

# **Climate and Transportation Solutions:**

**Findings from the 2009 Asilomar Conference on  
Transportation and Energy Policy**

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## **Chapter 9:**

# **Smart Growth and Climate Change: California's SB 375 and Sacramento's Blueprint Experience**

**by Mike McKeever**

Strategies and policies to reduce greenhouse gas (GHG) emissions from transportation have mostly focused on vehicle technology and fuels. The use of those vehicles and fuels has received much less attention. This chapter describes innovative efforts in Sacramento, California, to reduce vehicle use and sprawl. While the initial motivation for this initiative had little to do with climate change, the Sacramento experience soon became a model and inspiration for a 2008 California law to reduce GHGs by reducing land use sprawl and vehicle use. The 2008 law is now being used as a model for national legislation. Thus, the Sacramento experience provides insight and background for policies and processes targeted at vehicle use and urban land use—whether to reduce GHGs or simply manage urban growth.

The Sacramento Area Council of Governments (SACOG) represents the governing bodies of 22 cities and 6 counties—Sacramento, Placer, El Dorado, Yolo, Yuba and Sutter—in central California that work collaboratively to plan future transportation and land use patterns for the region. Under federal law, SACOG is the designated Metropolitan Planning Organization (MPO) for the region. Every four years, it prepares a long-range Metropolitan Transportation Plan that must comply with the federal Clean Air Act. SACOG is also responsible under state law for planning to meet the region's housing needs and, since 2008, to oversee reductions in GHG emissions from passenger travel. The organization is a voluntary association with responsibilities to address the needs of its member cities and counties. SACOG's 31-member governing board includes at least one elected representative from each of its 28 member governments.

While SACOG carries out integrated land use, transportation and housing planning for the entire region, it does not mandate compliance with its regional land use vision, known as the Blueprint. Instead, the Blueprint represents a consensus among its members based on their recognition that they share common challenges and will succeed through common strategies. This chapter describes SACOG's Blueprint growth strategy; the land use planning principles that underpin it; land use, transportation and air quality metrics that measure the plan's performance; and SACOG's new responsibilities to reduce GHGs.

## **The Blueprint Process**

The Blueprint is a strategy to guide growth through the year 2050 adopted in December 2004. Its development followed adoption of a Metropolitan Transportation Plan in 2002 to determine whether traffic conges-

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tion, air quality and overall quality of life could be improved in the Sacramento region through changing the current pattern of development. The process was designed to combine the best technical information with a comprehensive citizen and stakeholder participation to determine the region's preferred future growth pattern. SACOG designed the process to produce a vision for the region that had sufficient technical grounding and political support to serve as the basis for SACOG's next Metropolitan Transportation Plan and, more broadly, to shape the region's future.

Over the last 15 years the Sacramento region has grown very rapidly. Until the last few years, much of the growth had been in a pattern typical of most metropolitan areas in the country characterized by low population density and an imbalance between jobs and houses within the major sub-areas of the region. Larger lot subdivisions farther away from the region's employment centers dominated the housing market. Growth in primary, or base sector, jobs has been dominated by government and other service sector employment.

The adopted Blueprint is comprised of seven growth principles through 2050:

- Housing choice and diversity
- Use of existing assets
- Compact development
- Natural resources conservation
- Quality design
- Mixed use development
- Providing transportation choices

The map and growth principles set out a strategy for managing a projected increase of nearly two million people, one million jobs and 840,000 housing units. The long-term 2050 time frame was selected purposely to stretch beyond the typical 20- to 25-year planning horizons of existing land use and transportation plans. The Blueprint tested these principles at three geographic scales: neighborhood, county and regional.

## **Neighborhoods**

A series of thirty neighborhood level workshops were held throughout the region. To help reach out to communities across a large region, SACOG turned to Valley Vision, who was a full partner in executing the project. Valley Vision recruited and involved citizens and stakeholders in the workshops, and they formed advisory committees of key opinion leaders within each county to further recruit workshop participants. The goal, realized at most workshops, was to seat individuals from five to seven diverse interests at each small group table, including developers; local property owners and businesses; citizens; activists from the environmental, housing and other issue specific communities; and public agency representatives.

Project staff designed a series of interactive planning exercises for participants. In their small groups, participants used context maps, pictures and data, along with a map of the study area, and a menu of land use options to make decisions that were recorded by placing stickers on parcels to represent the land uses they wanted in their plan. Roving land use and transportation experts answered questions, and a trained facilitator guided the discussion.

A laptop computer and operator, running the new web-based Planning for Community Economic, Environmental and Energy Sustainability (I-PLACE3S) software through a cell phone connection, were available at each table to enter the plan as the citizens created it and, at various junctures, to tell them how it was performing on key metrics like the balance between jobs and housing, housing diversity, vehicle miles traveled, air emissions per household, and mode choice, including the percent of trips by car, transit, walking and biking. I-PLACE3S is designed to achieve two primary objectives. First, it provides sophisticated, objective technical information to illustrate the complex interrelationships between land use, transportation and air quality issues. Second, it provides information in an easily understood and accessible format that all stakeholders can use to develop informed opinions. This system enabled SACOG to use interactive planning technology in dozens of community meetings to provide parcel-specific land use planning accu-

racy at a regional scale and at real-time response speeds. An economic reality test included in I-PLACE3S conducts a planning level pro forma analysis on the proposed development ideas for every parcel. This return on investment function was used to test the profit performance and, thus, investment feasibility for private developers.

### **The Counties**

SACOG convened committees of senior land use planners within each of the counties and built three alternative county level planning scenarios for growth through 2050 to compare to the base case scenario. The planners started with the citizen input from the neighborhood workshops. They examined the results of a housing market preference survey and the long-range demographic forecast to develop realistic targets for what portion of future housing construction should be planned for eight low, medium and high density housing products. Current general plans and zoning codes were assessed to determine to what extent built densities were at or below allowed densities. The planner committees discussed ways it may be possible to change local policies and codes over the next five decades. Each county prepared three scenarios, all designed to use smart growth principles, but in different ways and to different degrees. The four scenarios, including the base case, were labeled A, B, C and D to avoid biasing people's opinions about their merits. The overall growth rate within the county typically varied between the three scenarios. This method of building the county scenarios was designed to blend visionary planning with real-world policies and market conditions, with the goal of ultimately finding a preferred scenario that would perform well and could actually be implemented.

The county-level round of workshops were conducted with a minimum of one workshop in each county and several in Sacramento County. Maps, charts and stickers used in the earlier neighborhood workshops were used, but this time the participants were asked to choose the county-wide scenario they liked best, either the base case or one of the three alternatives.

Laptop computers and operators were at each table to enter the changes and give immediate feedback on how their changes would alter the performance of the scenario for travel behavior, air quality impacts, jobs-housing balance, total growth, and other impacts measured by I-PLACE3S. This time, the computers were connected to the server using high speed Internet, not cell phones, to transfer much larger data sets resulting from more parcels in a county compared to a neighborhood.

### **Region**

Three alternative regional scenarios were created with the regional planners committee to compare to the base case future. The three scenarios were similar or identical for about 80 percent of the growth through 2050. In one scenario, the final 20 percent was located in small towns, including one new town, around the periphery of the region. In another scenario, the final 20 percent was located in inner-ring suburban locations adjacent to existing urbanization. In the final scenario, the last 20 percent growth was placed into inner infill and revitalization areas.

The four regional scenarios were also labeled A, B, C and D and discussed at a large day-long regional forum attended by 1,500 people in downtown Sacramento. Facilitators for each table were recruited, drawing from local elected officials, senior local government staff, and staff from related state agencies, transit agencies and air districts. The facilitators were required to take a training course, and their direct participation in the event was an important element in building understanding of and support for what became the final preferred scenario.

After the small group work, participants used individual keypad clickers to record both their personal preferences and the consensus preference of their small group. No tables voted for the base case scenario and very few selected the scenario that placed the final 20 percent growth in the cities the farthest away from the urban core of the region. The consensus votes of the tables favored the scenario that placed the final 20 percent in the inner suburban areas, while the individual votes favored the scenario that placed the final

20 percent of the growth in inner infill areas, an interesting divergence that turned out not to be particularly difficult to resolve. After analyzing each of the maps, SACOG staff prepared a draft preferred scenario that was a balance of the two most popular scenarios from the regional workshop.

### Board Approval

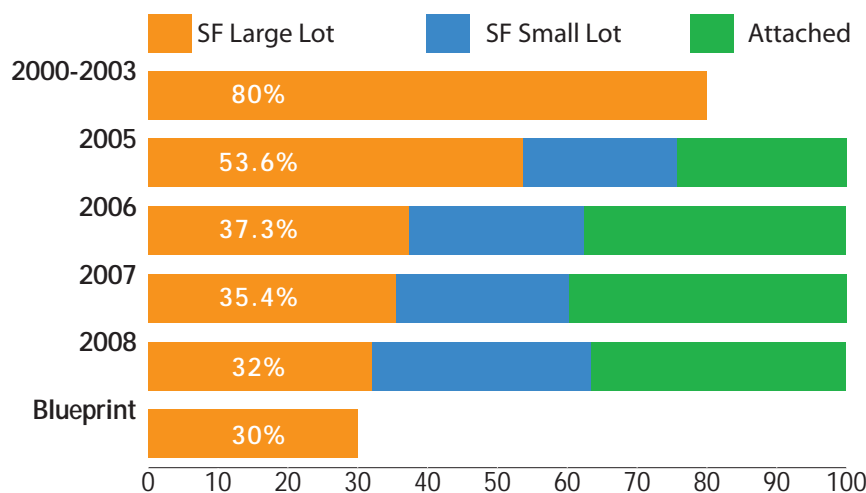
Throughout the entire workshop process, SACOG board members were briefed and provided opportunities to give input and guidance on project progress at least monthly, both at committee meetings and at full board meetings. The input from the elected officials peaked with the last big event of the Blueprint development process, a regional summit of all city and county elected officials. The elected officials used electronic keypads to identify what aspects of the draft preferred Blueprint alternative they liked and disliked. The draft alternative was very popular with the participants, and the few areas of concern gave SACOG staff fairly clear direction about the types of final refinements needed before taking the plan to the board for final action.

By the time the workshops and two regional forums had been conducted in April 2004, more than 5,000 individuals had used the modeling software and given input into the future vision of land use in the Sacramento region.

## Major Features of the Blueprint Growth Strategy

The Blueprint changes the mix of future housing products significantly compared to base case trends in the region. In 2004, detached single family (SF) properties from 5,500 square feet to several acres in size represented 68 percent of the existing housing stock and 80 percent of the new housing being constructed. The Blueprint calls for only 31 percent of the new residential units to be built in this larger lot, with nearly seven out of ten in an attached format, such as townhouses, rowhouses, condominiums or apartments, or small 3,000 to 4,000 square foot lots in detached formats.

**Figure 9-1:** Recent trends in the Sacramento area housing mix 2005-2006



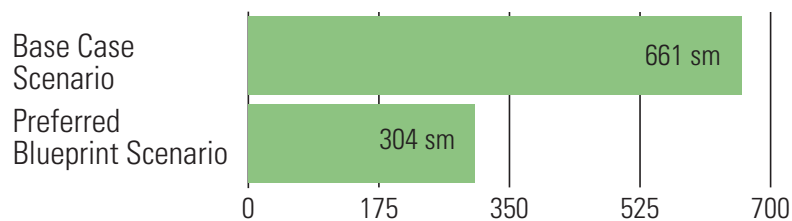
The project conducted market research on homebuyer and renter preferences that showed a strong interest in the higher density products, particularly when placed in a setting that reduced driving distances to jobs and services. The market interest was particularly strong among households with residents aged 55 years and older, with two-thirds of people in this category stating a preference for small lots or attached

products for their next residential move. This is important because the project's demographic research projected that two-thirds of the growth in households in the region through 2050 would be people in this age category, within only 21 percent of the growth in households with children. As shown in Figure 9-1, by 2008, the fourth year of Blueprint implementation, 68 percent of new housing starts were small lot single family or attached, a dramatic change from the trend line in 2004.

In 2004, virtually no growth was occurring through redevelopment of parcels with existing buildings that were either in disrepair or had a market value below the value of the land. SACOG used the simplified economic feature of the I-PLACE3S software to estimate the redevelopment potential for downtowns and transportation corridors throughout the region. The analysis showed there is a great deal of land appropriate for redevelopment. The Blueprint scenario relies on redevelopment of existing built parcels for 13 percent of the housing growth, or 109,000 units, and 10 percent of the employment growth, or 100,000 jobs. The Blueprint also relies on infill with new buildings on existing, vacant lots for a substantial portion of future growth. Approximately four out of ten of the 400,000 new jobs and 320,000 envisioned by the Blueprint will occur within walking distance of transit service at least every 15 minutes during the peak afternoon and evening commute hours.

The result of the higher density housing products and aggressive use of redevelopment and infill opportunities is a growth pattern that uses land much more efficiently. As shown in Figure 9-2, the base case scenario requires 661 square miles of land for new urban development through 2050, while the Blueprint requires only 304 square miles for the same amount of growth in population, housing and jobs. This is a reduction of 357 square miles needed for future urbanization.

**Figure 9-2:** Land requirements for new urbanization, in square miles through 2050



The Blueprint's more compact future urban footprint creates the potential to preserve significant amounts of agricultural and natural resource lands in the future. While the Blueprint does not constitute a detailed open space, farmland or natural resources management plan for the region, it could require 64 fewer square miles of agricultural land converted to urbanization; 31,300 fewer acres of disturbed resource lands, such as wetlands, vernal pool complexes and hardwood stands; and 36,000 fewer acres of development in floodplains.

The detailed design features of development determine its overall quality and some aspects of travel behavior. Variables, such as the relationship of buildings to streets, setbacks, the placement of garages, sidewalks and parking, landscaping, the aesthetics of building design, and the design of the public right-of-way, including block lengths, grid street patterns and connectivity, increase walking, biking and transit use and reduce the length of auto trips. In 2050, only 34 percent of the people in the base case scenario would live in neighborhoods with good or excellent pedestrian features. Twice that many, or 69 percent, would live in neighborhoods with these features in 2050 in the Blueprint scenario.

The concept of mixing rather than segregating land uses has many manifestations, including locating jobs with housing nearby. The Sacramento region has three major employment centers, downtown Sacramento and two suburban centers. All three have many more jobs than nearby housing, an imbalance that the Blueprint strives to remedy with more aggressive housing growth in these areas in the future. By 2008, 25,000 of the 40,000 new housing units projected by the Blueprint near the Sacramento jobs center were already either built, under construction, approved for development, or in the application stage.

Mixing land uses means more than the location of jobs and housing. Multiple worker households and other considerations mean that it will never be possible to have all workers living close to their jobs. Moreover, only 15 percent of all auto trips are commuter trips. Short connections to schools, shopping, services, parks and other amenities are also important. The Blueprint focuses on the neighborhood scale by encouraging a mix of uses in infill settings and in new, larger master planned communities. In the 2050 base case scenario, 26 percent of the people would live in areas with a good mix of housing, jobs and other amenities, while in the Blueprint over twice that many people, or 53 percent, would live in these circumstances.

SACOG designed a transportation network to serve the Blueprint and base case growth patterns in 2050. The difference in travel performance was substantial. Congestion was significantly reduced. In the base case scenario, in 2050 vehicle miles traveled per household increased by 12 percent, while in the Blueprint scenario, they decreased by 17 percent. Average daily travel time per household increased by 27 percent by 2050 in the base case and increased by only 5 percent in the Blueprint. The percentage of trips using transit was more than four times as high in the Blueprint, roughly 3.3 percent, compared to the 0.8 percent in the base case. The percentage of walking or bike trips was more than twice as high in the Blueprint than the Base Case, 12.9 compared to 5.5 percent, respectively.

Other performance metrics were also favorable. Emissions of small particulates and greenhouse gases are estimated to be 15 percent less in the Blueprint compared to the base case. Residential water demand is projected to be 33 percent less per household, largely due to smaller yards. The total cost of constructing infrastructure for water, transportation, sewer, flood control, drainage and resource mitigation is \$14 billion less through 2050 in the Blueprint scenario compared to the base case scenario.

## Integrating the Blueprint

In 2008, the SACOG board adopted a new Metropolitan Transportation Plan (MTP), which prioritized \$42 billion in transportation investments for the region through 2035. It was SACOG's first MTP based on a future land use pattern that was significantly influenced by the Blueprint growth principles. It reflects a transportation investment portfolio purposely designed to serve a growth pattern that is more compact and has a stronger mix of land uses within the various neighborhoods and cities of the region.

SACOG staff included a number of enhancements to its data and modeling capabilities in developing the new MTP. Most notably, they developed parcel-level GIS data, including general plan and zoning designations, lot size, and ownership for all 800,000 parcels throughout the six-county region. For the first time, SACOG used an integrated forecasting model, called MEPLAN. This model uses economic costs, development policies, travel time and household demographics to allocate future growth. The regional travel model, called SACMET, was upgraded most importantly by the addition of a post-processing capacity called 4Ds, standing for density, diversity, design and destination. The 4Ds are land use characteristics that influence travel behavior and are added to travel models to better understand the effects of smart growth land use design options on travel. The analysis uses elasticities, or percent changes, to modify vehicle trips, vehicle miles traveled, and mode choices based on changes in land use characteristics.

In the transition period between the end of the Blueprint process and the beginning of the new MTP development, SACOG committed to another round of enhancements to its data and models. Workshop capabilities were improved by embedding a somewhat simplified version of SACMET, the 2002 MTP regional travel model, into the I-PLACE3S software so that it could be used interactively to produce travel and land use information in minutes. This upgrade included the 4Ds to better capture smart growth details. SACOG's overall analytical capacity was improved by shifting from the SACMET 4-step model to a new, activity-based regional travel model, called SACSIM.

This SACMET and SACSIM models analyze travel patterns in a fundamentally different manner than traditional 4-step models. The 4-step model segments travel into individual trips by purpose. Activity-based

models link trips into tours that begin and end at home or work, depending on the list of activities associated with the tour. With this new approach, the number and sequence of trips, the modes chosen, the time of day, and the total amount of travel time are internally consistent, which is not possible with 4-step models.

In addition to the Blueprint growth pattern, the 2035 MTP has a different portfolio of transportation investments compared to previous plans. Leading the change is a 56 percent increase in bicycle and pedestrian investments and a 35 percent increase in smart growth programs. These new investments are made possible by reducing the demand for investment in options that serve only single occupant vehicles and allocating a larger share of flexible revenues to alternatives that meet the future set of mobility demands. The 2035 MTP also includes a 21 percent increase in transit funding and a 17 percent increase in road operations and maintenance funding to better optimize the existing system.

Increases in road capacity are also part of the 2008 MTP. Strategic road expansions include several car-pool and bus lanes, largely in the inner areas of the region, and complete street grids that better serve local transit, bike, pedestrian and auto travel. Through matching MTP investments with supportive Blueprint land uses and focusing on critical bottlenecks, congested vehicle miles traveled per household increase a modest 12 percent versus 60 percent projected in the earlier plan. By 2035, the projected vehicle miles traveled per household and air emissions are substantially lower than the prior MTP, while walking, bicycling and mass transit trips are substantially higher.

A few examples of SACOG's MTP2035 investments that are targeted at creating synergies with the Blueprint growth strategy follow.

- **Bridges:** Downtown Sacramento, the employment center for the region, is surrounded by the American and Sacramento rivers. The Blueprint encourages more growth in the downtown area, particularly housing, and in areas immediately across the rivers, but otherwise adjacent to downtown. Two multi-modal bridges, one over each river, will provide added connections and mobility to encourage this inward growth.
- **Streetcars:** Rail transit stimulates compact urban development by providing a viable option to replace the car and sending a signal to the private markets that the government is making long-term investments to promote growth in a particular area. Light rail transit is an important part of the 2035 MTP, but lighter weight rail, commonly called streetcars, will be reintroduced to provide shorter-distance service. A starter streetcar line will be built to link inner West Sacramento and Sacramento across the Sacramento River, and a streetcar loop will be built to tie the region's second largest employment center in Rancho Cordova into the existing light rail line.
- **Expanded bus service:** While the plan expands the light rail system and reintroduces the streetcar, the largest increases in transit service miles come from enhanced local bus service and a significant expansion in the use of neighborhood shuttles.
- **Complete streets.** The plan focuses on multi-modal road designs that promote transit, walking, biking and smart growth land development along with auto mobility. The goal is not to eliminate the automobile from the equation, but to ensure that all modes function well in the right-of-way.
- **Targeted highway investments:** While highways receive a declining share of funds, there are still important investments that improve traffic flow and reduce greenhouse gas emissions, including auxiliary lanes, which are particularly helpful in keeping delivery trucks off of local streets, interchange improvements and expansion of the incomplete carpool and bus lanes.
- **Transportation funds for Blueprint growth:** The 2035 MTP includes nearly \$750 million in transportation funds to support Blueprint style growth through 2035. A competition will be held every 18 months to solicit the best projects in the region that can leverage these funds for transportation infrastructure improvements like new parking garages and projects to promote street connectivity.

## Senate Bill 375 and GHG Reduction

In 2006, California passed the Global Warming Solution Act, the toughest law in the nation for reducing GHG emissions. That law provides overall targets for the state but not specific rules and policies. In late 2008, a new law was passed, Senate bill 375 (SB375), that specifically targeted GHG reduction from vehicle use in metropolitan areas. It was patterned after the planning process used at SACOG and the other major MPOs in California, all of which had also conducted sophisticated regional scenario planning exercises over the last decade. The SB375 law requires the California Air Resources Board (CARB) to assign targets for reducing greenhouse gas emissions in 2020 and 2035 to each of the state's 18 MPOs.

The new law also makes major changes to the California Environmental Quality Act (CEQA) to encourage the construction of smart growth housing and mixed use projects. It includes a Regional Housing Needs Assessment (RHNA) statute that requires the location of new housing to be consistent with the land use components of regional transportation plans. Furthermore, SB375 requires local governments to rezone land consistent with those plans, and to integrate the state's goals for reducing greenhouse gas emissions under a previous law, known as AB32, with regional transportation plans. SB375, two years in the making, was supported by a unique coalition of the California Building Industry Association, several environmental groups, the California League of Cities, the County Supervisors Association of California and various housing advocacy groups.

The three main components of the bill are the sustainable communities strategies (SCS) and regional transportation plans (RTP), CEQA reform, and affordable housing planning through the RHNA. They are summarized below.

### ***Sustainable Communities Strategies and Regional Transportation Plans***

By July 1, 2010, SB375 requires the CARB, after considering the recommendations from a broadly based Regional Targets Advisory Committee, to provide targets to MPOs, including the SACOG, for greenhouse gas emissions for cars and light duty truck trips from regional land use and the transportation system. The MPOs will prepare a SCS as a component of their RTP, or MTP in the case of the Sacramento region that meets the target, if feasible.

If the SCS does not meet the target, the MPO must adopt an alternative planning strategy (APS) that does. However, the MPO is not required to implement the APS if it requires funds that exceed available transportation funding or if the changes to land use patterns go beyond what federal law allows. Several safeguards in the law are included to preserve local government land use authority.

### ***California Environmental Quality Act Reform***

The CEQA reforms require some changes to residential and residential-oriented mixed use projects to meet the greenhouse gas targets. For example:

- Such projects no longer have to analyze their growth-inducing impacts or their impacts on climate change or on the regional transportation network.
- A limited set of projects that meet a very stringent series of environmental and other criteria are now exempt from CEQA analysis.
- A substantially more limited CEQA review than normal is now available for projects with a density of 20 dwelling units per acre that are within 0.5 miles of current or planned high quality transit service for any impacts that are sufficiently analyzed in the RTP environmental impact report and provide adequate mitigation.
- Local governments can now establish their own mitigation standards for local traffic impacts.

## ***Affordable Housing Planning through the RHNA***

Each MPO's process for updating its RHNA will occur every eight years instead of every five years to improve coordination with updates to RTPs, which occur under federal law in four year increments. The California Department of Housing and Community Development process for setting the regional housing allocations for the MPOs will be amended to encourage providing sufficient housing to match the projected employment growth in a region, and the way the MPOs allocate the housing to each of the cities and counties must be consistent with the SCS.

Local governments will be required to rezone their properties to be consistent with their updated RHNA within three years, or within four years if the local government has completed 75 percent of its rezoning by the third year and meets one of three conditions—circumstances out of its control, lack of infrastructure to serve the sites or need for a major update to its general plan to meet its RHNA allocation. If a local government does not update its housing element within 120 days of the statutory deadlines, then it will have a four-year RHNA update cycle instead of an eight-year cycle.

The CARB will establish the targets for the regions by September 30, 2010, and the first round of RTPs to comply with the new law will occur between 2011 and 2013, depending on the regular update schedule for each region.

## **Conclusions**

The experience of SACOG in grappling with urban planning issues has broad implications for the development of climate change policies. Already the SACOG Blueprint has served to guide the development of state urban planning legislation, and it is serving as a model for incorporation into state GHG reduction strategies. While GHG reduction may not be the principal benefit of better urban planning and management, the increasing public support for GHG reduction and the enthusiasm of lawmakers to institute a legal process to reduce GHGs from transportation provide the opportunity to do better planning. They could also provide the legal mandate and the financial incentives to accelerate and strengthen efforts at smart growth. The challenge in California now is to improve the SB375 process so that it creates real incentives for local and regional governments and accelerates good policy and planning.