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Climate Policy at the Local Level: A Survey of California's Cities and Counties

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November 2008

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Summary

California has taken on a leadership role on climate change. Under the Global Warming Solutions Act of 2006, the state has committed to reduce greenhouse gas (GHG) emissions to 1990 levels by 2020. Meeting this target will require emission reductions across all sectors of the economy. Under the California Air Resources Board's proposed scoping (or implementation) plan, released in October 2008, the largest sources of emission reductions are from the transportation sector (through efficiency standards and cleaner fuels), energy efficiency programs, and increased use of renewable energy sources.

Although the proposed scoping plan does not establish explicit targets for local governments, there has been considerable policy interest in increasing the local government role. A study by the state's Climate Action Team (2006) shows that actions directly under city and county authority, such as land use and building decisions, have the potential to significantly reduce emissions from transportation by lowering vehicle miles traveled (VMT). Since 2007, the Attorney General's office has been pushing cities and counties to address emissions from new development as part of the review process under the California Environmental Quality Act (CEQA), and recently signed Senate Bill (SB) 375 charts a process for establishing regional targets for transportation-related emissions.

Although some of these measures have been hotly debated, there are also signs of strong local support for state efforts to reduce GHG emissions. Roughly a third of all local governments have joined one or more initiatives that encourage local climate policy action, and both the League of California Cities and the California State Association of Counties have been supportive. However, there has been little concrete information on what local governments are doing across the state. To address this gap, the Public Policy Institute of California, in association with the Institute for Local Government, conducted a survey of California's cities and counties regarding climate-related actions. We received completed surveys from 310 cities and counties, or 58 percent of all cities and counties in the state, representing 73 percent of the state's population. The survey was supplemented with follow-up interviews in about two dozen communities.

The results show that there is already considerable activity on climate change at the local level. Roughly three-quarters of the local governments in our sample are working on climate change issues; over half have already completed or have plans to conduct emissions inventories for their own facilities and operations, and many (42%) are also doing this for the community as a whole. Over half have completed or are planning to prepare climate action plans, which lay out steps to reduce emissions. Regular local planning and regulatory tools, such as general plan updates, CEQA reviews, building codes, and zoning requirements, are also being modified to address emissions. Because activity is generally higher in communities with larger populations, the emissions benefits are potentially greater than these numbers imply.

However, when it comes to implementing specific programs that can reduce emissions – such as energy efficiency, green building, transportation, land use, and water use efficiency – local governments are still much more focused on their own facilities and operations than on the community at large. Broader community efforts have been facilitated by partnerships and collaborations with other local and regional entities, including business associations and non-profits. Strikingly, local government action is also much lower in addressing the impacts of

climate change – sometimes called "adaptation" - even though scientific projections point to significant impacts.

Moving ahead, several types of implementation barriers should be addressed to facilitate further emission reductions. Although state action is important in some areas, regional agencies and other partners (such as non-profits) may be able to address other areas most effectively, alone or in collaboration with state and local governments.

(1) First, better information is needed, particularly on programs and policies that have worked elsewhere and methods to quantify the costs and benefits of specific programs. To make emissions inventories more useful as a planning tool, there is also a need to improve methods of attributing emissions from VMT to communities.

(2) Second, to address resource constraints, information on funding options and available resources should be shared with local governments. State and regional agencies should also consider how to provide incentives for effective local action, even if they face limited resources themselves.

(3) Third, greater clarity is needed in state law, particularly for addressing the climate implications of local land use decisions. Questions loom about how to effectively use the environmental review process to assess the effects of a development project on GHG emissions. To implement SB 375, local governments will need to work with state and regional authorities to develop effective tools for achieving regional targets.

In addition, there is a need to raise awareness about the importance of adaptation strategies to reduce vulnerability to the impacts of climate change. As the California Resources Agency develops an adaptation strategy for the state, it can play a particularly useful role in catalyzing state and regional agencies to examine the implications of climate impacts for local land use and building decisions.

Acknowledgments

We are grateful to the many local officials who generously agreed to complete this survey and to respond to our follow-up questions. We also wish to thank the Institute for Local Government – in particular Yvonne Hunter, Kathy Les, and Ken Loman – for very helpful input on the design of the survey and the interpretation of survey results, and the League of California Cities and the California State Association of Counties for assistance in advertising the survey and providing mailing lists. Thanks also to Mark Baldassare, Chris Hoene, Julia Lave Johnston, Jed Kolko, Jeremy Madsen, Max Neiman, Cliff Rechtschaffen, Tom Steinbach, and Terry Watt for helpful input on the design of the survey. We thank Rick Frank, Bill Higgins, Yvonne Hunter, Julia Lave Johnston, and Jed Kolko for helpful comments on an earlier draft. Finally, many thanks to the PPIC staff who helped with the preparation and mailing of the survey - Maria Cheves, Laurie Croft, Marjorie Gelin, Oralea Howard, Michael Maa, Luisa Miller, Chiemeka Okoronkwo, Robin Patfield, Terry Rillera, and Eric Schiff.

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Acronyms

AB	Assembly Bill
ABAG	Association of Bay Area Governments
BART	Bay Area Rapid Transit
CARB	California Air Resources Board
CCAN	California Climate Action Network
CCAR	California Climate Action Registry
CCX	Chicago Climate Exchange
CEQA	California Environmental Quality Act
COG	Council of Governments
CSAC	California State Association of Counties
ESCO	Energy service company
GHG	Greenhouse gas emissions
GIS	Geographic information systems
ICLEI	An international association of local governments and their associations with a commitment to sustainable development
ILG	Institute for Local Government
LED	Light-emitting diode
LEED	Leadership in Energy and Environmental Design
MPO	Metropolitan Planning Organization
MTC	Metropolitan Transportation Commission
OPR	Office of Planning and Research
RPS	Renewable portfolio standard
RTP	Regional Transportation Plan
SACOG	Sacramento Area Council of Governments
SB	Senate Bill
SCAG	Southern California Association of Governments
VMT	Vehicle miles traveled

Introduction

In recent years, California has taken center stage in national and international efforts to fight global warming. In 2001, the California Climate Action Registry (CCAR) was established to track and report greenhouse gas (GHG) emissions. In 2002, legislation was adopted to limit greenhouse gas emissions from new vehicles sold in the state (Assembly Bill (AB) 1493) and to establish a renewable portfolio standard (RPS), with the goal of increasing the share of renewable energy sources in electricity procured in the state (Senate Bill (SB) 1078). In 2006, GHG limits were established on electricity imported from out of state (SB 1368).

These regulations and programs form the cornerstone of more comprehensive economy-wide measures to reduce greenhouse gas emissions. In 2005, Governor Schwarzenegger signed Executive Order S-3-05, setting a goal of reducing emissions to 1990 levels by 2020 and 80 percent below 1990 levels by 2050. A multi-agency Climate Action Team was launched to show how the state could comply with these targets. The 2020 goal was codified into law through the Global Warming Solutions Act of 2006 (AB 32), which placed responsibility for developing an emission reduction plan with the California Air Resources Board (CARB). In October of this year, CARB released the proposed AB 32 scoping plan, which outlines how the state will meet the 2020 emissions target (California Air Resources Board, 2008).

According to this plan, California will need to reduce emissions by 169 million metric tons (or roughly 30%) below projected "business as usual" scenario for 2020. About two-thirds of these reductions would come from five programs: GHG emissions standards for passenger vehicles, energy efficiency programs, a more aggressive renewable portfolio standard, a low-carbon standard for transportation fuels, and measures to reduce emissions of gases with high global warming potential (e.g., refrigerants). The plan also recommends that California join with other western states to form a market for carbon emissions ("cap and trade"), which could achieve approximately 20 percent of the targeted reductions.

State Climate Policy and Local Government

Local governments have recently found themselves in the midst of the state's climate policy debates. In 2007, the Attorney General began filing comments on climate-related issues in the environmental reviews conducted by local jurisdictions, and sued San Bernardino County for failing to consider GHG emissions in its proposed general plan update.[1] The case was settled and San Bernardino County agreed to develop a GHG emission reduction plan. Concerns over this case contributed to the passage of SB 97 (2007), requiring the Governor's Office of Planning and Research and the California Resources Agency to develop guidelines for local governments and others to account for GHG emissions when conducting analysis of plans and projects under the terms of the California Environmental Quality Act (CEQA).

CARB's proposed scoping plan outlines two important roles for local governments. First, the plan encourages them to establish emission reduction targets of 15 percent by 2020 for municipal operations and the surrounding community. Although this action is not included among the plan's quantified measures to meet the AB 32 targets, it highlights the important role that local governments can play in implementing programs included in the scoping plan (e.g.,

[1] See http://ag.ca.gov/globalwarming/ceqa.php.

energy and water use efficiency and recycling and waste programs). Such a commitment by local governments would parallel the state's own commitment to reduce GHG emissions associated with its operations. CARB is working to develop tools and resources that will help local governments to establish and reach these targets, including protocols for estimating emissions associated with government operations and the local community.

The second role for local governments is through the regional transportation planning process. The Climate Action Team (2006) estimates that reductions in vehicle miles traveled (VMT) could lower emissions by as much as 18 million metric tons of CO_2 equivalent (or 11%of the 2020 target) by 2020. The proposed scoping plan includes an estimate of the reductions that could be achieved through regional GHG emission targets for passenger vehicles at a somewhat lower level – 5 million metric tons statewide (3 % of the 2020 target).[2] A new piece of legislation, SB 375 (2008), provides the framework for achieving these reductions. SB 375 requires CARB, in consultation with metropolitan planning organizations (MPOs), to develop regional GHG emission reduction targets for passenger vehicles for 2020 and 2035. To meet the targets, each MPO will be required to develop a "sustainable communities strategy" within its regional transportation plan (RTP). If the strategy is not able to meet the target, the MPO must develop an "alternative planning strategy" to show how the target could be met. SB 375 provides incentives for regional and local governments to develop these strategies by providing some relief from CEQA requirements for projects consistent with RTPs that meet the targets. SB 732, a companion bill to SB 375, establishes a Strategic Growth Council, whose activities include awarding grants and loans to aid the development of the sustainable community strategies.

Some of these measures have led to debates regarding the extent to which local governments should be held accountable for emissions in a regulatory framework. Nevertheless, there are also signs of strong local support for California's efforts to reduce GHG emissions. Both the League of California Cities ("the League") and the California State Association of Counties (CSAC) have begun actively promoting local initiatives to fight global warming. The Institute for Local Government (ILG), the non-profit research arm of the League and CSAC, has launched a California Climate Action Network (CCAN) to provide information and outreach to cities and counties on practical steps for implementing local programs and policies. In addition, roughly a third of all local governments have joined one or more initiatives that encourage local government action on the climate policy front, including the U.S. Conference of Mayors' Climate Protection Agreement (25% of the state's cities),[3] ICLEI (an international association of local governments and their organizations that have made a commitment to sustainability) (20%of all cities and counties),[4] and the California Climate Action Registry (4%of all cities and counties).[5]

[2] This estimate is not intended to be a target that must be met through SB 375.
[3] The agreement was initiated in 2005. Signatories commit to meeting or beating Kyoto targets in their own communities, urging state and federal government policies to meet or beat the Kyoto Protocol emission reduction target for the United States, and urging Congress to adopt bipartisan greenhouse gas emission reduction legislation. http://www.usmayors.org/climateprotection/agreement.htm
[4] http://www.iclei.org/
[5] http://www.climateregistry.org/

Surveying Local Governments

These initiatives suggest the potential for considerable local action to address emission reduction goals. However, they do not provide a clear picture of the extent and types of actions local governments are undertaking or considering in different parts of the state. To fill this information gap, the Public Policy Institute of California, in association with ILG, the League and CSAC, conducted a survey of the state's cities and counties over a several month period beginning in May of this year. The survey sought to document the climate-related policies and programs that local governments have adopted or are considering, to solicit information about actions deemed promising as well as barriers to adoption, and to gauge the support that local governments may need to implement local actions. It also sought to document concerns about the potential impacts of climate change on local communities. Completed surveys were received from respondents in 280 cities and 30 counties, for a 58 percent overall response rate (Appendix A). County responses generally refer to policies and programs in the unincorporated areas which are directly managed by the county administration, rather than the entire county land area. City responses are for actions within city boundaries.

In this report, we present the survey responses, supplemented with information obtained from follow-up interviews with roughly two dozen communities across the state. To set the stage, we begin with an overview of the context for local government action: which types of activities fall squarely under the jurisdiction of local governments, and where do other levels of government (e.g. state and regional agencies) and other local entities (e.g. electric and water utilities) play a leading role? The following three chapters review the survey responses in three areas: local efforts to reduce greenhouse gas emissions (sometimes called climate change "mitigation"), local measures to address the impacts of climate change ("adaptation" policy), and barriers to the implementation of local climate-related policies and programs. Responses are generally presented using two metrics: the average for all sampled jurisdictions (with each jurisdiction weighted equally, irrespective of size), and the average for the population covered by the survey (with each jurisdiction weighted by population). As we will see, these measures often differ, because larger jurisdictions are generally more active. The next chapter then asks whether differences in the extent of local action are associated with a wider set of factors: regional groupings, household income, and party affiliation.[6] A concluding chapter summarizes key findings and policy implications.

[6] For more detail on regional breakdowns of the survey responses, see the technical appendix to this report, available at http://www.ppic.org/content/pubs/other/1108EHR_appendix.pdf

The Scope for Local Government Action

Although planning and evaluation tools are important to chart emission reduction strategies, specific policies and programs must be implemented to produce emissions benefits. These include increasing energy efficiency and renewable energy sources; reducing transportation sector emissions by using more fuel-efficient vehicles, increasing the use of alternative fuels, and adopting land use patterns that support alternative modes of travel (taking public transit, bicycling, walking); and achieving efficiencies in other areas, such as water and waste management. In addition, activities such as forestry and wetlands management can provide benefits by sequestering carbon. As the deliberations on the AB 32 scoping plan show, some measures have a larger or faster potential to produce emissions benefits for California. Costs – often measured in dollars per ton of CO_2 reductions - can vary widely, with some measures (such as switching to compact fluorescent lighting) quickly resulting in cost savings, and others (including some tree-planting projects and the development of some renewable energy sources) remaining quite costly (Creyts et al., 2007). Ideally, policies will encourage the adoption of measures where the potential for benefits (including co-benefits such as reducing pollution) is greatest and most cost-effective.

The potential for local governments to play an effective role in reducing emissions will vary across measures, depending not only on the resources available to them, but also on the extent of their authority and influence. Whereas cities and counties may take the lead on some decisions (such as land use patterns and types of buildings), regional authorities or other local entities (such as utilities) are often the lead players on other decisions (such as transportation investments or electricity and water management). Overarching state and federal policies may shape the extent of authority in all of these areas. Local governments typically have the most leeway to take initiative on measures that affect their own facilities and operations. But the potential impact will be greater if they can steer or influence actions at the community level, where their direct authority may be more limited. Here we summarize some of the key roles of different governing institutions, as context for the discussion of survey results on local actions.

Local Government Prerogatives

Land use is often considered the quintessential area of local government authority. Cities and counties have the ability to influence land use and building decisions through a variety of planning and regulatory tools. General plans lay out the broad directions of a community's long-term development plans. The general plan updates, along with a host of more specific planning and project documents, are required to undergo a CEQA review to ensure that they do not cause significant environmental harm (or that this harm is adequately mitigated). Although state law sets a minimum standard for general building codes and for energy codes within buildings (often known as "Title 24" energy and building codes), local governments often have the authority to introduce more stringent requirements in both areas.[7] Finally, zoning codes help shape communities' development footprints – including average lot sizes, densities, urban growth boundaries, and the extent to which neighborhoods are residential, commercial, industrial, or mixed use.

[7] The local government must file an administrative waiver request with the California Energy Commission and Building Standards Commission to set higher standards, but this is generally a formality.

Mixed Local and Regional Authority

Another key local prerogative is the management of various utility services, including electricity, water, wastewater, and solid waste. Although some cities and counties own and operate their own utilities,[8] these services are often provided by special districts and investor-owned utilities, operating under distinct authority and over distinct service areas. Utility actions can encourage the community to conserve electricity through various incentive programs and pricing tools (these can apply to electricity use directly, but also to water use, which is energy-intensive). Both municipal and investor-owned electric utilities generally have the lead in introducing renewable energy sources, although cities and counties can facilitate residential and business investments in solar power, which falls under their permitting authority. They can also promote energy efficiency and green building standards for new residential and commercial buildings through regulation and public education.

Meanwhile, regional agency actions – notably those of regional and county transportation agencies and regional air districts – are especially relevant for transportation planning. Since the early 1990s, the lion's share of federal transportation dollars is spent at the regional level by 18 MPOs. The three largest of these – in Southern California, the San Francisco Bay Area, and the Sacramento Metro Area – overlap with regional councils of government (COGs).[9] In planning road and transit investments, the MPOs often work with the regional air districts, which enforce federal and state air quality standards. Together, these regional agencies will be key players in efforts to reduce GHG emissions from surface transportation, particularly by reducing the emissions caused by congestion and increasing alternatives to solo driving. Regional and local coordination in such efforts is important, because of the interplay between effective transportation investments and "smart growth" land use measures, adopted by cities and counties. By encouraging more transit use, biking, and walking, these measures can lower the demand for driving.[10]

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[8] Statewide, 45 of the 535 local jurisdictions (about 8%) run their own electric utilities, with the remainder run by investor-owned utilities. Roughly 40 percent of California cities run their own water utilities, with the remainder run by special districts (40%) or private companies (20%). About 40 percent of all cities and counties run their own wastewater utilities, with the remainder run by special districts. For solid waste management, many cities and counties contract out to private operators for collection and recycling services. The majority of disposal and landfill operations are handled by private companies.

[9] The Southern California Association of Governments (SCAG) includes Imperial, Orange, Los Angeles, Riverside, San Bernardino, and Ventura Counties and serves as both MPO and COG. The same is true for the Sacramento Area Council of Governments (SACOG), which includes El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties. The Association of Bay Area Governments (ABAG) is the regional COG for the nine-county region including Alameda, Contra Costa, Marin, Napa, Santa Clara, San Francisco, San Mateo, Solano, and Sonoma Counties. The MPO for this region is the Metropolitan Transportation Commission (MTC).

[10] For a review of the literature on development patterns and GHG emissions, see Ewing et al., 2007.

State and Federal Policy Influence

As the examples above show, state and federal policies often define the context for local and regional action by setting standards that must be met or exceeded and by providing resources for local and regional programs:

(1) *Energy use efficiency and renewables.* State policies have been particularly active in this area. California has long been a leader in energy efficiency standards for buildings. The state's renewable portfolio standard, noted above, is shaping utility investments in alternative sources of electricity. In addition, the 1996 Electric Utility Restructuring Act, which mandated that utilities charge a public benefit surcharge for renewable energy, energy conservation, and research, development and demonstration, has provided a funding source for local incentive and outreach programs. The Governor's Million Solar Roofs Program includes several initiatives to encourage solar installations through financial incentives to existing government, business and residential properties and new construction.[11] The recent passage of AB 811 (2008) enables cities and counties to provide community financing programs for solar. The new California Green Building Code (2008) will require at least 15 percent additional savings in energy relative to the existing building code and improved water use efficiency starting in 2010.[12]

(2) *Transportation and land use.* Since the passage of AB 32, state actions have targeted the activities of local and regional authorities in this area in at least two important ways, as noted above. The Attorney General's push to require consideration of GHG emissions impacts as part of general plan updates and CEQA reviews, and related efforts under SB 97 to develop new review guidelines, are reshaping the context of these local land use tools. By requiring regional targets for GHG emissions from passenger vehicles, SB 375 makes the link between smart-growth land use policies and climate policy explicit. It streamlines the CEQA process for local and regional projects that will help meet the regional targets.

(3) *Water use efficiency*. Since the last major drought in the early 1990s, the state has encouraged voluntary measures by providing financial incentives to urban water utilities. These efforts have received a boost in recent years from state laws requiring the installation of water meters in communities that were not billing by use and the screening of water availability before approving new development (Hanak, 2005). After two years of a new drought, the state is considering more explicit conservation requirements, including a goal of 20 percent reductions in per capita water use by 2020.[13]

(4) *Waste reduction and recycling*. The Integrated Waste Management Act of 1989 (also known as AB 939), which became effective in 1990, requires local governments to divert at least 50 percent of the solid waste generated in their community through source

[11] Through several programs, $3.3 billion is being committed, with a goal of producing 3,000 MW of solar energy by 2016 (California Solar Initiative, 2008).

[12] The new code also requires a 20 percent reduction in potable water for indoor use and a 50 percent reduction for outdoor use (CCR Title 24, Part 11 §503-§604). (Recycled water is a potential substitute for potable water used outdoors). The code also requires, among other things, several indoor air quality-related measures and the diversion of 50 percent of construction waste (See ibid. at §§707 et. seq.)

[13] http://www.swrcb.ca.gov/water_issues/hot_topics/20x2020/index.shtml

reduction, reuse and recycling. By 2006, over half of all jurisdictions had waste diversion rates exceeding these levels (California Integrated Waste Management Board, 2006).

(5) *Fuel efficiency standards*. Last, but not least, measures to require higher fuel efficiency in cars and light trucks are an important way to reduce transportation-related emissions, and feature prominently in the AB 32 scoping plan. This is an example of an area where local authority is limited to purchasing practices for the agency's own vehicle fleet. Even state authority has been challenged in this area. California has been in litigation with the federal government to establish the right to enact GHG emission standards for new vehicles sold in the state beginning in 2009, which will include higher fuel efficiency, as called for by AB 1493 (2002).

As we will see, many of the successes local governments are registering on climate policy – particularly at the community level - depend on partnerships with the other levels of governing authority noted here. In addition, local governments have been able to extend their influence through partnerships with non-governmental associations and groups, including local business and residents' associations and organizations such as ICLEI that provide technical support. Some examples of these partnerships are provided below.

In assessing the potential for effective local action, it is also important to bear in mind that the opportunities and costs may vary across communities for reasons such as size, financial resources, and the nature of past and projected growth. For instance, smaller communities are likely to be at a disadvantage in terms of staff resources to address climate issues. Likewise, the scope for actions related to land use and transportation will depend on the community's existing footprint, areas of possible expansion, and potential for transit as a transportation alternative. Thus, there is no one-size-fits-all approach that will be appropriate for all communities across the state.

Local Policies and Programs to Limit GHG Emissions

To develop a picture of local government activities to address climate change and emission reductions, the survey asked a series of questions ranging from the general to the specific: First, is the city or county administration doing any work on climate change issues? Second, is the local government undertaking an assessment of carbon emissions or developing a climate action plan? Third, are regular planning and regulatory processes (e.g. general plans, CEQA reviews, and building codes) being updated to limit emissions? And fourth, what specific types of programs that can help achieve this goal (e.g., renewable energy, transportation, etc.) are being adopted? In this chapter, we examine these answers in turn.

General Activity on Climate Change Issues

A very high proportion of local governments – 75 percent – indicate that they have some general activity underway on climate change issues (Table 1). Because larger cities and counties are more likely to be active, the estimated share of the sample population living in communities with some type of climate change work underway is higher – over 90 percent.[14]

Table 1
Are there departments, divisions, or working groups in your city/county administration working on climate change issues?

	Yes	No	Don't know
Jurisdictions (%)	75	24	1
Population (%)	91	7	2

Note: Sample size is 310.

Emissions Inventories and Climate Action Plans

One of the most concrete steps a local government can take as part of an emission reduction program is to conduct an emissions inventory. Such inventories help identify the main sources of emissions (and hence potential areas for reduction), and they are a necessary component of any programs that track emissions over time. The survey asked whether local governments had already done or were planning to do emissions inventories for two distinct areas: (1) facilities and operations of the local government itself, and (2) the community as a whole.

The responses suggest a strong level of local government involvement in this more detailed type of activity (Table 2). Statewide, over half of jurisdictions surveyed have completed or plan to conduct inventories for local government facilities and operations, and over 40 percent are extending this effort to the community. Because larger jurisdictions are,

[14] As discussed in Appendix A, these statewide estimates for jurisdictions and population use weights to adjust for different response rates across regions. If non-responding jurisdictions have the same pattern of answers as responding jurisdictions within the same region, the sample averages reported here are valid for the state as a whole. If non-responding jurisdictions are less active, the statewide averages would be lower than the sample estimates reported here.

once again, more likely to be active, the share of population covered is even higher, with only a third or less of residents living in jurisdictions without plans to conduct inventories.

Table 2
Has your city/county already conducted or made plans to conduct a carbon emissions inventory to determine current emissions levels from different activities?

For Local Government Facilities and Operations				
	Already done	Plan to do	No plans at this time	Don't know
Jurisdictions (%)	19	36	44	2
Population (%)	46	31	21	2

For the Community as a Whole				
	Already done	Plan to do	No plans at this time	Don't know
Jurisdictions (%)	14	28	57	2
Population (%)	36	32	31	1

Notes: Sample size is 301. Percentages may not sum to 100 due to rounding.

Roughly a third of the communities reporting activity have already completed the inventories, and in many cases the "planned" inventories are already underway. These efforts are particularly prevalent in the San Francisco Bay Area and the Sacramento Metro Area, where there has been support through a variety of regional and county-wide initiatives. For instance, within the Bay Area, communities in Sonoma County were involved in a joint countywide assessment. In San Mateo and Santa Clara Counties, city and county governments have been working in partnership with a local business group, Joint Venture Silicon Valley, and in Alameda County the effort is coordinated with the help of the county waste authority, StopWaste.Org.[15] Some Bay Area communities have also received financial support from the Bay Area Air Quality Management District. In the Sacramento area, both SACOG and the Sacramento Metropolitan Air Quality Management District have played a leadership role, with funding support from the air district.

Local governments typically partner with outside parties to conduct the inventories. ICLEI has been a particularly important partner in the Bay Area (currently working with San Mateo and Santa Clara communities, for instance). Specialized consulting firms are also active. As discussed below, the development of these inventories has revealed a host of questions regarding data availability and reliability as well as appropriate methods for attributing certain types of emissions – particularly those related to VMT. The experiences suggest that these inventories will often need to be considered "works in progress" – to be revisited as data and methods are refined.

A climate action plan can be used to identify emission reduction targets and the policies and programs that will be employed to reach them, as well as other actions the community may wish to undertake to prepare for the impacts of climate change, such as sea level rise and higher temperatures. Although few communities already have such plans completed, slightly over

[15] StopWaste.Org is the Alameda County Waste Management Authority and the Alameda County Source Reduction and Recycling Board, operating as a single public agency.

half intend to prepare them (Table 3). Because some of the state's largest communities have already developed plans (e.g. Los Angeles, San Diego, and San Francisco), close to a third of the population is already covered.

Table 3
Has your city/county developed a climate action plan?

	Yes	Not yet, but plan to	No	Don't know
Jurisdictions (%)	7	45	45	2
Population (%)	31	41	25	3

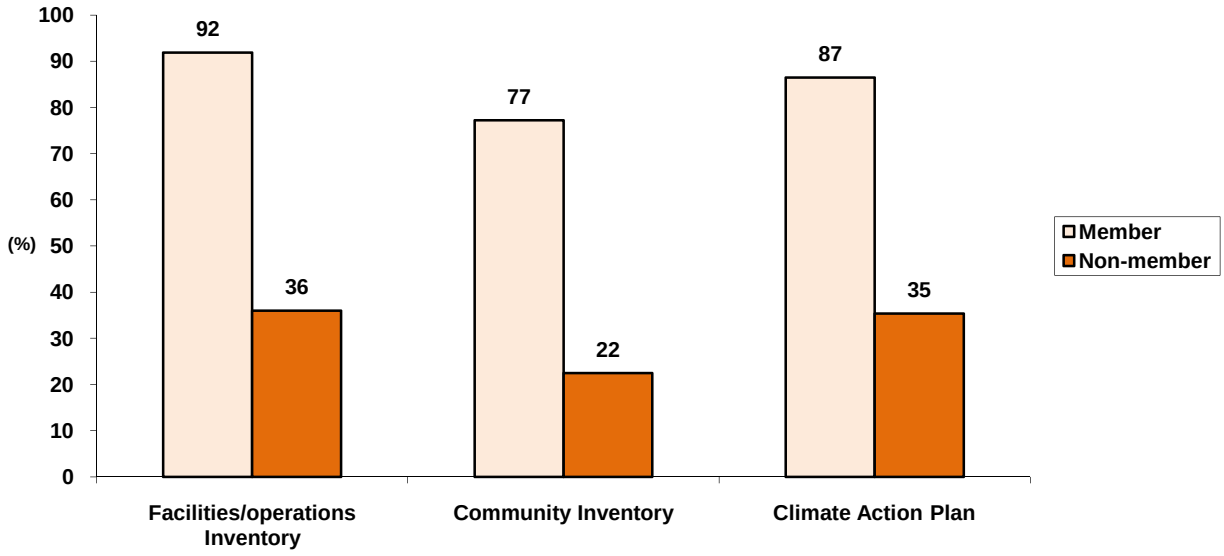
Notes: Sample size is 307. Percentages may not sum to 100 due to rounding.

Not surprisingly, there is a high degree of overlap between jurisdictions that are developing emissions inventories and preparing climate action plans: the inventories identify the baseline, and the plans become the blueprint for meeting emission reduction goals. Interviews revealed that this planning process is frequently going beyond climate change issues to address broader sustainability goals. For instance, the City of Sacramento has developed a Sustainability Plan, which incorporates targets related to congestion, livability, water conservation, and other areas.[16] San Jose's Green Vision Plan includes targets related to clean tech job creation, tree planting, and bicycle/pedestrian trails, among others.[17] This approach acknowledges that actions to reduce GHG emissions can have important co-benefits in other specific areas – such as reducing pollution, lowering energy costs, and improving the quality of open space and the urban environment – with the potential for more general benefits to the local economy and quality of life.

Cities and counties that are members of the various climate initiatives (ICLEI, the U.S. Conference of Mayors' Climate Protection Agreement, CCAR) are much more likely to be developing inventories and action plans (Figure 1). This higher level of activity is not surprising for members of ICLEI, one of the primary sources of information and technical support on the conduct of emissions inventories. The fact that signatories to the Mayors' Conference are also more active suggests that membership in this group – sometimes seen as a symbolic gesture – is often backed by concrete policies.

[16] See Sacramento Sustainability Master Plan: www.cityofsacramento.org/generalservices/sustain.
[17] http://www.sanjoseca.gov/pdf/SanJoseGreenVision.pdf

Figure 1
Climate initiative membership and climate policies



Notes: Figure shows shares of jurisdictions with completed or planned emissions inventories and climate action plans, for members of a Climate Initiative (ICLEI, Mayors' Conference, CCAR) and non-members. Sample size is 301 for inventories and 307 for climate action plans.

Updating Existing Planning and Regulatory Tools

The next set of questions focused on the existing set of planning and regulatory tools – general plans, CEQA reviews, and energy, building, and zoning codes. Because local land use and building decisions can influence a community's carbon footprint, updating these planning and regulatory documents is a potentially important component of local climate policy. The survey asked cities and counties whether they had already incorporated measures within these documents to limit greenhouse gas emissions, or had plans to do so. As seen in Table 4:

- Roughly two-thirds of all jurisdictions answered "yes" to these questions regarding general plans and CEQA reviews.

- Roughly half answered "yes" for modifying building codes, energy codes, and zoning requirements.

- The share of the population living in communities undertaking revisions to their general plans, CEQA review criteria, and building codes is significantly higher, because larger jurisdictions are more likely to be active in these areas.

Table 4
Has your city/county incorporated measures to limit greenhouse gas emissions into the following planning or regulatory processes?

	Already done	Plan to do	No plans at this time	Don't know
General Plan policies				
Jurisdictions (%)	15	52	28	4
Population (%)	20	64	13	3
CEQA reviews				
Jurisdictions (%)	22	44	28	7
Population (%)	31	51	12	6
Building codes				
Jurisdictions (%)	13	43	37	8
Population (%)	27	47	18	8
Title 24 energy codes				
Jurisdictions (%)	19	32	34	15
Population (%)	19	31	17	33
Zoning requirements				
Jurisdictions (%)	8	44	41	8
Population (%)	8	47	19	26

Notes: Sample size ranges from 301 to 303. Totals may not sum to 100 because of rounding.

The tool for which the largest share of communities reported already having introduced modifications is CEQA reviews. This is perhaps not surprising, given the attention focused on this process by the Attorney General's Office, noted above. However, written comments and follow-up interviews revealed that this is still largely an informal process, with consultants being asked to look at emissions in the context of individual CEQA reviews. There remains considerable uncertainty about how to appropriately use CEQA as a carbon emission reduction tool. Questions abound concerning when a plan or project surpasses a "threshold of significance" for carbon emissions, which would necessitate more detailed review and specific mitigation measures. For this reason, some local governments are waiting for guidance from the state, notably the new CEQA guidelines due January 1, 2010. As shown below, many local governments view the lack of state guidance as a barrier to adopting and implementing effective climate-related policies and programs.

Specific Policies and Programs

The survey next asked respondents to identify whether they had already adopted or were considering adopting policies or programs in nine specific areas that can limit greenhouse gas emissions. To acknowledge that activities might be adopted primarily for reasons other than climate change, the question was introduced with the statement:

"Some local governments have adopted or are considering adopting new policies and programs designed to limit greenhouse gas emissions. In addition, some policies and programs may have emissions benefits, even if they were not adopted for that purpose. These programs may target different sectors, such as local residents or businesses or city/county departments."

Respondents were asked to indicate the focus of the activities – whether on internal operations (city/county facilities and operations), local businesses, and/or local residents. They were also given the option of indicating other areas of action, and were asked to describe successes and difficulties. All nine areas are targeted by the California Climate Action Network's outreach efforts to local governments.[18] As a guide to the overall patterns of responses, it is useful to review the types of emission benefits associated with each area and the types of activities local governments reported in written responses and follow-up interviews:[19]

(1) *Renewable energy (e.g. solar, wind, methane digesters)*. Renewable sources can reduce emissions by substituting for carbon-based fuels. The most frequently mentioned activities related to solar installations on municipal facilities. At the community level, some governments are waiving permit fees for solar, and several are providing additional incentives. Roseville's city-owned utility recently embarked on an ambitious solar homes plan by offering rebates to builders for solar installations in new development projects. Berkeley's Solar Initiative provides long-term loans to the community for solar installation. Incentives under the Million Solar Roofs program are beginning to play a role for public facilities (e.g., Watsonville) as well as community installations (e.g., Roseville). Some communities also mentioned successes with methane digesters to power some facilities.

(2) *"Climate-friendly purchasing" (e.g. Energy Star or recycled content)*. Such policies can lead to energy savings (direct emissions benefits) and waste reduction (indirect benefits). Activities reported generally related to the adoption of municipal purchasing policies for recycled, biodegradable, and/or otherwise "green" products.

(3) *Energy efficiency (e.g. energy standards, energy audits)*. By saving energy, such policies and programs can lead to direct emissions benefits. Activities reported included energy improvements in city/county operations, especially through lighting retrofits and use of LED (light-emitting diode) lighting. At the community level, many respondents mentioned voluntary incentive programs to increase energy efficiency in homes by way of energy audits, appliance installations, and other improvements. These programs are generally run by the local utility, sometimes with municipal support. Funding from the public benefit surcharge (described above) is facilitating programs and partnerships. For instance, the Energy Coalition Partnership, a group of ten cities in Southern California, is funded by Southern California Edison's public benefit funds. The partnership has a community outreach program, offers energy tune-ups, distributes compact fluorescent bulbs, and makes direct installations of energy-efficient equipment in residential buildings. Similarly, programs such as ABAG's Energy Watch, funded through PG&E, assist local governments to become more energy efficient. A few

[18] A tenth CCAN area, promoting community and individual action, was not explicitly included in the survey.

[19] The survey included the description shown in italics for each area.

respondents also mentioned programs to introduce the use of "cool roofs" – a potentially important energy-saving device (Akbari, Menon and Rosenfeld, 2007).

(4) *"Green" building (e.g. LEED standards, recycled content, sustainable landscaping)*. Such programs can provide direct energy savings as well as indirect emissions benefits through waste reduction and water conservation. Among local activities, the use of LEED or LEED-equivalent standards (Leadership in Energy and Environmental Design, a third-party certification process run by the US Green Building Council) was commonly mentioned for municipal buildings. Voluntary green building programs targeting the community were also mentioned (LEED for businesses, "Build It Green" for residential construction). The state's recent passage of a Green Building Code is likely to help consolidate these gains. Some communities (e.g., San Jose and Mammoth Lakes) note that market demand has been an important factor in the proliferation of green building; this factor appears to be less of a draw in some other markets.

(5) *Transportation (e.g. fuel-efficient vehicles, alternative fuels)*. Such programs can provide direct emissions benefits by reducing the use of fossil fuels. The most common activity mentioned was improvements in the efficiency of the municipal vehicle fleet. Other activities included traffic efficiency improvements, as well as measures to reduce VMT (carpools for municipal employees, community dial-a-ride programs, and bicycle, pedestrian and public transit improvements targeting the wider community).

(6) *Land use (e.g., transit-oriented development)*. Smart-growth land use is viewed as an important tool for reducing VMT, and hence the use of fossil fuels. Respondents identified land use policies related to development project reviews (e.g. encouraging infill or transit-oriented development), as well as general plan policies for urban growth. Regional transportation planning efforts appear particularly influential in the Bay Area and the Sacramento Metro areas, but there are examples from other regions as well. Chula Vista has engaged in focused land use planning for well over a decade, during a period of high population growth, and has reduced per capita GHG emissions by 17 percent. As part of an effort to manage congestion, Bakersfield's general plan promotes neighborhood clusters of commercial development; this has discouraged longer car trips.[20]

(7) *Waste reduction/recycling (e.g. waste audits, recycling incentives)*. These policies can reduce the production of methane in landfills (a direct emissions benefit) and the amount of new resource use (an indirect benefit of recycling). Respondents citing successes identified waste diversion rates exceeding 50 percent, the current state standard.

[20] In practice, it can be difficult to distinguish between transportation- and land use-oriented measures to promote alternative modes of transportation and reduce solo driving. These two areas overlap somewhat in the analysis of emission reduction potential by the Climate Action Team (2006), as they did in discussions surrounding the development of CARB's scoping plan. The scoping plan ultimately settled on grouping both areas under the rubric of transportation. In our survey, it appears that respondents generally considered an activity to fall into the transportation category if it involved measures to reduce transportation-related emissions with the existing patterns of development, while land use activities related to planning to reduce transportation-related emissions from new development.

(8) *Water use efficiency*. Because water use often has high energy costs for treatment, delivery, and heating, conservation can reduce carbon emissions.[21] Successful activities cited included incentives for low-water landscaping, use of recycled water, and public education. In light of the drought, there appears to be an upswing in the use of incentives to reduce outdoor watering, which often accounts for more than half of residential water use.

(9) *Offsetting carbon emissions (e.g. tree planting, forestry conservation)*. Trees, wetlands, and some other land uses can store, or sequester, carbon. (In addition, shade trees near buildings can lower energy use for cooling.) Some carbon offset programs enable users to pay others to engage in emission-reducing behavior. Activities mentioned by respondents included tree planting and participation in PG&E's Climate Smart program, which provides offsets to make customers' energy use carbon neutral.

Table 5 summarizes the share of jurisdictions statewide with activities or plans in each area, ranked in order of prevalence for facilities and operations. Some patterns are striking:

- First, there is generally much more activity targeting facilities and operations of the local government administration than the wider community. At least half of all jurisdictions report existing or planned programs in seven out of the nine areas (everything but land use and carbon offsets). The most prominent areas are waste reduction and transportation (80%), followed by energy and water use efficiency (nearly 75%). The high level of waste reduction activity is likely due in large part to prior work at the local level as a result of AB 939, noted above.

- Second, activity rates are similar for programs targeting businesses and residents. The only areas where at least half of all jurisdictions are active are waste reduction and water use efficiency. At the other end of the spectrum, only 11 percent of all governments are targeting transportation-related activities at the community level. Various energy-related programs, green building, and land use fall in between, at roughly 30 to 40 percent community-level involvement.

- Third, once again, larger jurisdictions tend to be more active, across the board (Figure 2). Larger communities stand out for renewable energy, energy efficiency, and green building (for facilities and operations and for the community), land use and waste reduction (for the community) and carbon emissions offsets (for facilities and operations).[22]

[21] A California Energy Commission (2005a) study estimates that water accounts for nearly 20 percent of the state's electricity use. The proposed scoping plan foresees reductions of 4.8 MMT CO_2-equivalent from this sector.

[22] For activities targeting facilities and operations (not shown in Figure 2), the share of population covered in the areas mentioned was 15 to 22 percentage points higher than the share of active jurisdictions.

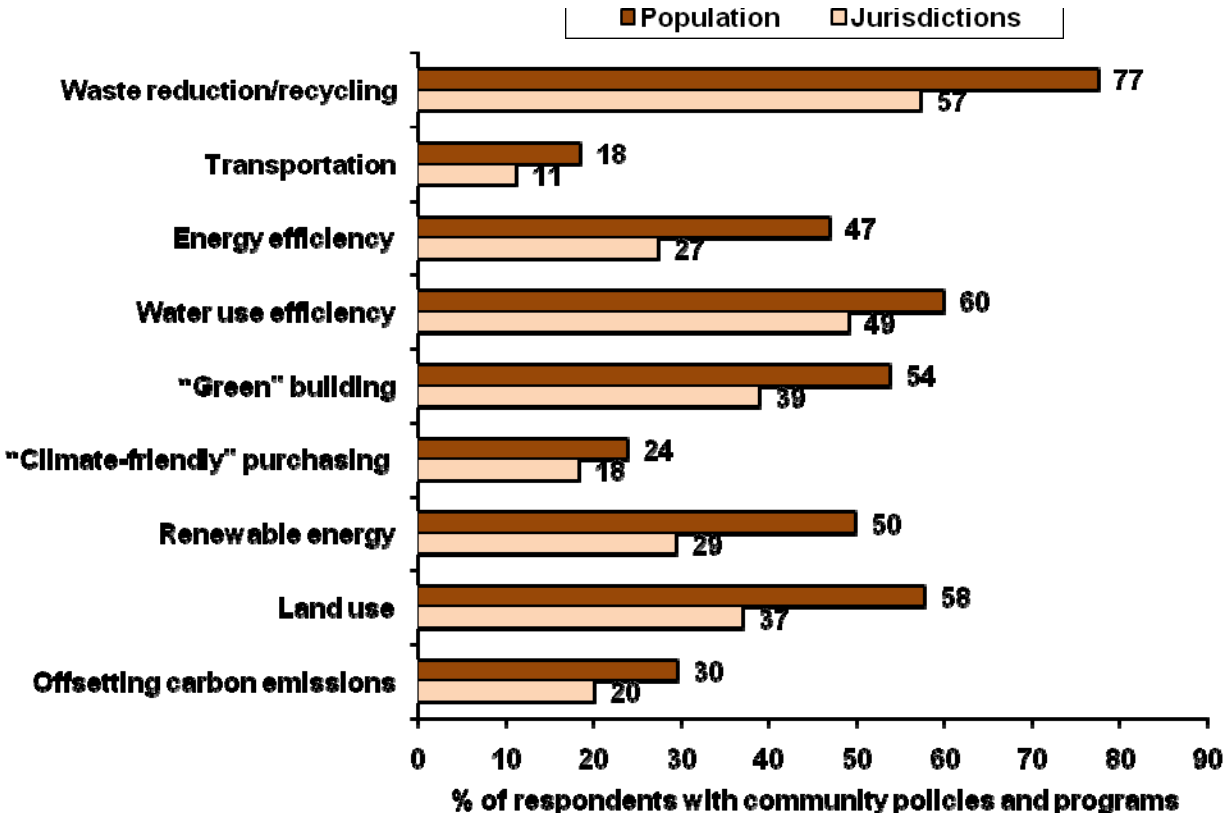
Table 5
For each of the following areas, please indicate whether your city/county has current or planned policies or programs targeting activities of city/county departments, the business community, and/or local residents (% of jurisdictions)

	Facilities and operations	Local businesses	Local residents	No programs or plans at this time	Don't know
Waste reduction/recycling (e.g. waste audits, recycling incentives)	80	58	56	16	1
Transportation (e.g. fuel-efficient vehicles, alternative fuels)	80	11	11	18	1
Energy efficiency (e.g. energy standards, energy audits)	74	29	26	22	1
Water use efficiency	73	49	50	20	3
"Green" building (e.g. LEED standards, recycled content, sustainable landscaping)	65	42	36	28	2
"Climate-friendly" purchasing (e.g. Energy Star or recycled content)	65	18	18	28	3
Renewable energy (e.g. solar, wind, methane digesters)	50	29	30	40	1
Land use (e.g. transit-oriented development)	46	38	35	33	5
Offsetting carbon emissions (e.g. tree planting, forestry conservation)	45	20	20	48	5

Notes: Sample sizes range from a low of 300 (water use efficiency) to a high of 308 (waste reduction).

From written responses and interviews, the general picture that emerges is that although climate change is not generally the driving force behind the adoption of these policies and programs, many communities are now considering them in light of new climate-related objectives. In some cases, inventories are being conducted to see what is already being done and what new activities can be added. In other places – especially where there is less support for climate-related policies among local elected officials – activities are promoted on grounds other than emission reductions. In particular, cost savings from various efficiency measures (energy, water) appear to be a strong selling point for doing makeovers of city and county facilities and operations.

Figure 2
Policies or programs targeting the community



Notes: Response rates are based on the average for businesses and residents.

As some of the examples noted here suggest, partnerships are often key to the successful introduction of these policies and programs. Because most energy and water utilities are distinct entities, local governments need to work cooperatively with them to have the greatest effect. Utilities may provide funding for community outreach – for instance, the public benefit funds for energy efficiency. For water use efficiency, coordination between water utilities, local governments, and builders has been successful in encouraging the introduction of low-water landscaping in new developments and the use of more recycled water. In areas such as land use and transportation planning, coordination among local governments within a county or region appears beneficial, and perhaps essential. SACOG's blueprint planning exercise – an effort involving community participants as well as local and regional officials in the development of the regional transportation plan – appears to have been a particularly influential tool.

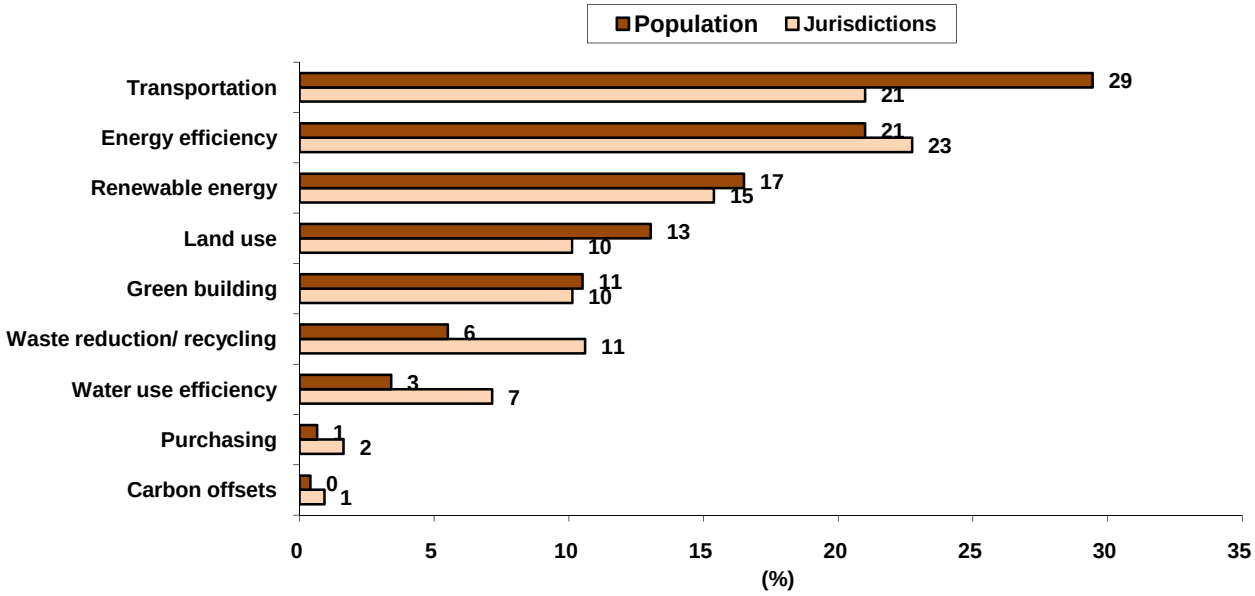
Non-government organizations, including those with a national scope (U.S. Green Building Council) and more locally-oriented groups (e.g. Monterey Green Action in the City of Monterey and the California Sustainability Alliance in the City of Irvine) have often been important partners and catalysts. Community task forces (e.g. Solana Beach's Clean and Green Team and the City of Riverside's Clean and Green Action Taskforce) and local business groups

(e.g. in Silicon Valley) have been very helpful to local governments in prioritizing and mobilizing plans and policies.

Ranking the Action Areas

At present, many local portfolios reflect a collection of existing activities responding to a diverse set of policy goals, rather than a carefully charted plan to reduce greenhouse gas emissions. To gauge the scope for future policy directions, it is of interest to understand how municipal officials view the nine action areas in terms of their potential to reduce emissions within their community. Figure 3 reports the results of a ranking exercise, wherein survey respondents were asked: "Please rank the three types of programs that have the greatest potential to reduce carbon emissions in your city/county." To summarize the responses, each top-ranked area was given a score of three, with the second- and third-ranked areas receiving a score of two and one, respectively.

Figure 3
Local officials' ranking of programs that have the greatest potential to reduce carbon emissions in their city/county



Notes: Sample size equals 294.

The survey responses suggest that local governments – and particularly larger communities – are largely aware of the relative emissions benefits of various activities, even though their current portfolios may not reflect this ranking. The top three areas listed – transportation, energy efficiency, and renewables – are also at the top of the list of emission reduction measures included in CARB's proposed scoping plan. Including green building (primarily an energy-saving tool), these four areas account for 69 percent of the total survey response when jurisdictions are weighted equally, and 77 percent when they are weighted by population size. Although current or planned local government actions in these areas are fairly

widespread for facilities and operations, their coverage falls off dramatically at the community level – particularly for transportation (Table 5).

Land use – the quintessential local government tool - is ranked lower than actions such as improved fuel efficiency and renewable energy, on which local governments have much less influence. This ranking suggests that local governments view this policy tool as an important, but less immediate, means of addressing climate change. Given the weight of existing land use patterns relative to the pace of new development, many analysts view land use as a more important tool for meeting California's longer term (2050) emission reduction goals (California Air Resources Board, 2008). Because this will be a gradual process, however, it is important to start now. Today, just over a third of all jurisdictions (covering 58 % of the population) have current or planned activities targeting community land use (Figure 2). SB 375 provides a framework for further action.

The remaining four areas – waste reduction, water use efficiency, climate-friendly purchasing, and carbon offsets – have relatively minor roles in the views of the larger communities (in all, accounting for 10 percent in the population-weighted scores). Smaller communities give higher marks to waste reduction and water use efficiency – two areas where they are most likely to be active.

Preparing for the Impacts of Climate Change

As highlighted by a widely publicized statewide scientific assessment, significant impacts of global warming are anticipated in California, even if global efforts to limit GHG emissions are highly successful (Cayan, et al., 2006). [23] California's communities will need to prepare for these changes by developing adaptation strategies.[24] Such strategies include actions to make communities less vulnerable or more resilient to threats such as wildfires, extreme heat, and flooding, which are expected to increase as a result of global warming. The appropriate responses will likely vary considerably across the state.

To date, adaptation has generally received more limited attention in policy circles than mitigation. For instance, at the international level, adaptation came into focus with the fourth report of the Intergovernmental Panel on Climate Change (2007). In California, the state has only recently begun to develop a comprehensive approach to this issue.[25] Our survey sought to see where local governments currently stand. This section of the survey began with a brief introduction on climate change impacts:

> *"While much of the focus of state climate policy has been on reducing greenhouse gas emissions, there is also increasing discussion of how to prepare for the potential risks to California's economy and society from the impacts of climate change. These potential impacts include sea level rise, higher air and water temperatures, more extreme weather events (e.g., floods, drought, and storm surges) and a declining mountain snowpack."*

Respondents were then asked to report on whether the potential impacts of climate change had begun to receive attention, what types of impacts had raised concern, and whether certain planning and regulatory processes had begun to address the impacts of climate change.

Awareness of Climate Change Impacts

Like their counterparts at higher levels of government, California's cities and counties appear to be less active on adaptation than on mitigation. When asked "Has there been analysis or discussion of the potential impacts from climate change on your community," only 36 percent of respondents answered in the affirmative – less than half the share that reported work on climate change issues more generally (see Table 1). The population living in communities assessing impacts is larger (59 %), because larger communities are, once again, more active. Doing some work on climate change appears to be a precondition for assessing impacts – very few communities are doing the latter without doing the former.

Across the state, only the Bay Area stands out as having climate change impacts broadly on the radar (60 % of jurisdictions responding "yes," and 76 % of the population covered). Bay Area communities have likely profited from the extensive regional outreach conducted on

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[23] Much of this research now appears in a special issue of the journal *Climatic Change* (Vol. 87, Supplement 1, March 2008). For information on the second statewide assessment, due to be released in early 2009, see: http://www.climatechange.ca.gov/research/2008_assessment/index.html

[24] For an in-depth analysis of the adaptation challenges facing California, see the collection of reports from the PPIC project, *Preparing California for a Changing Climate*. Bedsworth and Hanak (2008) provide a summary of this work.

[25] http://www.climatechange.ca.gov/adaptation/

climate change impacts by the San Francisco Bay Conservation and Development Commission, in association with ABAG, the MTC, and the regional air district.

Interestingly, California's residents appear to be more concerned about the impacts of climate change than these responses on local activity imply. According to a July 2008 PPIC survey of 2501 California adults, 69 percent believe that the effects of global warming have begun to happen or will begin to happen within a few years, with few differences across regions (Baldassare et al., 2008). Seventy-nine percent believe that global warming is a very or somewhat serious threat to the economy and quality of life for California's future.

Those communities that *are* assessing climate change impacts appear relatively well-informed about the broad types of changes to expect (Figure 4):

- Water supply impacts, mentioned by half of local government respondents, are expected to result from the declining snowpack and the potential for more severe droughts. These have been among the most discussed in the state, highlighted by state water officials and local and regional water agencies.

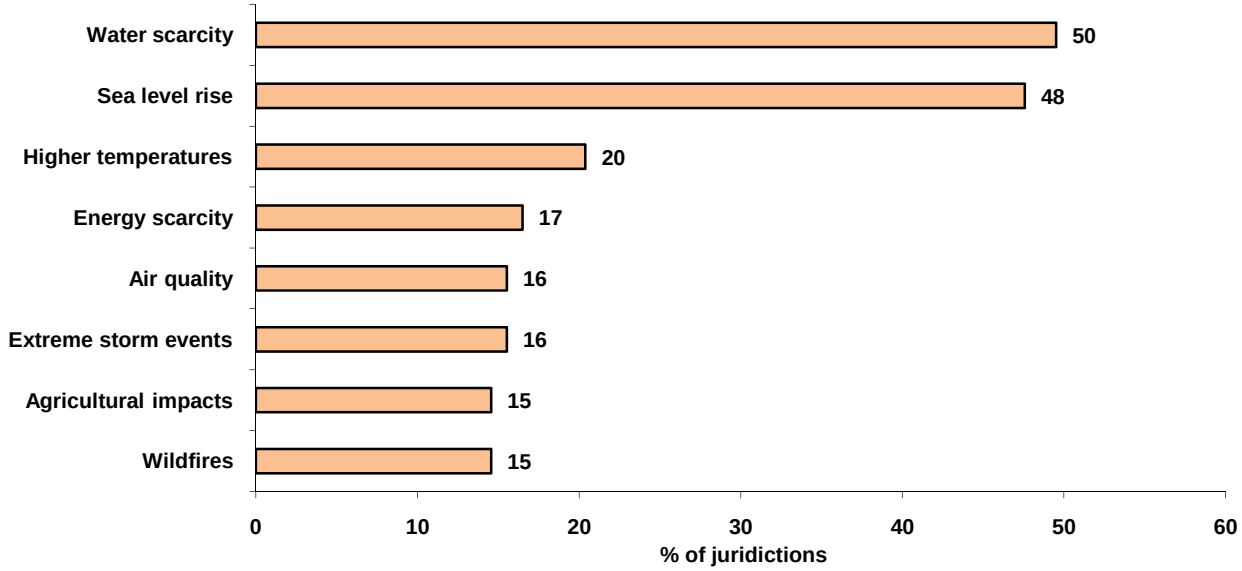
- Sea level rise (48% of respondents) was highlighted by communities in the Bay Area and the Central Coast, both of which are particularly vulnerable.

- Higher temperatures (20%) will have direct effects (e.g. on public health) as well as indirect effects on air quality (16%) and peak energy demand. Combined with a potential decline in hydroelectric capacity, these demand changes may result in energy scarcity (17%).

- Extreme storm events (16%) were particularly highlighted by Central Coast and Sacramento area communities, and wildfires (15%) by communities in the South Coast, where widespread evacuations occurred in 2007.

- Changes in water availability and the rise in extreme events are both likely to affect conditions for the agricultural sector (15%).

Figure 4
Potential climate change impacts of concern
(% of jurisdictions)



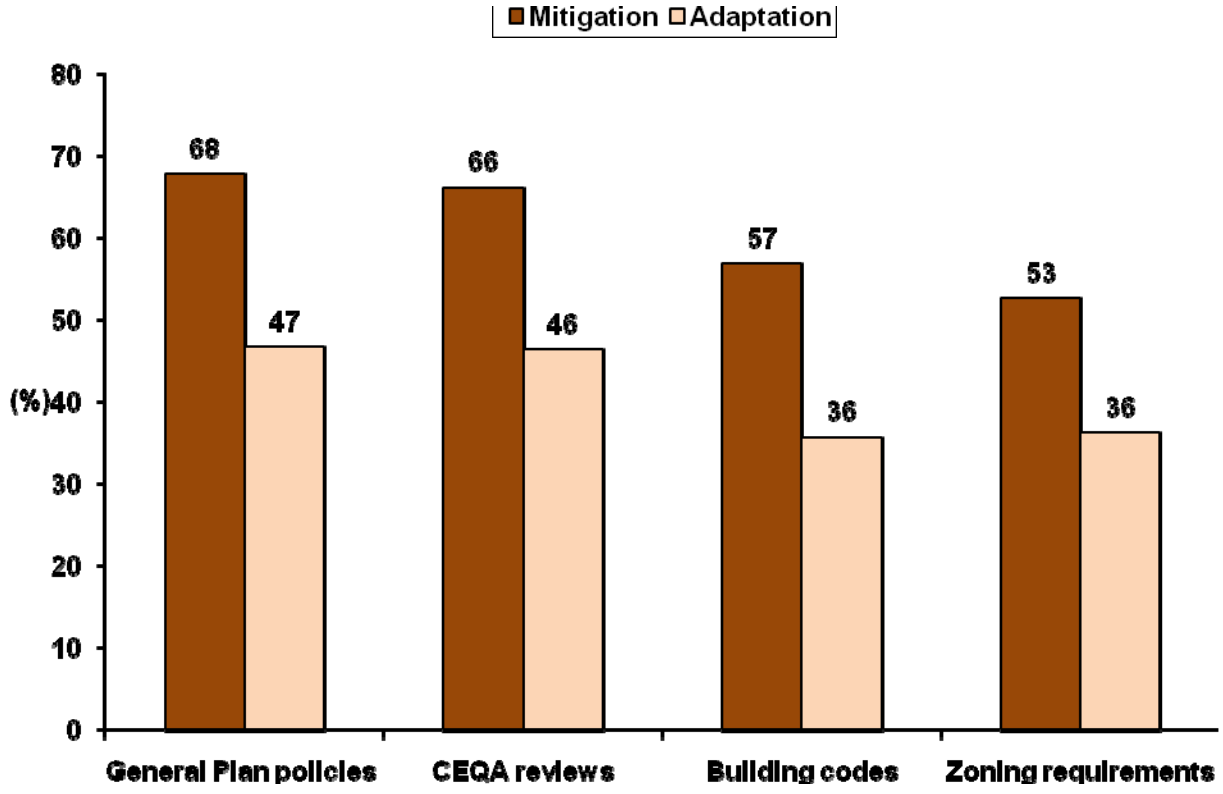
Notes: Sample size equals 103. (Only those respondents whose communities were assessing impacts answered the question about areas of concern). The figure reports topics mentioned by at least 10 percent of the sample, based on answers to an open-ended question about potential impacts that had raised concern.

Updating Existing Planning and Regulatory Tools

Many of the same planning and regulatory tools that local governments can use to foster GHG emission reductions – general plans, CEQA reviews, building codes and zoning requirements - can also help prepare communities for the impacts of climate change. In this case, the question is how land use and building decisions may need to adjust to limit vulnerability to the anticipated changes in the climate. For instance, in communities facing a higher risk of flooding from sea level rise, storm surges, or higher riverine flood flows, it may make sense to reconsider which locations are appropriate for new construction and whether building standards should be modified (e.g. by raising minimum base heights). In areas likely to become more susceptible to wildfires, requiring more fire-resistant building materials may be in order. Various decisions about local public works – location of drainage, access roads – also come into play.

Local governments report fewer efforts to update these tools to prepare for climate change, as compared to efforts associated with GHG emission reduction. Figure 5 compares the share of communities that have already updated or plan to update tools to address emissions (a mitigation focus) with the share incorporating measures to address the impacts of climate change (an adaptation focus). In general, a third fewer communities are planning to address adaptation.

Figure 5
Communities addressing climate change mitigation and adaptation in planning and regulatory tools
(% of jurisdictions)



Notes: Figure reports the share of jurisdictions that have already done or plan to incorporate climate-related measures. For details on the mitigation question see Table 4. For the adaptation question, sample size ranges from 298 to 302. The share reporting "don't know:" general plans (7%), CEQA reviews (9%), building codes (10%), zoning requirements (10%).

Of course, it is not necessary for local governments to incorporate mitigation and adaptation measures simultaneously. It may actually be most sensible to wait on some changes until better information is available about the types of adaptation measures that will be needed, as the nature of climate changes becomes clearer. However, it will also be prudent for communities to consider some types of adaptation measures sooner, rather than later. In particular, it makes sense to take a long-term perspective on risk prevention when durable public and private investments are involved. Given that general plans are typically only revisited every decade or so, it will be a missed opportunity if communities incorporate climate change mitigation without also considering the potential response to climate change impacts.

Barriers to Adoption of Climate-Related Actions

The final part of the survey asked respondents to provide their assessment of the extent to which informational, resource, and institutional barriers were limiting their local government's ability to develop climate-related policies and programs. The section began with the following statement:

> *"In recent debates about local governments' role in climate policy, discussions have highlighted potential barriers to local action, including information, resources, and other factors. Here, we ask several questions about these potential barriers, to help assess how state, regional, or other organizations might support local governments."*

Informational Needs and Constraints

When asked whether they have adequate information to develop effective climate-related policies or programs, only 36 percent of survey respondents answered in the affirmative (Table 6). The share of the population living in communities with adequate information is somewhat higher (54%). Confidence in information is linked to action: Communities that believe they have adequate information are nearly twice as likely to be undertaking carbon emissions inventories and developing climate action plans.

Table 6
Do you feel your city/county has adequate information to develop effective climate policies or programs?

	Definitely adequate	Probably adequate	Probably inadequate	Definitely inadequate	Don't know
Jurisdictions (%)	6	30	37	24	2
Population (%)	10	44	27	18	1

Notes: Sample size is 301.

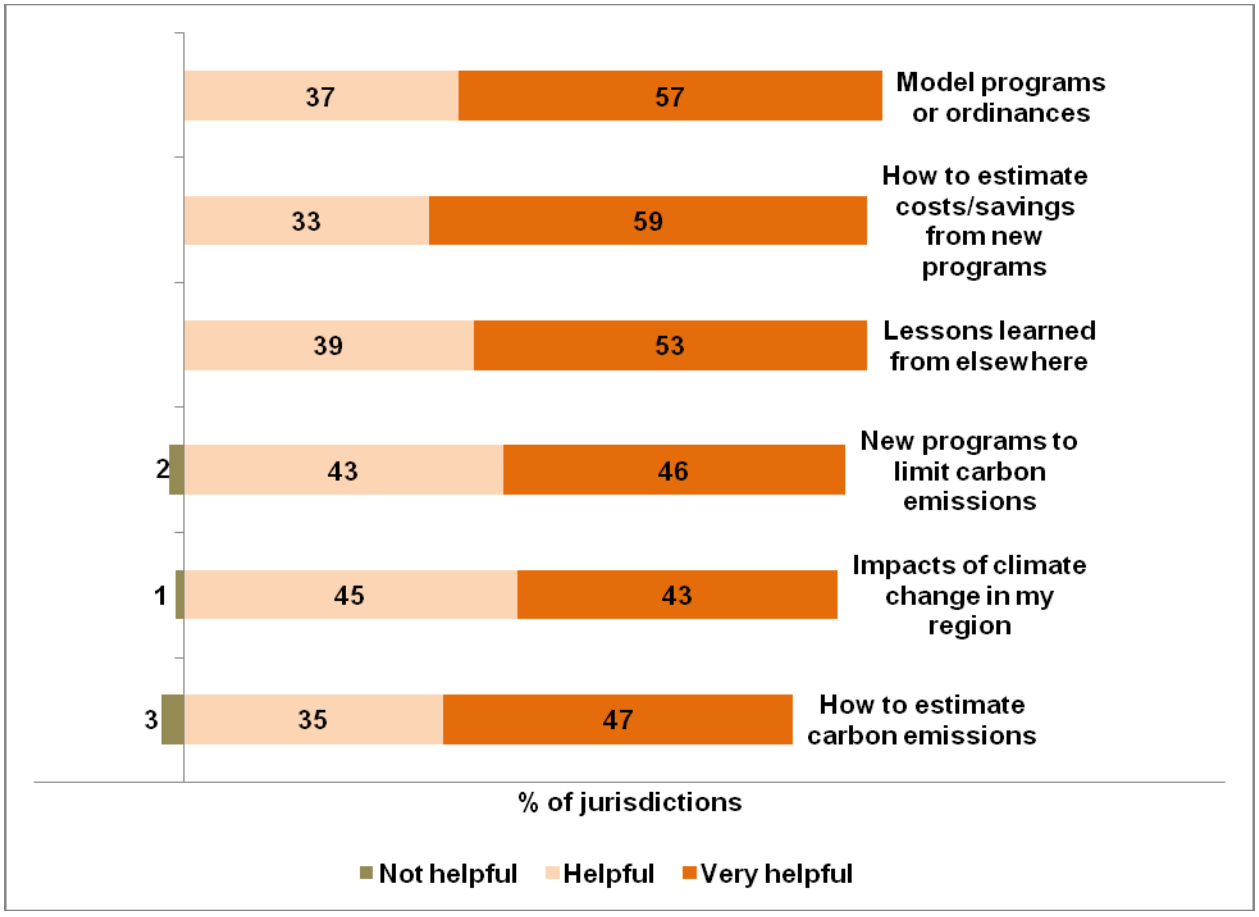
Respondents were then asked to identify whether six different types of information would be helpful to the development of their climate-related activities (Figure 6). The demand for more information is strong, particularly for methods to estimate costs and savings from new programs, model programs and ordinances, and lessons learned from elsewhere (all above 90%).

The slightly lower score for information on how to estimate carbon emissions (82%) arises because some particularly active communities feel they already have the information they need for this work. However, interviews and written comments suggest that emissions inventories are still quite problematic, particularly for the community-level inventories that will be used to develop emission reduction plans. One problem highlighted is availability of adequate data from third parties (notably electric utilities) – this information is often slow to arrive, and not always accurate. Another concern is the measurement and allocation of VMT from land use and transportation. For instance, the widely-used ICLEI method for developing emission inventories applies a rough rule of thumb for allocating VMT on highways to the

adjacent community. Although this method can create a broad picture, it is not sufficient for a more detailed planning exercise, and certainly would be problematic in a regulatory context.

Going forward, it will be useful to share innovations being explored by some communities and their partners in this area. One particularly interesting exercise to watch is the work by the City of Irvine and ESRI, the Geographic Information Systems software company, to develop land-use based inventories and projections of carbon emissions to refine emission reduction programs.

Figure 6
How useful would the following types of information be to your city/county in developing its climate policies and programs?
(% of jurisdictions)



Notes: Sample sizes range from 301 to 304. Between 4 and 11 percent of respondents answered that the information would be neither helpful nor unhelpful, and between 3 and 4 percent answered "don't know."

Most inactive or less active communities expressed strong demands for information about various climate policy tools.[26] This suggests that there are opportunities for information providers – including state and regional agencies and non-governmental groups – to help local governments develop their climate policies and programs by improving the knowledge base.

Resource Needs and Constraints

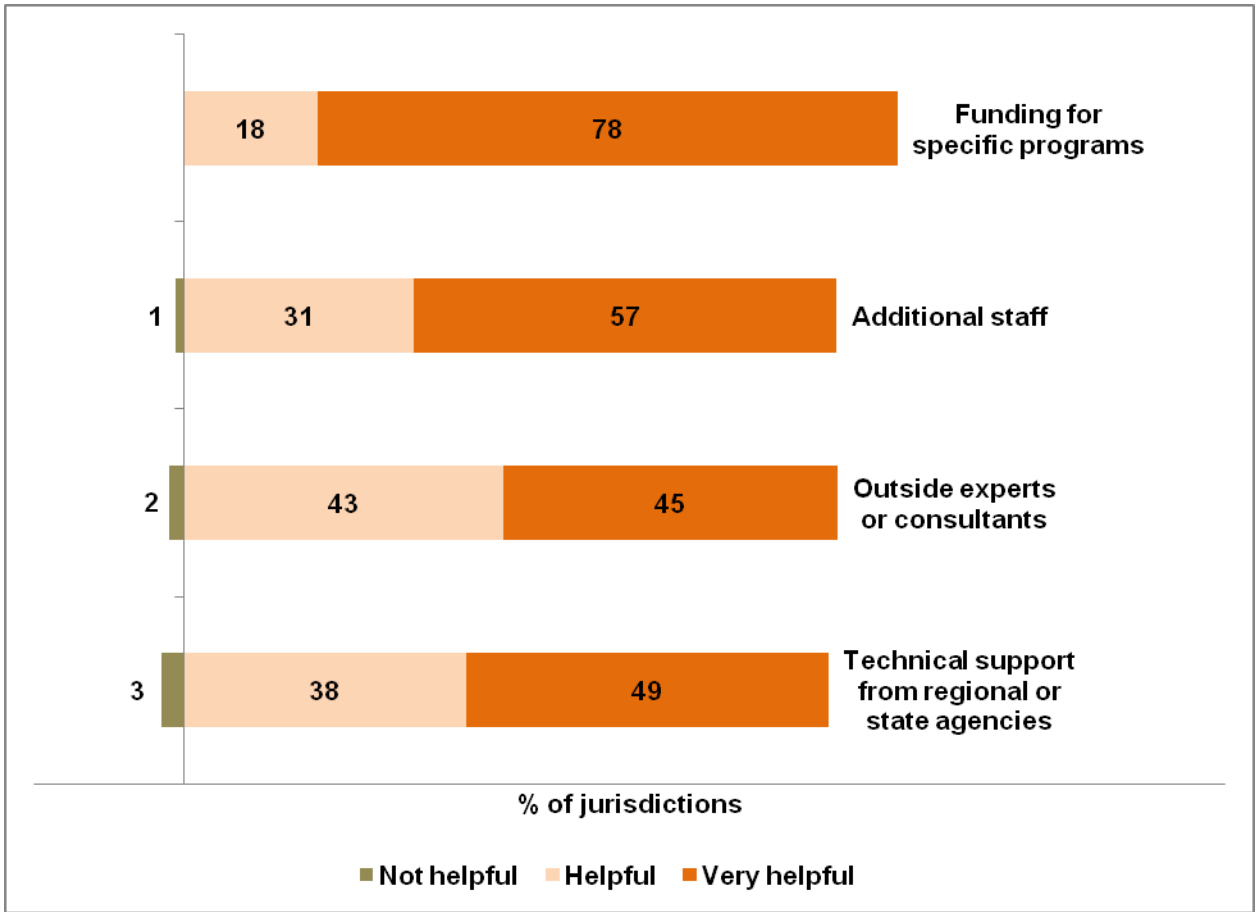
Even though there are some clear gaps in and needs for information, the constraints appear much greater when it comes to resources to develop and implement climate-related policies and programs. Eighty-six percent of all jurisdictions consider their resources (staff and or funding) definitely or probably inadequate for the task. Communities that are currently inactive – with no departments, divisions, or working groups looking at climate change issues – are more likely to report resource constraints.[27] As with information, these results suggest that greater resource availability could facilitate broader local government participation in climate-related work.

As with information, respondents generally would find a full range of additional resource support helpful, although there are differences in degree (Figure 7). Perhaps not surprisingly, the most flexible type of support - funding for specific programs - scored particularly high (with 96 % of the sample considering such support to be very helpful or helpful). The other three areas, including various types of staffing/technical support, were scored positively by nearly 90 percent of respondents.

This overall perception of funding as a limiting factor is consistent with descriptions of implementation difficulties in the nine program areas noted in Table 5. By the same token, the success stories are often tied to innovative funding strategies. In addition to drawing on the traditional local finance toolkit (e.g. local taxes, assessments and impact fees), cities and counties are tapping outside resources, including grants, low-cost loans, and other types of support from utilities, other government entities, and various private and non-governmental partners, as seen in the following examples.[28]

[26] We verified this by examining information demands for jurisdictions answering "no" to the question about general activity (Table 1), jurisdictions indicating that they have no plans for emissions inventories (Table 4), and jurisdictions with low rates of activity in specific areas (Table 5).
[27] Fifteen percent of those who are active (as reported in Table 1) considered their resources definitely or probably adequate, versus only 3 percent of those who are inactive.
[28] For an Institute for Local Government review of the pros and cons of different funding sources for open space, see www.ca-ilg.org/openspace. Many of the same issues are relevant for climate change programs.

Figure 7
How useful would the following resources be to your city/county in developing its climate policies and programs?
(% of jurisdictions)



Notes: Sample sizes range from 303 to 304. Between 2 and 9 percent of respondents answered that the resources would be neither helpful nor unhelpful, and between 1 and 2 percent answered "don't know."

Mobilizing Local Taxes, Fees, and Assessments

(1) *Public bonds and taxes:* Local governments can ask their constituents to approve public financing of projects through bonds and taxes. San Francisco voters approved a public bond for solar investments. Berkeley secured voter approval for climate-related activities before putting together a climate action plan.[29] Emeryville's local shuttle (which connects to the BART light-rail system) is funded by an annual property tax

[29] Berkeley's voter-approved Measure G (2006) advises the city to go forward with a climate action plan while recognizing that the costs of implementation are yet unknown.

assessment on commercial areas. Such measures can be difficult to pass, often requiring approval by two-thirds of voters.[30]

(2) *Public Works Fees.* Revenues from public works fees (e.g., bridge tolls, parking fees, utility fees) can be used to fund programs such as transit improvements and water use efficiency. The City of Riverside, which runs its own water utility, will use some of the proceeds from higher water rates to fund conservation programs. Such a program has been operating successfully in the service area of the Irvine Ranch Water District for over a decade. Some fees (e.g. for water and wastewater) can be raised to cover costs without direct voter approval.

(3) *Impact fees:* Local governments can include fees to mitigate emissions in impact fees on new development. For instance, Chula Vista plans to fund existing building retrofits by charging developers a mitigation fee on new buildings that fall below certain performance thresholds. The Sacramento Metropolitan Air Quality Management District is considering emissions mitigation fees for new development. The Indirect Source Review (ISR) Rule used by San Joaquin Valley Unified Air Pollution Control District could also be used to set up a land use mitigation fee structure for greenhouse gas emissions (Lawrence Frank and Company, Inc., 2008). Developers often resist new impact fees because they may reduce profitability; however, such fees are often more palatable to existing residents than more broad-based increases in taxes or fees.

Tapping Outside Resources

(4) *Support from local partners.* The importance of the public benefit funds made available by electric utilities has already been noted. Broader partnerships with other local utilities and agencies have also proven useful. For instance, Chula Vista's Conservation and Environmental Services Department is partially funded by the local water and electric utilities and the regional transportation planning authority (San Diego Association of Governments (SANDAG)). In San Jose, Silicon Valley businesses are helping to finance various programs. Walnut Creek is partnering with non-profits for a community tree planting program.

(5) *Grants and low-cost loans*. Grants are available from federal, state, and regional agencies for investments in water use and energy efficiency and other activities. Grants are not a long-term funding source for on-going projects, and the up-front staff time required to research and apply for funds can be a deterrent to many communities, particularly smaller ones. Nevertheless, grants can be a useful source for certain investments. As noted above, several local air districts have supported the development of emissions inventories.[31] Most of American Canyon's planned climate-related initiatives will be funded through grants. The City of Monterey plans to organize its climate action plan and related efforts to enhance its attractiveness as a grantee for funding purposes.

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[30] Local general obligation bonds (except for education) require a two-thirds voter majority, as do special purposes taxes and property assessments (the latter can also be approved by a simple majority of property owners) (Rueben and de Alth, 2005).

[31] The Bay Area Air Quality Management District has been most active, awarding $3 million in climate protection grants in 2007. Over $1.8 million was awarded to city and county governments to develop climate action plans, integrate climate change into general planning, build capacity, among others.

Along with neighboring local governments, Mammoth Lakes secured a federal grant to purchase buses and begin a regional bus transit system. The City of Sonoma took out a zero-interest loan through the federal Clean Air Renewable Energy Bond to fund photovoltaic installations at four city facilities. Watsonville is taking out a loan to fund solar and plans to offset the payments with state rebates on solar installations.

(6) *Self-funding and revolving fund programs.* For activities that will directly save the investor money after an initial investment, such as energy and green building programs, it is possible to set up a self-funding program with an initial loan or investment. This is the idea behind Berkeley's Solar Initiative, for which the city is getting initial financing from a private bank. Residents who install solar repay the loan through a property assessment. Over time, the program will be self-funding, with the repayments applied to further investments in solar.

(7) *Agreements with private investors*. Some local governments are hiring energy service companies (ESCOs), an approach which avoids upfront costs of energy efficiency programs. These firms identify energy savings and finance the necessary investments, which the local government reimburses over a multi-year period.[32] Similarly, power purchase agreements rely on private investors to install solar power, for which investments can take many years to recoup. A company finances equipment and installation, and sells the resulting power to the user.

(8) *Selling carbon offsets.* As communities make advances in monitoring and reducing emissions, a carbon offset market could become a potential source of funds for projects expected to reduce emissions significantly. There may also be scope for more rural communities to earn offsets for climate-protective land uses. Carbon markets such as the Chicago Climate Exchange (CCX) or the regional market contemplated by the South Coast and Sacramento Metropolitan Air Quality Management Districts[33] would provide the vehicle for earning these offset dollars.

(9) *Cross-funding activities*. Some communities are taking a comprehensive view to the funding issue, acknowledging that some programs will cost money, while others will save money. The City of Sonoma is funding some activities in its climate action plan with savings achieved elsewhere. The City of Roseville is considering borrowing against future energy savings to fund a comprehensive climate action plan similar to work done by communities in Sonoma County.

Local Support

Many, if not most, of these funding arrangements depend at least in part on the support of local actors, ranging from elected officials, to city and county staff, to businesses and residents. The survey asked respondents to gauge the level of local support for climate-related activities from each of these four groups. Support from staff and elected officials is considered

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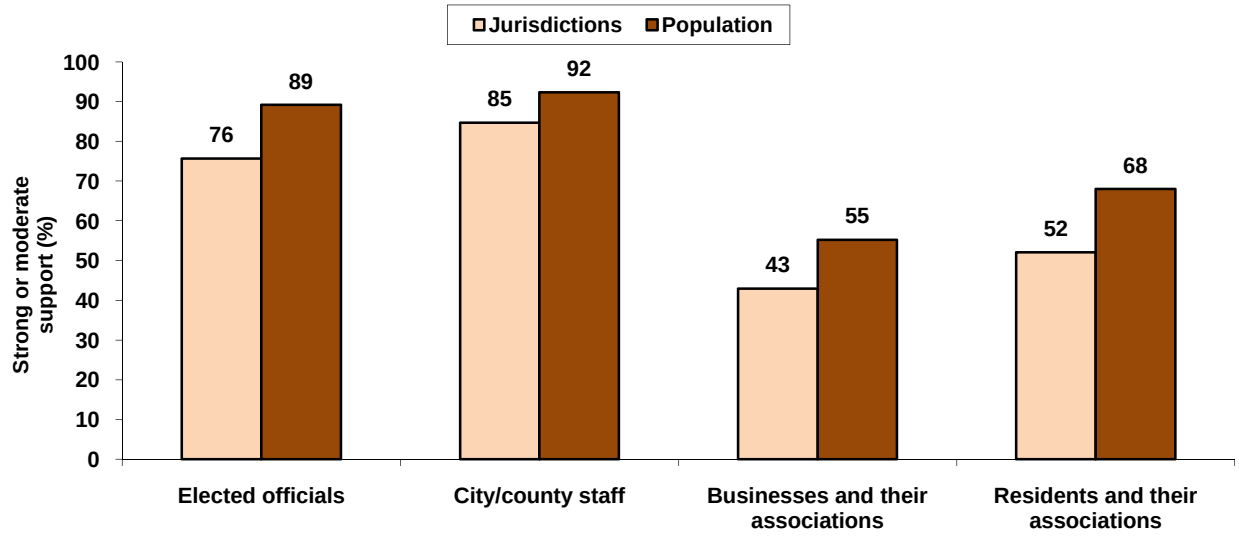
[32] For information on ESCOs operating in California see California Energy Commission (2005b).

[33] The South Coast Air Quality Management District (2008) is considering a banking program it calls the SoCal Climate Solutions Exchange.

very high, with 85 and 76 percent of all jurisdictions reporting strong or moderate support from these groups, respectively (Figure 8). The rates are somewhat lower for residents (52%) and businesses (43%). However, the figures jump when population is taken into account, because larger jurisdictions have higher scores – consistent with the higher levels of climate-related activity in larger communities.

When responses are weighted by population, 68 percent of residents are viewed as supporting climate-related policies and programs. This result is consistent with the findings of a recent PPIC poll of residents themselves: 73 percent indicated support for the state's AB 32 goal to reduce greenhouse gas emissions to 1990 levels by 2020 (Baldassare, et al., 2008). That poll also suggests that local governments might have support for doing more in this area. Whereas a third of residents (31%) felt that their local government was doing "just enough" to address global warming, just over half (52%) felt that their local government was not doing enough (Baldassare, et al., 2008).

Figure 8
In your opinion, how much support is there for climate change-related policies and programs in your city/county by the following groups?



Notes: Sample size ranges from 303 to 305. Unreported answers include "little" or "no" support and "don't know." The share of jurisdictions reporting "don't know": city/county staff (4%), elected officials (9%), businesses (17%), residents (19%).

Implementation Barriers

Finally, the survey asked respondents to gauge the seriousness of five potential legal and institutional barriers to implementing climate-related actions:

(1) *Federal or state preemption of local authority.* By law, certain types of measures that can reduce GHG emissions are not available to local governments. Many efficiency standards are set at a higher level of government (e.g. fuel efficiency standards for vehicles available on the market; general building and plumbing standards for energy and water use efficiency). However, some leeway for local initiative may exist, notably in going beyond state building code standards or establishing GHG/CEQA thresholds.

(2) *Difficulties of coordinating with other agencies.* For many local governments, some key functions are undertaken by other entities – e.g. electricity and water utilities, regional or county transportation planning agencies, local air districts. Collaborative efforts have often been a key to success.

(3) *Lack of clarity in the law (e.g., CEQA guidelines).* To the extent that local governments will be held accountable for the decisions under their purview – particularly land use-related measures such as general plan updates and CEQA reviews – the current lack of clarity in state law regarding local requirements is a potential barrier to action. SB 97, which charges the Office of Planning and Research and the Resources Agency to prepare guidelines on the use of CEQA reviews in a climate change context, is an attempt to address this problem.

(4) *Lack of state-mandated actions.* There are also areas where the absence of state mandates to act could make it more difficult for local government to take action. For instance, if local support is weak or lacking, state directives can provide the political cover for implementing unpopular decisions. As an example, 2004 legislation requiring all water utilities to start metering water use has taken this conservation measure out of the realm of local political debates.

(5) *Conflicting state mandates.* Local officials can be quick to point out that existing state mandates are not always consistent. In particular, as part of the requirements for updating the "housing element" of the general plan, local governments are expected to produce a certain amount of new housing (including affordable housing), consistent with regional growth projections. Any state measures that might make it more difficult to approve new housing can been seen as conflicting with this requirement. To avoid such a conflict, SB 375 (the new law requiring regional emissions targets) put the housing element and the regional transportation planning process on the same schedule. As another example, CARB's guidelines to avoid locating sensitive new development (including residences, schools, or medical facilities) within 500 feet of freeways (set to meet public health objectives) is a potential barrier to infill development (California Air Resources Board, 2005; Krist, 2005).

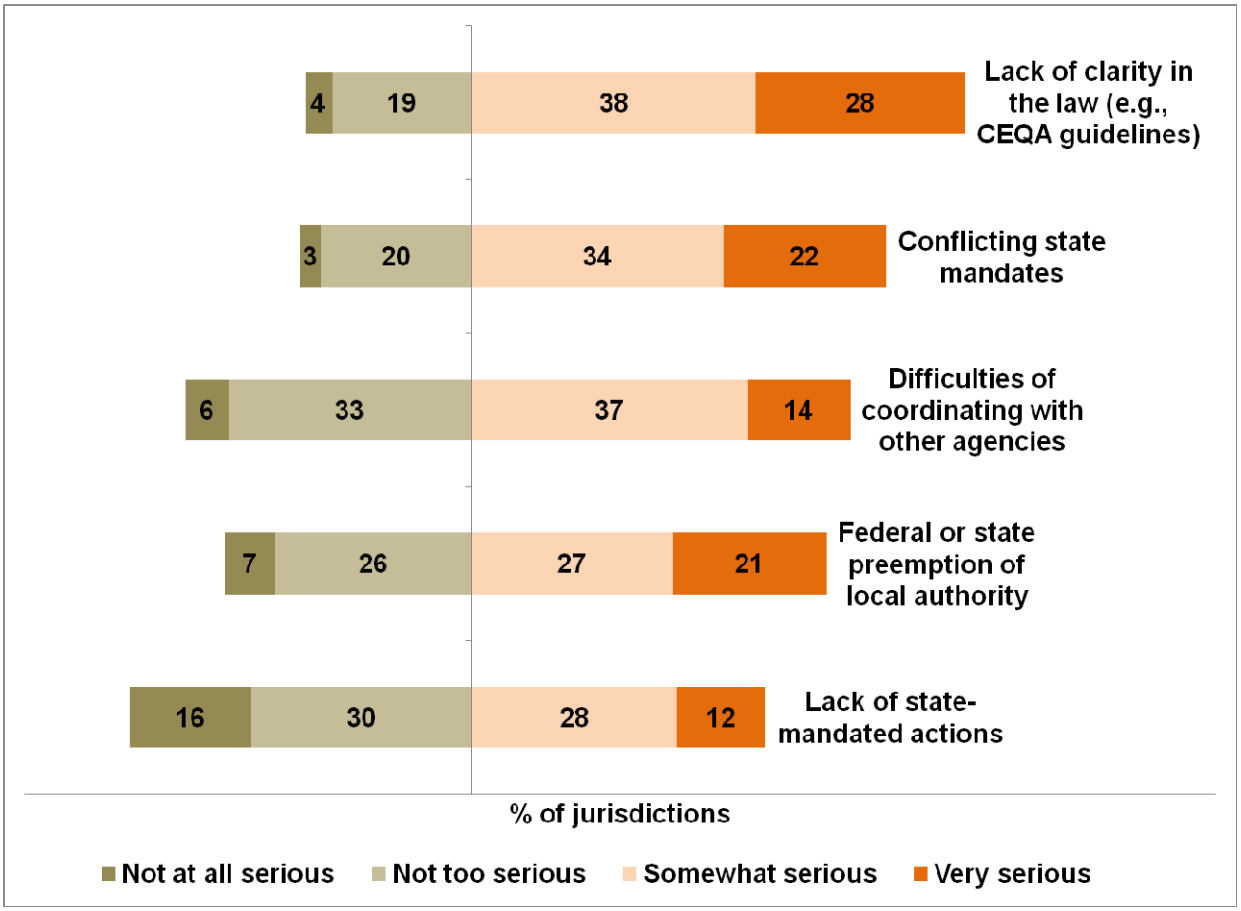
As seen in Figure 9, views are less consistent for these potential barriers than they are for resources or information. The most significant barrier is the lack of clarity in the law regarding issues such as CEQA guidelines – it is considered very (28%) or somewhat (38%) serious by nearly two-thirds of all jurisdictions. Some local governments – including fast-growing

communities in the Inland Empire - are awaiting further guidance on the CEQA issue before updating their review process and other land use planning tools.

Next in order of importance are conflicting state mandates – very or somewhat serious for 56 percent of the sample – followed by coordination difficulties with other agencies (51%) and federal or state preemption of local authority (48%).

The lowest ranked barrier is the lack of state-mandated actions: only 40 percent of respondents view this as a very or somewhat serious problem. Written comments suggest the polarizing nature of this issue. Many respondents pointed to the funding constraints they already face, and raised concerns about "unfunded state mandates" for climate-related actions.[34] On these questions, community size does not generally matter.

Figure 9
How serious a barrier are the following factors to the implementation of climate policies and programs in your city/county? (% of jurisdictions)



Notes: Sample size ranges from 304 to 306. The difference between the sum of percentages reported here and 100 is the share of respondents that answered "don't know" (11% to 22% of the sample).

[34] The California constitution mandates state reimbursement of local expenditures for "state mandated local programs" (Art. XIIIB, § 6).

What Factors Are Associated with Local Action?

The results presented so far suggest that larger communities may have an easier time mobilizing the necessary information, resources, and support to take action. As seen in the detailed tables provided in the technical appendix to this report, there also appear to be different response patterns across regions of the state, with the Bay Area often out in front and some inland areas – including the San Joaquin Valley and the state's rural counties – sometimes lagging behind. Regional factors could be expected to matter if regional initiatives are a driving force in promoting local policies. Regional factors could also influence the costs of taking action; for instance, smart-growth land use and transit-oriented development may be more difficult to implement in rural regions, which have less extensive transit networks. However, other factors could be driving regional differences. In addition to population size, higher levels of household income might be associated with more active communities, which will generally have an easier time mobilizing resources. Both population and income might help account for more activity in the Bay Area and less in the rural areas.

Given the differences in patterns of party affiliation across the state – with voters in regions such as the Bay Area more likely to be registered Democrats and voters in many inland areas more likely to be registered Republicans – it is also of interest to know whether political views are associated with the differences in local government actions. Generally, majorities of Californians with all three major affiliations – Democratic, Republican, and Independent – are concerned about global warming and support the state's efforts to reduce GHG emissions (Baldassare, et al., 2008). At the same time, there are generally fairly strong partisan differences in the extent of support for these measures, with Democrats typically expressing the strongest concern and level of support, followed (usually closely) by Independents, trailed (sometimes considerably) by Republicans. As an example, when asked whether they favor or oppose the state law that requires California to reduce its greenhouse gas emissions back to 1990 levels by the year 2020 (the AB 32 goal), 57 percent of Republicans said they were in favor, versus 77 percent of Independents and 83 percent of Democrats (Baldassare, et al., 2008).

Here, we explore whether these various factors - population, household income, party affiliation, and region - influence local government responses to selected questions from our survey, when controlling for the other factors.[35] Table 7 reports the estimated effects of one standard deviation increase in the first three factors, relative to their sample means.[36] It also shows whether regional effects are still evident after controlling for the other factors. Party affiliation is measured as the share of registered Republicans for the June 2008 primary election in each jurisdiction.[37]

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[35] The regressions are run as linear probability models, with the dependent variable taking the value of one if a policy is adopted or planned, and zero if not (those answering "don't know" are excluded). Population (Dept. of Finance, 2008) and mean household income (2000 Census) enter the model in natural logs, because effects are likely to taper off beyond a certain level. For region definitions, see Appendix A.

[36] A standard deviation corresponds to roughly one-third of the sample.

[37] This method assesses whether there are significant differences between more heavily Republican areas and areas with more Democrats and Independents. Party affiliation is from the Statewide Database, (Institute of Governmental Studies, UC Berkeley): http://swdb.berkeley.edu/d00/index.html.

Table 7
Role of community size, income, partisan affiliation, and region on local government actions

Survey question	Effect on likelihood of answering "yes" of a standard deviation increase in: Population	Household Income	Republican Share	Are there regional differences?
Climate change mitigation measures				
Working on climate change issues (Table 1)	15%	7%	-	Yes
Planned/completed carbon emissions inventories (Table 2):				
- For facilities and operations	17%	12%	-9%	Yes
- For the community as a whole	18%	12%	-9%	Yes
Planned/completed climate action plan (Table 3)	13%	16%	-16%	Yes
Planned/completed measures to limit GHG emissions (Table 4):				
- General Plan	13%	-	-7%*	-
- CEQA reviews	13%	9%	-6%*	-
- Building codes	8%	11%	-16%	-
- Title 24 energy codes	8%	-	-12%	-
- Zoning requirements	11%	14%	-17%	Yes
Number of specific policies and programs (Table 5)a/	2.4	-	-1.2	Yes
Climate change adaptation measures				
Analysis of potential climate change impacts	13%	-	-10%	Yes
Planned/completed measures to limit impacts (Figure 4):				
- General Plan	14%	7.1%*	-6.7%*	Yes
- CEQA reviews	10%	9%	-	Yes
- Building codes	7%	9%	-	-
- Zoning requirements	10%	12%	-10%	Yes
Potential barriers to local action				
Adequate information (Table 6)	12%	10%	-	Yes
Adequate resources	4%*	5%*	-	-
Strong/moderate local support (Figure 7):				
- Elected officials	8%	-	-10%	-
- City/county staff	4%*	-	-	-
- Businesses and their associations	-	16%	-14%	Yes
- Residents and their associations	8%	16%	-17%	Yes

Notes: Table reports the change in likelihood of a positive answer for jurisdictions with one standard deviation (s.d.) above the mean value for 2008 population (log mean=33,500, s.d. = 103,000), 1999 household income (log mean = $65,700, s.d.= $35,000), and 2008 share of registered Republicans (mean = 36%, s.d.= 12%). Values are significant at the 95 percent level of confidence except those marked by an asterisk (*), which are significant at 90 percent. " – " indicates not significant . Last column reports whether regional differences persist after controlling for other factors.

a/ For this question, the table reports the change in number of policies out of a possible total of 27 shown in Table 5 (nine each for facilities, businesses, and residents).

Population continues to make a substantial difference in almost all areas examined, even after controlling for the other factors. Larger jurisdictions are consistently more likely to be active on climate-related issues, and receive higher levels of support from residents and local elected officials. Household income also matters on most issues, with higher income jurisdictions both more active and more likely to have support of local residents and businesses.

Partisan differences also appear to matter for most things. Although there is no difference in the extent to which local governments are working on climate issues in general., communities with a higher Republican share are less likely to be conducting emissions inventories, developing climate action plans, and incorporating measures to reduce GHG emissions in various local planning and regulatory tools (General Plans, CEQA reviews, building codes, Title 24 energy codes, and zoning requirements). They are also likely to be implementing fewer specific policies and programs to reduce emissions.

Communities in areas with a higher Republican voter share are also somewhat less likely to have begun examining the impacts of climate change. This gap is consistent with the results of the PPIC statewide opinion poll, in which only 41 percent of Republicans believe that the effects of global warming have already begun to happen, versus 64 percent for Independents and 74 percent for Democrats (Baldassare, et al., 2008). Yet, these communities are not consistently less active in updating local planning tools to take climate impacts into account.

Party affiliation has mixed effects regarding potential barriers to action. We find no significant differences in the perceived adequacy of information or resources, nor in the role of the various implementation barriers shown in Figure 9.[38] Respondents did perceive some differences in the extent to which local elected officials, businesses, and residents support climate-related actions, but no differences in the level of staff support.

Many of the apparent regional differences disappear once one controls for population, income, and party affiliation. The Bay Area and the Sacramento Metro region still appear ahead in their work on emissions inventories – an area where there has been strong support by regional agencies. The Bay Area also appears further along in assessing climate change impacts. Southern California, meanwhile, appears to be lagging in both respects. In contrast, the lower rates of activity in the San Joaquin Valley and the rural counties generally reflect differences in size, income, and party affiliation rather than regional factors.

[38] Income and population generally do not matter for these questions, either, although officials in larger jurisdictions were more likely to find conflicting state mandates to be a problem. Central Coast officials felt more strongly that lack of clarity in the law was a problem, and those in the rural areas felt strongly that lack of state-mandated actions was not a problem. These results are available on request.

Conclusion

In recent discussions about how California can meet its goals to reduce greenhouse gas emissions, there has been some debate about the potential role of local government action. The results of this survey suggest that local government efforts are already well underway, largely through voluntary measures. Roughly three-quarters of the local governments in our sample are working on climate change issues; over half have already completed or have plans to conduct emissions inventories for their own facilities and operations, and many (42%) are also doing this for the community as a whole. Over half have completed or are planning to prepare climate action plans, which lay out steps to reduce emissions. Regular local planning and regulatory tools, such as general plan updates, CEQA reviews, building codes, and zoning requirements, are also being modified to address emissions.

Because activity is generally higher in communities with larger populations, the emissions benefits are potentially greater than these numbers imply. Wealthier communities (as measured by household income) are also likely to be more active. Consistent with differences in the intensity of views about the importance of state action to limit global warming, jurisdictions with higher shares of Republican voters are somewhat less likely to be undertaking local actions.

When it comes to implementing specific programs that can reduce emissions – such as energy efficiency, green building, transportation, land use, and water use efficiency – local governments are still much more focused on their own facilities and operations than on the community at large. To some extent, this is a matter of going after the "low hanging fruit" first; it is easier to tackle internal operations than to launch community-wide programs, particularly when other entities (e.g. electric and water utilities, regional transportation authorities) play important roles in setting policies for the community. In addition, certain actions – notably energy efficiency and green building programs – are fairly easy to justify for internal operations because they can generate fairly rapid cost savings. (Indeed, in areas where there is less support for climate-related actions per se, these cost savings are used as the main selling point).

Tackling internal operations first may also reflect a strategy of leading by example. It can be difficult to ask the community to make changes if the local government has not made an effort. Indeed, many organizations that provide technical assistance on emission reductions encourage municipal reductions as a first step, before moving on to community-level actions. Local governments do appear to have a fairly clear sense of the relative potential of different types of activities to lower emissions in their communities, even though these do not correspond to the areas where they are currently active at the community level (e.g., transportation, energy efficiency, renewable energy).

Partnerships and collaborations have been crucial to many of the successes seen to date. The forms of partnerships have been varied: across local agencies (e.g., work between utilities and local governments on energy efficiency), within regions (e.g., countywide or regionwide efforts to conduct emissions inventories), with business groups (e.g., Joint Venture Silicon Valley), and with non-profits (e.g., ICLEI on emissions inventories, U.S. Green Building Council and Build It Green on green building, and various local groups on overall strategy and specific programs such as tree planting).

Strikingly, local government action is much lower when it comes to addressing the impacts of climate change – sometimes called adaptation. Yet scientific projections point to significant impacts such as increases in heat waves, coastal and riverine flooding, reduced water supplies, and more frequent wildfires over this century, even if global efforts to reduce greenhouse gas emissions are successful. Only half of those communities that are working on climate change (36% of the sample) have begun to assess these impacts. Actions to address climate impacts through local planning processes, to reduce vulnerability through changes in land use and building practices, are also lagging. In this regard, local governments are not different from other levels of government; the state has only recently begun to develop a comprehensive adaptation strategy.

To facilitate further local action on climate change mitigation, several types of implementation barriers should be addressed. Although state action is important in some areas, regional agencies and other partners (such as non-profits) may be able to address others most effectively, alone or in collaboration with the state and local governments.

(1) *Information*. A high proportion of those surveyed report information gaps and needs, particularly on programs and policies that have worked elsewhere and methods to quantify the costs and benefits of specific programs. To make emissions inventories more useful as a planning tool, there is a need to improve methods of attributing emissions from VMT to communities. Innovative models should be sought out and shared – e.g., the GIS-based work now being undertaken by the City of Irvine and the company ESRI to track emissions.

(2) *Funding*. Resource availability is viewed as a serious constraint by most of those surveyed, and it appears particularly acute for programs that do not generate an immediate pay-off. Success stories are often tied to funding innovations – taking advantage of special grant programs (e.g., from the regional air districts or the electric utilities), identifying new revenues (e.g., impact fees), building partnerships with the private sector (e.g., in Silicon Valley), and working with private investors who can help smooth the cost of investments in areas such as energy efficiency and solar installations. There is a need to share information on funding options and available resources with local governments. State and regional agencies should also consider how to provide incentives for effective local action, even if they face limited resources themselves.

(3) *Lack of clarity in state law*. Lack of clarity is particularly a problem for addressing the climate implications of local land use decisions. Questions loom about how to effectively use the CEQA review process to assess the effects of a development project on GHG emissions. What thresholds of significance should be used to determine if a project is causing environmental harm, given that the effects of any individual project are small relative to the global scale of the problem? How should the review of individual projects be tied into the state's overall goals to reduce emissions? With the recent passage of SB 375, the potential now exists for a regional approach to emissions from land use and transportation. Local governments will need to work with state and regional authorities to develop effective tools for achieving regional targets.

In addition, there is a need to raise awareness about the importance of adaptation strategies to reduce vulnerability to the impacts of climate change. Awareness now appears highest in the Bay Area, where regional agencies have been taking the lead in getting the

information out on potential impacts such as sea level rise. As the California Resources Agency develops an adaptation strategy for the state, it can play a particularly useful role in catalyzing agencies in other regions to begin examining the implications of climate impacts for local land use and building decisions.

Appendix A. About the Survey

The survey was conducted over several months beginning in mid-May and ending in early August 2008. We sent a questionnaire by email and U.S. postal mail to city managers and county administrators in all 478 of the state's municipalities and the 57 counties with unincorporated areas. (Since San Francisco County is contiguous with the city, it has no unincorporated areas). Recipients were invited to refer the survey to another person; in many cases it was filled out by staff in departments of planning, public works, or environmental affairs. [39] Respondents could fill out an online version or an identical paper version.

In addition to an initial fax reminder sent to all persons who received the survey, we contacted non-respondents up to three times more to encourage their participation. The survey was also advertised in the electronic newsletters of the League and CSAC. This process resulted in a reasonably high response rate (280 cities and 30 counties, or 58 percent of all jurisdictions) (Table A.1). This sample represents a somewhat larger share of the state's population (27.7 million, or 73 percent) because jurisdictions with larger populations had a higher response rate (Table A.2).

Table A.1
Overall Response Rates

Jurisdiction Type	Total Jurisdictions Surveyed	Surveys Completed	Response Rate (%)	Share of 2008 Population (%)
Cities	478	280	59	74
Counties	57	30	53	65
Total	535	310	58	73

Sources: January 2008 population from California Department of Finance, 2008.

Table A.2
Response Rates by Jurisdiction Size

Jurisdiction Size (2008 Population)		Total Jurisdictions Surveyed	Surveys Completed	Response Rate (%)
Small	< 10,001	113	59	52
Medium	10,001-50,000	217	119	55
Medium Large	50,001-200,000	179	109	61
Large	> 200,000	26	23	88
Total		535	309	58

There were also some differences in response rates by region – with higher than average participation by communities in the San Francisco Bay Area, and lower than average participation in the San Joaquin Valley and the more rural counties grouped in the "Rest of State" category (Table A.3). Because response patterns also differ across regions – with Bay Area communities typically more active on climate change-related policy and San Joaquin

[39] Of the 267 respondents who gave their title, 56 percent were in the city or county manager's office or the general administration, 35 percent in one of these three departments, and 9 percent in other positions.

Valley and Rest of State communities typically less active, we use regional weights to generate estimates of the overall statewide average responses. This weighting assumes that the non-responding communities in each region have a similar pattern of answers to the responding communities. If non-responding communities are in fact less active, the statewide averages we report are higher than the true values. However, judging by the pattern of answers of "late responders" – communities that would have been excluded from the survey had we not made a second extension of the deadline – we do not find evidence of such a bias.[40]

Table A.3
Response Rates by Region

Region	Total Jurisdictions Surveyed	Surveys Completed	Response Rate (%)	Total Population	Population Covered by Survey	Population Covered (%)
South Coast	154	94	61	17,500,000	13,621,308	78
Bay Area	109	80	73	7,301,080	6,045,981	83
Inland Empire	50	33	66	4,144,088	2,795,123	67
San Joaquin Valley	70	26	37	3,956,003	1,886,919	48
Sacramento Metro	29	17	59	2,304,411	1,709,446	74
Central Coast	38	21	55	1,450,844	994,807	69
Rest of State	85	39	46	1,430,074	608,661	43
California	535	310	58	38,086,500	27,662,245	73

Source: January 2008 population from California Department of Finance, 2008.
Notes: Counties in regional groups: South Coast (Los Angeles, Orange, San Diego, Ventura), Bay Area (Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma), Inland Empire (Riverside, San Bernardino), San Joaquin Valley (Fresno, Kern, Kings, Madera, Merced, San Joaquin, Stanislaus, Tulare), Sacramento Metro Area (El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba), Central Coast (Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz), Rest of State (Alpine, Amador, Butte, Calaveras, Colusa, Del Norte, Glenn, Humboldt, Imperial, Inyo, Lake, Lassen, Mariposa, Mendocino, Modoc, Mono, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, Tuolumne).

Survey results are generally presented in two ways: the share of jurisdictions that answered in a particular way, and the corresponding share of population living in those jurisdictions. For the population-weighted averages, we again apply regional weights to account for the differences in regional response rates.

[40] To test this, we compared the responses of the 57 jurisdictions that did not return their surveys until after receiving the notice of a second and final extension of the deadline – sent in early July – with the responses received between mid-May and July 4th, controlling for region and the log of population. There were no significant differences between the early and late responders regarding general activities in the climate change area (Table 1) or emissions inventories (Table 2).

References

Akbari, Hashem, Surabi Menon, and Arthur Rosenfeld, "New Estimates of Avoided CO2 by Cool Roofs and Cool Pavements," unpublished manuscript, Lawrence Berkeley National Laboratory, 2007.

Baldassare, Mark, et al., "Californians and the Environment," *PPIC Statewide Survey,* Public Policy Institute of California, July 2008.

California Air Resources Board, "Climate Change Proposed Scoping Plan: A Framework for Change," Pursuant to AB 32 The California Global Warming Solutions Act of 2006, Sacramento, California, October 2008.

California Air Resources Board, "Air Quality and Land Use Handbook: A Community Health Perspective," Sacramento, California, April 2005.

California Department of Finance, *Race/Ethnic Population with Age and Sex Detail, 2000–2050*, Sacramento, CA, July 2007 (2007a).

California Department of Finance, *E-4 Historical Population Estimates for City, County and the State, 1991-2000, with 1990 and 2000 Census Counts*, Sacramento, California, August 2007 (2007b).

California Department of Finance, *E-5 Population and Housing Estimates for Cities, Counties and the State, 2001-2008, with 2000 Benchmark*, Sacramento, California, May 2008.

California Energy Commission, *California's Water-Energy Relationship: Final Staff Report*, Sacramento, California, November 2005 (2005a).

California Energy Commission, *Summary of Energy Service Companies Summary of Responses*, Staff Report, CEC-400-2005-001, January 2005 (2005b).

California Integrated Waste Management Board, "Statewide Biannual Review Compliance Status," Sacramento, California, 2006.

Cayan, D., A. Luers, M. Hanemann, and G. Franco, *Scenarios of Climate Change in California: An Overview*, California Climate Change Center White Paper, CEC-500-2005-186-SF, February 2006.

Climate Action Team, "Report to Governor Schwarzenegger and the Legislature," California Environmental Protection Agency, Sacramento, California, March 2006.

Creyts, J., A. Derkach, S. Nyquist, K. Ostrowski, J. Stephenson, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost? U.S. Greenhouse Gas Abatement Mapping Initiative*, McKinsey & Company, December 2007.

Ewing, R., K. Bartholomew, S. Winkelman, J. Walters, and D. Chen, *Growing Cooler: The Evidence on Urban Development and Climate Change*, Urban Land Institute, Chicago, Illinois, 2007.

Hanak, Ellen, *Water for Growth: California's New Frontier*, Public Policy Institute of California, San Francisco, California, 2005.

Intergovernmental Panel on Climate Change. *Climate Change 2007 – Impacts, Adaptation and Vulnerability.*Contribution of Working Group II to the Fourth Assessment Report of the IPCC, Cambridge University Press, London, United Kingdom, 2007.
Krist, John, "State Air Guidelines Conflict with 'Smart Growth,'" *California Planning and Development Report*, June 2005.

Lawrence Frank and Company, Inc., "Reducing Global Warming and Air Pollution: The Role of Green Development in California," unpublished paper, July 2008.

Rueben, Kim and Shelley de Alth, "Infrastructure Financing in California," in E. Hanak and M. Baldassare, *California 2025: Taking on the Future*, Public Policy Institute o f California, San Francisco, California, 2005.

South Coast Air Quality Management District, "SoCal Climate Solutions Exchange," White Paper, Diamond Bar, California, June, 2008.

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