DECEMBER 2024

A CLEAR VISION: THE NYC CLEAN HEAT PLAN

ADAM FREED, STEFANIE LE, AND STEPHEN GOLDSMITH

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About the Authors

Adam Freed is a Principal at Bloomberg Associates and helped lead New York City's sustainability efforts from 2008-2012, serving as the Acting and Deputy Director of the Mayor's Office of Long-Term Planning and Sustainability. As part of PlaNYC, the city's long-term sustainability plan, New York City planted one million trees, created more than 240 new community playgrounds, enacted the nation's most aggressive green buildings legislation, achieved the cleanest air quality in over 50 years, announced the largest expansion of its recycling program in 25 years, launched a $2 billion green infrastructure program, and lowered its greenhouse gas emissions by 14%. At Bloomberg Associates, he works with mayors to craft and implement sustainability strategies and actions covering a wide range of issues, including energy, GHG mitigation, climate resilience, housing affordability, green infrastructure, air quality, and solid waste. Freed also served as the Deputy Managing Director of The Nature Conservancy's Global Water Program, where he worked to help cities around the world have safe, sustainable, and reliable water supplies. In addition to his time with city government, Adam was an Assistant Comptroller in the Office of the New York State Comptroller. Adam is also a Lecturer at Columbia University, a member of the New York City Water Board, and on the board of the Friends of Governors Island. He received his Master of Urban Planning from New York University and was a Mel King Community Fellow at the Massachusetts Institute of Technology (MIT).

Stefanie Le is a freelance reporter who specializes in open source intelligence (OSINT) investigations. Prior to this, Stefanie was a video reporter for The Washington Post's Visual Forensics team. Additionally, she worked for several years at organizations addressing political misinformation, most recently as the deputy research director at Media Matters. She has also worked at the International Criminal Court's Office of the Prosecutor as an investigator, at the Boston Globe, and the Human Rights Center at UC Berkeley's School of Law. Stefanie holds a master's degree in Journalism from UC Berkeley Graduate School of Journalism, a master's degree in International Affairs from Harvard University, and bachelor's degrees in Writing, Literature, and Publishing; and Journalism from Emerson College.

About the Authors

Stephen Goldsmith is the Derek Bok Professor of the Practice of Urban Policy at Harvard Kennedy School and director of Data-Smart City Solutions at the Bloomberg Center for Cities at Harvard University. He previously served as Deputy Mayor of New York and Mayor of Indianapolis, where he earned a reputation as one of the country's leaders in public-private partnerships, competition, and privatization. Goldsmith was also the chief domestic policy advisor to the George W. Bush campaign in 2000, the Chair of the Corporation for National and Community Service, and the district attorney for Marion County, Indiana, from 1979 to 1990. He has written The Power of Social Innovation, Governing by Network: the New Shape of the Public Sector; Putting Faith in Neighborhoods: Making Cities Work through Grassroots Citizenship; The Twenty-First Century City: Resurrecting Urban America, The Responsive City: Engaging Communities Through Data-Smart Governance; A New City O/ S: The Power of Open, Collaborative, and Distributed Governance; and Collaborative Cities: Mapping Solutions to Wicked Problems. His most recent book Growing Fairly: How to Build Opportunity and Equity in Workforce Development, was released in February 2022.

About Data-Smart City Solutions

Data-Smart City Solutions at the Bloomberg Center for Cities at Harvard University is working to catalyze the adoption of data projects on the local government level by serving as a central resource for city leaders. We highlight best practices, top innovators, and promising case studies while also connecting leading industry, academic, and government officials. Our research focuses on the intersection of government and data and explores innovations in open data, predictive analytics, and civic engagement technology. We seek to discover and preemptively address civic problems by integrating cross-agency data with community data.

About the Community Data Health Initiative

The Community Data Health Initiative is a collaboration among the Data-Smart City Solutions program at the Bloomberg Center for Cities at Harvard University, the Environmental Defense Fund, and the African American Mayors Association. Launched in 2022, the initiative assists mayors and city leaders in utilizing data to address localized environmental issues, with a key focus on improving health outcomes for communities disproportionately affected by environmental hazards like air pollution and extreme heat.

With generous funding from the Robert Wood Johnson Foundation and the Kresge Foundation, this initiative works closely with a group of partner cities on pilot projects, with the goal of sharing learnings and best practices across city networks nationwide.

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79 John F. Kennedy Street Cambridge, MA 02138
datasmart.hks.harvard.edu

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Introduction

In 2007 the Bloomberg administration outlined a sweeping commitment to the environment in a long-term plan called PlaNYC, which charted a broad set of government and private actions. NYC Clean Heat, one of PlaNYC's marquee initiatives, began with the visuals – by using data and maps to starkly illustrate the real-life harm and consequences from air pollution on New Yorkers. Yet, even before a host of city agencies used data to visualize poor air quality and its local sources on a map of New York City, Andy Darrell, the Environmental Defense Fund's (EDF) New York regional director at the time and one of the architects of Clean Heat, looked out his office window in the Flatiron District.

In 2007, Darrell was working at this office with Isabel Silverman, a legal intern, when she noticed large puffs of black smoke coming from the tops of buildings in Manhattan. Noting how noxious the smoke looked, Silverman asked Darrell what the smoke was. "I looked out the window and I actually didn't know the answer to that. I'm a New Yorker, and I've lived here much of my life, and the black smoke on the top of buildings – it's kind of like pigeons. It's just there. It's part of the landscape of the city," said Darrell.

Darrell then tasked Silverman to do some research to figure out the cause of black smoke. She determined it was from heating oil used by the boilers in aging NYC buildings – particularly No. 6 and No. 4 heating oil, heavy crude oils that emit high levels of soot, particle pollution, and nickel when burned. No. 6 and No. 4 heating oil, aka "bunker fuel", are commonly used to heat industrial buildings and for large marine vessel propulsion.

Darrell and a team of scientists at EDF undertook some preliminary research and brought the issue to the Mayor's Office of Long-Term Planning and Sustainability (OLTPS), the group charged with writing PlanNYC at that time, leading them to include improving air quality as a major part of PlaNYC.

The black smoke commonly seen from New York City buildings using heavy heating oil (Source: Environmental Defense Fund)

Beginning of the Process

In April 2007, Bloomberg released PlaNYC, a ground-breaking long-term strategic plan to prepare New York City for a projected population increase of one million people while improving the quality of life for existing New Yorkers. PlaNYC encompassed a broad array of issues, from housing and brownfields to energy and climate change, and constituted New York City's first comprehensive sustainability plan.

At the time PlaNYC was being prepared, New York City's air quality failed to meet federal standards for ozone and fine particulate matter ($PM_{2.5}$). In addition, many of the city's neighborhoods had pollution levels significantly higher than the citywide average. Many of these same neighborhoods also had high asthma rates and other health conditions linked to and exacerbated by air pollution.

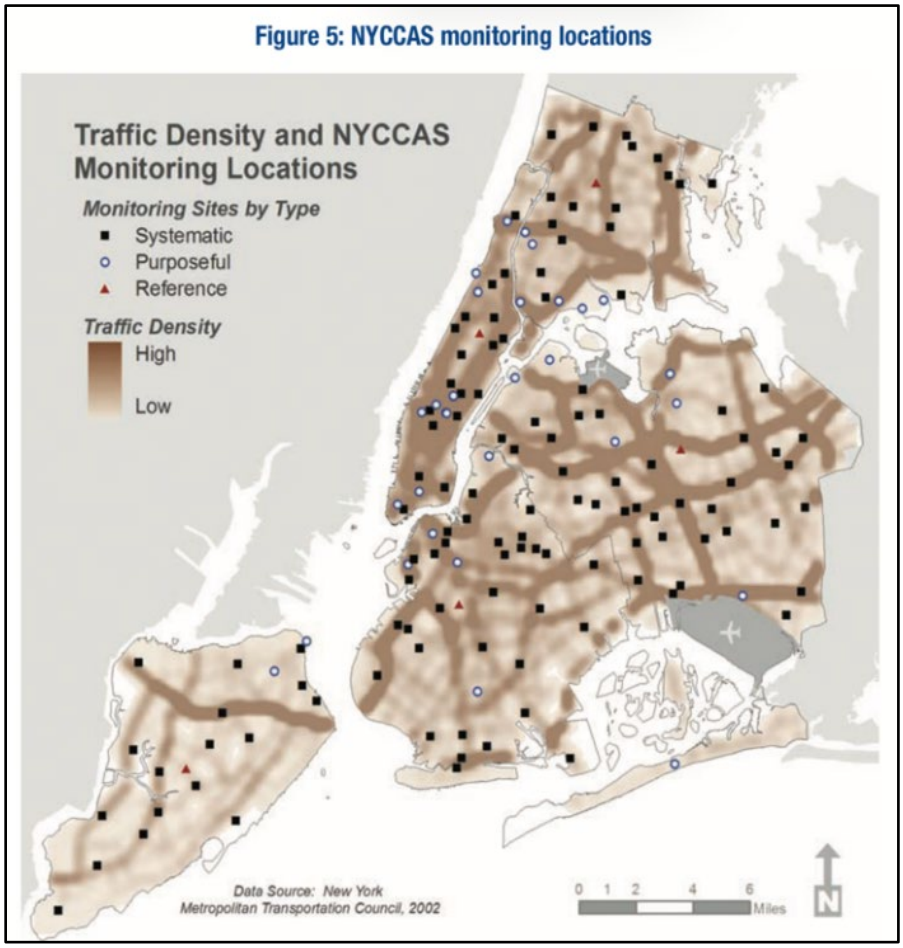
PlaNYC set the ambitious goal of achieving "the cleanest air quality of any big U.S. city" by 2030. The city estimated that even a 10% reduction in $PM_{2.5}$ would save hundreds of lives annually (PlaNYC, 2007, p. 120). To guide this work, PlaNYC included an initiative to collect more granular data on air pollution, so policymakers and partners could understand how air pollution varied across the city and the local sources (e.g., cars, trucks, power plants, and building heating systems) that were responsible for them.

"That was the first times that a mayor of New York City had thought about the environmental future and the economic future of the city at the same time and framed

the issues together to develop a detailed plan for how to move environmental progress forward in a way that also worked for the economy of New Yorkers," said Darrell of the PlaNYC initiative.

Documenting Street Level Air Quality

The New York City Department of Health and Mental Hygiene (DOHMH), in partnership with Queens College, launched the New York City Community Air Survey (NYCCAS) in 2007. NYCCAS was the first systematic and comprehensive assessment of street-level air quality in an American city and one of the largest local air quality studies conducted at this time. The program measured street-level concentrations of air pollutants shown to impact public health, including black carbon, nitrous oxide (NOx), ozone (O3), sulfur dioxide (SO_2), $PM_{2.5}$, and metal constituents such as nickel and lead. NYCCAS sensors were placed at 150 locations throughout the city, which were selected to offer a mix of high and low traffic and building densities, different amounts of tree cover, and various mixes of commercial, residential and industrial properties to represent the variety of urban environments found in New York City.

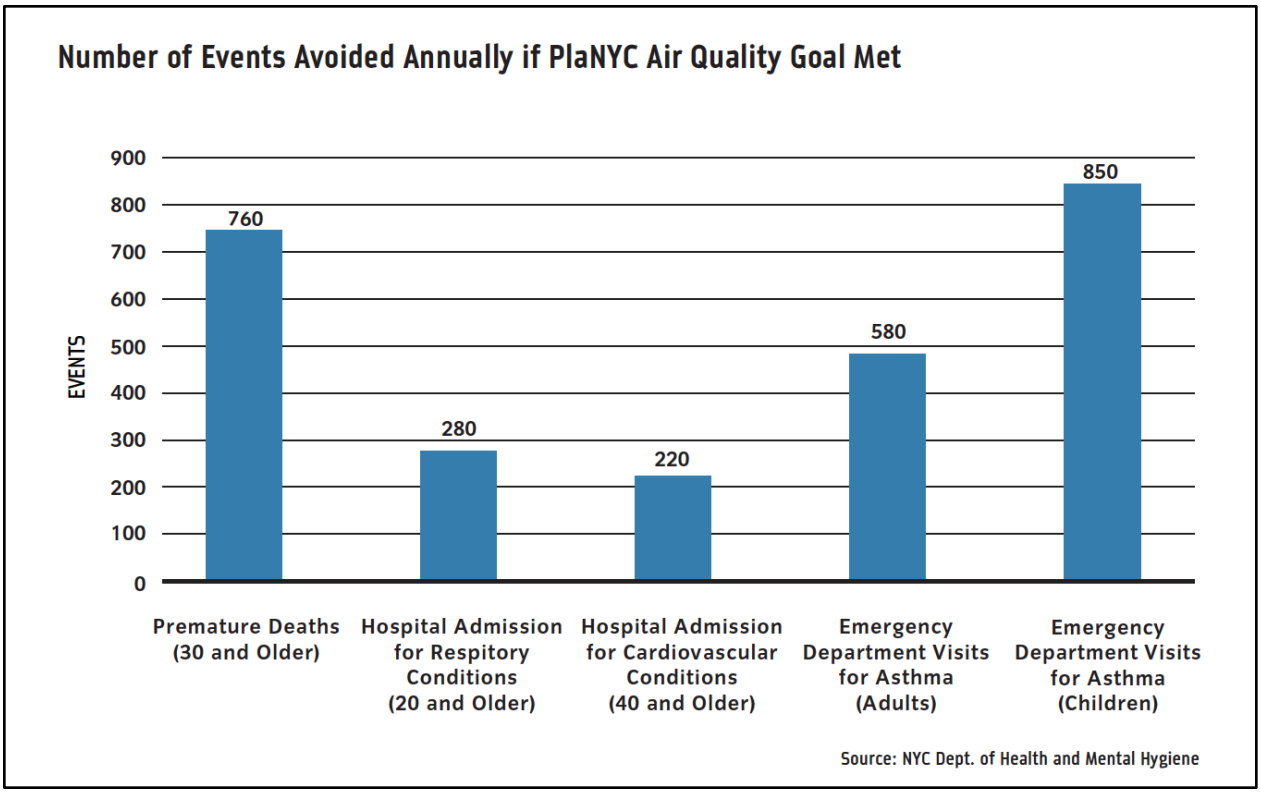


Distribution of NYCCAS sensors in 2007 (Source: City of New York)

NYCCAS sensor on a lamp post in Times Square (Source: City of New York)

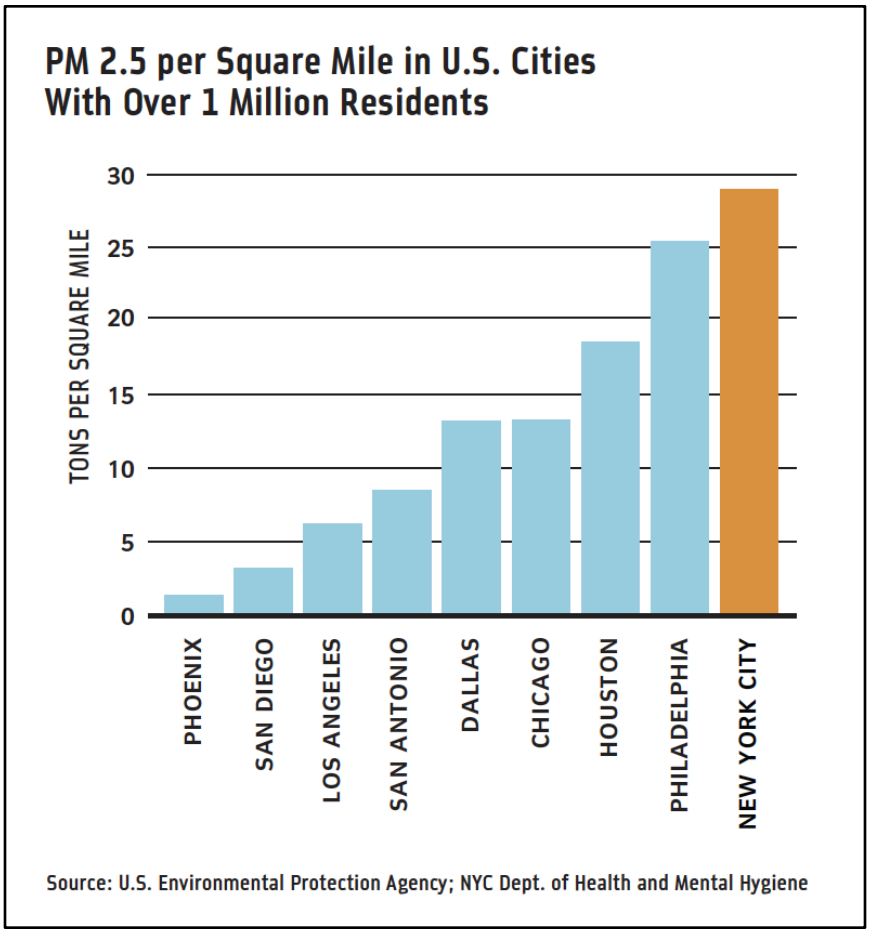
Unlike traditional regulatory monitors, which are often located on rooftops, NYCCAS sensors were mounted 10 to 12 feet off the ground on public light or utility poles along streets and in parks, ensuring they captured air quality readings where people walked and where traffic-related pollution was usually higher. The first NYCCAS report argued that "there is no more basic need for a healthy living environment than clean air; air pollution can threaten the well-being of all New Yorkers."

Using the initial findings from NYCCAS and methodologies developed by the Environmental Protection Agency and public health practitioners, DOHMH completed a 2010 study "Air Pollution and the Health of New Yorkers" that quantified the impact of air pollution on the health of New Yorkers. The report concluded that $PM_{2.5}$ pollution caused more than 3,000 annual deaths, 2,000 hospital admissions for lung and heart conditions, and approximately 6,000 emergency department visits for asthma. The report noted that a reduction of just 10% in $PM_{2.5}$ levels at that time could prevent more than 300 premature deaths, 200 hospital admissions and 600 emergency department visits annually.



The number of health events that would be avoided annually if the PlaNYC air quality goal was met. (Source: NYC Department of Health and Mental Hygiene)

Putting specific numbers to the toll air pollution had on New Yorkers was a critical wake-up call to a broad array of stakeholders. The NYCCAS data provided the roadmap and helped build the political will to take action. The DOHMH data showed that improving air quality was not just an environmental issue, but a public health imperative.



Tons of PM2.5 per square mile in US Cities with more than 1 million residents. (Source: EPA and NYC Department of Health and Mental Hygiene)

Following the Data

Identifying Culprits: NYC Boilers and Heating Oil

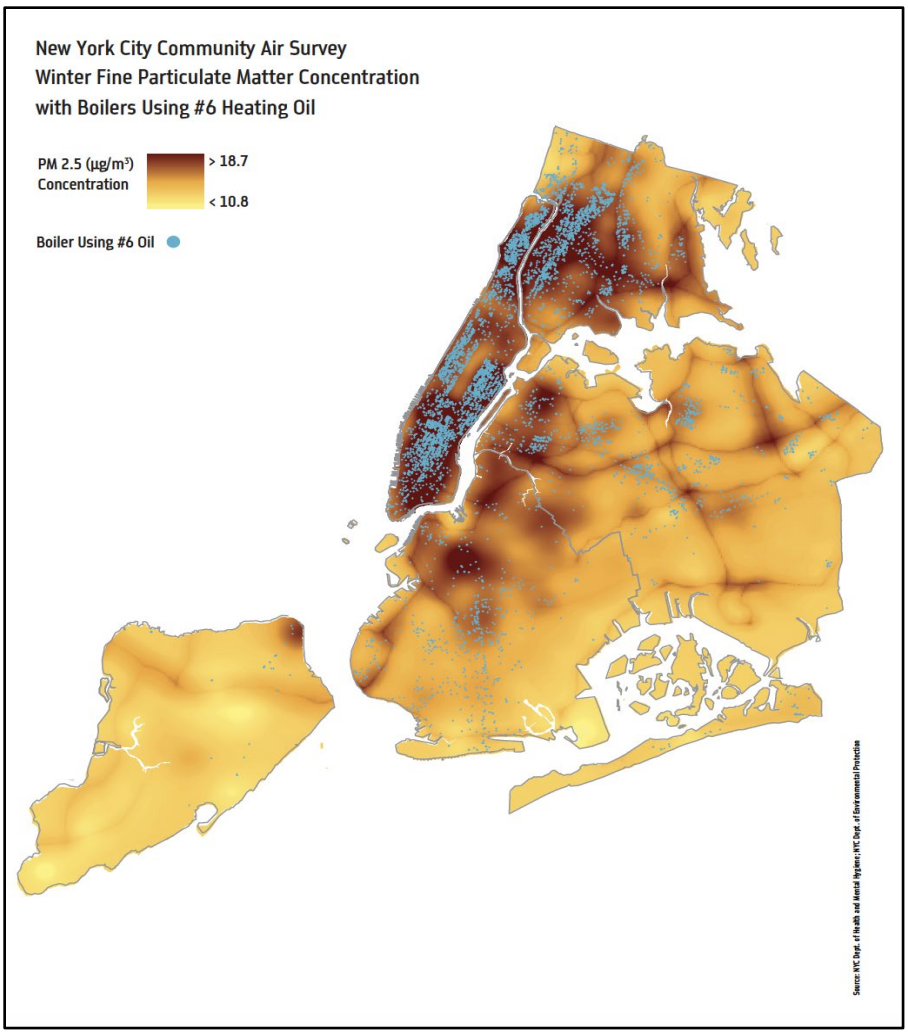
The first NYCCAS report on winter air quality showed that neighborhoods of all income levels had high levels of street-level air pollution. This changed the view of air pollution as an environmental justice issue predominantly impacting low-income communities to one that affected New Yorkers of all income levels. NYCCAS also identified high traffic volume and, in winter, the use of heavy heating oil to heat buildings as the main drivers – the same source of the black smoke that Darrell and Silverman saw from their window.

New York City's 1.1 million buildings typically used one of four fuels to generate heat: No. 2, 4, or 6 heating oil, or natural gas. No. 2 heating oil is a distillate fraction of crude oil and similar to diesel fuel used for on-road vehicles. No. 4 oil is a blend of distillate (No. 2) and residual (No. 6) fuel oils. No. 6 oil is the dirtiest fuel in terms of emissions

generated when combusted. It was also the cheapest fuel and frequently utilized in large commercial, residential and institutional buildings.

Buildings in New York City consumed 1 billion gallons of heating oil annually in 2007, more than any other city in the U.S. Approximately 6,000 buildings used No 6. oil and 4,000 used No. 4 oil. These buildings burned 227 million gallons of No. 6 oil annually and about 84 million gallons of only slightly cleaner No. 4 oil (EDF, Bottom of the Barrel, p. 7). The NYCCAS report on winter air quality showed that burning heating oil in buildings accounted for nearly 14% of $PM_{2.5}$ emissions in the city – more pollution than generated from vehicles or power plants (PlaNYC, 2011, p. 129). In fact, the 10,000 buildings using No. 4 and No. 6 heating oil – or 1% of New York's buildings – were responsible for more $PM_{2.5}$ than all cars and trucks in the city combined.

The mayor's sustainability office and the health department worked together on the rollout and analysis of NYCCAS data. Together, they overlaid the air pollution maps generated by NYCCAS with the location of No. 4 and No. 6 boilers in the city, which were regulated by the city's Department of Environmental Protection (DEP). This map showed the clear correlation between heavy heating oil and $PM_{2.5}$ and sulfur dioxide emissions as well as the distribution of air pollution. Many of the areas with high concentrations of heavy heating oil – like Harlem, the South Bronx, and parts of Brooklyn – also had high rates of asthma hospitalization and other respiratory and cardiovascular issues.



The distribution of boilers using No. 6 heating oil overlaid on PM2.5 concentrations as measured by NYCCAS monitors. (Source: City of New York)

From Visualization to Action

Turning this information into action and improving environmental health in New York City required a multi-pronged approach. Under the direction of the mayor's office, the effort included developing state and city legislative action, an enforcement plan and financing support – multiple steps involving the stick and carrot approach to mobilize action.

EDF's advocacy, PlaNYC's air quality goal, clear use of the data demonstrating the impact of air quality on public health, and Mayor Bloomberg's vision laid the foundation for aggressive action on heating oil. The PlaNYC team and the environmental department were both overseen by one of us, then-Deputy Mayor Stephen Goldsmith, making political and policy alignment easier between the bodies, which had worked closely together since the initial planning for PlaNYC.

For Goldsmith, the defining moment for action occurred when OLTPS leadership showed him a map visualization of the effect of particulates on the Upper West Side on mortality rates graphically showing how localized the harm was. And so, the question became – what could the city do about it?

Saving Lives with Local Clear Air Action

New York City was well-positioned to address pollution from heating oil, as building owners were required to register their boilers every three years. This meant the city had detailed data on the boilers including their location, size, what they burned and age. The city could also regulate what fuels were burned in New York.

Another one of us, Adam Freed, then-Acting Director of OLTPS, worked with DEP to create a three-pronged regulatory and legislative agenda to phase out heavy heating oil. The first step involved advocating for a state law requiring No. 2 heating oil to contain no more than 15ppm sulfur (a reduction from 2,000ppm), creating what was known as "low sulfur No. 2". This was critical as No. 4 oil, which is a combination of No. 2 and No. 6 oils, would become much cleaner. This bill was passed in July 2010.

One month later, the second step occurred when the New York City Council passed Local Law 43 requiring all heating oils to contain 2% biofuel and No. 4 oil to cut its sulfur levels in half (from 3,000ppm to 1,500ppm). The bill also required No. 4 oil to be made up of at least 50% more No. 2 oil (which was more expensive than No 6. oil) than previously used, making No. 4 oil much cleaner and bringing the price of No. 4 heating oil closer to No. 2.

Healthy Air Through Clean Heat

In April 2011, Bloomberg announced the creation of a new program to phase out heavy heating oil as the centerpiece of the release of the legally required update to PlaNYC (the plan was legally required to be updated every four years). This program was called NYC Clean Heat. It relied on a new DEP rule, the third piece of the City's strategy, that was issued in May 2011 and mandated buildings to stop using No. 6 oil by 2015, and No. 4 oil by 2030. The rule further required buildings using No. 6 and No. 4 oil to switch to No. 2 or natural gas when their boiler or burner was replaced. Buildings that demonstrated financial hardship could seek an extended schedule for conversion.

In discussing the 2011 release of PlaNYC in his weekly radio address, Mayor Bloomberg described the heating oil work as "the single biggest step we have taken to save lives since banning smoking in restaurants and bars. And over the long run, burning cleaner fuels will also save money on energy costs."

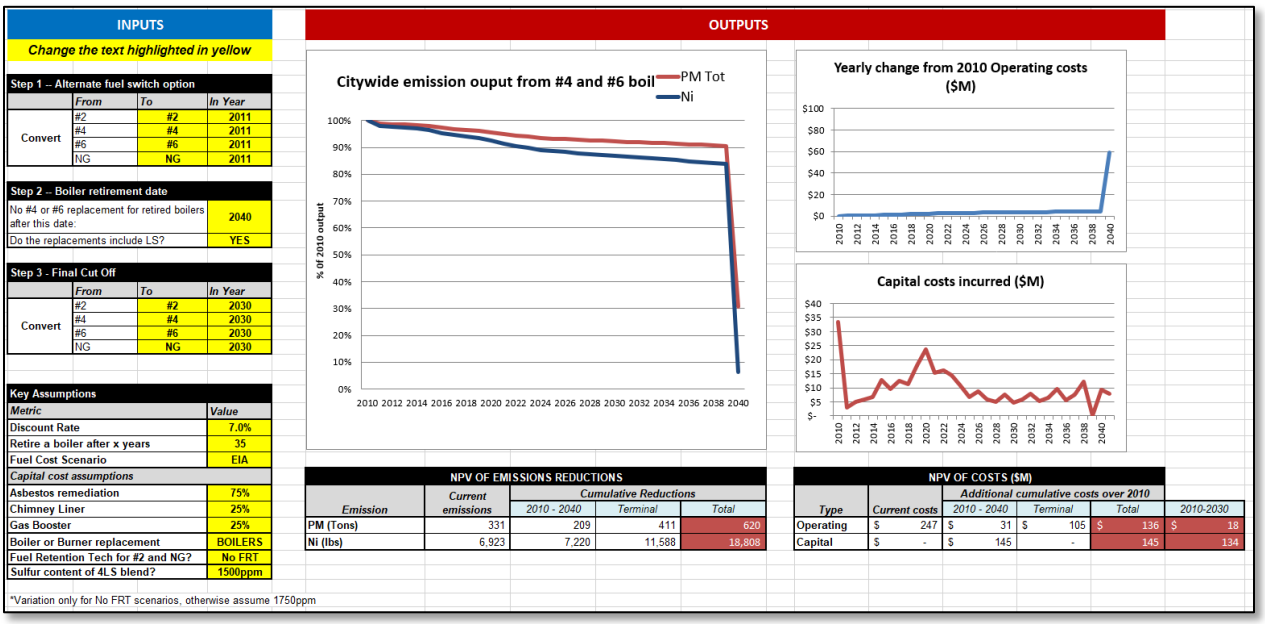
Pulling Together the Coalition and Stakeholders

Enacting the package of heating oil regulations took four years of data collection and analysis, advocacy, and policy development to craft rules that achieved significant health gains without unduly burdening building owners and operators, particularly low- and moderate-income residential buildings. Converting boilers to cleaner fuels was expected to cost building owners more than $300 million (City of New York, 2012). The city itself was not unaffected by the phase out of heavy heating oils, as more than 200 New York City public schools used No. 6 oil – or more than one-third of public schools (The New York Times, 2011).

In addition to the initial capital costs that boiler conversions would require, building owners and managers were unhappy about the need to convert their boilers before the end of their useful life, affordable housing advocates were concerned about the fiscal impact on low-income renters, and supporters were concerned about the availability of cleaner heating oil and access to natural gas for 10,000 buildings. The unions involved in fuel oil deliveries were also worried about job losses if buildings converted to natural gas.

OLTPS created a dynamic heating oil model that allowed policy makers to test various phase out scenarios and estimate the environmental and economic impacts of these changes, including changes in $PM_{2.5}$ and sulfur emissions and in capital and operating expenses for buildings. The model also allowed users to test three future fuel cost scenarios, adjust the expected capital costs and the expected useful life of boilers and was used in a series of meetings to inform the development of regulations and NYC

Clean Heat.



INPUTS

Change the text highlighted in yellow

Step 1 -- Alternate fuel switch option

	From	To	In Year
Convert	#2	#2	2011
	#4	#4	2011
	#6	#6	2011
	NG	NG	2011

Step 2 -- Boiler retirement date

No #4 or #6 replacement for retired boilers after this date:	2040
Do the replacements include LS?	YES

Step 3 - Final Cut Off

	From	To	In Year
Convert	#2	#2	2030
	#4	#4	2030
	#6	#6	2030
	NG	NG	2030

Key Assumptions

Metric	Value
Discount Rate	7.0%
Retire a boiler after x years	35
Fuel Cost Scenario	EIA
Capital cost assumptions	
Asbestos remediation	75%
Chimney Liner	25%
Gas Booster	25%
Boiler or Burner replacement	BOILERS
Fuel Retention Tech for #2 and NG?	No FRT
Sulfur content of 4LS blend?	1500ppm

*Variation only for No FRT scenarios, otherwise assume 1750ppm

OUTPUTS

NPV OF EMISSIONS REDUCTIONS

Emission	Current emissions	Cumulative Reductions 2010 - 2040	Cumulative Reductions Terminal	Cumulative Reductions Total
PM (Tons)	331	209	411	620
Ni (lbs)	6,923	7,220	11,588	18,808

NPV OF COSTS ($M)

Type	Current costs	Additional cumulative costs over 2010 2010 - 2040	Terminal	Total	2010-2030
Operating	$ 247	$ 31	$ 105	$ 136	$ 18
Capital	$ -	$ 145	-	145	134

A screenshot of the excel-based boiler conversion model created by OLTPS to assist in policy development. (Source: City of New York)

Attendees included all the various city agencies along with affordable housing advocates; environmental justice organizations; heating oil distributors; the city's natural gas utilities (Con Edison and National Grid); the Real Estate Board of New York (representing building owners); local unions, including Teamsters (who drove fuel oil trucks) and 32BJ (which represented building supers); and energy and building experts. Darrell of EDF, a participant in the meetings, observed that "the common agreement that heating oil – specifically No. 4 and No. 6 oils – was the largest factor affecting air quality allowed partners to shape a shared vision of success and implement a collaboration to accomplish that vision" (The Intersector Project, 2015).

The meetings allowed the city to clarify the costs and benefits of converting to cleaner fuels, and provided an opportunity to identify obstacles that could make this conversion difficult for building owners and managers, heating oil providers, and utilities.

As the regulations were rolled out, the city realized it needed to keep this coalition of stakeholders together to support implementation. This led to a public-private partnership, led by OLTPS and EDF, that formed the core of the New York City Clean Heat program.

Then-policy advisor at OLTPS Steven Caputo, who helped develop the program which would eventually become NYC Clean Heat, identified the opportunity to proactively engage stakeholders on their financial concerns to help expedite the conversion process.

Public-Private Partnerships

NYC Clean Heat had four core components: proactive outreach to buildings using No. 6 heating oil; an information clearinghouse for building owners, managers, residents and the general public; technical assistance for building owners for conversions and utility coordination to help buildings work with utilities to convert to gas; and financing and incentives, with a focus on low- and moderate-income buildings.

All of these efforts were driven by NYCCAS and DEP data, which was used to target outreach efforts and utility coordination to areas in the city with poor air quality and high concentrations of No. 4 and No. 6 boilers. In addition, the city convened the NYC Clean Heat Task Force, chaired by Douglas Durst, Chairman of the Durst Organization, which brought together stakeholders from real estate, industry, energy, and finance to create a "practical plan" to meet the PlaNYC goals around fuel conversions and air quality.

Outreach

EDF assisted with outreach especially around the issues of affordability. "We basically went neighborhood by neighborhood and worked through the groups of buildings that were burning dirty oil and offered them help," said Darrell. EDF created educational materials about the health impacts of heavy heating oils and the benefits of converting to cleaner fuels. Their work took them from community events to co-op boardrooms, as they met with thousands of people to accelerate fuel conversions. Additionally, the city enlisted residents to pay attention to the health issues as well. It launched the "Spot the Soot" campaign, which urged New Yorkers to call 311 if they saw black smoke from a building and to contact building managers to urge them to convert to cleaner fuels.

Technical Assistance and Clearing House

EDF, with city support, also built a team of experts to help buildings with fuel conversions. This included hiring ICF International to provide direct technical assistance to building owners and managers on the relative pros and cons of conversions to No. 2 or natural gas.

"The idea was: let's provide building owners with technical assistance," said Caputo "So we hired [ICF International], a firm that was skilled in utility incentive program management to help with us really be boots on the ground – go knock on doors, go to community board meetings, talk with building architects, talk with supers, talk with co-op boards about the options they had, and why it made more financial sense to switch to cleaner heat sooner rather than later."

In some cases, logistical hurdles created the need for creative problem solving by the city and its partners. Often there were multiple buildings on a block or along a street

that wanted to convert to natural gas but did not have a natural gas line to connect with. Furthermore, Con Edison and National Grid were not equipped to accommodate the surge in demand. “We worked with [the utilities] to really invest in the gas system. We got them to change their tariffs, so that it wasn't as cost prohibitive to building owners, and where they could pull incentives,” said Caputo, “So that one building at a time didn't have to pay the whole price of running a line down their street, we started clustering buildings.”

OLTPS created maps showing where the utilities planned to extend gas lines, which would allow buildings to sign up for new gas service and consolidate the cost of the utility work across multiple buildings.

Financing

To alleviate the upfront financial concerns, the City worked with EDF and other partners to develop financing support for buildings. In 2010, the city had launched the New York City Energy Corporation (NYCEEC) to bring lower cost financing for energy efficiency projects. Boiler conversions for cleaner air were a prime match for this financing vehicle. NYCEEC was able to get private financing partners such as JPMorgan Chase & Co., to offer up to 50 million dollars’ worth of credit to assist buildings in transitioning their dirty boilers to cleaner replacements. In 2012, Bloomberg announced more than $100 million in financing to help with heating fuel conversions.

The city and EDF also worked with the natural gas utilities, Con Edison and National Grid, and Hess Corporation (the largest provider of heating oil in New York City) to assist customers in conversions and to offer incentives for cleaner fuels.

Financing Options

- **Loans and Credit Enhancements**: Offered by NYCEEC, focused on covering upfront conversion costs for fuel switches.
- **On-Bill Financing**: Allowed repayment via energy bills to utility or fuel provider without upfront cost to owner.
- **Mortgage-Based Loans**: Targeted at property owners, these options helped spread out the costs for equipment upgrades or boiler replacements.
- **Leasing**: Private financial partners leased heating equipment like tanks and boilers to buildings to alleviate equipment purchasing costs.

Impact and Legacy

New York City's heating oil efforts led to "one of the fastest and most significant air quality improvements in New York City history" (The Intersector Project, 2014, p.1). In the first two years of the regulations and the Clean Heat program, sulfur pollution in New York City dropped by a staggering 69%, nickel by 35%, and $PM_{2.5}$ (or soot) by 23%. (EDF, 2013). By 2014, the Clean Heat Program helped more than 5,000 buildings convert to cleaner fuels, reducing soot from buildings by more than 65%. The city estimated that cleaner air was saving 800 lives each year and avoiding 1,600 emergency room visits for asthma.

As of July 2015, 95% of the buildings that were using No. 6 oil in 2007 had converted to other fuels. By December, all buildings complied with the heating oil regulations. (City of New York, 2016). More than 6,300 buildings had converted to the cleanest fuels, skipping the transition to No. 4 oil. Approximately 75% of No. 6 conversions went directly to No. 2 or natural gas. This resulted in an 84% decrease in citywide SO_2 levels. The greatest air quality improvements were seen in the Upper West Side, northern Queens, and the South Bronx, which had the highest density of boiler conversions in the city. In addition to air quality improvements, the conversions cut an estimated 800,000 metric tons of carbon dioxide from citywide greenhouse gas emissions.

Building on the momentum of NYC Clean Heat and the accelerated progress in fuel conversions, in 2023, Mayor Eric Adams signed a bill banning use of No. 4 in city-owned buildings after July 1, 2025, and in all buildings after July 1, 2027. No new permits are now being issued in New York for No. 4 as of June 30, 2024 – six years earlier than the initial ban.

A Model for the Future

NYC Clean Heat became a model for energy outreach programs in New York, including the city's Retrofit Accelerator (launched in 2015), to help buildings increase their energy efficiency and reduce greenhouse gas emissions (City of New York, 2016). Beyond New York, Fred Krupp, CEO of EDF, cited Clean Heat as "a model for cities around the world." (City of New York, 2012).

Clean Heat brought to bear how the city can be a market maker and create systemic change. But change on this scale requires robust data and understanding and leveraging multiple policy levers. Clean Heat proved that environmental gains are possible when government, finance, real estate, and advocates join forces to achieve a common goal. Darrell also noted that Mayor Bloomberg's personal involvement and the use of his authority by other senior administration officials produced the momentum for change.

Key Takeaways

In 2007, Mayor Bloomberg and his administration faced a substantial challenge – to improve NYC's notoriously poor air quality. However, NYC Clean Heat was able to achieve the seemingly impossible by:

- Using data to identify the root causes of problems, not just the symptoms.
- Crafting compelling and urgent arguments to build support.
- Engaging stakeholders to develop solutions and accelerate implementation.
- Using multiple avenues and partners to drive impact (in this case, regulatory, finance, education, and technical assistance).

In summary: NYC Clean Heat started as a plan that visualized local data, examined the harm to public health, and then crafted an outreach effort coupled with regulatory mandates coupled with ways to alleviate the short turn pain. The dramatic results set a playbook for other cities.

References

1. Stefanie Le. Interview with Steve Caputo. August 2, 2024.
2. Stefanie Le. Interview with Andy Darrell. July 31, 2024.
3. Stefanie Le. Interview with Carter Strickland. July 26, 2024.
4. City of New York. (2007). *PlaNYC: A greener, greater New York*. https://www.nyc.gov/html/planyc/downloads/pdf/publications/full_report_2007.pdf
5. New York City Department of Health and Mental Hygiene. (n.d.). *Air quality: NYC community air survey*. NYC.gov. https://www.nyc.gov/site/doh/data/data-sets/air-quality-nyc-community-air-survey.page
6. New York City Department of Health and Mental Hygiene. (2011). *New York City community air survey: Results from winter 2008–2009*. https://www.nyc.gov/assets/doh/downloads/pdf/environmental/comm-air-survey-winter08-09.pdf
7. New York City Department of Health and Mental Hygiene. (2011). *Air quality programs and health impacts: A review and assessment of New York City's air quality and health impacts initiatives*. https://www.nyc.gov/assets/doh/downloads/pdf/eode/eode-air-quality-impact.pdf
8. New York City Department of Environmental Protection. (2013). *Local law 43: Biodiesel fuel requirement for heating oil in New York City*. https://www.nyc.gov/assets/dep/downloads/pdf/air/local-law-43-biodiesel-fuel-requirement.pdf
9. City of New York. (2011). *PlaNYC: A greener, greater New York (Update April 2011)*. https://www.nyc.gov/html/planyc/downloads/pdf/publications/planyc_2011_planyc_full_report.pdf
10. Porpora, T. (2011, April 21). Mayor Bloomberg discusses PlaNYC 2.0, New York City's updated sustainability agenda. *Staten Island Advance*. https://www.silive.com/news/2011/04/mayor_bloomber_discusses_plany.html
11. Office of the Mayor, City of New York. (2012, March 22). *Mayor Bloomberg announces more than $100 million in financing and new resources to help buildings convert to cleaner heating fuels*. https://www.nyc.gov/office-of-the-mayor/news/212-12/mayor-bloomberg-more-100-million-financing-new-resources-help-buildings
12. Navarro, M. (2011, April 21). New York City bans dirtiest heating oils at buildings. *The New York Times*. https://www.nytimes.com/2011/04/22/nyregion/new-york-city-bans-dirtiest-heating-oils-at-buildings.html
13. Intersector Project. (2015, March 30). *Lessons in building a common fact base from NYC clean heat*. https://intersector.com/lessons-in-building-a-common-fact-base-from-nyc-clean-heat/

14. Intersector Project. (2014). *Clean heat in New York City: A case study of collaborative governance.* https://intersector.com/wp-content/uploads/2014/10/C6_cleanheat_newyork.pdf
15. Environmental Defense Fund. (2014). *Heating oil in New York City: A review of the city's heating oil market and its implications for air quality*. https://www.edf.org/sites/default/files/10085_EDF_Heating_Oil_Report.pdf
16. Environmental Defense Fund. (2012, March 22). *EDF-led partnership plays major role in Mayor Bloomberg's clean air win for all New Yorkers.* https://www.edf.org/media/edf-led-partnership-plays-major-role-mayor-bloombergs-clean-air-win-all-new-yorkers
17. Office of the Mayor, City of New York. (2016, February 24). *Mayor de Blasio and DEP announce that all 5,300 buildings have discontinued use of most polluting heating oil.* https://www.nyc.gov/office-of-the-mayor/news/152-16/mayor-de-blasio-dep-that-all-5-300-buildings-have-discontinued-use-most-polluting