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June 2020

TRADING

A New Climate Solution
for Buildings

Urban Green Council's mission is to transform buildings for a sustainable future in New York City and around the world.

We focus on buildings because they account for 70 percent of the city's carbon emissions. We **convene** stakeholders to seek consensus; we **research** solutions that drive change locally and globally; we **advocate** for cutting-edge policy; and we **educate** a broad range of industry professionals.

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A New Climate Solution for Buildings

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EXECUTIVE SUMMARY

A trading program for buildings can help unlock retrofits and deliver carbon savings at the lowest cost. It can also drive new investment to buildings in environmental justice areas.

New York and other major cities are moving from ambitious climate targets to actionable mandates. Since buildings account for as much as 70 percent of carbon emissions in cities, that shift is bringing a growing focus on laws that require better building performance. NYC's building emissions law—Local Law 97 of 2019—is leading the charge, aiming to drive an unprecedented increase in energy efficiency and building electrification over the next three decades.

But the path to successful implementation is far from clear. To ensure buildings meet this enormous challenge, we need practical and innovative policies that help drive retrofits and unlock cost-effective carbon savings over time. NYC's new law places carbon caps on most large buildings. A new policy approach is emerging to help meet these caps: allow buildings to trade carbon savings.

How Can Trading Help Reduce Building Emissions?

Trading credits (or allowances) isn't a new concept. Trading programs have been successfully used to reduce the sulfur dioxide emissions that cause acid rain, to limit carbon emissions from power plants, and even to improve overall stormwater management in a city. But as a city-level policy tool for building efficiency, trading could be revolutionary.

At the most basic level, trading means allowing buildings to exchange carbon savings to meet a carbon reduction target. A trading system has two core elements: (i) a target or cap on emissions from buildings, and (ii) a new tradable commodity that represents the value of carbon savings. Regulators can set caps for individual buildings or for all covered buildings as a whole. The tradable commodity can be a credit generated when a building reduces its carbon emissions below its target. Or, it can be a permit or "allowance" to emit one unit of carbon, with all buildings required to buy or receive enough allowances to cover their annual emissions. Either way, trading unlocks the option for one building to sell excess savings to another.

Trading works as a climate strategy because the cost to reduce energy and carbon varies by building. Some have low-hanging fruit, like air sealing around windows and lighting system upgrades. Others have energy-intensive uses that may be very impractical or expensive to cut, like grocery stores or television production studios. And while operational savings can come at any time, capital upgrades are most cost-effective if an owner waits until equipment is being replaced.

Trading creates flexibility to adapt to these variations. Buildings that can reduce below their targets at a given point in time can sell

credits to buildings that have difficulty hitting targets, yielding the same overall carbon savings. Whether trading is within an owner's portfolio or across two unrelated buildings, it uses the flexibility of the market to find the lowest cost path for individual buildings, and therefore the system as a whole.

NYC's Building Emissions Law

New York City's recently enacted building emissions law anticipates trading. Local Law 97 of 2019 covers 50,000 of the city's large buildings and sets annual carbon emissions limits that start in 2024 and tighten significantly through to 2050, with sizable fines for noncompliance. The law requires the city to study and develop an implementation plan for carbon trading as a potential compliance path.

Trading under **Local Law 97** could enable feasible and cost-effective compliance as we transition to low-carbon buildings. All buildings will become more efficient as caps tighten over time. As our electric grid gets cleaner and efficient technologies become more affordable in the coming decades, trading may become less crucial.

Putting Environmental Justice Front and Center

We recognize that some stakeholders have serious concerns about market-based policies, in particular, the possibility that a trading program could fail to benefit all buildings and their occupants, or fail to help alleviate pollution hotspots. New York City has many minority and low-income communities where social, economic and environmental stressors are compounded—often called environmental justice (EJ) areas. But energy efficiency isn't reaching the buildings in these neighborhoods now, and without innovative policy approaches we risk leaving them further behind.

A successful trading program will help ensure dollars go to lowering emissions within the five boroughs and not to paying fines for noncompliance. In fact, the entire policy structure could be designed to tilt investment toward EJ areas, making them a priority. Alongside policies to preserve housing affordability, trading could help bring new funds and service providers to upgrade buildings in these priority areas. Improving energy efficiency lowers carbon emissions, and better building systems, such as heat pumps, will result in healthier, more comfortable living spaces. And reducing fossil fuels burned for heating—or

A CLOSER LOOK

What Are Carbon Credits and Carbon Allowances?

*At the heart of a trading system is a tradable commodity. That commodity can be a **credit** generated when a regulated entity reduces its carbon emissions below a cap or target. In that case, the credit represents the value of one unit (e.g. one ton) of carbon savings and can be sold to another regulated entity to help meet its cap or target.*

*Alternatively, the commodity can be an **allowance** that gives permission to emit one unit (e.g. one ton) of carbon. In allowance-based trading programs, all*

regulated entities are required to buy or receive enough allowances to cover their annual emissions. Allowances are typically distributed at least partially through auctions. See Credits, page 20, for more detail on both of these options.

eliminating them altogether—will improve air quality both indoors and out. These benefits must be fundamental to program design.

Global Relevance

New York City is a leader on climate policy, and a trading program here could spark policy development elsewhere. Many cities in the United States and around the world are grappling with similar challenges: how to unlock new funds to reduce carbon emissions, create business models to ramp up building retrofits, and ensure that improvements are distributed equitably. Program design options for NYC can inform other cities' consideration of carbon trading for buildings.

About this Report

This report is guided by four overarching principles: First, a trading program must be structured to drive building upgrades in environmental justice communities, where efficiency has lagged and improvements can have the biggest health and environmental impact. Second, a trading program should incentivize earlier, deeper and additional carbon reductions from buildings. Third, trading should provide flexibility for the lowest-cost path to compliance with Local Law 97. And fourth, while the options are framed for NYC, the ideas behind them are intended for any city anywhere.

Based on nine months of stakeholder input, this report is an initial step in a much longer policy development process. The report identifies key questions and policy options covering the scope, mechanics, and implementation of a carbon trading program for buildings. For each question, we've outlined the issue and a summary of policy options. On the opposite page, you'll find a more detailed exploration of policy options for those interested in reading the fine print. The many policy options can be combined in various ways to emphasize different priorities, so we've included some example approaches in the section Tying It All Together.

Unlike other Urban Green reports, our focus here is to explore policy strategies without specific recommendations. The report aims to help NYC choose the best path forward in designing its carbon trading program, but also to spur dialogue in cities around the globe about the potential for this novel policy approach.

With the right design, a trading program can be a powerful lever to help reach NYC's climate targets and transform our buildings for a healthy, low-carbon future.

UNDERSTANDING CARBON TRADING

What might building-level trading look like?

A Cap on Carbon

A cap sets a limit on carbon emissions from the energy used in buildings. Caps can be building-specific or for all buildings as a whole, and they grow more stringent over time.



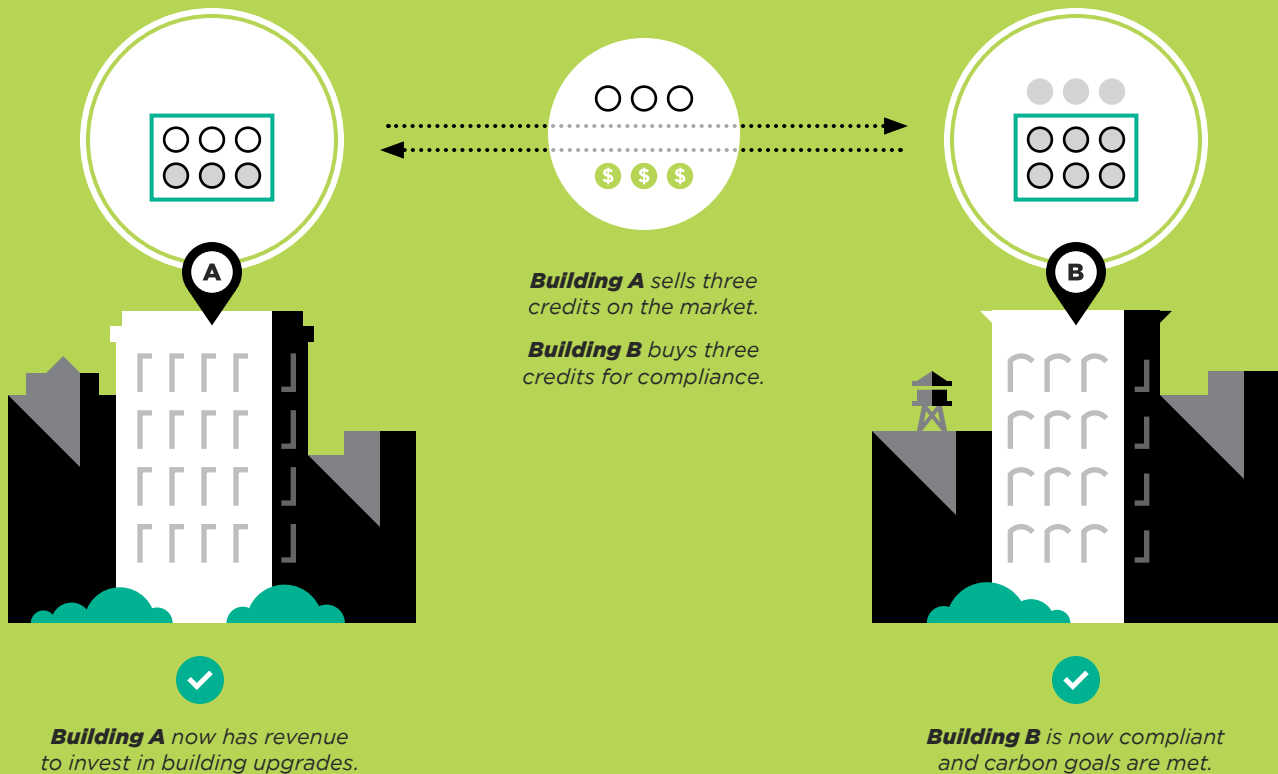
A New Commodity

Carbon savings become a quantifiable, tradable commodity. A building that reduces carbon below its cap receives a credit or allowance for those extra savings.

How It Works

Building A reduces emissions three units under its cap.

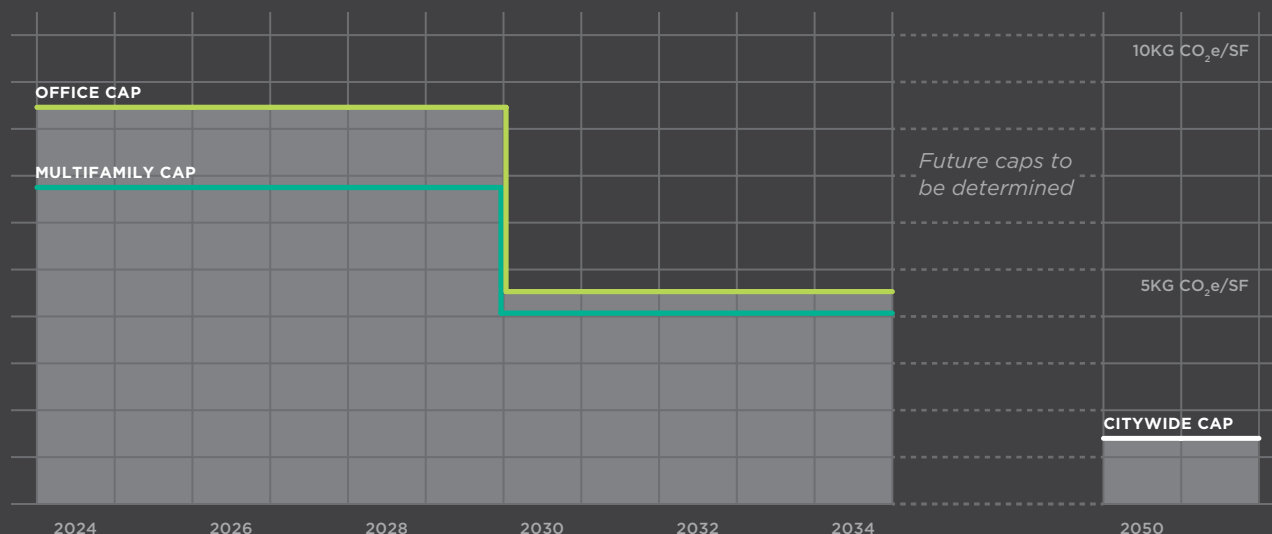
Building B's emissions are three units over its cap.



Basics of Local Law 97

NYC's Local Law 97 sets limits on carbon emissions from energy use in buildings. The law covers about 50,000 buildings over 25,000 square feet, with caps on emissions per square foot for 10 building types. Caps tighten over time: about 20 percent of

buildings are above the first caps from 2024-29, and about 75 percent are above the second caps from 2030-34. The law sets an average citywide cap for 2050, but building-level limits after 2034 will be set by the Department of Buildings.



Benefits of Trading

With the right policy design, a carbon trading program for New York City's buildings will:



Promote environmental justice by unlocking new funds for investment in building upgrades in priority areas, like low-income and minority neighborhoods.



Provide flexibility for building owners to find the lowest-cost path to compliance with Local Law 97, for example by aligning replacement timing with equipment lifespans.



Incentivize earlier carbon savings from buildings by rewarding owners who act sooner to implement energy efficiency upgrades.

About this Report

This report identifies key program design questions and policy options for a carbon trading program among buildings. As the first step in a longer policy development process, our primary aims are to **inform NYC's carbon trading study** under Local Law 97, and to **spur dialogue in cities** around the globe about this novel policy approach.

By the Numbers

9 months of meetings and discussions

11 program design questions explored

30 experts and stakeholders convened

59 policy options identified



TRADING SCOPE

Which buildings will be eligible to participate, when will trading start, and how can trading benefit environmental justice areas?

Over the past decade, a growing number of cities have focused efficiency policies on a small number of large buildings that represent an enormous amount of square footage, energy use and emissions. That's the focus of Local Law 97, which sets carbon caps on buildings over 25,000 square feet (about the size of a 25-unit apartment building). The law applies to 50,000 buildings—only five percent of NYC's one million buildings—but covers nearly 60 percent of the city's total building area.¹

The structure of Local Law 97 must guide the scope of a trading program for New York City. While the law covers large buildings, not all have carbon caps. For example, because of concerns about affordability impacts, buildings with rent-regulated units can instead complete a prescriptive checklist of efficiency upgrades.²

And the law's more stringent caps don't start until 2030, but earlier carbon reductions would mean greater cumulative savings.

In the past, some pollution trading policies have failed to benefit disadvantaged communities or have raised concerns about pollution hotspots. For that reason, Local Law 97 requires that environmental justice be central to any future trading program. Trading must be a vehicle to drive benefits and retrofits to buildings in EJ areas.

The questions in this chapter address program scope and breadth. Policymakers must determine which buildings can participate and when, how trading can promote equity, and what laws and regulations might limit program design options.

◀ *Sulfur dioxide levels have dropped 95 percent since NYC required building owners to convert to cleaner heating oils. A trading program could help bring energy efficiency and cleaner heating systems to many buildings across the city, leading to better air quality for all NYC residents.*

1 | Participants

Which buildings will be able to participate?

Issue

A range of policy goals can inform which buildings are eligible to participate in a trading program, including ensuring maximum uptake or achieving carbon reductions in hard-to-reach sectors. For example, in Tokyo's **cap-and-trade program** for buildings, some non-covered entities can participate by opting into emissions reduction targets. And in Washington, D.C.'s **stormwater retention credit program**, smaller non-covered buildings can earn sellable credits when they install green infrastructure.

Policy Approaches

Participation could be limited to buildings covered by emissions caps, which would keep the program simple and ensure it maintains the same aggregate emissions impact. Or, participation could be extended to some buildings not required to meet caps, such as those subject to prescriptive requirements or below the law's square footage threshold. Doing so could help drive investment and carbon savings in sectors that have lagged on efficiency to date. But any extension to non-covered buildings must yield new savings—additionality—instead of rewarding reductions that would have happened anyway.

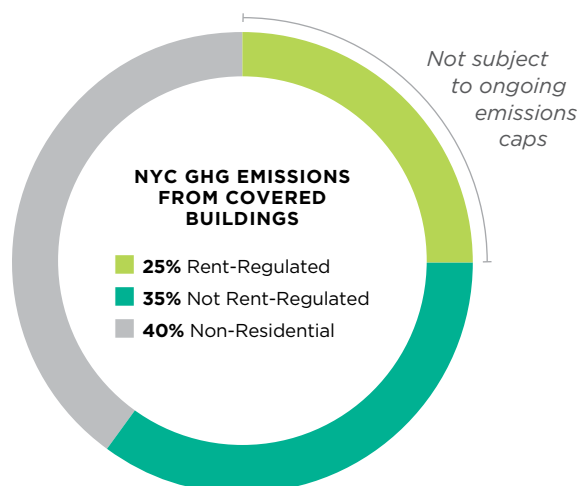
A CLOSER LOOK

Reaching Rent-Regulated Buildings

Rent-regulated buildings account for about 25 percent of the carbon emissions of covered buildings under Local Law 97. When carbon caps begin in 2024, the law allows these buildings to choose between meeting the 2030 carbon cap or implementing a list of low-cost energy efficiency upgrades, with no obligation beyond 2025.

Trading could unlock new funds and incentivize deeper reductions by allowing rent-regulated buildings to sell credits for additional carbon savings.³

DATA: NYC Rent Stabilized Building List 2016, LL84 2017



Policy Options

Limit credits to buildings meeting environmental justice criteria.

The trading program could limit credit generation to priority buildings, such as affordable housing or those meeting certain EJ criteria—either within the pool of buildings with emissions caps or extending to a wider set. This approach would ensure the program drives benefits to buildings in EJ areas, though it would also limit market size. See *Environmental Justice* (page 14) for more detail on policy options.

Limit participation to buildings with emissions caps.

Restricting trading to buildings with emissions caps would reduce administrative complexity. It would also avoid diluting the carbon impact of Local Law 97 because all reductions in the trading program would come from buildings already subject to caps. But that limit could hinder development of a more robust market to drive the lowest cost carbon savings citywide, particularly after 2029, when caps are much tighter and far more buildings will seek credits. It could also miss a critical opportunity for trading to unlock carbon savings in areas where retrofits have lagged.

Allow buildings without emissions caps to participate.

Some buildings covered by Local Law 97 do not have mandatory emissions caps. For example, buildings with at least one rent-regulated unit can instead choose to implement a prescriptive list of upgrades.⁴ That prescriptive approach won't yield the carbon savings we need to reach the city's climate goals. Allowing prescriptive-path buildings to generate credits could drive investment to the sector and help motivate deeper carbon reductions. But policy design must consider the effect on overall emissions reduction from Local Law 97 and ensure additionality. Potential approaches for these buildings include setting a baseline reduction before credits can be generated, requiring buildings to opt into emissions caps to be eligible to generate credits, or delaying participation until 2025 after the prescriptive upgrades are completed.

Allow participation by smaller buildings not covered by Local Law 97.

Buildings under 25,000 square feet aren't covered by Local Law 97, but account for about 40 percent of citywide floor area and 40 percent of citywide building emissions.⁵ Allowing these buildings to participate could help unlock retrofits in a hard-to-reach sector that is critical to citywide emissions reduction goals. But as with prescriptive-path buildings, requirements must be in place to ensure additionality, such as energy benchmarking (to measure savings), a minimum baseline reduction, or an agreement to opt into emission caps.

Expand participation over time.

The trading program could evolve and grow over time, gradually phasing in greater participation based on the options here. See *Timeline* (page 12) for a discussion of program timeline.

2 | Timeline

How will trading align with Local Law 97, when will buildings be eligible, and how can early action be incentivized?

Issue

A trading program must align with NYC’s timeline for emissions caps. Local Law 97 sets annual emissions limits for an initial compliance period from 2024 to 2029. A second compliance period runs from 2030 to 2034, and subsequent periods through 2050 will be set by future rules. With this structure, 2024 or 2030 are natural potential starting points for a trading program.

Policymakers need time to develop a program, but an early start date could yield larger cumulative carbon savings if it motivates earlier retrofits. With some program designs, it may be difficult to generate and use credits for compliance in the same year. That means the program may need to allow some form of banking, or the ability to apply credits from one year to a future compliance year.

Policy Approaches

Enabling trading for the first Local Law 97 compliance period (from 2024 to 2029) would incentivize earlier action. It would also allow the program to grow gradually over time, since fewer buildings will need to buy credits when the targets are less stringent. But starting trading in the second Local Law 97 compliance period (from 2030 to 2034) would allow more time to design and develop the program before implementation. Earlier action could still be incentivized if credits from reductions before 2030 could be banked for use in future years, either for later in the same compliance period or across two or more compliance periods.

A CLOSER LOOK

What is credit banking?

Banking means using credits or allowances from one year for compliance in a subsequent year. For example, a building that reduces emissions below its target and generates credits in 2025 could hold or “bank” those credits to sell at a later date or to use for its own compliance down the line. Depending on program rules, banking can be across years in the same compliance period or across compliance periods. Either way, banking helps provide flexibility to the market over time.

Policy Options

Allow early credits from buildings in EJ areas.

Credit generation could be limited to buildings meeting priority EJ criteria in the years prior to full program launch, whether that launch is 2024, 2030, or sometime in-between. Early credits would help drive investment in EJ areas in the near term and keep the program streamlined as it gets underway. See *Credits* (page 20) for more detail on policy options.

Enable trading for the first compliance period (from 2024 to 2029).

An early start to trading provides market demand that incentivizes earlier action. With fewer covered buildings looking to buy credits for the initial period, an early start could serve as a pilot phase to develop and refine the program and, if banking is allowed, provide liquidity for future years. While a two or three-year design and implementation timeline is feasible based on other trading programs, legislation to enable trading is unlikely before late 2021, so the timing could be challenging.

Enable trading for the second compliance period (from 2030 to 2034).

Delaying compliance through tradable credits until 2030 would provide more time to develop a program and platform. Earlier action could still be incentivized if credits could be generated and banked in advance. And if a narrowly focused program is established for the first compliance period, 2030 could be a trigger for program expansion to all covered buildings and potentially new participants, providing more time to address greater complexity as more buildings become involved in the program.

Limit credit banking to one compliance period or less.

Depending on the policy structure, disallowing credit banking entirely could stifle the market by creating a very short window for annual energy benchmarking, credit generation, trading, and Local Law 97 compliance submissions. Allowing banking within a compliance period would provide greater flexibility for trading, while having credits expire at the end of a compliance period (or the year following) would avoid over-supply and ensure additionality of reductions in the next compliance period. Rules around banking must be clear ahead of time to foster investor confidence and avoid legal challenges down the road.

Allow credit banking between compliance periods or indefinitely.

More expansive rules for credit banking would ensure credit value persists over time, which in turn could foster a more robust market. For example, credits in the Tokyo building cap-and-trade program are valid for one additional compliance period (a maximum of 10 years), and allowances in the Regional Greenhouse Gas Initiative (RGGI) never expire. But a more expansive approach to banking must guard against oversupply, which depends in part on the stringency of carbon caps and methods for credit generation. Banking could also be designed to benefit investments in EJ areas as explored in *Environmental Justice* (page 14).

3 | Environmental Justice

How can trading drive equitable investment and benefits to environmental justice areas?

Issue

A trading program must ensure equitable investment and avoid increased pollution in EJ areas that may already bear a disproportionate share of environmental risks. Many buildings in EJ areas don't have Local Law 97 emissions caps, either because they include affordable housing or they aren't part of the law's covered buildings. Without caps to drive upgrades, these buildings risk being left behind. And for those with caps, residents won't see the benefits of building upgrades—including more comfortable living spaces and lower utility costs—if owners comply with credits instead of on-site efficiency. Over time, trading and increasingly stringent caps must drive improvements in all large buildings, while ensuring investment flows to priority areas.

Policy Approaches

A New York City trading program should be structured in creative ways and in consultation with community groups to bring the benefits of energy efficiency to buildings in EJ areas. The program could assign greater value to credits for carbon savings in priority buildings. For example, a credit multiplier could yield more than one credit for each unit of carbon savings, or a credit subsidy could add a premium to each credit earned. Preferential rules could also apply to credits from buildings in EJ areas, such as an earlier start date for credit generation or the ability to bank credits for longer timelines. No matter the approach, policymakers must include measures to address potential effects on housing affordability and gentrification, and to preserve the emissions impact of Local Law 97.

A CLOSER LOOK

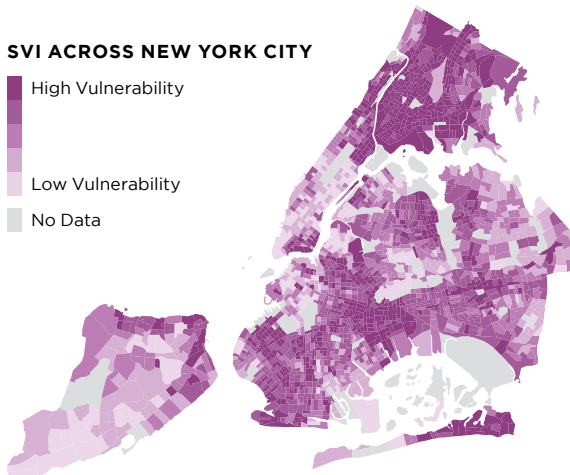
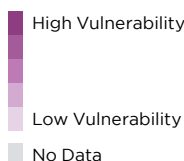
What is Environmental Justice?

NYC's Local Law 64 of 2017 defines environmental justice as the fair treatment and meaningful involvement of all persons, regardless of race, color, national origin or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, policies, and activities and with respect to the distribution of environmental benefits.

No single metric adequately identifies EJ areas, but composite metrics like the Social Vulnerability Index (SVI) help visualize the distribution of vulnerable communities across the city. The SVI includes measures of household composition and disability, socioeconomic status, minority status and language, and housing and transportation.

DATA: Centers for Disease Control and Prevention SVI 2018

SVI ACROSS NEW YORK CITY



Policy Options

Set preferential ratios for credits from EJ areas.

Carbon savings from covered buildings in EJ areas could be given greater value, with an ‘EJ multiplier’ yielding more than one credit for each unit of carbon reduction beyond the applicable cap. That higher value could draw greater investment, including from retrofit providers who will pay upfront costs and sell the credits (see *Effectiveness*, page 22). Key issues to consider include the timeline for an EJ multiplier and the impacts on total emissions savings and market integrity.

Include buildings without emissions caps that meet EJ criteria.

Allowing buildings without emissions caps in EJ areas to generate credits could open the door for investment in hard-to-reach neighborhoods. But doing so could also dilute the overall emissions impact of the law, so policy design must ensure additionality as discussed in *Participants* (page 10). For example, buildings subject to prescriptive measures shouldn’t be able to double-count upgrades they’re already required to make.

Set preferential rules for credits from EJ areas.

Even with the same value, credits from buildings in EJ areas could be designated with beneficial rules. Options include an earlier start date for credit generation or the ability to bank credits from EJ areas for longer timelines, though policymakers must assess potential impacts on overall emissions reductions achieved.

Subsidize credits from EJ areas.

To avoid the complexity of credit multipliers, the city could allocate funds to an EJ credit program, for example, to subsidize or guarantee a minimum return when credits are sold. The result would be the same—a higher market value for credits from buildings in EJ areas—but without the divergence between the actual quantity of emissions reductions and credits.

Invest auction proceeds in EJ areas.

If the program includes an auction to distribute any credits, some funds could be directed toward efficiency investments in EJ areas. Limits on city authority to sequester funds must be considered (see *Legal Landscape*, page 16).

Don’t reward bad actors.

One potential concern is that a trading program could benefit bad actors who aren’t in compliance with existing laws. To address this risk, the program could limit credit generation or the ability to comply through credit purchase to buildings that have no violations. Another potential concern is that buildings in EJ areas might avoid making any efficiency improvements by buying credits. To avoid this outcome, the program could set a maximum percentage of compliance through purchase of credits, either across the board or in target areas. This approach would guarantee on-site upgrades but provide less flexibility for building owners.

4 | Legal Landscape

What are the key legal issues affecting the program?

Issue

Trading carbon savings between buildings is a new frontier for city-level climate policy. Novel questions of legal authority and potential regulatory implications must be identified and addressed to develop a viable program.

Policy Approaches

A trading program must be designed to fall within the scope of NYC's "home rule" authority, which grants jurisdiction over local affairs. Certain state or federal laws may also prescribe or preempt some aspects of program design. For example, managing an exchange market could bring oversight from commodity and exchange regulators. And since a trading program creates a new form of property, program features could raise legal issues, such as if future changes to program rules reduce the value of existing credits.

Policy Options

What legal authority does the city have to develop a trading program?

New York State law enables “home rule,” which provides local government authority over local affairs. Home rule generally allows adoption of local laws to protect the environment, but the scope of that authority is subject to many restrictions. For example, New York municipalities are generally prohibited from imposing new taxes without state approval. While many cap-and-trade programs are based on periodic auction of pollution allowances, a market-wide auction could be construed as a mandatory charge on covered buildings akin to a tax imposed without state approval. To be valid and durable, a trading program must be designed within the scope of local authority.

How might state or federal law prescribe or preempt aspects of program design?

State or federal law may present challenges or outright conflicts that affect the viability of different program features. For example, the federal Energy Policy and Conservation Act or the New York State Energy Conservation Construction Code may preempt certain efforts to regulate building energy efficiency. Identifying the implications of relevant state and federal laws is crucial to successful and lasting program design.

How do commodity and exchange regulations affect the administration of a market?

Carbon credits or allowances are tradable environmental commodities, potentially subject to commodity and exchange regulation. Different credit structures and market designs will entail varying levels of regulatory oversight. For example, a simple registry for credit creation and transfer may not involve federal or state oversight, whereas a more sophisticated exchange platform with contracts for future transactions could bring oversight by the federal Commodity Futures Trading Commission. Even if the city develops only a simple registry, program features—such as limits on categories of credit purchasers—will influence how secondary markets function and subsequent regulatory oversight over those markets.

What are the property rights or other legal implications of credit registration, verification, ownership, and transfer?

A trading program entails creating a new form of property: the carbon savings credit or allowance. Program features will affect property value and could raise legal issues, such as if future changes to credit rules diminish the value of credits or if credit verification processes don't adequately guard against fraud. These issues should inform program design.



PROGRAM MECHANICS

How will carbon credits be generated, allocated, and priced, and what program features will ensure an effective and stable market?

A building emissions trading program under Local Law 97 may be of unprecedented size and scale, but New York City doesn't need to completely reinvent the wheel. Many existing trading systems offer insights on program design and lessons learned that will benefit NYC's effort.

Tokyo's cap-and-trade program shows how credits for carbon savings can fit within a building performance mandate. But with minimal trading so far, the program highlights that stricter targets and more participants may be necessary to create a robust market. The Regional Greenhouse Gas Initiative (**RGGI**) and California's

cap-and-trade program are the leading U.S. examples of carbon trading, with a focus on power plant emissions. Both offer helpful models for how to manage supply and demand, ensure transparency, and boost market stability.

Taking these and other models into consideration, the questions in this chapter tackle the nuts and bolts of a trading program: how credits are created and verified, and what design features can help ensure a well-functioning market.

◀ *Local Law 97 could drive a new \$20 billion retrofit market. Tradable credits that give value to carbon savings could unlock new business models for service providers to take retrofits to scale.*

5 | Credits

How will credits be measured, generated and verified?

Issue

Many cap-and-trade programs, like RGGI, rely on auction or allocation of emissions allowances. Every covered entity must receive or buy enough allowances to cover its emissions. Other trading programs use a baseline and credit model, where credits are generated for savings beyond a target. For example, the Tokyo cap-and-trade program issues credits to buildings that reduce emissions below their baseline percentage reduction requirements.

Either way, clear definition of credits is crucial, and reliable data is the backbone of a trading program. To be tradable in a marketplace and help spur retrofits, credits must be certain, stable and trusted commodities. To ensure policy impact, they must be reasonably tied to additional carbon savings. In NYC, the approach to credits must align with the compliance structure of Local Law 97.

Policy Approaches

Credits could be awarded for the amount a building's emissions are below its annual cap. But in the first compliance period (2024-2029), that free allocation would flood the market given that 80 percent of affected buildings are already below their caps. To ensure credits represent new, additional savings, credit generation could be conditioned on reducing carbon below a baseline, such as a prior year's emissions or the future, more-stringent 2030 cap. With a more traditional cap-and-trade approach, covered buildings could be required to buy or receive enough allowances to cover annual emissions, but that would mean significant changes to Local Law 97. In all cases, credit verification could align with the verification required for regular Local Law 97 compliance submissions through automatically uploaded utility data that is certified by a registered design professional.

A CLOSER LOOK

Tokyo Cap-and-Trade Program

Tokyo operates the world's first cap-and-trade program for building emissions. Launched in 2010, the program covers about 1,200 non-residential buildings and has driven a 27 percent emissions cut in its first two compliance periods (from 2010 to 2018).⁶ Most buildings have been able to reduce emissions below the caps through energy efficiency measures, so the program has resulted in very few buyers (and thus very few trades)—but that is expected to change as the caps tighten this year.⁷



Policy Options

Allocate credits for the amount a building's emissions are below its cap.

Credits could be automatically allocated if a building's annual emissions are below its annual cap. While this approach would align with the structure of Local Law 97, it would likely flood the market with an oversupply of credits in the early years without any additional carbon savings, because 80 percent of buildings are already below the caps for 2024 through 2029. This option, and the following two below, would also require credit banking for one or more years because of the short window for annual energy benchmarking, credit generation, trading, and then Local Law 97 compliance submissions (see *Timeline*, page 12).

Generate credits for carbon savings below a set baseline.

To address concerns of additionality and oversupply, credit generation could be conditioned on reductions below an emissions baseline, such as a three-year average or a single year prior to the compliance period. For a building with a baseline above its carbon cap, credits would be generated once the building reduces emissions below its cap. For a building already below its cap, credits would be generated only for reductions below its baseline emissions. This baseline approach could also potentially extend to buildings that don't have emissions caps under Local Law 97 (see *Participants*, page 10). Baselines would ensure buildings don't get credits for free, but they may penalize early adopters who have already implemented efficiency measures and introduce some complexity with individualized building baselines.

Generate credits for outperforming future caps.

In a variation on the baseline approach, credits could also be generated for the amount that a building's emissions are below its future annual cap. For example, the program could allow credit generation to start in 2024, but only for emissions savings below a building's cap for the second compliance period (2030-2034). This approach would reduce the risk of oversupply because far fewer buildings are below those future caps. It would also incentivize earlier and deeper carbon reductions in all covered buildings by rewarding prompt action.

Require allowances for compliance, distributed by free allocation or auction.

As with many cap-and-trade programs, a building with a carbon cap could be required to receive or buy enough allowances to cover its annual emissions. While all allowances could be sold at auction, that structure may raise legal issues (see *Legal Landscape*, page 16). Allowances could be freely allocated up to each building's annual cap, though that would flood the market in the first compliance period, since many buildings are below the caps for 2024-2029. To avoid oversupply, the program could begin in 2030 when the carbon caps are more stringent. Other approaches could be to allocate allowances up to the more stringent caps in a later compliance period, or allocate allowances up to a building's emissions in a baseline year. But doing so would penalize early adopters by giving them fewer allowances. Either way, an allowance-based approach would be a major revision of Local Law 97.

Create credits for some buildings based on prescriptive measures.

For buildings without emissions caps, like smaller buildings not covered by Local Law 97, a trading program could focus on estimated savings. In some energy efficiency programs, utilities are required to buy energy efficiency credits from buildings that implement a checklist of upgrades.⁸ A similar approach to credit generation here would be simple and accessible to a wide range of participants, a goal discussed in *Accessibility* (page 30). But many doubt the efficacy of prescriptive measures, since they rely on estimates of energy and carbon savings that often don't equal actual impact.

Verify credits through the LL97 compliance process.

Most credit options depend on annual Local Law 97 compliance submissions. These reports will be based on automatically uploaded utility data and must be certified by a registered design professional, which includes verifying the accuracy of data on building size, occupancy types, and annual oil, gas, electricity, and district steam use. Credit verification could align with this larger compliance process for Local Law 97.

Verify credits through approved third parties.

For credit generation based on prescriptive measures, approved third parties could verify that energy efficiency projects are completed to requisite standards. This would potentially raise program costs.

6 | Effectiveness

What will help create a robust market to drive new funds to retrofits?

Issue

An effective trading program will help incentivize energy efficiency by unlocking new sources of capital to fund retrofits across the city. To achieve that objective, the program must inspire confidence in credits and their value over time. It must also engage a range of third parties who can bolster supply and demand, such as retrofit consultants who have the expertise to use future credit value to help finance retrofits.

Policy Approaches

To ensure a robust market, the trading program should include rules to insulate credits from retroactive adjustments. Rules requiring disclosure of credit transactions will also make credit value more predictable. Anticipating how an owner might grant a security interest in credits as collateral for a loan will help align the program with financing needs. And enabling participation by service providers and other third parties could galvanize new sources of supply and demand, helping to bring retrofits to more buildings.

Policy Options

Ensure clear and immutable definition of credits.

Development of a new market depends on full faith in the underlying commodity. Whatever the method of creation, credits or allowances must be clearly defined, based on trusted data, and insulated from retroactive adjustments or rule changes that affect their value over time. Market confidence rests on that foundation.

Provide price transparency.

A well-functioning, liquid market requires price transparency. Many trading programs, like California's cap-and-trade program and RGGI, have publicly accessible allowance tracking systems that disclose the time, quantity and price of transactions. Rules requiring registration and disclosure of these key facts are crucial for clarity on credit value.

Align program features with financing mechanisms.

For a trading program to help dollars flow to retrofits, the program should align with financing needs. That means anticipating how an owner might grant a security interest in credits as collateral for a loan. Underwriting rules determine the likelihood of securing a loan. Identifying and adapting to relevant rules, such as potential requirements around documentation or data security, could help the program unlock new sources of capital for retrofits.

Enable market participation by service providers.

Architects, engineers, energy management professionals, and sustainability consultants will play a crucial role in bringing efficiency to scale by planning, financing and executing retrofits. Allowing these third parties to participate in a trading market would enable them to integrate credits when planning and financing retrofit projects. That could galvanize a major force in the trading market and help bring retrofits to more covered buildings.

Enable market participation by commercial tenants.

Commercial tenants can account for 60 percent or more of a building's energy use, but owners are ultimately responsible for compliance with carbon caps. New leasing provisions will likely emerge that attempt to bridge this gap by passing carbon caps or potential penalties on to tenants. Allowing commercial tenants to own, buy, and sell credits could enable innovative solutions to this challenging divide and incentivize tenant actions to reduce emissions.

7 | Price

How can the program ensure predictable market prices and liquidity?

Issue

Price is fundamentally driven by supply and demand in the marketplace, but it is also a function of program design. If prices fluctuate wildly or are too low, the prospect of generating credits won't motivate additional energy efficiency retrofits. If prices are too high, building owners will opt for other compliance options, including paying the Local Law 97 penalty (up to \$268 per ton of CO₂e). Many trading programs, like the **European Union Emissions Trading System** and RGGI, have grappled with low allowance prices in initial years because of oversupply and now have some measure of price control in place.⁹

Policy Approaches

Credit prices could be fixed by program administrators, set through a uniform price auction, bound by some form of price control, or left to be determined entirely by buyers and sellers in a secondary exchange market. Many auction-based trading programs set a price floor to guard against oversupply and also have a pool of allowance "reserves" to release or withhold if prices exceed a set range. But those approaches depend on control over supply and an exchange market. The Local Law 97 maximum penalty of \$268 per ton already sets a de facto ceiling: If credits exceed that price, owners would likely pay the penalty instead. The city could also simultaneously boost liquidity and provide some price certainty with funds for a purchase guarantee for eligible credit generators.

A CLOSER LOOK

Washington, D.C. Stormwater Retention Credit Trading Program

*Like many cities, Washington, DC requires new construction to incorporate on-site stormwater management. Through the city's innovative **credit trading program**, property owners can meet up to 50 percent of that requirement by purchasing Stormwater Retention Credits from other properties that reduce harmful runoff with green infrastructure. The policy includes a Price Lock Program: Eligible credit generators can lock in a price guarantee from the city without losing the option to sell in the open market if prices increase by the time a project is complete.¹⁰*



Policy Options

Avoid controls and let the marketplace set prices.

Price will depend significantly on how credits or allowances are created (see *Credits*, page 20). Deeper retrofits aren't easy, so if it's difficult to generate credits, there may be little risk of an oversupply that would drive prices toward zero. The market will also find a logical upper price, where it becomes cheaper for owners to retrofit their buildings instead of buying credits from carbon reductions elsewhere.

Set a price floor.

Many auction-based trading programs, like California's cap-and-trade program and RGGI, set a minimum reserve price for sale of allowances. In those systems, regulated entities must purchase allowances to comply. The price floor acts as a minimum carbon fee that guards against the price dropping to zero if there are too many allowances for sale. That floor also gives greater certainty to a return on investment in carbon reduction. But in a credit system with no auctions, it may be difficult to set a floor without administering the exchange market. And since the cost of deep retrofits is very high, the demand for credits may be sufficient to alleviate concerns about low credit prices.

Set a price ceiling.

A price ceiling sets an upper limit to allowances or credits, preventing runaway prices that could stifle market liquidity. The Local Law 97 maximum penalty of \$268 per ton already sets a de facto ceiling. If credits exceeded that price, owners will likely pay the penalty instead, although the reputational risk of non-compliance could exceed \$268 per ton. Setting a price ceiling below the penalty could help ensure credits are a viable option even at higher prices. That would drive dollars to retrofits instead of the city's general revenue, but it might require direct involvement in the exchange market.

Create market stability reserves.

Market stability reserves can help control prices by regulating supply. These reserves make allowances available to the market if prices get too high and withhold allowances if prices fall below a set threshold. In each case they drive the price back toward a desired range. The viability of reserves depends on how credits or allowances are created. Regulators can simply allocate reserves in an auction/allowance system because they control supply. But, reserves are more complicated if credits are instead generated when a building's emissions are reduced below a target.

Provide a purchase guarantee.

The city could simultaneously boost liquidity and provide some price certainty with a purchase guarantee for eligible credit generators. As with the Price Lock Program under Washington D.C.'s stormwater credit system, participants would apply for the option to sell credits to the city at a fixed price without losing the option to sell on the market once the credits have been generated. That option could be tailored to certain building or neighborhood criteria, providing a price floor and revenue certainty for applicable credit-generating projects.



PROGRAM IMPLEMENTATION

How can the management and delivery of a carbon trading program establish trust, provide widespread accessibility and ensure success?

No policy succeeds by design alone. A building trading program depends on getting the mechanics to work in practice and achieving strong market participation over time. A successful program requires an expert administrator, an effective platform, and robust, ongoing support for program delivery and improvement.

The City of New York has substantial experience implementing innovative policies, but there's little doubt that a building trading program will present new and unique challenges. The rollout of energy benchmarking for NYC's large buildings was supported by a help center and speaker's bureau, but the program uses a pre-existing online platform developed by the federal government. Similarly, NYC's energy code builds on model codes developed at the national level and revised by the state. By contrast, a building trading program essentially requires creating a novel currency to successfully anchor a new market.

Again, precedents—like RGGI and the Tokyo cap-and-trade program—offer helpful insights into program administration and support. And recent technological innovations, like the rise of blockchain as a secure digital accounting ledger, may enable new and potentially improved approaches to put a trading program into practice.

The questions in this chapter address these and other issues of program implementation, including how to build the right delivery platform, guard against fraud in the marketplace, and develop training to support program adoption.

◀ *Co-op and condo boards are key decision-makers in a sector that makes up nearly 15 percent of NYC's housing units. Trusted messengers can help inform and educate a wide range of building stakeholders on a new program like carbon trading.*

8 | Administration

How and on what platform will the program be administered?

Issue

Successful implementation of a trading program depends significantly on decisions about the managing entity, the scope of administrative responsibility, and the delivery platform. A competent authority with technical and administrative expertise and adequate resources is necessary to promptly deploy a trading program. That is particularly important with Local Law 97 compliance requirements only a few short years away.

Policy Approaches

Program administration can cover one or both of two key functions for credits: (i) registration and tracking, and (ii) exchange. Credits must be registered and tracked, with a secure and trusted record of ownership, transfer and retirement. Many programs establish dedicated nonprofit corporations to streamline tracking and implementation. While some existing programs have created new tracking systems, blockchain could be a cost-effective route to a secure record of ownership. Extending program administration to an exchange, which brings buyers and sellers together, is another option, but would require greater resources and expertise; it may also entail oversight from commodity and exchange regulators.

A CLOSER LOOK

What Is Blockchain?

Blockchain is the Fort Knox of accounting ledgers: a platform that provides an incredibly secure digital record of transactions between parties in an efficient, verifiable, and virtually permanent manner.

Each block is a digital record with a timestamp and encrypted details of any type of transaction. All blocks in the system are linked in a chain because each block has its own unique identifying “hash,” as well as the hash of the block before and after it in the chain. Once transaction details are recorded in a block they cannot be altered without altering all subsequent blocks.

Blockchain was originally invented to manage bitcoin and other cryptocurrency transactions, but now it's being used in a range of private and public functions. For example, IBM developed a blockchain platform to manage supply chains. Visa used blockchain to create a tool for secure bank-to-bank and high value corporate payments. The U.S. Food and Drug Administration has used blockchain to track and verify prescription drugs, and the Postal Service is seeking to use the technology to authenticate personal information. Governments in the U.S. and abroad are exploring using blockchain for healthcare, property, business, tax, court, and voting information.

Policy Options

Manage the program through a regulated nonprofit.

Many trading programs, like RGGI and California's cap-and-trade program, established dedicated nonprofit corporations to manage credit tracking and to support program development and implementation (but not to actually manage the exchange platform, which is left to the private sector). This approach could streamline administration and address limitations on staff, time and money in government offices, though it may be limited by legal restrictions in NYC.

Manage the program through a city office.

Administering the trading program through the new Department of Buildings Office of Building Energy and Emissions Performance, or another coordinated city office, could help ensure close alignment with Local Law 97 carbon reporting, compliance rules and enforcement. That's the approach taken in Tokyo's building cap-and-trade system and the Washington, D.C. stormwater credit program, both of which are administered by government entities. But the relevant office must be equipped with sufficient authority, training, technology infrastructure, and resources to get the program up and running quickly.

Manage only a credit registry.

Recordkeeping is the core of any trading program. Credits or allowances must be registered and tracked, with a secure and trusted record of ownership, transfer and retirement. But recordkeeping doesn't necessarily mean also managing a trading market, which in RGGI and many other programs is left to the private sector. Whether the program manager is a city agency or a dedicated nonprofit, they could focus on the registry and tracking system alone, which is easier and entails fewer regulatory complications.

Administer an exchange for all or some participants.

An exchange brings buyers and sellers together. Most equity and commodity exchanges are privately run in accordance with strict governmental standards. Creating and managing an exchange (in addition to the registry) could help ensure that a robust, accessible and liquid trading market develops. But doing so requires significant additional resources and expertise. It also entails potential oversight from state and federal commodity and exchange regulators. One approach could be to partner with an established exchange to create and manage a new designated platform.

Create a proprietary tracking system.

Many prior cap-and-trade programs have developed program-specific data and software platforms for registering and tracking allowances. This enables customization, but it also requires substantial resources to guarantee ongoing technological security.

Use blockchain technology for tracking.

Blockchain is a distributed ledger technology that can serve as a secure, immutable, digital record of ownership and transfer of credits. Because of these advantages, it's being increasingly explored for a range of digital accounting functions, including cryptocurrencies, stock records, renewable energy credits, and property title registries. Using blockchain as the backbone of a credit registry and tracking system could help ensure credits are secure and incorruptible, and avoid any possibility of double counting, all while cutting program costs.

Collaborate with stakeholders to develop and pilot the platform.

Given the novelty of a building-based trading program, the city could partner with experienced industry players to develop and beta-test a platform before full release. Doing so would leverage stakeholder input and private sector expertise to ensure optimal design and smooth implementation.

9 | Accessibility

How can the program be simple and accessible to a wide range of actors?

Issue

Many cap-and-trade programs regulate large organizations and institutions with substantial resources and technical capabilities, such as power plants or factories. By contrast, Local Law 97 covers about 50,000 buildings, ranging from some of the world's largest skyscrapers to 25-unit apartment buildings. It also regulates a wide range of building owners with differing resources, including large commercial real estate firms, affordable housing nonprofits, universities, and families that own a single building. A trading program must work for all of them.

Policy Approaches

To make trading simple and accessible, the city could facilitate an optional annual auction where the market sets a single clearing price for all those wishing to sell credits. Tailored approaches could make participation easier for priority buildings, such as a purchase price guarantee to reduce investment risks. And a range of other strategies could boost accessibility, including integrating automatic data upload and credit creation, developing a user-friendly online platform, and building engagement with key partners like property management companies and service providers focused on Local Law 97 compliance.

Policy Options

Facilitate a credit exchange with a single clearing price.

To make trading simple and accessible, the city could facilitate an annual auction where the market determines a single clearing price. For example, in a uniform-price sealed-bid auction, buyers submit confidential bids that are ranked from high to low. The administrator then sets a single clearing price for all credits based on the highest price where the quantity of buyers meets the supply of credits available for sale. Trading could still occur on other private exchanges throughout the year, but this type of facilitated auction would provide an easy entry point for many participants.

Streamline participation for some buildings.

Tailored approaches could make participation easier for priority buildings, such as an option to generate credits through prescriptive improvements or a purchase price guarantee to reduce investment risks (see *Credits*, page 20, and *Price*, page 24, respectively). The city could also help facilitate market access for some buildings by procuring a pool of credits or designating approved credit brokers.

Automate where feasible.

Integrating automatic processes like data upload and credit creation into Local Law 97 compliance, while aligning with existing platforms like the city's energy benchmarking tool, will allow easier program participation for a wider audience.

Design a user-friendly program platform.

As explored in *Administration* (page 28), a user-friendly program platform with clear price disclosure will help boost wider participation.

Engage key delivery partners.

For many buildings, program participation will depend on property management companies and service providers focused on Local Law 97 compliance. Targeted engagement with those entities, including rules that allow them to participate in a trading market, will help ensure the program reaches a wider array of buildings.

Provide adequate program resources.

Broad program participation will also depend on robust funding and staffing for outreach and support, including the options explored in *Education* (page 34).

10 | Integrity

What features will instill trust while averting market manipulation?

Issue

For a trading market to thrive, participants must have faith and confidence in the integrity of both the tradable commodity and the ongoing operation of the market. Transparency drives informed market decisions and strengthens trust by allowing participants to see the market in action. And as with any market, there is some risk that an entity could accumulate credits, amass undue market power, and profit through the resulting price inflation.

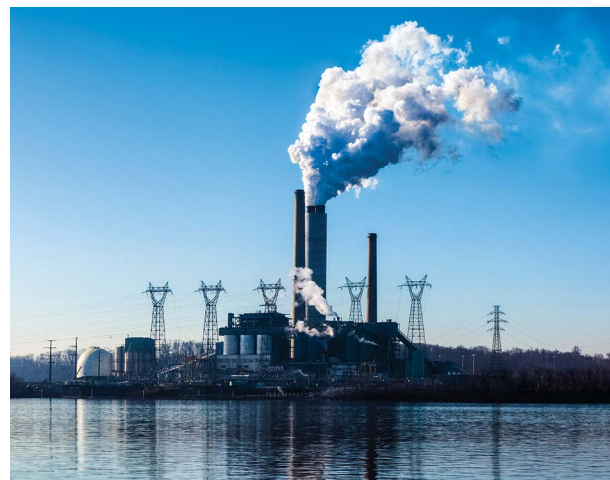
Policy Approaches

Establishing a high standard for data integrity and a secure credit tracking platform that discloses transactions will help ensure the market is trusted over time. Trading programs can include guardrails to prevent market domination by individual participants, such as required disclosure or limitations when credit holdings exceed a set level. Regular reporting from an independent market monitor could also identify potential market risks or detrimental activity. A formal periodic program review with stakeholder input could illuminate any need for adjustments and ensure the market functions properly over time to spur the lowest-cost emissions reductions citywide.

A CLOSER LOOK

Regional Greenhouse Gas Initiative (RGGI)

RGGI is a regional cap-and-trade initiative comprised of carbon budget trading programs in 10 northeastern U.S. states. RGGI includes a regional carbon cap that requires about 200 fossil fuel electric generating facilities over 25 MW to purchase allowances at auction or on the open market equal to their annual emissions for three-year compliance periods. Over the past decade, average emissions from power plants under the RGGI cap have dropped by about 50 percent. The program has generated over \$3 billion, much of which has been reinvested in carbon reduction initiatives in the participating states. RGGI includes a number of measures to ensure market integrity, including strong data verification, a public allowance registry, a dedicated market monitor and regular program review.¹¹



Policy Options

Prioritize data integrity.

Data integrity touches all aspects of market trust. Credit or allowance creation must be anchored in reliable, verified data, as is the case with the U.S. Environmental Protection Agency's (EPA) point source emissions monitoring that underpins RGGI. Where feasible, automating data input directly from utility meters would further boost market confidence in the tradable commodity and reduce risk for human error. Ensuring the program platform is secure and incorruptible is also crucial for ongoing market integrity (see *Administration*, page 28).

Provide market transparency.

Price discovery is essential to clarify credit value (see *Effectiveness*, page 22), but robust ongoing disclosure of credit transactions is perhaps even more critical for market integrity. As with RGGI and many other trading programs, making key transaction information publicly available online would help ensure the market is trusted over time.

Preempt market manipulation.

As with any market, there is some risk of an entity exerting undue market power by accumulating credits to profit through price manipulation. Trading programs can include measures to prevent this outcome. For example, RGGI prohibits any entity from buying more than 25 percent of available allowances at auction. Similarly, the U.S. EPA's renewable fuel credit program requires participants to disclose credit holdings when they exceed a set level.

Establish a market monitor.

The watchful eye of an independent market monitor is crucial for market integrity and for public acceptance of a trading program, though it would add operational costs. Regular reporting can identify potential risks and detrimental market activity, including false transactions intended to manipulate market prices.

Schedule regular program review.

Periodic review of the trading program provides a less frequent but more comprehensive opportunity to assess program successes, impacts and design. RGGI offers an instructive model, with two program reviews since its inception that have yielded multiple program improvements. Establishing a formal review process with stakeholder input can boost long-term market confidence.

11 | Education

What outreach and training will support program implementation?

Issue

Trading uptake depends on developing awareness and engagement with many stakeholders: diverse building owners, managers and operators, commercial tenants, community groups, designers, energy consultants, and others. To date, green building policy in NYC has thrived with the support of resource centers, outreach programs, and education, like the **Benchmarking Help Center**, the **Clean Heat Program**, the **Retrofit Accelerator**, and Urban Green's **energy code** and **GPRO** trainings. A trading program must be supported by comprehensive and ongoing education.

Policy Approaches

Reaching many different stakeholders will require an outreach effort tailored to a range of audiences, including key decision-makers like co-op and condo boards, managing agents and industry associations. Partnering with trusted messengers who have education expertise would optimize outreach, from lay tutorials to in-depth training on program and market mechanics. Existing city resources could deliver basic program information, while a polished and accessible online portal could serve as a starting point for many participants, with background information, how-to guides and other resource to support program implementation.

Policy Options

Develop an outreach strategy.

A trading program will affect many different stakeholders. Successful outreach will require a strategy tailored to a range of audiences. First, a comprehensive outreach strategy could identify and engage key decision-makers, such as co-op and condo boards, managing agents and industry associations. Second, it could rely on trusted messengers, like nonprofits and community organizations, who can amplify outreach and generate program awareness to boost participation.

Partner with experts to deliver training.

Organizations like Urban Green and AIANY have a history of developing and delivering green building curriculum and certificate programs for industry professionals. Leveraging a trusted brand—with expert instruction and an extensive network—will optimize content delivery ranging from lay tutorials to in-depth training on program and market mechanics.

Leverage existing city resources.

Basic program information should be delivered through established government channels, like the NYC Retrofit Accelerator and the new DOB Office of Building Energy and Emissions Performance. Doing so would require resources for dedicated staff, a help desk, advertising, site visits and other program support.

Create an online program hub.

A polished and accessible online portal created by the city or a nonprofit organization could serve as a starting point for many program participants. The portal could provide an overview of the trading program and how it relates to Local Law 97, as well as FAQs, educational videos, how-to guides, simulations, key contacts, and other resources to build awareness and support program implementation.



TYING IT ALL TOGETHER

Ultimately, the features of a carbon trading program will be shaped by its overarching goals. Here are three examples of what that might look like.

Many different approaches to trading are possible, and the most appropriate structure will depend on factors like program goals and available resources. Without recommending any particular path, this section illustrates various approaches by exploring three examples of potential trading programs.

All scenarios include policy options to benefit environmental justice communities, but the first example focuses program design on that one

goal, with credits generated only for reductions in buildings meeting designated EJ criteria. The second example builds on the Tokyo cap-and-trade structure, with all buildings that have Local Law 97 emissions caps generating credits when they reduce emissions below their individual targets. The third example explores the possibility of revising Local Law 97 to allocate tradable carbon allowances to buildings based on their individual caps.

Illustrative Trading Program Scenarios

1. Focus Entirely on Environmental Justice Areas

PARTICIPANTS

A narrowly focused program that limits credit generation to carbon savings only from buildings in EJ areas or that meet specific EJ criteria.

CREDIT ALLOCATION

Eligible buildings with emissions caps would generate credits by reducing carbon below their caps.

Eligible buildings that don't have emissions caps would generate credits by implementing a menu of efficiency upgrades or reducing carbon beyond a set percentage.

EJ INVESTMENT

Credits would help fund building upgrades in EJ areas because they could be sold to other buildings (in good standing with city ordinances) that seek credits for compliance with Local Law 97.

ADMINISTRATION

A city office could manage a traditional credit registry and a credit exchange on a proprietary platform, with periodic program review and regular reports to City Council.

2. Build on the Tokyo Approach with Baselines and Credits

PARTICIPANTS

A broader program that allows credit generation from all buildings with emissions caps, as well as buildings that don't have emissions caps if they benchmark energy use and opt into the caps.

CREDIT ALLOCATION

Buildings would generate credits either by (i) reducing carbon below their emissions cap, or (ii) if they're already below their cap, then reducing carbon below a baseline year.

EJ INVESTMENT

A credit multiplier could give greater value to carbon reductions in buildings in EJ areas. That greater value would tilt investment to upgrades in EJ areas, particularly through service providers who could integrate credit value into their financing practices.

ADMINISTRATION

A nonprofit could administer a credit registry and tracking system based on a blockchain platform, with secondary credit exchanges managed by independent private companies.

3. Adopt an Allowance and Auction System for Building Emissions

PARTICIPANTS

Local Law 97 could be substantially revised to an allowance-based system: all buildings that currently have emissions caps could be required to receive or buy enough allowances to cover their annual emissions.

CREDIT ALLOCATION

Allowances would be allocated freely up to each building's annual cap, enabling buildings below their caps to sell excess allowances to buildings with emissions above their caps.

EJ INVESTMENT

A set number of allowances could be auctioned each year, with the auction revenue directed to financing and programmatic support for building upgrades in EJ areas.

ADMINISTRATION

A nonprofit could manage the allowance registry and auction, with an accessible online platform available to market participants and the public. Allowances could also be traded on private secondary exchanges.





GOING GLOBAL

A building-level carbon trading program in New York City can pave the way for other cities to explore this novel climate solution.

This report focuses primarily on a trading program for New York City buildings, and explores a range of potential designs and their implications in the local context. The content is informed by nine months of engagement with many experts and stakeholders in NYC.

But trading could potentially be a powerful lever in many cities. It is as applicable in Tokyo and NYC as in Los Angeles, London or Singapore—or any city with ambitious climate targets that require major increases in energy efficiency and electrification across a large building stock.

The right policy design will depend on many factors, including existing policies for buildings, available resources and local priorities. Moving from concept to design to implementation will require a thorough policy process with significant input across the stakeholder spectrum.

Urban Green Council's **Global Climate Efficiency Trading Initiative** is a five-city effort to start down that path. We'll be exploring the policy approaches in this report by collaborating with green building councils in Hong Kong, London, Singapore and Toronto—with the potential to expand to any other interested cities.

Based on the process and discussions that informed this report, the next steps to jumpstart progress in other cities include:

- Launching local convenings that bring diverse knowledge and experience to the table, including environmental and community groups, building and energy professionals, and trading experts;
- Identifying the policy goals or principles of a potential trading program;
- Studying precedent programs for insight on design and operation; and
- Assessing the policy options articulated here and beyond, including through detailed analysis of building energy and economic data for potential approaches.

Many cities face a challenging gap between ambitious climate targets and current building emissions. We need innovative tools to close that gap in the most cost-effective way. We hope that this report, and our global initiative, can help spur dialogue on how a trading program could work in cities across the globe to transform the building sector for a low-carbon future.

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This report was informed by Urban Green's Global Climate Efficiency Trading Initiative, a collaboration that met over nine months to develop key questions and considerations for a carbon trading program for buildings.

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NOTES

- 1 Analysis based on NYC's Property Land Use Tax Lot Output (PLUTO) dataset, filtering for building size and other criteria to approximate the definition of covered building in Local Law 97.
- 2 Local Law 97 defines rent-regulated accommodation as a building containing one or more dwelling units required by law or by an agreement with a governmental entity to be regulated in accordance with the emergency tenant protection act of 1974, the rent stabilization law of 1969, or the local emergency housing rent control act of 1962.
- 3 Greenhouse gas emissions for covered buildings under Local Law 97 derived from analysis of (i) 2017 NYC Local Law 84 benchmarking dataset, excluding properties reported as owned by the City of New York, and (ii) NYC Rent Stabilized Building Lists from the NYC Rent Guidelines Board, based on 2016 Building Registrations filed with NYS Homes and Community Renewal. Emissions calculated using greenhouse gas coefficients for 2024-2029 from Local Law 97.
- 4 Prescriptive energy conservation measures in Local Law 97 include repairing heat system leaks, insulating heating and hot water pipes, weatherization measures, repairing steam traps, installing heating system sensors and controls, and upgrading lighting.
- 5 Analysis based on NYC's Property Land Use Tax Lot Output (PLUTO) dataset, Energy and Water Use Data, and the Inventory of New York City Greenhouse Gas Emissions.
- 6 See Results of Tokyo Cap-and-Trade Program in the 9th Fiscal Year, available at <https://www.kankyo.metro.tokyo.lg.jp/en/climate/index.files/9thYearResult.pdf>.
- 7 See Tokyo Cap-and-Trade Program at https://www.kankyo.metro.tokyo.lg.jp/en/climate/cap_and_trade/index.html.
- 8 An energy efficiency credit, or "white tag," is a certificate signifying that certain energy efficiency measures have been implemented. The credit represents an estimated (but not actual) amount of energy or carbon savings achieved from the measures implemented.
- 9 Price controls are measures that prevent commodity prices in a trading market from fluctuating too wildly. Typical examples include a price ceiling (maximum) or price floor (minimum) for a commodity. Price controls help limit price uncertainty for market participants.
- 10 See Stormwater Retention Credit Trading Program at <https://doee.dc.gov/src>.
- 11 See Regional Greenhouse Gas Initiative at <https://www.rggi.org/>.

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