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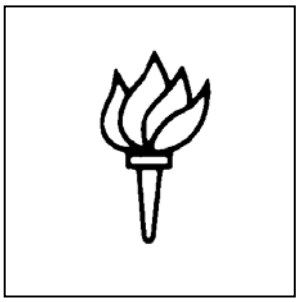

The Urban Environmental Renaissance

Katrina Wyman and Danielle Spiegel-Feld

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Katrina M. Wyman & Danielle Spiegel-Feld*

Abstract

City governments were an important source of environmental protection in the United States from the 1800s until well into the 1900s. However, since Congress passed a series of landmark environmental statutes in the 1970s, scholars have primarily equated environmental law with federal law. To the extent that scholars consider subnational sources of environmental law, they typically focus on states, rather than cities. This article shines a light on the role of cities in contemporary environmental law. It argues that major American cities are currently reviving cities' historical role as leaders in environmental lawmaking, and proposes mechanisms for expanding their scope to innovate within the framework that the 1970s federal environmental statutes established.

The article makes three significant contributions to existing literature. First, it resurrects the little-known history of early municipal efforts to protect their environments, which attests to cities' long-standing interest in environmental matters. Second, the article incorporates an original survey of environmental policies that cities have developed in recent years, which demonstrates the breadth of lawmaking that has largely been overlooked. Third, the article offers a framework for conceptualizing the interplay between federal, state and local laws and suggests strategies for finding greater space for municipal policy experimentation within the jurisdictional authority that cities possess.

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Introduction

For over a hundred years, cities were an important source of environmental protection in the United States. In the 1800s and early 1900s, cities arranged for the supply of drinking water for their growing populations, passed laws in an effort to keep that water clean, developed systems to manage wastewater, and enacted pioneering air pollution ordinances. States gradually assumed a greater role in environmental protection in the late nineteenth century, and then the federal government did so after World War II.[1] In the 1970s, federal authorities took over primary responsibility when Congress passed a series of landmark environmental statutes, including the National Environmental Policy Act, the Clean Air Act and the Clean Water Act.[2]

Since then, for almost five decades, environmental law in the U.S. has been primarily equated with federal environmental statutes and regulations. The major environmental groups orient many of their efforts to federal environmental regulation; environmental law scholarship tends to focus on the federal regulatory process; and environmental law classes teach the major federal environmental law statutes.[3] To the extent that there has been a focus on nonfederal sources of environmental law, it has been largely about the role of the states, most notably California, not

[1] Martin Melosi, *Environmental Justice, Political Agenda Setting, and the Myths of History*, 12 J. POL'Y HIST. 43, 57–59 (2000) [hereinafter Melosi, *Myths of History*]; *see also* MARTIN MELOSI, THE SANITARY CITY (2008); Martin V. Melosi, *Lyndon Johnson and Environmental Policy, in* THE JOHNSON YEARS, VOLUME TWO: VIETNAM, THE ENVIRONMENT, AND SCIENCE (Robert A. Divirie ed., 1987).

[2] JAMES E. KRIER & EDMUND URSIN, POLLUTION & POLICY: A CASE ESSAY ON CALIFORNIA AND FEDERAL EXPERIENCE WITH MOTOR VEHICLE AIR POLLUTION, 1940–1975, at 10 (1977); Jody Freeman, *The Uncomfortable Convergence of Energy and Environmental Law*, 41 HARV. ENVTL. L. REV. 339, 348–49 (2017).

[3] *See, e.g.*, John R. Nolon, *In Praise of Parochialism*, 26 HARV. ENVTL L. REV. 365, 374 (2002) ("The role of local governments is only briefly mentioned in environmental law casebooks."); Katherine A. Trisolini. *All Hands on Deck: Local Governments and the Potential for Bidirectional Climate Change Regulation*, 62 STANFORD L. REV. 669, 674–75 (2010) ("More broadly, local governments are largely overlooked as relevant actors in academic discussions of environmental law."). There are notable exceptions to the general scholarly tendency to neglect the role of cities in environmental law. *See, e.g.*, JOHN R. NOLON, PROTECTING THE ENVIRONMENT THROUGH LAND USE LAW: STANDING GROUND (2014); Sara C. Bronin, *Energy in the Ecopolis*, 45 ENVIRONMENTAL L. REP. 10514 (2015); Sarah Fox, *Home Rule in an Era of Local Environmental Regulation*, 44 ECOL. L. Q. 575 (2017); Trisolini, *supra*.

cities.[4] Scholars mainly seem to pay attention to the potential to advance an affirmative environmental agenda at the local and state levels when Republican dominance in Washington leaves the federal government inhospitable to environmental protection.[5]

This article argues that major cities have a growing role to play in securing environmental protection not just because of the current political climate in Washington, but for fundamental structural reasons. The regime of federal dominance that arose in the 1970s reflected a confluence of factors that no longer entirely apply. Nineteenth and twentieth century urbanization, industrialization and suburbanization gave rise to vast problems of air and water pollution that cities and states could not and would not address on their own, in part because the polluting industries accounted for significant portions of their economic base, and in part because the pollution often crossed municipal and state boundaries. Regulating this pollution, which was a side effect of socially useful industrial processes such as large-scale utility electricity generation, also necessitated trade-offs about how much pollution should be allowed given the benefits of the activities in which it was generated and the need to protect the public health. Making these trade-

[4] On California's leadership role in reducing conventional, and more recently greenhouse gas, air pollution from cars, see Ann Carlson, *The Trump Administration's Assault on California's Global Climate Leadership*, 112 AJIL UNBOUND 269 (2018); Ann E. Carlson, *Iterative Federalism and Climate Change*, 103 NW. L. REV. 1097 (2009) [hereinafter Carlson, *Iterative Federalism*].

As Professor Michael Livermore has observed, "In the United States, decentralization is often associated with federalism and devolution of authority to the states." Michael A. Livermore, *The Perils of Experimentation*, 126 YALE L.J. 636, 701 (2017) (citing Edward L. Rubin & Malcolm Feeley, *Federalism: Some Notes on a National Neurosis*, 41 UCLA L. REV. 903 (1994)).

[5] *See, e.g.*, RICHARD J. LAZARUS, THE MAKING OF FEDERAL ENVIRONMENTAL LAW 249–250 (2004) (referring to states filling the void during the early years of the George W. Bush administration); Denise Grab & Michael A. Livermore, *Environmental Federalism in A Dark Time*, 79 OHIO STATE L.J. 667 (2018) (describing the role of "blue" states in making up for the federal leadership deficit under President Trump). Richard Revesz is an exception, as partly during the Clinton era, he published several articles underscoring the potential for state environmental regulation to develop alongside federal regulation. Richard L. Revesz, *Rehabilitating Interstate Competition: Rethinking the 'Race-to-the-Bottom' Rationale for Federal Environmental Regulation*, 67 N.Y.U. L. REV. 1210 (1992); Richard L. Revesz, *Federalism and Interstate Environmental Externalities*, 144 U. PA. L. REV. 2341 (1996) [hereinafter, Revesz, *Interstate Externalities*; Richard L. Revesz, *The Race to the Bottom and Federalism Environmental Regulation: A Response to Critics*, 82 MINN. L. REV. 535 (1997) [hereinafter Revesz, *Race to the Bottom*]; Richard L. Revesz, *Federalism and Environmental Regulation: A Public Choice Analysis*, 115 HARV. L. REV. 553 (2001) [hereinafter Revesz, *Public Choice*]. *See also* Trisolini, *supra* note 3.

offs required investments in scientific and economic analysis that the federal government was best able to make on behalf of the nation as a whole. Moreover, implementing the selected standards required coordinating the activities of private and public actors across multiple jurisdictions, and substantial investments in infrastructure and pollution control equipment. In the 1970s, many American cities were in economic decline, with little by way of resources to spend on environmental protection as they sought to stave off creditors.[6] And given that many cities derived substantial portions of their revenues from taxing the polluting industries, they had little appetite to enact policies that could scare off such industries.[7]

While there are still powerful arguments for a robust federal floor of environmental standards, some major U.S. cities now are much better positioned than they were in the late 1960s and early 1970s to be leaders in environmental policy.[8] Major U.S. cities, especially on the coasts, now have more resources to spend on environmental protection; their populations are growing [9]

[6] MELOSI, *supra* note 1, at 212–213 (describing "fiscal woes" at the municipal level, exemplified by "New York City's financial collapse in 1975").
[7] J. Peter Byrne, *The Rebirth of the Neighborhood*, 40 FORDHAM URBAN L. J. 1595, 1606 (2013) ("[T]he exodus of manufacturing from cities after World War II assaulted the economic bases of cities.")
[8] *See* GERALD E. FRUG & DAVID J. BARRON, CITY BOUND: HOW STATES STIFLE URBAN INNOVATION 34 (2008) (noting that many cities have become more powerful and are in far stronger economic positions today than they were in the 1970s and 1980s "when New York City's financial troubles were perhaps the most salient urban event").
[9] From 2010 to 2018, America's largest city, New York City, led the state in population growth. *See* James Barron, *New York City's Population Hits a Record 8.6 Million*, N. Y. TIMES (Mar. 22, 2018), https://www.nytimes.com/2018/03/22/nyregion/new-york-city-population.html. This stands in stark contrast to the situation in the middle of the twentieth century when New York City and others were experiencing considerably slower growth than the surrounding suburbs. *See, e.g.*, Benjamin Baker, *Municipal Autonomy: Its Relationship to Metropolitan Government*, 13 WESTERN POL. Q. 83, 83 (1960). San Francisco's population also increased over 9.75 percent between 2010 and 2017, from 805,770 to 884,363. Adam Brinklow, *San Francisco Population Swells to More Than 884,000*, CURBED SF (Mar. 26, 2018), https://sf.curbed.com/2018/3/26/17165370/san-francisco-population-2017-census-increase. These cities' growth is part of a larger trend; recent data indicate that across the U.S., "large metropolitan areas are . . . growing faster than the rest of the country." William H. Frey, *US Population Disperses to Suburbs, Exurbs, Rural Areas, and "Middle of the Country" Metros*, BROOKINGS: THE AVENUE (Mar. 26, 2018), https://www.brookings.edu/blog/the-avenue/2018/03/26/us-population-disperses-to-suburbs-exurbs-rural-areas-and-middle-of-the-country-metros/. Some argue that the populations of coastal cities such as San Francisco would be increasing by even more if stringent land use regulations were not increasing the cost of housing prices. *See, e.g.*, CHRISTOPHER S. ELMENDORF, BEYOND THE DOUBLE VETO: LAND USE PLANS AS PREEMPTIVE INTERGOVERNMENTAL CONTRACTS (2018), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3256857.

and they are wealthier than they were in the 1960s and 1970s.[10] These cities also have powerful new incentives to focus on environmental protection. Major cities are no longer dominated by manufacturing and heavily polluting industries; innovation industries are now the economic lifeblood of the most vibrant cities in the post-industrial age and these industries, and the educated workers that they attract, are thought to value healthy environments and to be prepared to pay to enjoy them.[11]

As urban economies have evolved, there has been a flowering of environmental initiatives at the local level in some American cities, particularly during the last two decades.[12] Whereas federal and, to some extent, state environmental laws have largely regulated industrial sources of pollution such as power plants, cities have carved out a niche for themselves by regulating further downstream, to reduce the demand by buildings and other consumers of polluting industrial products and services.[13] Our original survey of the environmental policies of fifteen cities indicates

[10] For example, in 2018, San Francisco adopted a $11.05 billion budget, the highest in the city's history. Dominic Fracassa, *SF's Budget Soars by $937 Million and Will Top $11 Billion for First Time*, SAN FRANCISCO CHRONICLE (May 31, 2018). To give another example, Washington D.C.'s tax revenue increased from approximately $2.4 billion in total collections in 1995 to $7.4 billion in 2017. GOVERNMENT OF THE DISTRICT OF COLUMBIA ET AL., D.C. TAX FACTS 2018 41 (2018), https://cfo.dc.gov/sites/default/files/dc/sites/ocfo/publication/attachments/Tax%20Facts%202018-1.pdf.

[11] *See, e.g.*, David Gibbs & Rob Krueger, *Containing the Contradictions of Rapid Development? New Economy Spaces and Sustainable Urban Development, in* THE SUSTAINABLE DEVELOPMENT PARADOX: URBAN POLITICAL ECONOMY IN THE UNITED STATES AND EUROPE 95 (Rob Krueger & David Gibbs eds., 2007).

[12] In a prescient 2002 article, Professor John Nolon heralded "a remarkable and unnoticed trend among local governments to adopt laws that protect natural resources." Nolon, *supra* note 3, at 365. Nolon focused on the role of local governments in reining in development to address "the adverse impacts of land development and to control nonpoint source pollution." *Id*. In the nearly two decades since Nolon's article was published, local environmental protection efforts have expanded considerably beyond protecting landscapes and dealing with nonpoint pollution. We discuss a much broader range of local environmental measures than Nolon, focusing specifically on cities, and, also going beyond Nolon in seeking to explain the reasons for the renewed environmental interest in cities, and to recommend changes, primarily to state law, to enable cities to pursue additional environmental reforms.

[13] A decade ago, Professor Katherine Trisolini described the potential for cities to complement federal greenhouse gas emission reduction policies by regulating downstream segments of the economy to reduce demand, and surveyed some of the early city initiatives to lower greenhouse gas emissions. Trisolini, *supra* note 3, at 678, 690, 695–734, 743–44. As we indicate in Part 2.2, cities have continued to introduce such downstream initiatives in the years since to reduce greenhouse gas emissions and address other environmental problems. *See also* Clayton Mummings et al., *Pricing Carbon Consumption: Synthesizing an Emerging Trend*, 19 CLIMATE POL'Y 92 (2019) (arguing that there is an increasing international trend to regulate carbon emissions downstream).

that contemporary cities have undertaken a number of environmental initiatives that exceed what they are required to do under federal environmental law. Cities have passed new laws to improve local air quality, [14] implemented important initiatives to clean up brownfields for redevelopment,[15] developed new parks in old waterfront and industrial areas,[16] and tried to reduce the use of cars by expanding the ease of bicycling by adding bike lanes and bike-sharing.[17] Cities have also taken a leading role in devising strategies to reduce the environmental impact of solid waste; cities started to develop recycling programs as far back as the late 1980s,[18] in the absence of any federal obligation to do so, and more recently have enacted various bans on plastic and Styrofoam products.[19]

Cities have not only developed measures for addressing local pollution problems such as poor air quality and waste from which their residents stand to benefit, but have also sought to deal with the ultimate global pollution problem, greenhouse gas (GHG) emissions. Cities have endeavored to take action to reduce GHG emissions while federal policy on climate change has advanced (under President Obama) and retreated (under President Trump), even though the effects of local reductions could be cancelled out by continuing emissions in other jurisdictions. Cities

[14] In 2012, New York City passed a Clean Heat program that phased out the use of the dirtiest heating oils in large buildings. Jane Janeczko, *New York City Air Quality the Best In 50 Years, Announces Mayor Bloomberg*, HUFFPOST (Sept. 30, 2013), https://www.huffingtonpost.com/2013/09/27/new-york-air-quality_n_4004710.html. The Clean Heat program was implemented through "[o]ne local regulation change, one local law, and one state law," but is widely understood to have been a local initiative, pushed by the administration of former mayor Michael Bloomberg and others at the local level. Daniel Carrión et al., *Residual Inequity: Assessing the Unintended Consequences of New York City's Clean Heat Transition*, 15 INT'L J. ENVTL. RES. & PUB. HEALTH 116, 119 (2018).

[15] Mark McIntyre, *How PlaNYC Will Facilitate Brownfield Redevelopment*, 54 N.Y. L. SCH. L. REV. 431 (2009/10)

[16] See *infra* notes 198–200 and accompanying text.

[17] See Memoranda from Sara Savarani, Legal Fellow, Guarini Ctr. (Nov. 2018) (on file with authors).

[18] New York City was one of the first, if not the first, major American city to launch a recycling program, which it did in 1988. *See* Marjorie J. Clarke et al., *Integrated Waste Management Planning and Decision-Making in New York City*, 26 RESOURCES, CONSERVATION AND RECYCLING 125, 132 (1999).

[19] Bob Fredericks, *City's Styrofoam Ban Goes into Effect Jan. 1*, N.Y. POST (June 13, 2018), https://nypost.com/2018/06/13/citys-styrofoam-ban-goes-into-effect-january-1/; Diane MacEachern, *Cities Ban Styrofoam to Reduce Pollution*, MOMS CLEAN AIR FORCE (Oct. 5, 2015), https://www.momscleanairforce.org/cities-ban-styrofoam-to-reduce-pollution/.

across the county have passed laws mandating disclosure about the amount of energy used in buildings, the major source of GHG emissions in cities, including innovative local laws that will assign star ratings and letter grades to buildings based on their energy efficiency[20] And Washington, D.C. and New York City are considering legislation that would go further and actually require buildings to reduce their carbon footprints.[21] The City of Austin, which owns its own electric utility, established a goal in 2007 of having 30% of Austin Energy's electricity come from renewables by 2020 and already exceeded that goal.[22] School districts in the Sacramento area are engaged in the biggest U.S-based pilot of electric school buses, with the help of California state funds.[23]

These municipally driven initiatives serve at least three important functions. First, and most basically, cities' environmental policies are materially improving the quality of the environment in the areas in which nearly two-thirds of Americans now live.[24] Second, cities' experimentation with diverse policy instruments can serve as a proving ground for different approaches, leading to better policy development at the state and federal level. Third, to the extent that municipal environmental policies lower demand for polluting products, as laws that grade buildings seek to lower demand for electricity, they can help lessen the impact of the federal government's under-regulation of major sources of pollution, such as power plants.

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[20] See *infra* notes 225–227 and accompanying text.
[21] See *infra* notes 228–232 and accompanying text.
[22] Sarah Bloodworth, *Austin Sees Decrease in Carbon Dioxide Emissions Despite Population Increase*, THE DAILY TEXAN (Mar. 27, 2017), http://www.dailytexanonline.com/2017/03/27/austin-sees-decrease-in-carbon-dioxide-emissions-despite-population-increase. *See also*, Shelley Welton, *Public Energy*, 92 N.Y.U. L. REV. 267, 332–38 (2017).
[23] Ryan Gray, *Largest U.S. Electric School Bus Pilot Comes to California*, SCH. TRANSP. NEWS (May 12, 2017), http://www.stnonline.com/news/latest-news/item/8613-largest-us-electric-school-bus-pilot-comes-to-california.
[24] Press Release, U.S. Census, U.S. Cities are Home to 62.7 Percent of Population, But Comprise Just 3.5 Percent of Land Area (March 4, 2015), *available at* https://www.census.gov/newsroom/press-releases/2015/cb15-33.html.

Yet, despite the promise of local environmental initiatives, certain legal obstacles, especially limits on local authority established by state law, are hamstringing cities' ambitions to pursue their environmental goals. This article argues that such obstacles should be reduced and presents some ideas for how to do so.

To be clear, we do not argue that the federal government should retreat from environmental lawmaking and that we can now rely on cities to protect us from environmental harm. Instead, our argument is that important U.S. cities are reviving local governments' historical role as leaders in environmental protection, and that a closer look is needed at the obstacles that cities are encountering in advancing environmental protection goals.

This article proceeds as follows. Part 1 sets the stage for thinking about cities as environmental regulators by illustrating the foundational role they played in protecting water and air quality in the nineteenth and early twentieth centuries. It also analyzes why cities were sidelined by the federal government and relegated to their current subordinate status under federal environmental law. Part 2 explains why important cities are poised to become environmental leaders once again and illustrates the flowering of recent environmental initiatives at the local level, drawing on our survey of the environmental policies of fifteen large U.S. cities. Part 3 discusses the normative implications of the return of the city as an environmental regulator, focusing on the need to carve out additional space for cities to innovate, while maintaining a solid federal floor of environmental regulation.

1. From Local to Federal Environmental Law

While environmental law is primarily equated with federal law today, for most of the nation's history the federal government had little role in environmental protection and that responsibility

was left to local and state governments. This part resurrects the important role that cities played in the nineteenth and first part of the twentieth century in providing environmental protection and analyzes why the federal government became the main initiator of environmental policy in the 1970s. The history underscores the potential for cities to be leaders in environmental policy, while also recognizing the inability of cities to adequately address the environmental problems stemming from mass urbanization, industrialization and suburbanization.

1.1. The Original Urban Environmental Leaders

After the United States began to develop following the Revolutionary War, local governments were the main providers of environmental protection.[25] As we shall see, however, these local governments appear to have assumed this role out of necessity and their limited jurisdictional reach and regulatory resources presented a number of challenges as they attempted to secure healthy urban environments.

Cities' early attempts to secure safe drinking water for their inhabitants illustrates well both their pioneering role in providing environmental protection as well as the constraints they faced in meeting this need. As urban populations grew during the latter eighteenth and early nineteenth centuries, local water became highly polluted and proved inadequate to meet local requirements.[26] Cities led the response to these shortages. Indeed, the decision to build a water supply system was often cities' "first major undertaking … and the first which required a large initial outlay financed by bond issues."[27]

[25] JAMES SALZMAN, DRINKING WATER: A HISTORY 61 (2017).
[26] *Id*.
[27] MELOSI, *supra* note 1, at 21; *see also* EDWARD GLAESER, TRIUMPH OF THE CITY 97–101 (2011); NELSON MANFRED BLAKE, WATER FOR THE CITIES: A HISTORY OF THE URBAN WATER SUPPLY PROBLEM IN THE UNITED STATES (1956).

Philadelphia was the first city in the U.S. to establish a public water supply system in 1801, after a devastating yellow fever epidemic in 1793 "shut down" the City, then "the country's capital and busiest shipping port."[28] In 1803, the Philadelphia City Council enacted an ordinance to protect the city's water supply, declaring that "every person who should 'wantonly or willfully' throw into the basin or canal [supplying the city] any kind of filth, or should go into the water to wash or bathe, or should cause any dog or other animal to go into the water, should be fined five dollars plus costs."[29] It took New York City longer to establish its own water supply system and replace the polluted wells and the large pond that were the early sources of Manhattan's drinking water with water from outside the City's boundaries.[30] A state appointed Board of Water Commissioners built the Croton Aqueduct that opened to much fanfare in 1842, but the impetus for constructing the City-owned water supply system came from the City, and City-issued bonds paid the entire cost of building the system which exceeded $10 million.[31] As in Philadelphia, the City also endeavored to protect its water, with the Common Council passing an ordinance that "prohibited bathing or depositing of any form of rubbish or dirt in the water."[32]

[28] SALZMAN, *supra* note 25, at 61.
[29] BLAKE, *supra* note 27, at 255.
[30] SALZMAN, *supra* note 25, at 58–59, 66, 68.
[31] BLAKE, *supra* note 27, at 121–71. *See especially id*. at 135–42, 149–51, 163–67, 169. Notably, New York City continued expanding its water supply system after establishing the Croton reservoir, eventually developing reservoirs throughout the Catskills region as well. *See generally* Michael C. Finnegan, *New York City's Watershed Agreement: A Lesson in Sharing Responsibility*, 14 PACE ENVT'L L. REV. 577 (1997). Other cities also had to expand the water supply systems during this time period to satisfy the needs of growing populations. *See id*. at 272–79, 285–87 (Boston, Baltimore, Philadelphia, Los Angeles).
[32] JOHN DUFFY, A HISTORY OF PUBLIC HEALTH IN NEW YORK CITY 398 (1968); *see also* BLAKE, *supra* note 27. 256. Although scientific understandings of water quality evolved over the nineteenth and twentieth centuries, municipal regulation of drinking water did not necessarily track emerging understandings. *See, e.g.*, Finnegan, *supra* note 31, at 609–10, 615 n.220 (criticizing New York City's failure to develop regulations to protect the safety of its source waters and reservoirs between 1905 and 1954, and the barebones regulations that the City adopted in 1954 and maintained until the 1990s).

"By 1860, the nation's sixteen largest cities, as well as many smaller ones, had" water supply systems.[33] The increased supply of running water led to greater use of water for household and other uses.[34] Many people also took advantage of the ready availability of water to introduce water closets, which further increased water consumption.[35] So after introducing running water, cities faced the task of devising systems to manage waste water from household water consumption and human waste from water closets, as the old systems of dumping wastes into privy vaults and cesspools were overwhelmed.[36] Cities responded by building sewer systems.[37] The advent of sewer systems raised new challenges for cities, not all of which they could, or would, address on their own.[38]

Cities dumped the sewage from their systems into nearby watercourses, usually untreated. [39] This created problems for the downstream populations that obtained their water from the water bodies into which sewage was being dumped. The spread of typhoid prompted states to establish state boards of health starting in the late nineteenth century to regulate sewage disposal and to prohibit new sewer systems from dumping sewage into water bodies.[40] "By 1927, all but four states had boards of health with divisions of sanitary engineering" to regulate water pollution, but enforcement "was lax" and "state boards preferred" cooperating with industry.[41] Initially, the cities that had invested in combined sewage systems continued to dump their sewage untreated

[33] JOEL A. TARR, THE SEARCH FOR THE ULTIMATE SINK 114 (1996).
[34] *Id.* at 114. Wastage of water also was common in an era "when household water meters were practically unknown." BLAKE, *supra* note 27, at 269.
[35] TARR, *supra* note 33, at 114–15; *see also* BLAKE, *supra* note 27, at 269–72.
[36] TARR, *supra* note 33, at 115.
[37] In 1857, Brooklyn built the first combined sewage system to take stormwater and human wastewater. *Id.* at 116–17.
[38] TARR, *supra* note 33, at 117.
[39] *Id.* at 121.
[40] *Id.* at 122–23.
[41] MELOSI, *supra* note 1, at 144.

into streams, and opted to filter their drinking water rather than treat their sewage, because filtration was cheaper than treatment.[42] Filtration did nothing to help the downstream users, however, and by the 1920s, sewage treatment became an established city service, with some states even legislatively requiring cities to treat their sewage.[43] During the Depression, the federal government provided considerable funding to municipalities for the expansion of sewage and water supply systems, including sewage treatment plants.[44]

By the end of World War II, "industrial discharges were the greatest source of water pollution in the United States."[45] Many states reorganized their water pollution agencies, in some cases establishing standalone agencies separate from the board of health.[46] Although a few states developed innovative regulatory approaches, regulatory enforcement continued to be lax, as state agencies and the engineers that worked in them were reluctant to take on powerful industries and municipalities.[47] As water quality deteriorated, the federal government assumed an increasingly large role in addressing water pollution after World War II.[48]

As they were struggling to deal with managing wastewater, cities faced a new challenge in the late nineteenth and early twentieth centuries of managing air pollution.[49] Until the late nineteenth century, air pollution was regulated by the courts, under the rubric of common law torts

[42] TARR, *supra* note 33, at 127.
[43] MELOSI, *supra* note 1, at 152, 156.
[44] *Id.* at 149, 137.
[45] William L. Andreen, *The Evolution of Water Pollution Control in the United States – State, Local, and Federal Efforts 1789–1972: Part I*, 22 STAN. ENVTL. L.J. 145, 189 (2003).
[46] *Id.* at 189–90.
[47] *Id.* at 194–96.
[48] *Id.* at 235–60.
[49] William L. Andreen, *Of Fables and Federalism: A Re-Examination of the Historical Rationale for Federal Environmental Regulation*, 42 ENVTL. L. 627, 628 (2012).

such as nuisance and trespass.[50] Between 1867, when St. Louis passed the first municipal air pollution ordinance to deal with smoke from coal, and the 1950s and 1960s when many states began passing air pollution legislation, cities and counties were the main level of government attempting to regulate air pollution.[51]

From the nineteenth century until after World War II the primary concern of local governments regulating air pollution was the smoke from the use of coal, which became the main source of power in many Northeastern and Midwestern cities.[52] The smoke was particularly problematic in cities using bituminous coal, such as Pittsburgh and other Midwestern cities.[53] Influenced by the antismoke movement in London, "Progressive-era reformers" mobilized to abate the smoke in American cities to protect public health and reduce the potential that smoke might undermine economic development.[54] These ordinances took various formats and regulated diverse sources including industry, locomotives, and home furnaces,[55] but by 1920, "nearly every major American city" had passed "antismoke ordinances" and established "smoke inspection bureaus with significant administrative authority";[56] there were forty municipalities and one county with air pollution legislation and agencies to enforce them.[57]

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[50] NOGA MORAG-LEVINE, CHASING THE WIND: REGULATING AIR POLLUTION IN THE COMMON LAW STATE 103 (2003); Arthur C. Stern, *History of Air Pollution Legislation in the United States*, 32 J. AIR POLLUTION CONTROL ASS'N 44, 44 (1982) (dating the first ordinances to Cincinnati and Chicago in 1881).
[51] Stern, *supra* note 50, at 44. *See also* MORAG-LEVINE, *supra* note 50, at 104 (By 1920, "nearly every major American city" had passed "antismoke ordinances" and established "smoke protection bureaus with significant administrative authority."); Andreen, *supra* note 49, at 651
[52] Andreen, *supra* note 49, at 627, 628.
[53] MORAG-LEVINE, *supra* note 50, at 103.
[54] Andreen, *supra* note 49, at 640; MORAG-LEVINE, *supra* note 50, at 109.
[55] SCOTT DEWEY, DON'T BREATHE THE AIR: AIR POLLUTION AND U.S. ENVIRONMENTAL POLITICS, 1945–1970, 23 (2000) (describing an 1881 Chicago ordinance that declared smoke pollution a per se nuisance). *Id.* at 31–32 (describing St. Louis' efforts in the late 1930s to reduce smoke by prohibiting the use of soft coal in furnaces and boilers and forcing the local railroad to either burn higher grade fuel or convert to electric or diesel locomotives).
[56] MORAG-LEVINE, *supra* note 50, at 104.
[57] Stern, *supra* note 50, at 44 tbl.1.

Municipal ordinances were initially ineffective in reducing smoke. Then in 1937 and 1940 St. Louis passed innovative ordinances that "required both industrial and domestic sources of smoke to use either higher-grade coal or better combustion techniques such as automatic stokers."[58] Following the passage of these ordinances, the smoke abated in St. Louis and other American cities after World War II. However, improved coal combustion techniques and fuel switching from lower grade to higher grade coal and to natural gas are credited with the much of the improvement, and the role of the municipal ordinances in promoting these changes is subject to interpretation.[59]

As the smoke receded, it became apparent that other air pollutants, some less visible than smoke, were harming public health, and these proved even more challenging for local governments to overcome.[60] By 1950, there were eighty municipalities and two counties with air pollution ordinances and agencies to enforce them.[61] Yet, many of the local programs were underfunded. "In 1961, only 43% of the communities with major or moderate air pollution problems had control programs whose budget exceeded $5,000 per year."[62] Even New York City, the nation's most populous city, was never able to set up an effective air pollution control agency after decades of trying and "by 1966 … [it] had the worst air of any American city due to its high concentrations

[58] Andreen, *supra* note 49, at 642; *see also* MORAG-LEVINE, *supra* note 50, at 122.
[59] *Compare* Andreen, *supra* note 49, at 642–44, MORAG-LEVINE, *supra* note 50, at 104–22, *and* STERN, *supra* note 50, at 47 *with* Revesz, *Public Choice*, *supra* note 5, at 579, *and* DEWEY, *supra* note 55 at 27 (crediting the St. Louis ordinance as being the *reason* that St. Louis switched to low sulfur coal). Moreover, the smoke problem did not abate everywhere after World War II. For example, it was severe in New York City after World War II. DEWEY, *supra* note 55, at 114.
[60] MORAG-LEVINE, *supra* note 50, at 122–23; DEWEY, *supra* note 55, at 155–56; Andreen, *supra* note 49, at 644 ("Even as the smoke began to clear, it was obvious that the country suffered from many other dangerous air pollutants.").
[61] STERN, *supra* note 50, at 44 tbl.1.
[62] Andreen, *supra* note 49, at 647 (citing Randall Ripley, *Congress and Clean Air: The Issue of Enforcement, 1963*, *in* CONGRESS AND URBAN PROBLEMS 224, 226 (Frederic N. Cleaveland ed., 1969)). The 1963 federal Clean Air Act significantly increased federal funding of state and local air pollution control programs, and led to the creation of many more such programs. Andreen, *supra* note 49, at 653–55.

of invisible emissions, particularly sulfur dioxide and carbon monoxide."[63] Local programs also tended to be staffed by mechanical engineers, who lacked "the kind of specialized scientific knowledge that was needed to deal with more sophisticated problems" than smoke.[64]

The most entrepreneurial of the local agencies seems to have been the Air Pollution Control District created by Los Angeles County in 1947, pursuant to state legislation.[65] While Los Angeles had never suffered from coal-related smoke problems because it used "natural gas and fuel," it began experiencing severe smog problems starting in 1940.[66] The Control District innovatively regulated industrial sources, oil refineries and oil storage tanks, and banned the burning of trash at dumps.[67] These efforts addressed some of the causes of smog, but it persisted because of unregulated automobile emissions.[68] The Control District helped to finance research that established the link between these emissions and smog, and to recommend that the state of California regulate air pollution from cars, which California began doing in the 1960s.[69]

America's nineteenth century cities made other investments to improve the quality of the urban environment as well. Cities built pioneering parks, an important environmental amenity. Central Park, which opened gradually starting in 1858, was "the first landscaped public park in the United States" and led to the creation of other similar urban parks in New York City and

[63] DEWEY, *supra* note 55, at 113, 156. In 1964–65, the New York City Department of Air Pollution Control spent over a million on air pollution control and Mayor John Lindsay's administration launched additional efforts to attack air pollution with higher budgets for the Department. *Id.* at 128, 131–34. Despite some improvements, the City's air quality "in 1970 remained the worst in the country." Andreen, *supra* note 49, at n.284.
[64] Andreen, *supra* note 49, at 646–47 (citing FRANK UEKOETTER, THE AGE OF SMOKE: ENVIRONMENTAL POLICY IN GERMANY AND THE UNITED STATES, 1880–1970, at 156, 159 (2009)).
[65] Andreen, *supra* note 49, at 649 (citing DEWEY, *supra* note 55, at 43–44); KRIER & URSIN, *supra* note 2, at 79–80.
[66] Andreen, *supra* note 49, at 648 (citing DEWEY, *supra* note 55, at 27).
[67] *Id.* at 649 (citing DEWEY, *supra* note 55, at 45–46).
[68] DEWEY, *supra* note 55, at 45.
[69] Andreen, *supra* note 49, at 649–50 (citing KRIER & URSIN, *supra* note 2). Until 1959, controlling motor vehicle pollution remained "a local responsibility" in California. KRIER & URSIN, *supra* note 2, at 8.

elsewhere.[70] Central Park was built at the instigation of Manhattan's elite,[71] who had multiple motivations for establishing the Park, including emulating parks in leading European cities like London's Hyde Park; increasing the property values of privately owned lands surrounding the park; and, lower down on the agenda, the human health benefits of parks for exercise and clean air.[72]

Around the same time period in which America's urban elite endeavored to build new parks, the nation's cities started to swell with refuse[73] and "garbage nuisance came to be seen as a serious environmental problem."[74] The prevailing system of the early nineteenth century, whereby individuals were left to dispose of their garbage on their own, proved unworkable as urban areas became more densely populated and cities' increasingly unsanitary conditions were blamed for a number of public health problems.[75] Urban inhabitants looked to their local leaders for relief.[76] In response, many local authorities developed municipal garbage collection and street cleaning services. The resulting services were far from exemplary;[77] cities relied on some of the same problematic strategies that we saw in the context of wastewater management, including dumping in nearby waterways, to "solve" their solid waste challenges.[78] After prodding from local civic

[70] ROY ROSENZWEIG & ELIZABETH BLACKMAR, THE PARK AND THE PEOPLE: A HISTORY OF CENTRAL PARK 1, 200–01 (1992); *see also* David Schuyler, *Parks in Urban America*, *in* OXFORD RESEARCH ENCYCLOPEDIA OF AMERICAN HISTORY (2015).
[71] Initially, the Park was a city project but conflict "between state Republicans and city Democrats" led New York State to appoint a board that chose the design for the Park and oversaw its building and management until 1870, when the City regained authority over the Park. ROSENZWEIG & BLACKMAR, *supra* note 70, at 8, The City acquired the land for Central Park, in part using eminent domain. *Id.* at 7, 59–66, 77–85, 91, 96, 150, 238.
[72] *Id.* at 18, 23–36, 49, 54–55, 100, 214, 297, 301.
[73] *See* MARTIN MELOSI, GARBAGE IN CITIES: REFUSE, REFORM AND THE ENVIRONMENT 20–21 (2005).
[74] *Id.* at 17.
[75] *Id.* at 17–18, 21.
[76] *Id.* at 22 (quoting a 1892 article in *Engineering News* as stating, "[w]hen we consider that the sanitary well-being of 2 million people depends upon the manner in which the refuse is deposited of, it is seen that some solution to this complex problem must be reached, and our city authorities cannot afford to allow matters to relapse. . . .").
[77] *Id.* at 28.
[78] *Id.* at 32–34.

groups,[79] local authorities eventually began experimenting with technological solutions to the refuse problem, including incineration, but these approaches proved insufficient as well.[80] Finally, around the turn of the century, a sanitary engineer named Charles Waring, who was New York City's street-cleaning commissioner, developed New York's first comprehensive waste management strategy and started to bring the City's garbage problem in check.[81] Waring's reforms inspired other cities to improve their own waste management plans too.[82] However, it would take more than half a century following Waring's death for the federal government to make its first serious attempt to regulate solid waste.[83]

1.2. The Emergence of Federal Dominance

Why were local governments displaced as the primary protectors of environmental quality, and why was environmental law so significantly federalized in the early 1970s? The just recounted history of early municipal efforts to protect the environment provides some clues.

One reason is the perception in the 1960s and early 1970s that cities and states lacked the incentive to robustly address air and water pollution stemming from mass urbanization and industrialization.[84] From the end of World War II until 1978, manufacturing was the engine of the American economy.[85] Cities and states competed to attract manufacturing and other industry,

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[79] *Id.* at 29–38.
[80] *Id.* at 38–41.
[81] *Id.* at 51–63.
[82] *Id.* at 24–25, 56, 63.
[83] *Id.* at 24–25.
[84] *See* MATTHEW A. CRENSON, THE UN-POLITICS OF AIR POLLUTION 5 (1971) (indicating that a leading federal air pollution expert stated in testimony to Congress in 1966 that cities' slowness to act was primarily the result of political and social obstacles, not technological difficulties)

In the past few decades, scholars have expressed contrasting views about how successful local and state governments were in addressing air and water pollution before 1970. *See supra* note 58. However, there is no doubt that there was a "perception" in the 1960s and 1970s that states and local governments were insufficiently motivated to address air and water pollution. Andreen, *supra* note 49, at 633–34.
[85] ENRICO MORETTI, THE NEW GEOGRAPHY OF JOBS 19–21 (2012).

and environmental standards were one axis on which they competed.[86] If one jurisdiction required its industrial sources to reduce their pollution, it risked losing industries to others -- and any gains in environmental quality might be cancelled out by another jurisdiction adopting lower environmental standards if the pollution crossed jurisdictional boundaries.[87] Illustrating how New Jersey used low environmental standards to attract industry, environmental historian Scott Dewey recounts that in 1967, "when New York Senator Robert F. Kennedy toured the greater [New York] metropolitan area in a helicopter to review the interstate air pollution situation, he and his companions passed over a smoke-belching factory in New Jersey with a large sign offering an unsubtle reminder of the lax state of industrial regulation in the Garden State for New York industrialists considering relocation: 'Hoboken Welcomes Industry, Come on Over.'"[88]

In addition to their desire to attract and retain industry, city governments also lacked an incentive to control pollution because they themselves were polluters. They were discharging sewage into streams[89] and contributing to air pollution by burning garbage at municipal incinerators, and through their ownership of polluting buses for mass transit.[90] "A 1969 study of particulate emissions into the New York City atmosphere indicated that 19.3 percent were derived from municipal incineration and another 18.4 percent from on-site incineration, with the remainder

[86] KRIER & URSIN, *supra* note 2, at 201 (In 1970, "there was evidence that large industries were able in some instances to pressure states into establishing permissive standards, and that states might compete for industry by setting lax requirements.").
[87] Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196, 1212 (1977); Andreen, *supra* note 49, at 645 ("Manufacturing companies would also sometimes threaten to relocate their facilities should a community have the temerity to engage in regulation.").
[88] DEWEY, *supra* note 55, at 167. Andreen provides references to concerns in the 1960s that industry threatened jurisdictions if they sought to impose higher water quality standards and that states competed by offering lower water quality standards. Andreen, *supra* note 45, at 189.
[89] "By 1964, it was well established that combined sewer overflows (CSOs) represented a substantial pollution source nationwide." MELOSI, *supra* note 1, at 195.
[90] DEWEY, *supra* note 55, at 119, 121, 127 (referring to New York City's Board of Transportation).

from space heating, power generation, and industrial and mobile sources."[91] Eliminating these harmful practices would require costly investments by cities themselves and rate hikes for electric utility customers that the utilities likely would have blamed on local politicians.[92]

By the 1970s, when environmental law was federalized, many major U.S. cities had limited room to take steps that might alienate industry and residents. They were losing people to the suburbs; between 1950 and 1980, "[e]ighteen of the nation's twenty-five largest cities in 1950 suffered a net *loss* of population."[93] Employers also were decamping from cities, following people to the suburbs.[94] Major U.S. cities were afflicted with "fiscal, educational, racial, and housing crises … in the 1960s and 1970s."[95]

The lack of local incentives to address air and water pollution led local governments to make insufficient investment in the expertise necessary to address the environmental consequences of the mass industrialization after World War II. Cities had struggled to deal with smoke in the early twentieth century, and as mentioned above, outside of a few post-World War II programs such as Los Angeles County's, many lacked the resources and expertise to address more complicated air pollution problems such as "[t]oxic air industrial emissions – as well as sulfur dioxide, smog (ozone), carbon monoxide, and particulate matter other than smoke."[96] Water pollution also became more complex to regulate as industries generated new forms of wastes,

[91] MELOSI, *supra* note 1, at 206; *see also* DEWEY, *supra* note 55, at 132. In the 1950s and 1960s, apartment building incinerators were a major source of air pollution in New York City. *Id*. at 124–27, 133–34.
[92] *Id*. at 123.
[93] KENNETH T. JACKSON, CRABGRASS FRONTIER: THE SUBURBANIZATION OF THE UNITED STATES 283 (1985).
[94] *Id*. at 284–85.
[95] *Id*. at 301.
[96] Andreen, *supra* note 49, at 644–45.

"includ[ing] petrochemicals, pesticides, and potential radioactive materials," some of which they dumped into municipal sewage systems.[97]

By 1970, the federal government already had a track record of investing in research into pollution.[98] It was well-positioned to undertake the additional research and analysis necessary to address pollution for the nation as a whole, and avoid duplicative state and local efforts to establish standards; there were economies of scale associated with federal regulation.[99] There also may have been an expectation that the federal government would be more likely to act on the basis of scientific evidence than local and state governments. It was thought at the time that the federal government would be more responsive to environmental concerns and less beholden to polluters in standard-setting than local and state governments had been to date.[100] (And, in fact, some mid-century industry groups had sought to avoid federalization precisely because they thought they had more influence at the local level than they would have federally.)[101] For all these reasons, environmentalists favored federalization.[102]

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[97] MELOSI, *supra* note 1, at 197; *see also id*. at 140–41.
[98] *See, e.g.*, Andreen, *supra* note 49, at 651–56.
[99] KRIER & URSIN, *supra* note 2, at 201; *see also* Stewart, *supra* note 87, at 1212.
[100] *See* JAMES M. FALLOWS, THE WATER LORDS: RALPH NADER'S STUDY GROUP REPORT ON INDUSTRY AND ENVIRONMENTAL CRISIS IN SAVANNAH, GEORGIA 200 (1971) (stating, "[i]f the Federal government is so vulnerable to political pressures, it is easy to imagine how much more intense the pressure can be on state and local officials. As the story of towns like Savannah and St. Mary's illustrates, the closer a government gets to an industry, the more deference it must show. An industry's threat to pick up its payroll and leave weighs more heavily on a local mayor or state governor than on the Secretary of the Interior.") *See also* LAZARUS, *supra* note 5, at 92.
[101] CRENSON, *supra* note 84, at 72. (noting that US Steel wanted East Chicago and Gary, Indiana to adopt local environmental regulations to avoid the federal government doing so because the company thought it would have less influence over federal lawmakers than local lawmakers).
[102] *See, e.g.*, Andreen, *supra* note 45, at 263–64, 271; Stewart, *supra* note 87; A. Dan Tarlock, *Environmental Law: Then and Now*, 31 WASH. U. J. L. & POL'Y 1, 23 (2010).

Professor Richard Revesz subsequently challenged the argument that environmental groups are more likely to prevail at the federal level. Revesz, *Public Choice*, *supra* note 5. But it is clear that there was a perception in the 1960s and early 1970s that the federal government would be more responsive to environmental interests.

Even if cities had had stronger motivations for controlling pollution, the mismatch between the scale of the nation's environmental problems and the authority of local and state governments to manage the sources of pollution further bolstered the case for federal regulation. The effects of this mismatch were manifest in cities' struggles to control water pollution. In the eighteenth century, when local wells and ponds supplied drinking water, jurisdictions might have been able to control the quality of that water by regulating the use that their residents made of it; the resource was within the locality's jurisdiction. But after cities began acquiring drinking water from sources entirely or partly outside their borders, the actions of other jurisdictions, for example in dumping their sewage into shared rivers, had spillover effects that the affected localities had no legal authority to address.[103]

Cities and states encountered similar challenges in regulating inter-jurisdictional sources of air pollution. In fact, the inability of cities and states to resolve regional air pollution problems in the New York, New Jersey area, "metropolitan St. Louis, Chicago-Gary, and the Ohio River Valley between Ohio and West Virginia" "became a prime justification for federal intervention in interstate air pollution control."[104] In New York City's case, pollution from New Jersey's heavy industries were a major source of air pollution and associated health problems in Manhattan and Staten Island.[105] Yet in the decades leading up to the Clean Air Act of 1970, New York and New Jersey were never able to agree on a mechanism to address the regional air pollution problem, in large measure, it seems, because New Jersey was reluctant to regulate its industries.[106] New York

[103] MELOSI, *supra* note 1, at 187.
[104] DEWEY, *supra* note 55, at 158.
[105] *Id.* at 158–60, 164.
[106] *Id.* at 158–72.

City and State officials appealed for federal assistance in addressing interstate air pollution in the region in the 1960s.[107]

In theory, localities and states might have negotiated agreements under which they adopted a common set of standards to protect the shared resource or in which downstream users paid upstream users not to pollute. Once the states took over primary responsibility for water pollution in the 1920s, some did negotiate interstate compacts to control the pollution of shared watercourses. For example, Connecticut, New Jersey, and New York created the Tri-State Compact in 1936 to address the condition of New York Harbor.[108] But the interstate compacts that were negotiated were insufficient; while they prohibited discharges, they did not embody a wholesale plan to reduce "municipal and industrial pollution."[109] In other instances, cities went to court to stop others from dumping sewage into shared waters.[110] Congress also attempted to spur the states to negotiate interstate compacts to address interstate air pollution problems in the late 1960s.[111] New York, New Jersey and Pennsylvania did attempt to develop a Mid-Atlantic States Compact to address regional air pollution problems that might have also included Delaware and Connecticut, but the initiative was never successfully brought to fruition.[112] Federal legislation held out the hope of a more comprehensive resolution to the spillover problem than individual negotiations and litigation could achieve.[113]

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[107] *Id.* at 168. *See also* Freeman, *supra* note 2, at 396 n.254 (citing Bruce M. Kramer, *Transboundary Air Pollution and the Clean Air Act: An Historical Perspective*, 32 KAN. L. REV. 181 (1983)).
[108] MELOSI, *supra* note 1, at 144–45.
[109] *Id.* at 145.
[110] *Id.* at 157.
[111] DEWEY, *supra* note 55, at 171.
[112] *Id.* at 168–72.
[113] Stewart, *supra* note 87, at 1212.

Between 1969 and 1970 a public perception developed that there was an environmental crisis and that environmental protection could no longer be left largely to cities and states, whose efforts had yielded little in the way of improvement.[114] Environmental awareness had increased in 1960s, stimulated in part by publications such as Rachel Carlson's *Silent Spring*, and more environmental groups were forming locally and nationally.[115] The first Earth Day was held in 1970, and "[o]pinion polls … showed a sharp increase in public concern with pollution problems."[116] In the 1950s and 1960s, the federal role in environmental protection had increased incrementally.[117] For example, in 1965 Congress had required the federal Department of Health, Education and Welfare to establish emissions standards for new cars and the Department established the first standards in 1966.[118] In 1967, partly at the urging of the auto manufacturers, who feared "'chaos'" if states were allowed to impose a multiplicity of emission standards and balkanize the car market, Congress expressly preempted states and local governments from establishing their own standards, creating an exception only for California to establish more stringent standards in light of its historical leadership in regulating car emissions and distinct air pollution problems.[119] By the early 1970s, these and other incipient measures expanding the federal role were considered insufficient. Congress judged that federalization on a much grander

[114] KRIER & URSIN, *supra* note 2, at 10, 195, 201, 299–300.
[115] LAZARUS, *supra* note 5, at 58–59; Andreen, *supra* note 45, at 244–45.
[116] KRIER & URSIN, *supra* note 2, at 201.
[117] *Id.* at 103, 136; Andreen, *supra* note 45, at 239–55.
[118] KRIER & URSIN, *supra* note 2, at 175.
[119] *Id.* at 181–83; Air Quality Act of 1967, Pub. L. No. 90–148, § 208, 81 Stat. 485, 501; *see also* KRIER & URSIN, *supra* note 2, at 2; D. Currie, *Motor Vehicle Air Pollution: State Authority and Federal Pre-Emption*, 68 MICH. L. REV. 1083, 1087–90 (1970). California continues to enjoy the authority to establish vehicle emission standards, if granted a waiver by EPA. 42 U.S.C. §§ 7543(a)–(b) (2012). Other states can adopt the California standards. 42 U.S.C. § 7507 (2012).

There is a strong economic rationale for avoiding a multiplicity of emission standards for a nationally marketed good such as cars. Uniform standards enable manufacturers to make a single product, and thereby realize economies of scale that translate into lower prices for consumers. J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499, 1507–09 (2007); Stewart, *supra* note 87, at 1212.

scale was necessary to ensure that everyone would enjoy a minimum level of environmental protection.[120] Similar to Civil Rights laws from the 1960s, the new federal environmental laws would create mechanisms for protecting individuals across the country and step in to address state level intransigence.[121] In striking contrast to the political polarization today between Democrats and Republicans at the federal level on environmental issues there was a bipartisan support for federalization. Both political parties supported more aggressive measures to protect the environment in the 1970s.[122]

The federalization of environmental law in the 1970s meant that cities and states became subject to federal environmental standards, much to their annoyance at times.[123] However, cities and states were differentially affected by the federal government's new role in setting standards. Federal law often includes provisions delegating authority to the states to implement federal objectives within their borders.[124] Cities are not delegated implementation authority under federal law. Moreover, the federal delegation of authority to states sometimes newly empowered them vis-à-vis cities, giving states a new basis for advancing state priorities through cities. Cities are

[120] KRIER & URSIN, *supra* note 2, at 201 (quoting S. Comm. on Pub. Works, National Air Quality Standards Act of 1970, S. Rep. No. 91-1196, at 10–11 (1970)). *See also* Jedediah Purdy, *The Long Environmental Justice Movement*, 44 Ecology L. Q. 809, 827 (2018) (noting that Senator Edmund Muskie saw the National Ambient Air Quality Standards established by the Clean Air Act as creating a national right to clean air); Stewart, *supra* note 87, at 1217–19 (discussing "moral ideas and the politics of sacrifice" and noting that the idea that humans owe duties to nature supports centralization.)

[121] Thanks to Professor Richard Lazarus for emphasizing the historical relationship between the federalization of environmental law and the Civil Rights movement. For further discussion of the interplay between the two movements, *see* LAZARUS, *supra* note 5, at 92. *See also* Purdy, *supra* note 120, at 825–26 (noting that Senator Muskie rhetorically linked the environmental struggle to the War on Poverty and Civil Rights movement in speaking about the need for environmental protection), *and* Paul Sabin, *Environmental Law and the End of the New Deal Order*, 33(4) LAW AND HISTORY REV. 965, 973 (2015) (describing the ways in which the environmental movement of the 1970s drew upon the civil rights movement of the 1960s).

[122] LAZARUS, *supra* note 5, at 69 (stating, "[t]he average vote in favor of major federal environmental legislation during the 1970s was 76 to 5 in the Senate and 331 to 30 in the House, suggesting a broad bipartisan consensus."). *See also id.* at 75–79, 150–56; Andreen, *supra* note 45, at 255–56, 262–63 & n.264.

[123] City and state governments are subject to regulation under the Clean Water Act and Safe Drinking Water Act; states but not cities are regulated parties under the Clean Air Act.

[124] LAZARUS, *supra* note 5, at 71–72.

subject to federal standards administered by states because cities operate infrastructure such as drinking water supply systems and waste water treatment facilities that are regulated by federal standards similar to other industrial pollution sources. Thus, federal environmental law has required cities to spend funds on environmental protection that they otherwise might have allocated to other local priorities.[125] For instance, in order to meet the dictates of the federal Safe Drinking Water Act of 1974, New York City has been obligated to build a new $3.2 billion water filtration plant to filter water from the old Croton system, [126] to more strictly regulate land use in the vicinity of its reservoirs, to upgrade sewage treatment plants, and more.[127] Cities throughout the country also have had to make similar infrastructure investments to meet federal water quality objectives that are embedded in the Clean Water Act, and applied to cities by states under delegated federal authority.[128]

However, federalization has not meant that there is no space for cities and states to innovate. Federal environmental law often takes the form of minimum, not uniform, standards, except in a few areas such as energy efficiency standards for appliances and emissions standards for new motor vehicles where local and state governments generally cannot exceed (or undercut) the federal standards.[129] Outside of these contexts where federal standards are uniform standards, cities and states retain authority as a matter of federal law to adopt standards that surpass the federal

[125] Caswell F. Holloway et al., *Solving the CSO Conundrum: Green Infrastructure and the Unfulfilled Promise of Federal-Municipal Cooperation*, 38 HARV. ENVTL. L. REV. 335, 345 (2014).
[126] Winnie Hu, *A Billion Dollar Investment in New York's Water*, N.Y. TIMES (Jan. 18, 2018), https://www.nytimes.com/2018/01/18/nyregion/new-york-city-water-filtration.html.
[127] Finnegan, *supra* note 31, at 643–44.
[128] Brian Clark Howard, *Inside D.C.'s Massive Tunnel Project*, NAT'L GEOGRAPHIC (July 5, 2014), https://news.nationalgeographic.com/news/2014/07/140703-combined-sewer-overflow-washington-storm-water-tunnel/; *see also* Holloway et al., *supra* note 125, at 345–46.
[129] *But see supra* note 119 (discussing California's authority to obtain a waiver to adopt higher emission standards for new cars that other states can adopt).

minimums.[130] In recent years, major cities have moved beyond complying with federal standards to protect water quality to establish an independent role in the genesis of environmental policy. These initiatives, and the motivations that propelled them, are discussed in Part 2.

2. What Cities Are Doing Now and Why

Our main argument in this paper is that urban environmental law should no longer be defined solely as what cities are doing to meet the requirements of federal environmental law. Several of the conditions that gave rise to federalization in the 1970s no longer hold true and a number of U.S. cities are better positioned now to address environmental issues than they were in the past. Cities also have new motivations for doing so.[131]

Reflecting these changed circumstances, cities throughout the country have adopted environmental policies that go beyond what is required by federal law. This part suggests why cities are more driven to develop environmental policies today than they were during the period in which environmental law was federalized and describes the types of initiatives they have implemented.

Overall, we see the crop of new local policies as effectively complementing, rather than competing with, federal policies. Many local efforts have focused on reducing demand for pollution by targeting groups such as land and building owners and consumers. In contrast, the

[130] *See, e.g.*, 42 U.S.C. § 7416 (2012) (preserving the authority of state and local governments to more stringently regulate emissions).

State laws may restrict the ability of local governments to exceed federal minimums. *See infra* Part 3.0.

[131] Notably, cities' resurgence as leaders in developing environmental policy is unlikely to be a response to the particularly acute environmental degradation in urban areas because political science research indicates that people living in areas with more severe air pollution are indistinguishable from people living elsewhere with respect to their preferred level of environmental spending. DANIEL J. HOPKINS, THE INCREASINGLY UNITED STATES 109 (2018). Thus, while extraordinary levels of pollution in urban areas may have motivated cities to take a pioneering regulatory role in the 19th and 20th century, their leadership in the 21st century is most likely due to other factors.

federal regime has tended to focus on reducing the supply of pollution upstream by controlling the major sources of pollution, such as industrial sources, power plants and motor vehicles.[132] Recent local policies have also largely aimed at reducing the scale and effects of global climate change, which is a problem that was not prominent when the major federal environmental statutes were drafted and which the federal government has had difficulty addressing, although progress was made in the Obama era. Thus, local initiatives can be seen as filling in gaps that the federal landscape has left open.

2.1. Cities' contemporary motivations

Broadly speaking, there are three reasons why many cities are now poised to expand upon their role as environmental policymakers: they have stronger economic incentives to promote environmental protection, they have more resources to invest in bureaucratic expertise, and they have new political motivations to develop environmental policies to offset slow progress and backsliding at the federal level.

Turning first to cities' economic incentives to promote environmental protection, deindustrialization has significantly altered many cities' economies and the interests to which municipal politicians cater. Manufacturing is no longer the engine of the U.S. economy and has declined particularly precipitously in cities.[133] Instead, service industries, particularly knowledge

[132] On the division between local and federal authority to develop climate policies, *see* Trisolini, *supra* note 3, at 695–734.

[133] For example, "[m]anufacturing as a percentage of Chicago's workforce has been on an unabated 50-year decline." Melissa Harris, *The Future of Chicago Manufacturing? Fewer People Doing More*, CHICAGO TRIBUNE (Sept. 19, 2015), https://www.chicagotribune.com/business/columnists/ct-harris-manufacturing-mondelez-monterrey-0920-biz-20150918-column.html. From 2001 to 2015 the employment rate in manufacturing, nationally, declined by 24.8% but in the seven-county Chicago region, the decline was 32.6%. Greg Hinz, *State's Job Woes Start on the Factory Floor*, CRAIN'S CHICAGO BUSINESS (Nov. 28. 2015), https://www.chicagobusiness.com/article/20151128/ISSUE05/311289998/illinois-job-market-woes-due-to-decline-in-factory-employment. Manufacturing jobs also declined more quickly in New York City during the second half of the last century than in the nation as a whole *See* SASKIA SASSEN, THE GLOBAL CITY 204- 208 (2001).

intensive services which are concentrated in urban areas,[134] are now the driver of growth.[135] The businesses that are at the center of this renaissance do not fit neatly within the any single sector and the class "is not easily defined."[136] According to Enrico Moretti, a leading economist, these businesses comprise a distinctive "innovation sector," which includes "the high-tech sector; information technology, life sciences, clean tech, new materials, robotics and nanotechnology"[137] as well as parts of non-science and engineering industries such as "entertainment, industrial design, marketing and even finance."[138] And while only 10 percent of U.S. jobs are in the innovation sector, these jobs have significant multiplier effects, generating additional jobs.[139] The multiplier effect of high-tech jobs lead economists like Moretti to argue "that the best way for a city or state to generate jobs for less skilled workers is to attract high-tech companies that hire highly skilled ones."[140]

Research indicates that innovation companies and their high-skilled workers value different things than the heavy industries that cities and states competed for when manufacturing drove the U.S. economy. In particular, while the latter valued low wages and minimal regulation, innovation companies and the highly skilled workers they employ value "quality of life,"[141] or

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[134] BRUCE KATZ & JULIE WAGNER, BROOKINGS INSTITUTE, THE RISE OF INNOVATION DISTRICTS: THE NEW GEOGRAPHY OF INNOVATION IN AMERICA (2014). Glaeser emphasizes that when people cluster in cities, information and knowledge spreads more easily, and he describes "bringing people together" as the "most basic function" of cities. GLAESER, *supra* note 27, at 106; *see also id*. at 38, 48.

[135] MORETTI, *supra* note 85, at 12, 23. *See also* GLAESER, *supra* note 27, at 27–29; Alexandra L. Cermeño, *Service Labour Market: The Engine of Growth and Inequality*, VOX, CEPR POLICY PORTAL (July 12, 2015), https://voxeu.org/article/service-labour-market-engine-growth-and-inequality.

[136] MORETTI, *supra* note 85, at 48.

[137] *Id*.

[138] *Id*. at 53.

[139] Moretti estimates that "for each new high-tech job in a metropolitan area, five additional local jobs are created outside of high-tech in the long run," as contrasted with 1.6 additional jobs for each new manufacturing job. *Id.* at 60–61. High-tech jobs generate greater multipliers because high-tech workers are better paid than manufacturing workers, and high-technology companies tend to cluster so attracting one high-tech firm should attract others. *Id.*

[140] *Id.* at 13. *See also* Enrico Moretti, *Does New York Still Have A Future in Tech?*, N.Y. TIMES (Feb. 20, 2019) ("Once a city attracts some innovative workers and companies, its ecosystem changes in ways that make it even more attractive.").

[141] Gibbs & Krueger, *supra* note 11, at 101; *see also id*. at 100.

what urbanist Richard Florida calls "quality of place,"[142] which includes environmental amenities. As a *New York Times* critic wrote after Amazon announced that it would locate a new headquarters in New York City, "companies like Google, Facebook and Amazon became attracted to cities like New York, Los Angeles, Seattle and Washington because these cities had already made transformative public investments in assets like culture, parks, universities and transit."[143] In fact, in the competition that Amazon ran between cities to select a site for new headquarters, Amazon, which has its own sustainability goals,[144] specifically asked short listed cities to report on their sustainability policies and the availability of parks (among many other things).[145] So while environmental protection may have been inconsistent with urban economic development in the latter nineteenth and early twentieth century, at least some degree of environmental protection now seems to promote economic development.[146]

Perhaps more importantly, local government officials now *perceive* environmental protection to be a prerequisite for economic growth.[147] For example, the authors of the 2015

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[142] RICHARD FLORIDA, THE RISE OF THE CREATIVE CLASS REVISITED 280 (2012).

[143] Michael Kimmelman, *Amazon's HQ2 Will Benefit From New York City. But What Does New York Get Back?* N.Y. TIMES (Nov. 12, 2018), https://www.nytimes.com/2018/11/12/arts/design/amazon-hq2-long-island-city-costs-benefits.html. Amazon ultimately cancelled its planned headquarters in New York City following political opposition. Opponents of the new headquarters raised a number of objections, but certain tax breaks New York State offered proved particularly controversial. *See* Amazon Pulls Out of it New York Headquarters, *The Economist*, (Feb. 14, 2019).

[144] AMAZON, *Sustainability & Environment*, https://www.aboutamazon.com/sustainability.

[145] Karen Weise, *High-Tech Degrees and the Price of an Avocado*, N.Y. TIMES (Dec. 13, 2018), https://www.nytimes.com/2018/12/12/technology/amazon-new-york-hq2-data.html (data regarding sustainability policies available through report that is linked to in the article).

[146] The contemporary interest of high-value companies such as Amazon and highly paid workers in sustainability is consistent with the hypothesis that wealth is associated with stronger support for environmental protection. *See* Sandra T. Marquart-Pyatt, *Are There Similar Sources of Environmental Concern? Comparing Industrialized Countries*, 89 SOC. SCI. Q. 1312, 1323 (2008); *see also* Ronald Ingelhart, *Public Support for Environmental Protection: Objective Problems and Subjective Values in 43 Societies*, 28(1) POL. SCI. & POL. 57 (1995).

[147] Holloway et al., *supra* note 125, at 343. Other scholars have also noted that cities pursue quality of life improvements in order to compete for residents and businesses. *See, e.g.*, PAUL E. PETERSON, CITY LIMITS 144 (1980).

City officials may overestimate the extent to which their policy choices actually influence their cities' economic development. *See generally* RICHARD SCHRAGGER, CITY POWER (2016). But the fact they believe such policies to have this effect may still be a powerful motivator for environmental policy. Indeed, Gerald Frug and David Barron have characterized the "basic objective" of local cities that want to be global leaders as being to "make the city

"Sustainable Chicago" plan explicitly made the link between sustainability and economic growth, stating that, "[b]y addressing the goals outlined in this roadmap, Chicago will further its position as a sustainable place to live, work and play, while creating jobs and fostering growing industries."[148] This viewpoint contrasts starkly with the tendency of local leaders in the mid-twentieth century to equate pollution with prosperity.[149]

City efforts to attract innovation industries may help to explain some of the new investments that we see in building parks, revitalizing old industrial waterfront areas, and improving air quality.[150] The notion that cities would behave in this manner comports with Charles Tiebout's famous idea that local jurisdictions compete for residents by offering different packages of public goods, including environmental goods, from which people select in accordance with their willingness to pay.[151] Of course, these initiatives also might be regarded as an expression of the preferences of the people already living in cities, as such amenities stand to improve their quality of life, not just attract new residents. For example, the emergence of bike share and bike lanes might reflect the disproportionate share of the population of young people in cities.[152] Regardless

a desirable place for international financial institutions, creative entrepreneurs, and the attendant services (law firms, accounting firms, and consultants) to locate." FRUG & BARRON, *supra* note 8, at 146.

[148] CITY OF CHICAGO, 2015 SUSTAINABLE CHICAGO: ACTION AGENDA, https://www.cityofchicago.org/content/dam/city/progs/env/SustainableChicago2015.pdf.

[149] CRENSON, *supra* note 84, at 61; JOAN DIDION, SOUTH AND WEST 69–70 (2017). In Joan Didion's *South and West*, Didion quotes an official in Birmingham, Alabama in 1970 as stating, "[w]e got a pollution count in Birmingham now, which I guess is a sign of progress." *Id*, at 70.

[150] New York pledged to remake the Queens waterfront as part of its bid to host a new Amazon headquarters in Long Island City. Ben Caselman, *A $2 Billion Question: Did New York and Virginia Overpay for Amazon?* N.Y. TIMES (Nov. 14, 2018), https://www.nytimes.com/2018/11/13/business/economy/amazon-hq2-va-long-island-city-incentives.html.

[151] Charles Tiebout, *The Pure Theory of Local Expenditure*, 64 J. POL. ECON. 416 (1956). *See also* Stewart, *supra* note 87, at 1210 ("decisionmaking by state and local governments can better reflect geographical variations in preferences").

[152] GLAESER, *supra* note 27, at 166 (noting the relative youth of urban populations.)

as to which of these phenomena is a larger driver of municipal environmental policy, it is clear that cities have increased their attentiveness towards environmental policy in recent years.

The second reason for cities' new environmental prowess is closely linked to the first: as cities have become hubs of the innovation economy, they have amassed more resources to spend on their policy goals, including environmental protection. Today, major American cities bear little resemblance to the images of urban decay that dominated the scenery in the 1960s and 1970s.[153] Long gone are the days when the nation's largest city, New York, was bankrupt in all but name and outward migration was the norm.[154] Today, New York's economy is larger than Spain's[155] and its population is at an all-time high.[156] Throughout the United States, workers in metropolitan areas with big cities now earn an average of thirty percent more than workers who are in other metropolitan areas.[157]

As the average urban inhabitant has become more prosperous, cities' tax bases have expanded.[158] To return to the example of New York City, the City's gross tax revenue increased by 57% between 1980 and 2017 after adjusting for inflation[159] while its population increased by

[153] However, there are significant variations between cities, with some cities doing much better than others. RICHARD FLORIDA, THE NEW URBAN CRISIS: HOW OUR CITIES ARE INCREASING INEQUALITY, DEEPENING SEGREGATION, AND FAILING THE MIDDLE CLASS—AND WHAT WE CAN DO ABOUT IT (2017).
[154] *See* PETERSON, *supra* note 147, at 187–88. Other major American cities also experienced substantial population losses during this time period. *See supra* note 93 and accompanying text.
[155] BENJAMIN R. BARBER, COOL CITIES: URBAN SOVEREIGNTY AND THE FIX FOR GLOBAL WARMING 25 (2017).
[156] Barron, *supra* note 9. New York City accounted for ninety-five percent of the State's growth between 2010 and 2017. *Id.*
[157] GLAESER, *supra* note 27, at 6.
[158] New York City, to give one example, is home to an increasingly wealthy population, which increases the City's tax base. FISCAL POL'Y INST., NEW YORK CITY TAXES—TRENDS, IMPACTS AND PRIORITIES FOR REFORM 3 (2014) ("[T]ax data show that the number of New York City households with incomes of $1 million or more rose much faster between 2000 and 2011 than in the U.S. as a whole.") Of course, not all cities have seen their economic fortunes improve. *See* Michelle Wilde Anderson, *The New Minimal Cities*, 123(5) YALE L.J. 1118 (2014).
[159] N.Y.C. INDEP. BUDGET OFF., NEW YORK CITY TAX EFFORT: HISTORICAL TABLES tbl.4 (June 2018), https://ibo.nyc.ny.us/RevenueSpending/tax-effort-background-methodology-2018.pdf (click on "tables and charts" in the first sentence to download; then view tab T4).

only twenty one percent during the same time period.[160] New York is not the only city to experience revenue increases during this time; in fact, the Urban Land Institute reports that aggregate local government own-source revenue throughout the United States increased by eighty percent between 1977 and 2015.[161]

Taking advantage of their new resources, cities including Miami, Philadelphia and Seattle, and others have opened designated offices of sustainability with dozens of full-time staff.[162] And as the national environmental NGOs that were born in the 1960s 1970s have grown, they have opened offices in major cities throughout the country,[163] which provide local officials with a readily accessible source of outside expertise. These large NGOs have also effectively helped mobilize local constituencies to push for policy development. Indeed, the Natural Resources Defense Council (NRDC) boasts on its website that "[i]n Los Angeles . . . our experts in energy, water, air, and land are helping develop the city's first sustainability plan."[164] Cities also have greater capacity in managing drinking water supplies and water pollution because they have been forced to invest in these areas by federal and state regulation since the 1970s.[165] The professionalization of water quality management under federal and state tutelage likely helped to create the conditions for some of the local innovations in environmental policy that we see today.

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[160] *New York City, New York Population 2019*, WORLD POPULATION REVIEW, http://worldpopulationreview.com/us-cities/new-york-city-population/ (last visited Jan. 24, 2019).

[161] This calculation is pulled from data provided by the Urban Land Institute. *See* STATE & LOCAL GOVERNMENT FINANCE DATA QUERY SYSTEM, http://slfdqs.taxpolicycenter.org/pages.cfm. The Urban Institute-Brookings Institution Tax Policy Center. Data from U.S. Census Bureau, Annual Survey of State and Local Government Finances, Government Finances, Volume 4, and Census of Governments (1977–2015). Note that we have used an inflation adjustment calculator to derive the percentage increase in real dollars.

[162] Memoranda from Sara Savarani, Legal Fellow, Guarini Ctr. (Nov. 2018) (on file with authors).

[163] The Natural Resources Defense Council has offices not only in Washington, D.C. but also in New York City, Chicago, San Francisco, Bozeman, and Santa Monica. www.nrdc.org.

[164] NRDC, *Build Sustainable Cities*, https://www.nrdc.org/issues/build-sustainable-cities (last visited Jan. 21, 2019). *See also* NRDC, *New York*, https://www.nrdc.org/new-york.

[165] Holloway et al., *supra* note 125, at 344. *See also* Carlson, *Iterative Federalism*, *supra* note 4, at 1101–02 (federal regulation contributes to state innovation).

The third reason that cities are now poised to lead on environmental matters reflects the new distribution in political preferences across the U.S. While both Republicans and Democrats supported stronger environmental regulations in the 1970s, today, support for environmental protection has become strongly correlated with party identification. Democrats generally support new environmental regulations and Republicans generally favor relaxing existing regulations.[166] As urban areas are often more liberal than less densely populated parts of the country,[167] we would therefore expect cities to be more willing to invest in environmental protection than the nation as whole. And given that the gulf between political leanings in cities and rural areas has expanded in recent decades,[168] we would also expect that gulf between rural and urban preferences for environmental protection to have expanded over that period of time.

The increasing polarization surrounding preferences for environmental protection is evident in the gridlock over environmental matters in Washington. Congress has not passed a major piece of environmental legislation since 1990, except for the 2016 reform to the Toxic Substances Control Act.[169] The major advances in federal environmental law in the interim have come through rulemaking. The Obama Administration in particular promulgated ambitious regulations to reduce GHG emissions from new motor vehicles and power plants, after the Senate was unable to take up legislation to reduce these emissions in 2010.[170] But rulemaking is a very

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[166] DANIEL J. HOPKINS, THE INCREASINGLY UNITED STATES 109–12 (2018) (finding that individuals' perception of the threats posed by air pollution from cars and climate change are more strongly correlated with party affiliation than local pollution levels or proximity to the coasts, where sea rise level rise presents the greatest risks).

[167] David A. Graham, *Red State, Blue City*, THE ATLANTIC (Mar. 15, 2017), https://www.theatlantic.com/magazine/archive/2017/03/red-state-blue-city/513857/.

[168] *Id.* (noting that the spread between rural and urban voting preferences in the 2016 presidential elections was larger than at any point during the last 100 years).

[169] U.S. ENVTL. PROTECTION AGENCY, *The Frank R. Lautenberg Chemical Safety Act for the 21st Century*, https://www.epa.gov/assessing-and-managing-chemicals-under-tsca/frank-r-lautenberg-chemical-safety-21st-century-act (last visited Jan. 16, 2019).

[170] Ryan Lizza, *As the World Burns: How the Senate and the White House Missed Their Best Chance to Deal with Climate Change*, NEW YORKER (Oct. 11, 2010), https://www.newyorker.com/magazine/2010/10/11/as-the-world-burns.

slow, bureaucratic process and, as we are seeing now in the Trump era, federal rules can be repealed and replaced with less stringent rules. Thus, during the same time in which cities seem to have increased their interest in environmental protection, the federal government has proven increasingly inhospitable to the environmental agenda, except for the interlude in the Obama era when the executive branch, but not Congress, adopted policies to reduce GHG emissions.

State governments may not be much more welcoming to urban environmentalists than the federal government is. As suggested above, cities are often even substantially more liberal than the states that house them so we cannot generally expect states to fill the leadership void at the federal level.[171] In fact, the Republican Party has become more dominant in state capitals since the 1980s[172] and Republicans controlled a record thirty-three governorships in 2016.[173] In New York State, for example, prior to the November 2018 elections, ninety-two percent of the State Senators representing New York City were members of the Democratic Party while only forty-nine percent of senators throughout the State were Democrats[174] and Republicans had controlled the State Senate virtually without interruption for decades.[175] In Pennsylvania, one hundred percent of State senators hailing from Philadelphia were Democrats as compared to thirty-three percent for the

[171] Graham, *supra* note 167 (noting that while Democrats dominate cities, Republicans dominate the majority of States, and that "even the reddest states contain liberal cities). *See also* Grab & Livermore, *supra* note 5, at 669–70 (stating that, "there is little evidence that – without a sustained push by the federal government - red and purple states will do much besides maintain the status quo [with respect to environmental protection]"); Fox, *supra* note 3, at 595 (stating, "[i]n parts of the country with a more conservative statewide bent, cities are often more amenable to – and potentially more in need of – environmental regulation than the surrounding areas.").

[172] David Wasserman, *The Congressional Map Has a Record-Setting Bias Against Democrats*, FIVETHIRTYEIGHT (Aug. 7, 2017), https://fivethirtyeight.com/features/the-congressional-map-is-historically-biased-toward-the-gop/.

[173] Amber Phillips, *These 23 Maps Show Just How Dominant Republicans Are in America After Tuesday*, WASH. POST (Nov. 12, 2016), https://www.washingtonpost.com/news/the-fix/wp/2016/11/12/these-3-maps-show-just-how-dominant-republicans-are-in-america-after-tuesday/?utm_term=.555bb2a7d3a8.

[174] For a list of New York State Senators as of November 2018, *see* https://www.nysenate.gov/senators-committees (last visited Nov. 2, 2018). There were 32 registered Democrats in the State senate as compared to 31 registered Republicans but one Democrat, Simcha Felder, caucused with the Republicans so we included him in the Republican tally.

[175] Vivian Wang, *Just One Seat: The High-Octane Fight to Flip New York's Senate*, N.Y. TIMES (Nov. 5, 2018), https://www.nytimes.com/2018/11/05/nyregion/ny-senate-elections-democrats.html

State as a whole.[176] Even in states that are traditional bulwarks of the Republican Party we find relatively liberal urban centers. In Texas, for example, Austin, Dallas, and Houston are all headed by Democratic mayors yet the State has not had a Democratic governor since 1995.[177] Thus, local laws may be a way of realizing progressive policy preferences that have become increasingly difficult to express at the federal level, or even state levels.[178]

For all of the above reasons, many cities appear to be substantially better positioned to develop environmental regulation today than they were in the past. However, it is important to recognize that not all cities are equally well-positioned to become environmental regulators or oriented to doing so.[179] There also are limits to their abilities of cities inclined toward environmental regulation. Cities do not have legal jurisdiction to regulate all ecologically destructive activities; to the contrary, as we discuss further in Part 3, the scope of their authority is actually quite limited. Moreover, to the extent that cities legally *can* advance environmental protection, there are reasons to doubt that the current incarnation of municipal policies will live up to cities' full potential.

For one thing, the link, or perceived link, between environmental progress and economic prosperity might limit municipal officials' ambitions. If cities are interested in environmental policy again because they perceive it as a tool for attracting highly skilled workers and industry,

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[176] For a list of Pennsylvania State Senators, *see* https://www.legis.state.pa.us/cfdocs/legis/home/member_information/mbrList.cfm?body=S&sort=district (last visited Nov. 2, 2018).

[177] Kevin D. Williamson, *Republicans Do Well in Texas. Except for Dallas, Houston, Austin . . .*, WALL STREET JOURNAL (Apr. 27, 2018), https://www.wsj.com/articles/republicans-do-well-in-texas-except-for-dallas-houston-austin-1524866549; LEGISLATIVE REFERENCE LIBRARY OF TEX., *Governors of Texas, 1846 – Present*, https://lrl.texas.gov/legeLeaders/governors/govBrowse.cfm (last visited Jan. 21, 2019).

[178] *See also* Welton, *supra* note 22, at 272.

[179] For discussion of cities that have not prospered in the post-industrial age, see Anderson, *supra* note 158; FLORIDA, *supra* note 153.

then cities should act only insofar as they perceive it to be in their economic self-interest. Many of the local initiatives that we see likely can be explained as benefiting the cities that have taken them and their residents. As an example, phasing out dirty heating oils as New York City and other cities are doing improves local air quality; air quality improvements improve local public health and increase real estate values.[180] The risk is that cities will only be willing to undertake changes that are cost-beneficial from their perspective, and not implement more ambitious reforms that would be justified for the state, or the nation, as a whole because doing so would involve cities conferring positive externalities on others for which cities are unlikely to be compensated.

We see some indication of the limits of local enthusiasm in the context of city climate change plans. Major cities have established ambitious greenhouse gas reduction targets of carbon neutrality or 80 percent reductions in greenhouse gas emissions by 2050.[181] At first glance, it is puzzling that cities – or states -- would commit to aggressively addressing a global collective action problem such as climate change, given that they will incur the costs of their actions but not fully internalize the benefits – and that these benefits could be cancelled out by the continuing emissions of other jurisdictions.[182] There are several possible explanations. One is that while cities are taking incremental steps towards their ambitious goals, we are not aware of any city that has enacted binding measures yet that will enable it to achieve carbon neutrality or an 80 percent reduction by 2050. As discussed further in Part 2.2, several cities, most notably Washington, D.C. and New York City, are considering ambitious measures that would reduce GHG emissions from existing buildings. If these move forward, they could be explained as local expressions of policy

[180] MORETTI, *supra* note 85, at 167.
[181] Memoranda from Sara Savarani, Legal Fellow, Guarini Ctr. (Nov. 2018) (on file with authors).
[182] For references to the puzzling nature of city interest in reducing GHG emissions, *see, e.g.,* Trisolini, *supra* note 3, at 681–83*;* Welton, *supra* note 22, at 339.

preferences for action on climate change that cannot currently be realized at the federal level. They might also reflect the co-benefits of reducing GHG emissions (Washington D.C.'s draft bill is framed as a bill to improve energy efficiency),[183] or an industrial policy that could promote innovation, much as California's bold moves to reduce GHG emissions are sometimes characterized as an industrial policy.[184]

Another concern is that some of the environmental policies that cities are pursuing may exclude some people from cities, and therefore impose negative externalities on people in other jurisdictions. For example, some cities have introduced mandates that new construction include solar or green roof space, which may increase the cost of new construction, and deter building in areas with high housing prices that need new construction to increase supply and bring down prices.[185] These type of local environmental regulations might be examples of new urban exclusionary policies, with similar effects as the exclusionary zoning and other land use policies that suburbs have been pursuing for decades.[186]

Furthermore, although important cities have become wealthier in recent years, there remain limitations on the tax bases of even the most prosperous local governments, and, as discussed

[183] Bill 22-904, CleanEnergy DC Omnibus Amendment Act of 2018. Professor Shelley Welton has noted that "many of the same activities that cut carbon emissions most effectively […] also tamp down on electricity rates." Welton, *supra* note 22, at 336. Professor Trisolini mentions other co-benefits to municipal action to reduce greenhouse gas emissions. Trisolini, *supra* note 3, at 732–33.

[184] These hypotheses for municipal action draw on the hypotheses that scholars have offered for state action on climate change. Kirsten H. Engel & Barak Y. Orbach, *Micro-Motives and State and Local Climate Change Initiatives,* 2. HARV. L. & POL'Y REV. 119 (2008); Richard B. Stewart, *States and Cities as Actors in Global Climate Change Regulation: Unitary vs. Plural Architectures*, 50 ARIZ. L. REV. 681 (2008).

[185] *But see* Julia Pyper, *Everything You Need to Know About California's new Solar Roof Mandate*, GREENTECH MEDIA (May 21, 2018), https://www.greentechmedia.com/articles/read/everything-you-need-to-know-about-californias-new-solar-roof-mandate#gs.vbotIMFC (energy savings from the California solar mandate outweigh the added construction costs over a thirty-year mortgage)

[186] John Mangin, *The New Exclusionary Zoning*, 25 STAN. L. & POL'Y REV. 91 (2014); Vicki Been, *City NIMBYs*, 33 J. LAND USE & ENVTL. L. 217 (2018).
State preemption of local laws that restrict the supply of new housing, and therefore restrict density, might further environmental goals by reducing sprawl. GLAESER, *supra* note 27, at 183–99; Mangin, *supra*.

below, there are often legal limits on municipalities' ability to raise tax revenue. Recent changes to federal the tax law, which make it more difficult for city residents to deduct taxes garnered by state and local governments, may make municipalities even more hesitant than usual to enact new taxes to boost revenue for fear of driving out high income earners.[187] So while enhanced fiscal and administrative capacity at the local level means that some cities can be more innovative than they were in the 1960s and 1970s, it would be unreasonable to expect them to pursue anything close to the full range of tasks for which federal agencies are responsible. Cities still do not have the capacity to undertake costly risk assessments (and, even if they did, it would be duplicative for each city to undertake similar risk assessments of the same chemical.)[188]

An additional reason to be cautious about the new local interest in improving the environment to attract highly-skilled workers is that it may benefit some people within cities more than others. Since the emergence of the environmental justice movement, there has been much more awareness of the inequitable distribution of undesirable land uses such as toxic waste sites, landfills, waste transfer stations, power plants and truck and bus depots, across cities, often to the detriment of low income and racial minority neighborhoods.[189] A major concern of urbanists today is that urban revival is co-extensive with rising inequality within cities, as well as between them;[190] environmental policies that differentially benefit certain neighborhoods or groups of people within the city may be exacerbating these inequalities. As an example, low-income people and people of color are less likely to use the newly established municipal bike share programs, although there

[187] William Baldwin, *Preserving the State and Local Tax Deduction: Bad News*, FORBES (Mar. 31, 2018), https://www.forbes.com/sites/baldwin/2018/03/31/preserving-the-state-and-local-tax-deduction-bad-news/.
[188] Revesz, *Race to the Bottom*, *supra* note 5, at 543.
[189] National People of Color Environmental Leadership Summit, The Principles of Environmental Justice (October 1991); Vicki Been, *What's Fairness Got to Do with It? Environmental Justice and the Siting of Locally Undesirable Land Uses*, 78 Cornell L. Rev. 1001, 1005 (1993); Luke W. Cole, *Empowerment As the Key to Environmental Protection: The Need for Environmental Poverty Law*, 19 ECOLOGY L.Q. 619, 624–30 (1992).
[190] *See, e.g.*, FLORIDA, *supra* note 153.

are some recent innovative programs to promote bike equity.[191] And while parks are often thought to provide areas for people from different racial, ethnic and economic groups to mix, the reality is that people from certain groups may disproportionately use parks or benefit from them. Research indicates that visitors to New York City's High Line are "'overwhelmingly white'" even though "nearly one third of residents in its neighborhood … are people of color."[192] Environmental justice remains a live movement in post-industrial cities, and the agenda items now include not only the historical concerns that minority and low-income populations are disproportionately burdened by harmful facilities, but also unequal access to the new urban amenities.[193] Moreover, the economic revival that many cities have experienced alongside their environmental renaissance has raised the prospects of gentrification and displacement in historically minority neighborhoods.[194] Navigating the tradeoffs between new urban development, much of which is arguably beneficial from an environmental standpoint because it may reduce sprawl, and displacement, has created a new web of challenges for environmental groups to sort through.[195] In

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[191] Benjamin Schneider, *What Keeps Bike Share White*, CITYLAB (July 14, 2017), https://www.citylab.com/equity/2017/07/what-keeps-bike-share-white/533412/; Teresa Wiltz, *Can There Be Equity in the Bike Lane?*, PEW STATELINE (Feb. 14, 2018), https://www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2018/02/14/can-there-be-equity-in-the-bike-lane.

[192] Laura Bliss, *The High Line's Next Balancing Act*, CITYLAB (Feb. 7, 2017), https://www.citylab.com/solutions/2017/02/the-high-lines-next-balancing-act-fair-and-affordable-development/515391/. Historically, Central Park was also used by certain parts of the City's population. ROZENZWEIG & BLACKMAR, *supra* note 70.

[193] *See* Jennifer R. Wolch et al., *Urban Green Space, Public Health and Environmental Justice: The Challenge of Making Cities 'Just Green Enough,'* 125 LANDSCAPE AND URBAN PLANNING 234, 235 (2014); Shelley Welton, *Clean Electrification*, 88 U. COLO. L. REV. 571 (2015); Paul Stanton Kibel, *The People Down the Hill: Parks Equity in San Francisco's East Bay*, 1 GOLDEN GATE U. ENVTL. L.J. 331, 335–41 (2007); WE Act For Environmental Justice, West Harlem Piers Park, https://www.weact.org/campaigns/west-harlem-piers-park/;. To be sure, environmental justice advocates historically demonstrated some concern with the fair distribution of benefits such as parks as well as burdens. *See, e.g.*, Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENVIRONMENTAL LAW REPORTER 10681, 10684 (2000) (citing Michael Gelobter, *The Meaning of Urban Environmental Justice*, 21 FORDHAM URB. L.J. 841, 844 (1994)).

[194] *See* MUNICIPAL ARTS SOCIETY, A TALE OF TWO REZONINGS: TAKING A HARDER LOOK AT CEQR (2018). *See also* Ordonez v. City of New York, 2018 N.Y. Slip Op. 51093 (Unpublished).

[195] *See, e.g.*, Anthony Flint, *Backyard Brouhaha*, LAND LINES (Feb. 26, 2019).

short, while we urge scholars to recognize the value contribution that cities can and are making, we do not in any way intend to argue that we have reached the promised land.

2.2. The new wave of urban environmental laws

So how exactly are cities using their enhanced capabilities to advance the environmental agenda? There are a number of continuities between the work cities are doing to promote sustainability today and their pioneering efforts in earlier centuries to make cities more livable. As before, local governments are investing in infrastructure and amenities that improve the quality of urban life. For instance, going beyond the requirements of the federal Clean Water Act, to improve water quality, cities throughout the nation have taken a pioneering role in promoting green infrastructure,[196] which reduces the flow of polluted stormwater into waterways by capturing rain where it falls.[197] Cities are reprising their historical role by increasing investment in parks as well. For example, Chicago recently developed a 1.5 mile of downtown riverfront into "Riverwalk," a new recreation and pedestrian "multi-use" space, boasting restaurants, amenities, and even ecological benefits.[198] The spot, which has become popular among city residents and tourists alike, has generated considerable new revenue for the city[199] and in 2018 the vacancy rate for offices along the Chicago River was lower than at any point in the previous decade and rental rates were

[196] Holloway et al., *supra* note 125, at 342.
[197] *See, e.g.*, SEATTLE.GOV, *Seattle Public Utilities: Green Stormwater Infrastructure*, http://www.seattle.gov/util/EnvironmentConservation/Projects/GreenStormwaterInfrastructure/index.htm.
[198] Patrick Sisson, *Chicago's New Riverwalk Offers a Vision of the Future of Urban Parks*, CURBED (Nov. 2, 2016), https://www.curbed.com/2016/10/24/13382868/chicago-riverwalk-landscape-architect-urbanism-design; Anne-Marie Lubenau, *Spotlight: Chicago Riverwalk's Transformation Into Recreational Frontier*, METROPOLIS (June 12, 2017), https://www.metropolismag.com/cities/spotlight-chicago-riverwalk-transformation-recreational-frontier/.
[199] Riverwalk's revenue rose from an average $1.2 million per year in 2011–2014 to $4.8 million in its first 2015 and $9.8 the following year. Gina Ford, *Three U.S. Cities Reinventing the Modern Waterfront*, URBAN LAND (Nov. 13, 2017), https://urbanland.uli.org/planning-design/three-u-s-cities-reinventing-modern-waterfront/;Anne-Marie Lubenau, *supra* note 198.

the highest they had been in a decade.[200] Thus, once again we see cities' investments in environmental amenities expanding the economic base of an area.

As in days past, cities are also taking steps to reduce local air pollution. Boston, New York and Philadelphia all regulate, and in some cases ban, the use of highly polluting residual heating oils.[201] New York City's gradual phase out of several of these fuels in 10,000 older residential buildings has helped to give New York City its best air quality in over five decades.[202] A large number of cities have also adopted new or updated anti-idling ordinances during the past decade to reduce transportation related air pollution.[203] These measures add a layer of protection that goes beyond what federal statutes require; the federal Clean Air Act does not set any specific air quality requirements for school zones, yet Washington, D.C.'s anti-idling ordinance sets especially strict anti-idling restrictions near schools to protect the most vulnerable youths. [204]

Cities have been leading the fight to help adapt to climate change by investing in infrastructure to deal with increased flooding and heat. Facing rising seas, Miami has invested in a major anti-flooding project, which includes raising roads, installing pumps and replacing sewer connections.[205] And as the California climate becomes drier, Berkeley is exploring alternative sources of water, including using reclaimed water for street cleaning.[206] To temper the urban heat

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[200] Ryan Ori, *It's Not Just for Recreation. Companies Flocking to Chicago River Too.*, CHICAGO TRIBUNE (Aug. 17, 2018), https://www.chicagotribune.com/business/columnists/ori/ct-biz-riverfront-offices-ryan-ori-20180815-story.html.

[201] Memoranda from Sara Savarani, Legal Fellow, Guarini Ctr. (Nov. 2018) (on file with authors).

[202] Diana Hernandez, *Clean Heat: A Technical Response to a Policy Innovation*, 18 CITYSCAPE 277, 278 (2016).

[203] Austin, Chicago, Denver, Minneapolis, New York, Portland, and Washington, DC all have anti-idling ordinances in place. Memoranda from Sara Savarani, Legal Fellow, Guarini Ctr. (Nov. 2018) (on file with authors).

[204] D.C., Healthy Schools Act (2010), *available at* http://dcclims1.dccouncil.us/images/00001/20100510112429.pdf. New York City also sets especially strict idling restrictions for school zones. NYC BUSINESS, *Idling Regulations*, https://www1.nyc.gov/nycbusiness/description/idling-regulations;

[205] Joe Flechas, *Miami Beach to Begin New $100 Million Flood Prevention Project in Face of Rising Seas*, MIAMI HERALD (Jan. 28, 2017), https://www.miamiherald.com/news/local/community/miami-dade/miami-beach/article129284119.html.

[206] THE ROCKEFELLER FOUNDATION, CITIES TAKING ACTION 44 (July 2017).

island effect in the face of forecasts for blistering heat, New York City is spending millions of dollars to plant trees in neighborhoods that are most vulnerable to heat.[207] While city commitments to ambitious GHG reduction targets may be surprising, given the global nature of the emissions problem, cities efforts to adapt to climate change are much less surprising because city residents stand to benefit from continued access to drinking water and infrastructure to handle higher water levels.[208] Indeed, climate adaptation might be seen as the contemporary equivalent of the infrastructure investments, such as the construction of vast drinking water supply systems, which cities made in the nineteenth century to ensure continued urban viability.

But some things are decidedly different this time around. The environmental policies that cities are developing today emerge in the shadows of a far more robust federal policy landscape than existed when the first wave of urban environmental policies were established starting in the nineteenth century. Broadly speaking, there are two possible routes that policymakers can take to reduce pollution: they can regulate upstream the industries that produce pollution, from electricity generation, to manufacturing and agriculture, or they can regulate downstream the consumers that demand the products that industry makes.[209] Since the passage of the major environmental statutes of the 1970s, the federal government has fairly comprehensively regulated pollution from industrial sources.[210] As a result, given the preemptive force of federal regulation, which we discuss further in Part 3, cities seeking to expand their own portfolio of environmental policies

[207] CITY OF NEW YORK, COOL NEIGHBORHOODS NYC: A COMPREHENSIVE APPROACH TO KEEP COMMUNITIES SAFE IN EXTREME HEAT 11, 13 (2017), *available at* https://www1.nyc.gov/assets/orr/pdf/Cool_Neighborhoods_NYC_Report_FINAL.pdf.
[208] Cities may also benefit financially from developing comprehensive resilience or adaptation strategies because credit rating agencies, which assign cities credit ratings that affect municipal borrowing costs, have started to consider resilience planning in their assessments. *See* Billy Grayson, *Moody's: Climate Change Adaptation and Mitigation Could Affect Cities' Bond Ratings*, Urban Land Institute (Jan. 17, 2018).
[209] *See also* Munnings et al., *supra* note 13 (distinguishing upstream and downstream regulation).
[210] Katrina Fischer Kuh, *When Government Intrudes: Regulating Individual Behaviors that Harm the Environment*, 61 DUKE L.J. 1111, 1130–31 (2012).

have had to move away from regulating industry towards targeting the behavior of individuals instead. Thus, as the federal government has increased its regulation of the supply side of the economy, local governments have been pushed towards regulating the demand side.[211] To this end, many of cities' contemporary environmental policies regulate the way in which, or the extent to which, individuals - be they drivers, shoppers, or home or apartment dwellers - use the products that polluting industries produce.[212] That local governments would take the lead in regulating individual behavior makes sense given the variation in consumer behavior across the country, the lesser degree of technological expertise required to regulate individual behavior compared with large industrial sources such as power plants, and enhanced avenues for public participation in local lawmaking processes. Local governments have also fairly aggressively regulated one of the few industries that has largely escaped federal regulation - the real estate industry.[213] But in a sense, the real estate industry is also a consumer, in that it consumes the products such as electricity, cement, and appliances, that are made by the upstream industries the federal statutes regulate.

[211] Cities, such as Austin and Seattle, that own the local electric utilities have greater control over the generation mix, which is a supply side of the economy. *See* SEATTLE CITY LIGHT, *A Brief History of City Light*, http://www.seattle.gov/light/history/brief.asp (last visited Sep. 17, 2018); AUSTIN ENERGY, *Company Profile*, https://austinenergy.com/ae/about/company-profile/austin-energy-at-a-glance. But such cities are the exception, rather than the rule. *See* Welton, *supra* note 22, at 290 & n.98–99. Some cities with privately owned electric utilities have turned towards Community Choice Aggregation to exert control over the generation mix and incentivize the proliferation of renewables. *Id.* at 310–12.

[212] *See* Kuh, *supra* note 210, at 1131; Jason J. Czarnezki, *New York City Rules! Regulatory Models for Environmental and Public Health*, 66 HASTINGS L.J. 1621, 1622–23 (2015). *See generally* Michael P. Vandenbergh, *From Smokestack to SUV: The Individual as Regulated Entity In the New Era of Environmental Law*, 57 VAND. L. REV. 515 (2004) (arguing that environmental law has focused on regulating large firms and that there should be greater focus on regulating individual behavior).

[213] By real estate industry, we refer to the owners and operators of buildings. Apart from federally owned or occupied buildings, the federal government does not impose many environmental requirements on buildings, except to the extent that the Energy Policy and Conservation Act sets energy efficiency standards for certain appliances, which is discussed in Part 3. Most green building policies have therefore been left to state and local governments to develop.

Another distinctive facet of the new wave of urban environment policies is that it has a substantial focus on combating global climate change. Local governments' emphasis on developing climate change policies is a manifestation of their gap-filling role. Climate change was not on the environmental agenda at the time that the major federal statutes were passed and the federal government has been unable to implement a sustained response to the crisis in the time since. While the Obama Administration introduced important regulations to reduce GHG reductions in light of Congressional intransigence, the Trump Administration is now substantially reversing course. Faced with this reality, progressive state and local governments have stepped in.[214] Cities face significant legal constraints in tackling GHG emissions, given their limited authority over the supply side of the economy, such as electric generating units,[215] and, as noted above, it remains to be seen whether they will achieve their goals. But some cities have begun to implement innovative GHG reductions policies, particularly with respect to regulating energy use in buildings.[216]

Indeed, it is in the real estate sphere, where, again, the federal government has largely been absent, that cities have arguably developed their most innovative and robust policies. The municipal focus on buildings makes sense not only because cities typically have considerable legal authority over buildings,[217] and because buildings are immobile (although tenants can exit if regulations become cost-prohibitive). It is also logical because buildings are a major source of greenhouse gas emissions and other forms of air pollution in urban areas. Buildings account for

[214] *See* Maureen Groppe, *Mayors Pledge to Take the Lead on Fighting Climate Change*, USA TODAY (June 2, 2017), https://www.usatoday.com/story/news/politics/2017/06/02/mayors-pledge-take-lead-fighting-climate-change/102435920/.
[215] Again, only a small number of major cities control electric utilities. *See supra note* 211.
[216] New York, Seattle and Washington are all considering measures to promote building energy efficiency that could impose significant costs on the building sector. *See infra* notes 228–231 and accompanying text. A small number of U.S. cities have also implemented carbon taxes. *See infra* note 307.
[217] *See, e.g.*, Trisolini, *supra* note 3, at 701–03 (discussing local authority over building codes).

approximately forty percent of energy use nationwide[218] and are unlikely to account for less than that in any urban area given the reduced reliance on automobiles in densely populated areas. In Chicago and New York City, buildings account for approximately 70 percent of greenhouse gas emissions.[219] Given the outsized role that buildings play in cities' greenhouse contributions, and cities' leadership in regulating emissions from this sector, it makes sense to review some municipal green building policies in some detail. As will be described, cities' policies to curtail building emissions are generally consistent with their focus on demand-side regulation; a large share of building emissions is due to electricity usage yet cities generally cannot regulate the power plants that produce electricity. In consequence, local governments have focused on reducing demand for electricity by increasing energy efficiency.

Cities have generally developed distinctive tools for reducing emissions from new as opposed to existing buildings. Cities have required that *new* buildings meet green building standards that exceed state building code requirements, and in some cases that new city-owned buildings receive the US Green Building Council's "Leadership in Energy and Environmental Design" (LEED) certification. Cities also have begun to turn their attention to the energy efficiency of *existing* buildings, which is important because the building stock is slow to turn over.[220] There are three generations of these laws. The first, which exists in at least twelve American cities, requires that large buildings benchmark their energy use, and in some cases water use, against

[218] U.S. ENERGY INFO. ADMIN., *Frequently Asked Questions, How Much Energy Is Consumed In Buildings?*, https://www.eia.gov/tools/faqs/faq.php?id=86&t=1.
[219] City of Chicago, Chicago's Energy Benchmarking, 2017 Chicago Energy Rating System, https://www.chicago.gov/content/dam/city/progs/env/EnergyBenchmark/2017_Chicago_Energy_Rating_System_Summary.pdf (last visited March 11, 2019). N.Y.C. GREEN BLDGS. & ENERGY EFFICIENCY, *About OneNYC Green Buildings & Energy Efficiency*, https://www1.nyc.gov/html/gbee/html/about/about.shtml (last visited Jan. 28, 2019).
[220] As an example, about 85 percent of the buildings in New York City that are standing today will still be in place in 2030. CITY OF NEW YORK, MAYOR'S OFFICE OF LONG TERM PLANNING AND SUSTAINABILITY, ONE CITY BUILT TO LAST 24–25 (2014).

comparable buildings and report the results to the city.[221] The benchmarking information may be publicly available from a city website. A smaller number of cities require that buildings audit their energy use periodically, such as every five or ten years, and report the audit results to the city.[222]

There is some evidence that benchmarking and audit requirements are driving buildings towards greater efficiency,[223] but the improvements have not been substantial enough to put cities on the path to achieve their ambitious greenhouse gas reduction targets.[224] As a result, two cities which already have the first generation of laws, Chicago and New York, have now legislated that benchmarking scores be translated into star ratings or letter grades, respectively, and conspicuously displayed to the public. In Chicagof, buildings will be required to post their star rating in a prominent location beginning in 2019.[225] Starting in 2020, large buildings in New York City will be required to post these grades on the premises, much like New York City restaurants are now required to post letter grades based on health inspections.[226] The idea, borrowed from Europe, is that alerting the public to a building's energy efficiency through a highly salient, easy-to-understand sign will be more effective in creating market incentives for building owners to invest in energy efficiency than cities collecting benchmarking information and putting it on an obscure city website.[227]

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[221] Cities requiring benchmarking include: Boston; Chicago; Denver; Minneapolis; New York City; Philadelphia; Portland, Oregon; San Francisco; Seattle, and Washington, DC. For a full list accounting of jurisdictions that require benchmarking, *see* INST. FOR MKT. TRANSFORMATION, US BUILDING BENCHMARKING AND TRANSPARENCY POLICIES (2017), *available at* https://www.imt.org/resources/map-u-s-building-benchmarking-policies/.

[222] At least eight American cities currently require audits (Atlanta, Austin, Berkeley, Boston, Boulder, Cambridge, New York and San Francisco). New York City and Seattle require buildings to perform retro-commissioning as well. Memoranda from Sara Savarani, Legal Fellow, Guarini Ctr. (Nov. 2018) (on file with authors).

[223] Tim Meng, David Hsu, Albert Han, *Estimating Energy Savings from Benchmarking in New York City*, 133 Energy 455 (2017).

[224] *Id*.

[225] CITY OF CHICAGO, *Chicago Energy Benchmarking Homepage*, https://www.cityofchicago.org/city/en/progs/env/building-energy-benchmarking---transparency.html.

[226] Local Law 33, https://www1.nyc.gov/assets/buildings/local_laws/ll33of2018.pdf.

[227] GUARINI CTR., *Policy Briefs & Reports*, https://guarinicenter.org/publications-2/policy-papers/.

The third generation of building energy efficiency laws moves beyond informational requirements to actually require buildings to invest in energy efficiency. In the summer of 2018, the City Council in Washington D.C. began considering a bill that would require existing large buildings to improve their energy efficiency.[228] Along similar lines, New York City Mayor Bill de Blasio "has twice announced" that the City will impose a cap on emissions from large buildings but the City has yet to legislate a mandate.[229] The most recent draft legislation setting out New York City's proposed mandate establishes greenhouse gas emission intensity targets for buildings with more than 25,000 square feet of space, which become more stringent with time, and financial penalties for properties that exceed their target.[230] Among other novel features, the bill calls for the Mayor's Office of Sustainability to conduct a study of the potential to implement a greenhouse gas emission trading program among regulated properties, similar to a building emissions trading that exists in Tokyo.[231] The bill expressly exempts buildings with rent-regulated apartments from its purview due to concerns from residential tenant advocates that requiring these buildings to reduce their greenhouse gas emissions would lead to rent increases under the existing rent

[228] Bill 22-904, CleanEnergy DC Omnibus Amendment Act of 2018; *see also* COUNCILMEMBER MARY CHEH, *"Clean Energy DC Act of 2018" to Set Aggressive Renewable Energy Policy in the District*, http://www.marycheh.com/release/clean-energy-dc-act-of-2018-to-set-aggressive-renewable-energy-policy-in-the-district/ (last visited Jan. 21, 2019).

[229] There has been opposition from the real estate industry. Also residential tenant advocates are concerned that a mandate will lead to rent increases in rent-stabilized apartments due to the way that the state-governed rent stabilization framework defines "major capital improvements." Danielle Muoio, *De Blasio's Energy Efficiency Mandates Languish With No Deal in Sight*, POLITICO (Apr. 25, 2018), https://www.politico.com/states/new-york/city-hall/story/2018/04/25/de-blasios-energy-efficiency-mandates-languish-with-no-deal-in-sight-382038.

[230] N.Y.C. COUNCIL, Introduction 1253 of 2018, https://legistar.council.nyc.gov/LegislationDetail.aspx?ID=3761078&GUID=B938F26C-E9B9-4B9F-B981-1BB2BB52A486&Options=ID%7CText%7C&Search=1253.

[231] *Id.* at § 28-320.7.11.

On Tokyo's building emissions trading regime, *See, e.g.*, Sven Rudolph & Toru Morotomi, *Acting Local! An Evaluation of the First Compliance Period of Tokyo's Carbon Market*, 10 CARBON & CLIMATE L. REV. 75, 75 (2016).

The Washington, D.C. program would enable universities to engage in an implicit form of internal trading of responsibilities between their buildings. The bill would apply an energy performance standard the entire portfolio of a university's buildings, rather than to individual buildings. Bill 22-904, CleanEnergy DC Omnibus Amendment Act of 2018, tit. III, § 301(b).

stabilization framework, and thus harm housing affordability. Yet this exemption would exclude the majority of multifamily residential buildings from the bill's regulatory ambit, thus significantly weakening its potential impact.[232]

Outside of the green building sphere, cities have also used their authority to regulate development within their borders to reduce other kinds and sources of pollution as well. By encouraging dense mixed-use development around mass transit stations,[233] (so-called "transit oriented development"), cities can reduce the need to drive and therefore reduce the air pollution, including greenhouse gas emissions, that driving causes.[234] And by restricting development near waterways, cities can reduce nonpoint water pollution. Chicago has both types policies in place; the city provides incentives for development near Chicago Transit Authority and Metra stations, including floor area and building height incentives and the elimination of the parking requirements if alternative forms of transportation are provided,[235] and limits development within the vicinity of Lake Michigan to protect the shoreline's "special environmental" values, among other attributes.[236] (Notably, such waterfront development restrictions may be at odds with transit oriented development policies because foreclosing development in certain areas can lead to sprawl

[232] Donna DeCostanzo, *Trailblazing Bill Would Make NYC an Efficiency Champion*, NRDC: EXPERT BLOG (Dec. 3, 2018), https://www.nrdc.org/experts/donna-costanzo/trailblazing-bill-would-make-big-apple-efficiency-champio;

[233] Boston, Chicago, Denver, and Los Angeles, and other American cities have pursued various transit oriented development strategies in recent years. EPA ET AL., ENCOURAGING TRANSIT ORIENTED DEVELOPMENT; CASE STUDIES THAT WORK, https://www.epa.gov/sites/production/files/2014-05/documents/phoenix-sgia-case-studies.pdf. As of 2010, there were already approximately 200 transit oriented development sites in North America. Arefeh Nasri & Lei Zhang, *The Analysis of Transit-Oriented Development (TOD) in Washington, D.C. and Baltimore Metropolitan Areas*, 32 TRANSPORT POL'Y 172 (2014).

[234] GLAESER, *supra* note 27, at 14.

[235] Press Release, Mayor's Press Office, Mayor Emanuel Introduces Transit Oriented Development Reform Ordinance to Accelerate Development Near Public Transportation Stations (July 27, 2015), https://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2015/july/mayor-emanuel-introduces-transit-oriented-development-reform-ord.html.

[236] CITY OF CHICAGO, *Lakefront Protection Review*, https://www.cityofchicago.org/city/en/depts/dcd/provdrs/admin/svcs/lakefront_protectionapplication.html (last visited Jan. 21, 2019).

and more driving.)[237] Cities also have used their zoning authority to restrict uses of land for the extraction or distribution of fossil fuels; reminiscent of the bans that some localities have established on fracking within their borders, Portland, Oregon used its zoning authority in 2016 to ban new fossil fuel infrastructure in an effort to block a new propane export terminal.[238]

To provide more detail regarding the policies that cities are developing today, we have surveyed a group of fifteen cities that are noted for being leaders in sustainability. The cities surveyed are pulled from various public lists of sustainable cities[239] because we were not able to find a single list that featured the degree of geographic diversity that we think is necessary to comprehensively survey the policies that are being developed; given different regions of the countries face different types of challenges - to state the obvious, sea level rise is a bigger problem in Miami than Chicago and water shortages are a bigger problem in Los Angeles than Boston - it seems important to examine cities across the country. As such, we have put together a list that incorporates four cities from the east coast, three from the heartland, three from the south, and five from the Pacific west. The cities are: Austin, Boston, Chicago, Denver, Miami, Minneapolis, New York, Philadelphia, Portland, Orlando, San Diego, San Francisco, San Jose, Seattle, Washington, DC.

The table below presents an accounting of some of the most common policies that the surveyed cities have adopted. In keeping with our expectations, many of the most commonly

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[237] *See* GLAESER, *supra* note 27, at 211.
[238] Pete Danko, *Portland Fossil-Fuel Infrastructure Ban Survives Court Challenge*, PORTLAND BUS. J. (Aug. 1, 2018), https://www.bizjournals.com/portland/news/2018/08/01/portland-fossil-fuel-infrastructure-ban-survives.html.
[239] The lists are: WARREN KARLENZIG, HOW GREEN IS YOUR CITY? THE SUSTAINLANE U.S. CITY RANKINGS 2 (2007); *The Top 10 Green Cities in the U.S.*, THE GREEN GUIDE (July 7, 2013), https://www.thegreenguide.com/the-top-10-green-cities-in-the-u-s/; Adam McCann, *Greenest Cities in America*, WALLETHUB (Oct. 10, 2018), https://wallethub.com/edu/most-least-green-cities/16246/; Courtney Miller, *America's Greenest Cities*, NERDWALLET (Apr. 14, 2015), https://www.nerdwallet.com/blog/studies/americas-greenest-cities-2015/.

identified measures regulate consumer behavior either by creating incentives for consumers to choose green product/transportation alternatives or by creating infrastructure that makes it easier for consumers to make green choices. Stated otherwise, demand side measures appear predominant. We have highlighted seven types of measures that appeared to be particularly common: (1) green building codes for new construction; (2) regulations requiring the disclosure of energy efficiency information in existing buildings; (3) land use regulations to promote density (here we include measures that strive to increase density proximate to transit sites, so-called transit oriented development strategies, and measures to amend single family zoning ordinances); (4) anti-idling regulations to improve air quality; (5) mandates that parking lot developers or owners make electric vehicle-ready spaces; (6) requirements that certain traffic lanes be set aside for bicycles and the establishment of bike share programs; and (7) plastic bag bans, taxes or fees. Of the seven measures described, all but green building codes appear to target individual behaviors.

TABLE 1: SURVEY OF CONTEMPORARY URBAN ENVIRONMENTAL LAWS[240]

City	Green Building Codes	Building Energy Disclosure	Measures to Increase Density	Anti-Idling	Electric Vehicles	Bicycle Lanes & Shares	Plastics Reduction
Austin	x	x[ab]	x[a]	x	x[b]	x[ab]	x[a1]
Boston	x	x[a]			x[a]	x[ab]	x[a]
Chicago	x	x[a]	x[a]	x	x[b]	x[ab]	x[a]
Denver	x	x[a]		x	x[ac]	x[ab]	
Miami	x			x[1]	x[b]	x[ab]	
Minneapolis	x[1]	x[a]	x[b]	x	x[bc]	x[ab]	x[a1]
New York	x	x[ab]		x	x[abc]	x[ab]	x[a1]
Orlando	x[1]	x[a]			x[bc]	x[ab]	
Philadelphia	X[1]	x[a]	x[a]	x	x[b]	x[ab]	
Portland	x	x[a]	x[a]	x[1]	x[bc]	x[ab]	x[ab]
San Diego	x		x[a]		x[b]	x[ab]	x[a]
San Francisco	x	x[ab]			x[a]	x[ab]	x*[ab]
San Jose					X	x[ab]	x[a]
Seattle	x	x[a]	x[a]	x[1]	x[a]	x[ab]	x[ab]
Washington DC	x	x[a]		x	x[bc]	x[ab]	x[a]
Legend	1 = Code applies only to municipal buildings	a= Bench-marking is required; b = Audits are required	a = TOD zoning ordinances, or financial incentives; b = Removal of single-family zoning	[1 =] Applies to municipal fleets only	a = Requirements for EV parking readiness; b = Municipal investments in charging infrastructure; c= Procurement mandate or investment in e-city fleets	a= Creation of bike lanes; b = Creation of bike shares.	a = Tax, fee, or ban on bags; b = Restrictions on straws and/or utensils; 1 = Measure struck down by State court or legislature

[240] *See* Appendix for sources that were used in compiling this table.

3. Giving Cities More Space to Experiment

As explained in Part 2.2, innovative cities are carving out a niche in regulating consumer demand for the polluting products supplied by industries such as electricity generators and manufacturers that are subject to federal environmental regulation. Yet, state and federal law have also stymied several prominent local efforts to reduce individuals' demand for polluting products.[241] Cities have been blocked from incentivizing the use of more efficient heating and cooling systems in buildings;[242] incentivizing taxis to use cleaner vehicles;[243] and incentivizing shoppers to waste less plastic by imposing fees on plastic bags.[244] Cities have also been prevented from incentivizing drivers to drive less by taxing them for road use and the pollution from their vehicles.[245] This part identifies ways to carve out more space for cities to alter environmentally damaging consumer behavior within the division of authority between the federal, state and local governments enshrined in the 1970s federal statutes, which made the federal government a significant environmental lawmaker.

We do not seek to upend the allocation of authority agreed to in the 1970s because there are compelling reasons for maintaining a robust minimum floor of federal environmental regulation, as the history recounted in Part 1 suggests. At the same time, we think there would be significant benefits to increasing cities' ability to innovate to the maximum extent that the law

[241] For an overview of state efforts to block local environmental policies in recent years, *see generally*, Fox, *supra* note 3.
[242] Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 835 F. Supp. 2d 1133 (D.N.M. 2010).
[243] Metro. Taxicab Bd. of Trade v. City of New York, 615 F.3d 152 (2d Cir. 2010).
[244] In 2017, New York State preempted a New York City law that would have required merchants to charge five cents for carry-out plastic bags. Jesse McKinley, *Cuomo Blocks New York City Plastic Bag Law*, N.Y. Times (Feb. 14, 2017). The same year, Minnesota enacted a law that preempted a Minneapolis ban on carryout plastic bags and prohibited municipalities from enacting fees on bags as well. Emma Nelson, *Legislature Blocks Plastic Bag Ban in Minneapolis*, Star Tribune (May 31, 2017). Arizona, Idaho, Michigan, Missouri, and Wisconsin have all passed similar measures prohibiting local regulation of plastic bags. *See* Fox, *supra* note 3, at 600–01.
[245] *See infra* notes 308–319 and accompanying text.

provides,[246] and believe that courts have sometimes interpreted the scope of residual local authority under the federal environmental statutes more narrowly than those statutes require. There may also be room to expand the scope of local environmental lawmaking authority under state law.

In thinking about how the scope for municipal innovation could be enhanced under the existing federal and state legal framework, it is important to keep in view the foundations of city authority to address environmental issues, and the thicket of legal constraints on cities enacting environmental laws. As is often repeated in judicial opinions concerning local governments' autonomy, cities are creatures of the states[247] and the scope of their legal authority is defined by the states that house them. Cities' ability to address environmental issues in particular is rooted in their home rule authority, which is enshrined in state constitutions or legislation,[248] or other state delegations of authority,[249] and is subject to redefinition by the states.

States' magnanimity towards municipalities has ebbed and flowed over the years as they have granted more or less generous home rule authority, and there has always been considerable variation in this respect between the states. However, in no state is municipal home rule authority a carte blanche grant of authority.[250] Of particular import for our purposes, many states closely guard taxation authority and grant their cities limited, if any, authority to establish or raise taxes without express approval of state legislatures.[251] Cities typically have more leeway under state law to enact fees without prior state approval. Yet, as will be described, fees and taxes are not

[246] *See supra* note 24 with accompanying text. For more skeptical views on the idea of subnational units as sites for innovation, see David Schleicher, *Federalism and State Democracy*, 95 TEX. L. REV. 763 (2017); Livermore, *supra* note 4.
[247] *See, e.g., Williams v. Mayor of Baltimore*, 289 U.S. 36 (1933).
[248] David J. Barron, *Reclaiming Home Rule*, 116 HARV. L. REV. 2255, 2260 (2003).
[249] *Id.* at 2261.
[250] On the meaning of home rule, see generally Barron, *supra* note 248.
[251] *See infra* Part 3.2.

perfect substitutes. And even when cities have extensive authority under state law to initiate legislation, for example to introduce a fee, they usually have limited immunity protecting them from state interference in their efforts,[252] as all states reserve the right to preempt local legislation in certain circumstances.[253] Recently, some state lawmakers have become less tolerant of local policy variations and more comfortable using punitive measures to force localities to conform to the preferences that dominate throughout the state.[254] Some state courts also have been reading constitutional protections for local immunity from state interference extremely narrowly, thus expanding the scope for state lawmakers to override local preferences, including on environmental matters.[255]

Federal environmental law imposes a number of further constraints on local authority over environmental affairs. City authority is limited by federal law because, under the supremacy clause, Congress can expressly or impliedly preempt local legislation in the same manner as it can preempt state legislation. While environmental federal law generally takes the form of minimum standards that cities and states can exceed, there are exceptions, governing new motor vehicles and appliances in particular, where federal standards preempt more stringent (as well as less stringent) local and state standards.[256] In a number of cases applying the provisions preempting local standards, the courts have very broadly interpreted the scope of these provisions, meaningfully

[252] *See* Nestor M. Davidson, *The Dilemma of Localism In An Era of Polarization*, 128 YALE L.J. 5 n.18 (forthcoming 2019).
[253] For instance, the California State Constitution prohibits local governments from adopting legislation that is "in conflict with general laws." *See, e.g.*, CAL. CONST. art. XI, § 7.
[254] This dynamic has arguably played out most dramatically in the context of conflict over so-called "sanctuary cities." *See* Erin Adele Scharff, *Hyper-Preemption: A Reordering of the State-Local Relationship?*, 106 GEO. L.J. 1469 (2018). *See also* John Infranca, *The New State Zoning: Land Use Preemption Amid A Housing Crisis*, 60 B.C. L. REV. (forthcoming 2019); Davidson, *supra* note 252, at 6–14; Richard Briffault, *The Challenge of the New Preemption*, 70 STAN. L. REV. 1995 (2018).
[255] Michael A. Cardozo & Zachary W. Klinger, *Home Rule in New York: The Need for Change*, 38 PACE L. REV. 90 (2017).
[256] *See infra* Part 3.1.

curtailing the authority of cities to sway consumer demand for green products that manufacturers are already making.

This part begins by reviewing some cases in which we feel the judiciary has adopted an overly cramped interpretation of local authority under the federal statutes and urges other courts to revisit this approach. We are particularly concerned with instances in which cities have been prevented from implementing incentives for consumers to choose relatively green products among available alternatives. Following a discussion of the federal statutes, we suggest avenues for expanding the scope of local autonomy under state law such that cities can more easily price environmental externalities. As we describe, even if states cannot be persuaded to delegate greater taxation authority to cities, which is the tool scholars have traditionally called for policymakers to use to price environmental externalities, cities may be able to accomplish many of the same objectives through their authority to implement fees. Our ideas for expanding local authority are rooted in the belief that financial incentives are powerful instruments to alter human behavior, and that cities would have more scope to affect consumer demand for polluting products if cities could put a price on using them.

3.1. Finding Space within Federal Law

Federal laws most constrain local lawmakers when these laws establish uniform standards and preempt lower levels of government from creating more or less stringent standards in the same domain. Uniform federal or state standards establish a ceiling and a floor and the ensuing form of preemption is sometimes labelled "ceiling preemption." In contrast, when a federal or state law establishes a minimum standard through so-called "floor preemption," local governments remain

free to enact regulations that are more, but not less, stringent than the federal or state requirements.[257]

Many federal environmental statutes embody floor preemption, which in theory means that local -- and state -- governments have wide scope to experiment provided they respect minimum federal standards.[258] However, there are exceptional cases where federal environmental law establishes uniform standards that preempt additional local and state regulation. As mentioned above, only the federal government and California, if granted a waiver by EPA, are authorized to regulate emissions from new motor vehicles;[259] and only the federal government is authorized to regulate the fuel economy of new motor vehicles.[260] Similarly, only the federal Department of Energy establishes efficiency standards for many types of appliances.[261] As suggested in Part 1.2, the traditional justification for uniform standards for products such as new cars and appliances is that these standards enable manufacturers to take advantage of economies in scale in production; the uniformity eliminates the need to make products that comply with conflicting governmental standards about the same product attribute.[262] Consumers benefit through lower prices for the mass-produced goods.

The case is much weaker for preempting state or local inducements to private actors to purchase "greener" models of new cars and appliances that manufacturers already are making.

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[257] Other scholars have previously set out this distinction between floor and ceiling preemption. *See, e.g.*, William Buzzbee, *Asymmetrical Regulation: Risk, Preemption, and the Floor/Ceiling Distinction*, 82 N.Y.U. L. Rev. 1547 (2007).
[258] Revesz, *Interstate Externalities*, *supra* note 5, at 2372 (referring to Clean Air Act § 116, 42 U.S.C. § 7416 (1994)); Freeman, *supra* note 2, at 350.
[259] 42 U.S.C. §§ 7543(a)–(b) (2012). Other states can adopt the California standards. 42 U.S.C. § 7507 (2012).
[260] 42 U.S.C § 32919
[261] Alexandra B. Klass, *State Standards and Nationwide Products Revisited: Federalism, Green Building Codes and Appliance Efficiency Standards*, 34 HARV. ENVTL. L. REV. 335, 346 (2010).
[262] *Engine Mfrs. Ass'n v. U.S. E.P.A.*, 88 F.3d 1075, 1079 (D.C. Cir.1996); Revesz, *Race to the Bottom*, *supra* note 5, at 544.

Because the manufacturers are already making the greener products, the state and local policies would not be requiring the manufacturers to produce products that they are not already manufacturing, or keep the manufacturers from taking other products off the market. Nor would the states or cities be requiring consumers to purchase the greener products, because consumers retain the option of not buying them under the inducement (albeit at a financial penalty). States and cities therefore would be merely incentivizing consumers to buy some of the manufacturers' models over others, inducing demand for relatively green products. This should cause negligible, if any, concerns about economies of scale (or negative externalities) from conflicting governmental standards. Nonetheless, in two cases, federal courts have held that state inducements to consumers to purchase existing greener products were preempted by federal environmental laws. Neither case reached the Supreme Court and there remains scope for other courts to distinguish these cases going forward. We believe that they should do so to preserve local authority to use voluntary incentives to encourage consumers to purchase green products that manufacturers are already making.

In *Metropolitan Taxicab Board of Trade v. City of New York* (*Metropolitan Taxi II*),[263] the Second Circuit held that New York City rules to incentivize taxicab fleet owners to purchase more fuel efficient vehicles were preempted by the Energy Policy and Conservation Act (EPCA). The rules were the City's second effort to convert taxis in the City to hybrid vehicles. The same plaintiff taxi owners and fleet operators had also successfully challenged the first set of rules, which had required that taxis convert to vehicles achieving specified levels of miles per gallon by prescribed dates.[264] The district court in *Metropolitan Taxi I* preliminarily enjoined the mandatory

[263] Metro. Taxicab Bd. of Trade v. City of New York, 615 F.3d 152 (2d Cir. 2010).
[264] Metro. Taxicab Bd. of Trade v. City of New York, 2008 U.S. Dist. LEXIS 94021, *5 (2008).

rules after concluding that they likely were preempted by EPCA's express preemption of state and local legislation which "relates to fuel economy standards;"[265] the City replaced them with the rules at issue in *Metropolitan Taxi II*. The second set of rules sought to encourage, not mandate, conversion to hybrids by making conventional vehicles relatively less profitable.[266] The new rules increased the lease caps – which is the maximum amount that fleet owners can charge for leasing their taxicab licenses and vehicles – for hybrid or clean fuel vehicles and decreased the lease caps for conventional vehicles.[267] Fleet owners were still permitted to use conventional vehicles and could earn a profit (albeit a more modest one) from doing so.[268] Nevertheless, in an unusually brief decision, the Second Circuit determined that because the "lease cap" rules "draw a distinction between vehicles with greater or lesser fuel-efficiency"[269] they "related to" fuel economy standards and therefore impermissibly infringed upon the federal domain.[270]

It is far from clear that the language of EPCA's preemption clause compelled the Second Circuit to reach this conclusion.[271] In fact, when interpreting the scope of a similar preemption provision in the Clean Air Act, the Supreme Court explicitly left open the possibility that local incentive programs for low-emitting vehicles would not constitute "standards" within the Act and could therefore escape preemption.[272] What is clear is that the outcome in the case is at odds with EPCA's overarching purposes, which include "to conserve energy supplies through energy

[265] 49 U.S.C. § 32919(a) (2012).
[266] *See Metro. Taxicab*, 615 F. Supp. at 155 (stating that the new lease caps would lower profits for conventional cabs by 65%–75%).
[267] *Id.* at 155.
[268] *Id.*
[269] *See id.* at 157.
[270] *See id.* at 155.
[271] *See* Roderick M. Hills, *Against Preemption: How Federalism Can Improve the National Legislative Process*, 82 N.Y.U. L. Rev. 1, 58 (2007) (noting the inherent ambiguity of prepositional phrases such as "relate to").
[272] *See Engine Mfrs. Ass'n v. S. Coast Air Quality Mgmt. Dist.*, 541 U.S. 246, 255 (2004) (concerning the reach of section 209 of the CAA, which prohibits the adoption or attempted enforcement of any state or local "standard relating to the control of emissions from new motor vehicles or new motor vehicle engines." 42 U.S.C. § 7543(a) (2012)).

conservation"[273] and "to provide for improved energy efficiency of motor vehicles, major appliances, and certain other consumer products."[274] Yet the court never considered EPCA's purpose in determining whether hybrid incentives fell within the bounds of the Act's preemption provision.[275] Moreover, given that the lease cap rule incentivized the purchase of a product that already existed on the market, there was no risk of forcing manufacturers to alter their production processes. This substantially undermined the economic argument for ceiling preemption because industry should have been far less burdened by divergent voluntary incentives than mandatory rules.

A New Mexico case that considered whether EPCA preempted an Albuquerque green building ordinance also led to a result that we believe should be revisited.[276] Shortly before New York City introduced its ill-fated hybrid taxi rules, Albuquerque enacted a new building code to promote the construction of more energy efficient buildings.[277] The contested building code set out several different pathways from which builders could choose to meet the code's energy standards. There were performance based pathways, which generally mandated that buildings meet a given level of energy efficiency overall but did not specify that individual heating ventilation, and air conditioning (HVAC) appliances meet particular standards, and prescriptive pathways, which permitted builders to demonstrate compliance by installing HVAC equipment that exceeded

[273] Energy Policy Conservation Act of 1975, 42 U.S.C. § 6201(2)(4) (2012). *See also* S. REP. NO. 94-179, at 2 (1975) (stating, "there is agreement that energy conservation must be a key element of [energy] policy" and "[t]he improvements in fuel economy called for in S. 1993 will lead to an overall reduction in gasoline demand").
[274] Energy Policy Conservation Act § 6201(2)(4).
[275] EPCA's legislative history provides little information regarding the intended scope of its preemption provision. Ophir v. City of Boston, 647 F. Supp. 2d 86, 93 (2009); Green Mountain Chrysler Plymouth Dodge, Jeep v. Combine, 508 F. Supp. 2d 295, 394 (D. Vt. 2007).
[276] Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 835 F. Supp. 2d 1133 (D.N.M. 2010).
[277] Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 2012 WL 13081235 *1 (D.N.M. 2012) (September 2007); Metro. Taxicab Bd. of Trade v. City of New York, 2008 U.S. Dist. LEXIS 94021 (2008) (December 2007).

federal minimum requirements.[278] Only builders of "small retail and office buildings" and residential homes were permitted to make use of a prescriptive pathways, which were presumably less complicated to implement than the performance standards.[279]

Soon after the code was issued, an association of HVAC manufacturers and distributors challenged it, arguing that the code was preempted by EPCA. [280] The City argued in response that while the prescriptive pathways may appear to be preempted if examined in isolation, they were salvaged here by the fact that there were several alternative options for demonstrating compliance available.[281] This district court was not persuaded by the City's claim. To the contrary, the court found no applicable precedent to indicate that a "local law is not preempted when it presents

[278] The pathways available to builders depended on the type of building; different pathways were provided for "commercial and multi-family buildings" compared with "one and two family detached dwellings and townhouses." For example, for commercial and multi-family buildings, in addition to the prescriptive pathway there were two performance pathways: obtaining LEED certification for the building at the level of "Silver" or greater; or designing the building as a whole to use 30% less energy than the minimum standards established by the American Society of Heating, Refrigerating and Air-Conditioning Engineers. *Id.* at 1135, 1138.

[279] *Id.* at 1135.

[280] The litigation resulted in three decisions from the same district court judge, the last of which held that the code could not be enforced. We limit our discussion to the district court's first two decisions: Air Conditioning, Heating & Refrigeration Inst. V. City of Albuquerque, 2008 WL 558616 (D.N.M. 2008) (preliminarily enjoining the code after holding that the plaintiffs are likely to succeed on their claims that the prescriptive and the performance pathways are preempted and not saved by the exemptions from preemption in EPCA); *and* Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 835 F. Supp. 2d 1133 (D.N.M. 2010) (granting summary judgment to the plaintiffs on their claims that the prescriptive pathways and one of the performance pathways for residential homes are preempted, without expressly considering if the prescriptive pathways for commercial and multi-family buildings or residential homes are saved by the statutory exemptions from preemption).

The district court relied on two preemption provisions: (1) 42 U.S.C. § 6316(b)(2)(A) (2012), which preempts state and local energy regulations of *commercial* appliances unless the regulation satisfies a savings clause in 42 U.S.C. § 6316(b)(2)(B) which is limited to code provisions covering new construction; and (2) 42 U.S.C. §6297(c), which preempts state and local regulations of *residential* appliances unless the regulation satisfies a savings clause in 42 U.S.C. §6297 (f)(3) which is also limited to code provisions covering new construction. Albuquerque argued that 42 U.S.C. § 6316(a) incorporates 42 U.S.C. §6297 – including 6297's savings provision. Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 2010 WL 11595566 (D.N.M.), No. CIV-08-633 MV/RLP, Defendant's Brief in Opposition to Renewed Motion for Partial Summary Judgment as to Volume I of the Albuquerque Energy Conservation Code, 2010 WL 11595566 (D.N.M.) (January 26, 2010). For a clear exposition of the two relevant preemption provisions and associated savings clauses, see Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 2010 WL 11595566 (D.N.M.), No. CIV-08-633 MV/RLP, 2009 WL 10697815 (D.N.M.), Renewed Motion and Memorandum Brief for Partial Summary Judgment on Preemption of the City of Albuquerque's Green Building Codes: Replacements (September 4, 2009).

[281] 835 F. Supp.2d at 1136–37.

regulated parties with viable, non-preempted options."[282] It also feared that allowing the prescriptive pathway to stand would "defeat the purpose" behind EPCA's broad preemption provision, which included protecting appliance manufacturers from a "patchwork" of State regulations which "complicated their design, production and marketing plans."[283] For both of these reasons, the court determined that the prescriptive pathways were preempted.

The court was similarly skeptical of the performance pathways. In a particularly significant section of its decision granting a preliminary injunction against the code, the court explained that some of the code's performance pathways appeared unlikely to meet an exception to preemption that EPCA provides for certain building codes for new construction that do not *require* the use of high efficiency appliances.[284] In the court's view, these performance pathways "effectively" required the installation of high efficiency appliances because a builder who used standard efficiency appliances would have to make other modifications in order to comply with the code.[285] The court never reached a final decision on whether these performance pathways were preempted in subsequent phases of the litigation due to the plaintiffs' failure to meet certain pleading burdens.[286] Nonetheless, the court's willingness to equate a disincentive, or penalty, with a requirement is noteworthy.

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[282] *Id.* at 1137 (citing for this holding the preliminary injunction decision, 2008 WL 5586316 at *8); *id.* at 1138 (concluding that the prescriptive pathway for the residential homes is preempted for the same reasons).

[283] *Id.*at 1137–38.

[284] Air Conditioning, Heating & Refrigeration Inst. V. City of Albuquerque, 2008 WL 558616 *9 (D.N.M. 2008). Residential building codes for new construction are exempted from preemption if they meet seven criteria, including "The code does not require that the covered product have an energy efficiency exceeding the applicable [federal] energy conservation standard." 42 U.S.C. §6297 (f)(3)(B).

[285] Air Conditioning, Heating & Refrigeration Inst. V. City of Albuquerque, 2008 WL 558616 *9 (D.N.M. 2008)

[286] Air Conditioning, Heating & Refrigeration Inst. v. City of Albuquerque, 835 F. Supp. 2d 1133, 1139–40 (D.N.M. 2010)

As was the case with the Second Circuit's interpretation of EPCA's preemption clause in *Metropolitan Taxi II*, it is far from clear that the court was obliged to interpret inducements to use greener products as preempted. In fact, two years later, the Ninth Circuit upheld a Washington state green building code that incorporated an option to use high efficiency appliances among the available pathways for compliance against an EPCA preemption claim.[287] In the Ninth Circuit's view, the use of high efficiency appliances is not "required," as that term is used within the statutory exception, so long as builders can choose an alternative means of compliance.[288] Moreover, unlike the New Mexico district court, the Ninth Circuit was willing to uphold the option of using high efficiency appliances -- even though this may have been the least costly means of compliance -- on the basis that any cost differential between the alternative compliance options merely incentivized, but did not compel, a particular pathway.[289] The Ninth Circuit recognized

[287] Bldg. Ass'n of Washington v. Washington State Bldg. Code Council, 683 F.3d 1144 (9th Cir. 2012).

[288] *Id.* at 1151 (applying 42 U.S.C. §6297 (f)(3)(B), the same provision discussed by the New Mexico court in Air Conditioning, Heating & Refrigeration Inst. V. City of Albuquerque, 2008 WL 5586316 *9).

[289] Bldg. Ass'n of Washington v. Washington State Bldg. Code Council, 683 F.3d 1144 at 1153 (citing Supreme Court precedent distinguishing requirements on the one hand, from economic incentives and inducements on the other). *Cf.* Air Conditioning, Heating & Refrigeration Inst. V. City of Albuquerque, 2008 WL 5586316 *9 (describing the higher cost of satisfying the code provisions without using high efficiency appliances as "effectively require[ing] the installation of products that exceed federal energy standards").

The Ninth Circuit distinguished the New Mexico court's preliminary injunction holding on §6297(f)(3)(B) by explaining that the Albuquerque ordinance created a more direct penalty for failing to use high efficiency appliances than did Washington State's ordinance. Bldg. Ass'n of Washington v. Washington State Bldg. Code Council, at 1151–52. However, the New Mexico district court did not articulate such a standard itself and it is far from certain that the court would have ruled differently if presented with the facts before the Ninth Circuit. Indeed, it seems equally plausible that the New Mexico court would have determined that an ordinance like Washington State's "effectively required" high efficiency products because, whether directly or indirectly, it created an economic incentive for their use. The uncertainty regarding the reach of the New Mexico decision has led some commentators to conclude the cases present a "circuit split." *See*, *e.g.*, Shari Shapiro, *Decision in* BIA v. Washington *Does Not Clarify When Energy Efficient Codes Are Preempted by Federal Law*, Green Building L., July 13, 2012, http://www.greenbuildinglawblog.com/2012/07/articles/ litigation/decision-in-bia-v-washington-does-not-clarify-when-energyefficient-codes-are-preempted-by-federal-law/. *But see* Kit Kennedy, *The Role of Energy Efficiency in Deep Decarbonization*, 48 Envt'l L. Rep. 10030, 10038 (2018) (arguing that the two building codes can be distinguished). At a minimum, the uncertainty regarding the scope of the New Mexico holding and whether other courts will follow suit is likely to discourage local officials from adopting building codes that permit individuals to demonstrate compliance via installation of high-efficiency appliances, even where this may be the most cost-effective means of achieving the desired energy savings.

that an economic incentive to use a product is not a legal requirement do so, something that the New Mexico district court was reluctant to do.

As was the case with New York City's incentives for hybrid taxis, Albuquerque's building code promoted the use of products that already existed in the market. The code did not directly regulate the manufacturers, requiring, as the federal statute does, that they produce products that comply with potentially aspirational standards. It therefore did not create a risk that industry would be forced to design new products to meet conflicting regulations in different jurisdictions and seems unlikely to have imposed substantial regulatory burdens on industry.[290]

The holdings in *Albuquerque* and *Metropolitan Taxi I* & *II* continue to be relevant for local environmental policymaking today. As mentioned in Part 2.2, cities are actively developing building codes to regulate the energy efficiency of new buildings and additions to existing buildings.[291] In crafting such requirements, cities might wish to provide builders, especially of small commercial buildings or residential homes who may have limited operational sophistication, with the option of satisfying energy efficiency targets by installing appliances that exceed federal energy efficiency standards, the very option that the New Mexico district court held to be preempted.

To take another example, cities interested in electrifying vehicles might want to encourage the electrification of large privately owned fleets of vehicles, such as the vehicles used by drivers

[290] *See also* Klass, *supra* note 261, at 365.

[291] *See* Air Conditioning, Heating & Refrigeration Inst. V. City of Albuquerque, 2008 WL 558616 *2 (D.N.M. 2008) (noting that the Albuquerque code applies to new buildings, additions to buildings and buildings that have been substantially renovated). *See also* Wash. Admin. Code § 51-101.3.2.1 (setting out the conditions under which the provisions of the Washington State Building Code apply to additions of existing buildings).

Notably, a city could not rely on an exemption from preemption under sections 6297(f)(3) or 42 U.S.C. § 6316(b)(2)(B) for mandating that *existing* buildings use covered appliances that exceed federal minimums; the statute only contemplates exemptions for building codes for new construction. 42 U.S.C. §6297 (f)(3); 42 U.S.C. § 6316(b)(2)(B).

for transportation network companies such as Uber and Lyft.[292] In light of the emergence of Uber and Lyft, there are now over nine times as many for-hire vehicles (FHVs) on New York City streets as taxis -- 107,435 licensed FHV vehicles compared with 13,587 licensed taxis.[293] The City is committed to promoting vehicle electrification,[294] and but for the case law there might be more focus in the City on the potential to promote the policy goal through the City's extensive regulation of FHV vehicles. The City clearly cannot require the FHV vehicles to electrify without running afoul of the Clean Air Act and potentially EPCA.[295] *Metropolitan Taxi II* suggests that the City also has limited authority to *incentivize* the electrification of the FHV fleet or other privately owned, highly regulated vehicle fleets in the City. In the wake of *Metropolitan Taxi II*, a bill was introduced in Congress to undo the effect of the decision but it never passed.[296] In the absence of legislative reversal, might there be scope for distinguishing a new *incentive* for FHVs from the lease cap rule for taxis in *Metropolitan Taxi II* on the facts, and adopting a more purposive interpretive of EPCA preemption to enable New York and other cities to induce (but not require) electrification? The Supreme Court's silence to date on whether the Clean Air Act prohibits subnational governments from voluntarily incentivizing the purchase of cleaner vehicles suggests

[292] California, which regulates transportation network companies at the state level, has passed legislation to promote the electrification of transportation network company vehicles. *See* Cal. Clean Miles Standard & Incentive Program, S.B. 1014, 2018 Leg. Sess. (Cal. 2018).

[293] N.Y.C. TAXI & LIMOUSINE COMM., 2018 FACT BOOK 1 (2018). Almost 64% of the licensed taxis are hybrids; almost 19% of the licensed FHV vehicles are hybrids. *Id*.

[294] Press Release, City of New York, Mayor Announces City Electric Vehicle Fleet Ahead of Schedule, Halfway to Goal (April 17, 2017) *available at* https://www1.nyc.gov/office-of-the-mayor/news/245-17/onenyc-mayor-city-electric-vehicle-fleet-ahead-schedule-half-way-toward-goal

[295] American Auto Mfrs. Ass'n v. Cahill, 152 F.3d 196 (2d Cir. 1998) (New York State zero emission vehicle requirements preempted by Clean Air Act); Metro. Taxicab Bd. of Trade v. City of New York, 2008 U.S. Dist. LEXIS 94021 (2008).

As Richard Revesz suggested to us, California might adopt requirements that vehicles, such as transportation network company vehicles, electrify, relying on a waiver from EPA for such a requirement. If it did so, other states might then adopt the California standards. For a state to limit the electrification requirements to vehicles in cities, California's requirements would have to also limit the requirement in the same way. For California legislation to electrify transportation network company vehicles, *see supra* note 292.

[296] Green Taxis Act, H.R. 1243, 112th Cong. (2011).

that the option is not yet foreclosed under the CAA.[297] Moreover, the *Metropolitan Taxi* decisions are only binding within the Second Circuit; other circuits remain free to interpret EPCA differently and, as we have described, there are strong grounds for them to do so.

To remedy the seeming overuse of preemption in the environmental field in other contexts, a number of scholars have previously called on courts to adopt a stronger presumption against invalidating subnational environmental measures on the basis of implied preemption.[298] A presumption against implied preemption in environmental cases may certainly be appropriate. The problem, however, is that the statutory provisions in *Metropolitan Taxi I* and *II* and *Albuquerqu*e provided for express preemption. One option in an express preemption case is to urge the courts to adopt a more purposive approach to interpreting preemption provisions.[299] In close cases, such an approach may dispositively tip the scales towards environmental interest.[300] If the courts had insisted on greater fidelity to the overarching goals that EPCA aimed to achieve, New York City's and Albuquerque's use of voluntary incentives to induce demand for less-polluting products may have been allowed to stand and cities today might have a broader set of tools to achieve their environmental goals.

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[297] *See* Engine Mfrs. Ass'n v. S. Coast Air Quality Mgmt. Dist., 541 U.S. 246. (2004).

[298] Robert L. Glicksman & Richard E. Levy, *A Collective Action Perspective on Ceiling Preemption by Federal Environmental Regulation: The Case of Global Climate Change*, 102 NW. U. L. REV. 579, 589 (2008); Richard B. Stewart, *States and Cities as Actors in Global Climate Regulation: Unitary v. Plural Architectures*, 50 ARIZ. L. REV. 681, 706 (2008); Paul S. Weiland, *Federal and State Preemption of Environmental Law: A Critical Analysis*, 24 HARV. ENVTL. L. REV. 237, 238 (2000).

[299] Other scholars have argued that preemption inquiries should always turn on the purpose of the statute that is claimed to preempt the state or local law. Glicksman & Levy, *supra* note 298, at 580.

[300] Some may worry that limiting the scope of ceiling preemption would undermine environmental goals by making it hard to secure legislative compromises with industry. But given the slow pace of federal environmental law development during the past three decades, this risk does not seem as pressing as the risk of stifling innovation at the subnational levels.

3.2. Finding Space within State Law

As indicated in Part 3.0, cities authority to address environmental issues is rooted in state grants of authority under home rule or other provisions of state law. In as much as state law often empowers cities, it also powerfully constrains them, and so one way to increase the space for cities to innovate would be to reduce the thicket of constraints on cities that state law imposes. For example, state law might be reformed to grant cities greater authority to use taxation to reduce consumer demand for polluting products and services.

Cities generally have quite limited authority under state law to raise revenue through taxes.[301] In Massachusetts, for example, cities including Boston must rely on property taxes and state aid for their revenues because the Massachusetts Home Rule Amendment does not empower cities to levy taxes.[302] A majority of states in the nation even impose limitations on local governments' authority to adjust property taxes,[303] which has historically been the largest source of local funds.[304]

While there is considerable debate about the appropriate scope of city authority over taxes,[305] there are economic arguments for cities to have greater authority to enact taxes to address environmental externalities. Indeed, "a significant group of economists [has] argued that a tax would be the" best way of reducing greenhouse gas emissions specifically.[306] If drivers and

[301] Frug & Barron, *supra* note 8, at 82. On the history of state law limits on local taxation authority, see Barron, *supra* note 248, at 2283, 2295, 2299, 2312–15, 2322, 2365.
[302] *Id.* at 76.
[303] Daniel R. Mullins and Bruce A. Wallin, *Tax Expenditure Limitations: Introduction and Overview*, 24 PUB. BUDGETING & FIN. 7 (2004).
[304] RICHARD BRIFFAULT & LAURIE REYNOLDS, STATE AND LOCAL GOVERNMENT LAW 688 (8th ed. 2016).
[305] John Douglas Wilson, *Theories of Tax Competition*, 52(2) National Tax Journal 269, 289 (1999); Clayton P. Gillette, *Who Should Authorize a Commuter Tax*, 77 U. Chicago L. Rev. 222, 245 (2010).
[306] RICHARD L. REVESZ, ENVIRONMENTAL LAW AND POLICY 179 (3d ed. 2015); *see also* N. Gregory Mankiw, *One Answer to Global Warming: A New Tax*, N.Y. TIMES (Sep. 16, 2007),

building owners were taxed for the harms that they impose on others by driving gasoline-fueled cars on municipally-owned roads and burning fossil fuels on-site to heat buildings, then drivers and owners would likely reduce their driving and consumption of fossil fuels, or pay the tax if the activities were more valuable to them. In either case, the social costs of driving and fossil-fuel heating would be fully internalized. In addition, with the funds raised from the tax, local governments could devote additional spending to goals such as environmental protection, redistribution (for example, to offset any regressive impacts of the tax on low-income earners) or reducing other taxes, in accordance with public preferences.[307]

The limits on cities' taxation authority have foiled some prominent municipal environmental initiatives. Comprehensive road pricing is an example of an environmental policy that New York City has had to forgo partly because of state law limitations on municipal taxation authority. For decades, transportation planners have sought to reduce vehicular traffic and air pollution in Manhattan and provide a new source of funding for mass transit by charging every driver to enter the most congested part of New York City, but their efforts have been frustrated by the state law requirement that the City obtain state legislative approval to comprehensively price driving into and inside the City.[308] The need to obtain the support of the State Assembly, Senate

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https://www.nytimes.com/2007/09/16/business/16view.html (referenced by Revesz). Economists generally envisage a federal tax, not local taxes, to reduce GHG emissions.

[307] A very small number of small U.S. cities have carbon taxes, which are essentially taxes on electricity consumption. Boulder, Colorado is likely the best known example of a city with a carbon tax. It is legally able to impose the tax because, unusually among states, Colorado allows municipalities to initiate taxes without state approval. *See* COLO. CONST. art. XX.

In other examples of local environmental taxes, Boston taxes all carryout bags, and bans conventional plastic bags, and Chicago taxes plastic bags in order to encourage shoppers to use reusable or paper bags. There are tolled roads, and some jurisdictions have tolled lanes next to untolled lanes on the same highway. However, these initiatives do not ensure that all drivers pay for the miles that they drive. Bruce Schaller, *New York City's Congestion Pricing Experience and Implications for Road Pricing Acceptance in the United States*, 17 TRANSPORT POL'Y 266, 272–73 (2010).

[308] For a description of New York City's repeated efforts to implement congestion pricing, *see* Sam Schwartz et al., *A Comprehensive Transportation Policy for the 21st Century: A Case Study of Congestion Pricing in New York City*, 17 N.Y.U. ENVTL. L.J. 592–93 (2008).

and Governor provides the opponents of road pricing -- typically called "congestion pricing" in New York City politics -- with ample veto points to thwart a policy that would benefit the majority of New Yorkers.[309] This was most vividly illustrated in 2007-2008, when then Mayor Bloomberg made congestion pricing the centerpiece of his marquee initiative to improve the sustainability of New York City known as *PlaNYC*. Bloomberg developed a plan that would have charged drivers $8 to enter Manhattan south of 60th Street.[310] The plan was predicted to reduce vehicle miles travelled within parts of Manhattan by 6.8 percent[311] and would have provided an influx of capital to invest in new buses, subway upgrades and bike lanes.[312] The City Council voted in favor of adopting congestion pricing by a margin of 30-20.[313] Unfortunately, the State Assembly refused to bring the proposed legislation authorizing the plan to a vote due to opposition in some of the outer boroughs of the City, and so congestion pricing died.[314] The *New York Times* noted that the legislature had dealt a "huge blow to Mr. Bloomberg's environmental agenda."[315] At the time of this writing, there were signs that congestion pricing may finally become a reality in New York

[309] *See* Schaller, *supra* note 307, at, 270–72.

In 2017, Roderick Hills and other legal scholars argued that New York City has authority under existing state law to charge drivers for using the roads and bridges that the City owns. These scholars argued that section 1624(a)(4) of the state Vehicle and Traffic Law authorizes the City to implement new tolls on its roads and bridges without State consent so long as such charges are authorized by the City Council. Roderick Hills, Eric Lane & Frederick A.O. Schwartz Jr., *With Traffic and Transit in Crisis, City Must Take Charge*, CRAIN'S NEW YORK (July 6, 2017), https://www.crainsnewyork.com/article/20170706/OPINION/170709991/with-traffic-and-transit-in-crisis-city-must-take-charge. As the scholars acknowledge, however, the City does not share their legal interpretation of its authority. Moreover, even if the City were to toll *its* roads and bridges, as these scholars suggest it could, this would not lead to comprehensive and coordinated region-wide road pricing. The Metropolitan Transportation Authority and the Port Authority of New York and New Jersey own important bridges and tunnels (which they currently toll); these agencies are not controlled by New York City.

[310] Schaller, *supra* note 307, at 267.

[311] Schaller, *supra* note 307, at 268.

[312] Aaron Naparstek, *Congestion Pricing Q&A with Rohit Aggarwala, Part 3*, STREETSBLOG NYC (Sep. 19, 2007), https://nyc.streetsblog.org/2007/09/19/congestion-pricing-qa-with-rohit-aggarwala-part-3/; *see also* Schaller, *supra* note 307, at 268.

[313] Schaller, *supra* note 307, at 267, 269. Opposition was concentrated in the outer boroughs of Queens and Brooklyn. *Id*. at 269.

[314] Nicholas Confessore, *Congestion Pricing Plan Dies in Albany*, N.Y. TIMES (April 7, 2008), https://cityroom.blogs.nytimes.com/2008/04/07/congestion-pricing-plan-is-dead-assembly-speaker-says/.

[315] *Id*.

City.[316] Yet, its fate still remains unsure and, today, vehicular traffic continues to slow travel times,[317] worsen local air quality,[318] and contributes roughly thirty percent of City-wide GHG emissions.[319]

Enlarging municipal taxation authority to address more environmental externalities such as vehicular traffic would generally require affirmative changes in state legislation, or even state constitutions, if they are the source of city home rule authority and limits on it. No doubt some state lawmakers would resist such changes, which would involve a redefinition of the historical relationship of states and local governments for the benefit of local governments. However, there might be a window of opportunity at the state for such changes when state legislatures and the governor come under the control of progressive parties as has recently happened in New York and several other states.[320]

If cities are unable to persuade state officials to expand their taxation authority, they may still be able to achieve some of their environmental goals by enacting new user fees. Like taxes,

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[316] Winnie Hu, *New York Has Moved Closer Than Ever to Passing Congestion Pricing. Here's Why*. N.Y. TIMES, (Feb. 19, 2019).

[317] *See* Anthony Noto, *NYC Economy May Be Losing $20 Billion a Year Due to Traffic Congestion*, N.Y. BUS. J. (Jan. 17, 2018), https://www.bizjournals.com/newyork/news/2018/01/17/nyc-economy-may-lose-due-to-traffic-congestion.html.

[318] Schwartz, *supra* note 308, at 588. *See also* Kheirbek et al., *The Contribution of Motor Vehicle Emissions to Ambient Fine Particulate Matter Public Health Impacts in New York City: A Health Burden Assessment*, 15 ENVTL. HEALTH 89 (2016).

[319] CITY OF NEW YORK, INVENTORY OF NEW YORK CITY GREENHOUSE GAS EMISSIONS IN 2016, at 5 (2017), *available at* https://www1.nyc.gov/assets/sustainability/downloads/pdf/publications/GHG%20Inventory%20Report%20Emission%20Year%202016.pdf.

[320] The 2018 elections, which left Democrats in control of all three houses of government in a number of states for the first time in years, may provide new opportunities to pursue such changes. In a number of states including Colorado, Illinois, Maine, Nevada and New York all three houses of government— governorships, Houses and Senates—came under Democratic control. This single party control may make it easier to pass legislation that aligns with cities' progressive priorities.

fees can be used to price environmental externalities. And, as mentioned above, many states grant municipal governments greater latitude to raise revenue through user fees than through taxes.[321]

Some cities have begun exploiting their authority to introduce fees for environmental ends. For example, cities throughout the country, including Philadelphia[322] and Washington, DC,[323] have implemented stormwater remediation fees, which require property owners to pay a fee based on an approximate amount of the stormwater runoff their properties generate.[324] A number of American cities, including Boulder[325] and New York, have also implemented fees for plastic bags (although in the New York City's case, the fee was subsequently preempted by State legislative action[326]) and Los Angeles has enacted a fee on paper bags as well.[327] The question for scholars and policymakers to consider is, could fees be used more broadly to price environmental externalities? We believe there may be scope for them to do so although there are also limits to how far this authority can be stretched.

The dividing line between fees and taxes can be blurry,[328] but, in general, taxes are levied on all those within a government's taxing authority without regard for the benefit an individual taxpayer receives, while fees are levied only upon those who avail themselves of a service in

[321] Gillette, *supra* note 305, at 1246. For example, New York City can typically instate new user fees or service charges without seeking permission from the State. N.Y. MUN. HOME RULE § 10(9-a).
[322] *Stormwater*, CITY OF PHILADELPHIA WATER, https://www.phila.gov/water/wu/stormwater/Pages/default.aspx (last visited Jan. 23, 2019).
[323] *Stormwater Fee Background*, DC.GOV DEPT. OF ENERGY & ENV'T, https://doee.dc.gov/service/stormwater-fee-background (last visited Jan. 23, 2019).
[324] JUSTIN GUNDLACH, SABIN CTR. FOR CLIMATE CHANGE LAW, COLUM. L. SCH. PUTTING GREEN INFRASTRUCTURE ON PRIVATE PROPERTY IN NEW YORK CITY, 13 (2017). The funds raised through these fees are intended to offset the expenses cities incur building and maintaining infrastructure to manage stormwater. *Id.*
[325] Boulder, Colo., Ordinance 7870 (Nov. 12, 2012), *available at* https://www-static.bouldercolorado.gov/docs/Boulder_Disposable_Bag_Fee_Ordinance-1-201511231547.pdf?_ga=2.17122105.106050988.1547743727-1839498462.1538685830.
[326] Jesse McKinley, *Cuomo Blocks New York City Plastic Bag Law*, N.Y. TIMES (Feb. 14, 2017), https://www.nytimes.com/2017/02/14/nyregion/cuomo-blocks-new-york-city-plastic-bag-law.html.
[327] Scharff, *supra* note 254, at 193.
[328] *Id.* at 186–92.

proportion to the individual benefit received.[329] As Professor Erin Scharff has observed, some charges are fairly easy to classify along these lines; property taxes, which apply to every homeowner in an area, fit quite natural within the domain of taxes, while a fee for using a public golf course is clearly a fee.[330] But many other charges seem to fit somewhere in between these two poles.

State courts have developed a variety of tests to try to distinguish fees from taxes in the difficult cases. In Texas, for example, the distinction between fees and taxes seems to rest entirely on whether the purpose for the charge is to raise revenue; so long as a charge has a regulatory purpose, it is considered a function of the city or state's police power, rather than its taxation authority, and is therefore a fee.[331] Cities in Texas, then, may be able to address of a range of environmental externalities with fees, beyond stormwater and bag fees. For instance, Austin may be able to adopt fees on products that reflect their embedded carbon or attach a fee on the sale of fish that has not been sustainably sourced.

Many other states, however, use a multi-factor assessment to distinguish fees from taxes[332] and in these states, the opportunities for using fees may be more limited. The most significant constraint posed by the multi-factor approach is that the states that apply it tend to insist that charges be proportionate to the expenses that the government incurs in providing a given service or addressing a given harm in order to be classified as a fee.[333] Courts have not typically required

[329] Laurie Reynolds, *Taxes, Fees, Assessments, Dues, and the "Get What You Pay for" Model of Local Government*, 56 FLA. L. REV. 373, 379 (2004). In addition, tax revenue typically goes to a general governmental fund whereas revenue from fees is earmarked for a specific function. Joslin v. Regan, 406 N.Y.S.2d 938, 941 (N.Y. App. Div. 1978).
[330] Scharff, *supra* note 254, at 186–87.
[331] *Id.* at 186. We could not find a case from a state other than Texas that considers only the purpose behind a fee, but did not conduct an exhaustive search of case law in all 50 states. Thus, there may be others that apply a similar approach.
[332] *Id.* at 186–89.
[333] *Id.* at 187–88.

an exact match between the size of the charge and the expenses incurred.[334] But a relationship of some sort is required.

The proportionality requirement may make it difficult for cities to use fees that exceed the scope of government expenditure to address a given environmental problem. This limitation would make it particularly difficult to fully price environmental harms – such as greenhouse gas pollution - that impose costs on other jurisdictions. In these cases, cities may be able to adopt a more modest fee that reflects the costs of local actions to adapt to climate change but not the sum total of global harms that greenhouse gas emissions pose. It may thus be difficult to adopt the federal government's social cost of carbon, which reflects global harms.[335] Cities in states that require proportionality would also presumably be prevented from using fees to discourage the purchase of products, such as fish that were unsustainably harvested in the high seas, that reap havoc entirely outside their borders as local officials would not expend resources mitigating such harms.

Still, even cities in states that require proportionality may have more scope to use fees to address environmental externalities than they have taken advantage of thus far. For example, one could imagine such cities adopting more fees to offset the jurisdictions' cost in managing waste, particularly waste such as electronic waste, which poses particularly significant environmental challenges, or even using fees to help offset the costs of infrastructure and services that is built to adapt to climate change. Given the urgency of subnational environmental actions in the current era, we encourage local governments to explore their ability to make broader use of their authority over environmental fees.

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[334] *Id.* at 188.
[335] Peter Howard & Jason Schwartz, *Think Global: International Reciprocity as Justification for a Global Social Cost of Carbon*, 42 COLUMBIA J. ENVTL. L. 203 (2017).

Conclusion

Important American cities are now better positioned and more motivated to address environmental problems than they were in the 1970s when environmental law was significantly federalized. Although constrained by federal and state laws, cities have nonetheless begun to carve out a niche suite of policies to reduce demand for polluting products, most notably in the buildings sector where cities are pioneering innovative ways of increasing energy efficiency. If cities were given more authority to use financial incentives such as taxes and other inducements, cities would have additional scope to refine their regulation of demand, without undercutting the benefits of federal environmental standards. Reducing consumer demand for fossil fuels in the building and transportation sectors could have a major impact on greenhouse gas emissions. In an era when the federal government is rolling back environmental standards notwithstanding rising threats from climate change, it is vital to empower cities to implement environmental protections, some of which ultimately may help to inform federal regulation when the federal government returns to safeguarding the environment.

Appendix A: Sources for Table 1: Survey of Contemporary Urban Environmental Laws

I. Green Building Codes

City	Sources
Austin	Austin Energy Green Building, *What is the Austin Energy Green Building Program?*, https://greenbuilding.austinenergy.com/aegb/about/ (describing the city's rating system for sustainable building practices).
Boston	Boston, Mass., Zoning Code art. 37 (2007), *available at* http://www.bostonplans.org/getattachment/a77140ba-cdd0-48fb-9711-84540bf31f35 (requiring proposed projects to be LEED certifiable); Boston Planning & Development Agency, *Article 37 Green Building and Climate Resiliency Guidelines*, http://www.bostonplans.org/planning/planning-initiatives/article-37-green-building-guidelines (further explaining and providing guidelines for the requirements of article 37).
Chicago	City of Chicago, *Chicago Sustainable Development Policy*, https://www.cityofchicago.org/city/en/depts/dcd/supp_info/sustainable_development/chicago-sustainable-development-policy-update.html (last visited Aug. 31, 2018) (requires new and renovation construction projects to achieve a certain number of points by implementing various green strategies).
Denver	Denver, *Denver's Green Buildings Ordinance*, https://www.denvergov.org/content/denvergov/en/denver-development-services/commercial-projects/green-roof-initiative.html (last visited Aug. 31, 2018) (requiring new buildings of at least 25,000 square feet to include a cool roof and one of several green infrastructure options).
Miami	City of Miami, *Office of Miami Sustainable Initiatives*, http://archive.miamigov.com/grants/sustainable.html (requiring new buildings greater than 50,000 square feet to be LEED-silver certified, and providing density bonuses for achieving higher levels of certification).
Minneapolis	Minneapolis Sustainability, *LEED Building Policy*, http://www.minneapolismn.gov/sustainability/policies/sustainability-leed (last updated Aug. 3, 2016) (requiring new city-owned buildings to be LEED-silver certified).
New York	New York, N.Y., Local Law No. 86 (2005), *available at* http://www.nyc.gov/html/oec/downloads/pdf/green_building/LL86_of_2005.pdf (requiring projects receiving city funding to achieve a LEED-silver rating or reduce energy costs and potable water use); New York, N.Y., Local Law No. 85 (2009), *available at* http://www.nyc.gov/html/planyc2030/downloads/pdf/ll85of2009_energy_code.pdf (requiring that buildings that are being renovated meet the current energy code).
Orlando	City of Orlando, *Energy & Green Buildings*, http://www.cityoforlando.net/greenworks/energy-and-green-buildings/ (requiring new city-owned buildings to meet LEED standards).
Philadelphia	City of Philadelphia, *Green Buildings*, https://www.phila.gov/departments/department-of-public-property/green-buildings/ (requiring new city-owned buildings over 10,000 square feet to be LEED-silver certified).
Portland	Portland Bureau of Planning & Sustainability, City of Portland Green Building: A Summary of Codes, Regulations, Programs, and Policies Related to Green Building and Development, https://www.portlandoregon.gov/bps/article/475489 (providing a list of green building codes currently in effect).
San Diego	San Diego Cty. Plan. & Dev. Servs., *The Green Building Program*, https://www.sandiegocounty.gov/pds/greenbuildings.html (provides incentives for green

	building); ENERGY.GOV, *City of San Diego – Sustainable Building Policy*, https://www.energy.gov/savings/city-san-diego-sustainable-building-policy (providing regulations requiring city buildings and renovations for buildings larger than 5,000 square feet to achieve LEED-silver certification).
San Francisco	SF ENVIRONMENT, *San Francisco Green Building Code*, https://sfenvironment.org/green-building-ordinance-sf-building-code (requiring new construction to meet green building requirements); San Francisco, Cal., Regulation No. SFE13-03-GB, *available at* https://sfenvironment.org/sites/default/files/policy/sfe_gb_greenbuildingrequirements-city buildings_regsfe-13-03-gb.pdf (requiring municipal projects to achieve LEED-gold certification).
San Jose	None.
Seattle	CITY OF SEATTLE, SEATTLE CLIMATE ACTION 12 (2018), http://durkan.seattle.gov/wp-content/uploads/2018/04/SeaClimateAction_April2018.pdf (requiring new or renovated city-owned buildings to be LEED-gold certified and fifteen percent more energy efficient than the existing energy code); CITY OF SEATTLE, SEATTLE CLIMATE ACTION 10 (2018), http://durkan.seattle.gov/wp-content/uploads/2018/04/SeaClimateAction_April2018.pdf (requiring commercial buildings of at least 50,000 square feet to "identify[] low- or no-cost building operations and maintenance improvements to improve energy and water efficiency."
Washington DC	DC.GOV, *District's Green Construction Code*, https://doee.dc.gov/publication/districts-green-construction-code (requiring new buildings to "perform as much as 30 percent more efficiently").

II. BUILDING ENERGY DISCLOSURE

City	Sources
Austin	AUSTIN ENERGY, *Energy Conservation Audit and Disclosure Ordinance*, https://austinenergy.com/ae/energy-efficiency/ecad-ordinance (requiring energy audits and disclosures for all buildings); AUSTIN ENERGY, *ECAD for Commercial Buildings*, https://austinenergy.com/ae/energy-efficiency/ecad-ordinance/for-commercial-buildings (requiring commercial buildings of at least 10,000 square feet to benchmark and report their energy use rating annually).
Boston	CITY OF BOSTON, *Building Energy Reporting and Disclosure Ordinance*, https://www.boston.gov/environment-and-energy/building-energy-reporting-and-disclosure-ordinance (requiring large- and medium-sized buildings to disclose their energy and water use annually).
Chicago	CHICAGO, ILL., MUNICIPAL CODE ch. 18, § 18-14 et seq., *available at* https://www.cityofchicago.org/content/dam/city/progs/env/EnergyBenchmark/SO2017-7060.pdf (requiring buildings of at least 50,000 square feet to report their bechmarking information annually, verify it every three years, and post their star scale rating prominently on the property); *see also* CITY OF CHICAGO, *Chicago Energy Benchmarking Homepage*, https://www.chicago.gov/city/en/progs/env/building-energy-benchmarking---transparency.html (last visited Aug. 31, 2018).
Denver	DENVER DEPT. OF PUBLIC HEALTH & ENVIRONMENT, *Benchmarking*, https://www.denvergov.org/content/denvergov/en/environmental-health/environmental-quality/Energize-Denver/CommercialMultifamilyBuildingBenchmarking.html (requiring all buildings over 25,000 square feet to report their energy usage annually).
Miami	None.
Minneapolis	MINNEAPOLIS, MINN., CODE OF ORDINANCES ch. 47, § 47.190 (2013), *available at* https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=COOR_TI

	T3AIPOENPR_CH47ENAIPO_47.190COBURADI (requiring all city-owned buildings over 25,000 square feet or commercial buildings over 50,000 square feet to report their energy usage annually); *See also* MINNEAPOLIS SUSTAINABILITY, *Buildings & Energy*, http://www.minneapolismn.gov/sustainability/buildings-energy/index.htm (last updated Sep. 7, 2018).
New York	NYC MAYOR'S OFF. OF SUSTAINABILITY, *NYC Benchmarking Law*, https://www1.nyc.gov/html/gbee/html/plan/ll84.shtml (requiring large buildings to measure and report their energy and water use annually; NYC MAYOR'S OFF. OF SUSTAINABILITY, *LL87: Energy Audits & Retro-commissioning*, https://www1.nyc.gov/html/gbee/html/plan/ll87.shtml (requiring buildings over 50,000 square feet to undergo "periodic energy audit and retro-commissioning measures").
Orlando	ORLANDO, FLA., CODE OF ORDINANCES ch. 15, § 15.03, *available at* https://library.municode.com/fl/orlando/codes/code_of_ordinances?nodeId=TITIICICO_CH15SU_PTIBUENBE_S15.03BERE (requiring city and non-city buildings to report their energy use annually); *See also* CITY OF ORLANDO, *Building Energy and Water Efficiency Strategy*, http://www.cityoforlando.net/greenworks/building-energy-and-water-efficiency-strategy/ (requiring energy audits or retro-commissioning for buildings that score under the national average, beginning in 2020).
Philadelphia	PHILADELPHIA, PENN., ch. 9, § 9-3402 (2012); PHILLY BUILDING BENCHMARKING, *About*, http://www.phillybuildingbenchmarking.com/about/#about-ordinance-anchor (requiring buildings of at least 50,000 square feet to report their energy and water use annually).
Portland	CITY OF PORTLAND, *Energy Performance Reporting Policy for Commercial Buildings*, https://www.portlandoregon.gov/bps/68329 (requiring buildings of at least 20,000 square feet to report their energy use annually).
San Diego	None.
San Francisco	SAN FRANCISCO, CAL., SAN FRANCISCO ENVIRONMENT CODE, ch. 20, *available at* http://library.amlegal.com/nxt/gateway.dll/California/environment/chapter20existingcommercialbuildingsener?f=templates$fn=default.htm$3.0$vid=amlegal:sanfrancisco_ca$anc=JD_Chapter20 (requiring nonresidential buildings to report energy performance annually, and obtain energy efficiency audits).
San Jose	None.
Seattle	SEATTLE, WASH., MUNICIPAL Code, ch. 22, § 22.920, *available at* https://library.municode.com/wa/seattle/codes/municipal_code?nodeId=TIT22BUCOCO_SUBTITLE_XMIRURE_CH22.920ENUSBE (requiring benchmarking for nonresidential and multi-family buildings greater than 20,000 square feet); *See also* SEATTLE.GOV, *Energy Benchmarking*, https://www.seattle.gov/environment/climate-change/building-energy/energy-benchmarking (last visited Aug. 29, 2018).
Washington DC	DC.GOV, *Energy Benchmarking Disclosure*, https://doee.dc.gov/page/energy-benchmarking-disclosure (last visited Aug. 29, 2018) (requiring large buildings to report their energy and water performance annually).

III. MEASURES TO INCREASE DENSITY

City	Sources
Austin	AUSTIN, TEX., CODE OF ORDINANCES ch. 25-2 § 25-2-147, *available at* https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT25LADE_CH25-2ZO_APXDTR

	ORDEDI (establishing and defining boundaries of mapped transit-oriented development districts).
Boston	None.
Chicago	Chicago, Ill., Transit-Oriented Development (TOD) Ordinance (Sep. 24, 2015), *available at* http://chicago47.org/wp-content/uploads/Transit-Oriented-Development-TOD-Ordinance-rev.-9-24-15.pdf (providing FAR and building height increases and other incentives for development projects near transit-served locations).
Denver	None.
Miami	None.
Minneapolis	Sarah Mervosh, *Minneapolis, Tackling Housing Crisis and Inequality, Votes to End Single-Family Zoning*, N.Y. TIMES (Dec. 13, 2018), https://www.nytimes.com/2018/12/13/us/minneapolis-single-family-zoning.html.
New York	None.
Orlando	None.
Philadelphia	PHILADELPHIA, PENN., PHILADELPHIA CODE ch. 14, § 14-513 (2018), *available at* http://library.amlegal.com/nxt/gateway.dll/Pennsylvania/philadelphia_pa/title14zoningandplanning/chapter14-500overlayzoningdistricts?f=templates$fn=default.htm$3.0$vid=amlegal:philadelphia_pa$anc=JD_14-513 (establishing transit-oriented development overlay distrcits and their design standards); *See also* Jared Brey, *Council Adopts Zoning Changes Allowing More Density in Center City*, PLAN PHILLY (Oct. 15, 2015), http://planphilly.com/articles/2015/10/15/council-adopts-zoning-changes-allowing-more-density-in-center-city.
Portland	CTOD, TRANSIT-ORIENTED DEVELOPMENT STRATEGIC PLAN: METRO TOD PROGRAM 5 (2011), http://www.reconnectingamerica.org/assets/Uploads/2011-portland-tod-final-web.pdf (describing the city's Metro TOD Program, which provides incentives and grants to encourage "higher-density, mixed-use projects located near transit").
San Diego	SAN DIEGO, CAL., SAN DIEGO MUNICIPAL CODE ch. 13, art. 2 (2000), *available at* http://docs.sandiego.gov/municode/MuniCodeChapter13/Ch13Art02Division11.pdf (establishing urban village overlay zones, which are intended to "create a mix of land uses in a compact pattern that will reduce dependency on the automobile, improve air quality, and promote high quality, interactive neighborhoods").
San Francisco	None.
San Jose	None.
Seattle	CITY OF SEATTLE DEPT. OF PLANNING & DEVELOPMENT, IMPLEMENTING TRANSIT ORIENTED DEVELOPMENT IN SEATTLE: ASSESSMENT AND RECOMMENDATIONS FOR ACTION 20 (2013), http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/s047781.pdf (listing TOD overlays as one of the existing city transit-oriented development tools).
Washington DC	None.

IV. ANTI-IDLING

City	Sources
Austin	AUSTIN, TEX., CODE OF ORDINANCES art. 3, § 6-1-51 et seq., *available at* https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT6ENCOCO_CH6-1AIQU_ART3

	MOVEID_DIV2RE_S6-1-51IDPR (restricting motor vehicle idling to five minutes or less when not in motion).
Boston	None
Chicago	CHICAGO, ILL., MUNICIPAL CODE ch. 9, § 9-80-095, *available at* http://library.amlegal.com/nxt/gateway.dll/Illinois/chicago_il/title9vehiclestrafficandrailtransportati/chapter9-80miscellaneousrules?f=templates$fn=default.htm$3.0$vid=amlegal:chicago_il$anc=JD_9-80-095 (restricting diesel vehicle idling to three minutes or less within a one-hour period); *See also* CITY OF CHICAGO, *Doing Our Share for Cleaner Air: Idling Reduction*, https://www.cityofchicago.org/city/en/depts/cdot/supp_info/doing_our_share_forcleanerairidlingreduction.html.
Denver	Denver, Colo., Ordinance No. 330-90 (Dec. 8, 2008), http://enginesoff.com/pdfs/City-County-of-Denver-Idling-Vehicle-Law.pdf (restricting motor vehicle idling to five minutes or less within a one-hour period).
Miami	MIAMI, FLA., MUNICIPAL CODE ch. 22.5 § 22.5-4, *available at* https://library.municode.com/fl/miami/codes/code_of_ordinances?nodeId=PTIITHCO_CH22.5GRIN_ARTIGRFL_S22.5-4DEGRFLPL (restricting municipal fleets only by requiring each department to develop their own anti-idling policy).
Minneapolis	MINNEAPOLIS, MINN., CODE OF ORDINANCES ch. 58 (2008), *available at* https://library.municode.com/mn/minneapolis/codes/code_of_ordinances?nodeId=COOR_TIT3AIPOENPR_CH58ID (restricting motor vehicle idling to five minutes or less within a one-hour period).
New York	N.Y., N.Y., NEW YORK CITY ADMIN. CODE tit. 24, § 24-163; NYC BUSINESS, *Idling Regulations*, https://www1.nyc.gov/nycbusiness/description/idling-regulations (restricting motor vehicle idling to three minutes or less while parking, standing, or stopping).
Orlando	None.
Philadelphia	PHILADELPHIA, PENN, AIR MANAGEMENT REG. IX, § 3, *available at* http://www.dieseldifference.org/laws/AMSordinance.pdf (restricting heavy-duty diesel vehicle idling to two minutes or less for layovers).
Portland	Portland, Or., Ordinance No. 182871 (June 3, 2009), https://www.portlandoregon.gov/citycode/article/272450 (restricting municipal diesel vehicle idling to five minutes or less, and municipal gasoline vehicle idling to 3 minutes or less for frequent stops and 1 minute or less when stopped "for a foreseeable period of time").
San Diego	None.
San Francisco	None.
San Jose	None.
Seattle	Seattle, Wash., Exec. Order No. 2016-09, http://murray.seattle.gov/wp-content/uploads/2016/12/Executive-Order-2016-09-Drive-Clean-Seattle-Fleet-Initiative.pdf (restricting city vehicles from idling).
Washington DC	D.C., D.C. MUNICIPAL REGULATIONS ch. 20-9, § 20-900, *available at* https://dcregs.dc.gov/Common/DCMR/SectionList.aspx?SectionId=7740 restricting motor vehicle idling to three minutes or less while parking, standing, or stopping).

IV. ELECTRIC VEHICLES

City	Sources
Austin	AUSTIN ENERGY, *Electric Vehicles*, https://austinenergy.com/ae/about/environment/electric-vehicles (describing the 200 charging stations established by the Plug-In Austin network).
Boston	CITY OF BOSTON, *EV-Boston: Electric Vehicle Resources*, https://www.boston.gov/departments/environment/ev-boston-electric-vehicle-resources (describing city policy requiring five percent of parking be equipped with electric vehicle chargers, and ten percent be EV-ready in new or renovation projects).
Chicago	Mayor's Press Office, Mayor Emanuel's Drive Electric Chicago Effort Gets $15 Million Grant for Electric Vehicles and Charging Stations (Oct. 11, 2017), https://www.cityofchicago.org/city/en/depts/mayor/press_room/press_releases/2017/october/DriveElectricChicago.html (describing city investments in electric vehicle charging stations and an electric vehicle fleet).
Denver	Jon Murray, *Denver's New Building Code Requires Garages to Support Electric Vehicles*, DENVER POST (Mar. 9, 2016), https://www.denverpost.com/2016/03/09/denvers-new-building-code-requires-garages-to-support-electric-vehicles/ (describing requirement for new single-family homes and duplexes to have electric vehicle capability in the garages); DENVER DEPT. OF PUBLIC HEALTH & ENV'T, *Electric Vehicles and Alternate Fuels in Denver*, https://www.denvergov.org/content/denvergov/en/environmental-health/environmental-quality/Alt_Fuels.html (describing the mayor's commitment to deploy 200 electric vehicles in the municipal fleet by 2020).
Miami	Press Release, Mayor Tomas P. Regalado, City of Miami Announces New Car Charging Station at City Hall (Oct. 30, 2013), http://www.miamigov.com/home/docs/Headlines/2013/10-Car_Charging_Station.pdf.
Minneapolis	MINNEAPOLISMN.GOV, *Electric Vehicles in Minneapolis*, http://www.minneapolismn.gov/sustainability/take-action/WCMSP-201762 (describing city's investment in public charging stalls); MINNEAPOLIS PUBLIC WORKS, *Fleet*. http://www.minneapolismn.gov/publicworks/green/public-works_pw_green_fleets (Jan. 22, 2018) (describing city's policy to green its fleet); *see also* MINNEAPOLIS SUSTAINABILITY, *Electric Vehicles in Minneapolis*, http://www.minneapolismn.gov/sustainability/take-action/WCMSP-201762 (last updated July 24, 2017).
New York	NEW YORK CITY, N.Y., LOCAL LAW NO. 130 (2013), *available at* https://www1.nyc.gov/assets/buildings/local_laws/ll130of2013.pdf (requiring parking garages to include electric vehicle charging station capability); Press Release, Office of the Mayor, City of New York, Leading the Charge: Mayor Announces Fast-Charging EV Hubs in All 5 Boroughs (Sep. 20, 2017), https://www1.nyc.gov/office-of-the-mayor/news/600-17/leading-charge-mayor-fast-charging-ev-hubs-all-5-boroughs (describing local investments in electric vehicle charging stations); NEW YORK CITY, *Drive Electric NYC*, https://www1.nyc.gov/html/ev/html/city/city-initiatives.shtml.
Orlando	CITY OF ORLANDO, *Greenworks: Transportation*, http://www.cityoforlando.net/greenworks/transportation/ (describing city efforts to invest in charging stations and transition its city fleet to electric vehicles).
Philadelphia	PHILADELPHIA PARKING AUTHORITY, *Charging Up at the PHL Airport*, http://www.philapark.org/tag/ev-charging-stations/ (describing investments in electric vehicle charging stations at the Philadelphia International Airport).
Portland	Andrew Theen, *Electric Vehicle Charging Stations Coming to East Portland, Milwaukie, Hillsboro*, OREGON LIVE (Dec. 5, 2018), https://www.oregonlive.com/commuting/2018/12/

	electric-vehicle-charging-stations-coming-to-east-portland-milwaukie-hillsboro.html (describing incoming investments in electric vehicle charging stations); PORTLAND, ORE., BCP-ENN-5.04, *available at* https://www.portlandoregon.gov/citycode/article/539713 (directing city bureaus to replace city vehicles with electric vehicles).
San Diego	SAN DIEGO, *City of San Diego's EV Charging Stations*, https://www.sandiego.gov/sustainability/clean-and-renewable-energy/evcharging (describing city's investments in electric vehicle charging stations).
San Francisco	Office of the Mayor, Mayor Lee Signs New Ordinance to make San Francisco Electric Vehicle Ready (Apr. 27, 2017), https://sfmayor.org/article/mayor-lee-signs-new-ordinance-make-san-francisco-electric-vehicle-ready (describing city ordinance to require new buildings to have electrical vehicle capacity in twenty percent of parking spaces).
San Jose	None.
Seattle	SEATTLE DEPT. OF CONSTRUCTION & INSPECTIONS, 2017 SEATTLE ELECTRICAL CODE 70-72.2 § 220.57 (2017), *available at* http://www.seattle.gov/dpd/cs/groups/pan/@pan/documents/web_informational/p3558699.pdf (establishing requirements for electric vehicle capacity for construction projects).
Washington DC	DISTRICT DEPT. OF TRANSPORTATION, DEPARTMENT ENERGY SAVING INITIATIVES 7, https://comp.ddot.dc.gov/Documents/Energy%20Savings%20Initiatives.pdf#pagemode=none&page=7 (describing past and future city plans to install public curbside electric vehicle charging stations); *Id*. (describing electric vehicle fleet purchases and plans to expand its fleetshare program).

V. BICYCLE LANES & SHARES

City	Sources
Austin	AUSTIN TEXAS, *Biking in Austin*, http://austintexas.gov/page/austin-cycling-101 (providing a map of bike lanes in the city); AUSTIN B-CYCLE, *About*, https://austinbcycle.com/about (describing the city-run bike share program).
Boston	CITY OF BOSTON, *Better Bike Lanes*, https://www.boston.gov/departments/boston-bikes/better-bike-lanes (describing the network of bike lanes in the city); BLUEBIKES, https://www.bluebikes.com (providing information on the city-run bike share program).
Chicago	CITY OF CHICAGO, *Bicycling*, https://www.cityofchicago.org/city/en/depts/cdot/provdrs/bike.html (last visited Aug. 31, 2018) (describing the 200 miles of bike lanes in the city); DIVVY, https://www.divvybikes.com/ (providing information on the city-run bike share program). *See also* CITY OF CHICAGO, *Dockless Bike Share Pilot Project*, https://www.cityofchicago.org/city/en/depts/cdot/supp_info/dockless-bike-share-pilot-project.html (last visited Aug. 31, 2018); Mary Wisniewski, *Chicago to Test-Drive New 'Dockless' Bike Share Program Starting Next Week*, CHICAGO TRIBUNE (Apr. 27, 2018), http://www.chicagotribune.com/news/local/breaking/ct-met-dockless-bikes-20180425-story.html.
Denver	BICYCLING IN DENVER, *Current Projects*, https://www.denvergov.org/content/denvergov/en/bicycling-in-denver/infrastructure.html (describing the 130 miles of bike lanes in the city); DENVER B-CYCLE, https://www.denverbcycle.com/company (providing information on a bike share program in the city, run by a nonprofit). *See also* David Sachs, *Dockless Bike-Share is Coming to Denver Streets Through a DU Pilot*, STREETSBLOG DENVER (Feb. 26, 2018), https://denver.streetsblog.org/2018/02/26/dockless-bike-share-is-coming-to-southwest-city-

	streets-through-a-university-of-denver-pilot/ (describing a dockless bike share program run by the city).
Miami	GREEN MOBILITY NETWORK, MIAMI'S BEST BY BIKE (2015) (providing a map of bike lanes in the city); CITI BIKE MIAMI, http://www.citibikemiami.com (providing information on the city-run bike share program).
Minneapolis	MINNEAPOLIS PUBLIC WORKS, Bicycling in Minneapolis, http://www.minneapolismn.gov/bicycles/index.htm (last updated July 28, 2017) (describing the 129 miles of on-street bikeways); MINNEAPOLIS PUBLIC WORKS, *Bike Share*, http://www.minneapolismn.gov/bicycles/ga/WCMS1P-135605 (last updated July 17, 2017) (describing the local bike share program, run by a nonprofit); NICE RIDE, https://www.niceridemn.com/ (providing information on the dockless bike share program).
New York	Winnie Hu, *More New Yorkers Opting for Life in the Bike Lane*, N.Y. TIMES (July 30, 2017), www.nytimes.com/2017/07/30/nyregion/new-yorkers-bike-lanes-commuting.html (describing the use of bike lanes in the city); NEW YORK CITY, *Citi Bike*, https://www1.nyc.gov/nyc-resources/service/1025/bike-share (providing information on the city-run bike share program).
Orlando	CITY OF ORLANDO, *Bicycle Safety*, http://www.cityoforlando.net/transportation-planning/bikesafety/ (describing the policies for riding on green bike lanes in the city); CITY OF ORLANDO, *Orlando Bike Share*, http://www.cityoforlando.net/transportation-planning/bikeshare/ (providing information on the city-run bike share program).
Philadelphia	PHILADELPHIA BICYCLE MAP, https://philadelphiastreets.com/images/uploads/resource_library/Philadelphia_Center_City_Bike_Map.pdf (providing a map of bike lanes in the city); INDEGO, *About*, https://www.rideindego.com/about/ (providing information on the city-run bike share program).
Portland	PORTLAND BUREAU OF TRANSPORTATION, *Protected Bike Lanes*, https://www.portlandoregon.gov/transportation/71589 (last visited Aug. 21, 2018) (describing the system of bike lanes in the city); PORTLAND BUREAU OF TRANSPORTATION, *BIKETOWN - Portland Bike Share*, https://www.portlandoregon.gov/transportation/57983 (last visited Aug. 21, 2018) (providing information on the city-run bike share program).
San Diego	SAN DIEGO, *Bicycling: General Information*, https://www.sandiego.gov/bicycling/general-information (describing the city's efforts to improve its existing bicycle network); DISCOVER BIKE, http://www.discoverbikesandiego.com/ (providing information on the city-run bike share program).
San Francisco	SFMTA, *Bicycling San Francisco*, https://www.sfmta.com/bicycling-san-francisco (last visited Aug. 27, 2018) (providing a map of bike lanes in the city); SFMTA, *Bikeshare*, https://www.sfmta.com/getting-around/bike/bike-share (last visited Aug. 27, 2018) (providing information on the city's bike share program).
San Jose	SAN JOSE, *Biking*, http://sanjoseca.gov/index.aspx?NID=3705 (describing the 285 miles of on-street bike lanes in the city); FORD GOBIKE, https://www.fordgobike.com/ (providing information on the city's bike share program).
Seattle	SEATTLE.GOV, *Seattle Department of Transportation: Protected Bike Lanes*, https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/protected-bike-lanes (last visited Aug. 29, 2018) (describing the projects the city has implemented to establish protected bike lanes); SEATTLE.GOV, *Seattle Department of Transportation: Free-Floating Bike Share*, https://www.seattle.gov/transportation/projects-and-programs/programs/bike-program/bike-share (last visited Aug. 29, 2018) (providing information on the city's privately-run bike share program).

Washington DC	DISTRICT DEPT. OF TRANSPORTATION, *Bicycle Maps*, https://ddot.dc.gov/page/bicycle-maps (providing a map of bike lanes in the city); CAPITAL BIKESHARE, *About Capital Bikeshare*, https://www.capitalbikeshare.com/about (providing information on the city's bike share program).

VI. PLASTICS REDUCTION

City	Sources
Austin	AUSTIN, TEX., CODE OF ORDINANCES art. 7, § 15-6-121 et seq., https://library.municode.com/tx/austin/codes/code_of_ordinances?nodeId=TIT15UTRE_CH15-6SOWASE_ART7CABA_S15-6-121DE (banning all single-use carryout bags); Drew Knight & Kalyn Norwood, *Austin Plastic Bag Ban Sacked Following Texas Supreme Court Ruling*, ABC KVUE (July 3, 2018), https://www.kvue.com/article/news/local/austin-plastic-bag-ban-sacked-following-texas-supreme-court-ruling/269-570420457 (noting that the state Supreme Court found the ban unconstitutional).
Boston	BOSTON, MASS., MUNICIPAL CODE ch. 17, § 17-20.1 et seq., *available at* http://library.amlegal.com/nxt/gateway.dll/Massachusetts/boston/chapterxviilicensesandregulationsaffecti?f=templates$fn=default.htm$3.0$vid=amlegal:boston_ma$anc=JD_17-20.3 (banning single-use plastic bags and establishing a charge for other checkout bags).
Chicago	CHICAGO, ILL., MUNICIPAL CODE ch. 3, § 3-50, *available at* https://www.cityofchicago.org/content/dam/city/depts/rev/supp_info/TaxPublicationsandReports/3-50ChicagoCheckoutBagTaxOrdinance.pdf (imposing a seven-cent tax on checkout bags); *see also* CITY OF CHICAGO, *Chicago Checkout Bag Tax – Frequently Asked Questions*, https://www.cityofchicago.org/content/dam/city/depts/rev/supp_info/TaxPublicationsandReports/CheckoutBagTaxFAQs.pdf.
Denver	None.
Miami	None.
Minneapolis	Emma Nelson, *Legislature Blocks Plastic Bag Ban in Minneapolis*, STAR TRIBUNE (May 31, 2017), http://www.startribune.com/state-legislature-blocks-plastic-bag-ban-in-minneapolis/425517333/.
New York	New York, N.Y., Proposed Int. No. 209-A (Apr. 27, 2016), *available at* http://www.baglaws.com/assets/pdf/new_york_city.pdf (imposing a five-cent fee on carryout bags provided to customers); Jesse McKinley, *Cuomo Blocks New York City Plastic Bag Law*, N.Y. TIMES (Feb. 14, 2017), https://www.nytimes.com/2017/02/14/nyregion/cuomo-blocks-new-york-city-plastic-bag-law.html.
Orlando	None.
Philadelphia	None.
Portland	Portland, Or., Ordinance No. 189271, *available at* https://www.portlandoregon.gov/bps/article/708847 (placing restrictions on single-use plastics, including bags and serviceware).
San Diego	San Diego, Cal., Ordinance 20720 (Aug. 10, 2016), *available at* http://docs.sandiego.gov/council_reso_ordinance/rao2016/O-20720.pdf (banning stores from providing single-use carryout bags to customers, and imposing a ten-cent charge for recyclable paper bags). *See also* Joshua Emerson Smith, *San Diego Approves Ban on Plastic Bags*, SAN DIEGO UNION-

TRIBUNE (July 19, 2016), http://www.sandiegouniontribune.com/news/environment/sdut-san-diego-plastic-bag-ban-2016jul19-story.html.

San Francisco S.F., CAL., S.F. ENV'T CODE ch. 17 (2007), a*vailable at* http://library.amlegal.com/nxt/gateway.dll/California/environment/chapter17plasticbagreductionordinance?f=templates&fn=default.htm&3_0=&vid=amlegal%3Asanfrancisco_ca (banning single-use plastic bags, and imposing a ten-cent checkout bag charge for recyclable paper, compostable plastic, or reusable bags).

San Jose San Jose, Cal., Ordinance No. 29314, *available at* https://www.sanjoseca.gov/DocumentCenter/View/23916 (banning retail establishments from providing single-use carryout bags to customers).

Seattle Seattle, Wash., Ordinance 125165, *available at* https://library.municode.com/wa/seattle/ordinances/municipal_code?nodeId=795352 (banning single-use plastic carryout bags and requiring a five-cent charge for recyclable paper bags). *See also* SEATTLE.GOV, *Seattle Public Utilities: Bag Requirements*, http://www.seattle.gov/util/MyServices/Recycling/ReduceReuse/PlasticBagBan/index.htm (last visited Aug. 29, 2018); SEATTLE, WASH., MUNICIPAL CODE ch. 21, § 21.36.086 (requiring any disposable food service ware to be compostable or recyclable).

Washington DC DC DEPT. OF ENERGY & ENVT., *Skip the Bag, Save the River*, https://doee.dc.gov/bags (requiring a five-cent fee for paper and plastic bags provided at check-out).