

# Reduction in PM<sub>2.5</sub>-associated Health Care Costs as Incentive for Healthcare Sector Advocacy for Climate Policy

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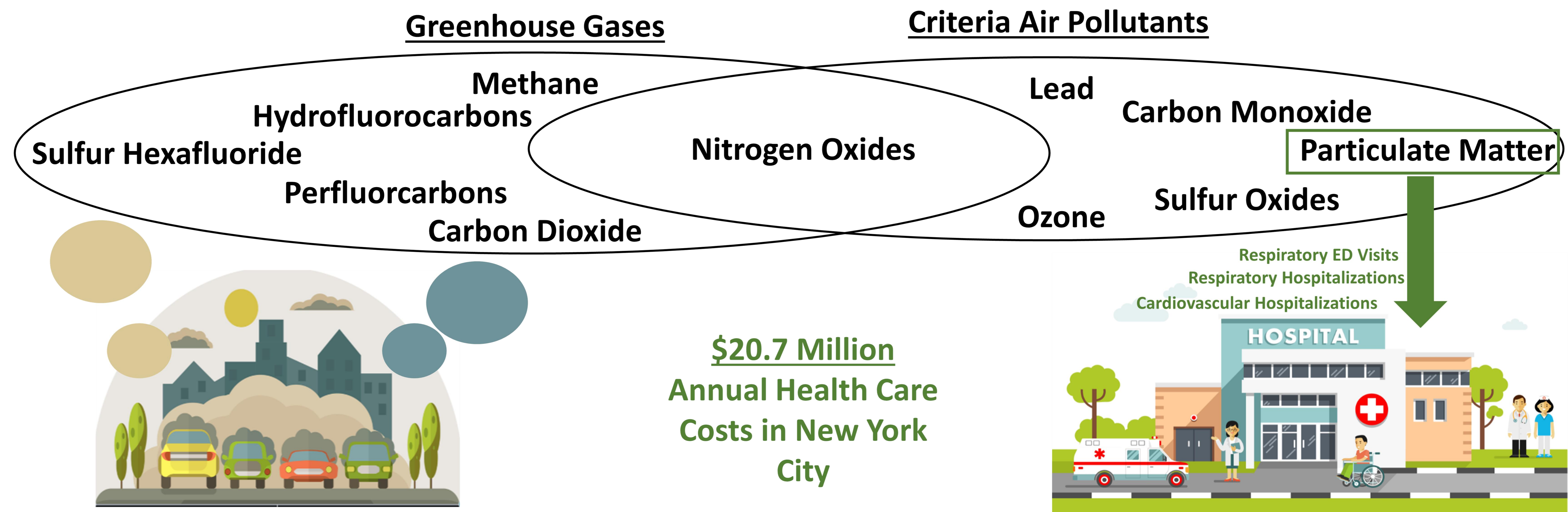
## BACKGROUND

- The healthcare industry is positioned to be an effective and powerful advocate for climate policy
- Known population health consequences of the climate crisis have not sufficiently incentivized healthcare stakeholder advocacy for climate policy
- Local levels of PM<sub>2.5</sub>, a criteria air pollutant often emitted with greenhouse gases, are directly correlated with costly healthcare encounters for cardiovascular and pulmonary disease
- This study quantifies healthcare costs associated with PM<sub>2.5</sub> derived from burning high-sulfur residual oil and vehicle emissions in New York City to illustrate financial benefits of climate policy for the healthcare industry

## METHODS

- Previous analyses estimated hospital admissions for cardiovascular and respiratory complaints and ED visits for respiratory complaints attributable to PM<sub>2.5</sub> formed by combustion of high-sulfur heating fuel and vehicle emissions
- These analyses utilized the Community Multiscale Air Quality Model in addition to modeling based direct-measurement air quality data and the EPA's Modeled Attainment Test Software
- The costs of these encounters were calculated utilizing information from the New York Statewide Planning and Research Cooperative System and the Healthcare Cost and Utilization Project

## THEMATIC ANALYSIS RESULTS



## IMPLICATIONS

- In New York City, PM<sub>2.5</sub> from high-sulfur heating oil and traffic emissions contributes \$20.7 million to annual healthcare costs through hospitalizations for cardiovascular and respiratory complaints and ED visits for respiratory complaints
- This estimate does not include other categories of encounters potentially attributable to PM<sub>2.5</sub>, PM<sub>2.5</sub> attributable to sources other than heating oil or vehicle emissions, or encounters attributable to other criteria air pollutants
- Recognizing direct healthcare savings from reduced air pollution combined with the common sources of criteria air pollutants and greenhouse gases is key for catalyzing healthcare industry climate advocacy at the national or global level.
- Examples of policies implemented in NYC for which health systems could advocate that would reduce particulate matter, healthcare costs, and greenhouse gas emissions are outlined below:



Enforce mpg requirements for your city's taxis



Convert city vehicles from diesel to electric



Expand access to bicycles and bike lanes



Phase out high-sulfur (residual) heating oil



Require emission control devices on commercial char broilers



Prohibit construction of new wood burning fireplaces

## REFERENCES

1. Kheirbek I, Haney J, Douglas S, Ito K, Caputo S, Matte T. 2014. The Public Health Benefits of Reducing Fine Particulate Matter through Conversion to Cleaner Heating Fuels in New York City. Environ. Sci. Technol;48(23):13573-82. doi: 10.1021/es503587p.
2. Kherbek I, Haney J, Douglas S, Ito K, Matte T. 2016. The contribution of motor vehicle emissions to ambient fine particulate matter public health impacts in New York City: a health burden assessment. Environmen Health;15(1):89. doi:10.1186/s12940-016-0172-6/

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	Road Vehicles	High-Sulfur Oil	Cost per Encounter
<b>Respiratory ED Visits</b>	660	550	\$3,133
<b>Cardiovascular Hospitalizations</b>	90	80	\$53,536
<b>Respiratory Hospitalizations</b>	120	100	\$35,550

**Table 1. Composite Data on Number and Cost of PM<sub>2.5</sub>-attributed Hospitalizations and ED Visits Stratified by Emission Source**

**Figure 1. Examples of policies implemented in NYC to reduce particulate matter, greenhouse gas emissions, and associated health care costs**

