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# Using Local Knowledge to Shrink the Individual Carbon Footprint

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> Mayors are on the front lines of impacting human behavior—from their work on recycling, to aids [sic] prevention, and prostate cancer, they are changing human behavior every day.[1]

> Local government leaders are . . . uniquely positioned to influence citizen behaviors—their transportation options, energy consumption patterns and general consumer decisions.[2]

## I. INTRODUCTION

Entire texts have been devoted to exploring the meaning of the term "lifestyle" and sociological understandings of lifestyle are complex and nuanced.[3] For present purposes, however, a more simple articulation of the term will suffice. Lifestyle can mean "mode of living,"[4] including "patterns of action"[5] and "patterns of ways of living."[6] Without rendering judgment, one observation that can fairly be made about the current lifestyles and associated behaviors of Americans is that they indirectly and directly lead to the emission of a high volume of

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1. The United States Conference of Mayors Climate Protection Center, Mayors Leading the Way on Climate Protection, http://www.usmayors.org/climateprotection/revised/ (last visited Oct. 26, 2009).

2. ICLEI Local Governments for Sustainability USA, Climate Change, http://www.icleiusa.org/programs/climate (last visited Oct. 27, 2009) [hereinafter ICLEI Local Governments].

3. *E.g.*, DAVID CHANEY, LIFESTYLES 4 (1996) ("The term [lifestyle] is used a great deal but there are problems in defining something as nebulous as a lifestyle.").

4. MICHAEL E. SOBEL, LIFESTYLE AND SOCIAL STRUCTURE: CONCEPTS, DEFINITIONS, ANALYSES 3 (1981).

5. CHANEY, *supra* note 3, at 11.

6. *Id.* at 12.

greenhouse gases ("GHGs").[7] Although an American diplomat is said to have remarked in preparing for the Rio Earth Summit that "'the American lifestyle is not up for negotiation,'"[8] a growing number of legal scholars recognize the need for environmental policy to capture individual GHG emissions, and have begun to explore whether and how the law can or should be used to change individual, GHG-emitting lifestyles and behaviors.[9] One consideration in designing a policy aimed at individual, GHG-emitting behaviors will be the division of authority between different levels of government. As evidenced by the opening quotations, local governments are often characterized as well-situated to influence individual behavior, particularly GHG-emitting behaviors.[10] This Idea links concepts developed in the environmental federalism literature with work discussing the use of law to influence environmental

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7. The per capita carbon dioxide emissions of the average American is estimated to be approximately twenty metric tons per year. ENERGY INFO. ADMIN., U.S. DEP'T OF ENERGY, WORLD PER CAPITA CARBON DIOXIDE EMISSIONS FROM THE CONSUMPTION AND FLARING OF FOSSIL FUELS 1980-2006, at 1 tbl.H.1cco2 (2008), *available at* http://www.eia.doe.gov/pub/international/iealf/tableh1cco2.xls. Even limited to emissions from "behaviors over which individuals have direct, substantial control, the total emissions for the average American in 2000 equaled over 14,000 pounds (seven tons) of carbon dioxide." Michael P. Vandenbergh & Anne C. Steinemann, *The Carbon-Neutral Individual*, 82 N.Y.U. L. REV. 1673, 1693 (2007).

8. James Salzman, *Sustainable Consumption and the Law*, 27 ENVTL. L. 1243, 1256 (1997) (quoting Joe Kirwin, *Less than $5 Billion Pledged for Agenda 21 Action Plan; Final Document to Be Released by United Nations in September*, 15 Int'l Env't Rep. (BNA) No. 14, at 486 (July 15, 1992)).

9. *See, e.g.*, Hope M. Babcock, *Assuming Personal Responsibility for Improving the Environment: Moving Toward a New Environmental Norm*, 33 HARV. ENVTL. L. REV. 117, 123, 145-49 (2009) [hereinafter Babcock, *Assuming Personal Responsibility*] (analyzing the role of norms in shaping environmental behavior); Hope M. Babcock, *Global Climate Change: A Civic Republican Moment for Achieving Broader Changes in Environmental Behavior*, 26 PACE ENVTL. L. REV. 1, 5-6, 13 (2009) [hereinafter Babcock, *Global Climate Change*] (arguing for a new norm of environmental responsibility and identifying climate change as an opportunity for developing this norm); John C. Dernbach, *Harnessing Individual Behavior to Address Climate Change: Options for Congress*, 26 VA. ENVTL. L.J. 107, 114, 121, 129-30 (2008) (identifying how Congress can better engage individuals in the effort to reduce GHG emissions); Holly Doremus & W. Michael Hanemann, *Of Babies and Bathwater: Why the Clean Air Act's Cooperative Federalism Framework Is Useful for Addressing Global Warming*, 50 ARIZ. L. REV. 799, 814-16 (2008) (identifying the capacity to generate individual behavior change as an important criterion for assessing proposed climate change policy); Andrew Green, *Self Control, Individual Choice, and Climate Change*, 26 VA. ENVTL. L.J. 77, 91 (2008) (discussing constraints on individual action to reduce GHG emissions, including self-interest, bounded rationality, and bounded willpower); Albert C. Lin, *Evangelizing Climate Change*, 17 N.Y.U. ENVTL. L.J. 1135, 1146-53 (2009) (exploring appeals to values as a mechanism for encouraging climate-friendly behavior); Michael P. Vandenbergh et al., *Individual Carbon Emissions: The Low-Hanging Fruit*, 55 UCLA L. REV. 1701, 1720 (2008) (identifying seven readily implemented actions that can reduce individual emissions); Vandenbergh & Steinemann, *supra* note 7, at 1712-14, 1726-27 (advocating for the development of a carbon neutrality norm to spur individual behavior change).

10. ICLEI Local Governments, *supra* note 2.

behaviors[11] to consider the competence of local governments with respect to influencing individual, GHG-emitting lifestyle and behavior choices.

Many local governments have been surprisingly active in adopting climate change mitigation measures. Local mitigation efforts include everything from self-imposed GHG emissions reduction targets and renewable portfolio standards, to "green" building codes.[12] This local action is surprising because local efforts to mitigate climate change defy a bedrock principle of environmental federalism—namely, that jurisdictions cannot be relied upon to curtail environmental harms where they do not internalize the costs and benefits of doing so.[13] (Notably, in the context of climate change, localities that undertake climate change mitigation efforts internalize all of the costs of such measures yet share the benefits (reduced emissions and potentially lessened climate change impacts) with the world.)[14]

The unexpected willingness of local governments to engage in climate change mitigation has occasioned a flurry of reflection and debate about whether local efforts are meaningful,[15] what the implications of local climate change initiatives are for theories of

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11. In particular, the work of Professor Michael P. Vandenbergh. *See, e.g.*, Michael P. Vandenbergh, *From Smokestack to SUV: The Individual as Regulated Entity in the New Era of Environmental Law*, 57 VAND. L. REV. 515, 597-99 (2004) [hereinafter Vandenbergh, *From Smokestack to SUV*]; Vandenbergh et al., *supra* note 9, at 1715-16; Michael P. Vandenbergh, *Order Without Social Norms: How Personal Norm Activation Can Protect the Environment*, 99 NW. U. L. REV. 1101, 1103-04 (2005) [hereinafter Vandenbergh, *Order Without Social Norms*]; Michael P. Vandenbergh, *Taking Individual Behavior Seriously*, ADMIN. & REG. L. NEWS, Fall 2005, at 2, 4 [hereinafter Vandenbergh, *Taking Individual Behavior Seriously*]; Vandenbergh & Steinemann, *supra* note 7, at 1688-89, 1696.

12. *See generally* J. Kevin Healy, *Local Initiatives*, *in* GLOBAL CLIMATE CHANGE AND U.S. LAW 421, 422-42 (Michael B. Gerrard ed., 2007).

13. Richard B. Stewart, *Pyramids of Sacrifice? Problems of Federalism in Mandating State Implementation of National Environmental Policy*, 86 YALE L.J. 1196, 1215-16 (1977) (describing the Tragedy of the Commons and spillover effects); *see also* David E. Adelman & Kirsten H. Engel, *Adaptive Federalism: The Case Against Reallocating Environmental Regulatory Authority*, 92 MINN. L. REV. 1796, 1846-47 (2008) (observing that local climate change mitigation efforts are in "direct contravention" to traditional precepts of environmental federalism).

14. Katherine Trisolini & Jonathan Zasloff, *Cities, Land Use, and the Global Commons:* Genesis *and the Urban Politics of Climate Change*, *in* ADJUDICATING CLIMATE CHANGE: STATE, NATIONAL, AND INTERNATIONAL APPROACHES 72, 80 (William C.G. Burns & Hari M. Osofsky eds., 2009).

15. For example, Professors Jonathan Zasloff and Katherine A. Trisolini, although not endorsing this view, recognize the possibility that "cities [may] be engaging in mere window dressing . . . without really taking the difficult steps required to actually reduce their emissions" and that "municipal rhetoric on climate change remains just that." *Id.* at 88.

environmental federalism,[16] and how the motivations of local actors can be understood.[17] Additionally, there has been much discussion about the efficacy of local actions and the appropriate role for local governments in addressing the climate change problem.[18]

This Idea does not consider which level of government is best suited to address or attempt to define the optimal role of local governments with respect to climate change (writ large). Instead, this Idea seeks to assess the competence of local governments in implementing one particular climate change mitigation strategy—effecting changes in lifestyle and behaviors that reduce individual GHG emissions. Are local governments uniquely situated to spur lifestyle and behavioral changes that achieve reductions in their citizens' individual carbon footprints? The answer to this question appears, at least with respect to direct changes to lifestyle and behavior,[19] to be yes. Local governments possess community information helpful for (1) identifying the types of lifestyle and behavior changes feasible for a particular community, and (2) implementing programs to generate those changes. While further study is needed, a preliminary analysis suggests that the community-specific information possessed by local governments could enhance policies aimed at changing GHG-emitting lifestyles and behaviors.

## II. INDIVIDUALS AND CLIMATE CHANGE MITIGATION

Before discussing the potential contributions of local governments with respect to reducing individual carbon footprints, some discussion is warranted as to why it makes sense to focus on changes in individual lifestyle and behaviors as a mitigation strategy in the first instance. The

16. *E.g.*, Adelman & Engel, *supra* note 13, at 1847-49 (using the example of state and local climate change mitigation as support for a theory of adaptive federalism); 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, 1026-28 (2006) (discussing the implication for theories of environmental federalism of state and local action to address climate change).

17. *E.g.*, Engel, *supra* note 16, at 1023-25; Trisolini & Zasloff, *supra* note 14, at 90.

18. *E.g.*, Laura H. Kosloff et al., *Outcome-Oriented Leadership: How State and Local Climate Change Strategies Can Most Effectively Contribute to Global Warming Mitigation*, 14 WIDENER L.J. 173, 204 (2004) (arguing that "we should think of state and local policies and measures as a key source of policy experimentation and learning, as a source of public and corporate education, and as a source of pressure and encouragement to national and international policy development efforts").

19. The term "direct" serves to distinguish between policies that occasion decisions by individuals to change their behaviors and policies that alter behaviors or related emissions indirectly by, for example, raising the costs of goods or mandating product efficiency standards.

mitigation value of seeking GHG-reducing changes in individual lifestyle and behaviors can be characterized as having three, primary components: (1) potential emissions reductions (by volume); (2) policy diversity; and (3) the establishment of beneficial feedback loops.

First and foremost, emissions traceable to individuals constitute a significant volume of GHG emissions and changing individual lifestyle and behaviors can help to mitigate climate change by avoiding (at least a portion) of these emissions.[20] In a series of articles, Professor Michael P. Vandenbergh (along with a number of co-authors) has documented the origin and volume of emissions from the individual and household sectors, as well as strategies for reducing these emissions.[21] This work "demonstrate[s] that individual and household emissions comprise roughly 30 to 40 percent of the [carbon dioxide] emissions from the United States," and that large volumes of these emissions can be avoided by relatively small changes in individual lifestyle and behavior.[22] For example, in the article *Individual Carbon Emissions: The Low-Hanging Fruit*, Professor Vandenbergh and his co-authors estimate that a 10% reduction in motor vehicle idling could reduce carbon dioxide emissions by six to nine million tons per year,[23] a 33% reduction in standby power consumption could reduce carbon dioxide emissions by sixteen to twenty-two million tons per year,[24] and that if one-third of households adjusted their thermostat settings by two degrees, 18.1 to 36.3 million tons of carbon dioxide emissions could be avoided.[25]

Thus, individuals generate high volumes of GHG emissions and a significant volume of these emissions can be avoided by lifestyle and behavior changes.[26] This presents a dilemma for environmental law and policy. Unlike controlling point source emissions from industrial

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20. *See* Dernbach, *supra* note 9, at 118; Lin, *supra* note 9, at 1149.

21. Vandenbergh et al., *supra* note 9, at 1750 tbl.2; Vandenbergh & Steinemann, *supra* note 7, at 1693 tbl.1, 1700 tbl.3.

22. Vandenbergh et al., *supra* note 9, at 1703.

23. *Id.* at 1724.

24. *Id.* at 1735.

25. *Id.* at 1745. Additionally, if half of U.S. households decreased their water heater temperature by twenty degrees, that would reduce carbon dioxide emissions by twenty-eight to thirty-nine million tons; a 33% increase in the personal motor vehicle fleet that maintains proper tire pressure could reduce carbon dioxide emissions by twelve million tons; and if 25% of all registered vehicles changed air filters annually, that could reduce carbon dioxide emissions by nineteen to twenty-seven million tons. *Id.* at 1746-49.

26. Because individuals contribute such a significant percentage of U.S. GHG emissions, reducing individual emissions may in fact be *necessary* to achieve GHG reductions sufficient to avoid the most harmful effects of climate change. *Id.* at 1709 ("Reductions in these types of low-hanging fruit emissions also may be necessary to make the remarkably large emissions reductions required to achieve the long-term targets.").

sources, there are no well-established mechanisms for (directly) changing individual lifestyle and behavior.[27] At present, climate policy appears over-reliant on price signals and technological (product) advancements to achieve individual emission reductions.[28] Proposed cap-and-trade legislation, for example, anticipates indirectly influencing individual behaviors and reducing individual GHG emissions by increasing the cost of energy-intensive activities and goods.[29] This presumption is, however, dubious for a variety of reasons, most importantly that research suggests individuals may not understand and respond to price signals in expected ways.[30] And the rebound effect, the junker effect, and population growth all suggest that it would be unwise to rely on increased product efficiency, alone, to reduce emissions.[31] Accordingly, efforts to directly "green" individual lifestyles and behaviors—and not rely solely on price signals to spur such changes or product efficiency mandates to reduce the impacts of existing lifestyle and behavior choices—offer an additional policy approach to reduce individual emissions. In light of the fact that individual lifestyle and behavior have to date been largely unaddressed by domestic environmental policy, diversifying policy approaches would seem prudent.[32]

Finally, convincing individuals to make lifestyle or behavior changes that reduce GHG emissions (as opposed to indirectly causing changes through price signals or product efficiency standards) could have notable co-benefits—it may occasion a broad range of emissions-reducing or other environment-friendly behaviors by that individual,

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27. Indeed, individual lifestyle and behavior may be "beyond the scope of our environmental laws." Babcock, *Global Climate Change*, *supra* note 9, at 5; *see also id.* at 5-6, 17 (proposing that environmental Nongovernmental Organizations ("NGOs") take the lead in changing norms to support environmental behaviors and observing that enforcement of laws regarding personal lifestyle choices would face difficult enforcement challenges); Vandenbergh, *Order Without Social Norms*, *supra* note 11, at 1103-04 (describing the difficulties of applying traditional forms of environmental regulation to individual behavior and exploring the use of law to activate personal norms as an alternative).

28. *See* Dernbach, *supra* note 9, at 111-14 (critiquing proposed federal climate change legislation for focusing on industrial emitters and failing to adequately address individuals).

29. Vandenbergh et al., *supra* note 9, at 1703.

30. *Id.* at 1703-04 (listing a number of the limitations of relying on indirect measures, such as price signals, to influence behavior); *see also* Doremus & Hanemann, *supra* note 9, at 814-16 (explaining why cap-and-trade systems may fail to capture individual emissions).

31. ROBERT R. NORDHAUS & KYLE W. DANISH, PEW CTR. ON GLOBAL CLIMATE CHANGE, DESIGNING A MANDATORY GREENHOUSE GAS REDUCTION PROGRAM FOR THE U.S. 39-40 (2003) (describing the rebound and junker effects).

32. *See* Dernbach, *supra* note 9, at 118 (commenting that the "scale and magnitude" of advisable emissions reductions "indicate the need to engage all available resources").

and/or make it more likely that the individual will support the adoption and enforcement of climate mitigation policies.[33] One strategy for changing individual behavior, for example, is to use information to activate norms.[34] The information and the norms it supports can translate into a variety of environmentally-friendly behaviors as well as support for environmental policies.[35] Additionally, individuals who participate in environmental projects, such as volunteer stream monitoring, have been shown to exhibit greater civic engagement with respect to environmental issues.[36] If individuals who make lifestyle and behavior changes perceive that they are doing so as part of a larger environmental project, their "participation" may thus spur greater overall engagement with respect to environmental issues. And sustained public support for both enactment and enforcement will likely be particularly important in the context of climate change, where the benefits of mitigation policies will likely not be obvious in the near term.[37] Succeeding in changing individual lifestyle and behavior to reduce GHGs thus has the potential to create feedback loops that encourage additional emissions reductions as well as generate support for climate change mitigation policy.

## III. LOCAL INFORMATION BEGETS EFFICIENCY

Changing individual lifestyle and behaviors to reduce GHG emissions can thus have a number of beneficial effects, beyond immediate emissions reductions. Constructing policy to generate these changes, however, presents a complex and novel task. One element of structuring a policy approach will be to decide how to apportion responsibility among different levels of government. The comparative competencies of different levels of government with respect to dealing with environmental harms is a topic that has been well developed in the

33. *Id.* at 118-19.

34. *E.g.*, Vandenbergh & Steinemann, *supra* note 7, at 1704-12.

35. *Id.* at 1711-12 (describing a recent study which "demonstrate[d] that individuals who believe that global warming requires immediate attention are more likely to reduce their car fuel usage, increase their public transportation usage, insulate their homes, and reduce their lighting and appliance use" and observing that "norm activation can influence civic behaviors, such as voting and joining advocacy groups").

36. Christine Overdevest et al., *Volunteer Stream Monitoring and Local Participation in Natural Resource Issues*, 11 HUM. ECOLOGY REV. 177, 183 (2004) ("Experienced volunteers were more active than their inexperienced counterparts in resource management-related behaviors, such as talking with and providing information to neighbors about resource issues, engaging in personal reading and research about resource issues, and attending public meetings to discuss issues.").

37. Eric Biber, *Climate Change, Causation, and Delayed Harm*, 37 HOFSTRA L. REV. 975, 984-85 (2009).

environmental federalism literature.[38] These works suggest that one characteristic of an environmental problem that argues in favor of greater local involvement is when local information and values are important to achieving an efficient solution.[39] The example frequently given is that of a contaminated piece of property. In determining the appropriate remedy for such a site, local information (such as nearby land uses and potential future uses for the property) may be integral.[40]

Local, community information may also be important for designing policies to influence individual lifestyle and behavior changes. Proponents of flexible, market mechanisms to reduce GHG emissions frequently opine that market measures achieve efficient reductions by allowing regulated entities to assess the "costs" of GHG emission reductions and to achieve reductions through the lowest cost means (buying credits or directly reducing emissions).[41] When it comes to individual lifestyle and behavior changes, local information is essential to the first step in an efficiency-maximizing process—determining the costs of reducing emissions.[42] The goal is to achieve the most emission

38. Daniel C. Esty, *Toward Optimal Environmental Governance*, 74 N.Y.U. L. REV. 1495, 1544-45 (1999) [hereinafter Esty, *Environmental Governance*]. *See generally* Daniel C. Esty, *Revitalizing Environmental Federalism*, 95 MICH. L. REV. 570 (1996) (analyzing centralized and decentralized roles of the federal government in environmental regulation and advocating for a multitier regulatory structure) [hereinafter Esty, *Environmental Federalism*].

39. Esty, *Environmental Federalism*, *supra* note 38, at 610 ("Environmental problems often have important local dimensions that are more likely to be captured by giving decisionmaking authority to those close to the issue.").

40. Esty, *Environmental Federalism*, *supra* note 38, at 617 ("The 'right' answer to such [geographically heterogeneous environmental] problems depends on locality-specific factors such as on what chemicals are in the waste, whether the waste is migrating off-site, the likelihood that groundwater is affected, the dependence of those in the community on groundwater for drinking, the relative scarcity of land, the likely future use of the site, the wealth of the community in question, and other circumstances. In such cases, on-the-ground knowledge is of central importance, and the diversity of circumstances is salient. Thus state-by-state or even community-by-community regulation makes sense. Smaller jurisdictions can tailor their regulatory solutions according to the exact, location-specific parameters of a given hazardous waste problem."); Esty, *Environmental Governance*, *supra* note 38, at 1556 (observing that "on-the-ground information about a particular site and its likely future use makes local information critical" and recommending "shared governance" between federal and local entities).

41. NORDHAUS & DANISH, *supra* note 31, at 11-13.

42. *See* Esty, *Environmental Federalism*, *supra* note 38, at 606-07 ("[E]conomics teaches that when environmental background conditions, emissions levels, climate, weather, risk preferences, policy priorities, and income levels diverge, regulations tailored to localized circumstances will improve social welfare."). Of course, the present discussion presumes a centralized decision about desirable emissions levels that is then implemented in different ways locally. Thus, the question is not tailoring policy preferences regarding the appropriate level of risk or harm to local preferences but instead tailoring policy implementation to local conditions. *See id.* at 623 ("The implementation and enforcement of environmental policy is done best on a relatively decentralized basis to ensure

reductions at the lowest cost in terms of impacts on lifestyle and behavior.[43] But the "cost" for changing lifestyle and behavior is frequently not monetary, but instead encompasses slippery factors like habit, convenience, comfort, culture, and satisfaction, that may outweigh (or be more salient than) monetary costs.[44] And different lifestyle and behavior changes will have markedly different benefits (in terms of emission reductions) depending on local circumstance.[45]

Some examples help to illustrate the relevance of community-level information to cost/benefit determinations with respect to climate change-mitigating lifestyle and behavior changes. The suite of lifestyle and behavior changes likely to find acceptance and achieve significant emissions reductions may be quite different in a rural farming community with single family homes miles from stores and services (where pickup trucks are actually used for hauling and towing) than in a more urban community characterized by apartment living and served by public transportation. As a threshold matter, the "business as usual" individual GHG emissions, and the possibilities for reductions from those emissions levels, will be quite different between members of these

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that the regulating entity is aware of local circumstances and is accessible to the regulated community.").

43. Vandenbergh et al., *supra* note 9, at 1715.

44. *See id.* at 1715-16 (describing non-monetary barriers to behavioral change); *see also id.* at 1727 (observing, with respect to motor vehicle idling, that although "the value of the driver's attention . . . [is] not a monetary cost, it clearly costs the driver to pay attention to turning off the engine when the vehicle is stationary").

45. In their recent article, *Of Babies and Bathwater: Why the Clean Air Act's Cooperative Federalism Framework Is Useful for Addressing Global Warming*, Professors Holly Doremus and W. Michael Hanemann propose employing state emission inventory and emission reduction plans (modeled on the Clean Air Act's SIP requirement) to address climate change, and in particular to capture emissions from individual behaviors, for some of the same reasons. Doremus & Hanemann, *supra* note 9, at 826-27.

> There is considerable variation in the ways that states contribute to climate change, as well as in the relative economic costs and social disruption that would be associated with various emission reduction measures. . . . [T]he details of how to reach a given level of GHG emission reduction can be enormously important to states and localities. Those decisions, therefore, should be made locally to the extent feasible.

*Id.* (internal citations omitted); *see also* Dernbach, *supra* note 9, at 157 (suggesting that Congress "requir[e] or allow[] states to adopt individual or public engagement plans . . . [that] would allow states to tailor individual engagement efforts to their own economic, geographic, and demographic situations"); Thomas D. Peterson et al., *Developing a Comprehensive Approach to Climate Change Policy in the United States That Fully Integrates Levels of Government and Economic Sectors*, 26 VA. ENVTL. L.J. 227, 265-66 (2008).

communities.[46] And the same lifestyle and behavior changes will have different costs and benefits in each community.[47]

For example, in the rural community, the cost of foregoing vehicle travel or large-size vehicles may be prohibitively high while the cost in the urban community (with access to public transportation and little actual "need" for SUVs or pickup trucks) is much lower. Educating individuals about how to alter lawn care (or agricultural) practices to reduce emissions or sequester carbon may prove feasible and useful in the rural community, but largely irrelevant in the urban community (where most individuals' apartments do not have lawns). The communities may have different levels of cultural attachment to certain potentially GHG-intensive behaviors, such as driving trucks, eating beef, ordering restaurant delivery (to be eaten with plastic utensils off of plastic plates), or buying leather shoes (like cowboy boots). Local governments are in a unique position to understand community lifestyles and behaviors and the concomitant costs of changing them. They can use that information to identify the lifestyle and behavior changes that can be most easily achieved and prioritize accordingly.

Beyond identifying the lifestyle/behavioral changes best pursued in a community, local governments also possess community information important to tailoring public campaigns to achieve those changes.[48]

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46. Indeed, many carbon calculators estimate individual carbon footprints based on state, region, urban area, and (soon) zip code. One example is the Berkeley Institute of the Environment CoolClimate Carbon Footprint Calculator. Berkley Inst. of the Env't, CoolClimate Carbon Footprint Calculator, http://coolclimate.berkeley.edu/ (last visited Oct. 26, 2009).

47. Business-as-usual behaviors and emissions in a community may form a baseline "reference point" against which individuals gauge changes designed to reduce emissions. *See* Green, *supra* note 9, at 89 ("[I]t is not the outcome *per se* that determines the well-being or utility an individual obtains from a particular activity, but the change from some reference point." (citing Shane Frederick, et al., *Time Discounting and Time Preference: A Critical Review*, 40 J. ECON. LITERATURE 351, 370 (2002))).

48. *See* Vandenbergh, *From Smokestack to SUV*, *supra* note 11, at 621 (observing, with respect to the regulation of individuals, that "[f]or some issues, states and localities may be better positioned to tailor public information campaigus [sic] and other informational regulatory efforts to local populations"); Vandenbergh, *Taking Individual Behavior Seriously*, *supra* note 11, at 4 ("[N]ational norm campaigns may fail if they overlook regional differences in beliefs, norms or even language. For some issues, EPA and other federal agencies may be better situated to provide information directly to the public as well as to facilitate the activities of state and local governments. For others, states and localities may be better positioned to tailor public information campaigns and other informational regulatory efforts to local populations."); *see also* Victor B. 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 (2008) (advocating local government development of public-private partnerships to protect the environment and positing that "the nature of local governments' relationship to social norms means that local governments can in fact be vehicles for the use of such norms as policy tools").

Research suggests that world view, cultural and psychological factors, and ideology all shape how individuals understand and respond to information.[49] Similarly, some scholars have concluded that it is not possible to rely on environmental norms alone to achieve widespread public participation—alternate norms, with a broader reach (such as the norm of personal responsibility), may prove more effective at motivating action by some individuals.[50] The chief rationale for doubting the efficacy of local action to address climate change is the "holes" problem—some local communities may be motivated to take action to address climate change but others will not be, thereby creating jurisdictional gaps.[51] In the present context, however, the factors giving rise to the holes problem may actually cut in favor of local involvement. Local governments are much more likely to know the prevailing world view, ideological bent, and norms of their communities and, thus, may be able to structure information and compliance campaigns to suit those community attributes.[52] Notably, in the context of climate change and energy conservation, there are many ways to package the message. An appeal to environmental norms may work in some communities, but might backfire in others, where it would be more successful to appeal to a norm of personal responsibility. Some communities might be motivated to act by references to saving the earth; others by an emphasis on the cost savings of energy conservation or United States energy independence.[53]

In a recent article, examining how local governments can use norms to create public-private partnerships with the business community, Professor Victor B. Flatt offered the following particularly apt example

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49. *See, e.g.*, Aaron M. McCright, *The Social Bases of Climate Change Concern, Knowledge, and Policy Support in the U.S. General Public*, 37 HOFSTRA L. REV. 1017, 1021-27 (2009) (analyzing the influence of political identification and other cultural factors on climate change concern, knowledge, and policy support). *See generally* Dan M. Kahan et al., *The Second National Risk and Culture Study: Making Sense of—and Making Progress In—The American Culture War of Fact* (Yale Law Sch. Pub. Law, Working Paper No. 154; George Wash. Univ. Legal Studies, Paper No. 370; George Wash. Univ. Law Sch. Pub. Law, Paper No. 370; Harvard Law Sch. Program on Risk Regulation, Paper No. 08-26), *available at* http://ssrn.com/abstract=1017189 (discussing the extent to which core values influence individuals' perception of societal risks related to "culture war" issues).

50. Vandenbergh & Steinemann, *supra* note 7, at 1712-17.

51. Jamison E. Colburn, *Localism's Ecology: Protecting and Restoring Habitat in the Suburban Nation*, 33 ECOLOGY L.Q. 945, 960 (2006); Flatt, *supra* note 48, at 459.

52. *See* Esty, *Environmental Federalism*, *supra* note 38, at 609-10.

53. *See* Dernbach, *supra* note 9, at 124-25 (identifying a number of ways to frame appeals for climate change mitigating action by individuals).

of how local governments can tailor climate change messages to local communities:

> Seattle and Houston have both become involved with climate change issues recently, as have many cities in the country; but, their differing approaches illustrate how locally tailored social norm creation is more effective than a national approach. In Seattle, the approach is centered around the idea of doing what is right, and controlling bad corporate behavior. . . . The Seattle mayor traded on the culture of the city by connecting the city's tradition of environmentalism to climate change. . . .
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> [T]he Houston mayor has asked city personnel to inventory GHGs in the city and has supported assisting businesses with reducing climate change impacts through energy efficiency. He proposed that the city begin purchasing large amounts of wind power and gave as a public reason that it was cheaper and more reliable, i.e., better for business, while secondarily touting its benefits to the environment. Moreover, as the leader of the city at the center of the worldwide energy industry, he has directed the city to become a member of the International Council of Local Environmental Initiatives (ICLEI) and has met with Mayor Livingstone of London to discuss climate change initiatives. The Houston mayor took his city's pro-business reputation and connected it to climate change.
>
> Both mayors are active on the issue, but their actions are shaped by their community. In Seattle, the mayor appeals to the local norm of environmentalism, while in Houston, the mayor appeals to the business advantages of controlling GHGs.[54]

In addition to choosing the best message for their communities, local governments may possess advantages in deploying norms to change behaviors, including their proximity to individuals and concomitant ability to incorporate "face-to-face communication and

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54. Flatt, *supra* note 48, at 477-78 (citations omitted). Another useful illustration is provided by Professor Hope M. Babcock, who comments that "Texas has used the autonomy or individual liberty norm to good effect in its 'Don't Mess with Texas – Real Texans Don't Litter' anti-littering campaign. The state emphasizes the aspect of litter prevention that involves individual control over the quality of the environment rather than government control over the individual." Babcock, *Global Climate Change*, *supra* note 9, at 12. Professors Hari M. Osofsky and Janet Koven Levit also provide an interesting account of the distinct motivations and mechanisms that caused two very different cities—Tulsa and Portland—to sign the Mayors Climate Protection Agreement. *See generally* Hari M. Osofsky & Janet Koven Levit, *The Scale of Networks?: Local Climate Change Coalitions*, 8 CHI. J. INT'L L. 409 (2008).

feedback" into public campaigns.[55] Research relating to recycling norms suggests that efforts to inculcate norms may be most effective when they incorporate both of those elements.[56] Another geographic advantage for local governments may be the proximity of their citizens to one another and their concomitant ability to "see" one another's behavior. Community members who witness other community members adopt a GHG-friendly behavior may be more readily persuaded to adopt the same behavior.[57] The availability and use of informal external sanctions such as shaming (to the extent advisable) may also be more effective in smaller communities.[58] And to the extent that "existing norms and the ability of norms to change depend heavily on the social, economic, and historical context of the community in which these norms developed,"[59] the importance of context suggests at least the possibility that local governments may hold knowledge helpful for the development of new community norms.

Local governments may also be particularly well suited to employ mandates to achieve compliance with desired lifestyle and behavioral changes. When it comes to individual lifestyle and behavioral changes, compliance and enforcement are a bugaboo.[60] With respect to some

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55. *See* Ann E. Carlson, *Recycling Norms*, 89 CAL. L. REV. 1231, 1290 (2001) (identifying face-to-face contact as an important element in instilling recycling norms). Local governments may also be well positioned to identify whether a community behavior is best characterized as "loose-knit" (and thereby less susceptible to social sanctions and reliance on social norms) or "close-knit" (and thereby potentially hospitable to social norm activation). *See* Vandenbergh, *Order Without Social Norms*, *supra* note 11, at 1105 & n.22 (articulating the difference between loose-knit and close-knit situations and the impact on norm activation). Notably, local governments may also have opportunities to use school curricula to assist in norm activation efforts. *See* Colburn, *supra* note 51, at 996 (referencing, with respect to the role of local governments in conservation, "[l]ocal governments' legal capacity to . . . use local schools to inculcate a normative respect for nature").

56. Carlson, *supra* note 55, at 1286-91; *see also* RICHARD A. POSNER, THE PROBLEMATICS OF MORAL AND LEGAL THEORY 74-75 (1999) (noting the decline of morality generally but observing that "norms are more effective when people are under the observation of their peers and cannot easily leave the peer group").

57. *See* Babcock, *Assuming Personal Responsibility*, *supra* note 9, at 154 (describing the norm of conformity); Vandenbergh, *Order Without Social Norms*, *supra* note 11, at 1118-19 (describing the reciprocity norm).

58. Babcock, *Assuming Personal Responsibility*, *supra* note 9, at 164-65 (describing the difficulties of using shame as a sanction but observing that it may be most effective in smaller, close-knit communities).

59. Andrew Green, *Norms, Institutions, and the Environment*, 57 U. TORONTO L.J. 105, 116 (2007) (citing DOUGLASS C. NORTH, INSTITUTIONS, INSTITUTIONAL CHANGE AND ECONOMIC PERFORMANCE 94 (1990)).

60. Indeed, the focus on norm activation to change behaviors arises in large part from the recognition that traditional legal prohibitions may not be practically or politically feasible. *See* Babcock, *Global Climate Change*, *supra* note 9, at 5-6 ("Efforts to detect and ultimately enforce against environmentally harmful individual activities, many of which occur in and around the home,

behaviors (turning lights off when leaving a room, for example), government mandates and their enforcement may be practically impossible. With respect to other behaviors, mandates and their enforcement—even if feasible—may founder on objections that they are uncomfortably intrusive. (Imagine, for example, being hailed by an officer while unloading groceries in your driveway and receiving a "carbon" ticket for using plastic shopping bags.) And mandates on individual action that raise such objections create the risk of giving rise to perverse responses.[61] In the context of the Endangered Species Act, for example, objections to enforcement against individual (private) property owners has resulted in an attitude of "shoot, shovel, and shut up"—individuals going out of their way to exterminate endangered species to avoid the Act's strictures.[62] For the reasons that follow, however, local governments may possess some advantages in the difficult task of deploying mandates to achieve lifestyle and behavioral changes.[63]

First, as described previously, local governments have invaluable, community-level information to offer about what kind of mandates (including their scope and any advisable exemptions) are likely to be feasible and acceptable within a community. Once a mandate is adopted, local governments also have community knowledge useful for compliance and enforcement.[64] Additionally, in part because of their ability to craft and enforce mandates with an eye to local attitudes, local

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would be costly for the government to carry out and would trigger enormous political resistance because of the interference with individual liberty and invasion of privacy."); Vandenbergh, *Taking Individual Behavior Seriously*, *supra* note 11, at 3 ("The intrusiveness and expense of enforcing formal legal measures against millions of individuals make individual behavior difficult to regulate through formal legal measures backed by sanctions.").

61. Babcock, *Global Climate Change*, *supra* note 9, at 5-6.

62. Andrew P. Morriss & Richard L. Stroup, *Quartering Species: The "Living Constitution," the Third Amendment, and the Endangered Species Act*, 30 ENVTL. L. 769, 795 (2000).

63. Of course, there are many other mechanisms (short of mandates applied directly to individuals) that government might use to encourage (or indirectly mandate) compliance—imposing as a product mandate a requirement that home lighting be motion sensitive (and turn off automatically once one leaves a room) or encouraging the use of reusable canvas bags through public information campaigns, for example. However, mandates, such as anti-idling laws, are one of a number of policy tools (along with public information campaigns, removing impediments to individual choice, creating financial incentives for desired action, and others) that might be used to influence individual lifestyle and behaviors. Vandenbergh, *From Smokestack to SUV*, *supra* note 11, at 599-600, 613-14 (describing the expressive function of command and control regulation as applied to individual behavior); Vandenbergh et al., *supra* note 9, at 1727 (describing research suggesting that public education campaigns "may function better in conjunction with laws that exact penalties for excessive idling").

64. *See* Esty, *Environmental Federalism*, *supra* note 38, at 623; *see also* Flatt, *supra* note 48, at 469-70 (discussing the influence local leaders have on compliance within the private sector).

government efforts may be less likely to trigger intrusion objections than more distant state or federal governments.

Imagine the difficulties, for example, posed to state and federal authorities attempting to enforce an anti-idling law in many diverse communities. Their capacity to enforce the law efficiently may founder on a lack of local knowledge. They may be less likely to know, for example, that the local Saturday night cruise is a hotbed of illegal idling, or that parents picking up their kids from the local pool frequently idle curbside with the air conditioning on during the summer months. And state and federal authorities may not be aware of a community's sacred cows—the behaviors that must either be exempted from the law or overlooked with respect to enforcement (and instead pursued through non-mandatory measures) to avoid inciting widespread community backlash.[65] Moreover, we are already conditioned to accept local constraints on our everyday lives and behavior—fines for not sorting the recycling, for parking in the wrong place, restrictions on times for lawn watering, etc. One can imagine the potential public resistance, for example, engendered by a national anti-idling law enforced by federal agents. In short, local governments may have a better gestalt intuition about how to structure and enforce mandates on individual behaviors within their communities to best achieve compliance and avoid intrusion objections.

Local governments are thus likely to possess local information integral to prioritizing which lifestyle/behavior changes to seek in a community and, once those are identified, how best to go about achieving those changes. Because of their unique knowledge of local attitudes, practices, infrastructure, and lifestyles, local governments may be uniquely situated to identify both which GHG-reducing changes are most likely to find acceptance in their communities (and impose the lowest "costs" on individuals within the community) and also how best to structure policies to achieve compliance.

## IV. ANOTHER AREA OF SPECIAL LOCAL COMPETENCE: PHYSICAL ARCHITECTURE

Local governments also define the physical architecture and infrastructure of communities through building and zoning codes, a function which greatly influences individual carbon emissions. It is well

65. Perhaps it is the cherished practice of idling vehicles to power electric grills during high school football tailgates. In the long run, shutting down the high school tailgate in a flurry of fines might not work as well as outfitting the parking lot with power outlets.

recognized that this physical architecture and infrastructure—where and how buildings, streets, parking lots, parks, etc. are constructed—in turn defines the broad outlines of a community's energy needs and sets the starting point for any conservation effort.[66] And, for similar reasons, physical architecture and infrastructure also channel the lifestyles and behaviors of local individuals and constrain/define the range of choices available to individuals to reduce their carbon footprint. Indeed, when local control over building and zoning codes is identified as a mechanism for local governments to reduce GHG emissions, a good portion of those emissions reductions arise from changes in individual lifestyle and behavior.[67]

Consider, for example, trips to the market. The physical architecture and infrastructure of a community will both define the "business as usual" carbon emissions of the average trip to the market as well as the options available for reducing those emissions. The emissions generated by a trip to the market in a suburban area are likely to be indexed to the need to drive from a residential neighborhood to the market and back. Similarly, options for reducing those emissions will be largely dictated by physical architecture and infrastructure. There are many potential ways to reduce the individual GHG emissions associated with trips to the market. One might reduce the number of total trips (by avoiding single-item driven trips—the Friday night pint of ice cream), walk, take public transportation, drive but observe gas-saving driving protocols (insuring tires are properly inflated, avoiding idling or quick acceleration), drive a hybrid, carpool, etc. Individuals in traditional, Euclidian-zoned (most suburban) communities may not have the option of walking if markets are not located in areas readily accessible by foot from residential neighborhoods; in many small communities, public transportation may not exist.

Control over building and zoning codes thus presents another way in which local governments can occasion reductions in individual GHG emissions. And community knowledge may again be helpful to local

66. *E.g.*, Doremus & Hanemann, *supra* note 9, at 827-28 (observing that state and local governments "have greater political and practical abilities than the federal government to deal with a substantial share of emissions, particularly those connected to individual behaviors" because "[s]tate and local governments have authority over key infrastructure choices that mediate behavioral decisions and the emission consequences of those decisions"); Healy, *supra* note 12, at 421-22; Patricia E. Salkin, *Smart Growth and the Greening of Comprehensive Plans and Land Use Regulations*, *in* A.L.I. & A.B.A., COURSE OF STUDY: PLANNING, REGULATION, LITIGATION, EMINENT DOMAIN, AND COMPENSATION 447-48 (2008); Trisolini & Zasloff, *supra* note 14, at 80-82.

67. Doremus & Hanemann, *supra* note 9, at 827.

governments as they consider how best to structure building and zoning code changes to achieve emissions reductions in ways compatible with community needs and attitudes. While land use planning presents a very powerful way for local governments to influence individual emissions, it is not developed at length here for a few reasons. First, the link between local land use planning and GHG emissions has already been extensively examined and discussed.[68] Similarly, the question of the relative competence of federal versus state versus local governments with respect to land use (and, in particular, smart growth land use) has likewise already received significant treatment.[69] And, finally, mandates contained in building and zoning codes are perhaps more akin to measures that indirectly give rise to changes in lifestyle and behavior.[70]

## V. RECOGNIZING LIMITS ON LOCAL GOVERNMENT CAPABILITIES

This Idea has argued that local governments possess some particular strengths with respect to influencing individual GHG-emitting lifestyles and behaviors. There are, however, many components to creating opportunities for individual choice and influencing individual emissions—energy policy that supports renewable energy sources, carbon footprint labeling for consumer goods—that are beyond the competence of local governments.[71] Nor can local governments be relied upon to unilaterally implement the kinds of behavior policies described above.[72] National and/or state action will likely be necessary both to induce local governments to act to reduce individual emissions and to provide funding and support for such efforts. Although, as noted above, some local governments have acted to reduce emissions voluntarily, external encouragement (federal funding or the threat of federal enforcement, for example) will likely be needed for widespread local involvement. And, especially in smaller communities, significant state or federal assistance will likely be necessary to aid local governments.

For example, centralized expertise would likely be needed to assist local governments in creating a GHG inventory indexed to the individuals in their communities, calculating the emissions attributable to and emissions reductions available from different behaviors, and

68. *See supra* note 63.

69. *E.g.*, Patricia E. Salkin, *Smart Growth and Sustainable Development: Threads of a National Land Use Policy*, 36 VAL. U. L. REV. 381, 387 (2002).

70. *See supra* note 19.

71. *See* Peterson et al., *supra* note 45, at 252 (setting forth a Climate Policy Integration Matrix matching economic sectors with the different levels of government).

72. *See* Vandenbergh, *From Smokestack to SUV*, *supra* note 11, at 599.

tracking forward-going emissions.[73] This information could be used to provide local governments with a menu of GHG-emitting behaviors of their citizens from which they could select the behaviors best targeted in their communities.[74] Centralized expertise would also likely be necessary to assist local governments in crafting effective public information campaigns.[75] Although local governments have community knowledge that will enable them to pick the message and means most suited to their communities, they don't have the expertise to frame and disseminate that message effectively.[76] The need for this assistance by no means presents an insurmountable obstacle to local involvement—it is typical of existing mechanisms of cooperative federalism and, already, local governments have (without federal involvement) formed networks that compile and disseminate information and strategies for achieving local emissions reductions.[77]

Finally, further research and analysis is needed to more fully and critically assess local government involvement in efforts to change GHG-intensive lifestyles and behaviors. A better understanding of the GHG emissions attributable to different individual behaviors and how these behaviors compare between communities is necessary. It is possible, for example, that the types of lifestyle and behavior changes needed to yield meaningful volumes of GHG emissions reductions are

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73. *See id.* at 621 ("Economies of scale exist at the federal level to conduct, assess, and report to the states and local governments on the general lessons of research on how to influence environmentally significant behaviors. For some issues, state and localities may be better positioned to tailor public information campaigus [sic] and other informational regulatory efforts to local populations. For others, EPA may be better situated to play the role of providing information directly to the public as well as to facilitate the activities of state and local governments."); *see also* Esty, *Environmental Federalism*, *supra* note 38, at 614-15 (describing economies of scale in developing technical information to support environmental regulation).

74. *See* Doremus & Hanemann, *supra* note 9, at 826 (describing the benefits of standardizing state climate inventories).

75. *See* Vandenbergh, *From Smokestack to SUV*, *supra* note 11, at 616-20 (describing the complexities of, and social science expertise necessary for, successfully crafting environmental public information campaigns); Vandenbergh & Steinemann, *supra* note 7, at 1732 ("More resource-intensive local information campaigns also may be necessary. These programs may need to combine nationwide research with state and local implementation. Ensuring that these efforts rely on the best available social-science research and are implemented rigorously will require a fundamental reexamination of the way government funds research, staffs information offices, designs and evaluates programs, and interacts with state and local governments.").

76. *See, e.g.*, Vandenbergh & Steinemann, *supra* note 7, at 1732.

77. For example, the United States Conference of Mayors Climate Protection Center published Best Practices for municipalities seeking to reduce GHG emissions. *See generally* MAYORS CLIMATE PROT. CTR., U.S. CONFERENCE OF MAYORS, TAKING LOCAL ACTION: MAYORS AND CLIMATE PROTECTION BEST PRACTICES (2009), *available at* http://usmayors.org/pressreleases/uploads/ClimateBestPractices061209.pdf (highlighting successful programs implemented by a wide variety of municipalities, including large and small cities).

more uniform between communities than assumed herein (thus decreasing the importance of community information in the selection of targeted behaviors). A more detailed review of social and personal norm literature is necessary to evaluate the capabilities of localities to deploy norms to influence behavior, including whether it is feasible to tailor norm-activating information campaigns to local communities. And some arguments that run counter to local involvement—that local governments may be more sensitive to local opposition to measures requiring individual sacrifice, for example[78]—should also be carefully weighed. Moreover, it is possible that public choice distortions or simple corruption could be more severe at the local level.[79] Local politicians might, for example, decline to target the emissions from favored groups (the wealthy who fund campaigns, for example) and impose the greatest burdens on those groups with the least political influence (poor communities, immigrant communities, etc.), raising environmental justice concerns.[80]

Ultimately, however, even in light of the limitations described above and mindful of the identified uncertainties, there are some reasons to believe that local government participation could prove immensely useful to crafting and implementing policies for reducing individual GHG emissions through lifestyle and behavior change. In contemplating comprehensive efforts to reduce individual GHG emissions, consideration should be given to the particular competence of local governments and the community information that they command.

78. Stewart, *supra* note 13, at 1217-19 ("National mechanisms for determining environmental policies facilitate, to a greater degree than their state and local counterparts, the achievement of commitments entailing material sacrifice[.] . . . [This is because] [u]nder centralized decisionmaking these sacrifices may be less visible (because of fiscal mechanisms) or more palatable (because widely shared). Or the sacrifices may be discounted because federal officials are simply less sensitive to short-term swings in public attitudes.").

79. Esty, *Environmental Federalism*, *supra* note 38, at 649-51 (identifying limitations of public participation in local environmental decisionmaking).

80. For example, an effort to circumscribe window air conditioner use while not addressing the use of central air could disproportionately impact those in older and less expensive homes.

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