Micro-Motives and State and Local Climate Change Initiatives

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To date, the majority of states and hundreds of cities have adopted local climate change initiatives, while the federal government has been anything from passive to hostile with respect to climate change issues. State and city climate change initiatives pose a puzzle: Why are citizens and politicians willing to shoulder the entire cost of local climate change initiatives when they must share the benefits with others planet-wide? In this Essay, we address this puzzle by analyzing the potential incentives for supporters of local climate change initiatives. Our analysis indicates that some of the support stems from informed, utility-maximizing decisions and some is derived from various biases affecting individual decisionmaking. Furthermore, the analysis suggests that state and city climate change initiatives could affect incentives of elected and non-elected federal officials in ways that could lead to effective federal action on climate change.

INTRODUCTION

In November 2006, over eighty percent of the voters in Berkeley, California, endorsed Ballot Measure G, giving City authorities a sweeping mandate to regulate greenhouse gas emissions. Ballot Measure G proposed to authorize Berkeley's Mayor to develop a plan to reduce the city's greenhouse gas emissions by eighty percent by 2050 and by an unspecified smaller percentage within 10 years.[1] The text of Ballot Measure G informed voters that the financial implications of the plan were unknown and "plan dependent."[2] Nevertheless, an overwhelming majority of Berkeley's voters charged city officials with the task of beginning a process that could result in substantial costs to each household with little guaranteed benefit in terms of a reduction in the risks of global climate change.[3]

The choice of Berkeley voters is puzzling because of their disregard of potential costs and because, as discussed below, they will share any small environmental benefit resulting from Measure G with every living being on earth. As puzzling as this choice may be, many states and hundreds of localities are making similar choices to adopt measures to mitigate global warm-

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[1] City of Berkeley Ballot Measure G: Greenhouse Gas Emissions (2006), http://www.ci.berkeley.ca.us/elections/measures/2006/GgreenhouseTTA.pdf.

[2] *Id.*

[3] *See, e.g.*, Carolyn Jones, *It Won't Be Easy Being Green*, S.F. CHRON., May 24, 2007, at A1.

ing.[4] This Essay explores the seemingly irrational preferences expressed by such initiatives.

Fundamental to understanding the puzzle posed by state and local climate change initiatives (collectively, "local climate change initiatives") is the fact that greenhouse gases are global pollutants. Because such gases mix in the atmosphere, the actual geographic location of local emissions is unimportant. Thus, fluctuations in local emissions contribute to or subtract from the global concentration of greenhouse gases but otherwise have no local effects. A reduction of greenhouse gas emissions solely within the jurisdiction of one state or municipality will alter the risks of climate change for that locality only to the extent that it reduces the world's total concentration of greenhouse gases by a meaningful amount. However, such a scenario is unlikely, as reductions in greenhouse gas emissions at the level of a municipality or even at the state level are generally too small to affect global concentrations.[5]

Local climate change initiatives, therefore, invite two questions: First, assuming local actions to reduce emissions have no impact on global concentrations, why are the public and decisionmakers willing to invest any resources in their creation or implementation? Second, even assuming local actions can affect global greenhouse gas concentrations at a meaningful level, why are the public and local decisionmakers willing to invest in such measures when they will share the benefits of their investments with everyone on the globe? Put simply, local actions to mitigate climate change generate, if anything, small positive externalities: the jurisdictions that bear the costs of such actions cannot begin to fully capture their environmental benefits.

Economic textbooks predict that decisionmakers are unlikely to undertake actions that entail costs when they can capture, at best, only a very small portion of the benefits flowing from such actions. In such instances, free riding is often the economically superior course of action.[6] This logic applies equally to individuals, firms, and governments. The standard solution for this collective action problem is to resort to the coercive authority of

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[4] *See infra* Part I. The most current information about state and local climate change initiatives can be found on the website maintained by the Pew Center for Global Climate Change, http://www.pewclimate.org/what_s_being_done/in_the_states.

[5] *See* Michele M. Betsill, *Localizing Global Climate Change: Controlling Greenhouse Gas Emissions in U.S. Cities*, (Belfer Cent. for Sci. & Int'l Affairs (BCSIA), Env't & Natural Res. Program, Kennedy Sch. of Gov't, Harvard Univ., Discussion Paper 2000-20, 2000), *available at* http://www.ksg.harvard.edu/gea/pubs/2000-20.pdf. For total levels of state emissions in 1999, see BARRY G. RABE, STATEHOUSE AND GREENHOUSE: THE EMERGING POLITICS OF AMERICAN CLIMATE CHANGE POLICY 2, 5 (2004).

[6] *See*, *e.g.*, RICHARD CORNES & TODD SANDLER, THE THEORY OF EXTERNALITIES, PUBLIC GOODS AND CLUB GOODS (2d ed. 1996); MANCUR OLSON, THE LOGIC OF COLLECTIVE ACTION: PUBLIC GOODS AND THE THEORY OF GROUPS (1965); George J. Stigler, *Free Riders and Collective Action: An Appendix to Theories of Economic Regulation*, 5 BELL J. ECON. MGMT. SCI. 359 (1974). For the original framing of the free rider problem in the context of public goods, see Paul A. Samuelson, *The Pure Theory of Public Expenditure*, 36 REV. ECON. & STAT. 387 (1954).

a central planner who can ensure the provision of optimal levels of public goods, such as a reduction in the risk of climate change. For example, the ideal solution to the problem of excessive emissions of greenhouse gases is an *effective* international agreement of the world's largest emitters, containing emissions reduction targets and timetables. However, thus far, despite its status as the world's largest emitter, the United States has been reluctant to address climate change through the formation of such an international cooperative agreement, not to mention unilaterally. Nevertheless, we are observing policies to address climate change at the state and local levels of government.

This Essay seeks to accomplish two goals: to explain the motivations for the public and decisionmakers' preferences for local climate change initiatives and to assess potential contributions of local initiatives toward global actions for emissions abatement.

We argue that what may seem like a misguided cost-benefit calculus has diverse explanations, some of which are related to rational utility-maximizing choices. Our study uncovers a host of benefits flowing from decisions to act locally on climate change, which are not dependent on effective reductions in global concentrations of greenhouse gases. Examples of such benefits include the opportunity to make symbolic political statements, to attract new businesses, and to appear aggressive on environmental protection. Notwithstanding, our study also concludes that many individuals are likely to underestimate the costs of local climate change initiatives and to overestimate their benefits.

This Essay builds upon previous works[7] to fill a critical void in the literature on climate change, which thus far has focused almost exclusively on a macro analysis of the benefits of greenhouse gas abatement at the global or national level. This literature establishes the scientific and economic consensus that abatement is needed, although much disagreement still exists over the optimal level of reductions. Due to the collective action and free riding problems, this literature assumes that any solution must be implemented at a macro level through an agreement by world governments or at least those representing a large fraction of the world's total greenhouse gas emissions. Our analysis presents a micro analysis of local climate change initiatives and suggests that the total effect of such initiatives may ultimately lead to improvements in social welfare and individual well-being that are similar to those that could be achieved through a first-best solution at the macro level, albeit costlier.

The Essay continues as follows. Part I summarizes the major existing local climate change initiatives. Part II examines the motivations behind

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[7] *See, e.g.*, J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change*, 155 U. PA. L. REV. 1499 (2007); Kirsten H. Engel, *Harmonizing Regulatory and Litigation Approaches to Climate Change Mitigation: Incorporating Tradable Emissions Offsets into Common Law Remedies*, 155 U. PA. L. REV. 1563 (2007); Kirsten H. Engel & Scott R. Saleska, *Subglobal Regulation of the Global Commons: The Case of Climate Change*, 32 ECOLOGY L.Q. 183 (2005).

these initiatives. It distinguishes between explanations of public demand and political and government supply of such initiatives. Part III discusses the relationship between Part II's micro analysis and macro-level effects. Part IV concludes.

I. Highlights of State and Local Climate Change Initiatives

Local climate change initiatives span a large and diverse set of government programs. For simplicity, we briefly describe some of the major initiatives. Our goal in this summary is not to provide a complete list of known local climate change initiatives. Rather, we wish to show that the number and diversity of local climate change initiatives indicate that, despite their net costs, such initiatives are popular with voters and politicians. Our summary below also shows that many of the initiatives are still in the planning stages, either because implementation dates are unspecified or set for the future or because the initiatives are the subjects of ongoing litigation.

A. Municipal Initiatives

1. *Cities Committing to Greenhouse Gas Reductions*

In June 2005, the U.S. Conference of Mayors adopted the Mayors Climate Protection Agreement that urges cities to adopt measures designed to meet or exceed the target and timetable for reducing greenhouse gases established by the Kyoto Protocol—a reduction of 7 percent below 1990 levels by the year 2012.[8] As of Nov 5, 2007, the mayors of over 710 cities had joined the Agreement.[9] Participating cities are instituting programs to reduce greenhouse gas emissions by installing energy-efficient lighting; developing and enforcing building codes incorporating energy-efficient designs; investing in mass transit, carpooling and bicycle commuting programs; and switching over to solid waste management programs that use less energy and recover landfill gases.[10]

Actions at the city level have generated political capital for several mayors. Two prominent examples are Greg Nickels of Seattle and Michael Bloomberg of New York City. Nickels spearheaded the U.S. Conference of

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[8] U.S. Conference of Mayors, *The U.S. Mayors Climate Protection Agreement* (As endorsed by the 73d Annual U.S. Conference of Mayors meeting, Chicago, 2005), *available at* http://www.usmayors.org/climateprotection/documents/mcpagreement.pdf.

[9] For an up-to-date list of the mayors who have signed the Agreement, see U. S. Conference of Mayors, Mayors Climate Protection Center, Participating Mayors, http://www.usmayors.org/climateprotection/listofcities.asp.

[10] *See generally* Harriet Bulkeley & Michele M. Betsill, Cities and Climate Change (2003) (describing Denver and Milwaukee's climate protection initiatives); Michele M. Betsill, *Mitigating Climate Change in U.S. Cities: Opportunities and Obstacles,* 6 Loc. Env't 393, 397–98, 404 (2001), *available at* http://www.colostate.edu/Depts/PoliSci/fac/mb/Local%20Environment.pdf. (examining municipal action under the Cities for Climate Protection initiative).

Mayors Climate Protection Agreement, and Bloomberg passed a local regulation requiring the city's yellow cab fleet to drive only hybrid cars by 2012[11] and pushed for a congestion-pricing plan to reduce traffic jams and pollution.[12]

B. State Initiatives

1. *California Global Warming Solutions Act of 2006*

Under the leadership of Governor Arnold Schwarzenegger, California committed to a 25% cut in greenhouse gas emissions by 2020 in order to lower the state's emissions to 1990 levels.[13] The Act requires the California Air Resources Board to establish a program for statewide greenhouse gas emissions and to monitor and enforce compliance with this program. Recent news reports indicate that the Governor's office is attempting to hamper implementation of the Act in light of the anticipated costs.[14]

2. *Vehicle Emission Standards*

In 2004, California became the first state to adopt limits on the emissions of greenhouse gases from passenger cars and light-duty trucks.[15] The California Air Resources Board estimates that this regulation will reduce greenhouse gases emitted from regulated vehicles by 18% by 2020 and 27% by 2030.[16] Thus far, twelve states have adopted the California vehicle emission standards: Arizona, Connecticut, Florida, Maine, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington. Vehicle emission standards adopted by a large number of states or even by a small number of large states, such as California, New York, Florida, and Pennsylvania, will adversely affect the value of the manufacturers' designs that do not meet the standards since their potential markets will shrink dramatically. In other words, state vehicle emission standards offer

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[11] Press Release, Mayor Bloomberg Announces Taxi Fleet to Be Fully Hybrid By 2012 (May 22, 2007), http://www.nyc.gov/portal/site/nycgov/ (follow "News and Press Releases" hyperlink; then follow "May 2007" hyperlink; then follow "Read the press release" hyperlink beneath "May 23, 2007").

[12] Holman W. Jenkins, Jr., *Bloomberg vs. The Car*, WALL ST. J., July 11, 2007, at A14. Thus far the congestion-pricing plan has met with resistance from State lawmakers. *See* Anahad O'Connor & Danny Hakim, *Bloomberg Lashes Out at Lawmakers*, N.Y. TIMES, July 17, 2007, available at http://www.nytimes.com/2007/07/17/nyregion/17cnd-congestion.html ?hp.

[13] California Global Warming Solutions Act of 2006, Cal. Health & Safety Code § 38500 (2007).

[14] Janet Wilson, *Critic Rips Aides to Gov.,* L.A. TIMES, June 30, 2007, at B3; Greg Lucas, *Fired Air Board Head Says He Tried to Keep Integrity,* S.F. CHRON., June 30, 2007, at B2. This may signal uncertainty by the Governor over the staying power of the political capital generated by action on climate change in view of the costs of such policies.

[15] CAL. CODE REGS. tit. 13, § 1961.1 (2005).

[16] Cal. Air Resources Board, Fact Sheet, Climate Change Emissions Control Regulations (Dec. 10, 2004), http://arb.ca.gov/cc/factsheets/cc_newfs.pdf.

an example of how local initiatives can have large-scale effects. However, legal challenges filed by the automobile industry are delaying the implementation of these state standards.[17]

3. *State Emission-Reduction Plans*

Twenty-nine states have either finalized or are in the process of drafting plans for reducing local greenhouse gas emissions.[18] State plans vary substantially in their specificity levels, with the most aggressive plans laying out specific emission-reduction targets, timetables, and emission registry mechanisms. Fourteen states have adopted plans that include defined targets and timetables, while another fifteen states have adopted plans with lower levels of specificity.

4. *State Renewable Portfolio Standards*

Twenty-five states and the District of Columbia presently require electric utility companies to generate a certain percentage of electricity from qualifying renewable energy sources. The stringency of the renewable portfolio standards ("RPS") varies greatly from state to state, with California's among the strictest (20% mandatory standard by 2010) and North Dakota, Virginia and Missouri among the most modest (voluntary goals of 10 percent by 2015, 12% by 2022 and 11% by 2020, respectively).[19] Many of these states have already reached their initial RPS goals and have enacted a second round of RPS legislation. In addition, fifteen states allocate funds, often called "public benefit funds," to support renewable energy projects and energy efficiency programs.[20]

5. *Electric Power Plant Carbon Dioxide Emission Standards*

Several states are implementing emission standards for electric power plants. California, Massachusetts, and New Hampshire cap carbon dioxide emissions of power plants, while Oregon and Washington require power plants to offset a percentage of their carbon dioxide emissions, which, for example, some utilities in Oregon are doing by investing in reforestation projects in Ecuador.[21]

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[17] *See, e.g.*, Cent. Valley Chrysler Jeep, Inc. v. Witherspoon, 2007 WL 135688, 1 (E.D. Cal. 2007) (challenging the standards as preempted by the federal Energy Policy and Conservation Act).

[18] *See* Pew Center on Global Climate Change, States with Climate Change Action Plans, http://www.pewclimate.org/what_s_being_done/in_the_states/action_plan_map.cfm (including a list of states with a climate action plan and a link to the text of each plan).

[19] *See* Union of Concerned Scientists, State Clean Energy Maps and Graphs, http://www.ucsusa.org/clean_energy/clean_energy_policies/state-clean-energy-maps-and-graphs.html.

[20] *Id.*

[21] *See* Press Release, Conservation International, Oregon Power Companies Offset Carbon Through Investment in Ecuador's Rainforest (Nov. 13, 2002), http://web.conservation.org/xp/news/press_releases/2002/111302.xml.

C. Interstate and Regional Initiatives

1. *State Greenhouse Gas Emission Registries*

To date, thirty-nine states, two Canadian provinces, and two tribal nations have agreed to adopt and implement uniform protocols for measuring, reporting, and verifying greenhouse gas emissions in several industrial sectors.[22] The driving force behind this standardization is to facilitate trade in emission rights. Trade in any "product" emerges when the product is in short supply for some market participants. Trade in emission rights will emerge when authorities impose restrictions upon greenhouse gas emissions that allow transfers of emission rights. Once a market forms, emission rights will become a commodity because, at least in the short run, those polluters emitting above regulatory standards may find it cheaper to purchase rights than to reduce their emissions to meet the standards. Standardization of emission reporting expands the market for emission rights because it permits interstate trades. In this respect, emission registration standardization is somewhat similar to the standardization of the European currencies; the Euro currency saves Europeans the transaction costs associated with currency conversions.

The creation of a greenhouse gas registry and the interstate standardization of reporting and monitoring protocols are likely to benefit local businesses in several ways. First, a registry provides participants with a basis upon which they may be able to claim credits for early emissions reductions. Second, the prospective emergence of markets for emission rights will allow businesses that start reducing emissions today to take advantage of their early start on the learning curve of greenhouse emission reductions by selling emission rights at high prices to second movers. Last but not least, standardization—because it lowers transaction costs—will expand markets and make compliance with mandatory emissions restriction profitable to some businesses.

2. *Regional Climate Change Programs*

One of the more interesting developments in local climate change initiatives is the development of regional collaborations among states. Regional collaborations standardize markets for emissions rights, thereby facilitating regional trade. The most advanced regional collaboration is the Regional Greenhouse Gas Initiative ("RGGI"). Initiated by former New York Governor George Pataki in 2003, RGGI is a cooperative framework of Northeastern and Mid-Atlantic states designed to create a regional cap-and-trade program for carbon dioxide emissions from electric power generators.[23]

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[22] *See* The Climate Registry, http://www.theclimateregistry.org.

[23] *See* Regional Greenhouse Gas Initiative, http://www.rggi.org. Currently, ten states participate in RGGI: Connecticut, Delaware, Maine, Massachusetts, Maryland, New Hampshire,

In August 2006, RGGI issued a model rule establishing a uniform implementation date of January 1, 2009, capping the carbon dioxide of power plants at present levels until 2015, and prescribing an emission reduction of 10% by 2019.[24]

In February 2007, the governors of Arizona, California, New Mexico, Oregon, and Washington established the Western Climate Initiative ("WCI"), which Utah and the Canadian Provinces of British Columbia and Manitoba joined a few months later. WCI creates a framework to establish regional emissions targets and to form markets for trade in emission rights for multiple sectors. WCI has yet to adopt specific targets and timetables.[25] Finally, six Midwestern states and one Canadian Province have formed their own climate pact, agreeing to establish regional greenhouse gas reduction targets and a multi-sector cap-and-trade regime to meet the targets.[26]

For the states involved in regional initiatives, a regional approach promises greater efficiency, especially if the region implements emission reductions through a cap-and-trade program. It also reduces economic losses due to the leakage of market share of fossil-fuel-intensive products, such as electricity, to industries able to export their products to the regulating state.[27]

3. *Cooperative Efforts to Compel Federal Regulation*

Many state and local governments are pooling resources to compel the federal government to pursue regulatory action on climate change. Local efforts to compel federal regulation are similar to other local climate change initiatives: initiators bear the full costs of such efforts, even though, if successful, they will share the benefits of federal regulation with the rest of the world. Despite the obvious potential of such schemes for free riding, several examples of such efforts exist. In the most notable example, eight states and several cities sought federal regulation of greenhouse gas emissions from new motor vehicles. This effort culminated in *Massachusetts v. EPA*,[28] in which the Supreme Court held that the federal Clean Air Act obligates the EPA to determine whether the conditions mandating federal regulation—reasonable anticipation of endangerment—are triggered with respect to motor vehicle greenhouse gas emissions.

New Jersey, New York, Rhode Island, and Vermont. In addition, the District of Columbia, Pennsylvania, the Eastern Canadian Provinces, and New Brunswick are "observers."

[24] *Id.*

[25] *See* Western Climate Initiative, WCI October 29, 2007 Workplan, http://www.westernclimateinitiative.org/ewebeditpro/items/O104F13792.pdf.

[26] Midwestern Greenhouse Gas Accord (2007), available at: http://www.wisgov.state.wi.us/docview.asp?docid=12497. In November 2007, the Governors of Illinois, Iowa, Kansas, Michigan, Minnesota, and Wisconsin, together with the Premier of the Canadian Province of Manitoba, signed the Accord as full participants while the Governors of Indiana, Ohio, and South Dakota signed the agreement as observers. See Pew Center on Global Climate Change, available at: http://www.pewclimate.org/what_s_being_done/in_the_states/news.cfm.

[27] Kirsten H. Engel, *Mitigating Global Climate Change in the United States: A Regional Approach,* 14 N.Y.U. ENVTL. L.J. 54, 68–71 (2005).

[28] Massachusetts v. EPA, 127 S. Ct. 1438 (2007).

State and local governments are also lobbying Congress for federal action on climate change. For example, in June 2007, governors from several western states wrote to the House and Senate leadership, requesting Congress to demand that the EPA grant California the waiver of preemption necessary for California's regulations restricting vehicle carbon dioxide emissions to become effective.[29] The governors also requested that Congress establish national greenhouse gas reduction goals and support policies to create a comprehensive market-based approach to climate change.

D. State Nuisance Actions Against Individual Emitters

To date, state attorneys general have filed two high-profile common law tort actions against major individual sources of greenhouse gas emissions. In 2003, the attorneys general of New York, California, Connecticut, Iowa, New Jersey, Rhode Island, Vermont, and Wisconsin and the City Attorney for New York filed a suit against five major electric power generators located in the Midwest, alleging the plants constituted a public nuisance under state and federal common law.[30] As relief, the plaintiffs requested that the defendants abate their carbon dioxide emissions at each of their plants. In a second lawsuit, filed in 2006, the State of California sued six major vehicle manufacturers, claiming that the "massive" quantities of greenhouse gases emitted by the companies' automobiles have contributed to the public nuisance of global warming.[31] California is seeking monetary damages to compensate the State for the harm already sustained by the State's coastal and other resources as a result of global warming. Both cases are still pending. The California case currently is being litigated in a federal district court. The Northeastern states' case is now before a federal appeals court after the trial court held that the case presented nonjusticiable political questions.[32]

II. Forces Explaining State and Local Climate Change Initiatives

Thus far, we have shown that although the private costs of state and municipal climate change initiatives seem to outweigh their potential private benefits in terms of reducing the risks associated with climate change, such

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[29] Letter from Gov. Janet Napolitano et al. to Rep. Nancy Pelosi et al. (June 14, 2007), *available at* http://www.cleancarscampaign.org/web-content/cleanairact/docs/6-12-07_Reid-Pelosi_ltr.pdf. Under the Clean Air Act, California must obtain a "waiver" of federal preemption in order to impose emission standards upon new vehicles that are more stringent than those imposed by the EPA. 42 U.S.C. § 7543 (2000).

[30] Complaint at 43–49, Connecticut v. Am. Elec. Power Co., 406 F. Supp. 2d 265 (S.D.N.Y. 2005) (No. 04-5669).

[31] Complaint for Damages and Declaratory Judgment at 2, Cal. ex rel. Lockyer v. Gen. Motors Corp., No. 06-05755 (N.D. Cal. Sept. 20, 2006).

[32] *Am. Elec. Power Co.*, 406 F. Supp. 2d at 274.

initiatives are increasingly common. In this Part, we provide several of the most salient explanations for this trend.

We start with a discussion of the demand for local climate change initiatives because of the standard assumption that politicians seek to please their constituencies, and hence these initiatives are being driven by voter preferences. We continue with a discussion of the supply of local climate change initiatives that is unrelated to the desire of politicians and other public officials to satisfy public demands and wants. This separate discussion of supply is necessary for two reasons. First, many local initiatives do not require a popular vote or other form of direct public endorsement; rather, they merely may need some sort of official government action. For example, several of the thirteen states that have imposed restrictions upon greenhouse gas vehicle emissions have done so without asking the voters for specific authority.[33]

Second, as explained below, the public demand for local initiatives and the supply of local initiatives by elected and nonelected officials are interrelated. For example, the framing of proposed local climate change initiatives may affect the demand for such initiatives. In this sense, the demand and supply in the market for local initiatives are similar to demand and supply in other markets where consumers' preferences respond to variations in supply.[34]

A. The Demand Side

1. *Symbolic Statements*

The establishing documents of many local climate change initiatives are written in a broad and nonbinding manner, permitting government officials great flexibility in timing, scope, and aggressiveness of implementation. This abstract nature of climate change initiatives suggests that one of their primary functions is to serve as symbolic statements in favor of action addressing climate change.

The 2006 ballot in Berkeley illustrates this point. On the same day that 81% of Berkeley's voters endorsed Measure G, 69% of Berkeley's voters endorsed Measure H, calling on Congress to impeach and remove from office President Bush and Vice President Cheney for "Treason, Bribery, or

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[33] There is a growing trend among environmental and citizen groups to turn to ballot initiatives to obtain passage of specific climate-related measures that have met resistance in state legislatures. *See* The New Rules Project, Update: Voters Decide State and Local Energy Initiatives (Nov. 8, 2006), http://www.newrules.org/de/archives/000143.html (listing energy and climate change related initiatives put before the voters during the November 2006 elections).

[34] *See, e.g.*, Samuel Bowles, *Endogenous Preferences: The Cultural Consequences of Markets and other Economic Institutions*, 36 J. ECON. LITERATURE 75 (1998). *See also* Oren Bar-Gill & Chaim Fershtman, *Law and Preferences*, 20 J.L. ECON. & ORG. 331 (2004); Robert Cooter, *Expressive Law and Economics*, 27 J. LEGAL STUD. 585 (1998).

other High Crimes and Misdemeanors."[35] Measure H clearly had a solely expressive function with no corresponding operative instruction for the City's authorities. Thus, since endorsement of symbolic statements is not unusual in Berkeley, it is unclear whether Berkeley's voters indeed intended to give the City Council a sweeping mandate to take any practical action under Measure G at all. Similar voting patterns could characterize the ballots and elections in other states and localities.

Voters who endorse a proposal but perceive it to be mostly symbolic in nature may downplay the relevance of implementation costs or ignore them all together. Such voters may intend to register a general preference for action on climate change, while lacking any clear expectation that expenditures, either private or public, will be required as a result of their expression of such preferences.

2. *Strategic Voting*

Climate change initiatives present a collective action problem: absent a centrally binding plan, each state (or locality) would be better off free riding on the efforts of other states and localities rather than acting on climate change itself. Many individuals intuitively understand this point and may intentionally choose to act rather than free ride on others' actions. In doing so, they may hope that others will act in a similar way and that the resulting aggregate effect will be significant enough to mitigate climate change. Thus, like any small-time criminal who hopes to escape the prisoner's dilemma by keeping quiet in the interrogation room, many citizens may demand and endorse local climate change initiatives, hoping that citizens in other jurisdictions will do the same. And from all appearances, they are. The risks associated with such strategic voting are relatively small for plans with delayed implementation because states and localities have the option to back off before incurring any costs if other state and localities do not adopt similar climate protection measures.[36]

3. *Warm Glow*

Studies of altruism show that giving gifts often entails psychic benefits to the donor, even when the value of giving to another is uncertain. This

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[35] City of Berkeley Ballot Measure H: Impeachment of President Bush and Vice President Cheney (2006), *available at* http://www.ci.berkeley.ca.us/elections/measures/2006/HimpeachTTA.pdf.

[36] For example, the U.S. Mayors Climate Protection Agreement merely requires the mayor's signature for a city to obligate itself to "strive" to meet the Kyoto Protocol greenhouse gas emissions target and timetable. This vague commitment allows the signing mayors a great deal of leeway to eschew concrete reductions at a later date. Some of the signing mayors publicly admitted that, at the time of signing, they were unfamiliar with potential costs associated with complying with the Agreement's targets. *See, e.g.*, Corinne Purtill, *U.S. Cities Uniting to Battle Emissions*, ARIZ. REPUBLIC, Apr. 23, 2007, at 1.

effect is commonly known as "warm glow."[37] A person who feels a warm glow from acting on climate change is likely to support local climate change initiatives. The fact that the action confers insignificant benefits on society may affect the extent of the warm glow, but not necessarily. For some individuals, acting on behalf of the environment may be rewarding in and of itself, while positive outcomes may simply enhance the rewarding feeling.

4. *Framing of Benefits*

Local climate change initiatives frequently define goals for emission reductions but fail to specify the expected impact of the plan on concentrations of global greenhouse gases.[38] This asymmetric presentation of information could lead individuals to overestimate the benefits of plans because the focus is on local emission reductions rather than on the actual impact of the local reductions on the risk of climate change. It is quite plausible that the level of support for local climate change initiatives is higher than it would be if the plans reported their actual impact on global warming. Moreover, the focus on emission reductions could create the impression that there exists a linear relation between greenhouse gas emissions and the weather events that characterize climate change, when in actuality the ratio is not linear and the exact impact of emission reductions on climate change is uncertain.[39] Along the same lines, because local actions to mitigate climate change normally address only a very small portion of the world's total emissions of greenhouse gases, the impact of such actions on climate change is similarly uncertain. Thus, the common framing of local climate change initiatives may create an upward bias in the perceptions of benefits promised by such initiatives.

5. *Underestimation of Costs*

Even if we assume that individuals accurately estimate the benefits of local climate change initiatives, there are at least two good reasons to believe that individuals may underestimate the costs associated with the implementation of such plans.

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[37] *See, e.g.*, James Andreoni, *Impure Altruism and Donations to Public Goods: A Theory of Warm-Glow Giving*, 100 ECON. J. 464 (1990); William T. Harbaugh et al., *Neural Responses to Taxation and Voluntary Giving Reveal Motives for Charitable Donations*, 316 SCIENCE 1622 (2007).

[38] For example, state climate action plans often express the benefits of a given policy measure in terms of the number of metric tons of carbon dioxide emissions the measure will avoid, rather than the impact of the measure in reducing climate change. *See, e.g.*, ARIZ. CLIMATE CHANGE ADVISORY GROUP, CLIMATE CHANGE ACTION PLAN (Aug. 2006) *available at* http://www.azclimatechange.us/ewebeditpro/items/O40F9347.pdf; CTR. FOR GLOBAL & REG'L ENVTL. RESEARCH, UNIV. OF IOWA, IOWA GREENHOUSE GAS REDUCTION PLAN (Dec. 1996), *available at* http://atmos.cgrer.uiowa.edu/research/reports/iggap/FinalReport.pdf.

[39] *Cf.* Myles Allen, *Liability for Climate Change* 421 NATURE 891, 891 (2003) (describing the difficulty of distinguishing between climate change and normal weather as causes of increased risk of flood damage to homes).

One reason for such misunderstanding is that public cost-benefit analysis of a local climate initiative may be affected by hyperbolic discounting. Hyperbolic discounting is a form of time-inconsistent preferences.[40] An individual is a hyperbolic discounter if her short-run discount rate is higher than her long-run discount rate.[41] For example, a hyperbolic discounter may prefer $100 today over $101 tomorrow, but will prefer $101 ten years and a day down the road over $100 ten years from now. Two important implications of hyperbolic discounting are that hyperbolic discounters are impatient for near-future benefits but regret their choices later. This phenomenon is commonly known as dynamic time inconsistency.[42] Put simply, a hyperbolic discounter may make choices with negative net present value; cost-benefit decisions with perceived immediate benefits and deferred costs are the most likely to be regretted over time. Standard manifestations of such behavior include credit card debt and crime, both of which are characterized by immediate payoffs and deferred costs.[43]

Local climate change initiatives often have some immediate benefits and deferred costs. This separation between costs and benefits on the time horizon may lead to impatience for the immediate benefits. Endorsement of future reductions of greenhouse gas emissions entails immediate benefits in the form of personal satisfaction, or "warm glow," that results from acting for the environment.[44] The costs of these initiatives are postponed at least until the actual implementation date. As a result of this temporal disparity between benefits and costs, hyperbolic discounting may lead individuals to support local initiatives, even though individuals with standard preferences may reject the very same initiatives.

A second reason voters may underestimate the costs associated with local climate change initiatives is that they may assume that the problem can be fixed in a cost-effective manner by presently existing or soon-to-be-developed technologies. Individuals may assume that clean technologies

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[40] *See generally* David Laibson, *Golden Eggs and Hyperbolic Discounting*, 112 Q. J. ECON. 443 (1997); Joel Myerson et al., *Discounting Delayed and Probabilistic Rewards: Processes and Traits*, 24 J. ECON. PSYCHOL. 619 (2003). For experimental evidence, see Richard Thaler, *Some Empirical Evidence on Dynamic Inconsistency*, 8 ECON. LETTERS 201 (1981); Shane Frederick et al., *Time Discounting and Time Preference: A Critical Review*, 40 J. ECON. LITERATURE 351 (2002).

[41] Neoclassical economics assumes that individuals discount the future at a constant rate. *See*, *e.g.*, Tjalling C. Koopmans, *Stationary Ordinal Utility and Impatience*, 28 ECONOMETRICA 287 (1960); Paul Samuelson, *A Note on Measurement of Utility*, 4 REV. ECON. STUD. 155 (1937).

[42] *See* JON ELSTER, ULYSSES UNBOUND 24–34 (2000). For a non-technical discussion, see Christine Jolls et al., *Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1539–41 (1998).

[43] *See*, *e.g.*, Oren Bar-Gill, *Seduction by Plastic*, 98 NW. U. L. REV, 1373, 1396–99 (2004) (discussing hyperbolic discounting as one of the explanations for credit card debt); James Q. Wilson & Allan Abrahamase, *Does Crime Pay?*, 9 JUST. Q. 359 (1992) (discussing hyperbolic discounting as one of the explanations for criminal activities).

[44] Consistent with the microeconomic perspective of this paper, the benefits assumed by this discussion are those that accrue to the voter personally as a result of his or her support for the given climate change initiative.

whose actual costs and performance are comparable to presently employed technologies already exist or could be developed inexpensively in the near future.[45] Individuals who operate under this assumption may be more likely to support local initiatives whose implementation requires the use of clean technologies.[46]

6. *Financial Interests*

Actions that reduce greenhouse gas emissions can work to the financial benefit of certain sectors that supply energy efficient products or services. For this reason, clean technology manufacturers and some energy suppliers, such as wind power companies, support local climate change initiatives.[47] Similarly, labor unions often support renewable energy projects because, in contrast to imported oil, they generate new jobs.[48]

7. *"The Price is Worth It"*

Some voters view the costs of actions on climate change as justifiable, since for them environmental values are "priceless."[49] Proponents of this rhetoric challenge the usefulness of cost-benefit analysis when it comes to environmental policies. Other voters may reject the view that the environment is priceless, but nevertheless hold that action to reduce the risk of climate change is "worth" the costs of the given initiative. Given that the actual climate benefits of a state or local initiative are so small as to be negligible, it is quite plausible that this view is not an independent explanation, but rather a product of some of the previous explanations, such as symbolic statements, warm glow, framing of benefits, and misperceptions of costs.

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[45] President George W. Bush has set forth this view of the potential for technological solutions to solve the world's environmental problems, stating, in his 2003 State of the Union address, "In this century, the greatest environmental progress will come about not through endless lawsuits or command-and-control regulations, but through technology and innovation." President George W. Bush, 2003 State of the Union Address (Jan. 28, 2003), *available at* http://www.whitehouse.gov/news/releases/2003/01/20030128-19.html.

[46] For an assessment of the costs of implementing energy-efficient technologies as well as the barriers to adopting such technologies, see INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE, CLIMATE CHANGE 2001: MITIGATION 26–65 (2001), *available at* http://www.grida.no/climate/ipcc_tar/wg3/pdf/TS.pdf.

[47] *Cf.* John J. Fialka, *Ad Campaign Bashing Coal Is Ended After Uproar*, WALL ST. J., Apr. 27, 2007, at B4 (discussing a natural-gas company's campaign against coal).

[48] *See, e.g.*, Press Release, WindWorks Long Island, LI Business and Labor Leaders Praise Renewable Energy, http://lioffshorewindenergy.org/index.php?module=article&view=8& (describing Long Island labor organizations' endorsement of the Long Island Power Association's plan to build an offshore wind energy farm).

[49] *See, e.g.*, FRANK ACKERMAN & LISA HEINZERLING, PRICELESS: ON KNOWING THE PRICE OF EVERYTHING AND THE VALUE OF NOTHING (2004).

8. *Resorting to Second-Best Solutions*

Even individuals who understand that local climate change initiatives are very costly may nevertheless endorse such initiatives, given that the first-best solution—federal and international action—is not available.

B. The Supply Side

One obvious explanation for the supply of local climate change initiatives is the existence of public demand for such actions. Elected politicians and political candidates understand that the longevity of their careers depends on satisfying the wants of their constituents. Our discussion of the demand for local climate change initiatives, however, shows that the existing supply of local climate change initiatives and its framing could explain some of this demand. For example, the endorsement of symbolic statements is possible only when an initiative has already been developed by decisionmakers and submitted to the public for approval. Similarly, misperceptions of costs and benefits often stem from the framing of a particular initiative. Thus, since the way in which local climate initiatives are supplied may create or enhance demand, an independent investigation of supply is warranted.

An independent analysis of the supply side is also justified because many local initiatives do not require a popular vote or other form of direct public endorsement but merely need some sort of official government action.

In this Section, we highlight several reasons why state and local officials may offer local climate initiatives even in the absence of manifest voter demand for such policies.

1. *Administrative Entrepreneurship*

Case studies of local climate change initiatives indicate that officials within administrative agencies, as opposed to elected politicians, frequently develop the idea for such initiatives and have the motivation to carry them forward. Such officials develop climate initiatives and policy recommendations in concert with stakeholder groups and perhaps with the implicit blessing of the governor but without the direct involvement of the legislature. Gradually, as support for such measures grows, elected officials may become more involved. For instance, Robert Shinn, the Commissioner of the New Jersey Department of Environmental Protection, receives much of the credit for his state's early leadership on climate change.[50]

The motivations for such administrative entrepreneurship are diverse. They range from personal belief in the importance of action on climate change to political aspirations to the attractiveness of climate policymaking

[50] BARRY RABE, STATEHOUSE AND GREENHOUSE: THE EMERGING POLITICS OF AMERICAN CLIMATE CHANGE POLICY 112–20 (2004).

to help accomplish other goals for which the official shares responsibility, such as business development or progress in reducing conventional pollutants.

2. *Political Entrepreneurship*

Polling data demonstrate that climate change is an attractive agenda issue for politicians.[51] The topic offers politicians an opportunity to distance themselves from oil and gas interests, whose public popularity is currently low. Furthermore, the absence of an aggressive federal response to climate change enhances the political capital generated by endorsing local climate change initiatives; for example, state and local politicians who champion climate change regulation receive generous media coverage.[52] Thus, creating local action on climate change initiatives or simply having the issue on the agenda can allow politicians to gain greater exposure and potentially greater popularity.

Populous states, such as California and New York, offer political entrepreneurs even greater political returns on investments in local initiatives. When technological standardization is necessary to maximize economies of scale and product value to the consumer, industries are likely to revise their standards to serve states that constitute large markets. For example, the automobile industry must take into account California's greenhouse gas standards for vehicle emissions but may not respond in the same way to initiatives affecting smaller markets. A state politician who leads an action that influences national markets is likely to gain substantial media exposure and increase his popularity among environmental constituencies.

3. *Future Markets for Emission Rights*

Early actions on climate change may offer several economic opportunities related to future markets for emission rights. Because the regulation of greenhouse gases is likely to lead to the formation of emission markets, first movers will be able to generate tradable credits for use in future markets. These credits will be particularly valuable during the adjustment period of second movers who will have to purchase substantial quantities of emission rights until their economies convert to lower levels of emissions. From this

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[51] *See, e.g.*, Press Release, Environmental Defense, Floridians Overwhelmingly Support Climate Change Fix (Aug. 8, 2007), http://www.environmentaldefense.org/pressrelease.cfm?contentID=6757 (describing a statewide poll finding that eight in ten Florida voters support plans by Governor Crist to roll back greenhouse gas emissions to 2000 levels and almost nine in ten Florida voters support the Governor's plan to require better fuel efficiency for new cars sold in Florida).

[52] *See, e.g.*, Mark Martin, *Legislature Flooded with Bills about Climate Crisis,* S.F. CHRONICLE, Apr. 2, 2007, at A1. (describing the international attention bestowed on Governor Schwarzenegger and Assembly Speaker Fabian Núñez for their first-in-the-nation legislation that set greenhouse gas reduction targets for 2020).

perspective, the supply of some local climate change initiatives is partially motivated by economic development opportunities.

4. *Attracting Businesses*

State and local officials are under intense pressure to improve their economies. Some states have embraced local climate change initiatives to attract new or enhance existing industries within their territories. For instance, studies show that the expansion of the renewable power industry has a positive impact on employment.[53] Moreover, job-creation is often touted by advocates as selling point of RPS in state legislatures.

5. *Piggybacking on the Popularity of Actions on Climate Change*

The demand for action on climate change allows elected and non-elected officials to use this goal as a platform to promote various policies whose primary goals are not reduction of greenhouse gases, but that may incidentally facilitate such reductions. For instance, the California Attorney General recently sued San Bernardino County for failing to control urban sprawl in its twenty-five-year growth plan, noting that transportation was a major source of greenhouse gas emissions.[54] Similarly, many state and municipal plans addressing traffic congestion emphasize the contribution of jammed traffic to climate change, although the major goals of such plans are not related to climate change. The demand for local climate change initiatives, therefore, does not explain the supply of such policies, but rather provides an explanation for their framing.

III. Local Equilibria and Global Change

Local climate change initiatives are very unlikely to effectuate sufficiently large emissions reductions to disrupt present patterns of climate change. They may have an aggregate non-negligible impact on concentrations of greenhouse gases, but not a sufficient one. Their value is in their potential to compel the federal government to reduce greenhouse gas emissions. Only the federal government, acting unilaterally or with other international players, can sufficiently reduce global climate risks through regulation of greenhouse gas emissions. Thus, to the extent that local climate change

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[53] Daniel M. Kammen et. al., University of California at Berkeley, RAEL Report, Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate? 3 (Apr. 13, 2004, corr. Jan. 31, 2006), *available at* http://rael.berkeley.edu/files/2004/Kammen-Renewable-Jobs-2004.pdf (finding that the renewable energy sector generates more jobs per unit of energy produced than the fossil fuel sector). Although Kammen et al. find that a shift from fossil fuels to renewable energy will create some job losses in the short term, these losses can be adequately ameliorated or mitigated through various policy actions.

[54] *See* John Ritter, *Calif. Sees Sprawl as Warming Culprit,* USA Today, June 5, 2007, at 1A.

initiatives render federal regulation more likely, they can indirectly lead to the first-best solution of action at the macro level.[55]

Local climate change initiatives could generate and enhance micro motives among elected and nonelected federal officials to act on climate change for three primary reasons. First, actors at the federal level may observe the political capital captured by state and local politicians supporting local climate change initiatives and realize that one source of this capital is their aggressiveness in the face of the federal government's passivity. In this context, federal passivity is "money left on the table" that federal actors may wish to capture for themselves.

The second reason that action at the local level may spur federal action is the interrelated nature of the demand for and supply of climate change initiatives. As discussed above, local climate change initiatives appear to have an expressive function—they can enhance the demand for further climate change initiatives and play some role in shaping preferences for such initiatives. This additional demand for action on climate change is about effective action, rather than exclusively local action. Therefore, the impact of the supply of local climate change initiatives on preferences for action offers federal actors greater political capital that cannot be ignored.

The third reason is that state and local climate change initiatives may motivate national businesses and environmental groups to pursue federal regulation. Experience shows that disparities across state regulations often lead industries to lobby for preemptive federal regulation in an effort to reduce the costs of complying with diverse state programs.[56] Indeed, industry leaders of some major industries have recently called for federal regulation.[57]

Last but not least, it is important to note that local climate change initiatives may also adversely affect micro-motives for federal action on climate change. The reason is that such initiatives could have a placebo effect: the pervasiveness of local initiatives may create the impression that something effective is being done. When such an impression is widespread, it could suppress the demand for more effective action at either the state and local

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[55] While there is disagreement over the desirable levels of reductions in greenhouse gas emissions, scientists and economists widely agree that current levels of greenhouse gases must be reduced to avoid welfare losses. *See, e.g.*, William Nordhaus, The Challenge of Global Warming: Economic Models and Environmental Policy 22 (July 24, 2007) (unpublished manuscript), *available at* http://nordhaus.econ.yale.edu/dice_mss_072407_all.pdf.

[56] *See, e.g.*, J.R. DeShazo & Jody Freeman, *Timing and Form of Federal Regulation: The Case of Climate Change,* 155 U. PA. L. REV. 1499, 1506 (2007); E. Donald Elliott et al., *Toward a Theory of Statutory Evolution: The Federalization of Environmental Law*, 1 J.L. ECON. & ORG. 313, 326 (1985).

[57] *See Business Leaders Urge Climate Action*, ENV'T NEWS SERVICE, Feb. 22, 2007, http://www.ens-newswire.com/ens/feb2007/2007-02-22-01.asp (noting ninety major international corporations and organizations issued statements calling on governments to reduce greenhouse gas emissions and increase energy efficiency); *see also Developers Hopeful About a U.S. Carbon-Trading Market*, L.A. TIMES, Jan. 20, 2007, at C2 (describing the U.S. Climate Action Partnership, formed between ten major U.S. corporations and environmental groups to lobby for climate change legislation).

levels and/or at the federal level. The social costs of this placebo effect may persist even if, in the long run, the public becomes aware of the ineffectiveness of symbolic actions. Any delay in acting to mitigate climate change will be costly.

Conclusion

State and local actions on climate change are somewhat enigmatic: At first glance, the costs of such initiatives seem to outweigh their benefits. In this Essay, we present several explanations for the demand for and the supply of such actions and argue that, once the motivations of both voters and state and local policymakers are fully understood, such actions coincide with standard assumptions regarding the human pursuit of maximizing utility.

Local actions on climate change are unlikely to ever be sufficient to institute the emission reductions thought necessary to mitigate climate change, even according to conservative estimates. Nevertheless, we argue that local initiatives play an important role in a world where the first-best solution—a coordinated global effort—is still unavailable. Local actions could expedite the transition toward the first-best solution through the political dynamics that they set in place. Our analysis presents the micro motives behind actions on climate change at the state and local level and suggests that, under present dynamics, actions at these levels could lead to action at the federal level, which could in turn encourage the development of global agreements.