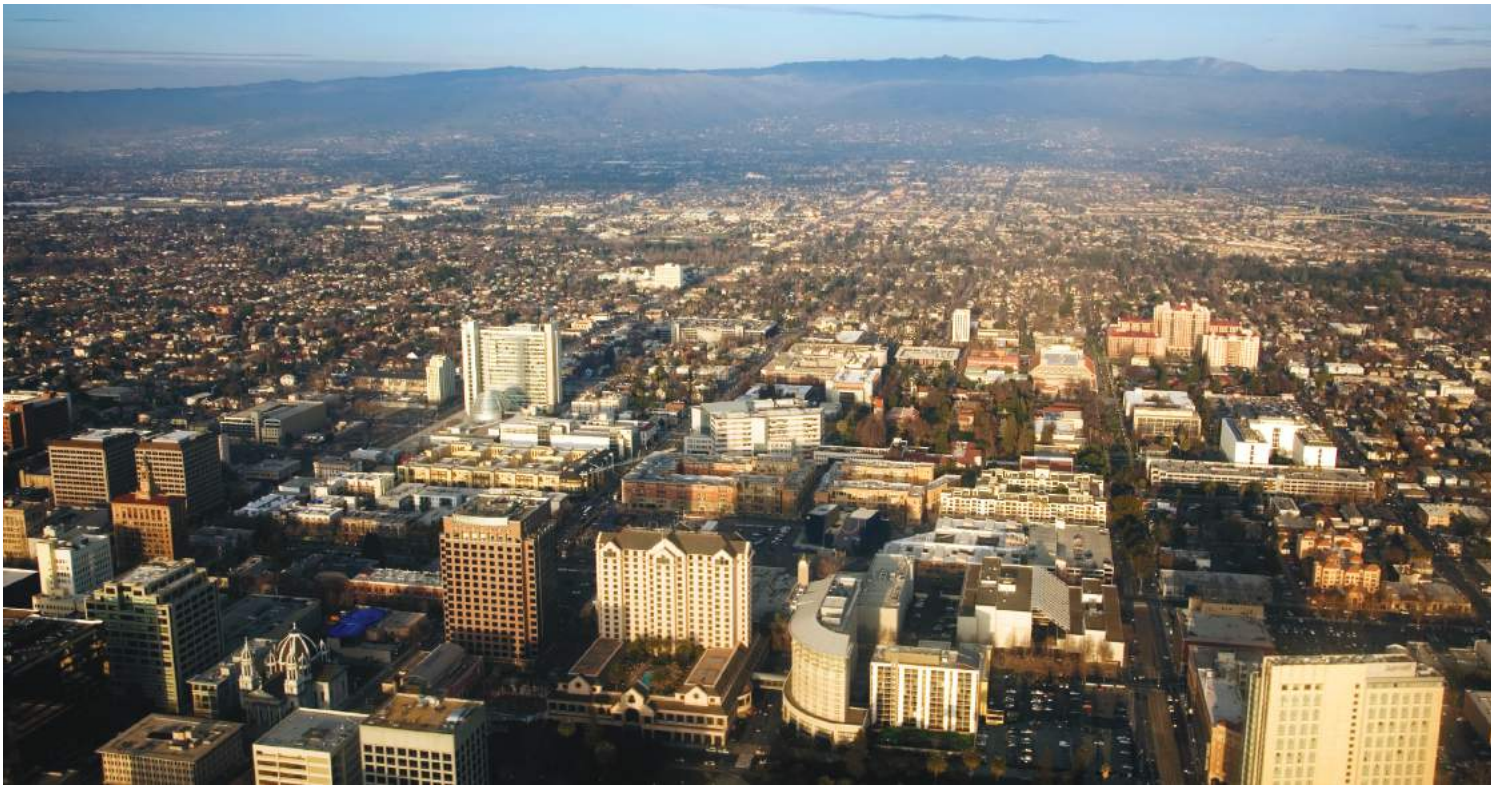


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Local Government Climate Action Survey 2014

A Status Report on Climate Protection Activities
in San Mateo and Santa Clara Counties

Issued September 2014

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CHAPTER

Executive Summary

This report is a summary of selected climate actions being undertaken by cities in Santa Clara and San Mateo Counties – the heart of Silicon Valley. It is an update of two previous reports on this topic prepared by the Loma Prieta Chapter of the Sierra Club in 2008 and 2009. The report's purpose is to increase awareness of the climate actions of local governments in our area, to facilitate the exchange of best climate action practices, and to advocate for more decisive action worthy of the magnitude of the climate change challenge confronting all of us.

It is clear that our society needs to take prompt action to reduce our greenhouse gas emissions, thereby avoiding the most adverse effects of climate change, and also to undertake various adaptation measures to reduce our vulnerability to the climate changes already underway.

Given the political gridlock in Washington, D.C., we cannot afford to wait for our federal government to mount a comprehensive campaign against climate change. Therefore, it is particularly appropriate and important for local governments to take action since cities are “ground zero” where most people live and will be affected by the impacts of climate change.

Here in Silicon Valley, all of the 33 jurisdictions (31 cities and two counties) responding to our survey have taken steps to mitigate climate change over the past decade. Some cities are making more progress than others and much more remains to be done to significantly reduce greenhouse gas (GHG) emissions.

On the positive side of the ledger, we found that almost all of the responding cities have made public commitments to reduce GHG emissions – usually by creating a climate action plan (CAP). In their CAPs, the cities have identified emissions reduction targets (both community-wide and municipal) and various means of accomplishing the reductions. In addition, almost all of the cities have assigned one or more staff members to help implement the CAP.

In most cities, the two largest segments of GHG emissions are those produced by operating vehicles and heating and cooling buildings. All of the cities are attempting to reduce vehicle emissions, often starting by greening their municipal fleets. But, since municipal emissions are a very small fraction of the overall problem, most of the cities are also addressing community-wide transportation emissions through a suite of actions such as promoting carpooling, encouraging walking and biking, fostering the use of low and zero-emission vehicles, improving public transit and pursuing transit oriented development.

Local cities are also jumping on the “green building” bandwagon. The State of California recently adopted updated Title 24 Energy Efficiency and CALGreen building standards for new and retrofitted residential and commercial buildings. Cities in Silicon Valley have endorsed these new standards that set quite a high bar, and see the opportunity to really move the needle on emissions in this sector.

A number of the cities are also encouraging the expansion of renewable energy generation within their boundaries. In addition to installing solar arrays on various municipal buildings, many of them have created incentives such as reduced permit fees and expedited permitting to ease onsite renewable energy installation. Going a big step further, several cities are seriously exploring implementing community choice aggregation: aggregating the buying power of their citizens and purchasing renewable energy on a community-wide basis.

Two other climate actions being taken by many cities involve reducing the GHG emissions associated with water consumption and waste processing. Many of the cities, in concert with local water agencies, are taking steps to reduce water use, especially water used in often-wasteful landscape irrigation. In regard to waste processing, almost all of the jurisdictions have attained the state mandated diversion rate of 50% and some have a goal of “zero waste.” Some cities also are generating energy by combusting the methane escaping from their landfills.

Unlike five years ago, many of the cities are starting to prepare to adapt to the threats posed by climate change. Some have developed ways to reduce the impacts of severe flooding from extreme storms. Others are taking steps to limit the effects of fire in the natural landscape. And, although ultimately it will require a regional response, a few cities are starting to plan ways to lessen the impacts of rising bay waters.

Another very positive development in the last half-decade is the emergence of a number of public and private entities that are assisting local cities in mitigating and adapting to climate change — e.g. the Regionally Integrated Climate Action Planning Suite in San Mateo County. Most of the cities are taking advantage of the information, resources and networking opportunities provided by these entities.

Significant internal challenges still confront many of the cities to effectively address climate change as they move forward. These include: the relatively low priority they have assigned to addressing climate change, inadequate levels of funding and staffing, a lack of follow up GHG emissions inventories, the difficulty of continuing to make progress after low-hanging fruit are picked, and the challenge of engaging large numbers of community members in climate action.

In light of the strengths and challenges mentioned above, the report ends with a series of conclusions and recommendations. They acknowledge the good work already done by cities in our region and suggest ways that local governments in Silicon Valley, supported by active and engaged citizens, can even more effectively combat climate change in the years ahead.

Summary of Recommendations

At the report’s conclusion, we make a number of recommendations for additional steps that should be taken by cities in Silicon Valley. They are based on the results of our survey and also our assessment of the threats posed to our region by climate change and the critical need to give it more attention. These recommendations are outlined here and spelled out in more detail at the end of this report.

Our four primary recommendations are:

1. Because our society needs to be at or near zero carbon emissions within 20 to 25 years, Silicon Valley cities should extend GHG emissions reduction targets beyond 2020, make them more ambitious, and start planning now for a major effort to achieve them.
2. Since many cities in this region are hard pressed to significantly reduce their GHG emissions due to limited resources and staffing, they should pursue more multi-jurisdictional collaborative initiatives including adjacent cities sharing staff and undertaking joint climate action projects.

3. Since most carbon reduction strategies, while helpful, do not result in dramatic reductions in GHG emissions, cities in our region should identify and initiate “game-changing projects” that significantly reduce emissions.
4. Since history shows that state legislation, regulations and funding can greatly enhance local carbon reduction efforts, the cities should encourage state and regional entities to mandate higher standards and provide the technical assistance and funding enabling cities to meet them.

Our additional recommendations are:

5. Many cities need to make combatting climate change a much higher and more visible priority.
6. Cities should more actively and creatively engage their citizens in the carbon reduction process.
7. Cities need to devote a good deal more attention to reducing transportation related GHG emissions.
8. Many cities should tap new sources of revenue in order to support a significant increase in carbon reduction activities.
9. Cities should conduct “Climate Risk and Vulnerability Assessments” to identify threats and then develop plans for integrating climate adaptation with carbon reduction strategies.

Introduction

Cities and Climate Change

Climate change is happening, and is like no other threat that human beings have ever faced! It is already affecting our lives in the San Francisco Bay Area and, in the near future, poses even greater risks to people in the United States and around the globe.

The scientific evidence of human-induced climate change is overwhelming. As greenhouse gas emissions increase, temperatures are climbing, precipitation patterns are changing, glaciers and ice caps are melting, sea levels are rising, extreme weather events (heat waves, cyclones, floods and droughts) are increasing, the oceans are becoming more acidic and coral reefs are dying.

As the most recent report of the Intergovernmental Panel on Climate Change points out in stark terms, these climate-related alterations of ecosystems are very likely to have dramatic negative impacts on human beings around the globe: for example, diminished water supplies, declining crop yields, increased flooding, damaged coastal infrastructure and settlements, increased ill health and mortality, more conflicts over scarce resources and a rising tide of “climate refugees.”¹

According to the recently released National Climate Assessment, the southwest United States, including California, will experience hotter temperatures and decreased precipitation leading to declining water supplies, reduced agricultural yields, more frequent and larger wildfires and more coastal flooding.² Here in the San Francisco Bay Area, in the near term, the most likely impacts of climate change will be water shortages due to a diminished Sierra Nevada snowpack (witness the current severe drought) and the gradual rising of the water level in the Bay. We are also likely to experience an increase in heat waves, more severe wildfires and higher food prices.³ These are impacts for which we are grossly underprepared.

Despite the dire threats we face, this is also a time of opportunity. Turning our attention to creating sustainable solutions to climate change will act as a driver of innovation not only in the business world but in the governmental sector as well. For example, the rapidly declining cost of renewable energy systems and the mounting evidence of the economic benefits of low carbon strategies signal a very real opportunity to replace a substantial portion of America’s “brown power” with “green power.”

It is clear that our society needs to take prompt action, both to mitigate the adverse effects of climate change by rapidly decreasing our greenhouse gas emissions and to undertake various adaptation measures (e.g. water management, land use planning and infrastructure investment) in order to reduce our vulnerability to unavoidable threats.

In an ideal world, leadership to address the massive threat of climate change would come internationally from global climate agreements and nationally from our federal government. But we are far from such a world, given the inaction in Washington, D.C. Therefore, leadership on the issue must be taken at the state, regional and local levels now!

It is particularly appropriate for local governments to take action to stem climate change. Cities are “ground zero” where most people live and most people will be affected by climate change. The inhabitants of cities are also the source,

directly and indirectly, of the majority of greenhouse gas emissions. All of us will need to change our behaviors in order to significantly lower those emissions. In addition, cities are natural laboratories for trying out a range of creative climate mitigation strategies — the best of which can be copied elsewhere.

Fortunately, local climate action is already underway across the nation, with some cities such as Seattle⁴ and Portland⁵ making great strides in reducing their emissions. In California, sparked by growing awareness among local officials of the dire threat of climate change and also climate initiatives at the state level — most notably Assembly Bill 32, the Global Warming Solutions Act of 2006⁶ — many cities have jumped on the climate action bandwagon. Most cities in Silicon Valley are part of that contingent, and some were early leaders.

Background

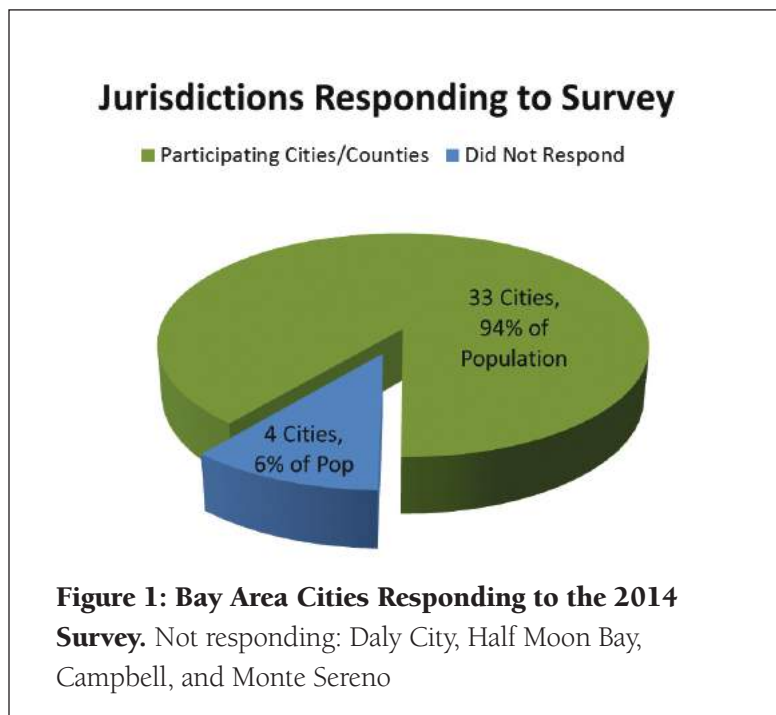
Cool Cities Campaign

The Sierra Club’s Loma Prieta Chapter, which includes San Mateo, Santa Clara, and San Benito Counties, has made local action to reduce greenhouse gas emissions its number one priority. A central part of the Chapter’s Global Warming Program is the Cool Cities Campaign. This campaign is a National Sierra Club initiative promoting local government action to reduce municipal and community-wide greenhouse gas emissions by engaging teams of volunteers in each city. The Loma Prieta Chapter’s Cool Cities effort commenced in 2007 and continues to this day, with Cool Cities Teams active in many local cities.

In 2008, the Cool Cities Campaign produced a report entitled *Cool Cities Local Government Climate Action Survey 2008: A Report on the Climate Protection Policies and Practices in San Mateo and Santa Clara County Jurisdictions*. An updated report was produced in 2009.⁷

This report, created in 2014, is a follow-up to the two earlier studies. **Figure 1** (right) shows that 33 of 37 jurisdictions participated in this survey, home to 94% of the two counties’ 2.6 million residents.

Some of the changes suggested in the 2008 and 2009 reports have now been implemented, but much more remains to be accomplished.



Going forward the Loma Prieta Chapter encourages and will support the local governments in its region to:

1. Set meaningful community-wide greenhouse gas emissions reduction targets through an engaged public process.
2. Develop a Climate Action Plan to achieve those reduction targets.
3. Create the position of a “Sustainability Coordinator” reporting to the city manager, to oversee the implementation of the Climate Action Plan.
4. Implement the Climate Action Plan by taking a range of steps to reduce GHG emissions and using frequent emissions inventories to assess progress toward reduction targets.
5. Use Life Cycle Cost Assessment to forecast the total cost of owning, operating and maintaining infrastructure over its useful life (including fuel, energy, labor, waste, and replacement components).
6. Engage members of the community in personally reducing their GHG emissions and helping the city meet its GHG reduction targets.

2014 Climate Action Survey

The previous (2009) Climate Action Survey report concluded with the sentence: *The results of our survey suggest the trend line on climate action by local jurisdictions ... is moving in the right direction, but these trends must continue and accelerate rapidly in the next year so that the Silicon Valley region can decisively step up to the climate and clean energy challenge.* Since 2009, the science has only become clearer about the urgent need for climate action. Therefore, in this report we want to assess if, indeed, significant progress has been made among local cities since our last study.

Now that most cities have baseline emissions inventories and climate action plans focused on meeting their reduction targets, we wanted to look at indicators for how cities are progressing, what results they are achieving, and how best practices might be leveraged to minimize some of the challenges they continue to face.

With this emphasis, the 43 questions in the 2013-2014 survey were modified to be less focused on commitment milestones than past surveys, and more indicative of implementation actions and results. Direct comparison against the 21 milestones from 2008 and 2009 reports is therefore not attempted. However, where relevant we compare the findings of the two reports to assess the progress made over the last six years.

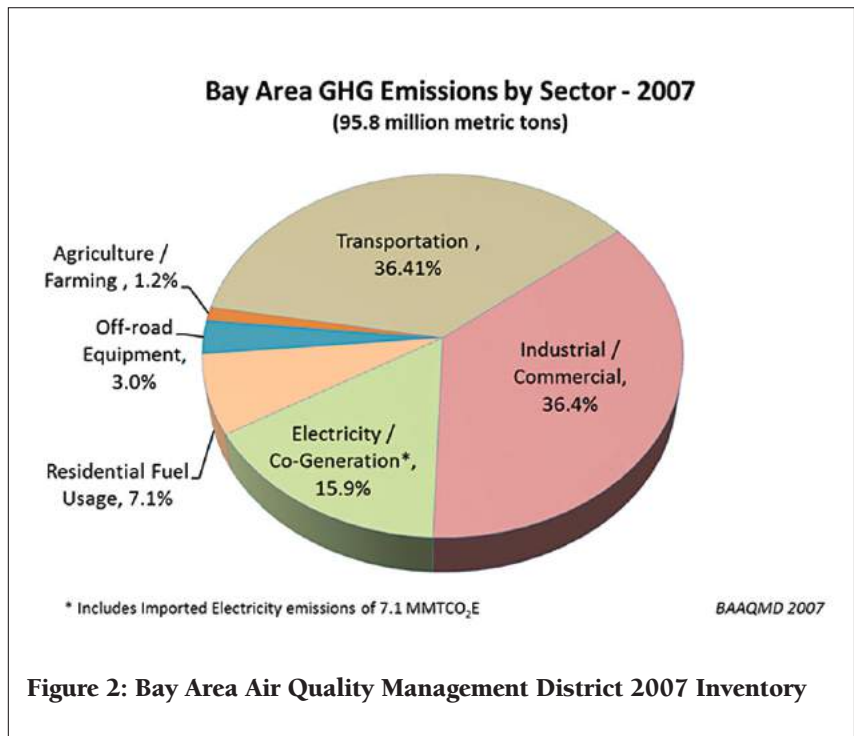
Our survey questionnaire was distributed to the 35 cities and two counties in December 2013 and January 2014. This was followed up with phone calls and email messages. Responses to the survey were gathered in the early months of 2014 by means of face-to-face or phone interviews and, in a few cases, through our online survey instrument. In all, a total of 31 cities and two counties responded, representing 94% of the population of the two counties.

As with previous versions, this report presents a snapshot in time of selected local government climate actions based on the cities' responses to our survey in early 2014. The report is not an exhaustive listing of all activities being undertaken by the cities; rather, it conveys a selected overview of the range of the climate actions underway in Silicon Valley.

Local Emissions of Greenhouse Gases

The Global Warming Solutions Act of 2006 (Assembly Bill 32) set the target of reducing California's greenhouse gas (GHG) emissions to 1990 levels by 2020. That is approximately a 20% statewide reduction in emissions from 2006. Even more substantially, the legislation calls for California's GHG emissions to be 80% below 1990 levels in 2050!

In order to be in alignment with the AB 32's goals, regional and municipal entities must inventory their GHG emissions to understand their sources. Subsequent inventories then will allow cities and other jurisdictions to assess the progress they are making in reducing emissions.



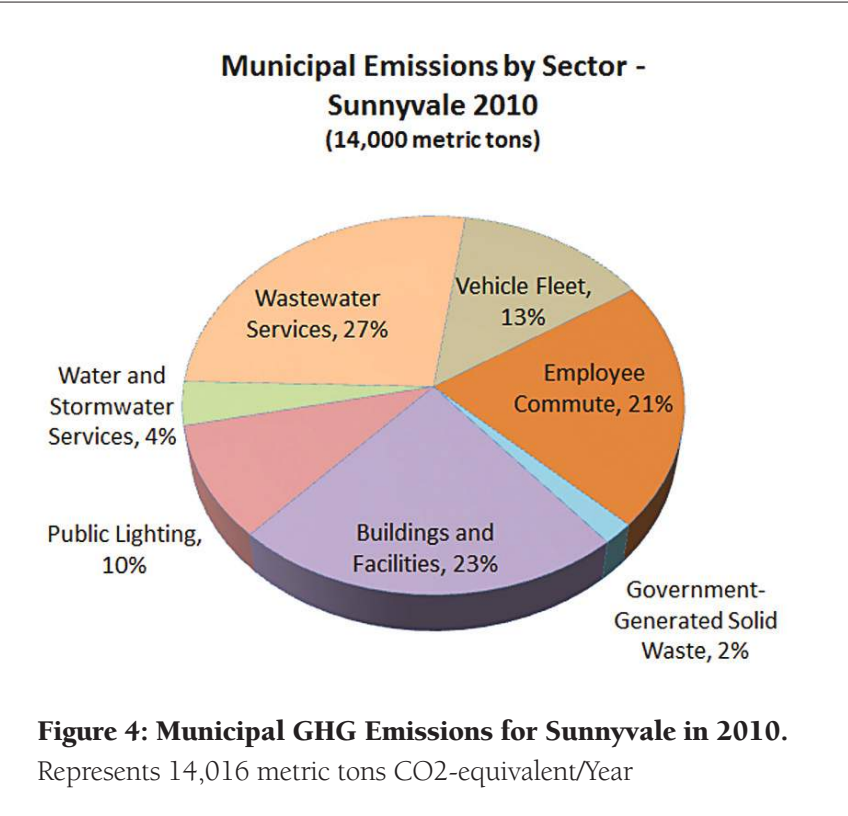
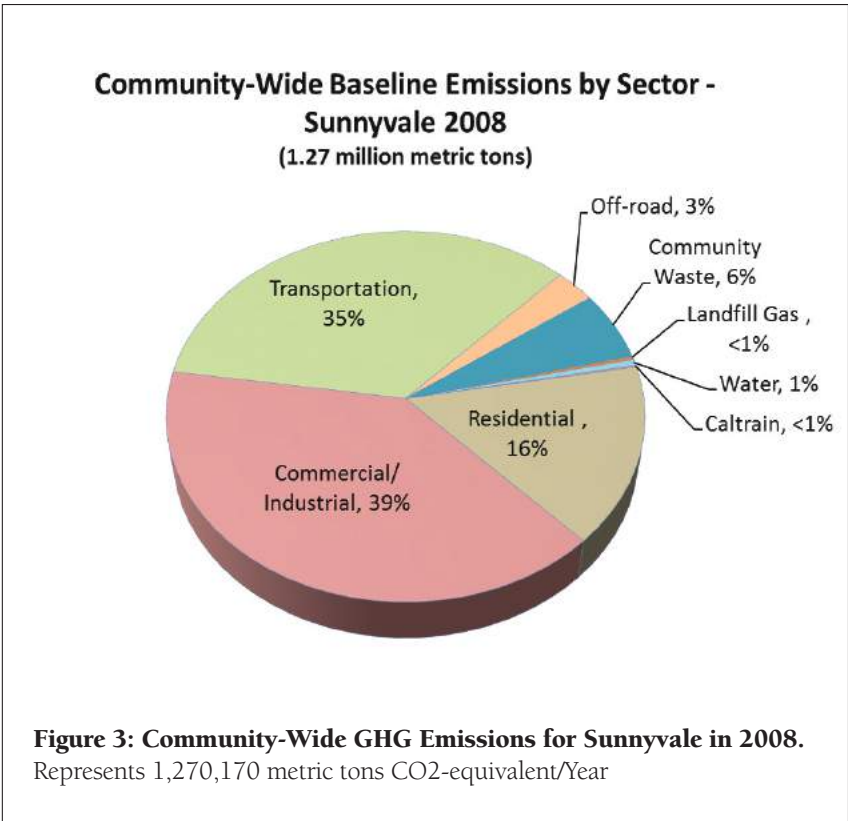
The Bay Area Air Quality Management District's (BAAQMD)⁸ most recent (2007) inventory of the Bay Area's GHG emissions by sector (See **Figure 2**) shows that emissions from the transportation sector and the industrial/commercial sector each account for over one-third of all our region's emissions. Energy production activities such as electricity generation and co-generation were the third largest contributor with almost 16% of total emissions. Residential fuel combustion (space heating, cooking and water heating) was the fourth largest contributor with seven percent of total GHG emissions. (The 2010 Bay Area inventory apparently shows a very comparable distribution, but had not been officially released at the time of publication.)

Figure 3 (next page) presents an example of a community-wide GHG emissions inventory using data from the city of Sunnyvale. Similar to the BAAQMD inventory, the largest two sources of emissions (nearly 75% of the total) are carbon dioxide released by: 1) Commercial and industrial activity, including building heating, cooling and lighting. 2) The combustion of fuels by on-road and off-road vehicles. (Sunnyvale is more industrial than most area cities, where transportation is typically the largest single source of emissions.)

The third largest source of emissions is electricity use and natural gas combustion from residential dwellings. The fourth largest is recycling and disposing of waste. Next are the emissions from transporting water around the city. Methane emissions associated with waste disposal, although pound for pound even more impactful than CO₂, make a smaller contribution of less than one percent – as do the emissions from Caltrain engines running through the city. (Caltrain emissions also contain many other toxic pollutants.)⁹

Figure 4 presents an example of a municipal inventory, also for Sunnyvale. The largest source of emissions is wastewater treatment, followed closely by those from buildings and facilities and those generated by the vehicles of employees commuting to and from work. Next in order come the emissions from the city's vehicle fleet, those generated by public lighting including streetlights, the pumping of water, and government generated solid waste.

It is important to note that the GHG emissions directly related to municipal government operations, in almost all cases, account only for only a small fraction of community-wide emissions. (In the case of Sunnyvale, emissions from municipal operations are **1%** of the city's total emissions.) Efforts by cities to control municipal emissions are nevertheless often a smart first step since the actions can be relatively high profile, demonstrate local leadership and introduce new technologies and best practices to the citizenry. However, substantially lowering a city's GHG footprint requires its officials and staff to devote most of their attention to reducing community-wide versus municipal GHG emissions.

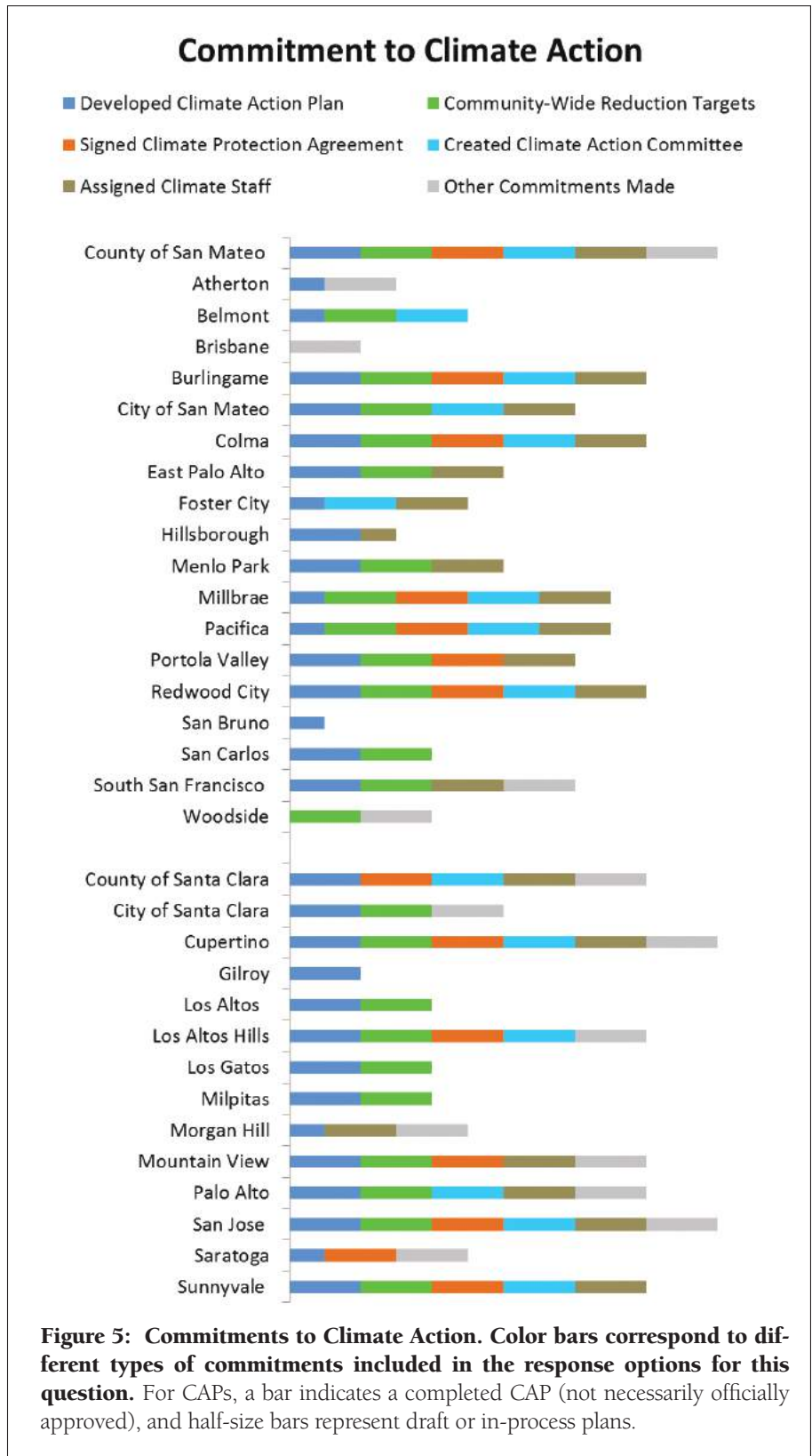


Cities' Climate Action Commitments

The first step for a city on the road to significant greenhouse gas emissions reduction is making a public commitment to do so. Our survey asked cities about several of the common ways to make such a commitment.

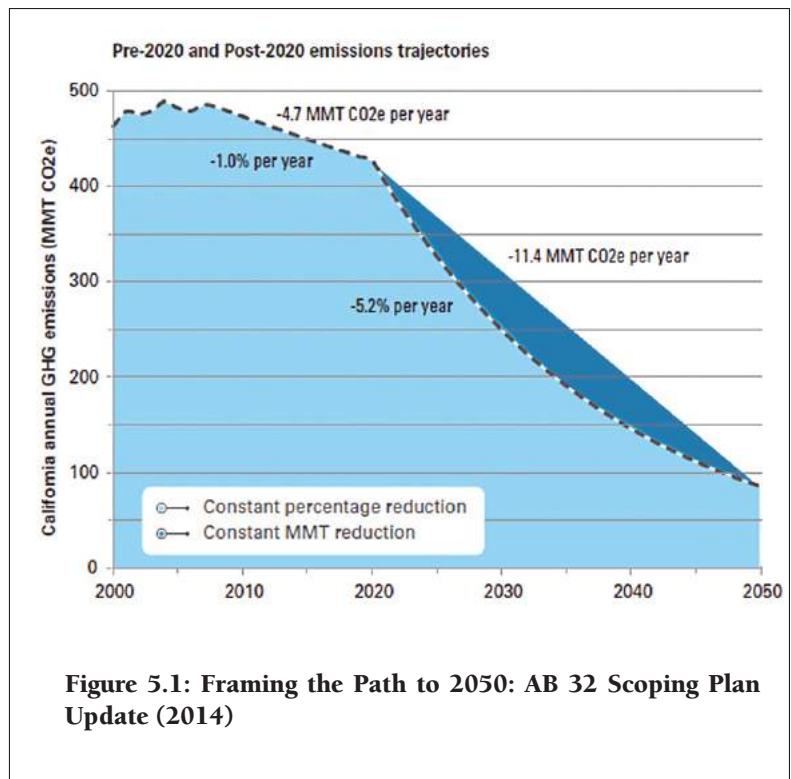
- Developing a Climate Action Plan (CAP) or equivalent.
- Setting community-wide emissions reductions targets.
- Signing a climate protection agreement (e.g. the U.S. Mayors Climate Protection Agreement¹⁰ & Bay Area Climate Compact¹¹).
- Creating a climate action committee or taskforce.
- Assigning city staff to focus on climate protection.

All of the responding jurisdictions reported making at least one commitment to reduce GHG emissions and many have made several types of commitment. (See **Figure 5.**) 94% now have a Climate Action Plan (CAP) in some form; 23 have a completed CAP, while another eight had a CAP either in-process or in draft form at the time they responded to the survey (shown as a shorter dark blue bar in Figure 5). Only two do not yet have some form of CAP. At least 70% of the cities report that they created their CAPs since our 2008-2009 survey.



Notable Community-Wide Targets	
Pacifica	35% below 2005 by 2020
Los Altos Hills	30% below baseline by 2015
Menlo Park	27% below 2005 by 2020
Mountain View	Staged reduction plan of 5% by 2012, 10% by 2015, and 15-20% by 2020
San Jose	Uses a "threshold method" targeting 6.6 metric tons of CO2 equivalent per service population in 2020, and 3.04 MT/SP/year by 2035
Palo Alto	Currently provides 100% carbon-free electricity and plans a 60% reduction in GHG emissions over the next decade.

A number of the cities involved community members in the development of their CAPs through a committee or task force. It is important to point out that some cities have taken significant climate actions prior to having a CAP, while a few cities with CAPs have taken only modest steps to reduce emissions.



Cities' climate action staffing patterns vary greatly. Most have specific staff members assigned to work on climate-related issues; some of whom work full-time to reduce emissions. Other cities use a broad-based model where multiple city staff members are involved. However, a number of other cities (not all of them small) have only one part-time staff member working on this issue — often in addition to performing a number of other unrelated responsibilities.

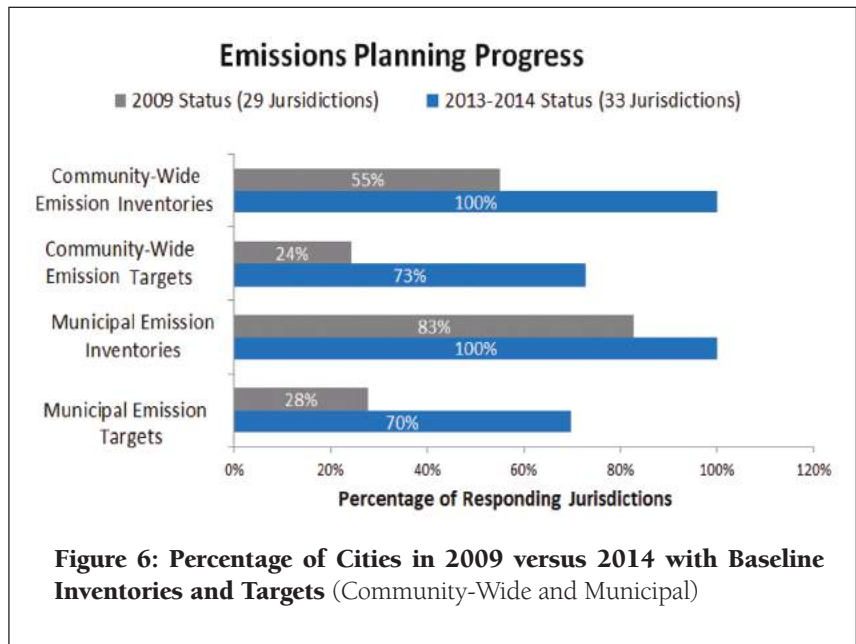
Identifying specific targets for GHG emissions reductions is a very important success factor in making reductions happen. Almost 75% of responding jurisdictions (24 of 33) set specific emissions reduction targets for their community overall.

- Most cities set a reduction target of 15% below their 2005 level by 2020. (2005 is a common baseline year.) The State considers this consistent with AB 32.
- Very few specifically mentioned having targets beyond 2020 (See **Box above**), although those planning to adhere to AB 32 goals should target to reduce 80% below 1990 by 2050.
- For strategic planning purposes, it is important for cities to realize the need for interim goals in charting a path to 2050. The AB 32 Scoping Plan Update states that emissions from 2020 to 2050 will have to decline several times faster than the rate needed to reach the 2020 emissions limit.¹² (See **Figure 5.1.**)

Emissions Reduction Planning

It is one thing to commit to reducing a city's greenhouse gas emissions, and altogether another thing to accomplish it. The best way to know if real progress is being made is to measure emissions over time.

Generally, cities undertake two types of GHG emissions inventories: a survey of the emissions generated by municipal operations, and a survey of the emissions produced by the overall community. The size of municipal emissions often are less than one percent of the total, so it is essential to measure progress and track metrics related to reducing community-wide emissions.



Community inventories require a two-step process:

1. The city must conduct a baseline inventory of GHG emissions-generating activities within its boundaries such as the heating, cooling, lighting, and construction of buildings (homes, offices, factories, etc.); transportation-related activities (private vehicles and public transit) including off-road emissions; solid waste-related emissions including disposed waste sent to landfills and emissions (methane) from closed landfills; and the emissions associated with the delivery of water and those caused by wastewater treatment.

Note: For some elements, such as transportation, statistical models are sometimes used to make estimations when empirical data is difficult to capture.

2. In subsequent years, the city must conduct periodic follow-up GHG inventories, ideally measuring the same sources of emissions, in order to assess its progress in reducing them. These inventories should be done frequently enough to track the effectiveness of particular GHG reduction initiatives and make necessary adjustments.

As **Figure 6** (above) shows, our 2014 survey results compare very favorably against the survey findings in 2009, regarding the percentage of cities that have conducted baseline inventories and have set corresponding targets. All 33 of the responding jurisdictions report they have done baseline emissions inventories for their overall community; the majority using 2005 data. Also, many more cities now have emissions reduction targets than in 2009.

There are several factors that make it difficult to simply directly compare the baseline and subsequent inventories to measure progress, even within the same city. (**See Box** next page.) Comparisons across cities introduce even more variables that make any aggregation and statements about trends risky. In their responses, several cities provided caveats regarding their GHG inventory data and methods, and some were not yet able to share the latest results based on 2010 data.

Despite the complexities associated with accurately conducting GHG emissions inventories, some general observations can be derived from the city inventory data that our survey collected:

- As **Figure 7** shows, many cities are making progress inventorying their GHG emissions – especially those that have completed their follow-up inventories (22 of 33 respondents).
- A higher percentage of cities in San Mateo County have conducted follow-up inventories than those in Santa Clara County. This discrepancy may be due to the fact that the City and County Association of Governments in San Mateo County hired a consulting firm (DNV-GL, formerly KEMA) to do all the inventories – which require some technical expertise and can be quite time consuming.
- The cities that have conducted follow-up inventories are positioned to better assess their progress in reducing GHG emissions and modify their carbon-reduction strategies as necessary.
- Conversely, the cities that have not yet conducted follow-up inventories have very limited direct GHG data on whether, and to what degree, their climate actions are actually reducing emissions.
- Preliminary data from the cities that have results from follow-up inventories show that all have made some progress in reducing their GHG emissions since the time of their baseline inventories. (See above **Caveats box**.)
- Cities need to continue to fine-tune their GHG emissions inventories. One largely neglected but potentially high impact area of emissions are those generated by the personal air travel of cities' residents (**See Box right**).

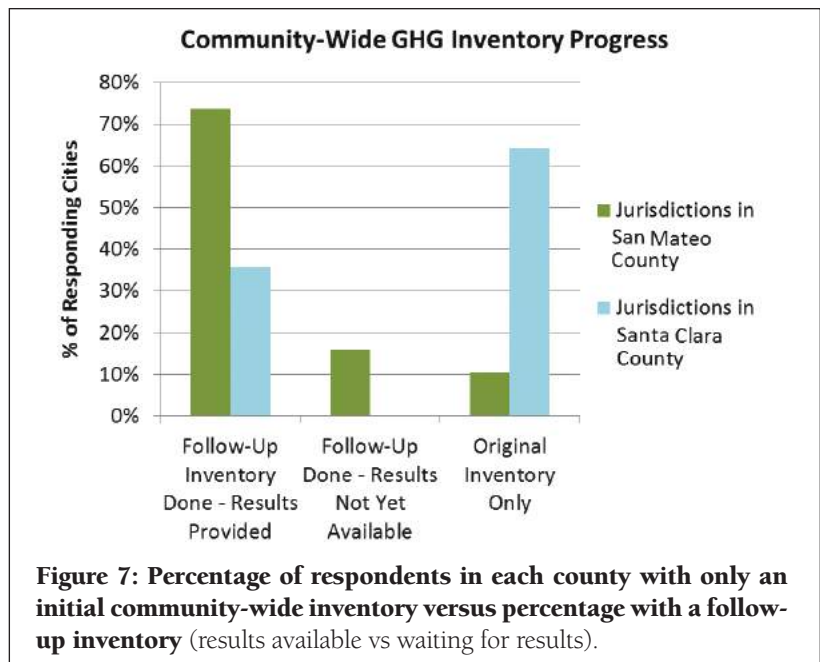


Figure 7: Percentage of respondents in each county with only an initial community-wide inventory versus percentage with a follow-up inventory (results available vs waiting for results).

Some Caveats to Consider when Comparing Emissions Inventory Values

- Preliminary inventory results require validation and often corrections.
- Many cities conducted baselines using the ICLEI model in 2005, and 2010 follow-up inventories based on different models from regional initiatives like RICAPs.
- Methodologies can vary for determining solid waste emissions, transportation models, etc.
- The scope of the sources of emissions included can change for a community over time, including population, new / retired facilities, etc.
- Decisions about what types of sources to include, and what methodologies to use, vary by city.
- Some cities adjusted baseline values due to double-counting of certain components in 2005, or to include new sectors to align with the followup inventory.
- Many variables beyond the city's climate actions, including economic conditions, can affect results.

Air Travel Emissions



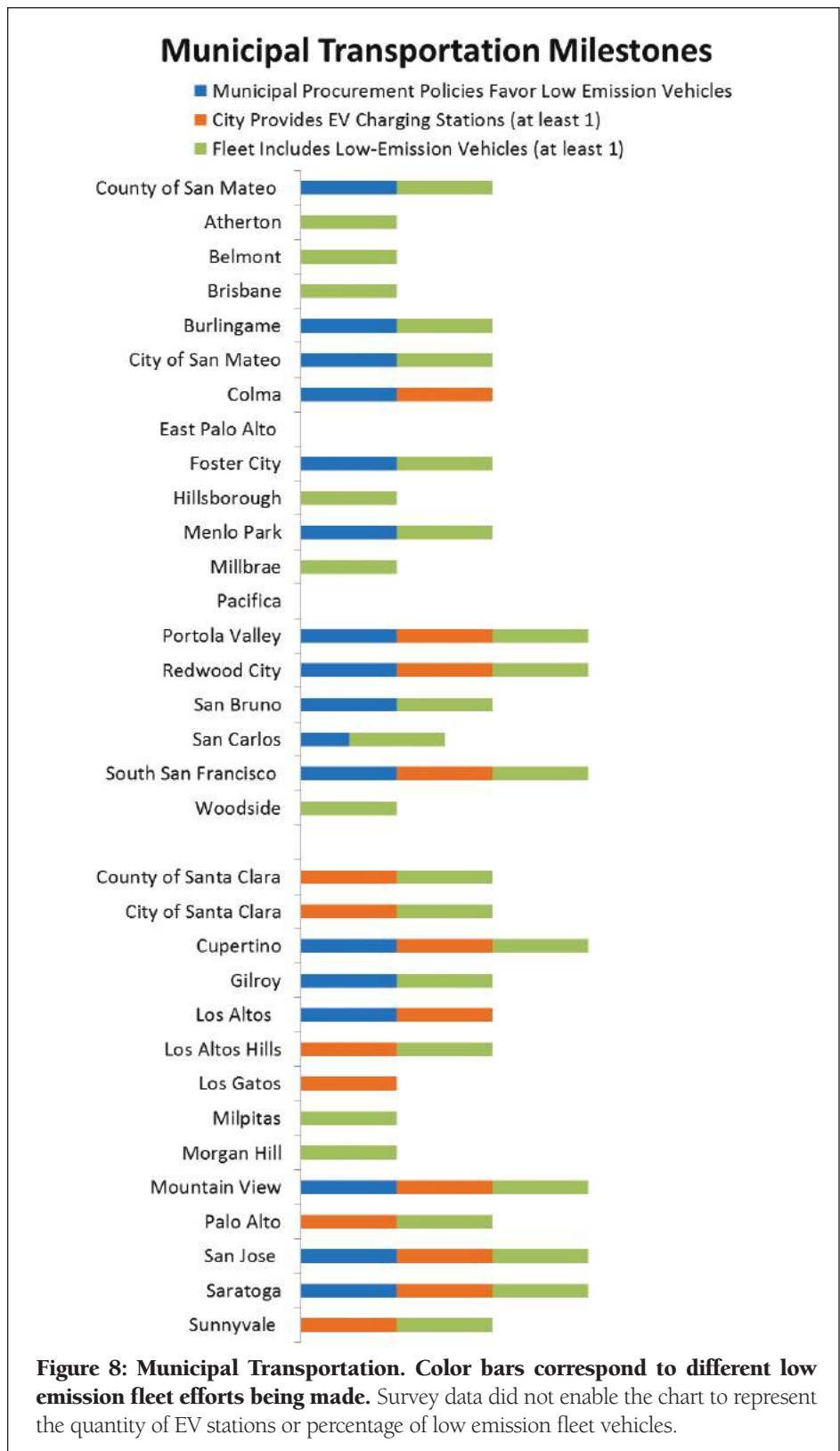
Only Palo Alto and Los Altos Hills measure another substantial source of their residents' GHG emissions – those from the airplanes in which they fly. In Silicon Valley, air travel constitutes a significant part of many individual's carbon footprints. In 2005 Palo Alto estimated that about 9% of its citywide emissions were attributable to personal air travel. It is very likely that this percentage is even higher in some smaller affluent communities. The omission of this, admittedly difficult to measure, source of emissions has the result of understating the amount of carbon that the people and cities in Silicon Valley contribute to climate change.

Climate Actions – Transportation

Transportation comprises about 36% of total GHG emissions in our region and is one of the two largest sources of emissions.¹³ (Shown earlier in **Figure 2**.) The greatest portion of transportation emissions comes from automobiles, with single occupancy vehicles being the largest part of that segment. Addressing emissions from this sector is challenging since mobile emissions sources, by definition, can move from one jurisdiction to another and local government regulation of vehicle emission standards is not practical. Vehicle air pollutant emission standards in California have historically been regulated by the State and a similar effort has been made to regulate vehicle GHG emissions.

Although cities and counties cannot directly regulate GHG emissions from vehicles, they can craft policies and programs that diminish the need for auto travel, expand the utilization of vehicles that produce low carbon emissions, and promote public transit.

Such strategies can reduce transportation emissions both from local government operations and those generated by the public at large.



Municipal Transportation Emissions Reductions

Earlier in the report, **Figure 4** displayed the municipal emissions inventory for the City of Sunnyvale. From this figure one can see that combined emissions associated with vehicle fleets and employee commutes typically represent a significant portion of overall emissions from government operations – 34% in Sunnyvale’s case.

One way to reduce municipal transportation emissions is by reducing fleet size or utilizing vehicles that produce few or no GHG emissions per mile. (See previous page **Figure 8**.) Another way is to help city employees reduce their commute-related greenhouse gas emissions. (See **Figure 9**.)

Our survey queried jurisdictions on the role alternative fuel and/or alternative technology vehicles play in their vehicle fleets and policies. We found mixed results. While there is a trend toward making city vehicles more fuel efficient, a number of the cities surveyed do not keep records distinguishing zero or low-emission vehicles from standard city vehicles.

Almost all cities had some zero or low-emission autos (San Jose leases 50 EVs, the City of Santa Clara has a fleet of Priuses and both of Woodside’s autos are hybrid SUVs) and some cities have trucks powered by compressed natural gas. Survey responses indicate that only half the cities have procurement policies favoring low or zero-emission vehicles. (See **Figure 8**.)

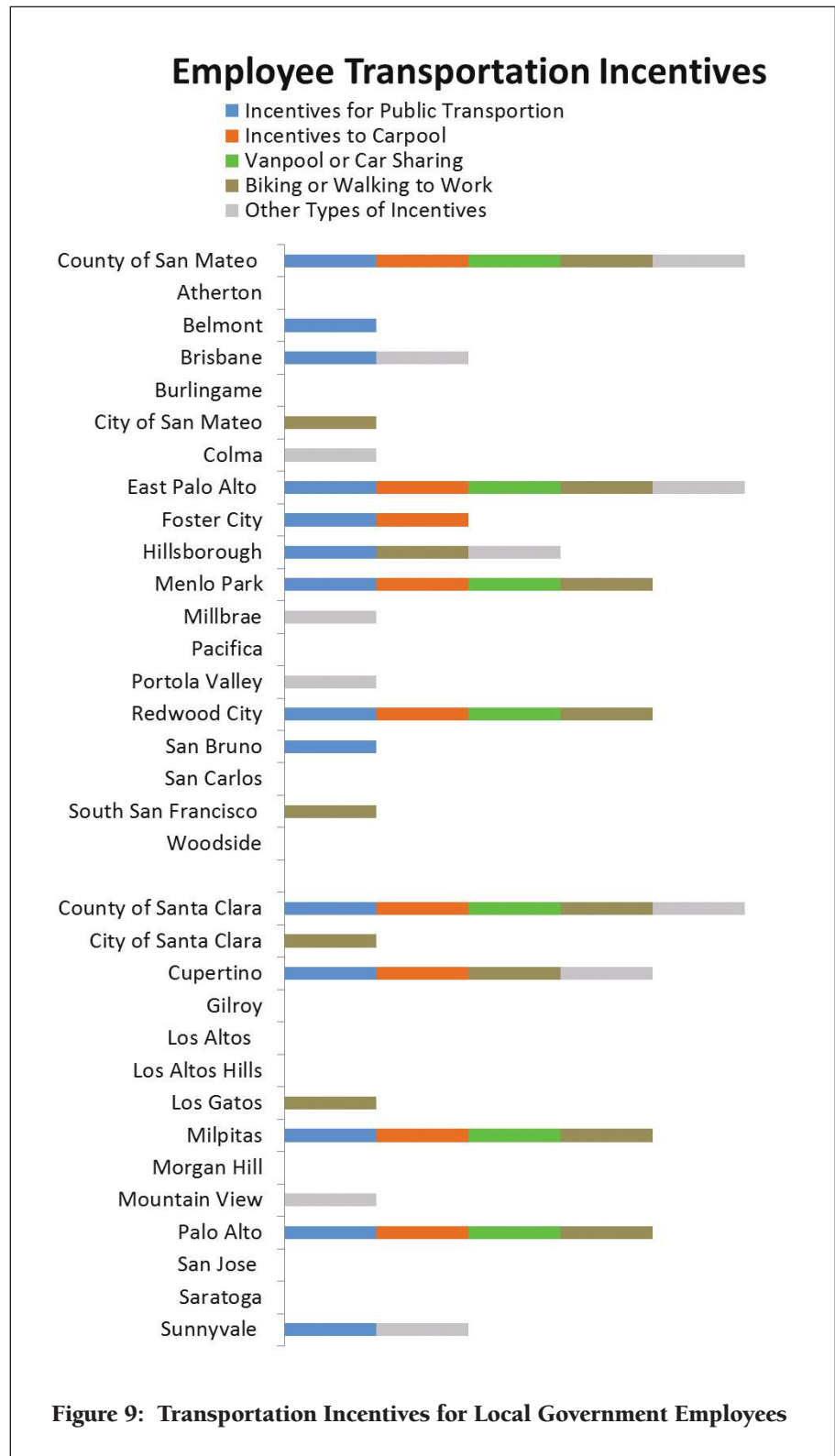


Figure 9: Transportation Incentives for Local Government Employees

We also asked the cities if they provide electric vehicle charging stations for use by their employees and the public – 15 cities report having at least one public charging station. A number of other cities have plans to install charging stations. San Jose stands out, housing about 50 public EV charging stations throughout the city. (A growing number of companies also provide EV charging stations for their employees.)

There are several ways that cities can encourage their employees to reduce their commute-related GHG emissions and almost all of the cities surveyed have made efforts in this direction.

- Of the two-thirds of jurisdictions that report having transportation incentives for their employees, 14 encourage the use of public transit. (For example, Palo Alto offers Caltrain Go Passes to employees.) This is the most common incentive area, with several cities providing pre-tax benefits for employees using public transit.
- Thirteen cities support biking or walking to work, most commonly by providing bike racks and lockers, bike sharing programs and shower facilities.
- Cupertino reports having the first municipal bike fleet in the region. Established in 2009, the city has offered bicycle safety trainings in partnership with the Santa Clara County Sheriff's Office to all employees as part of the program, which is used by approximately 50% of employees.
- As **Figure 9** indicates, the Counties of San Mateo and Santa Clara, East Palo Alto, Menlo Park, Redwood City, Cupertino, Milpitas and Palo Alto are offering the most variety of transportation-related incentives to their city employees.
- In the category of “other incentives”, examples provided by survey participants include: free EV charging for employees, shuttle access, zip car availability, a ‘one-free-bike’ program, and a telecommuting policy.
- The recently enacted law, SB 1339, requires all businesses with more than 50 full-time employees (including local governments) to provide some form of commuter benefit (e.g. a transit subsidy) to their employees by the end of September 2014.¹⁴

Community-Wide Transportation Emissions Reductions

There are quite a few ways that cities can seek to reduce the transportation-related GHG emissions of their inhabitants – both individuals and businesses. A major strategy is intelligent land use planning, also known as “transit oriented development.” This approach emphasizes concentrating growth in compact mixed-use urban centers that include high quality public transport, bike-friendly and walkable neighborhoods and short commutes. It is an excellent way, albeit fairly long-term, to diminish automobile use (especially single-occupancy vehicles), thereby reducing vehicle emissions.

Only 20 of the 33 responding jurisdictions have policies to requiring or encouraging transit-oriented development. (See **Figure 10** next page.) One of the best examples of this in Silicon Valley is Mountain View's award-winning high-density mixed-use development near downtown next to the Caltrain and light rail lines.

Other approaches used by cities to reduce the GHG emissions from transportation include promoting walking and biking (See **box**), improving bike lanes, promoting the use of low or zero-emission vehicles, taking steps to reduce vehicle idling, improving public transit including shuttles, and assisting businesses in reducing their employees' commute-related emissions.

Bay Area Bike Share



This regional program involves four cities in the two counties: Redwood City, Palo Alto, Mountain View and San Jose. Its 700 heavy-duty bikes can be rented from and returned to any station in the system, creating an efficient network with many possible combinations of start and end points. The Metropolitan Transportation Commission and other agencies fund the pilot project.

The results of our survey found that:

- Almost all cities make efforts to promote walking and biking, including the creation or improvement of bike lanes and participating in the Safe Routes to School program.¹⁵
- In addition, 17 cities report that they promote the use of low or zero emission vehicles in their community. Notably, the County of Santa Clara adopted a Plug-in-Electric Vehicle Charging Ordinance requiring either pre-wiring or the installation of charging systems for PEV's in new buildings – which acts as a model encouraging each of the cities in the county to adopt similar ordinances.
- Several focused on diminishing vehicle idling – primarily by coordinating traffic lights.
- Although the California Air Resources Board's updated AB 32 scoping plan notes the need for local/regional efforts to reduce vehicle miles traveled (VMT), only six participants say they are currently setting VMT goals. However, other activities taken may be contributing to reducing VMT.
- In the city of Santa Clara, the Santa Clara Valley Transit Authority is building a dedicated lane for bus rapid transit. In San Mateo County Sam Trans is doing a BRT phasing study.
- In the category of “other efforts,” examples provided include: San Jose promotes car sharing with approximately 25 cars available; the Peninsula Traffic Congestion Relief Alliance¹⁶ was mentioned by some cities; as was the Complete Streets¹⁷ policy – aiming to make streets safer for bikers and pedestrians.

Steps to Reduce Transportation GHG Emissions

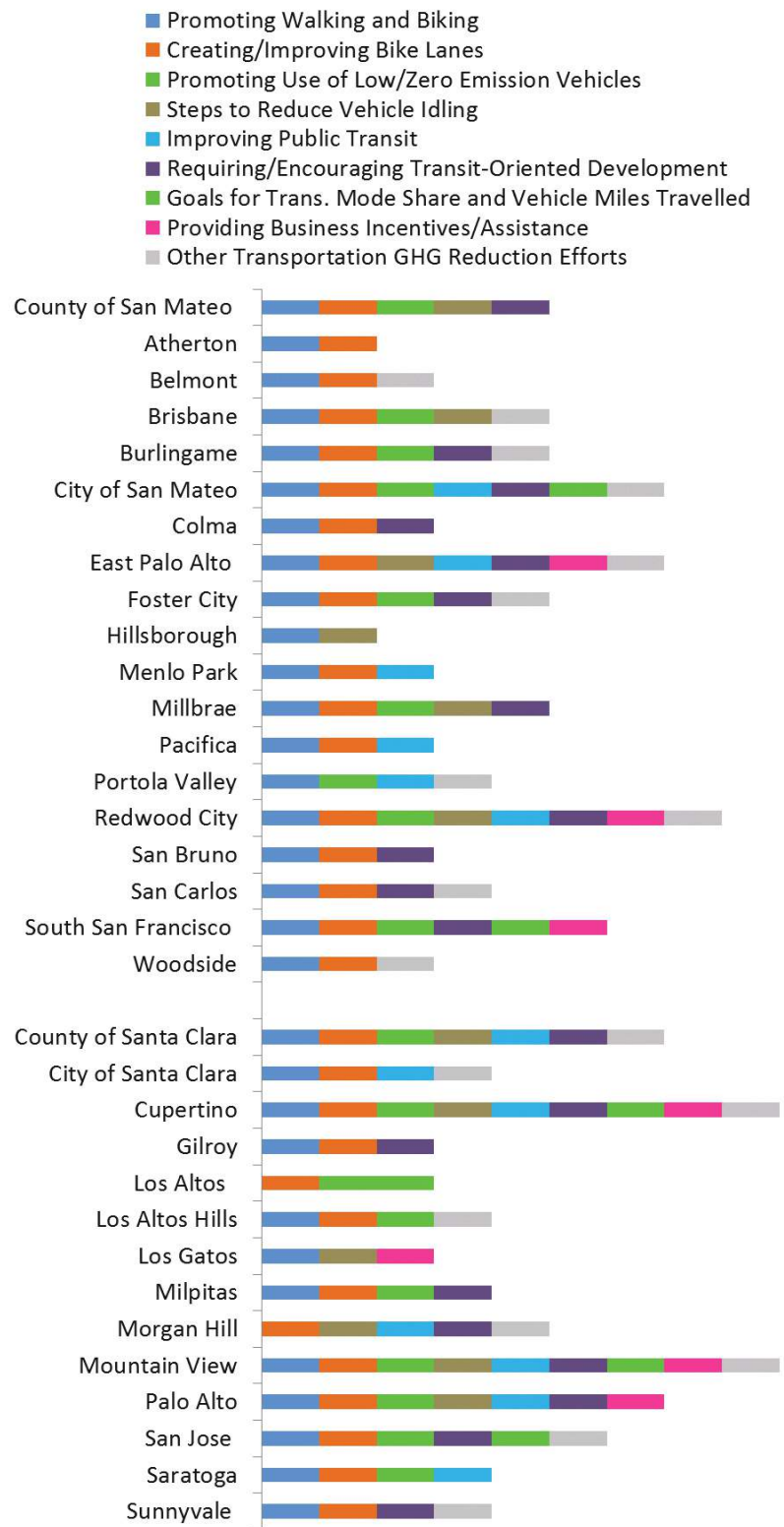


Figure 10: Efforts to enable the community to reduce transportation-related emissions

- Several cities are employing six or more types of activity to encourage public reduction of transportation GHG emissions including; Cupertino, Mountain View, Redwood City, San Mateo, East Palo Alto, South San Francisco, Palo Alto, San Jose, and the County of Santa Clara – with several other cities with four or five active programs.

Climate Actions – Buildings

Homes and commercial buildings use large amounts of energy for heating, cooling, lighting and other functions. The U.S. Green Building Council reports that, nationwide, buildings account for 41% of total energy use, 73% of electricity usage and 38% of all greenhouse gas emissions.¹⁸

Accordingly, cities can potentially have a large impact if they help the buildings within their borders to become much more energy efficient. Fortunately, in recent years a “green building” movement has emerged focused on constructing and retrofitting buildings to make structures much more resource and energy efficient throughout their lifetimes.

Included in this movement are two voluntary certification systems that can be used to assess how “green” a building project is. For commercial buildings, the U.S. Green Building Council has designed the Leadership in Energy and Environmental Design (LEED) Green Building Rating System. Using this system, building projects are assessed and projects that pass a threshold are awarded Silver, Gold or Platinum ratings. For residential buildings, Build It Green’s GreenPoint Rated verification system has become a regional standard. A rating totaling 50 points across specific categories is considered the minimum requirement for a GreenPoint rated new home.

These voluntary rating systems of buildings are backed up by strong State of California building regulations set in 2008, which have been strengthened even further in the latest 2013 code update. CALGreen building standards set a high bar that cities must follow for new construction and alterations of residential and non-residential buildings. And, Title 24 (part six of the State Building Code) focuses on increased energy efficiency of new and retrofitted homes and commercial buildings. (See **Box** above for opportunities and challenges.)

The energy efficiency standards require all new residential construction to be zero net energy by 2020 and all new commercial construction to be zero net energy by 2030. The 2013 standards, effective in 2014, are more than 25% more efficient on average, than the 2008 standards for residential and commercial buildings respectively, per the California Energy Commission.¹⁹

Opportunity: The new Title 24 updates offer cities the potential to drive significant GHG emissions reductions in the building sector.

Challenges: Increased complexity, requiring significant new training and tools. A temporary dip in compliance is a risk. Also, the new requirements will effectively diminish the energy efficiency upgrade rebates from PG&E, for certain upgrades now required by law.

Action: Cities have an opportunity to help drive high compliance levels by adding targets and implementation strategies into their Climate Action Plans. Consider possible value of cross-city efforts.

All California cities are now mandated to meet the new state building standards noted above. Our survey attempted to identify whether cities in our region also had policies of their own that set energy efficiency standards for municipal, residential and commercial buildings. In addition, we asked if they provided incentives for improving building energy efficiency. Many cities noted energy efficiency programs when asked about their efforts in public outreach and engagement, which are covered later in the report.

Regarding municipal buildings, two-thirds of the cities surveyed report having policies requiring energy efficient design for new buildings and for retrofitting existing buildings. One of the leaders is Portola Valley, which recently completed construction of a LEED platinum certified Town Center complex. In addition, San Jose requires LEED Silver certification for all new city projects larger than 10,000 square feet; 18 city buildings are currently certified.

Reducing the energy used in municipal lighting is a strategy that all of the cities surveyed have embraced. Many have switched to more efficient lights in their buildings and parking lots. Some use motion sensors to control illumination in meeting spaces. Converting streetlights or traffic lights to energy efficient LEDs is also a popular solution. (See **Box** above.) Millbrae, East Palo Alto, and Hillsborough have converted all of their streetlights in this manner. Mountain View, Sunnyvale and Cupertino have converted all of their traffic lights.

In regard to residential construction standards, 20 of the responding cities stated that they have explicit energy efficiency standards for new residential construction and 17 have such standards for residential renovations. A similar number of cities have explicit energy efficiency standards for new and retrofitted commercial buildings.

Several of the cities, including Hillsborough, Morgan Hill, Palo Alto and San Bruno (See **Box**), indicated that their standards are higher than the state requirements, although some may have been superseded by recent updates in state standards. Palo Alto is also considering a requirement that new residential and commercial buildings be all-electric.

A few of the cities provide incentives for green building practices. Selected examples include: Los Altos Hills fast tracks the review of projects with green elements; Sunnyvale give green buildings breaks on the floor-to-area ratio; Palo Alto's utility provides a \$3,000 rebate for certified green buildings; and the County of San Mateo expedites building inspections for projects over a high Build It Green threshold.

Overall, our survey shows substantial progress in cities' emphasis on green building standards. A good deal of this is attributable to the State's new higher building standards. But statements that most of the cities greatly appreciate the State's new standards (and some have set the bar even higher) are a very welcome development in this high-emissions sector.

Street Lighting



With over 63,000 streetlights, the City of San Jose has a large-scale opportunity and has installed 3400 smart, dimmable LED streetlights.

Using a combination of grant funding and PG&E rebates, the city saved almost \$90,000 in energy expenses and 818 MT of CO₂e per year. San Jose is looking to contract with its Energy Services Company to accelerate the conversion of another 2000 streetlights in 2014.

San Jose's 2013 Green Vision Report

San Bruno's "Rebuild it Green"



This program provides substantial rebates to homeowners whose homes were destroyed by the large gas main explosion and fire in 2010. Eighty percent of the rebuilt homes have incorporated green building elements beyond basic code requirements..

Climate Actions – Energy Use

Clean energy technologies that do not produce GHG emissions are a critical part of any strategy to combat climate change. A number of such technologies exist but solar energy (both for electricity generation and water heating) is an increasingly obvious alternative to pursue at the municipal level. This is especially the case since recent cost reductions make it more affordable and competitive with other forms of energy generation.

There are two ways that cities can promote non-fossil fuel energy use: 1) Increase renewable energy for city facilities and 2) Incentivize the public to purchase or generate it themselves. Our survey pursued both of these options. (Another emerging way to provide renewable energy on a community-wide basis, Community Choice Aggregation, is profiled at the end of this section.)

Municipal Renewable Energy Use

On this topic, we asked about the percentage of each city's municipal energy needs being met by renewable sources. Fifteen cities reported they tapped renewable sources (compared to six in 2008) but most did not know the percentage in their mix beyond the 19% in PG&E's portfolio. Among those cities that did know the answer, a few of them have made good strides.

Portola Valley generates between 60% and 70% of the energy for its municipal needs from the solar array on its Town Center. Both Millbrae and Los Altos Hills generate 35% of their energy from local renewable sources. And San Jose has 62 MW of installed solar power – ranking second among cities in California.

Many of the other cities also tap renewable sources for their municipal needs. Examples include:

- Pacifica has solar arrays on its city hall and wastewater treatment plant.
- Sunnyvale taps biogas (landfill and digester gas) to operate its water pollution control plant.
- County of San Mateo has two large solar arrays on County parking garages.
- Mountain View has a solar system on its downtown parking garage.
- Cupertino has two solar carport projects underway.
- South San Francisco and Millbrae have cogeneration facilities at their wastewater treatment plants.
- Burlingame taps methane from its sewage treatment plant to generate electricity for the plant's operation.
- Atherton has 100% of its radar speed indicator signs powered by solar panels.
- **See Box** at right regarding Palo Alto's city-owned utility.

In addition to the individual renewable energy efforts of cities, there is a regional initiative created by Joint Venture Silicon Valley called the Renewable Energy Procurement Project.²⁰ Its goal is to facilitate the increased installation of public renewable energy

Palo Alto's city-owned utility



Palo Alto shifted to a 100% carbon-free electric portfolio in 2013. To achieve carbon neutrality, the utility relies on renewable-energy sources, including wind farms, solar energy, renewable gas captured from landfills and hydroelectric generation (which provides about half of the city's entire electricity load).

It made its citywide electricity supply carbon neutral, by replacing power from fossil fuel sources with three utility-scale solar projects for a total of 80 MW of new power.

generation systems. Originally focused on Silicon Valley, the project recently expanded to include Alameda and Contra Costa Counties. It aggregates the purchasing power of local public agencies through standardized power purchase agreements and collaborative procurement. Through the project, solar installations have been installed on community centers, city halls, fire stations, police stations, senior centers, libraries and other public facilities. Participating Silicon Valley jurisdictions have included Cupertino, Foster City, Los Gatos, Menlo Park, Milpitas, Morgan Hill, Mountain View, Pacifica and Redwood City as well as the counties of Santa Clara and San Mateo.

Community Renewable Energy Use

Growing numbers of individuals and businesses in Silicon Valley are purchasing or generating renewable energy. Since we wanted to find out how cities were encouraging this trend, we asked them what kind of incentives they were using to promote the use of on-site renewable energy systems. (See **Figure 11.**)

- Twenty of the cities cited reduced or eliminated permit fees. (One city, Pacifica, countered this trend by raising its solar permit fee.)
- Thirteen cities noted expedited permitting; two mentioned providing rebates; and eight noted providing or identifying alternative financing.
- The County of Santa Clara, Cupertino and Palo Alto are currently offering the most incentives to the public for onsite renewable energy.

Another incentive cited by the cities is arranging for bulk purchases of solar systems. For example, Hillsborough, Los Altos, Los Altos Hills, Portola Valley, and Woodside partnered with PG&E and the Bay Area Climate Collaborative to organize a “solar group buy” resulting in 38 photovoltaic systems being installed with a combined capacity of 180 kW.

On a grander scale, Foster City is preparing to act as lead agency on a multi-city bulk solar purchase program in San Mateo

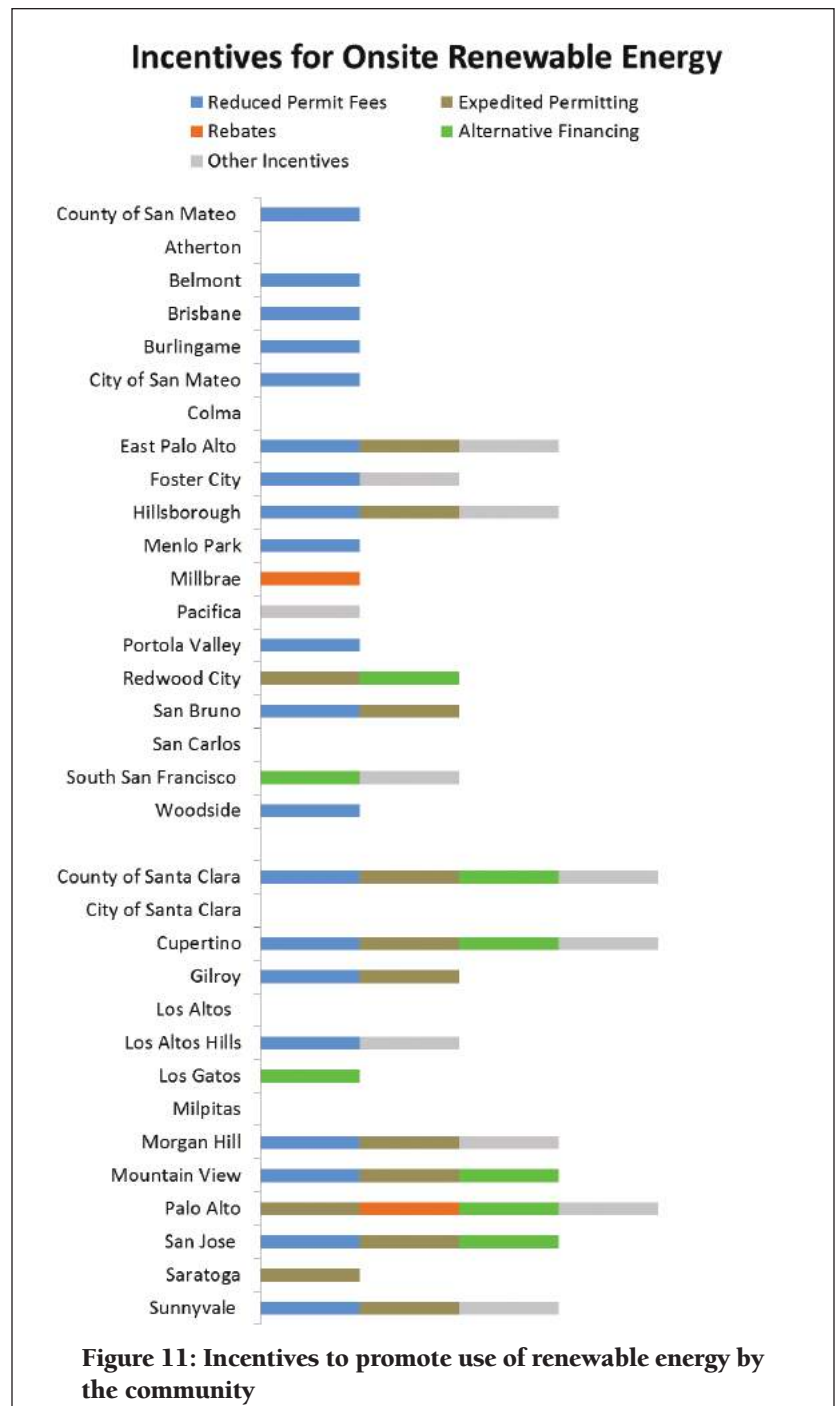


Figure 11: Incentives to promote use of renewable energy by the community

County. By offering reduced pre-negotiated prices with one or more solar installers and with promotional assistance from participating cities, the program's goal is to facilitate several thousand new residential solar installations.

Other city actions facilitating increased local energy development include:

- Morgan Hill indicates that new housing developments featuring solar are more likely to be awarded housing allocations.
- South San Francisco promotes solar financing through the commercial Property Assessed Clean Energy (PACE) program.²¹
- San Jose formed a new PACE district with loans to its residents and businesses for solar (and energy efficiency upgrades) payable through property taxes.
- Cupertino is developing a financing handbook for businesses seeking funds for renewable energy and energy efficiency through its GreenBiz program.

Most of the cities are taking action to push local renewable energy development, and the California Solar Initiative (CSI) has been a strong solar incentive statewide. (See Box right.) But the fact that six cities report having zero incentives and twelve others only employ one incentive indicates that there remains room for improvement. The CaliforniaFIRST²² program provides low cost financing for clean energy and energy efficiency to commercial buildings, and residential buildings as of the summer of 2014. Cities in our two counties are eligible to participate.

Sunnyvale is exploring the feasibility of constructing a "Community Solar Array" within the city. Three optional structures are being evaluated: 1) A city-owned community solar plant, 2) A shareholder-owned community solar plant, or 3) A third party-owned community solar plant.

If, and how, such a system would be deployed will be heavily influenced by the SB 43 Green Tariff Shared Renewables/Enhanced Community Renewables²³ rules currently being established by the California Public Utilities Commission. Under these emerging rules, the energy generated would be sold to PG&E through a power purchase agreement, and then resold by PG&E to energy customers as 100% green power. Whatever rules emerge, it is likely that Sunnyvale residents will have an option to purchase 100% green power in the relatively near future.

(See Box right noting a unique collaborative project.)

Another way to substantially increase renewable energy generation, currently being explored by some local cities, is

California Solar Initiative

As of March 2014, the State of California reported that 8,494 people in Santa Clara County and 2,330 in San Mateo County received solar installation rebate payments. (This is a conservative number since some cities, such as Palo Alto, use other solar incentive programs.) Residents of San Jose received 4,135 (38%) of Santa Clara County's rebate payments followed by 536 in Los Altos, 518 in Sunnyvale and 512 in Morgan Hill.

Challenge: CSI is no longer accepting applications, making it imperative to pursue new options to continue uptake of solar.

SEEDZ — The Smart Energy Enterprise Development Zone



This is a collaborative project initiated by Joint Venture Silicon Valley intended to model the "commercial power network of the future." Located in a zone including north Mountain View, north Sunnyvale and Moffett Field, the project's founding partners include Google, Applied Materials, Juniper Networks plus PG&E, the Electric Power Research Institute and the two cities. Its smart energy elements include distributed generation, grid infrastructure, electric transport, integrated building systems and electric storage and backup.

“Community Choice Aggregation.”²⁴ This approach allows cities and counties (sometimes banding together) to choose their own energy provider rather than being tied to an investor-owned utility. They aggregate the buying power of their citizens to purchase renewable energy (and generate their own also) and provide it on a community-wide basis. (The utility still handles the transmission and distribution of the electricity.) CCAs now serve nearly 5% of Americans in over 1300 jurisdictions including Marin and Sonoma Counties. It is very encouraging that local cities and counties in Silicon Valley are considering this strategy since switching to carbon-free electricity is the best way to dramatically reduce GHG emissions!

Climate Actions – Water Conservation

Fresh water is a scarce resource, becoming even scarcer in the serious drought currently affecting California. Climate change projections, especially the likely decline in the Sierra Nevada snowpack, signal even dryer times in coming years. In addition pumping, heating and treating water require substantial amounts of energy, therefore contributing to GHG emissions. For these reasons, it is imperative for all of us to use water very wisely.

Although the various water districts in Silicon Valley play the lead role in local water conservation efforts, there is a good deal that cities can do to reduce water use. In our survey, we asked the cities what steps they are taking to conserve water.

On the municipal front, a number of cities have taken serious steps to reduce water consumption. For example, Saratoga has installed low flow toilets and faucet aerators in city facilities. That city also has replaced a good deal of turf in city parks with drought-tolerant native landscaping and installed smart weather-based irrigation controls in its parks and many of its street medians. Los Gatos retrofitted its irrigation system in city parks and also planted drought-tolerant shrubs and native plants. Following similar actions, Palo Alto reduced its municipal water use by 83% between 2007 and 2012.

Then there are actions taken to reduce water use community wide. Outdoor water use is particularly a problem since landscaping irrigation often requires a significant amount of water. Fifteen of the cities surveyed address this problem, through water efficient landscaping ordinances, by promoting the replacement of lawns with more drought-tolerant options such as native plant gardens. Several cities, including Cupertino provide outdoor (and indoor) water use audits and assessments to help residents conserve water. Foster City provides rebates for lawn replacements including installing irrigation controllers and synthetic turf. Other cities having outdoor landscaping ordinances include Hillsborough, Portola Valley and Foster City. For example, the City of Santa Clara’s landscaping efficiency ordinance reduced the city’s water use by 20%. (Water districts often provide the rebates.)

Cities and water agencies also are helping to reduce indoor water consumption. Eighteen of the cities surveyed offer rebates for the installation of low flow toilets. In addition many cities, including Millbrae, Pacifica, East Palo Alto and Menlo Park, provide rebates to residents purchasing high efficiency washing machines. Millbrae also offers rebates to homeowners installing rain barrels and cisterns. Several cities, such as Mountain View and Millbrae, offer classes and workshops on water conservation. In addition, Mountain View has redesigned its utility bill to encourage water conservation.

Our survey asked if the cities used reclaimed water and 14 responded affirmatively. Sunnyvale, Mountain View and Pacifica use reclaimed water to irrigate their municipal golf courses. Santa Clara, Milpitas, Redwood City, Sunnyvale, Palo Alto and the County of Santa Clara irrigate their parks or selected municipal facilities with reclaimed water. Millbrae offers grey water reuse workshops.

The clear reclaimed water leader is San Jose. In collaboration with the Santa Clara Valley Water District, San Jose has developed the Silicon Valley Advanced Water Purification Center.²⁵ Currently the Center is producing 13 million gallons of highly purified recycled water per day. This reclaimed water is distributed by over 130 miles of purple pipe to customers in Milpitas, Santa Clara and San Jose. Its goal is to produce 40 million gallons per day by 2020. San Jose's ultimate goal is to reuse or recycle 100% of the city's wastewater.

Climate Actions – Waste Reduction

Production and consumption of a vast array of material goods continues to accelerate in our society. Extracting, processing, manufacturing, transporting, and disposing of these goods all contribute to GHG emissions due to the large amount of energy required in each stage of a product's life cycle. We need to do a much better job moderating this production/consumption process to reduce its negative environmental impacts.

Although local governments can take steps to moderate conspicuous consumption within their boundaries (e.g. encouraging the shared use of items such as autos and bicycles), our questions focused on the last stage of a product's lifecycle – disposing of materials (recycling, composting, landfilling and energy recovery from solid waste).

Since 2000, California has required cities to divert at least 50% of their solid waste from landfills. Statewide, California's diversion rate was 65% in 2010. The goal is to have 75% of the State's solid waste diverted by 2020.²⁶

In keeping with the State's waste diversion standards, we asked the cities what percentage of their solid waste was diverted through recycling or other methods. Twenty-two of the jurisdictions reported their diversion rates. Most of the remaining cities said they did not know their diversion rate because an independent contractor handled their solid waste. Of the jurisdictions responding, only two cities reported rates of less than 50%. Los Altos Hills led those at 75% or above with 97%. This high achieving group also included Woodside, Portola Valley, Los Altos, Palo Alto, Brisbane and Mountain View.

We also asked the jurisdictions if they had generated energy from their waste. Seven responded affirmatively: Sunnyvale (at the SMART station also used by Mountain View and Palo Alto), San Jose, Saratoga, South San Francisco, and the County of San Mateo. Lastly, we asked the jurisdictions if they had taken steps to decrease the energy used in wastewater treatment and eleven said they had: San Mateo, Foster City, Millbrae, Pacifica, San Bruno, South San Francisco, Gilroy, Los Gatos, Palo Alto, San Jose and Sunnyvale.

Climate Adaption

As the impacts of climate change become more apparent, there is growing recognition of the need to implement measures to adapt to climate change threats, in tandem with stepped up efforts to reduce greenhouse gas emissions. Since a number of cities are commencing to assess likely climate change impacts, in our survey we requested information from them on how they are planning to adapt to climate change.

In the San Francisco Bay Area, the most likely impacts of climate change over the next decade or two are sea level rise, declining freshwater availability due to drought, severe flooding due to occasional large storms, extreme heat waves and fires in the natural landscape.

Rising waters in the Bay and on the ocean coastline will require a regional response and public agencies are starting planning to address this potentially very costly threat.²⁷ But some cities and counties are getting into the act as well. The County of San Mateo recently hosted a well-attended sea level rise conference and included an adaptation assessment in its CAP and General Plan update. That County plus San Bruno, South San Francisco, and SFO did a study to assess and address sea level rise impacts. Mountain View conducted its own sea level rise study.

Other likely impacts can be met, at least in part, by local jurisdictions, ideally working in collaboration. **Figure 12** shows how the cities in our survey are starting to respond to potential climate change threats.

- Thirteen are planning for severe flooding (including Los Gatos planning for Lexington Reservoir spill over, and a joint powers authority formed to mitigate the flooding of San Francisquito Creek).
- Eleven are preparing for fires in natural landscape (e.g. brush removal, controlled burns, non-flammable roofing and other fire-resistant building standards).
- Twelve cities are addressing a decline in water quality or availability (both by conservation and added storage).
- Eight are addressing extreme heat waves. For example, San Carlos plans to open public buildings as “cooling centers.”
- Six jurisdictions noted efforts to address sea level rise along the coast, Bay shoreline and SFO airport; three others reported planning to address climate-related threats to municipal infrastructure and public safety.

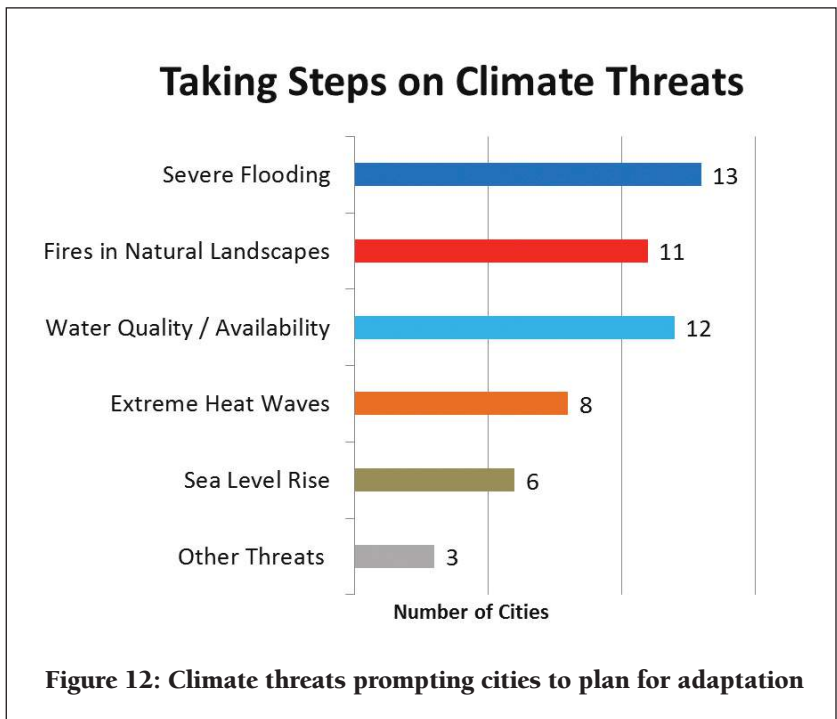


Figure 12: Climate threats prompting cities to plan for adaptation

The only reported resistance to climate adaptation planning was the opposition of realtors to controls on coast-side building in Pacifica.

In recognition of the reality that there are limits to the effective action that cities can take individually, regional efforts are becoming active forums for collaboration and coordinated action. Of particular note are the efforts of the Bay Area Climate and Energy Resilience Project, a regional entity promoting climate adaptation strategies, and Silicon Valley 2.0, a project encouraging climate adaptation led by the County of Santa Clara. (See appendix for details.)

Public Outreach and Engagement

Since the activities of people and businesses make up the lion's share of a city's greenhouse gas emissions, it is imperative that residents reduce their individual carbon footprints if a city is to make real progress. Some portion of their emissions may be reduced with little initiative on their parts simply by changing government policies. Examples of this are federal and state governments requiring greater auto fuel efficiency and reducing in the percentage of "brown power" in a utility's portfolio.

Cities have limited options to change residents' behaviors "unconsciously." One way, although not a quick fix, is to use urban redesign to locate new development near high quality public transport and develop neighborhoods to promote walking and biking. Cities can also promote behavior change by requiring higher energy efficiency standards for residential and commercial buildings – both new construction and retrofits.

Educating and incentivizing the public about sustainable alternatives and efficient energy strategies can impact behaviors. In that regard, our survey asked city representatives to identify "the steps your city has taken to promote climate change awareness among the citizens of your community and to actively involve them in reducing greenhouse gas emissions."

One way to engage citizens used by many of the cities was to involve some residents in developing their community-wide climate action plans. This move has the benefit of not only generating good ideas but also creating a cadre of local people who are knowledgeable and supportive of the plan's objectives and activities and can communicate that information to others in the community. Once the plan was developed, most of these groups appear to have faded away over time. Some persist, sometimes in a new form, such as the City of San Mateo's "Sustainability Commission" and Palo Alto's "Community Environmental Action Partnership" and "Carbon Free Palo Alto." (It is difficult to retain motivated community volunteers unless there are interesting and impactful climate-action initiatives in which they can become involved.)

Public Outreach in Cupertino



Cupertino has a particularly active community outreach strategy including: "Growing Greener Blocks" – a neighborhood-focused home energy audit program; "GreenBiz Cupertino" – an environmental consultancy and benchmarking service that helps small and mid-sized businesses save energy; "Tree4Free" – a program that provides free trees to grow the city's urban canopy in order to reduce temperature, improve air quality, and promote energy savings and carbon sequestration; and "Go Green Grants" – that provides small grants to residents for energy and water saving projects in homes and neighborhoods.

Another approach that a number of cities have employed to involve community members in climate protection is promoting energy efficiency in homes and businesses.

- Silicon Valley Energy Watch is a partnership between the City of San Jose and PG&E that provides energy audits and retrofit services for residences and businesses throughout Santa Clara County. (See appendix)
- San Mateo County Energy Watch provides similar services in that county. (See appendix)
- A number of the cities, for example Mountain View, have funded Acterra's Green@Home program that uses community volunteers to provide free residential energy audits.

(See **Box** on previous page regarding Cupertino's outreach strategy.)

Other community climate outreach approaches that the cities use include: speaker series; workshops and classes; Earth Day events; booths at fairs, picnics and farmers markets; displays at city hall; utility bill inserts; newsletters and flyers, and city websites and Facebook pages.

Despite these efforts, we have the sense that most people in Silicon Valley spend little time thinking about climate change or acting to reduce its likely impacts. If this attention deficit is indeed the case, it provides cities and organizations in our region with both an imperative and an opportunity to creatively engage their community members in combatting climate change!

Challenges Facing Cities

Since the goals of this report revolve around the desire to help cities, and the region, take effective action appropriate to the magnitude and importance of the climate change challenge, it is important to spotlight some of the common challenges our cities feel they are facing.

When asked to share their greatest challenges in reducing carbon emissions, and what types of support could be most helpful to future climate protection activities, the comments of the respondents fell into six general categories:

- Inadequate funding/incentives and certainty for programs
- Lack of sufficient resources and/or specialized expertise for certain tasks
- Making climate change a priority compared to other concerns
- Little power to address sources of high emissions impact
- Challenges of community engagement and behavior change
- State and Local policy alignment issues

The most common challenge expressed by over 30% of the respondents to our survey (city staff members) was that, in order to take more aggressive and consistent action to reduce carbon emissions, they need additional and reliable **funding and incentives**.

- Many energy program activities have been funded by federal and utility grants and agreements. With most federal energy grants now ended, many cities have very few outside resources to continue energy efficiency work.

- Staff members continue to monitor potential funding sources such as Proposition 39 and Cap and Trade revenues²⁸; however, this funding source may not be realized until 2015, based on the Governor's recent budget proposals.
- When Federal, State, and other tax credits, rebates and incentives are discontinued, it becomes more difficult to reach GHG emissions reduction targets.
- Dedicated funds, while needed, are rare. Energy money typically goes to PG&E and counties, and then is funneled down to cities.
- Respondents in some smaller cities noted the difficulty competing with larger cities for funding.
- On a positive note, San Jose noted that public/private partnerships have been, and continue to be, important to fund the implementation of that city's Green Vision.

Closely related, and nearly as commonly expressed, is the simple fact that city climate efforts are often **under-staffed** and existing staff members may not have time to develop the detailed expertise for certain emissions inventory and grant-related tasks.

- A number of the smaller cities have one person assigned to address climate-related issues. Not infrequently, these staff members are expected to perform other unrelated duties as well. Many of them feel overloaded.
- GHG Inventories and Climate Action Plans require particular expertise that may not be a core competency in all cities; navigating the world of constantly changing stimulus programs and writing effective grant proposals may also fall in this category.
- An issue here, related to funding, is the lack of certainty that climate staff positions will endure. Staff funding may be tied to specific grants or programs, leaving cities without a dedicated resource and continuity of knowledge.

Despite the now wide recognition of the urgent need to address climate change, **making it a high priority** is a challenge in some cities.

- Many cities fund their climate action efforts from their general funds. In these cases addressing climate change must compete with short-term urgent needs such as crime fighting. Not infrequently, addressing climate change becomes an afterthought.
- Certain cities indicated that the "low hanging fruit" of saving energy might already have been captured. To achieve increased reductions, greater investments are required and may have much longer payback periods.
- Five cities explicitly mentioned the lack of the "political will" by key decision makers, to strongly advocate for policies and prioritization of emission reduction efforts. In those cases, staff members report difficulty getting action and money for implementing Climate Action Plans. On the other hand, several respondents specifically highlighted the high level of commitment from their city councils, city manager's offices and other city departments.

The survey participants cite **lack of influence** or control over emissions from both transportation and existing-building sectors as challenges. This is of particular concern, and potentially a large opportunity area, since transportation and buildings generate over two-thirds of our local emissions.

- Staff members in many cities feel they have little control over traffic – the number one carbon emitter. Communities along freeways deal with the issue of non-local truck and car traffic passing through their com-

munity. Others feel limited by their city's limited biking/walking infrastructure, land use patterns that don't support sustainable transit-oriented development, and the reluctance of people to use mass transit, carpool, or voluntarily reduce their miles traveled.

- Existing buildings may remain in place for decades and therefore represents a major opportunity for energy efficiency improvements; however state mandates have been focused on new buildings until very recently. The California Air Resources Board is specifically asking for local help in this arena, however, cities perceive a lack of direct control over existing private buildings (homes and offices).

Effective community engagement is essential for serious reductions of community-wide emissions, particularly in cities where the transportation infrastructure and buildings are already “built out.” Changes in energy-related behavior are needed and several cities have experienced how difficult and time-consuming it can be to try to engage their community members to become leaders in their neighborhoods and workplaces.

- While many cities report having invested effort in promoting awareness of climate change with their residents and businesses, nearly 20% of respondents list community engagement as one of their greatest challenges in reducing carbon emissions, and note that effectiveness of their investment is difficult to measure.
- Respondents note the challenge of influencing busy people to take action and make the necessary changes in travel choices, home energy efficiency, renewable energy usage, water conservation, etc. Resistance to change is strong, particularly in a culture of consumption and accumulation.
- Incentives and rebates may not be funded well enough to spur big change — e.g. the modest rebates in the Energy Upgrade California²⁹ program have apparently resulted in very low participation rates. Land use policy and transit infrastructure change very slowly, putting significant pressure on influencing behavior change through outreach that really connects.
- Several respondents also cited the challenge of creating good partnerships with schools, businesses and community groups.

State versus Local Policy can also present challenges.

- Despite the power of state building requirements, implementing CALGreen can be complex for cities that have local green building ordinances.
- There is a perceived lack of policy coordination and collaboration with cities to provide more latitude so they can be adapted to fit local needs, and ensure the state policies do not supersede more stringent local policies.

Conclusions and Recommendations

Conclusions

Local governments in Silicon Valley have made progress in combatting climate change in recent years. At the same time, the urgency to take action has become scientifically clearer and more broadly understood. Much more remains to be accomplished for Silicon Valley's greenhouse gas reductions to scale to the magnitude of the challenge confronting us over the next 20-30 years.

Our survey reveals a climate action glass that is half full.

On the one hand some real progress has been made by the jurisdictions surveyed:

- 94% have developed a Climate Action Plan (or equivalent).
- 100% have conducted baseline community-wide GHG emissions inventories.
- 75% have set community-wide GHG emissions reduction targets.
- 67% have conducted at least one follow-up community-wide GHG emissions inventory.
- Preliminary data indicate that all of the jurisdictions conducting comparable follow-up community-wide GHG emissions inventories have reduced their emissions to some degree since 2005.
- Almost all of the jurisdictions have made special efforts to reduce the GHG emissions of their municipal operations.
- 67% have taken some steps to adapt to the likely impacts of climate change. Climate adaptation was not even on the table five years ago!
- In addition, since our 2009 survey a number of new sources of regional coordination and technical assistance for the jurisdictions have emerged. A good example is RICAPS – the Regionally Integrated Climate Action Planning Suite in San Mateo County. These entities are helping a number of the jurisdictions to make substantial climate action progress.
- State building codes (Title 24 Energy Efficiency Standards³⁰ and CALGreen³¹) were strengthened recently, and conforming to them provides the framework to help the jurisdictions reduce GHG emissions from a major sector.

Yet, substantial challenges to achieving significant GHG emissions reductions remain:

- Many cities give a relatively low priority to combatting climate change as compared to other challenges they face. The lack of a sense of urgency on the part of some elected officials and limited support by some city administrators translate into modest budgets and staffing levels. Limited public support is a factor as well. As a result, well-meaning but under-resourced and often part-time staff members are greatly challenged to mount effective GHG reduction programs.
- In all the jurisdictions, over 95% of the GHG emissions come from the private sector (individuals and businesses) in their communities. Reducing these emissions is crucial but often difficult for local government to influence. While jurisdictions are making progress reducing some of the emissions that are easiest to influence (e.g. setting green building efficiency standards), most cities are finding it challenging to effectively educate, engage and incentivize their citizens to voluntarily reduce their emissions.
- Cities that have not conducted follow-up GHG emissions inventories have difficulty directly measuring the effectiveness of their efforts and prioritizing future GHG reduction activities.

- Sizable progress on one of the primary emissions producing sectors, transportation, has proven to be an elusive challenge for cities, and is still a large opportunity area. Reducing vehicle miles traveled, especially by the ubiquitous single occupancy vehicles, is necessary but the convenience of autos makes public transit and other transportation alternatives a hard sell.
- Although all jurisdictions conducting follow-up community-wide GHG emissions inventories appear to have reduced their emissions to some degree since 2005, many of these reductions are modest. Therefore, at their current pace of activity, it is uncertain if some of the cities will meet their 2020 GHG reduction targets.
- Most cities appear to have given little attention to the big challenge of continuing to reduce GHG emissions beyond 2020 when the reduction targets become even deeper and the challenge of attaining them more daunting.

Recommendations

Silicon Valley is known worldwide as a center of innovation – not only in high technology but also in clean-tech. Given our region’s tradition and the expertise of its residents, we should be a leader in local government climate action planning. The incremental climate action steps that our local jurisdictions have taken thus far are a good start and they prepare us for even more substantial work in the near future.

We make these recommendations both in light of the above-mentioned conclusions and also in recognition of the dramatically changed climate and energy context in which we are now operating as compared to the early 2000s when climate change first came to most cities attention. Now there are both new threats to be addressed and emerging opportunities to be seized.

Our first and most important recommendation for the cities and counties in Silicon Valley:

Think and act more strategically to effectively address climate change			
1. Extend ambitious GHG emissions reduction targets beyond 2020	2. Pursue more multi-jurisdictional collaborative initiatives	3. Initiate game-changing projects	4. Encourage state and regional entities to set mandates, assist and fund

1. Extend GHG emissions reduction targets beyond 2020, make them more ambitious, and start planning now for how to achieve them.

Climate change is going to hit us hard and we need to move fast and dig deep to avoid its most dire impacts. Our society needs to be at or near zero carbon emissions within 20 to 25 years!

In its updated AB 32 scoping plan, the State of California states its intention to develop a mid-term statewide emissions target that will frame the next suite of emission reduction measures and ensure continued progress toward scientifically based goals; it also encourages local governments to do the same. Similarly, the Bay Area Air Quality Management District is setting a regional target of 80% below 1990 levels by 2050.³² Achieving this target will require average emissions reductions of five to six percent per year!

Most cities in our survey have focused their attention on achieving 2020 emissions reduction targets. In addition to these short-term goals (which, as we mention above, may be difficult for some cities to attain), we think that the cities must also set ambitious targets for GHG emissions in the years following 2020. And, they need to start planning now how to achieve those targets.

2. Pursue more multi-jurisdictional collaborative initiatives

Even when cities make combatting climate change a priority, many are hard pressed to significantly reduce their GHG emissions due to limited resources and staffing. We see two possible ways to address this resource and expertise deficit:

- Explore more systematic collaboration between Santa Clara and San Mateo Counties at the county level. San Mateo County's RICAPS and Santa Clara County's Office of Sustainability both are doing good work helping their cities reduce their GHG emissions. Given their proximity and the fact that cities in the two counties already interact with each other, a cooperative agreement between the two entities could avoid overlapping services and increase impacts.
- Adjacent cities, especially smaller ones, should consider sharing staff (or consultants) and undertaking joint climate action projects. Particularly in San Mateo County, a number of the cities' climate actions are very limited by their low budgets and their use of part-time staff. Effective climate action requires both significant staff time and expertise. Sharing one or more top-flight staff members, focused on climate change, is one way to accomplish this.

3. Initiate game-changing projects.

Most carbon reduction strategies, while helpful, do not result in dramatic reductions in GHG emissions. Given the urgency of reducing emissions rapidly, it makes sense for cities to identify and undertake actions having that capability.

- The most powerful instrument local jurisdictions have available to significantly reduce their carbon emissions is replacing fossil fuel energy with renewable energy for electricity generation. Community Choice Aggregation is an obvious way to accomplish this because it has the capability to rapidly shift a large percentage of a city's population to carbon free energy. Ideally formed by a combine of cities, CCA or something similar should be seriously explored by all of the cities that do not have their own utility. (Sunnyvale, Mountain View and Cupertino are now exploring creating a CCA.) Cities interested in this step should add reference to it in their CAPs.
- Identify a handful of the most egregious and largest point sources of GHG emissions within a city and make it a priority to significantly reduce those emissions. For example in Menlo Park, the cogeneration facility at SRI International and the closed Marsh Road Landfill at Bedwell Bayfront Park (its methane gas discharges are flared currently) together account for about 10% of that city's community-wide GHG emissions. If a city makes reducing emissions at facilities like these a public priority, not only would its emissions be substantially reduced but also it would be making a very visible commitment to combatting climate change.
- Another way to decarbonize local energy is to pursue "fuel switching" by replacing natural gas powered devices (e.g. hot water heaters and furnaces) with electric ones in all new and retrofitted buildings. Also, requiring that all new residences and commercial buildings have electric vehicle charging stations can enable a transition to low carbon transportation.

4. Urge state and regional entities to mandate higher standards and provide the technical assistance and funding enabling cities to meet them.

- Expand California's Renewable Portfolio Standard³³ (for electricity providers) to move from 33% in 2020 to 100% in 2030.
- Push for a substantial portion of the funding generated by the auction proceeds of California's Cap & Trade³⁴ program to support local GHG reduction actions.
- Encourage the California Air Resources Board, the California Department of Conservation, or the Bay Area Air Quality Management District to conduct standardized GHG emissions inventories for the cities every two years.
- Encourage the Governor's Office of Planning and Research or the Association of Bay Area Governments (ABAG) to share with local cities information about best climate-action practices being undertaken by cities across the country.

Additional Recommendations

Make Climate Action a Top Priority

- Many cities in Santa Clara and San Mateo Counties need to make combating climate change a much higher priority and back up that commitment with increased staff resources (at least one full-time person solely focused on climate change) and funding. In some cases, moves in this direction may require pressure from and the support of concerned citizens.
- Cities also need to make climate action a more visible priority. This could be accomplished by undertaking high profile projects and requiring annual progress reports to the city council and the community at large.
- Cities should conduct community-wide GHG emissions inventories regularly – at minimum every two years. This would be best accomplished by using outside experts to calculate the emissions.
- Cities should screen all of their decisions through a “climate change filter” to determine if they reduce or contribute to GHG emissions.

Step Up Community Engagement

- Cities should more actively engage their citizens in the carbon reduction process.
- Partner with local non-profits (e.g. Acterra in Palo Alto and Menlo Spark in Menlo Park, or a Sierra Club Cool Cities Team) to implement community-based projects (e.g. bulk purchases of residential solar arrays) to reduce GHG emissions and personal carbon footprints.
- Sponsor well-publicized community-wide competitions for good carbon reducing ideas and provide mini grants to promising projects.
- Involve youth in identifying and pursuing carbon-reduction activities.
- Organize neighborhood “green teams” whose members practice low carbon lifestyles and encourage others to do the same.
- Identify and honor local “Low Carbon Heroes” (individuals and organizations) for their demonstrated ingenuity, commitment and success in reducing GHG emissions.
- Cities should measure and publicize the carbon emissions associated with personal (and business) air travel and encourage the voluntary reduction of such travel.

Focus on Transportation and Building Emissions

- Since transportation is, in most cities, the largest contributor to GHG emissions, the reduction of vehicle miles traveled (VMT) is very important. While supporting the expanded use of electric vehicles is very desirable, those vehicles on the road still contribute to traffic gridlock. Reducing VMT will not only reduce emissions but also help to solve traffic and parking problems – which often are rated by residents as more urgent problems than climate change. Therefore, the cities, the counties and regional entities should make comprehensive Transportation Demand Management programs a very high priority. We need to help people drive less and get them out of single occupancy vehicles!
- Charging for parking is another strategy that should be pursued. The price signal sends a strong message in favor of alternatives to driving in private vehicles. When applied to city employees it can be focused on drive-alone commuting and can be especially effective when combined with transit passes and efficient vanpools. When applied to the public at large, it can similarly discourage the use of private vehicles.

- Make the energy efficiency of buildings a very high priority, given its proven cost-effectiveness as a carbon reduction strategy. Now that Property Assessed Clean Energy financing is available to residential as well as commercial and industrial property owners, cities should strongly encourage all property owners to take advantage of this excellent source of financing for building energy efficiency upgrades.

Generate More Funding/Financing

In order to generate the additional funding needed for climate action, cities should explore tapping municipal revenue sources, such as increasing the utility user tax, and earmarking the proceeds for carbon reduction projects.

Give More Attention to Climate Adaptation

Cities should conduct “Climate Risk and Vulnerability Assessments” to clearly understand the specific risks they and their residents face. Even with limited financial resources, when risks are identified, strategies can be developed for integrating climate adaptation plans with ongoing activities and new projects.

In summary, following through on these four strategic recommendations plus action on the additional recommendations (as appropriate for each city’s unique situation), can enable local jurisdictions in Silicon Valley to decisively step up to and meet the massive climate change and clean energy challenge confronting us!

Appendix — Sources of Technical Assistance for Cities

Bay Area Air Quality Management District — A regional agency that regulates sources of air pollution in the Bay Area. Its Climate Protection Program is developing a “Regional Climate Protection Strategy” designed to reduce GHG emissions to 80% below 1990 levels by 2050. It also inventories GHG emissions and provides data and other assistance to local governments in the Bay Area. <http://www.baaqmd.gov>

Bay Area Climate and Energy Resilience Project — A collaborative of public, private, and non-profit stakeholders in the San Francisco Bay Area. The project supports and enhances the local climate adaptation efforts of cities, counties and other organizations. It organizes workshops and conferences, undertakes surveys of sub-regional initiatives dealing with climate adaptation and community resilience, and proposes collective climate adaptation solutions. <http://www.abag.ca.gov/jointpolicy/projects.html>

Bay Area Climate Collaborative — A public-private partnership focused on accelerating the clean energy economy. It emphasizes market-oriented and cross-sector initiatives that reduce carbon, advance economic development and accelerate the penetration of climate solutions. Its projects include the Next Generation Streetlight Initiative, the Electric Vehicle Readiness Awards, and the Bridge to a Clean Economy that focuses on near-term market-oriented climate initiatives. <http://www.baclimate.org>

Climate Protection Campaign — A non-profit environmental organization based in Sonoma County that provides information and assistance for government, business, and the community at large on Community Choice Energy and other climate protection solutions based on their work in the North Bay, Silicon Valley, and other California communities. <http://climateprotection.org>

Governor’s Office of Planning and Research — One of the OPR’s responsibilities is providing tools and guidance for local governments in California to address climate change. These include: publication of technical advisories and regulatory guidelines, coordination of state online climate change resources, coordination of a best practices learning network for local governments, and a video library of innovative climate solutions. http://www.opr.ca.gov/m_climatechange.php

Joint Venture Silicon Valley, Public Sector Climate Task Force — One of JVSV’s several initiatives, the Task Force includes representatives from every city and county in Silicon Valley plus other public agencies. It works with local governments, helping them develop tools, technologies and collective strategies to reduce carbon emissions. It also serves as a clearinghouse, sharing best climate action practices at its bi-monthly meetings. <http://www.jointventure.org>

San Mateo County Energy Watch — Formed in 2008 through a partnership between PG&E and the City/County Association of Governments, SMC Energy Watch provides energy saving services (energy audits, rebates, benchmarking, and trainings) to local governments, small businesses, non-profit organizations, schools and some low-income residences. One of its primary elements, RICAPS (the Regionally Integrated Climate Action Planning Suite) assists cities in drafting climate action plans and designing and implementing GHG inventories. Its monthly Multi-City Working Group meetings are a time for city representatives to get assistance implementing and tracking their climate action plans. <http://www.smcenergywatch.com>

Silicon Valley 2.0 — A regional initiative, managed by the Santa Clara County Office of Sustainability and funded by the Strategic Growth Council. The project, focused on Santa Clara County, uses a risk management framework to: evaluate the exposure of community assets (infrastructure, populations, and landscapes) to likely climate impacts; examine the potential consequences to the economy, society, and environment of this exposure; and develop preemptive adaptation strategies that improve community resiliency. <http://www.sccgov.org/sites/osp/SV2/Pages/SV2.aspx>

Silicon Valley Energy Watch — The City of San José, Pacific Gas & Electric Company (PG&E), and Ecology Action have joined forces through SVEW to help Santa Clara County save energy and money. The program offers free energy audits, targeted retrofits, technical assistance, education, training, and more. It works with nonprofits, small businesses, community organizations, professionals, residents, and more, connecting eligible customers to a broad range of available energy efficiency resources. <http://www.sanjoseca.gov/index.aspx?NID=1501>

Sustainable San Mateo County — A non-profit organization devoted to promoting sustainability throughout the County. It produces an annual Indicators Report measuring progress toward sustainability in a number of areas including greenhouse gas emissions, energy use, transportation and green buildings. It also hosts an annual awards event recognizing businesses, community groups, city programs, and individuals that demonstrate an outstanding commitment to improving sustainable practices within San Mateo County. <http://www.sustainablesanmateo.org>

Sustainable Silicon Valley — A consortium of companies, governmental entities, academic institutions and non-profit organizations that work together to inspire a sustainable future. Its programs include: WEST Summit — an annual event that addresses Water, Energy and Sustainable Technology issues, Eco Council Salons that address key sustainability issues, and Sustainability Leaders Forums that provide ideas and networking opportunities for people in the sustainability field. <http://www.sustainablesv.org/>

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