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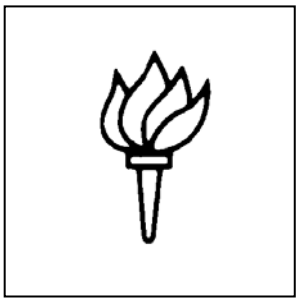

Emissions Trading for Buildings?

Danielle Spiegel-Feld

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Abstract

In April of 2019, the New York City Council passed groundbreaking legislation that caps the amount of greenhouse gases that large building owners can emit, or cause to be emitted, for free. The new law, known as Local Law 97 of 2019 ("Local Law 97"), holds great promise for reducing building energy use, which accounts for roughly forty percent of emissions across the globe and over two-thirds of emissions in New York City. But it will also impose substantial costs on the local real estate industry. With an eye towards minimizing these costs, Local Law 97 calls on the City to conduct a study of the potential to create an emissions trading program for regulated buildings; trading programs have been successfully used for years in industrial sectors to reduce the cost of emissions control, yet how to translate the lessons learned from industrial trading programs to buildings is still very much an open question. In this essay, I highlight some key points of distinction between the emissions trading program that New York City is contemplating and prior programs that policymakers will need to bear in mind as they develop a trading scheme for this novel context. As the federal government retreats from its efforts to tackle climate change, and the burden of doing so falls increasingly upon local leaders' shoulders, the question of how to tailor emissions trading programs to the local landscape will doubtless be relevant for cities outside New York City as well.

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Introduction

In April of 2019, the New York City Council passed groundbreaking legislation that imposes a cap on the amount of greenhouse gases (GHG) that large building owners can emit, or cause to be emitted, for free. The new law, known as Local Law 97 of 2019 ("Local Law 97"), establishes individualized GHG budgets for buildings larger than 25,000 square feet that restrict the amount of energy that can be purchased from the electrical grid or burned on site.[1] If a building exceeds this budget, which decreases over time, the building's owner will have to pay a penalty in proportion to the amount of the excess. As of the time of this writing, New York City is the only local government in the United States to have capped buildings' GHG emissions in this manner.

Local Law 97 holds substantial promise to reduce building energy use, which accounts for roughly forty percent of emissions across the globe and over two-thirds of emissions in New York City. But the law also carries a hefty price tag: it has been estimated that the real estate industry will need to spend between $16 and $24 billion over the next decade to make the upgrades necessary to comply with the City's cap.[2] (To put this number in perspective, the City's most recent budget calls for approximately $14 billion in total annual capital expenditures.[3])

[1] A building's GHG budget is calculated based on its square footage and occupancy type (i.e., apartments, hotels, offices, etc). The formula is: [gross square footage] x [X tons of CO^2 per square foot] where "X" equals the particular building emissions intensity limit for the particular occupancy type. N.Y.C. Admin. Code § 28-320.3.1. This formula is intended to accommodate the different intensities with which different types of properties are used. The bill sets out individualized carbon intensities for different types of energy sources (e.g., electricity purchased from the grid, natural gas, #2 fuel oil, etc) that can be used to calculate the tons of CO^2 that have been consumed during the year. N.Y.C. ADMIN. CODE § 28-320.3.1.1.

[2] Daniel Geiger, *Landlords Must Spend $20 Billion for Carbon Cuts*, CRAIN'S NEW YORK BUS. (June 18, 2019), https://www.crainsnewyork.com/real-estate/landlords-must-spend-20-billion-carbon-cuts.

[3] COUNCIL OF THE CITY OF NEW YORK, REPORT OF THE FINANCE DIVISION ON THE FISCAL 2020 EXECUTIVE BUDGET 18 (2019) https://council.nyc.gov/budget/wp-content/uploads/sites/54/2019/06/FY20-Expense-Revenue-and-Capital-Report.pdf.

With an eye towards minimizing costs, Local Law 97 calls on the City to conduct a study of the potential to create an emissions trading program for regulated buildings. The idea of developing an emissions trading program for buildings is novel. While trading programs have become fairly commonplace in environmental law, most such programs regulate large industrial sources of pollution like power plants or oil refineries rather than the end-users of energy and are administered by higher levels of government than cities, be it the national, state or international authorities. What New York City is contemplating – a municipal carbon trading program for buildings – has only previously been implemented in Tokyo,[4] which sits halfway across the world in an entirely different legal and cultural framework. Moreover, the scale of what New York City is contemplating puts it in a different league than Tokyo; whereas Tokyo regulates approximately 1,300 facilities,[5] Local Law 97 covers roughly 50,000.[6] Even the European Union's emissions trading system, which is the largest in the world, covers only 13,400 sources.[7] Thus, New York City's ambitions present a new frontier for emissions trading programs. This essay examines some of the unique characteristics of the New York City landscape that will have to be addressed if the program is to be effective.

[4] Notably, beginning in 2013, China launched seven pilot emissions trading programs throughout the country and several of these programs include buildings among the regulated sources. However, the essay does not attempt to assess the lessons that the Chinese pilots hold for New York City for several reasons. To begin with, there is little reliable information that specifically assesses buildings' performance in the pilots. Second, contrary to expectations regarding a New York City trading program, commentators have noted that the Chinese pilot programs were "primarily controlled by the government [and] neither private investments nor non-state-owned financial actors were adequately mobilized to participate." A.Y. Lo & M. Howes, *Powered by the State or Finance?* 45 EURASIAN GEOGRAPHY & ECON. 386 (2014). Finally, the national ETS which will eventually replace the pilot programs, will not cover buildings. Jocelyn Timperley, *Q&A: How Will China's New Carbon Trading Scheme Work?*, CARBON BRIEF (Jan. 29, 2018), https://www.carbonbrief.org/qa-how-will-chinas-new-carbon-trading-scheme-work.

[5] Sven Rudolph & Takeshi Kawakatsu, *Tokyo's Greenhouse Gas Emissions Trading Scheme: A Model for Sustainable Megacity Carbon Markets?*, *in* MAGKS PAPERS ON ECON., at 9 (Ser. No. 201225, 2012).

[6] NYC MAYOR'S OFFICE OF SUSTAINABILITY, CLIMATE MOBILIZATION ACT: FREQUENTLY ASKED QUESTIONS 1 (2019), https://be-exchange.org/wp-content/uploads/2019/05/BE-Ex_MOS_FAQ_5.22.19.pdf ("Approximately 50,000 buildings on 23,000 properties are affected by [Local Law 97].").

[7] *EU Emissions Trading System (ETS) Data Viewer*, EUROPEAN ENV'T AGENCY, https://www.eea.europa.eu/data-and-maps/dashboards/emissions-trading-viewer-1.

There is an expansive literature examining the optimal design for traditional emissions trading programs and the goal of this essay is not to rehash that literature or to present a detailed description of what New York City's program should look like. Instead, my purpose is to sketch out some of the ways in which the idea of a municipal emissions-trading program for buildings materially differs from the emissions trading programs that have operated thus far. Broadly speaking, there are two categories of challenges with which local officials will have to grapple: challenges relating to the character of the regulated sources (buildings as opposed to industrial operations), and challenges related to the distinctive identity of the regulator (cities as opposed to higher levels of government). In the pages below, I provide more detail on the nature of these distinctions and how they may impact the optimal program design. But first, I will briefly review the economic theory that undergirds emissions trading programs and instances in which such programs have been used to date.

I. Theory and design of emissions trading programs

The central insight behind all emissions trading programs is that in any given sector, some firms will be able to reduce their emissions more cheaply than others.[8] In a traditional environmental regulatory regime in which all firms must meet a uniform emissions standard, "polluter A is obliged to cut back his own wastes even if it is cheaper for him to pay his neighbor B to undertake extra cleanup instead."[9] Emissions trading programs aim to correct this inefficiency; by issuing permits that entitle firms to emit a specified amount of pollution and allowing firms to buy and sell such permits from each other, firms with relatively low marginal reduction costs can choose to reduce more than firms with higher marginal costs. The result,

[8] Hahn & Stavins, *Incentive Based Environmental Regulation*: *A New Era for an Old Idea?*, 18 ECOLOGY L. Q. 1, 6 (1991).
[9] Ackerman & Stewart, *Reforming Environmental Law*, 37 STANFORD L. REV. 1333, 1341 (1985).

assuming firms have good insight into their control costs and there are few barriers to trade, is that a system of marketable permits should "bring about a least-cost allocation of control burdens."[10]

The first step in setting up an emissions trading system is to determine the universe of regulated sources. Both the type of source (i.e., electric utilities, manufacturers, transportation providers, et cetera) and the geographic reach of the program (i.e., regional, national, international et cetera) must be determined. Once the universe of covered sources has been established, a regulator typically decides the total allowable amount of pollution that these sources can emit ("the cap") and then divides this cap into permits that authorize the holder to emit a specified percentage of the total. The permits are then allocated to the covered sources, who, in turn surrender the permits to the regulator at specified intervals in an amount that corresponds to the emissions released during the preceding period.

Within these broad outlines, policymakers have substantial flexibility as to how they design trading programs and there is considerable variation between the programs that have been developed. For example, how should regulators allocate emissions permits among covered entities? What sort of flexibility mechanisms, such as offsets[11] and banking,[12] should be allowed? How should compliance be monitored and enforced? Should entities that are not covered by the cap, such as investment funds or aggregators, be allowed to participate in the market?[13] Should

[10] *Id.* at 1341.
[11] Offsets allow covered sources to receive tradeable credits by pursuing emissions reductions at sources that are not covered by the cap. Nathaniel O. Keohane, *Cap and Trade, Rehabilitated: Using Tradeable Permits to Control U.S. Greenhouse Gases*, 3 REV. ENVT'L ECON. & POL'Y 42, 49 (2009).
[12] Banking is defined as "saving unused allowances for future compliance periods." ENVTL. PROT. AGENCY, *How Do Emissions Trading Programs Work?*, https://www.epa.gov/emissions-trading-resources/how-do-emissions-trading-programs-work (last updated Apr. 24, 2019).
[13] On the merits of restricting participation, see Terry Dinan & Andrew Stocking, *U.S. Cap-and-Trade Markets: Constraining Participants, Transactions, and Prices*, 6 REV. ENVT'L ECON. & POL'Y 169 (2012).

regulators pursue linkage with other programs such that permits can be traded between them? These are just some of the design decisions that must be made.

In the United States, the first major emissions trading program was established in the early 1990s to regulate SO_2 emissions from electricity generators, which was causing acid rain.[14] The trading component of the acid rain program was credited with substantially reducing the cost of pollution reductions relative to command-and-control regulation[15] and trading regimes were developed to control a variety of pollutants thereafter.[16] In recent years, emissions trading programs have come to play a particularly prominent role in states' efforts to control GHG emissions. Trading regimes are well suited for GHG reductions because it is the aggregate amount of pollution across the globe, rather than the distribution of such pollution, that determines the extent of harm. As such, there is less need to worry about the creation of so-called "hot spots," which can materialize under trading regimes if sources with relatively high abatement costs are concentrated in particular areas. [17]

The two most prominent GHG-oriented trading regimes in the United States are the Regional Greenhouse Gas Initiative (RGGI), which regulate GHGs from electricity generators in nine northeastern states,[18] and California's Cap-and-Trade Program, which covers emissions from

[14] The US Environmental Protection Agency had permitted some emissions trading under the Clean Air Act's program to improve local air quality beginning as early on as 1974. However, for much of this time, trading was only permitted between facilities that were under the same ownership and trading was never widely used under the program. Hahn & Stavins, *supra* note 8, at 15–16.

[15] Studies of the acid rain trading program indicate that compliance costs were reduced by as much as 50 percent below what they would have been under a command-and-control alternative. A. DENNY ELLERMAN, DAVID HARRISON & PAUL L. JOSKOW, PEW CENTER FOR GLOBAL CLIMATE CHANGE, EMISSIONS TRADING: EXPERIENCE, LESSONS, AND CONSIDERATIONS FOR GREENHOUSE GASES 32 (2003).

[16] *Id.*

[17] EMISSIONS TRADING FOR CLIMATE POLICY: US AND EUROPEAN PERSPECTIVES 69 (Bernd Hansjürgens ed., 2005). For a discussion of the potential for trading regimes to create hot spots and solutions to the problem, see Jonathan Nash & Richard Revesz, *Markets and Geography: Designing Marketable Permit Schemes to Control Local and Regional Pollutants*, 28 ECOLOGY L. Q. 571 (2001).

[18] REGIONAL GREENHOUSE GAS INITIATIVE, PROGRAM OVERVIEW AND DESIGN (2019), https://www.rggi.org/program-overview-and-design/elements

electricity generators, large industrial sources, and fuel distributors.[19] Neither of these programs has operated flawlessly[20] and commentators have suggested a range of design adjustments that could be made to improve their functioning.[21] Yet while these shortcomings have highlighted the importance of making careful decisions about market design, they have not cast serious doubt upon the potential for trading regimes to lower the cost of pollution control across a regulated sector.

In the context with which this essay is concerned – emissions reductions from buildings in New York City – cost-efficiency is of paramount importance. The local real estate industry, which is a powerful political constituency, is already facing headwinds.[22] From a political standpoint, then, the long-term feasibility of meeting the City's emissions reductions goals may depend on finding a path to minimizing the cost of emissions reductions in order to quell the industry's unease. Cost-effectiveness is also critical from a purely environmental standpoint because policies that raise real estate costs in New York City could encourage sprawl and inadvertently increase regional GHG emissions as a result.[23] Finally, tenant groups have an interest in ensuring costs are contained because property owners can be expected to pass on the cost of energy efficiency

[19] CALIF. ENVTL. PROTECTION AGENCY AIR RESOURCES BOARD, OVERVIEW OF ARB EMISSIONS TRADING PROGRAM (2015), https://ww3.arb.ca.gov/cc/capandtrade/guidance/cap_trade_overview.pdf.

[20] *See, e.g.*, Danny Cullenward et al., *California's Climate Emissions are Falling, But Cap-and-Trade is Not the Cause*, NEAR ZERO (Nov. 10, 2017), http://www.nearzero.org/wp/2017/11/10/californias-climate-emissions-are-falling-but-cap-and-trade-is-not-the-cause/ (finding that the emissions cap itself was unlikely to have caused emissions reductions because, *inter alia*, total emissions were substantially below the cap); Brian Murray & Peter T. Maniloff, *Why Have Greenhouse Gas Emissions in RGGI States Declined?*, 51 ENERGY ECON. 581, 583 (2015) (finding a lack of scarcity in the market for allowances between 2010 and 2012, which indicated that the cap had been set too high).

[21] *See e.g.*, LARA J. CUSHING ET AL., USC DORNSIFE PROGRAM FOR ENVIRONMENTAL AND REGIONAL EQUITY, A PRELIMINARY ENVIRONMENTAL EQUITY ASSESSMENT OF CALIFORNIA'S CAP-AND-TRADE PROGRAM 10 (2016) (suggesting that public health and environmental equity benefits of the California cap-and-trade program would be enhanced if more emissions reductions were generated by facilities in economically disadvantaged communities and offset credits could only be generated by projects in California).

[22] Amy Plitt, *Manhattan Real Estate Market Ends 2018 in 'Rest Mode,'* CURBED NEW YORK (Jan. 3, 2019), https://ny.curbed.com/2019/1/3/18166605/manhattan-real-estate-market-report-2018-slump (describing the slump in the New York City residential real estate market). Will Parker & Konrad Putzier, *New York Landlords in Financial Bind from New Rent Law*, WALL STREET J. (June 24, 2019), https://www.wsj.com/articles/new-york-landlords-in-a-financial-bind-from-new-rent-law-11561201200.

[23] *See* Jonathan Norman et al., *Comparing High and Low Residential Density: Life-cycle Analysis of Energy Use and Greenhouse Gas Emissions*, 132 J. URBAN PLAN. DEV. 10 (2006).

improvements to their tenants to the maximum extent possible[24] by raising rents.[25] All of the above factors militate in favor of developing a trading regime to fulfill Local Law 97's emissions reductions requirements. The question is how the program should be designed.

Although there is no domestic precedent for a municipal carbon-trading program, Tokyo's Emissions Trading System for buildings ("Tokyo ETS") provides one model of what such a scheme might look like. Tokyo's program covers approximately 1000 commercial/institutional buildings as well as about 300 industrial factories (residential buildings are excluded). [26] The program, which aims to reduce energy consumption at covered sources by 30% from 2000 levels by 2030,[27] issues allowances through an unusual mechanism. Whereas in most cap-and-trade programs a central authority distributes an initial allocation of emissions credits at the outset of the program, in Tokyo, credits are generated as the program progresses.[28] The process works as follows: buildings are assigned an individualized baseline emissions level that reflects their average emissions in the three years prior to the start of the program and are required to reduce emissions by a specified percentage below this baseline by the end of each of three compliance periods. If a building manages to reduce emissions by more than is required, they can apply to the authorities to issue credits in an amount that equals the excess reduction.[29] These credits can then be sold to other regulated entities in bilateral trades[30] (there is no open market for trading as a stock

[24] There are legal limitations to the extent to which owners of affordable housing units can pass on the cost of capital improvements, including energy efficiency retrofits, to their tenants. *See infra* Part II.d. Landlords of market rate housing may also be constrained in their ability to pass on costs if there is excess supply in the market.
[25] Notably, for tenants who pay their own electricity bills, the effects of a rent increase should be blunted somewhat by a decrease in electricity bills.
[26] Rudolph & Takeshi, *supra* note 5, at 2.2.
[27] Masayo Wakabayashi & Osamu Kimura, *The Impact of the Tokyo Metropolitan Emissions Trading Scheme on reducing greenhouse gas emissions: findings from a facility-based study*, 18 CLIMATE POL'Y 1028, 1028 (2018).
[28] *Id.* at 1033 (2018).
[29] *Id.*
[30] *Id.*

market).[31] To provide owners with flexibility, facilities can bank credits for use in the future and are allowed to meet a portion of their reduction obligation through offsets.[32]

Despite some shortcomings,[33] Tokyo's program has enjoyed widespread compliance,[34] thus proving that large commercial building owners have the capacity to participate in trading regimes. And while the vastly different cultural, legal, and economic contexts of the two cities – as well as Tokyo's decision to exclude residential buildings – may limit the directly applicability of lessons from Tokyo to New York City, it is still an important precedent. As such, in the pages that follow, I will note how Japanese officials addressed a given challenge – and how successful they were in doing so – wherever possible.

II. Key points of distinction

As described in the introduction, there are two broad categories of differences between the emissions trading regime that New York City is contemplating and the schemes that came before. The first category of challenges stems from the distinctive nature of buildings as a class of regulated entities. The second category of challenges relates to the identity of the regulator, with New York City facing a different mixture of legal constraints and policy considerations than higher

[31] *Id*. at 1034.
[32] TOKYO METRO. GOV'T, BUREAU OF ENV'T, TOKYO CAP-AND-TRADE PROGRAM (2010), *available at* http://www.kankyo.metro.tokyo.jp/en/climate/cap_and_trade/index.files/Tokyo-cap_and_trade_program-march_2010_T.pdf.
[33] *See infra* notes 54 & 55 with accompanying text.
[34] The ETS achieved nearly 100 percent compliance rate during the first compliance period. Sven Rudolph & Takeshi Kawakatsu, *The Tokyo-Saitama Emissions Trading Scheme – An Example for Successful Linking*, 13 CARBON & CLIMATE L. REV. (forthcoming). Approximately 80 percent of facilities are track to meet their targets for the second compliance period, which concludes at the end of 2019 as well. TOKYO METRO. GOV'T, BUREAU OF ENV'T, RESULTS OF TOKYO CAP-AND-TRADE PROGRAM IN THE 8TH FISCAL YEAR
COVERED FACILITIES CONTINUE REDUCING EMISSIONS IN SECOND COMPLIANCE PERIOD (2019), http://www.kankyo.metro.tokyo.jp/en/climate/cap_and_trade/index.files/8thYearResult.pdf.

levels of government. This section explores how these differences may impact the optimal program design.

a. Buildings as distinctive regulated entities

With respect to the character of the regulated entities, there are least two distinctions that seem particularly germane: 1) buildings are a larger and more diverse class of entities than has been regulated under traditional emissions trading programs; and 2) many building owners have limited control over the amount of energy used in their properties. These issues are discussed below.

i. Buildings are a large and diverse class of entities

Perhaps the most fundamental way in which New York City's carbon trading program would vary from most prior trading schemes is that it will regulate emissions from an unusually wide number and variety of entities. Most of the trading regimes that have been developed thus far regulate large businesses; for instance, RGGI regulates power plants,[35] and California regulates power plants, industrial facilities and fuel distributers.[36] In keeping with this trend, the Tokyo ETS regulates only factories and large commercial buildings.[37] Local Law 97 casts a wider net. Like the Tokyo ETS, Local Law 97 regulates large commercial buildings but, unlike Tokyo, it regulates residential buildings too. The law also regulates buildings that are very big (think of the World Trade Center) and buildings that are relatively small (think of a coop building in Queens with 20 units). The vintage of the regulated properties varies widely too, with properties that are more than 100 years old regulated alongside buildings that are just being built today. It is a Motley Crew of sources. And as noted above, the *number* of regulated entities is enormous as well; whereas the

[35] *See supra* note 18 with accompanying text.
[36] *See supra* note 19 with accompanying text.
[37] *See supra* note 26, with accompanying text.

entire State of California's regulates approximately 450 sources under its cap-and-trade program,[38] Local Law 97 covers roughly 50,000 sources.[39]

The large variety and number of entities regulated by Local Law 97 provides certain advantages to New York City as a potential marketplace for emissions trading. Emissions trading schemes were designed to leverage difference in the marginal cost of emissions reductions between different sources;[40] in a market that includes as much variation among covered sources as Local Law 97 regulates, trading should generate substantial cost efficiencies. The large number of sources should also help improve liquidity, which has been a challenge for some smaller trading program,[41] and decrease the risk that the market becomes non-competitive.[42]

Yet there are drawbacks as well. To begin with, the large number of covered sources introduces new administrative burdens with respect to monitoring and verifying reductions. That a local government should be the first jurisdiction to take on this challenge gives some room for concern given the relative scarcity of resources at the local as opposed to state or federal levels;[43] after all, one of the reasons for the federalization of environmental law was that the federal government has greater administrative resources and expertise.[44] New York City has gained some experience monitoring building energy use in the decade since the City's benchmarking law was passed,[45] which should have helped prepare it for the task. But for most of the time that the benchmarking law has operated it has covered only a subset of the buildings that are covered by Local Law 97.

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[38] CALIF. ENVTL. PROTECTION AGENCY AIR RESOURCES BOARD, OVERVIEW OF ARB EMISSIONS TRADING PROGRAM (2015), https://ww3.arb.ca.gov/cc/capandtrade/guidance/cap_trade_overview.pdf.
[39] *See supra* note 6 , with accompanying text.
[40] *See supra* notes 9–10 with accompanying text.
[41] Easwaran Narassimhan et al., *Carbon Pricing in Practice: A Review of Existing Emissions Trading Systems*, 18 CLIMATE POL'Y 967, 979 (2018).
[42] Hahn & Stavins, *supra* note 8, at 14–15.
[43] *See* Katrina Wyman & Danielle Spiegel-Feld, *The Urban Environmental Renaissance*, CAL. L. REV. (forthcoming).
[44] *Id.*
[45] Local Law No. 84 (2009) of City of N.Y., https://www1.nyc.gov/assets/buildings/local_laws/ll84of2009.pdf.

Moreover, the benchmarking data has relied on self-reports without third-party verification.[46] For a trading program to be successful, the City will likely need to devise more stringent monitoring and verification procedures.[47] Importantly, a great deal of this administrative complexity will be present regardless as to whether trading is permitted to implement Local Law 97 or not; even if all buildings were required to meet uniform performance standards, the City would still need to monitor emissions reductions of 50,000 sources, which is no small task. But trading presents some extra administrative burdens related to the management and policing of the market. To alleviate such burdens, the City may wish to outsource the task of market management to a third party.[48]

The diversity of regulated sources generates novel complexities as well. Smaller buildings tend to be far less sophisticated than large buildings, particularly when compared to the largest commercial properties, and have more limited administrative capabilities. These smaller properties may thus have more difficulty calculating abatement costs, projecting trends in allowances prices, or finding partners to trade with if bilateral trading is required. All of these factors may make smaller buildings less likely to trade allowances than larger buildings.[49] And if small buildings do not participate, they won't be able to benefit from the cost-savings that the trading regime affords. To avoid this outcome, regulators should establish rules that allow aggregators or other middlemen

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[46] PLANYC, NEW YORK CITY LOCAL LAW 84 BENCHMARKING REPORT 10 (2013), https://www.energystar.gov/sites/default/files/buildings/tools/The%20New%20York%20City%20Local%20Law%2084%20Benchmarking%20Report%2C%202013.pdf ("Aside from the geographical identifiers of BBL, BIN, and street address, the City does not verify or correct any data entries prior to disclosure.").

[47] OECD, GREENHOUSE GAS EMISSIONS TRADING AND PROJECT-BASED MECHANISMS 201 (2004), https://www.oecd-ilibrary.org/environment/greenhouse-gas-emissions-trading-and-project-based-mechanisms_9789264105775-en ("For an emissions trading regime to operate efficiently and to meet environmental targets, a strong monitoring, accounting and enforcement system is a key pre-requisite.").

[48] In this vein, the states that participate in RGGI tasked a non-profit corporation with the administration of its carbon market. THE REGIONAL GREENHOUSE GAS INITIATIVE, THE INVESTMENT OF RGGI PROCEEDS IN 2016 2 (2018).

[49] *See, e.g.*, Wakabayshi & Kimura, *supra* note 27, at 1035 (noting that the covered entities in the Tokyo ETS that have exceeded their emissions limits are mostly small and medium size entities and that interview data indicates that these entities "have limited capacities to actively participate in the credit trading scheme").

to participate in the market such that they can assist small buildings with the administrative tasks of trading and assume some of the risk.[50] The prevalence of aggregators of demand response in electricity markets – and the rules that permitted their rise[51] – may provide a useful guide as what to such rules might look like.

ii. Building owners lack complete control over their GHGs

There is another reason that all building owners, regardless of their size, may be more reluctant than industrial facilities to sell permits: building owners have more limited control over the amount of energy they use and the GHG intensity of that energy. Whereas many industrial sources, such as power plants, can control the GHG intensity of the fuel that they use for their power (for example, an electricity generator can switch from natural gas to oil[52]), building owners cannot control the GHG intensity of the electricity purchased through the grid. Building owners also lack complete control over the amount of energy used within their property. In fact, in commercial buildings in New York City, tenant-controlled spaces typically account for 40 to 60 percent of a buildings' energy use.[53] With building energy use so susceptible to the tenants' behavioral choices, landlords may hesitate to surrender permits based on projected energy use. The situation is not necessarily better in owner-occupied apartment buildings because in these buildings the decision-makers, typically a board, contribute only a fraction of the building's total energy use. In both

[50] Importantly, middlemen would take a commission of some sort for their efforts, which would reduce the cost-effectiveness of the market. They could also potentially exploit information deficits among unsophisticated property owners to their advantage. For both of these reasons, the City or other market administration would likely need to exercise some oversight over middlemen. Thanks to Cecil Scheib for raising this consideration.

[51] *See* Bo Shen et al., *The Role of Regulatory Reforms, Market Changes, and Technology Development to Make Demand Response a Viable Resource in Meeting Energy Challenges*, 130 APPLIED ENERGY 814 (2014) (describing the rise of demand response in the US and abroad and the policy changes that made this rise possible).

[52] J. Scott Holladay & Steven Soloway, *The Environmental Impacts of Fuel Switching Electricity Generators*, 37 ENERGY L. J. 187 (2016). Building owners have much more control over the GHG intensity of energy used for heating and hot water as that is produced onsite.

[53] NYC MAYOR'S OFF. OF SUSTAINABILITY, *NYC Carbon Challenge for Commercial Owners and Tenants*, https://www1.nyc.gov/html/gbee/html/challenge/commercial-offices.shtml (last visited July 22, 2019).

cases, the decision-makers' lack of control over energy use may discourage the sale of allowances. To be clear, this is not an argument against developing a trading program to implement Local Law 97 because the same problem – that is, the problem of penalizing landlords for actions that are beyond their control – will exist even if owners are not permitted to trade to meet their emissions targets (if anything, trading could mitigate concerns about unfairness by lowering compliance costs). However, it is important to bare this dynamic in mind when designing a trading regime because of its potential to chill trading and therefore reduce liquidity.

Tokyo's experience lends some credence to the concern that buildings will hesitate to sell allowances as Tokyo saw very little trading in the first four years after the ETS was launched (2011-2015).[54] Instead of trading permits, facilities tended to bank their surplus.[55] And while there was a modest uptick in trading in 2016,[56] trading fell off again thereafter.[57] There are several possible explanations for why trading has been so anemic. It could be that trading has been stifled by the lack of an open trading platform, which raised the transaction cost associated with trades,[58] or that building owners have had so many low-cost opportunities to reduce energy use at their own properties that there has been little demand to purchase allowances[59] The low trading volume could also reflect a learning curve as participants gain familiarity with the marketplace.[60] We may never know with certainty whether, and to what degree, these various factors have inhibited trading in Tokyo. However, given Tokyo's experience and the particular disincentives buildings owners have

[54] Wakabayshi & Kimura¸ *supra* note 27, at 1034–35. *See also* generally ASHA BRUDAGE-MOORE, GUARINI CENTER, TOKYO'S EMISSIONS TRADING SCHEME: LESSONS FROM A PIONEERING JURISDICTION (2019).
[55] *See* Wakabayshi & Kimura, *supra* note 27, at 1035.
[56] *Id.* at 1034–35 (2018).
[57] Email from Professor Sven Rudolphon June 13, 2019 reporting that the 2018 statistics provided by the Tokyo Metropolitan Government showed a sharp drop off in trading.
[58] Rudolph & Kawakatsu, *supra* note 5, at 3.1.
[59] Wakabayshi & Kimura, *supra* note 27 at 1034–35.
[60] *Id. See also* Sunhee Suk et al., *The Korean Emissions Trading Scheme: Business Perspectives on the Early Years of Operations*, 18 CLIMATE POL'Y 715–28 (2018).

to surrender permits, officials should be particularly careful to enact measures that encourage liquidity in the New York City market.

b. Cities as a distinctive regulator

In addition to the distinctive administrative and economic considerations that buildings present as regulated entities, the fact that a city would spearheading the trading scheme might impact its design because cities operate in a more constrained legal landscape than higher levels of government. In the paragraphs that follow, I describe how these constraints limit the design choices available to local policymakers. I also examine some distinctive policy considerations that local governments must address as they push forward.

i. Legal constraints upon cities as regulators

One of the most significant constraints upon cities' legal authority concerns their authority over taxes. Generally speaking, American cities cannot impose new taxes without express authorization from the state.[61] However, cities typically have more leeway to impose other kinds of charges, such as regulatory fees, and can utilize these tools to advance policy goals that might otherwise be achieved through taxes. New York City fits this pattern; it cannot issue taxes without State approval but has broad discretion over other types of charges like fees and penalties. To minimize legal risk, then, the City must structure its trading program in a manner that avoids imposing charges that resemble taxes. Unfortunately, the distinction between the two can be murky and varies between states. But, typically, taxes are compulsory and intended to raise government revenue, while fees are levied only upon those who choose to avail themselves of a particular

[61] GERALD E. FRUG & DAVID J. BARRON, CITY BOUND: HOW STATES STIFLE URBAN INNOVATION 82 (2008).

benefit and the funds raised are intended only to offset the cost to the public of the benefit received.[62]

The sale of allowances at auction raises some particularly thorny issues in this respect. Economists often endorse using auctions to allocate allowances because doing so reduces the likelihood of creating windfalls for incumbents and more quickly creates an efficient allocation of permits.[63] However, auctions introduce legal risk because they raise revenue for the government and can be seen as imposing mandatory charges on covered sources, features that bear some resemblance to taxes.[64] To minimize these legal risks, local policymakers may wish to either use auctions sparingly, such that only a minority of available allowances are auctioned, or avoid them all together. Tokyo's program provides an example of what an auction-less program might look like;[65] if allowances are generated by buildings that emit less than their cap, the city would presumably not be the primary recipient of the proceeds of the sales and there is little (if any) risk that that such sales would be considered a tax.

The second legal constraint with which local lawmakers must contend is potential restrictions on their ability to link with programs in other cities. By increasing the number of sources in a

[62] *See e.g.*, Laurie Reynolds, *Taxes, Fees, Assessments, Dues, and the "Get What You Pay for" Model of Local Government*, 56 FLA. L. REV. 373, 379–80 (2004). *See also* Joslin v. Regan, 406 N.Y.S.2d 938, 941 (N.Y. App. Div. 1978).

[63] *See, e.g.*, Jacob Goeree et al., *An Experimental Study of Auctions Versus Grandfathering to Assign Pollution Permits*, 8 J. EUR. ECON. ASS'N 514 (2010). *But see* CHRISTOPHER COSTELLO, GRANDFATHERING BY MERIT, DISTRIBUTIONAL EFFECTS OF ENVIRONMENTAL MARKETS 57 (Christopher Costello ed., 2019) (noting that grandfather can support market development because it is a more "palatable" means of allocation for incumbents, which diminishes their opposition to the program).

[64] *See generally*, Calif. Chamber of Commerce v. State Air Res. Bd., 10 Cal. App. 5th 604 (2017). While the majority of the California Court of Appeals upheld California Air Resources Board (CARB) regulations establishing an auction against the claim that they created an unauthorized tax, one of the three judges forcefully dissented from the opinion. *Id*. at 652 (Hull, J., dissenting). Moreover, in finding for the state, the majority placed considerable weight on the fact that CARB had distributed the majority of allowance for free, which allowed regulated entities to opt out of the auction; if CARB had auctioned off all allowances, the court may have reached a different decision. Thus, the case made clear that auctions introduce a degree of legal risk.

[65] *See supra* notes 28–30 with accompanying text.

market, linkage can confer a number of benefits to emissions trading markets, including lowering the average cost of emissions reductions and reducing price volatility.[66] In an attempt to take advantage of these benefits, quite a number of carbon markets have been linked in recent years.[67] As a case in point, the prefecture of Saitama, which neighbors Tokyo, launched an emissions trading program the year after Tokyo did so and allowances can be traded between the two jurisdictions.[68]

The degree to which American cities could pursue formal links with other jurisdictions is not entirely clear. As creatures of the state, cities can only pursue intergovernmental cooperation to the extent that their state authorizes them to do so.[69] More than forty states, New York included,[70] have constitutional or statutory provisions that specifically authorize intergovernmental cooperation between local governments in their state[71] and these provisions may provide a sufficient basis for cooperatively administering a carbon market. Yet, many of these same provisions restrict the subject of such cooperation and emissions trading may not fit within the delineated scope.[72] Moreover, where it is permitted, states generally require that local governments receive express state authorization for cooperative agreements between local governments in

[66] Michael Mehling, Gilbert Metcalf & Robert Stavins, *Linking Climate Policies to Advance Global Mitigation*, 359 SCIENCE 997, 997 (2018).
[67] For a review of markets that have pursued linkages, *see* Matthew Ranson & Robert N. Stavins, *Linkage of Greenhouse Gas Emissions Trading Systems: Learning from Experience*, 16 CLIMATE POL'Y 284, 286 (2016).
[68] Rudolph & TKawakatsu,*supra* note 34.
[69] Laurie Reynolds, *Intergovernmental Cooperation, Metropolitan Equity and the New Regionalism*, 78 WASH. LEE L. REV. 93, 119 (2003).
[70] Mary Mohnach, *Intermunicipal Agreements: The Metamorphosis of Home Rule*, 17 PACE ENVT'L L. REV. 161, 162–64 (1999).
[71] RICHARD BRIFFAULT & LAURIE REYNOLDS, STATE AND LOCAL GOVERNMENT LAW 581 (2016). *See also* Clayton Gillette, *Regionalization and Interlocal Bargains*, 76 N.Y.U. L. REV. 190, 221 (2001).
[72] *See* BRIFFAULT & REYNOLDS, *supra* note 71, at 585. New York State has provided a particularly capacious grant of authority to its local governments to cooperate among themselves and it seems quite possible that emissions trading would fit within the delineated scope of authority. *See* N.Y. GEN. MUN. LAW art. 5-G (authorizing local governments to enter into cooperative agreements regarding their "respective functions powers or duties . . .").

different states.[73] Federal constitutional law could also present an obstacle to linking markets across state lines.[74]

In New York City, these potential constraints may not be particularly problematic; there are so many covered buildings within New York City itself that linkage is unlikely to be necessary to ensure liquidity.[75] But for smaller cities, especially those in politically conservative states, the inability to pursue interstate linkages without state authorization could impede the efficient functioning of carbon markets. To minimize such impacts, policymakers in any smaller cities that may be considering creating a trading program, may want to broadly define the class of covered buildings to ensure that there is a sufficient number of sources within the city-limits.

ii. Competing municipal policy objectives

A final challenge with which local policymakers will need to contend is how to harmonize building emissions trading programs with other municipal policy objectives including promoting economic growth, high-quality affordable housing, and environmental justice. There are many facets to the relationship between trading programs and each of these policy objects but this short essay will only highlight a few issues that appear most pressing.

Looking first at the potential impacts of a trading program on economic growth, it is important to recognize that cities' relatively small size may make them particularly vulnerable to the economic impacts of regulation because individuals and businesses may more easily move

[73] *See, e.g.*, N.Y. GEN. MUN. LAW 14-G; WASH. REV. CODE § 39.34.030.
[74] *See* Augusta Wilson, *Linking Across Borders: Opportunities and Obstacles for a Joint Regional Greenhouse Gas-Western Climate Initiative Market*, 43 COLUM. J. ENVT'L L. 227, 260–64 (describing potential federal constitutional challenges under the compact clause to linkage between state carbon markets). The Compact Clause might also present an obstacle to interstate agreements between local governments given their status as "creatures of the states" in which they are located. *See e.g.*, WASH. REV. CODE § 39.34.040 (stating that any agreement between a public agencies of Washington and a public agency of another state will be considered and interstate compact).
[75] *See supra* note 6 with accompanying text.

across municipal boundaries in response to rising costs than across state or national lines.[76] These concerns about interlocal migration bolster the argument for permitting trading under Local Law 97 in order to lower the cost of compliance. Indeed, they should fuel efforts to devise a trading program that is as focused as possible on minimizing the cost of compliance; even if one is only concerned about environmental, rather than economic impacts, there is little to be gained by simply shifting emissions to other jurisdictions. Offsets present a notable exception to this general rule: if regulated entities can offset their compliance obligations by purchasing emissions reductions outside New York City there could be a wealth transfer from New York City to other localities, which would exacerbate the competitive disadvantage of properties here. As such, officials may want to limit the geographic scope of the offset market even if this raises the average cost of compliance beyond that which it would otherwise be.

A second policy challenge with which municipal officials must grapple is how to ensure that a trading program does not undermine the City's goal of maintaining ample high-quality affordable housing. Tokyo managed to sidestep this issue because its ETS does not cover residential properties.

At the urging tenant advocates who feared that landlords would pass on the costs of energy efficiency improvements by raising rents, New York City lawmakers exempted buildings containing rent regulated or subsidized housing from Local Law 97's emissions cap.[77] The

[76] *See, e.g.*, PAUL PETERSON, CITY LIMITS 69, 77, 132 (1980) (arguing that local governments are so "sensitive to external changes" that they must focus their efforts on growing the local economy instead of promoting "egalitarian concerns," which will ultimately cause the local economy to suffer by driving up the tax-to-benefit ratio for the average taxpayer and cause high earners to leave the community.) *See also* Clayton Gillette, *Who Should Authorize a Commuter Tax?*, 77 U. CHICAGO L. REV. 223, 236 (2010) ("To the extent that localities face interlocal competition for mobile capital and labor, local officials have incentives to consider the consequences of local tax policies on the ability to attract and retain both firms and workes who foster the city's economic development.").

[77] NYC ADMIN. CODE § 28-320.1 Note that the law obligates that New York City Office of Building Energy Management to establish a new set of GHG targets for the period from 2035–2050 and 2050 onwards and buildings

decision to exclude these properties – which account for as much as 36 percent of the City's building stock[78] – was highly controversial. Yet recent changes to the state's rent regulations, which severely restrict landlord's ability to recoup the cost of investments they make to improve properties,[79] have decreased the chances that this decision will be reversed. As such, buildings with affordable housing are unlikely to be obligated to participate in a future trading program.

The prospect of excluding affordable housing from a trading market is problematic. If we assume that low-cost abatement opportunities are distributed across building types, restricting the universe of properties in which owners seek abatement opportunities should raise the average cost of abatement. This is particularly worrisome if we believe, with some reason, that affordable housing properties tend to be less well maintained than others and therefore have relatively more low-cost upgrades still ripe for the picking.[80] Moreover, to the extent that energy efficiency improvements decrease onsite combustion of fossil fuels, which improves local air quality, or decreases electricity consumption, which reduce tenants' utility bills, there are equity arguments for ensuring that affordable housing properties are also improved.

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with affordable housing are expected to be subject to these limitations. N.Y.C. ADMIN. CODE § 28-320.3.9. Needless to say, this is a long way off.

[78] Comparing the roughly 1.2 million rent controlled, stabilized, or regulated rental units against the 2.1 million non-regulated rental or owner units. *See* SELECTED INITIAL FINDINGS OF THE 2017 NEW YORK CITY HOUSING AND VACANCY SURVEY 9 tbl.1, 11 tbl.3 (2018), https://www1.nyc.gov/assets/hpd/downloads/pdf/about/2017-hvs-initial-findings.pdf.

[79] In New York City, rent control regulations have historically restricted landlords' ability to pass on the cost of capital improvements to tenants via rent increases. Until recently, New York State's rent control regulations allowed landlords increase monthly rents by up to 6 percent to help finance capital improvements to the properties. This past June, this limit was lowered to 2 percent. Housing Stability and Tenant Protection Act of 2019, 2019 N.Y. Sess. Laws ch. 36 (McKinney); Sharon Otterman and Matthew Haag, *Rent Regulations in New York: How They'll Affect Tenants and Landlords*, N.Y. TIMES (June 12, 2019), https://www.nytimes.com/2019/06/12/nyregion/rent-regulation-laws-new-york.html. The change will make it harder for owners of affordable housing units to recoup the cost of their investments in energy efficiency upgrades.

[80] Vincent J. Reina, Constantine Kontokosta, *Low Hanging Fruit? Regulations and Energy Efficiency in Subsidized Multifamily Housing*, 106 ENERGY POL'Y 505 (2017), https://www.sciencedirect.com/science/article/pii/S0301421517302276.

So, how should affordable housing be including in a future trading market? One option may be to leave affordable housing outside the mandatory emissions cap but include it an offset market. This approach would allow the market to take advantage of potential low-cost abatement opportunities in the sector without obliging the owners of affordable housing to invest in the upgrades themselves.[81] Allowing affordable housing to participate in the offset markets might also counter the potential incentive to disinvest in these properties that the recent rent regulations have created.[82]

These questions about the implications of emissions trading for affordable housing presages another concern that local policymakers must address: how to reconcile the goals of a trading program, which seeks to cull the least-cost emissions reductions wherever they may be, with the environmental justice goal that emissions reductions be fairly distributed among low-income communities of color and more affluent groups alike. (The concern here is not about the distribution of GHG emissions themselves but rather the co-pollutants that so often accompany GHG emissions.)[83] Local governments are better poised than higher levels of government to evaluate the community-level distributional impacts of environmental policies given their proximity to the populations in question[84] and may therefore have a special obligation to consider these impacts in designing environmental policies and face special political pressure to do so.

[81]Local Law 97 authorizes covered entities to meet up to ten percent of their compliance obligation through the purchase of GHG offsets. § 28-320.3.6.2. The law tasks the Office of Building Energy Management with drafting regulations defining the scope of eligible offsets and it is possible that energy efficiency improvements in affordable housing buildings would qualify. *Id.*

[82] Luis Ferre-Sadurni et al., *Landmark Deal Reached on Rent Protections for Tenants in New York*, N.Y. TIMES (June 11, 2019), https://www.nytimes.com/2019/06/11/nyregion/rent-protection-regulation.html.

[83] CHRISTOPHER COSTELLO, INTRODUCTION DISTRIBUTIONAL EFFECTS OF ENVIRONMENTAL MARKETS 9 (Christopher Costello ed., 2019).

[84]*See* Richard L. Revesz, *The Race to the Bottom and Federalism Environmental Regulation: A Response to Critics*, 82 MINN. L. REV. 535, 537 (1997) (noting that it would be more costly for the federal government to gather information about the location-specific costs and benefits of environmental regulation than states). Expanding upon this logic, local governments should have even greater purview into the neighborhood-specific costs and benefits than states.

Left to its own devices, a liberally designed emissions market – by which I mean a market that is not designed to bias firms to reduce emissions in particular locations – may produce an equitable distribution of reductions; despite some early warning signs about the distributional impacts of the California Cap-and-Trade program,[85] a fairly rigorous study on the subject failed to find a disparate impact on disadvantaged communities.[86] But if local officials want to actively encourage the market to make emissions reductions in particular neighborhoods, they could develop rules, such as location-specific credit adjustments, that incentivize reductions in disadvantaged communities. It must be recognized, however, that there are tradeoffs between encouraging a particular distribution of reductions and maximizing market efficiency. Given these tradeoffs, it may be preferable to strengthen or improve the enforcement of complimentary air pollution programs, such as New York City's Clean Heat program,[87] to mitigate lingering pollution hot spots than hinder the liberal operation of the GHG market.

III. Conclusion

Emissions trading for buildings is replete with potential. As the burden of confronting climate change falls increasingly upon local leaders' shoulders, the need to minimize the cost of emissions reductions has never been greater. Experience from the industrial sectors indicates that trading programs could help local policymakers fulfill that need. Yet how to translate the lessons learned from industrial trading programs to buildings is still very much an open question. In this short essay, I have tried to highlight some key points of distinction that policymakers will need to bear

[85] Cushing et al., *supra* note 21.

[86] KYLE C. MENG, IS CAP-AND-TRADE CAUSING MORE GREENHOUSE GAS EMISSIONS IN DISADVANTAGED COMMUNITIES? DISTRIBUTIONAL EFFECTS OF ENVIRONMENTAL MARKETS (Christopher Costello ed., 2019). Meng also notes that "studies of another California cap-and-trade program for nitrogen oxide pollution have found that lower-income households are either not affected or may actually benefit from emissions trading." *Id.* at 28 (internal citations omitted).

[87] NEW YORK CITY, ABOUT NYC CLEAN HEAT, https://www.nyccleanheat.org/content/what-nyc-clean-heat

in mind as they adapt traditional trading programs to this novel context. Further research into the economics of building emissions reductions in different cities, as well as dialogue with local stakeholders, will be needed to craft trading programs that provide the greatest environmental benefit at least cost.