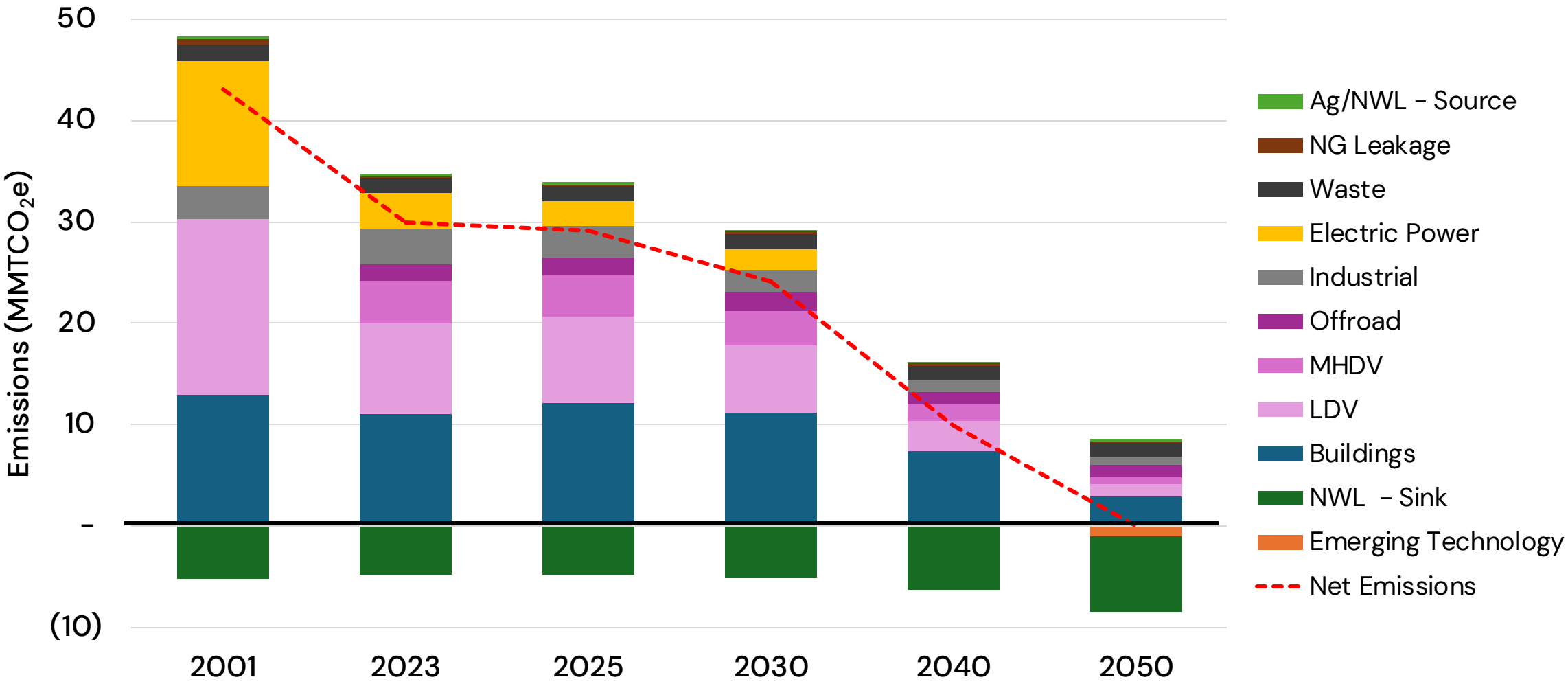
- Base year inventory for co-pollutants by county
- Co-pollutant reduction estimates from measure implementation

Co-Benefits Analysis Outputs:

- Updated estimates of co-pollutant reductions
- Change in incidences (counts) of adverse health outcomes (asthma, etc.)
- Monetized value (cost savings) of avoided adverse health outcomes
- List of expected benefits associated with the GHG reduction measures in the CCAP

Emissions Reductions

GHG Mitigation Scenario Reductions



Note: 2001 transportation sector emissions are not broken out by LDV, MHDV, and Offroad

Note: The state's net-zero goal is effective in 2050; net emissions in prior years are included to visualize progress towards 2050 levels

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Key Decarbonization Drivers: Buildings, Transportation, Power Sectors

→ Heat pump adoption follows New England's CPRG Heat Pump Accelerator targets, reaching 90% of residential space heating sales by 2040

- Over 30k heat pump HVAC systems installed annually by 2035 and over 45k by 2050, up from ~10k today
- Over 40k heat pump water heaters installed annually by 2035 and over 85k by 2050, up from ~10k today

→ ~70% of homes are weatherized by 2050

- By 2050, over 90k homes per year receive a combination of electric/induction stovetops, building shell efficiency improvements, smart thermostats

→ 100% sales of light-duty vehicles by 2035 and 100% of medium- and heavy-duty vehicles by 2050

- 2.7 million BEVs and PHEVs LDVs on the road by 2050 backed by over 120,000 charging stations
- Almost 170,000 MHDV ZEVs on the road by 2050, backed by almost 15,000 charging stations

→ Growing consumption of renewable diesel (RD) over time

- 25% of diesel use by 2035, increasing to 100% by 2050

→ Electrification of ferry routes and passenger rail lines

→ 100% of electricity supplied to CT is zero emissions by 2040

- Adds 2.5 GW of grid-scale solar, 6 GW of storage, 1.2 GW of nuclear, and 0.5 GW of offshore wind

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Polling Questions

Question 3: How does the scale of emissions reduction shown here compare to what you expected was needed to reach net zero?

- Much more than I expected
- Slightly more than expected
- About what I expected
- Less than I expected
- Not sure

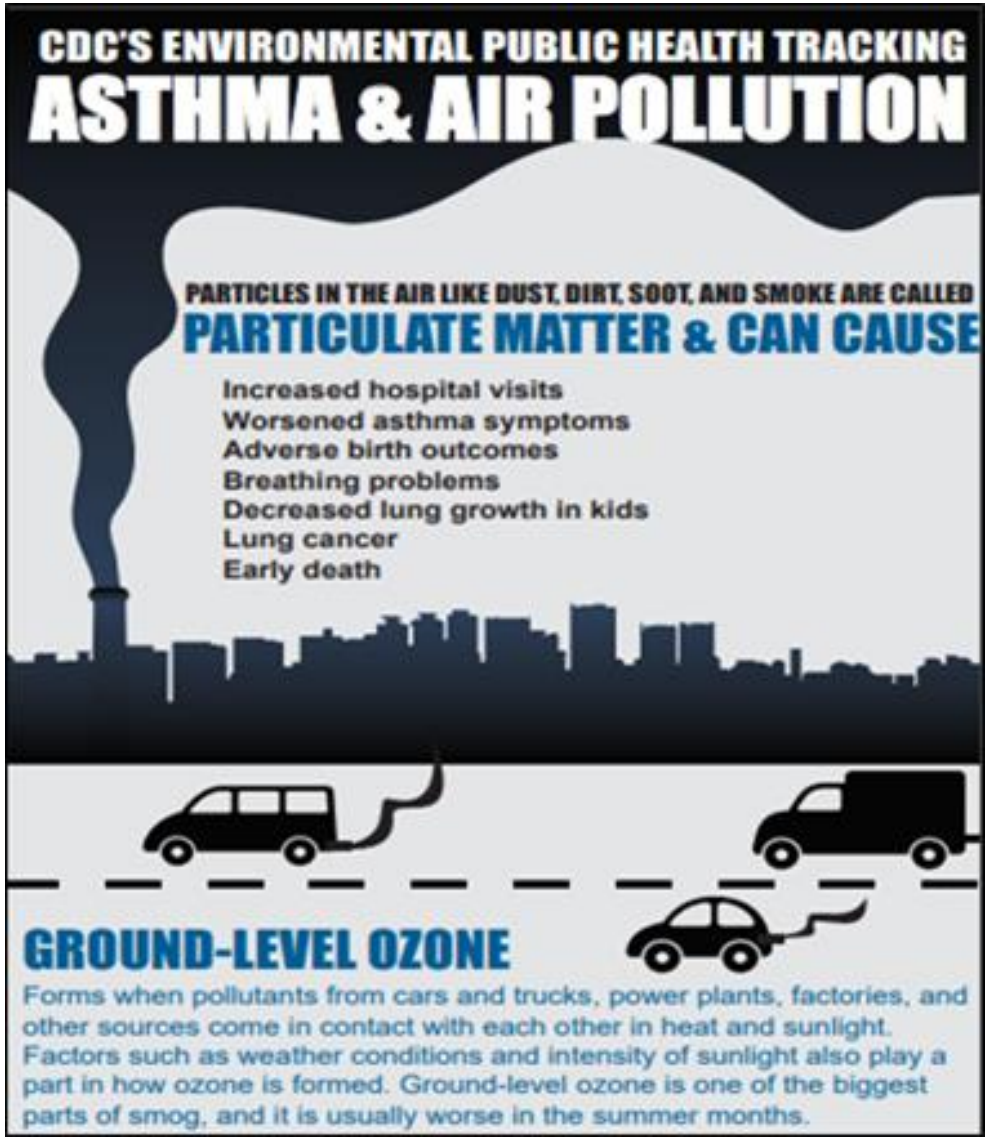
Health Impacts from Criteria Air Pollution (CAP)

Mobile (on and off-road) sources

Buildings (residential and commercial)

Industry and Power sector sources

- Fuel combustion emits air pollution (CO, NO_x, PM, SO_2, VOC, etc.).
- Breathing air pollution from exhaust leads to poor health.
- GHG Mitigation reduces fuel combustion and switches fuels.
- This has "co-benefits" of reducing air pollutant emissions, improving air quality, and improving public health.



Source: CT Dept. of Public Health
https://portal.ct.gov/dph/health-education-management--surveillance/asthma/asthma-program/air-quality?language=en_US

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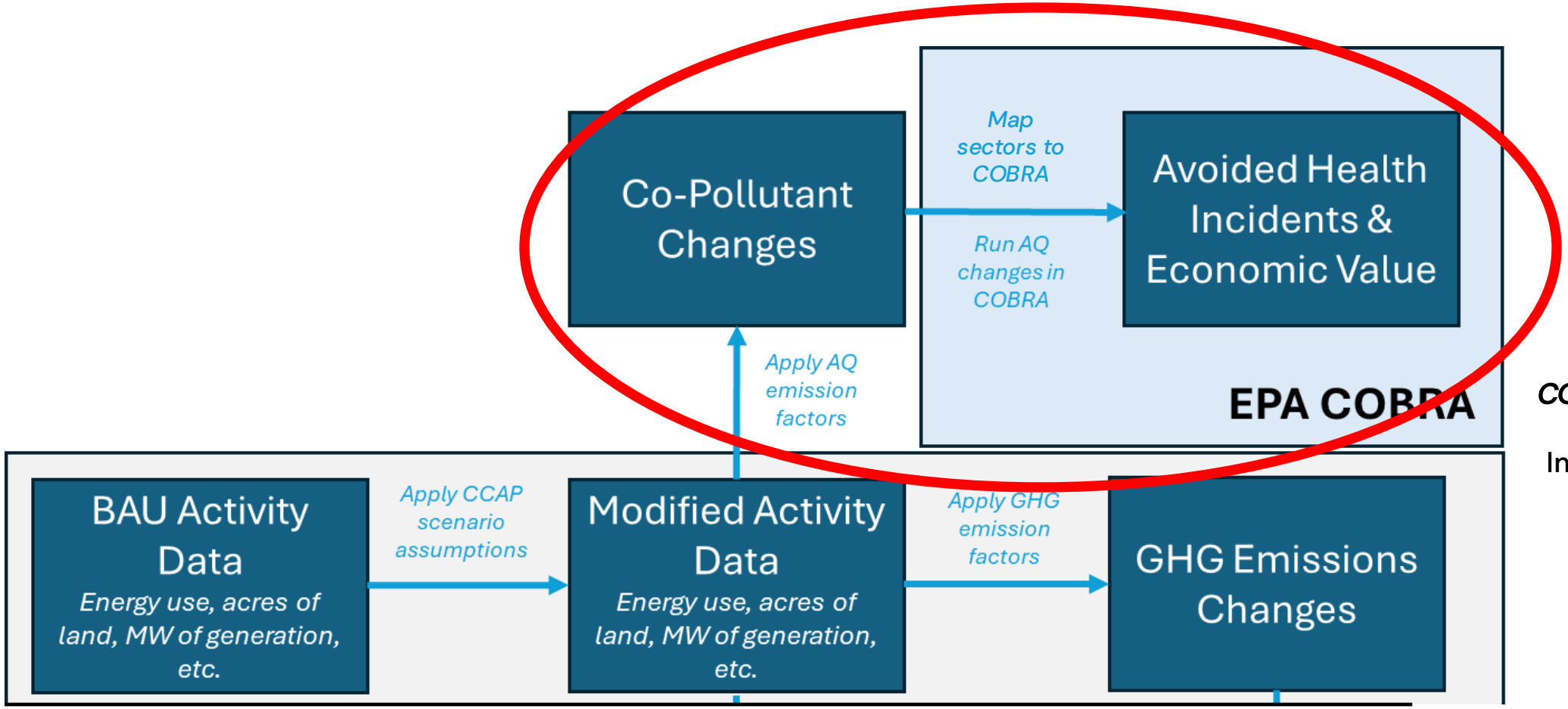
Co-Pollutant Emissions Modeling Approach



COBRA: Co-Benefits Risk Assessment Health Impacts Screening Tool

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Sectoral Emissions

Transportation Sector

- On-Road
- Off-Road (Aviation, Passenger Rail, and Ferry)

Buildings Sector

- Residential & Commercial

Electric Power Sector

Industrial Sector

<u>Not included:</u>

Waste Sector, Agriculture Sector, Natural & Working Lands Sector

- These do not affect co-pollutant analysis
- No mitigation measures affect in-state waste combustion

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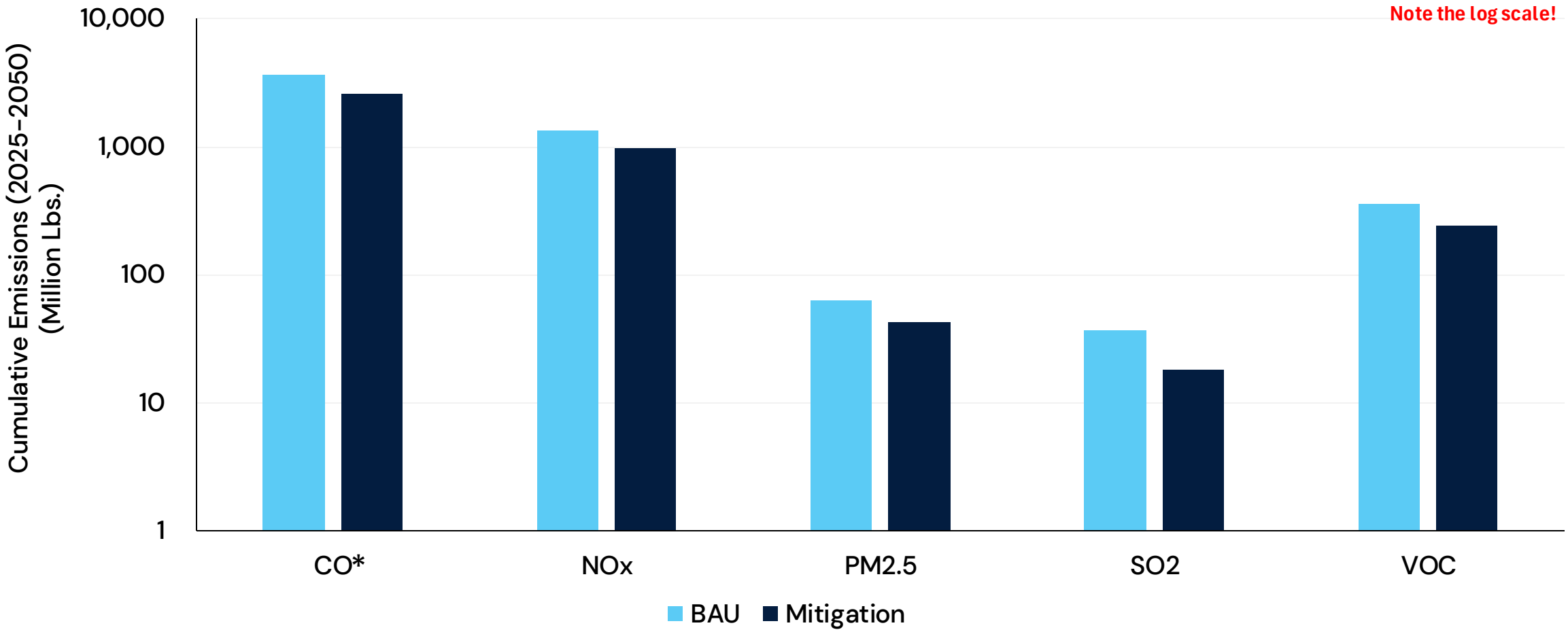
Statewide, Cumulative Emissions by Scenario and Pollutant



* Power sector emissions do not include CO.

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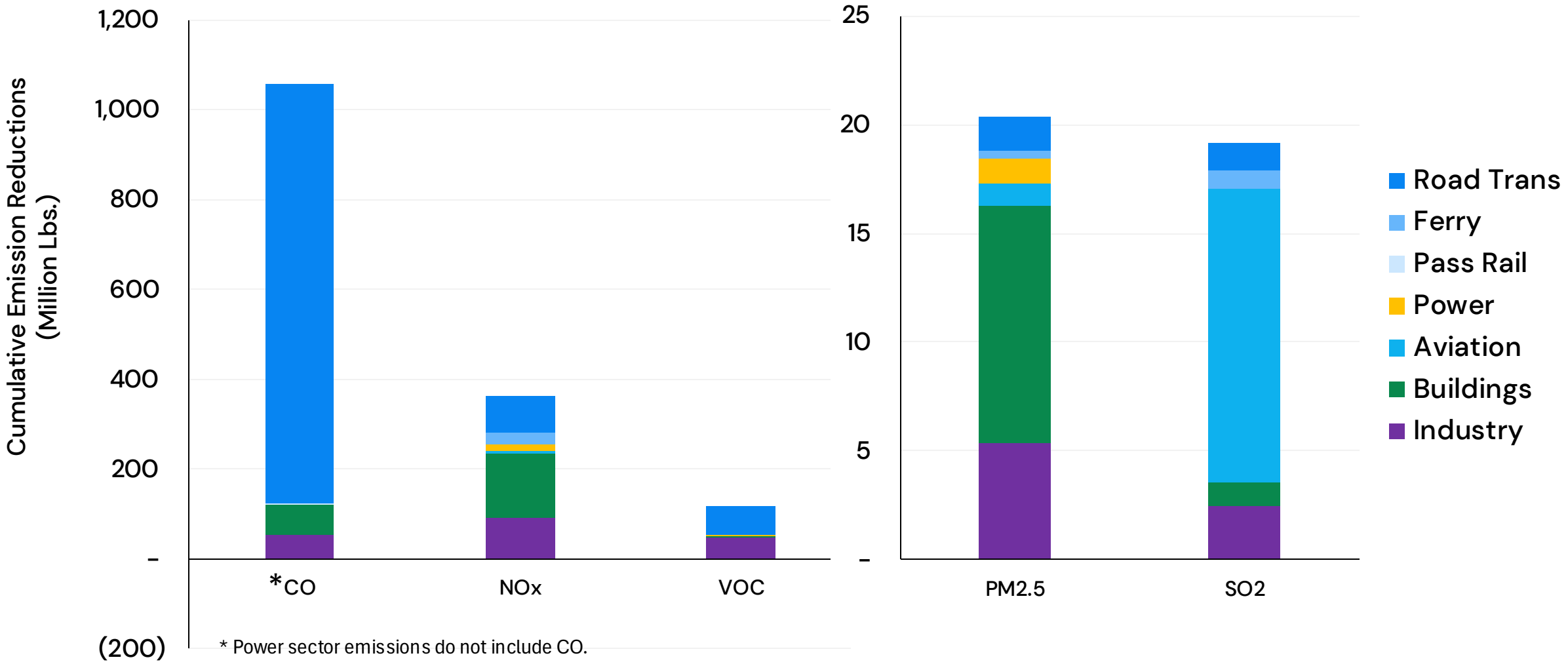
Statewide Cumulative Emission Reductions (2025–2050) through Mitigation, by Sector and Pollutant



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Health Benefits: COBRA Methodology

1. Model emissions by county for the BAU and Mitigation Scenario, then translate into COBRA Tiers.
2. Apportion NOx, SO_2, $PM_{2.5}$, VOC emissions across COBRA parameters to account for different fuels, stack heights, etc.
3. Execute COBRA for 2030 & 2050, comparing BAU and Mitigation scenarios.
   Note that each scenario reflects all emissions changes in all sectors combined.
4. Post-process results to account for a common $-year
5. Interpolate between modeled years to generate cumulative results statewide

Note that COBRA health impacts are based on changes in (primary + secondary) $PM_{2.5}$ and O_3 concentrations

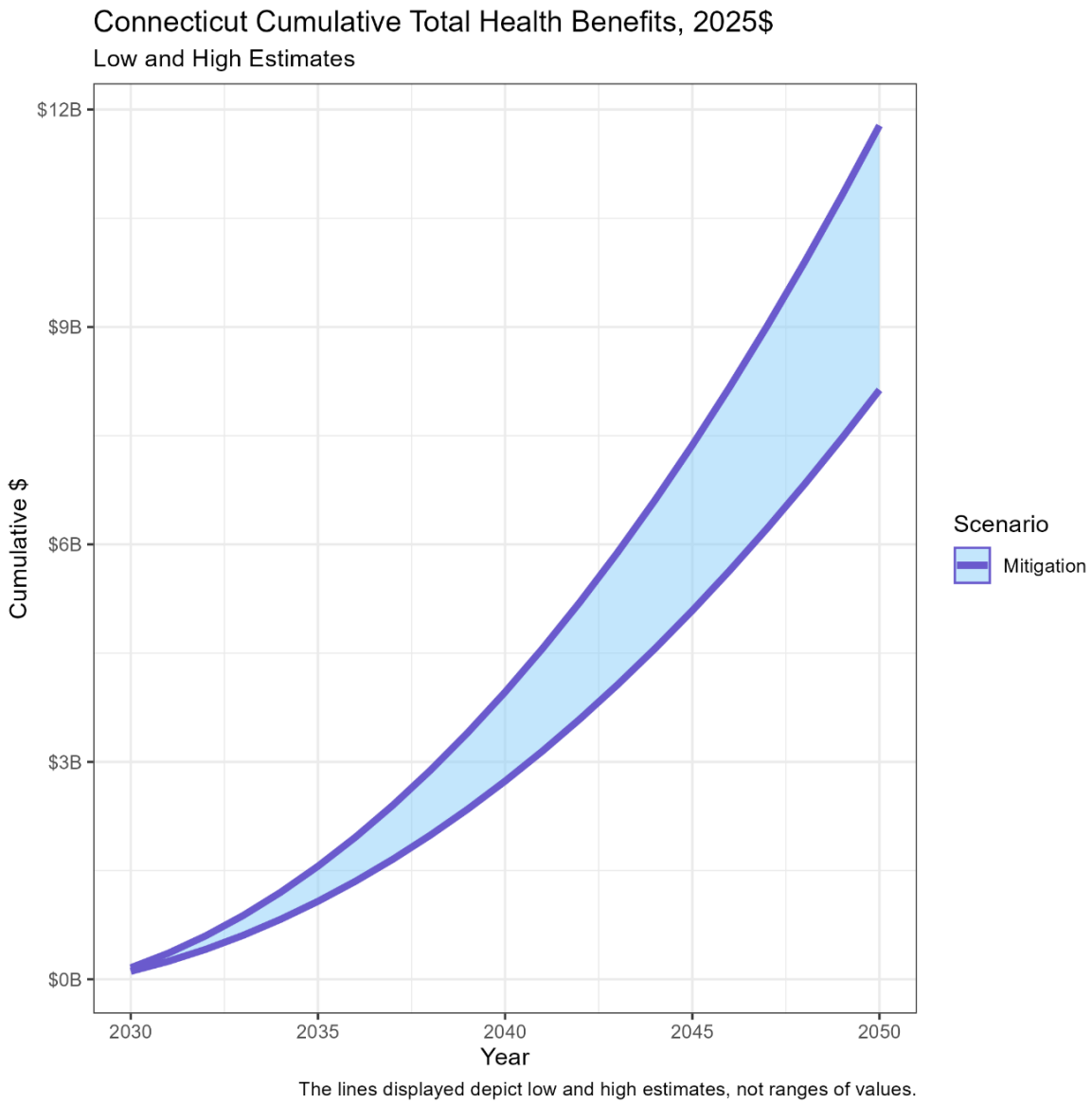
Co-Benefits Risk Assessment Health Impacts Screening and Mapping Tool (COBRA, v5.1)

In-State Health Benefits Resulting from Emissions Reduction

Connecticut State-Level Cumulative Health Impact Summary for 2030-2050 Under the Mitigation Scenario

Health Endpoint	2030-2050	
	Change in the Number of Cases	Monetary Health Benefits (2025$)[a,b]
Mortality, low estimate[c]	466	$7,520,000,000
Mortality, high estimate[d]	692	$11,200,000,000
PM, Infant Mortality	1	$18,300,000
Asthma Symptoms	322,000	$95,000,000
Asthma Incidence	1,920	$169,000,000
Rhinitis Incidence	12,700	$16,500,000
Respiratory ER Visits	790	$1,500,000
Hospital Admits, All Respiratory	51	$1,400,000
PM, Nonfatal Heart Attacks	176	$17,200,000
PM, Minor Restricted Activity Days	182,000	$26,100,000
PM, Work Loss Days	30,800	$11,200,000
PM, Incidence Lung Cancer	19	$1,010,000
PM, Hospital Admits, Vascular Disease	37	$1,220,000
PM, Hospital Admits, Alzheimers Disease	176	$4,600,000
PM, Hospital Admits, Parkinsons Disease	23	$627,000
PM, Stroke Incidence	17	$1,240,000
PM, Non-Hospital Cardiac Arrest	4	$269,000
PM, ER Cardiac Visits	75	$188,000
O3, Asthma ER Visits	5	$4,390
O3, All Cause School Days Lost	135,000	$264,000,000
Total, low estimate		**$8,130,000,000**
Total, high estimate		**$11,800,000,000**

(All results use a default 2% Discount Rate)



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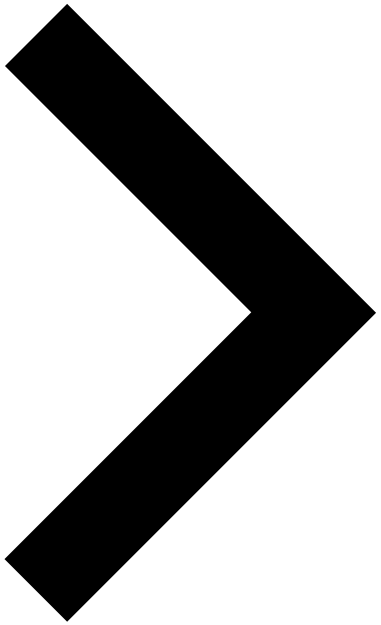
Polling Questions

Question 4: What, if anything, surprised you most so far?

- The size of health benefits
- Which sectors drive pollution reductions
- The role of buildings
- The timeline to 2050
- Little/no surprises
- Other (short answer)



Questions/Comments?

LIDAC Analysis

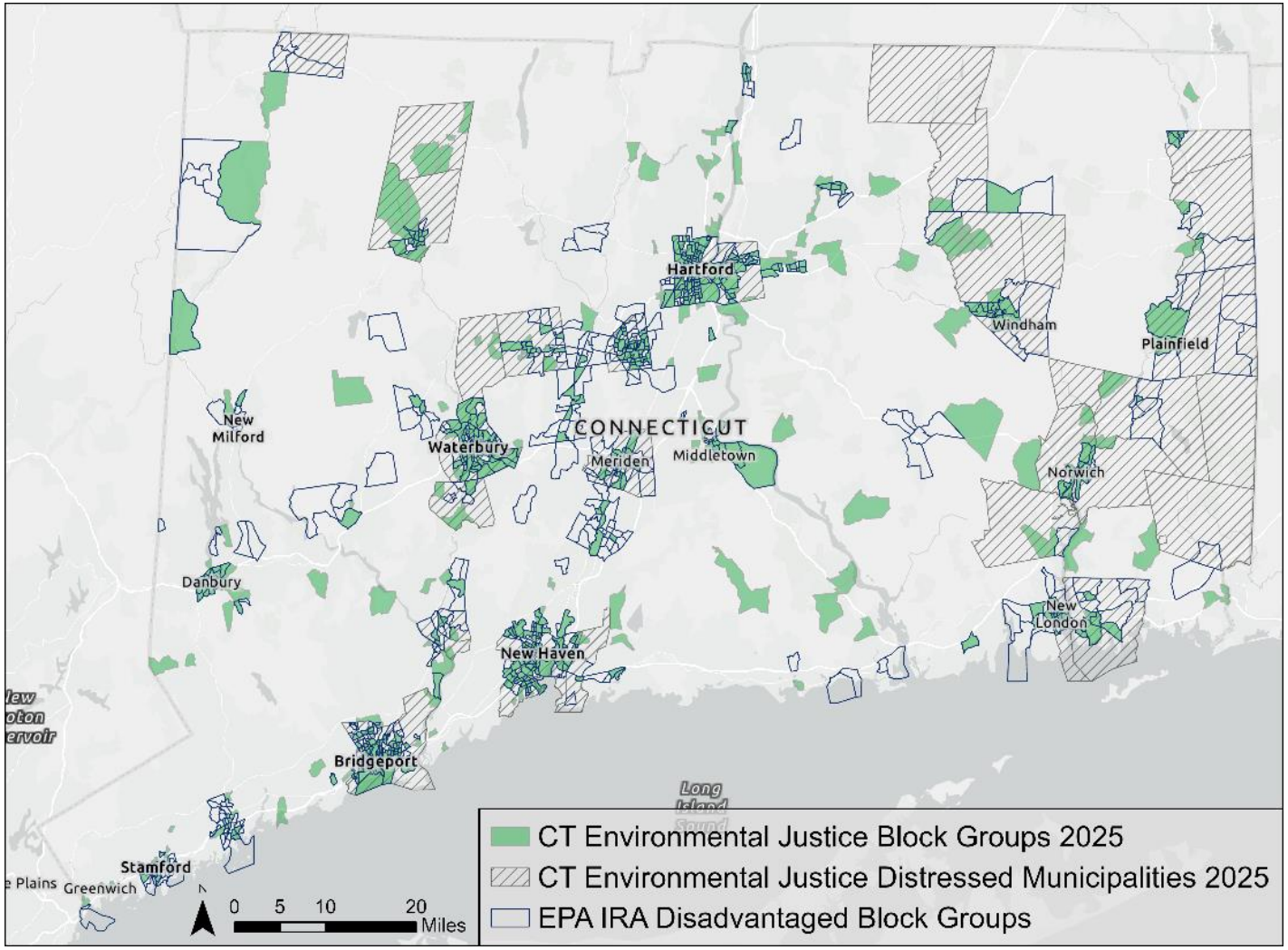
Disadvantaged Community Definition

CT DEEP used the following community identification criteria combining federal and state guidance:

- Any census tract that is included as disadvantaged in the Climate and Economic Justice Screening Tool (CEJST)
- Any census block group that is at or above the 90th percentile for any of EJScreen's Supplemental Indexes when compared to the nation or relevant state; or any geographic area within tribal lands as included in EJScreen.
- Any environmental justice community as defined by the Connecticut General Statutes, pursuant to Sec. 22a-20a(a), being (A) a United States census block group where 30% of the population is living below 200% of the federal poverty level; or (B) a distressed municipality as designated by the Connecticut Department of Economic and Community Development.

The identified communities highlight areas of focus for point source emission impacts.

Map Overlay for Identified Disadvantaged Communities



- The EPA IRA definition includes the following environmental indicators:
  - Particulate Matter 2.5
  - Ozone
  - Diesel Particulate Matter
  - Toxic Releases to Air
  - Traffic Proximity
  - Lead Paint
  - Superfund Proximity
  - RMP Facility Proximity
  - Hazardous Waste Proximity
  - Underground Storage Tanks
  - Wastewater Discharge
  - Nitrogen Dioxide (NO2)
  - Drinking Water Non-Compliance

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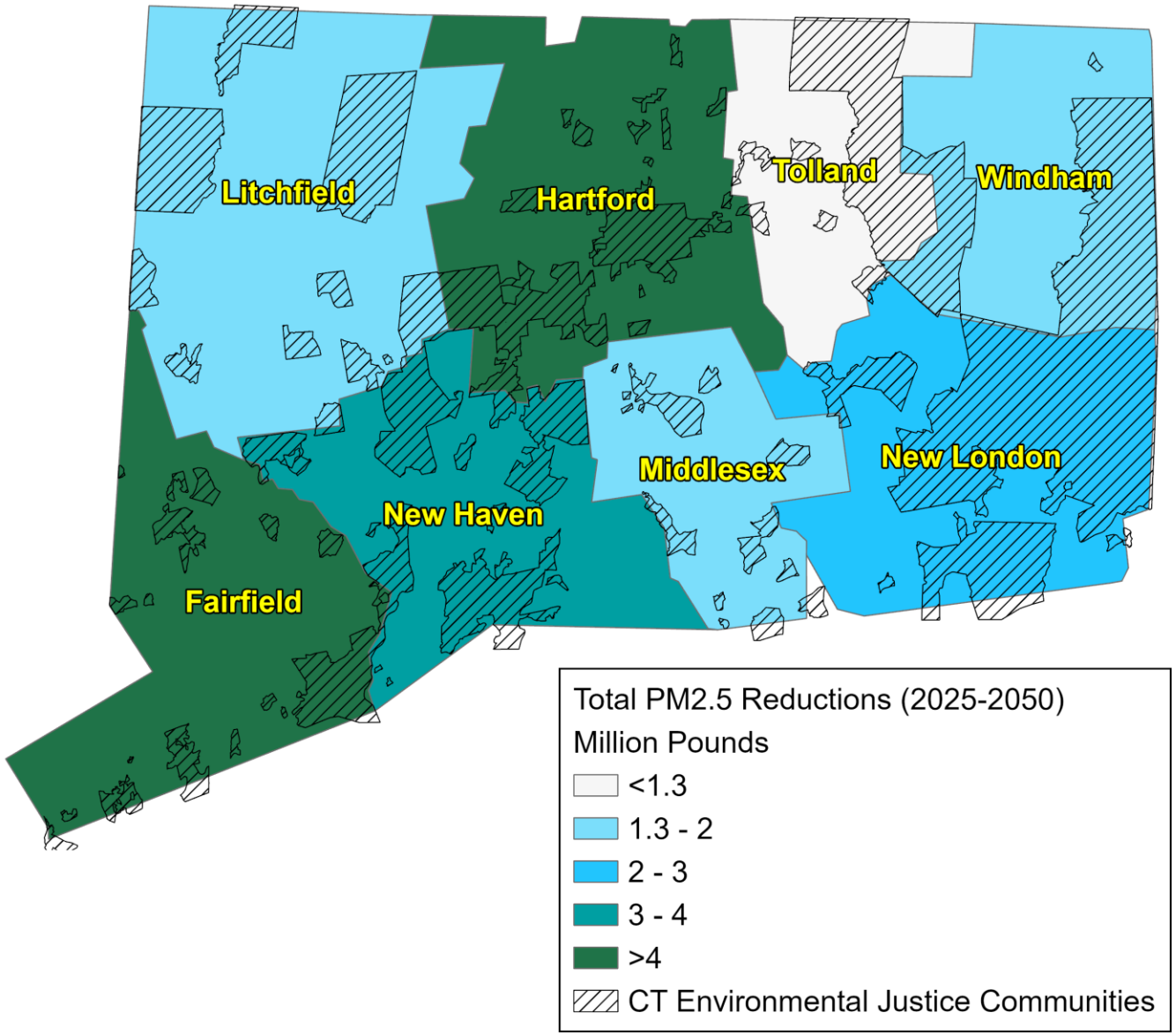
Cumulative $PM_{2.5}$ Reductions

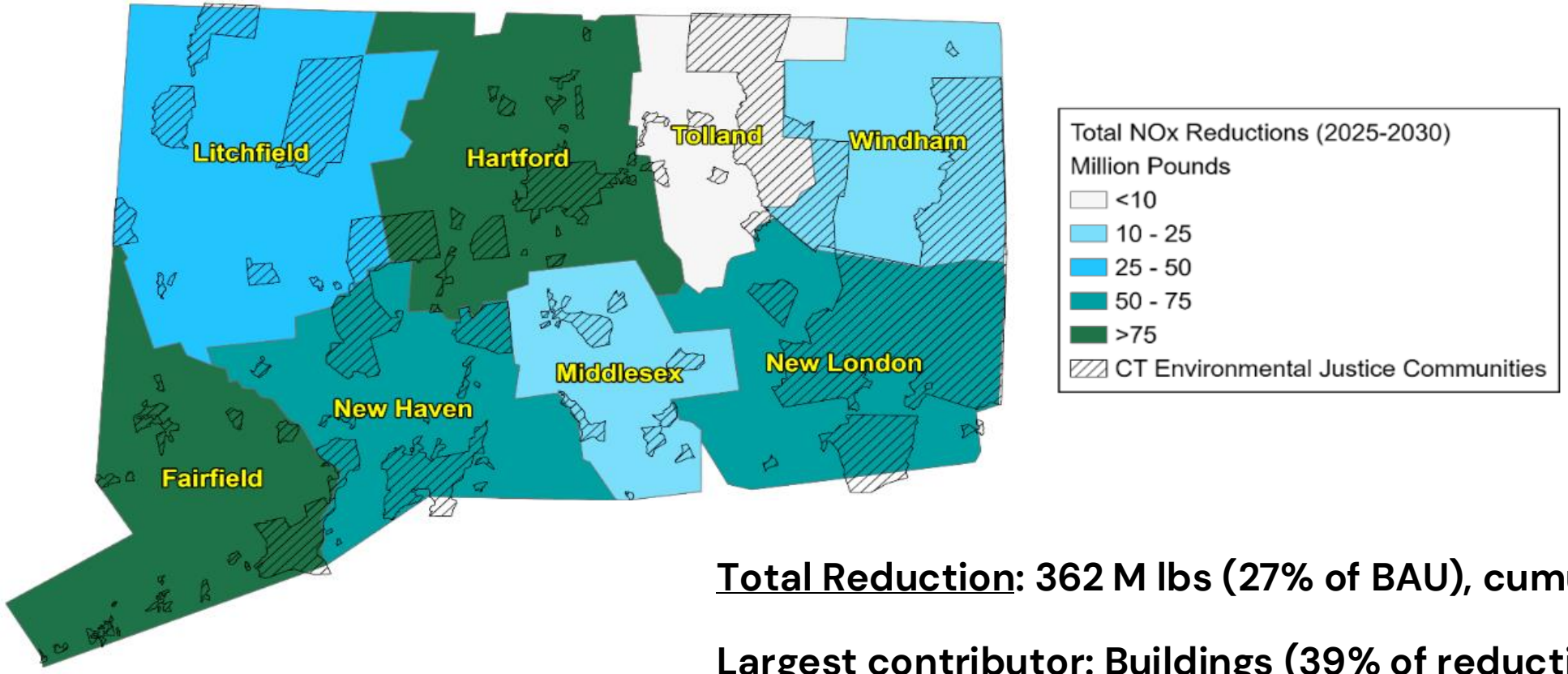


Total Reduction: 20 M lbs (32% of BAU), cumulative 2025-2050

Largest contributor: Buildings (54% of reduction)

Other sectors:
- Industry: 26%
- On-Road: 8%
- Off-Road Mobile: 7%
- Power 6%

Cumulative NOx Reductions



<u>Total Reduction</u>: 362 M lbs (27% of BAU), cumulative 2025-2050

<u>Largest contributor</u>: Buildings (39% of reduction)

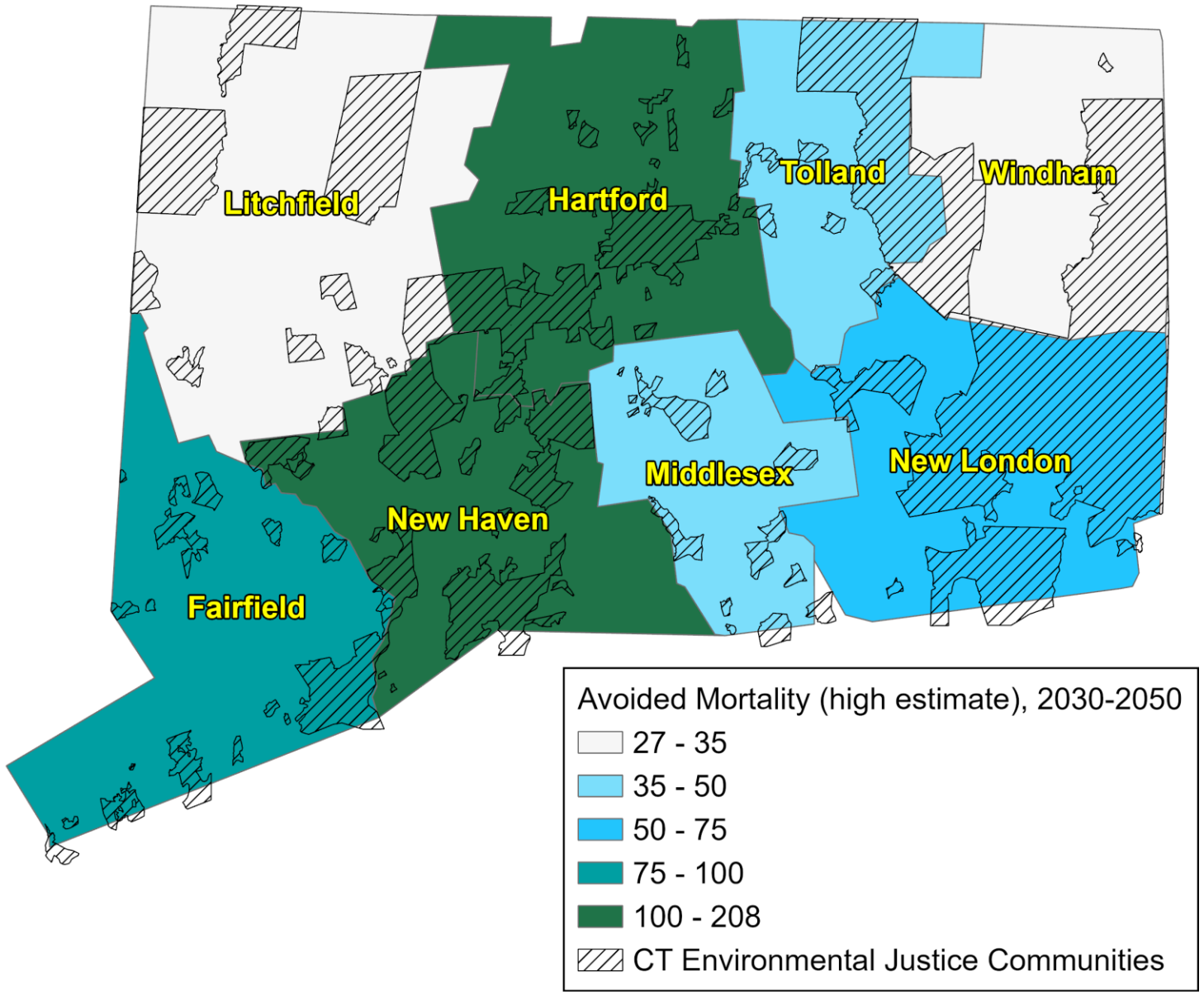
<u>Other sectors:</u>
- Industry: 25%
- On-Road: 22%
- Off-Road Mobile: 10%
- Power 4%

Polling Questions

Question 5: Do the pollution patterns shown for your county align with your lived experience?

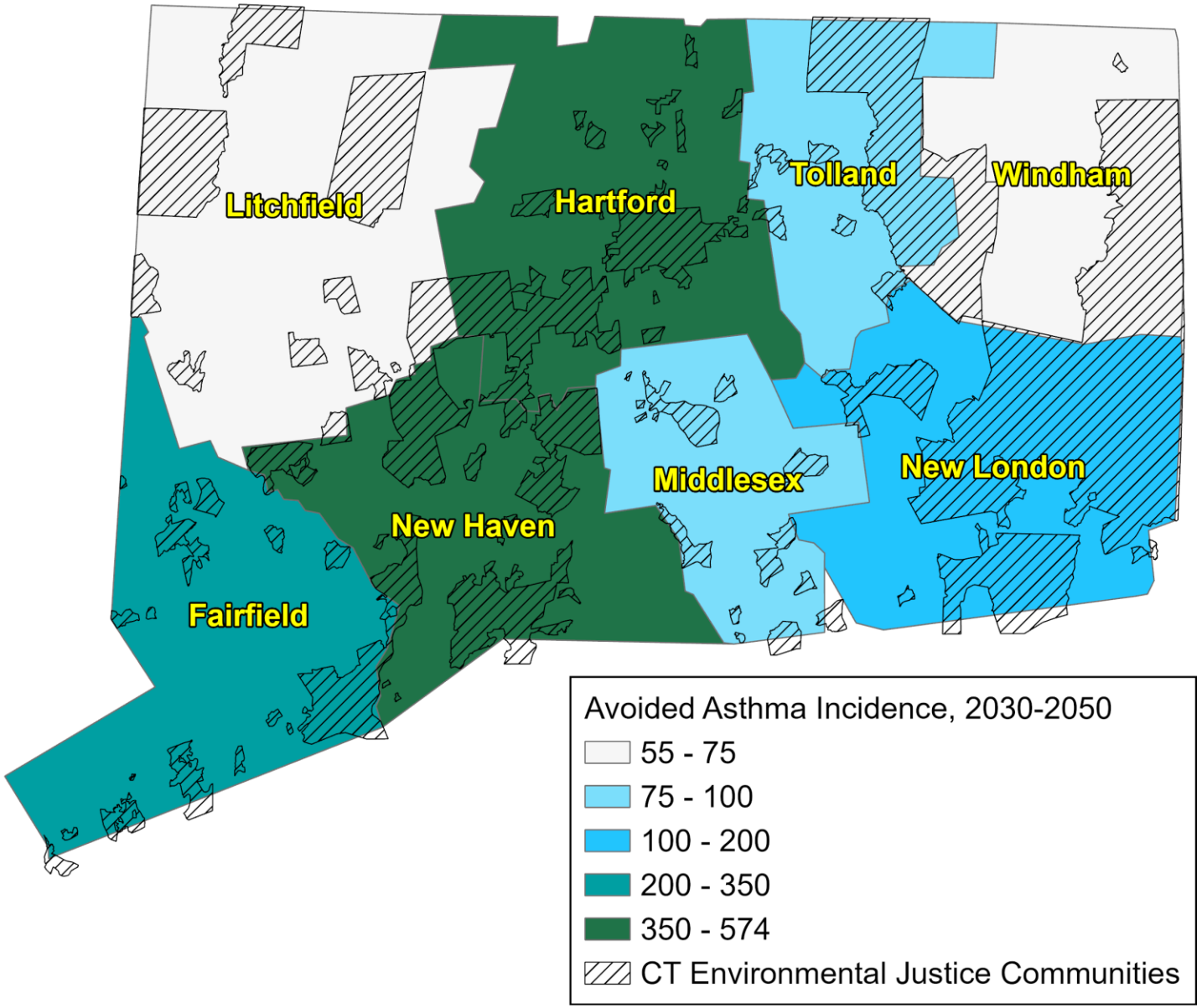
- Very closely
- Somewhat
- Not really
- Unsure/I don’t know my county well enough

Cumulative Avoided Premature Mortality (high estimate)



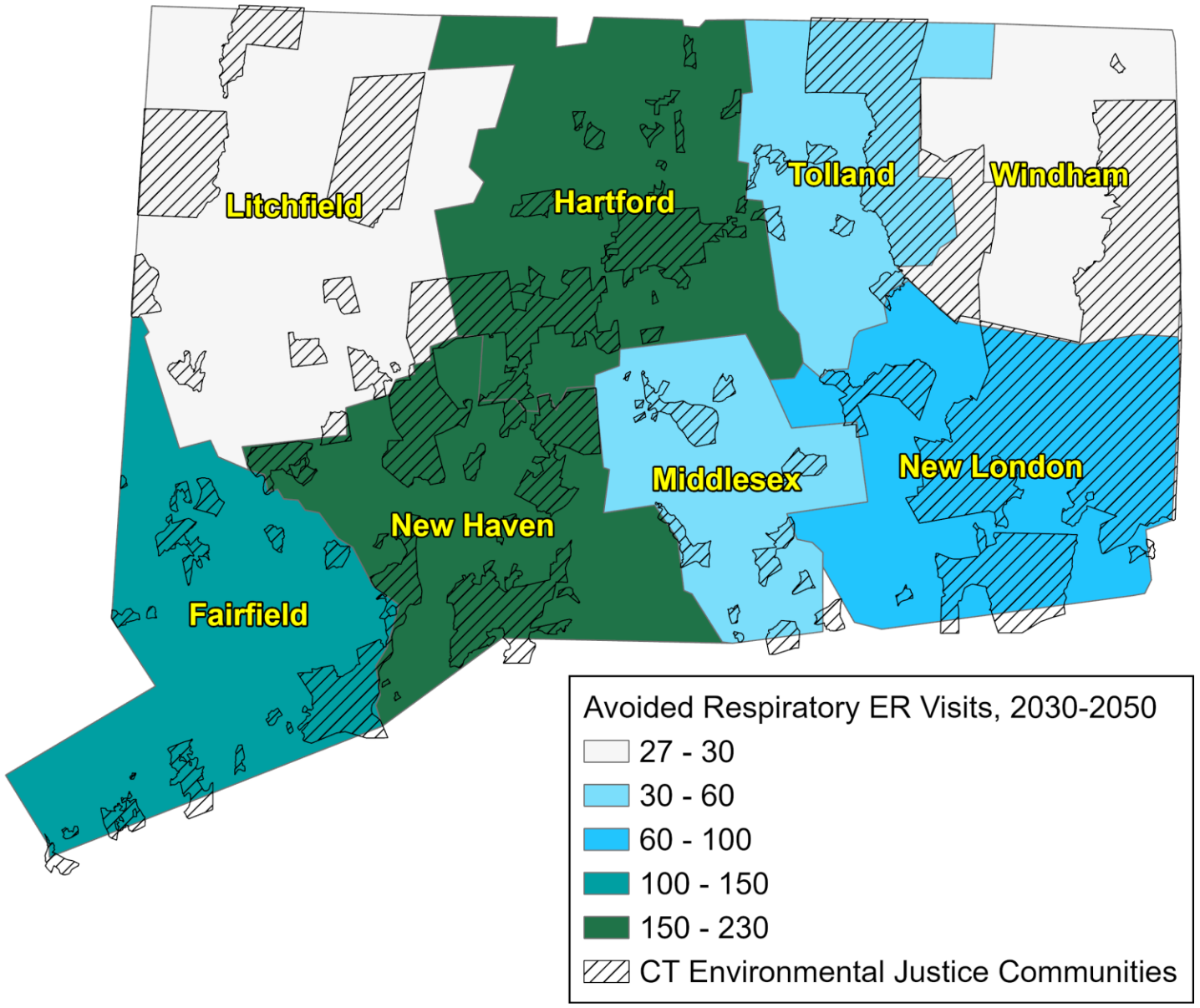
Range of avoided mortalities (high estimate) by county:
27 (Windham) – 208 (Hartford)

Cumulative Avoided Asthma Incidence



Range of avoided asthma incidence by county :
55 (Litchfield) – 574 (Hartford)

Cumulative Avoided Respiratory ER Visits

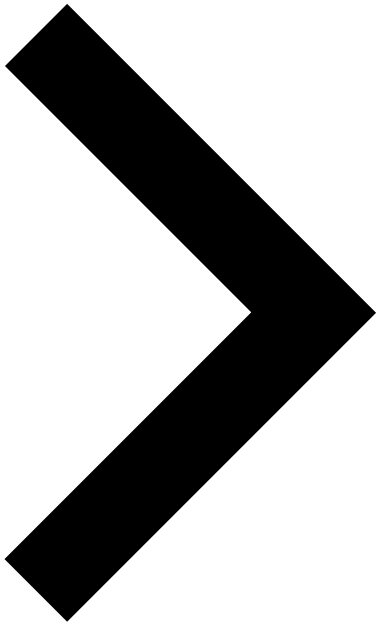


Range of avoided mortalities (high estimate) by county:
27 (Litchfield) - 230 (Hartford)

Polling Questions

Question 6: Which health outcomes resonate most with your community or work?

- Avoided premature mortality
- Reduced asthma incidence
- Fewer respiratory ER visits
- Reduced chronic illness risk
- Hard to say / need more context



Questions/Comments?

PCAP Identified Benefits

- **Transportation Sector:** Reduces ozone-forming pollution and improves public health (fewer asthma cases and hospital visits), lowers noise pollution through electrification, and expands equitable access to public transportation via electric buses and microtransit.
- **Residential and Commercial Buildings Sector:** Lowers GHG emissions and energy costs while improving indoor air quality, resilience, comfort, and housing quality, and creates jobs—especially in low-income communities.
- **Electric Power Sector:** Cuts GHG emissions and strengthens grid resilience and reliability through demand response, storage, and innovative clean technologies, with added benefits for job creation and public health.
- **Waste and Materials Management Sector:** Reduces methane and co-pollutant emissions from landfills and incineration, delivers public health benefits, and creates local jobs through food scraps diversion and new infrastructure.
- **Natural and Working Lands Sector:** Increases carbon sequestration, reduces heat, air, and noise pollution, improves public health, and enhances quality of life in urban, low-income, and disadvantaged communities.

CCAP Identified Benefits

- **Health Benefits and Air Quality Improvements**
  - Noise reduction and improved livability near busy roads
  - Building electrification reduces indoor and outdoor exposure to combustion pollutants
  - Cleaner fuels and clean energy reduce nearby community pollution
  - Reductions in $PM_{2.5}$ and ozone lower risks of asthma, heart attacks, ER visits, premature mortality, and other adverse health outcomes
- **Resilience Benefits**
  - Reduced stressors improve long-term adaptive capacity to climate impacts
  - Can reduce exposure to climate hazards facing LIDACs (flooding, extreme heat)
- **Cost Benefits**
  - Energy efficiency reduces electricity and fuel use, lowering monthly utility bills for households and businesses
  - Reduced air pollution lowers healthcare costs, especially heart and lung diseases
  - Improved worker health leads to fewer missed workdays

Polling Questions

Question 7: Where should the state prioritize investment to deliver the greatest climate and health benefits?

- Buildings (electrification, efficiency)
- Transportation (EVs, transit)
- Electric power and grid modernization
- Industrial emissions reductions
- Waste & materials management
- Natural & working lands

PCAP Identified Disbenefits

- **Upfront costs:** Higher initial costs for vehicles, building upgrades, and clean energy technologies may limit participation without sufficient incentives or financing.
- **Construction disruptions:** Short-term traffic, noise, and localized air quality impacts may occur during infrastructure and facility construction.
- **Capacity constraints:** Limited workforce, contractor availability, or municipal administrative capacity could slow implementation or raise costs.
- **Grid impacts:** Increased electrification may add load to the electric system, requiring upgrades to maintain reliability and control peak demand.
- **Technology uncertainty:** Emerging and pilot technologies (e.g., hydrogen, networked geothermal) carry performance, cost, and scalability risks.
- **Equity implementation risks:** Without careful targeting and outreach, benefits may be unevenly distributed or barriers may persist for LIDACs.

CCAP Identified Disbenefits

- **Potential Disbenefits**
  - Statewide, total air pollution emissions decrease for all pollutants, but some strategies could see small, local, or temporary increases in some air pollutants (only aviation VOC shows a slight, statewide increase, which is offset by reductions elsewhere)
  - Upfront costs of EVs and heat pumps may burden low- and middle-income households
  - Grid modernization costs could affect electricity rates if not managed carefully

Polling Questions

Question 8: Which sustainability elements should be prioritized in the next planning cycle?

- Stronger equity targeting for LIDACs
- Faster implementation timelines
- Greater focus on affordability and bill impacts
- Workforce and contractor capacity
- Local-scale data and analysis
- Accountability and tracking

Polling Questions

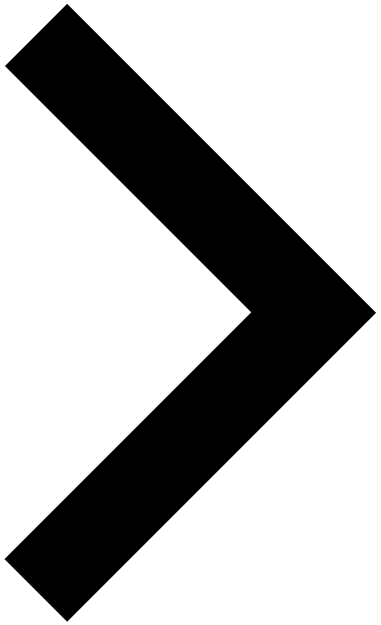
Question 9: What do you think DEEP or state agencies overall should focus on most to maintain a healthy climate for residents?

[short answer]

Polling Questions

Question 10: What materials would be most useful to help you leverage this data?

- One-page summaries by sector
- County-level fact sheets
- LIDAC-focused briefs
- Data tables / maps for download
- Slide deck with notes
- Talking points for community outreach
- Other (short answer)



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