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Cover Page Footnote
Environmental Law Fellow, UCLA School Of Law; J.D., Stanford Law School; M.A. Political Science, University of California at Berkeley; B.A., Oberlin College. The author will be joining the faculty of Loyola Law School, Los Angeles in July 2009. I would like to thank the organizers of the Cooper-Wlash Colloquium the participants for a particularly exciting and thought-provoking event. Special thanks to Frank Mitchell for his editorial acument and good-natured professionalism.

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WHAT LOCAL CLIMATE CHANGE PLANS CAN TEACH US ABOUT CITY POWER

Katherine A. Trisolini[*]

INTRODUCTION

This brief commentary on Heike Shroeder and Harriet Bulkeley's recent piece[1] in this volume of the *Fordham Urban Law Journal* asks what new light city action on climate change can shed on an old discussion about the extent of city power or powerlessness. While this commentary does not offer a new, full-fledged theory of city power, it does suggest new avenues for inquiry in the hopes of contributing to the understanding of local governments.

Assessments of city power in the United States have focused largely on how state and federal law either impede or augment city autonomy in rela-

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1. Heike Schroeder & Harriet Bulkeley, *Global Cities and the Governance of Climate Change: What Is the Role of Law in Cities*, 36 FORDHAM URB. L.J. 313 (2009).

tion to higher levels of government or other cities.[2] City action on climate change highlights the potential to revisit the question of city power from a new angle. Rather than inquiring into the relative power of cities vis-à-vis other governments, one can investigate power in relation to the object over which the city aims to exercise its power. In other words, we can ask: "City power with regards to what?" A very small degree of relative power may have a substantial effect on a specific problem. Cities may turn out to be quite powerful in one realm despite being quite disempowered in another. Although Schroeder and Bulkeley primarily examine structural constraints to assess the "role of law" in municipal climate change plans, their study highlights how the movement of local governments tackling climate change invites us to revisit the broader question of city power.

I. SCHROEDER AND BULKELEY'S STUDY OF LONDON AND LOS ANGELES

Schroeder and Bulkeley's review of climate plans in London and Los Angeles makes at least three important contributions to the study of climate change and local governments. First, the authors adeptly illustrate the range of domains in which cities act by reviewing their policies using a taxonomy that recognizes four types of governance modalities: "self governance" which concerns a local government's control of its own actions; "control and compliance refers to the . . . use of traditional forms of authority such as regulation and planning;" "provision" or governing through service delivery; and "enabling" which describes local efforts to facilitate, encourage, and enable voluntary private sector activities.[3] The authors show these two cities to be innovative in employing these various modalities to work around legal, economic, and other constraints.

Second, the authors avoid the temptation to seek a single variable to explain local interest in climate change. Rather, they identify multiple factors in their case studies that interact to motivate local action, thus capturing the nuance of catalyzing circumstances.[4] Finally, their Article draws attention to the importance of comparative study of local governments, an understudied topic of increasing relevance due to the emergence of cities as global actors.[5] Understanding cities' roles in addressing global problems is rendered all the more salient by the success of transnational organizations' ef-

2. *See* Part II *infra*.

3. Schroeder & Bulkeley, *supra* note 1, at 354-58.

4. *Id*. at 314.

5. *See, e.g.*, Yishai Blank, *Localism in the New Global Legal Order*, 47 HARV. INT'L L.J. 263, 268 (2006).

forts to mobilize local governments to act on climate change, as discussed by the authors.[6]

Schroeder and Bulkeley find that while international networks have catalyzed local efforts "[t]he extent to which municipal governments are able to address climate change, however, also depends on their competencies in this area."[7] The authors assess each city's "competencies" by reference to the formal legal framework that authorizes and constrains each city's actions under their respective systems of government.[8] Thus, their study aims to uncover how global cities are governing climate change in the context of their embeddedness within the vertical legal structures of the state.[9] Although they identify a number of creative efforts on the part of each city, particularly the use of tools such as partnerships that the authors see as reflecting a shift away from "law" and towards "governance," the authors appear somewhat pessimistic about cities' ability to meaningfully mitigate climate change given their legal subservience to higher levels of government.[10]

The authors describe the place of local governments within a hierarchy of governmental levels as the predominant factor in cities' ability to influence climate change: "The competency and capacity of local government to address a multi-layered environmental problem such as climate change is largely determined by the legal structures within which it is embedded . . . ."[11] Schroeder and Bulkeley describe local governments in the United Kingdom as operating under a principle of *ultra vires*: "local councils have been able to do only what they are statutorily permitted to do. Their rights

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6. Schroeder & Bulkeley, *supra* note 1, at 315-19.

7. *Id*. at 319.

8. *Id*. at 319-20 (London); *id.* 342-42 (Los Angeles).

9. *See id.* at 325-35 (describing the relative legal status of cities generally and the Greater London Authority ("GLA") and Los Angeles in particular in relation to other levels of government).

10. *Id*. at 353. They conclude, for example, that "in terms of seeking to change behavior, municipal governments in London and Los Angeles have limited powers and they have been reluctant to use those that they do have." S*ee also id*. at 339 (finding that the GLA's efforts to create decentralized energy in London face "considerable challenges" due to the national regulatory context "and the limited price paid for energy fed back into the national grid from decentralized generation"); *id*. at 343 (finding that Los Angeles's control of traffic is constrained because "[it] only provides incentives to reduce road traffic").

11. *Id*. at 314. The authors recognize that cities' competency and capacity are influenced by other factors as well, "such as critical individuals, past successes, business consensus, public opinion, market opportunities, and environmental advocacy," albeit to a lesser degree. *Id*. This latter set of factors speaks more to a local government's "capacity" in terms of the political and motivational constraints than to legal constraints on jurisdiction. *Id.*

and competences are not general, but specific."[12] The central government can dictate how they exercise their power or provide for more discretionary implementation.[13] Yet, the authors find many new sources of statutory authority ranging from mandates to report energy efficiency in housing stock and authority to improve it, to guidance on transport planning that allows them to address energy efficiency, renewable energy, and the travel intensity of development. The Local Government Act's introduction of a duty of "well being" has provided broad discretion that some U.K. governments have employed to address climate.[14]

Thus, local governments in the United Kingdom enjoy "partial autonomy" in their efforts to address climate change, although within a complex environment of increasing guidance from higher levels of government:

> The overall picture of competencies for addressing climate change among U.K. local authorities is a complex one. On the one hand, central government has becoming increasingly involved in "directing" local government in this area, particularly through new planning guidance and national performance indicators. On the other hand, these remain areas for local government discretion—there is no statutory responsibility to follow this guidance—and there is also considerable scope for local government to act on climate change through other means, including through their own estate, in arenas of housing and transport policy, and through the increasingly regulated area of biodegradable waste. Partial autonomy remains a valid description of the competencies of local government in this area, albeit that the increasing political and public salience of the issue has led to a greater level of involvement by United Kingdom local authorities than was the case in the late 1990s.[15]

Unlike other local governments, the Greater London Authority ("GLA") is specifically charged with environmental responsibilities, including express authorization on climate change. Although the GLA has a broader mandate to address climate change than other local governments, an overview of its power nonetheless still provides a mixed picture:

> The [GLA] has been charged with a "duty" to address climate change. . . . The GLA, as a devolved administration encompassing a regional development agency, however, also has an ambiguous, partially autonomous role in addressing climate change. Through its planning and strategic pol-

12. *Id*. at 319.
13. *Id*.
14. *Id*. at 320-21.
15. *Id*. at 324.

> icy powers, the GLA is charged with following national direction . . . but also has considerable independence.[16]

The authors' examination of the powers of local governments in the United States identifies the lack of local government recognition in the text of the U.S. Constitution, the historic presumption under Dillon's Rule that cities are creatures of their states, and the more recent enactment of "home rule" provisions in most state constitutions granting cities non-interference in specific areas of local affairs.[17] Yet they emphasize that states can withdraw these powers at any time and thus accept the view that U.S. cities are "mere conveniences of the states."[18]

The case studies show two large cities embedded within divergent formal structures. In addition to the broad differences mentioned above, the GLA was designed as a new and broader entity to provide governance for interconnected issues across a set of geographically connected smaller local jurisdictions. Los Angeles, in contrast, while having a fairly wide geographic area, nonetheless does not have authority over independent cities within its geographic borders and adjacent to it in the Los Angeles metropolitan region.

The most significant difference between the two cases lies in the GLA's mandate to address climate change and its responsibility to address performance indicators that makes it unique even among other U.K. governments:

> In the Greater London Authority Act 2007, the mayor was charged with the duty to "take action with a view to mitigation of, or adaptation to, climate change" in line with national government policy and with the responsibility for preparing detailed strategies for both mitigation and adaptation. This new duty places addressing climate change on a substantive legal footing, one not witnessed in the United Kingdom's other cities and regions.[19]

Los Angeles, in contrast, has had to make due with existing authority. It has no specific directive to address climate change and, at the time of the study, was governed by a federal government that had refused to adopt mandatory reduction plans. Although California enacted legislation in 2006 setting an aggressive emission reduction target, new regulations im-

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16. *Id*. at 325.
17. *Id*.
18. *Id*. at 325-26.
19. *Id*. at 334-35 (citation omitted).

plementing the policy will not take effect until 2010[20] and the statute did not create new municipal powers.[21] In short, Los Angeles has general powers and responsibilities typical for local governments in the United States—such as land use planning, waste management, and governance of its proprietary activities.[22]

Given this background, an unmentioned but surprising element of their study is the overlap between the two cities' climate change plans despite differences in formal legal structures. The GLA and Los Angeles have adopted similar approaches to emission reductions along a parallel temporal trajectory. Both cities have joined domestic networks of local governments agreeing amongst themselves to reduce emissions.[23] Both cities have altered new building requirements, revised transportation planning, and have targeted energy generation, seeking new sources of renewable power. While there are also clear differences in approaches, the similarities suggest that there may be something critical to climate change mitigation in certain domains of local power that call out to be addressed.

Schroeder and Bulkeley's presumption that the formal legal structures define the parameters of each city's capacity to govern inevitably points to the broader debate over questions of city power and powerlessness, a topic that has been central to the American literature on local governments. The following briefly reviews key elements of that discussion then suggests a new axis upon which to evaluate local governmental power.

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20. CAL. HEALTH & SAFETY CODE § 38560.5 (West 2008); s*ee also* CAL. AIR RES. BD., IMPLEMENTATION TIMELINE-CALIFORNIA GLOBAL WARMING SOLUTIONS ACT OF 2006, *available at* http://www.arb.ca.gov/cc/factsheets/ab32timeline.pdf.

21. CAL. HEALTH & SAFETY CODE § 38594 (West 2008).

22. *See* USA Recycling, Inc. v. Town of Babylon, 66 F.3d 1272, 1275 (2d Cir. 1995) ("For ninety years, it has been settled law that garbage collection and disposal is a core function of local government in the United States."); s*ee, e.g.*, ROBERT C. ELLICKSON & VICKI L. BEEN, LAND USE CONTROLS: CASES AND MATERIALS 29 (3d ed. 2005) ("Public land use regulation in the United States traditionally has been mainly the province of local governments.").

23. Schroeder & Bulkeley, *supra* note 1, at 321-22. Within their competencies, local authorities in the United States have begun to develop systematic action plans on climate change since 2000 through the Nottingham Declaration, which commits signatories to addressing the causes and consequences of climate change. Over 300 local authorities have since signed the declaration. A further initiative has been the "Merton Rule," which requires signatory boroughs and local governments in the United Kingdom to provide 10% of energy use through on-site renewable energy generation. In the United States, the Mayors Climate Protection Agreement commits signatories to meet or beat Kyoto Protocol reductions within their own communities. *See* Seattle.gov, United States Mayors Climate Protection Agreement, http://www.seattle.gov/mayor/climate (last visited Apr. 7, 2009).

II. RELATIVE CITY POWER: STRUCTURAL INFLUENCES ON AUTONOMY

Local government scholars in the United States have long debated the degree of local power versus powerlessness. In 1980, Gerald Frug's seminal article, *The City as a Legal Concept*, cogently laid out the claim that city powerlessness undermines civic life.[24] He argues that "our highly urbanized country has chosen to have powerless cities, and . . . this choice has largely been made through legal doctrine."[25] According to Frug, the structure of both state and federal law render cities impotent. "[C]ities have no 'natural' or 'inherent' power to do anything simply because they decide to do it."[26] State law denies cities inherent powers, limiting them to delegated powers that can be withdrawn or constrained at the whim of the state government. Even where state constitutions have granted home rule, city self-determination is limited to a narrow domain of "local concerns."[27] Yet, he argues, "[t]hese days, little if anything is sufficiently 'local' to fall within such a definition of autonomy. State law, in short, treats cities as mere 'creatures of the state.'"[28] Meanwhile, courts' interpretations of the Fourteenth Amendment and Commerce Clause of the Federal Constitution further restrict cities' ability to design their own destiny.[29] Finally, Frug contends, both state law and the federal constitution restrict cities' power to raise money, rendering them increasingly dependent on federal grants-in-aid that often come with policy strings attached.[30] Frug's view of city powerless is highly normative; he argues for the augmentation of city power to facilitate "public freedom," a "form of human association based on participation in public power."[31]

A decade later in 1990, Richard Briffault reconsiders city powerlessness by problematizing both the concepts of "power" and of "local government."[32] Regarding the former, he argues that

> Instead of treating "local power" as the right to prevail in direct city-state conflicts, local power should . . . be viewed as emerging out of the stan-

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24. *See generally* Gerald Frug, *The City as a Legal Concept*, 93 HARV. L. REV. 1059 (1980).

25. *Id*. at 1059.

26. *Id*. at 1062.

27. *Id*. at 1063.

28. *Id*.

29. *Id*.

30. *Id*.

31. *Id*. at 1073.

32. Richard Briffault, *Our Localism: Part II—Localism and Legal Autonomy*, 90 COLUM. L. REV. 346, 354 (1990).

> dard state practices of delegating revenue-raising, regulatory and expenditure authority to localities and of not interfering with the local exercise of that authority.[33]

He contends that the prevalence of localist values prevents state courts and legislatures from interfering with this arrangement, giving municipalities "considerable de facto power to frame local policies and pursue local goals."[34] Yet this formal autonomy plays out differently depending on the type of local government. Inner cities, lacking the local resources needed to serve their needs, either must depend on external funding sources that come with strings attached or simply operate at lower levels of service. Wealthy suburbs, by contrast, tend to have a higher tax base with fewer per capita needs.[35] Yet because the legal status of cities and suburbs is identical, inner cities must compete for business and taxpaying residents with wealthy suburbs that can insulate themselves from the local problems outside their boundaries.[36] Briffault, unlike Frug, thus finds the legal structures that promote city autonomy to be "normatively ambiguous."[37]

Another decade later, David Barron writes that despite the formal structure of state power, "[l]ocal autonomy—or, at least, something widely perceived to be local autonomy—is alive and well under state law despite an overwhelming state constitutional premise that localism is to be the exception rather than the rule:"[38]

> The formal regime of supreme state legislative authority notwithstanding, it is widely perceived that, under state law, local governments enjoy a great degree of what is termed local autonomy under state law. The force of local autonomy as a constraint on state power is the conventional premise from which many contemporary assessments of the state-local relationship proceed.[39]

Yet Barron also illustrates how an overly formal view of local autonomy as simple non-interference may ultimately undermine localist values because it ignores interjurisdictional spillover effects (e.g., air pollution), competitive pressures, and other market forces that "no local jurisdiction is equipped to address on its own, given the way central law defines local

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33. *Id*.

34. *Id*.

35. *Id*. at 352.

36. *Id*. at 444 ("Local politics in the suburbs is aimed at keeping the city and its concerns out, and the law of local autonomy—the rules governing local government formation, land use, school finance and local taxation—enables many suburbs to attain these goals.").

37. *Id*. at 446.

38. David J. Barron, *A Localist Critique of the New Federalism*, 51 DUKE L.J. 377, 393 (2001).

39. *Id*.

power."[40] Thus, centralized rules that formally limit local discretion may at times be necessary to vindicate local autonomy given that some choices cannot be effectively adopted through local action alone. But Barron's argument does not equate localism with mere "preference matching.": He writes: "For the central intervention to be localist in the way I intend, the state law would have to promote the capacity of the local government to adopt policies that current central law frustrates."[41]

For some scholars, local power inevitably leads to parochial, self-interested decision-making. Sheryl Cashin, for example, argues that the empowerment of suburbs at the expense of central city communities creates a "tyranny of the favored quarter"[42] because wealthy suburbs hog the region's infrastructure and benefit from the connection to an urban core while simultaneously avoiding their fair share of responsibility for maintaining the region. Cashin finds this to be highly anti-democratic when viewed from the perspective of the entire region and proposes a regionalist system of local governance. Cashin's argument follows a general resurgence in proposals for regional governance structures in the 1990s showing scholars and policymakers grappling with the impact of local autonomy and fragmentation within metropolitan areas, spawning proposals for metropolitan area-wide governance structures.[43]

Appearing in 1999, Frug's book, *City Making: Building Cities Without Building Walls*,[44] rejects the idea that simply transferring power to a regional government (or increasing the power of existing regional entities) could cure the ills targeted by advocates of regionalism.[45] Frug proposes to retain local autonomy while nonetheless recognizing regional interconnection. This would require, however, understanding city power not to refer to a sphere protected from state power but rather to require strengthening connections between cities.[46] His reconceptualization of local autonomy rejects the prominent public-choice vision of cities as mere providers of service packages to "consumer-voters" who voluntarily associate based on

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40. *Id*. at 386-88.

41. *Id*. at 389.

42. Sheryll D. Cashin, *Localism, Self-Interest, and the Tyranny of the Favored Quarter: Addressing the Barriers to the New Regionalism*, 88 GEO. L.J. 1985, 1987 (2000).

43. *See generally, e.g.*, ANTHONY DOWNS, NEW VISIONS FOR METROPOLITAN AMERICA (1994); MYRON ORFIELD, METROPOLITICS: A REGIONAL AGENDA FOR COMMUNITY STABILITY (1997).

44. GERALD FRUG, CITY MAKING: BUILDING COMMUNITIES WITHOUT BUILDING WALLS (1999).

45. *Id*. at 85-86.

46. *Id*. at 63.

similar service preferences.[47] Rather, cities' critical role as fora for public participation warrants envisioning them as community building enterprises focused on public participation and resolution of shared regional problems.[48] Frug proposes possible institutional mechanisms to accomplish these goals—from democratically elected regional governing bodies that determine the entitlements of local governments[49] to cities' use of service provisions on a regional basis to foster community building.[50] Services, he argues, could be a vehicle for "building connections among the people who live in the same geographic area, and for enabling ordinary people to participate in the design of the world in which they live."[51] Frug's more recent work thus retains his focus on local participation but proposes that this can encompass diverse populations connecting across city borders, a vision he acknowledges to be somewhat utopian.[52]

The long running conversation about city power and powerlessness in the local government literature (very cursorily summarized here) has developed a nuanced picture of the potential ways in which the formal legal structure of state and federal law affects local autonomy by constraining authority, granting powers and shaping interlocal relations. It has investigated how this structure shapes individuals' participation in the democratic process and communities' abilities to manifest a form of its collective choosing.

Another perspective on power, however, remains underexplored: that is, how well matched are local powers to the target of influence, in this case climate change mitigation? Local power obviously varies across domains, but this depends not only on formal governmental structures but also on the object of regulation or policy goals. In this sense, power can be assessed by the potential effect of acting within accepted local domains and the potential leverage this gives cities. Attention to the object of influence may reveal unexpected sources of power or opportunities to exert existing capacities in novel ways. As discussed briefly in the conclusion, it may also show how exerting their influence over climate change allows cities to reframe themselves not merely as conglomerations of consumer preferences but rather as community building enterprises.

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47. *Id*. at 167-73.
48. *Id*. at 175-76.
49. *Id*. at 86.
50. *Id*. at 210-11.
51. *Id*. at 217.
52. *Id*. at 220.

III. A CITY'S POWER OVER ITS OBJECT: GREENHOUSE GAS REDUCTION OPPORTUNITIES

While the multitudinous and worldwide nature of greenhouse gas sources creates vexing regulatory problems and what is often described as a global tragedy of the commons,[53] it also creates opportunities for influence at the local level. In some senses, the very complexities of climate change—the contribution of so many diverse sources to emissions—increases cities potential power in this domain because there are numerous causes of emissions within their areas of influence. Moreover, cities may be particularly well-matched to the task in some respects. City powers over building codes, zoning, and even their proprietary powers can potentially create substantial influence when considered collectively. Cities may also be uniquely positioned to influence individuals to change behaviors to change behaviors in a manner that benefits the climate.

Unlike the United Kingdom, where the GLA has been given a specific mandate to address climate change, local governments in the United States have exclusively used powers often unrecognized as part of "environmental law." Nonetheless, existing domains of local authority and leaders' sheer proximity to residents actually give U.S. cities the potential to substantially influence emissions despite their lack of constitutional recognition and their subjection to state and federal law.

As discussed below, the collective effect of cities' purchasing and other proprietary activities has the potential to be quite substantial.[54] Unlike the United Kingdom, many U.S. cities like Los Angeles own their utilities and a number have begun using their proprietary domain to reduce greenhouse gas emissions from energy production as well as other sources. They also manage the waste stream and often own landfills that emit methane, a potent greenhouse gas that can be converted to green energy. Cities' land use powers are potentially crucial in reducing vehicle emissions and energy

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53. *See, e.g.*, Barton Thompson, Jr., *Tragically Difficult: The Obstacles to Governing the Commons*, 30 ENVTL. L. 241, 246 (2000); *see also* Kirsten Engel, *State and Local Climate Change Initiatives: What Is Motivating State and Local Governments to Address a Global Problem and What Does This Say About Federalism and Environmental Law?*, 38 URB. LAW. 1015, 1022 (2006).

54. It is worth considering how the collective effect of city action adds up. The five U.S. cities participating in the C-40 alone contain nearly twenty million people, and 10% of U.S. emissions come from the ten largest cities in the United States, all of which participate in one or more climate change networks. *See* THE PEW CTR. ON GLOBAL CLIMATE CHANGE & THE PEW CTR. ON THE STATES, CLIMATE CHANGE 101: LOCAL ACTION 6 (2009), *available at* http://www.pewclimate.org/docUploads/Climate101-Local-Jan09.pdf. As Shroeder and Bulkeley explain, participation in networks has inspired local governments to share best practices. Schroeder & Bulkeley, *supra* note 1, at 316-25.

demand from buildings. Finally, they have taken advantage of their relatively small size and their proximity to their constituents to serve as educators and proponents of environmental protection norms. The following looks briefly at these areas.

A. Local Power in the Proprietary Domain

It would be easy to dismiss local climate change policy that merely addresses propriety actions as seemingly insignificant. After all, what can these small governmental units accomplish without regulating the businesses and residents in their communities? Surprisingly, the answer is probably "plenty." Cities own and operate numerous important sources of greenhouse gas emissions. In addition to buildings, vehicles, lighting structures, and schools, own and manage utilities, airports, landfills transit systems, and ports, among many other things.

The City of Los Angeles emits roughly the same amount of carbon dioxide as all of Sweden.[55] The City estimates that municipal operations accounted for 16.8 million metric tons of carbon dioxide, comprising one-third of the carbon dioxide output from the area.[56] Part of the reason this figure is so high is that, like a number of cities, Los Angeles owns its utility. It also directly controls large sources of carbon dioxide, including several airports and the Port of Los Angeles.[57] The Los Angeles Department of Water and Power has aggressive targets for expanding the mix of renewables in its power supply, which, if met, could lead to substantial emission savings.[58]

A 2007 survey of cities conducted by the United States Conference of Mayors shows that Los Angeles is far from alone in targeting renewable

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55. *See* CITY OF L.A., GREEN LA: AN ACTION PLAN TO LEAD THE NATION IN FIGHTING GLOBAL WARMING, EMISSIONS PROFILE at 14 (2007) [hereinafter GREEN LA], *available at* http://www.lacity.org/ead/EADWeb-AQD/GreenLA_CAP_2007.pdf.

56. *Id*.

57. Los Angeles attributes all emissions directly under its control to the City. *Id*. at 14. Its government operations include the Port of Los Angeles, Los Angeles World Airports, and the Los Angeles Department of Water and Power ("LADWP"). Because the City owns and operates LADWP, it takes responsibility for the utility's emissions, which account for 98% of total emissions, although it does not separately list emissions from use of electricity for city operations to avoid double counting. *Id*. The author takes this to mean that the City takes responsibility for all electricity use, whether it goes to residential, commercial, or industrial uses, because LADWP is municipally operated. However, it excludes emissions from private activities that occur at the port and airports, such as aircraft and ship emissions. *Id*.

58. *Id*. at 5.

energy.[59] Of the 134 cities responding (representing populations of roughly twenty-four million people), 64% currently use some renewable energy (3% purchase the energy, 24% produce it, and 37% do some of both) and another 20% planned to start using renewables in the next year.

The United States Environmental Protection Agency's ("EPA") Green Power Partnership—which works with governments at all levels, as well as businesses, universities, and nonprofits, and reports on their usage of renewable power[60]—identifies fourteen local governmental entities that purchase or generate 100% of their power from renewable sources. Nearly a hundred local governmental entities and agencies participate in the program, including large cities such as Houston, Dallas, and Albuquerque, counties, small towns and boroughs, and special use districts such as the Tarrant Regional Water District in Texas.[61]

Many other major U.S. cities are moving toward a more renewable energy mix. Dallas provides 40% of its power from wind,[62] while Houston began using 25% wind power as of July 1, 2008[63] with contracts ready to meet 30% of its demand with wind power and the possibility of raising this to 50%.[64] In Seattle, Washington, the city-owned utility, Seattle Light, announced in 2005 that it had achieved a "zero net emissions" of greenhouse gases through a combination of conservation, energy efficiency and offsets.[65]

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59. MAYORS CLIMATE PROT. CTR., U.S. CONFERENCE OF MAYORS, SURVEY ON MAYORAL LEADERSHIP ON CLIMATE PROTECTION (2007) [hereinafter MAYORS SURVEY], *available at* www.usmayors.org/climateprotection/climatesurvey07.pdf.

60. *See* U.S. Envtl. Prot. Agency, Green Power Partnership, http://www.epa.gov/grnpower (last visited Apr. 27, 2009).

61. *See* U.S. Envtl. Prot. Agency, Partner List, Green Power Partnership, http://www.epa.gov/grnpower/partners/index.htm (last visited Apr. 27, 2009).

62. PowerPoint Presentation: Green Behind the Scenes (City Council of Dallas, May 8, 2008), *available at* http://dallascityhall.com/council_briefings/briefings0508/Green_Behind_05072008.pdf. The City Council of Dallas decided in September 2007 to purchase 40% of its energy through renewable sources, an amount that is roughly equivalent to annual use of 22,857 residences. *Id.*

63. Lindsay Chapman, Houston Turns to Windpower, Savings (July 3, 2008), http://www.findingdulcinea.com/news/business/July-08/Houston-Turns-to-Wind-for-Power--Savings.htm.

64. *Houston Mayor White Pioneers Renewable Wind Energy to Reduce City's Electricity Bill*, U.S. MAYOR NEWSPAPER, Aug. 13, 2007, *available at* http://www.usmayors.org/usmayornewspaper/documents/08_13_07/pg9_Houston_wind.asp.

65. SEATTLE CLIMATE PROT. INITIATIVE, KEY ACCOMPLISHMENTS—JUNE 2007, http://www.mayorsinnovation.org/pdf/Article7_CC.pdf. Although the Washington Supreme Court complicated the utility's efforts by holding that state law precluded Seattle from using utility fees to buy carbon offsets, *see* Okeson v. City of Seattle, 159 Wash. 2d 436 (2007), the Washington Legislature enacted legislation expressly reversing the Court by allowing

Another potentially substantial area of reductions from proprietary actions stems from lighting. Although changing lightbulbs may sound trivial in the face of climate change, lighting actually accounts for 22% of U.S. electricity use.[66] One estimate finds that simply replacing traditional streetlights with highly efficient light emitting diode ("LED") bulbs could avoid 258 million metric tons of CO_2 (and save up to $280 billion).[67] Because cities operate numerous lighting sources—from streetlights, to traffic lights, to lighting for parks, airports, subways, and buildings, rapid adoption of LED lights by cities over the next twenty years could reduce electricity demands from lighting by 62%.[68]

Los Angeles has recently embarked on an initiative to retrofit 140,000 streetlights with LED bulbs, reducing its annual greenhouse gas emissions by 40,500 tons per year (while saving $10,000,000 annually).[69] Other major U.S. cities have also gotten into the game. Of the respondents to the Mayor's survey, all but four had upgraded to more energy efficient lighting in "public buildings, streetlights, parks, traffic signals, and other applications, or plan to do so in the next year."[70] Overall, 89% "have already installed more energy-efficient [lighting] technologies such as compact fluorescents, LEDs or photovoltaic street lights; another eight percent are considering doing so in the next year."[71] Chicago estimates that the program it began in 2004 to retrofit its 2900 traffic lights with LED bulbs eliminates 23,000 tons of carbon dioxide per year and saves the City $2.55 million annually in energy costs.[72] If these figures are correct, converting the 272,000 traffic signals in the United States,[73] (ninety-four times the number in Chicago) to LED bulbs could yield net emission savings of approximately 2,162,000 tons.[74]

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utilities to bank, credit, or trade greenhouse gas offsets or credits. *See* WASH. REV. CODE ANN. § 35.92.430 (West 2008); 2007 Wash. Legis. Serv. 349 (West).

66. *See* LED City: To Improve the Quality of Life, http://www.ledcity.org (last visited Mar. 31, 2009).

67. *Id.*

68. *Id.*

69. *See* NBC Los Angeles.com, Clinton Hails L.A.'s Shift to LED Street Lights, http://www.nbclosangeles.com/news/green/Clinton-Hails-LAs-shift-to-LED-Street-Lights.html (last visited Apr. 1, 2009).

70. MAYORS SURVEY, *supra* note 59.

71. *Id.*

72. C40 Cities, Lighting, http://www.c40cities.org/bestpractices/lighting/chicago_led.jsp (last visited Apr. 1, 2009).

73. NAT'L TRANSP. OPERATIONS COAL., NATIONAL TRAFFIC SIGNAL REPORT CARD TECHNICAL REPORT 2007, at 21 (2007), *available at* http://www.ite.org/reportcard/technical_report%final.pdf.

74. This figure is reached by simply multiplying Chicago's savings by ninety-four, clearly a rough estimate, but nonetheless likely well within the ballpark.

While lighting and energy provide two stark examples of potential emission savings within the proprietary realm, local governments can and have targeted a wide range of activities in their efforts to reduce energy consumption. Many have improved the fuel efficiency of their vehicle fleets[75] and several have adopted smaller scale efforts to purchase less bottled water, use less paper, and replace office equipment with more efficient models. [76] In 2008, Mayor Bloomberg announced that New York would spend $2.3 billion to cut greenhouse gas emissions from its operations by 30% in thirty years, through building energy efficiency improvements (projected to contribute 57% of the reductions),[77] repairs to leaking pipes and broken windows, conversion to higher efficiency pumps, and methane capture at water treatment plants, among other things.[78] Some municipalities have already reduced their emissions substantially. Salt Lake City, Utah, for example, has cut its energy usage by 31% since 2001, surpassing its commitment under the U.S. Conference of Mayors Climate Protection Agreement to meet Kyoto Protocol standards by 148% and seven years ahead of schedule.[79] Seattle, Washington has achieved a 60% reduction compared to 1990 levels.[80]

B. City Ability to Reduce Emissions by Shaping the Built Environment

The seemingly mundane activities that take place in cities' building and planning departments take on new importance in light of climate change. In the United States, local governments have power to regulate building construction and renovation through the enactment and enforcement of building codes.[81] The ability to alter building design and renovation stan-

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75. MAYORS SURVEY, *supra* note 59.

76. *See, e.g.*, SEATTLE CLIMATE PROT. INITIATIVE, *supra* note 65. Seattle's campaign to save paper, for example, reduced paper consumption in 2006 by 21%, thereby eliminating 125.4 tons of GHG emissions. *Id*.

77. Joan Gralla, NYC to spend $2.3 bln to cut greenhouse gases (July 7, 2008), http://talkingpointsmemo.com/news/2008/07/nyc_to_spend_23_bln_to_cut_gre.php.

78. *Id*. The City projects that it will begin to see fiscal savings from these efforts by 2015.

79. Salt Lake City Green, Climate Action Plan, http://www.slcgreen.com/CAP/current.htm (last visited Apr. 1, 2009).

80. SEATTLE CLIMATE PROT. INITIATIVE, *supra* note 65.

81. Building codes are encompassed by state and local "police powers" and have historically been the domain of city, rather than state, governments. *See* David Listokin & David B. Hattis, *Building Codes and Housing*, 8 CITYSCAPE 22, 23 (2005). Often a "building code" is not one document but rather a set of interrelated codes covering different aspects of building construction including: structure (fire safety, general safety, enclosure, interior environment, materials); plumbing; mechanical and combustion equipment; electri-

dards to improve energy efficiency (or even the authority to better enforce existing standards) places cities in an influential position with regards to energy demand. Buildings consume 68% of the electricity used in the United States, and 39% of all of the energy of any kind.[82] This high demand for power generates 38% of U.S. carbon dioxide emissions.[83]

Improved building energy efficiency presents a technologically easy, proven, and often cost-effective emission reduction strategy.[84] Although nearly a third of this energy demand could be reduced cost-effectively over a building's lifetime,[85] market barriers—such as inflated cost estimates for green building, differing incentives between landlords who would pay for efficiency improvements and tenants who would reap the cost savings, similar split incentives between developers and buyers, and an insuffi-

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cal systems; and energy. Although the last few decades have seen states increasingly adopting building or energy efficiency codes, generally these have only partially limited local control because few states entirely preempt local codes, although a number (including California) set regulatory floors. *Id*. at 31-32. Furthermore, a number of states still have no statewide building codes, leaving the issue entirely to the locals. *Id*. Finally, most states that have enacted building regulations have not adopted comprehensive codes and have thus left significant gaps for local regulation. *Id*.

82. *See* U.S. Envtl. Prot. Agency, Why Build It Green?, http://www.epa.gov/greenbuilding/pubs/whybuild.htm (last visited May 12, 2009) [hereinafter Why Build Green?]; *see also* UNIV. WIS. DEP'T OF URBAN PLANNING, CLIMATE CHANGE LITERATURE REVIEW, *available at* http://urpl.wisc.edu/ecoplan/content/lit_climate.pdf (last visited May 12, 2009).

83. Why Build Green?, *supra* note 82. Although cities vary in the proportion of their overall emissions that stems from buildings' energy consumption, it consistently ranks high. Los Angeles estimates that buildings account for two-thirds of the city's electricity demand and 32% of its carbon dioxide emissions. ENVIRONMENTLA, BUILDING A GREEN LOS ANGELES: FRAMEWORK FOR THE CITY'S GREEN BUILDING PROGRAM (2008), *available at* http://cityplanning.lacity.org/code_studies/GreenLa/Brochure.pdf. New York City estimates that 79% of the 58.3 million metric tons of CO_2 equivalent it generated in 2005 served buildings' energy demands. CITY OF N.Y., INVENTORY OF NEW YORK CITY GREENHOUSE GAS EMISSIONS, APRIL 2007, at 25, *available at* http://www.nyc.gov/html/om/pdf/ccp_report041007.pdf (noting that buildings account for a higher proportion of overall emissions in New York than in most cities because New Yorkers drive far less than residents of other cities).

84. Widely available technologies and building methods to improve energy efficiency include: improvement in the building's thermal envelope; heating system efficiency; reducing the cooling load through such methods as reflective roofs and shade trees; using passive and low-energy cooling techniques; building energy management systems; use of solar energy for power, heat, and hot water; use of highly efficient electric lighting; daylighting (use of natural light); and use of highly efficient appliances, electronics, and office equipment, among other things. THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CONTRIBUTION OF WORKING GROUP III TO THE FOURTH ASSESSMENT REPORT: MITIGATING CLIMATE CHANGE 295-403 (B. Metz et al. eds., 2007) [hereinafter IPCC 2007].

85. *Id*. at 389. After surveying eighty studies on the building sector, the IPCC concluded that "there is a global potential to reduce approximately 29% of the projected baseline emissions by 2020 cost-effectively." *Id*.

ciently developed green building industry—have impeded realization of these environmental and cost savings.[86] Construction forecasts underscore the potential emission savings from improved building efficiency: between now and 2050, U.S. residents will build or replace an estimated eighty-nine million homes and construct 190 billion square feet of commercial, office institutional and other non-residential space.[87] Code changes and incentives can help to overcome these barriers and shift construction and renovation to more efficient forms that reduce the buildings' dramatic demand electricity demands.

Los Angeles's Green Building Ordinance mandates that new construction and substantial retrofits of large commercial and residential buildings meet the U.S. Green Building Council's Leadership in Energy and Environmental Design ("LEED")[88] basic certification standards.[89] On average, LEED certified buildings use 30% to 40% less electricity than other buildings.[90] Significantly, the city also offers a valuable incentive to build green for projects of all sizes; construction projects that voluntarily meet LEED "Silver" standards (which incorporate more environmental considerations than basic certification) receive expedited permitting, a coveted resource for homeowners and developers alike.[91]

Like Los Angeles, other U.S. cities have targeted improved building design as part of their climate action plans. One recent nationwide inventory

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86. *Id*. at 390.

87. REID EWING ET AL., GROWING COOLER: THE EVIDENCE ON URBAN DEVELOPMENT AND CLIMATE CHANGE 48 (2007).

88. The U.S. Green Building Council ("USGBC") is an organization of industry professionals that provides third-party certification that buildings—either new or renovated—meet their standards, which promote energy efficiency as well as other environmental goals, such as water conservation and indoor air quality. *See* U.S. Green Bldg. Council, http://www.usgbc.org (last visited May 12, 2009).

89. *See* BUILDING A GREEN LOS ANGELES: FRAMEWORK FOR THE CITY'S GREEN BUILDING PROGRAM, http://www.ci.la.ca.us/mayor/stellent/groups/electedofficials/@myr_ch_contributor/documents/contributor_web_content/lacity_004866 (last visited May 12, 2009). Starting on November 1, 2008, new commercial buildings over 50,000 square feet, high-rise residential buildings over 50,000 square feet, and low-rise residential buildings of the same size that have fifty or more units, will be required to meet LEED certification standards; reconstruction of existing buildings will also trigger the requirement if the cost meets a certain threshold. The City Green Building Program also provides incentives for projects of any size to exceed minimum LEED certification standards and reach LEED's next level of "Silver" or higher. *Id*. at 2.

90. *See* U.S. Green Bldg. Council, The Green Home Guide: LEED for Homes Point Categories (Energy and Atmosphere), http://www.greenhomeguide.org/green_home_programs/LEED_for_homes_points.html (last visited April 28, 2009).

91. *See* Mitch Menzer & Eliza Pastor, *Los Angeles Adopts Green Building Ordinance*, STAY*CURRENT*, July, 2008, *available at* www.paulhastings.com/assets/publications/946.pdf?wt.mc_ID=946.pdf (describing expedited permitting as a valuable incentive).

of green building programs showed the number of programs more than tripling between 2004 and 2007.[92] During this period cities also increased the stringency of existing programs and expanded them to cover a broader range of building types[93] so that by 2007, 55% of the surveyed programs applied to private commercial development.[94] A study by the American Institute of Architects of cities with populations greater than 500,000 showed a dramatic upturn in programs over the last few years with seventy-five of ninety-three programs being authorized between 2003 and 2007.[95]

Local governments also have a substantial role in shaping the built environment through their power over zoning and land use, a well-established area of local power.[96] This power makes cities potentially important players in efforts to reducing greenhouse gas emissions from transportation because urban form and land use directly shape vehicle usage.

One-third of all of the United States' carbon dioxide emissions stems from the transportation sector.[97] Since 1980 this sector's emissions have been increasing the fastest,[98] consuming 70% of the barrels of oil used in the United States.[99] Eighty-percent of these emissions are generated by motor vehicle use.[100] While proposed and enacted policies for reducing transportation emissions have emphasized higher vehicle fuel-efficiency and low-carbon fuels. A recent study from the EPA finds that "[b]y far the most significant factor to past growth in GHG emissions [from transportation] has been increases in the number of vehicles on the road and in vehi-

92. SHERRIE GRUDER, SOLID & HAZARDOUS WASTE EDUC. CTR., GOVERNMENT GREEN PROGRAMS BUILDING INVENTORY 1 (2007), *available at* http://www4.uwm.edu/Dept/shwec/publications/cabinet/reductionreuse/Government%20Green%20Buildling%20Programs%20Inventory3.pdf.

93. *Id*.

94. *Id*.

95. Am. Inst. Architects, Local Leaders in Sustainability, http://www.aia.org/advocacy/local/programs/AIAS076930 (last visited Apr. 1, 2009).

96. *See, e.g.*, ROBERT C. ELLICKSON & VICKI L. BEEN, LAND USE CONTROLS: CASES AND MATERIALS 29 (3d ed. 2005) ("Public land use regulation in the United States traditionally has been mainly the province of local governments."); Richard L. Briffault, *Our Localism: Part I—The Structure of Local Government Law*, 90 COLUM. L. REV. 1, 3 (1990) ("Land use control is the most important local regulatory power. . . . [In land use], state delegated power, supported by judicial attitudes sympathetic to local control, has resulted in real local legal authority, notwithstanding the nominal rules of state supremacy.").

97. *See* EWING ET AL., *supra* note 87, at 2.1; Eileen Claussen, *Foreword* to DAVID L. GREENE & ANDREAS SCHAFER, PEW CTR. ON GLOBAL CLIMATE CHANGE, REDUCING GREENHOUSE GAS EMISSIONS FROM U.S. TRANSPORTATION, at ii (2003), *available at* http://www.pewclimate.org/docUploads/ustransp.pdf.

98. GREENE & SCHAFER, *supra* note 97, at 3.

99. *Id*. Transportation's share of total U.S. emissions increased from 31% to 33% between 1990 and 2007. *See* EWING ET AL., *supra* note 87, at 11.

100. *Id*. at 49.

cle usage."[101] It thus concludes that reducing transportation's upward emissions curve between now and 2050 will require decreasing the average amount Americans drive, referred to as their "vehicle miles traveled" ("VMT").[102] Other studies have similarly found that increases in VMT "ha[ve] outpaced population growth and is projected to continue to outstrip improvements in vehicle efficiency."[103]

A half century of automobile-oriented infrastructure expansion designed to serve development patterns shaped by traditional zoning have created urban sprawl[104] a significant cause of increasing VMT.[105] The characteristics of sprawl—dispersed, low density land use patterns that starkly separate residences from shopping and workplaces—increase VMT because cars provide the most practical way, and often the only way, to reach essential services, work, stores, entertainment, or social gatherings.[106] Moreover, VMT can increase drastically even at the smallest level of urban planning. Because traditional Euclidean zoning radically segregates uses, major arterials often separate commercial, residential, and industrial

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101. MUI ET AL., OFFICE OF TRANSP. & AIR QUALITY, U.S. ENVTL. PROT. AGENCY, A WEDGE ANALYSIS OF THE U.S. TRANSPORTATION SECTOR 16 (2007), *available at* http://www.epa.gov/otaq/climate,420r07007.pdf.

102. *Id*. at 17.

103. Progressive Policy Inst., Driving Down Carbon Dioxide (Nov. 24, 2003), http://www.ppionline.org/ppi_ci.cfm?knlgAreaID=116&subsecID=900039&contentID=252224; *see also* GREENE & SHAFER, *supra* note 97, at 6.

104. Although scholars define "sprawl" variously, the following captures critical elements:

> [Sprawl is] the process in which the spread of development across the landscape far outpaces population growth. The landscape sprawl creates has four dimensions: a population that is widely dispersed in low density development; rigidly separated homes, shops, and workplaces; a network of roads marked by huge blocks and poor access; and a lack of well-defined, thriving activity centers, such as downtowns and town centers. Most of the other features usually associated with sprawl—the lack of transportation choices, relative uniformity of housing options, or the difficulty of walking—are a result of these conditions.

REID EWING ET AL., MEASURING SPRAWL AND ITS IMPACTS: THE CHARACTER AND CONSEQUENCES OF METROPOLITAN EXPANSION 3, http://www.smartgrowthamerica.org/sprawlindex/MeasuringSprawl.PDF (last visited May 12, 2009).

105. *See, e.g.*, MATTHEW E. KAHN, GREEN CITIES: URBAN GROWTH AND THE ENVIRONMENT 110-24 (2006). Since World War II, the predominant pattern in land use development has presumed and supported automobile travel, and has pushed development further and further from central cities. EWING ET AL., *supra* note 87, at 13.

106. For example, in 2000, 88% of Americans commuted to work by car (76% in single occupancy vehicles). U.S. CENSUS BUREAU, JOURNEY TO WORK: 2000, at 1 (2004), *available at* www.census.gov/prod/2004pubs/c2kbr-33.pdf.

neighborhoods.[107] Thus, it is often impractical to walk to shopping, work, or entertainment, even if the distance between zones is small. These short trips are significant as nearly 40% of vehicle miles traveled stem from local trips, not commuting.[108] In metropolitan areas, half of the trips are three miles or less and 28% are less than one mile.[109] Moreover, cities have significant potential to shape VMT because, although residents travel between cities, overall 62% of travel currently occurs within cities.[110] By 2050, this figure has been projected to reach 80%.[111]

The authors of *Growing Cooler: The Evidence on Urban Development and Climate Change* argue "much of the rise in vehicle emissions can be curbed simply by growing in a way that will make it easier for Americans to drive less."[112] The authors find that numerous studies analyzing the impact of sprawl on driving behavior all showed compact development to reduce automobile use:[113] "the weight of the evidence shows that, with more compact development, people drive 20% to 40% less, at minimal or reduced cost, while reaping other fiscal and health benefits."[114] Overall, Ewing and colleagues "estimate that shifting 60% of new growth to compact patterns would save 85 million metric tons of [carbon dioxide] annually by 2030" while providing numerous co-benefits.[115]

Cities can promote compact development by changing zoning codes to do numerous things, including: concentrate growth in core service areas with existing infrastructure and housing, allow mixed-use and higher-density development, reduce or eliminate parking requirements, require employee parking cash-outs, improve walking and biking facilities and safety, increase transit availability and provide incentives for transit-oriented development.[116] Projections for future development show sub-

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107. *See* Peter Calthorpe, Land Use and Building the American Community, Presentation at the Fourth Annual Land Use Conference, The Rocky Mountain Land Use Inst., Univ. of Denver Coll. of Law (1996) (videotape on file with author).

108. *Id*.

109. *See* Posting of Marge Fahey to The Ground Floor, http://thegroundfloor.typepad.com/the_ground_floor/2008/07/soaring-gas-pri.html (July 22, 2008).

110. EWING ET AL., *supra* note 87, at 47.

111. *Id*.

112. *Id*. at 15.

113. *Id*. at 16.

114. *Id*. at 15.

115. *Id*. at 21. Because this study considered the impact of compact development independently, these savings could be substantially compounded when complemented by other measures that discourage driving such as higher gas prices, increased transit availability, employer incentives, or reduced parking availability, among other things. *Id*. at 50.

116. *Id*. at 138-44; *see also* CTR. FOR CLEAN AIR POLICY, STATE AND LOCAL LEADERSHIP ON CLIMATE CHANGE 16 (2003).

stantial opportunities to promote compact development by changing zoning. Studies estimate that "two-thirds of the development on the ground in 2050 will have been built between now and then."[117] Because new development will be built somewhere with or without zoning changes, redirecting the shape of the built environment offers a low-cost emission reduction strategy. The relative permanence of the built environment means that once built, these changes cannot be repealed. [118]

Although the fact that transportation demand crosses city boundaries easily suggests the need for regional solutions and supports David Barron's claim that vindicating some city goals (here, less auto travel) may require more centralized intervention, Ewing's study shows that even with current fragmentation of land use power within regions, actions by individual cities' to promote compact development can influence greenhouse gas emissions.

C. Implementing Emission Reductions by Managing Waste

Waste management, another typical and well accepted area of local power, has the potential to decrease energy demand while simultaneously eliminating new sources of greenhouse gas emissions. As local governments operate the majority of municipal solid waste programs in the United States, they have the opportunity to influence waste volume and recycling rates. Recycling affects energy demand in two ways. First, it reduces the use of fossil fuels needed to collect and transport waste to landfills. Second, it lowers demand for raw materials and the energy needs to transform them into products. According to the EPA, if the average recycling rate were raised from the 30.6% community average in 2003 to 35% the country would see energy savings estimated at 1720 trillion BTUs, the equivalent of 13.7 billion gallons of gasoline or 297 million barrels of crude oil. This would have the same effect on carbon dioxide emissions as removing twenty-seven million passenger cars from the roadway each year.[119] In addition to saving energy, recycling shrinks the volume of landfill waste that generates methane and avoids the release of carbon dioxide from waste disposal systems that employ incineration.[120]

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117. *Id*. at 19.

118. *Id*. at 50.

119. CHOATE ET AL., WASTE MANAGEMENT AND ENERGY SAVINGS: BENEFITS BY THE NUMBERS 6 (2005) *available at* http://www.epa.gov/climatechange/wycd/waste/downloads/Energy percent20Savings.pdf.

120. *See* U.S. Envtl. Prot. Agency, General Information on the Link Between Solid Waste and Greenhouse Gas Emissions, http://www.epa.gov/climatechange/wycd/waste/generalinfo.html (last visited Apr. 1, 2009).

Many U.S. cities' climate action plans target the diversion of solid waste from landfills and incinerators to recycling facilities.[121] Plans contain a variety of mechanisms, including education and outreach, improved access with new or expanded curbside pickup, mandatory increased recycling of a percentage of construction debris, and in some cases penalties for failing to recycle.[122] A number of cities also have increased significantly the recycling requirements for construction waste. Prior to amendments to its Construction Waste Ordinance in 2005, for example, Chicago did not even require contractors to record the level of waste generated from construction sites. Starting in 2005, however, they had to begin tracking waste and during 2006 they were required to "strive" for a 25% recycling goal. Starting in 2007, permits required contractors to recycle 50% of the debris from the job site.[123] As part of its climate change mitigation program, San Francisco adopted an ordinance in 2006 requiring diversion of 65% of construction waste.[124]

Seattle has enacted one of the more intriguing options as part of its climate change plan. As of January 1, 2005, Seattle implemented a program prohibiting residences and businesses from including in their garbage "significant" amounts of recyclables, defined as 10% or more. In addition to improving recycling accessibility and implementing a public education program, the City has hired inspectors to tag residential bins containing significant amounts of recyclables. These bins are not collected until the waste has been separated. Meanwhile, the City fines apartment building owners and other businesses if they fail to meet the requirements. At the

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121. *See, e.g.*, CITY OF BOSTON, CLIMATE: *CHANGE* (2007) *available at* http://www.cityofboston.gov/climate/pdfs/CAPJan08.pdf) (noting the goal of increasing recycling of all materials by 2012); CITY OF S.D. ENVTL. SERVS. DEP'T, CLIMATE PROTECTION ACTION PLAN (2005), *available at* http://www.sandiego.gov/environmental-services/sustainable/pdf/action_plan_07_05.pdf (including adoption of ordinances for demolition recycling, commercial paper recycling, and multiple family recycling); City of Chi. Climate Action Plan, http://www.chicagoclimateaction.org/pages/reduced_waste___industrial_pollution/53.php. (last visited Apr. 1, 2009) (noting the goals of reducing, reusing, or recycling 90% of city's waste by 2020).

122. *See supra* note 121.

123. *See* City of Chi., Construction and Demolition Recycling, http://egov.cityofchicago.org/city/webportal/portalContentItemAction.do?contentOID=536909079&contenTypeName=COC_EDITORIAL&topChannelName=Dept&blockName=Environment%2FRecycling+%26+Waste+Management%2FI+Want+To&context=dept&channelId=0&programId=0&entityName=Environment&deptMainCategoryOID=-536887205 (last visited Apr. 1, 2009) (noting that recyclables in demolition and construction include bricks, concrete, masonry, rock, scrap metal, plaster, dry wall, glass, plastic, shingles, and non-asbestos insulation).

124. *See* S.F., Cal., Ordinance No. 27-06 (July 1, 2006), *available at* http://www.sfenvironment.org/downloads/library/ondemolitionordinancefinal.pdf.

same time, Seattle has increased the ease with which residents and businesses can recycle by allowing apartments and commercial businesses to sign up for a second weekly pickup and by making yard waste collection for composting less expensive than garbage pickup.[125]

Some cities have shown impressive results that nonetheless have not stopped them from proposing further advances. Salt Lake City reports an increase of 85% in its residential recycling program since 2000.[126] Portland, which diverts 54% of its solid waste from landfills, attributes part of its success in reducing per capita emissions to its achievement of one of the higher recycling rates in the country.[127] The City offers recycling services to all residential buildings and requires businesses to develop a plan to divert at least half of their waste from landfills.[128] Portland has also recently implemented a commercial food waste collection program.[129] Los Angeles boasts a recycling rate of 62%, much higher than the national average and the highest among the five largest U.S. cities.[130] As part of its climate change efforts it has set a target of reaching a 70% diversion rate by 2015.[131] In 2007, the City began a long range solid waste planning process to make Los Angeles a "zero waste" city by 2030.[132]

Cities have the capacity to also affect greenhouse gases through the manner in which they operate landfills and sewage treatment plants, both sources of the greenhouse gas methane. The EPA's 2006 U.S. emissions inventory finds that methane from waste processes—landfills and sewage treatment—comprise 2.3% of U.S. emissions of greenhouse gases.[133] In addition to being commonly owned and operated by local governments, both of these sources provide opportunities to capture methane that would otherwise be released into the atmosphere and to transform it into green energy that displaces carbon dioxide intensive fossil fuels. Los Angeles and a

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125. Seattle.gov, Seattle Public Utilities—Ban on Recyclables in Garbage, http://www.seattle.gov/util/About_SPU/Recycling_System/History_&_Overview/Ban_on_Recyclables_in_Garbage/index.asp (last visited April 1, 2009).

126. Salt Lake City Green, *supra* note 79.

127. PROGRESS REPORT ON THE CITY OF PORTLAND AND MULTNOMAH COUNTY: LOCAL ACTION PLAN ON GLOBAL WARMING 1, 5 (2005), *available at* http://www.portlandonline.com/shared/cfm/image.cfm?id=112118.

128. *Id*. at 26.

129. *Id*. at 5.

130. GREEN LA, *supra* note 55, at 4.

131. *Id*. at 6.

132. Los Angeles Solid Waste Integrated Resources Plan, http://www.zerowaste.lacity.org/about/welcome.html (last visited Apr. 1, 2009).

133. *See* U.S. ENVTL. PROT. AGENCY, INVENTORY OF U.S. GREENHOUSE GASES AND SINKS 1990–2006, at 8-21 (2007), *available at* http://www.epa.gov/climatechange/emissions/downloads/08_Waste.pdf.

number of cities have made methane capture a key component of their climate change programs.[134] Salt Lake City has begun capturing methane at the City's municipal waste site, producing enough energy to power over 2500 homes.[135] Between 2005 and 2006, increased capture of co-generated power at the wastewater treatment plant reduced the City's annual emissions by 10,000 tons.[136]

Although it is unlikely to be an aspect of city operations that immediately jumps to mind when considering sources of "power," cities' authority and responsibility to address garbage and sewage empower them to target an important source of methane emissions and to create green energy. This very humble aspect of service provision turns out to be an important source of power over greenhouse gas emissions.

D. Cities as Educators and Purveyors of Environmental Norms

Cities' powers, responsibilities, and their proximity to residents place them in a unique relationship with their constituents. Cities provide the services and create the regulations that impact individuals much more immediately and directly than other levels of government; city representatives respond to medical emergencies, fires, and burglaries, collect the garbage, create and manage parks, replace the lightbulbs in streetlights, direct the traffic, and issue (or refuse to issue) building permits, among many other activities that place them in the midst of daily life. Elected officials are not far away in a remote capitol but rather out to be seen in public life.

This sheer proximity may give local governments an advantage over other levels of government in certain approaches to climate policy. As Vic-

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134. Los Angeles provides 80% of the power for its Hyperion Treatment Plant with methane recovered from the operations and is implementing another innovative program to generate biogas from solids remaining after sewage treatment. *See* GREEN LA, *supra* note 55 at 18. Examples of other cities capturing methane include Eugene, Oregon which provides half of the power for its wastewater treatment plant with methane generated by the treatment process onsite. This power conversion simultaneously reduces the plant's methane emissions by 90%. *See* U.S. CONFERENCE OF MAYORS, ENERGY AND THE ENVIRONMENT BEST PRACTICES GUIDE 30 (2007), *available at* http://www.usmayors.org/uscm/best_practices/EandEBP07.pdf.

Santa Barbara, California and Dayton, Ohio similarly powers its wastewater treatment plant with digester gas emissions. *See id.* at 50, 42. Albuquerque, New Mexico generates seventy kilowatt hours of electricity from a closed landfill which powers a remediation system to clean up groundwater contaminated by prior leaks from the site. *See id.* at 38. Salt Lake City has begun capturing methane at the City's municipal waste site, producing enough energy to power over 2500 homes. Salt Lake City Green, *supra* note 79. Between 2005 and 2006 increased capture of co-generated power at the wastewater treatment plant reduced the City's annual emissions by 10,000 tons. *Id.*

135. Salt Lake City Green, *supra* note 79.

136. *Id*.

tor Flatt explains, "[b]ecause at the local government level there is personal contact between government actors and the regulated parties, local government may be able to effectively advance environmental protection with what has come to be called public-private partnerships, or cooperative environmentalism with business."[137] Because proximity has a powerful influence on norm creation, Flatt suspects that "local government may be the only entity that can truly use public-private partnerships for effective environmental regulation."[138]

U.S. cities have also been increasingly adopting this tool, quite possibly in recognition of their unique position. The Seattle Climate Partnership, for example, created by the City in 2006, engages Seattle-area employers such as Starbucks, REI, the Port of Seattle, and the University of Washington to voluntarily assess and reduce their own carbon footprints.[139] In 2006 Houston Mayor Bill White launched a voluntary program, Flex in the City, to encourage businesses to adopt telecommuting or other flexible work options for employees.[140] By measuring reductions in subsequent freeway commute times, the City was able to demonstrate the effectiveness of the program.[141] In just the sort of face-to-face situation described by Flatt, the Mayor hosts a luncheon for participants and a committee determines the recipient of the Alfred P. Sloan Award for Business Excellence in Workplace Flexibility.[142] For similar reasons, cities may be particularly powerful in influencing individuals to change behaviors that contribute to global warming; the appearance of educational programs in Los Angeles and other cities' climate change plans suggests that cities are trying to capitalize on this uniquely local source of influence.[143]

The U.S. Conference of Mayors plans for addressing climate change recognize cities' potential power to impact climate change by shaping

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137. Victor Flatt, *Act Locally, Affect Globally: How Changing Social Norms to Influence the Private Sector Shows a Path to Using Local Government to Control Environmental Harms*, 35 B.C. ENVTL. AFF. L. REV. 455, 456-57 (2008).

138. *Id*. at 460.

139. Seattle Climate Prot. Initiative, Key Accomplishments—June 2007, *available at* http://www.mayorsinitiatives.org/pdf/Article7_CC.pdf.

140. Press Release, City of Houston, Tex., Flex in the City Demonstrates Commuter Time Cuts, Millions in Yearly Costs Savings (Oct. 12, 2006), *available at* http://www.houstontx.gov/mayor/press/20061012.html.

141. *Id*.

142. *Flex in the City 2007 Gains Momentum,* CITIZENSNET (Houston, Tex.), Oct. 10, 2007, at 2-3, *available at* http://woodsidecivicclub.com/Images/20071010CitizensNet.pdf.

143. *See* GREEN LA, *supra* note 53 at 27-28 (describing LA's plans for a citywide climate change education program); *see also, e.g.*, SEATTLE CLIMATE PROT. INITIATIVE, *supra* note 65 (describing the program launched by Seattle's Department of Neighborhoods in 2007 that funds neighborhood groups to develop local solutions to climate change).

norms: "Mayors, along with other local leaders, are in a unique position to change human behavior and take local action that will lead to significant and sustainable reductions in energy use, helping curb harmful greenhouse gas emissions."[144] City efforts to engage businesses and individuals in emission reduction efforts are hard to square with a public choice model that merely views cities as aggregators the service preferences of "consumer-voters." Rather, cities appear to be trying to shape the norms of their residents and actively involve them in climate governance.

CONCLUSION

Discussions of city power have long focused on cities' power relative to higher levels of government and to each other. The diffuse causes of climate change offer an opportunity to revisit the question of city power by focusing more closely on the intended object of influence. Although these two perspectives on power will at times overlap, they are not identical. If we consider greenhouse gas emissions as the target, cities can employ their relatively minor powers to substantial effect and many of them appear to be trying to do so. But consideration of cities' climate change policies alters the usual analysis of city power further. While local government theorists have generally evaluated cities' autonomy in terms of residents' ability to shape their local community or their metropolitan region, municipal climate change policies aim to meaningfully contribute to resolution of a global problem. Although some elements of climate change plans may provide fiscal or other benefits that may make cities better providers of services to "consumer-voters" on a public choice model, many other elements cannot be explained other than recognizing these as efforts to engage their residents in a community building effort that encompasses the entire world. Perhaps Frug's future vision for cities is already taking shape in the realm of local climate change policies, but on a grander vision of geographic interconnection than even he envisioned.

144. U.S. CONFERENCE OF MAYORS, STRONG CITIES… STRONG FAMILIES… FOR A STRONG AMERICA: MAYORS' TEN POINT PLAN '08 (2008), *available at* http://www.mayors.org/pressreleases/documents/10-PointPlan_1107.pdf.