



THE NORTHERN CALIFORNIA MEGAREGION

We've outgrown the original boundaries of the Bay Area. It's time to start solving problems at the scale of the megaregion.

SPUR ARTICLE

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INTRODUCTION

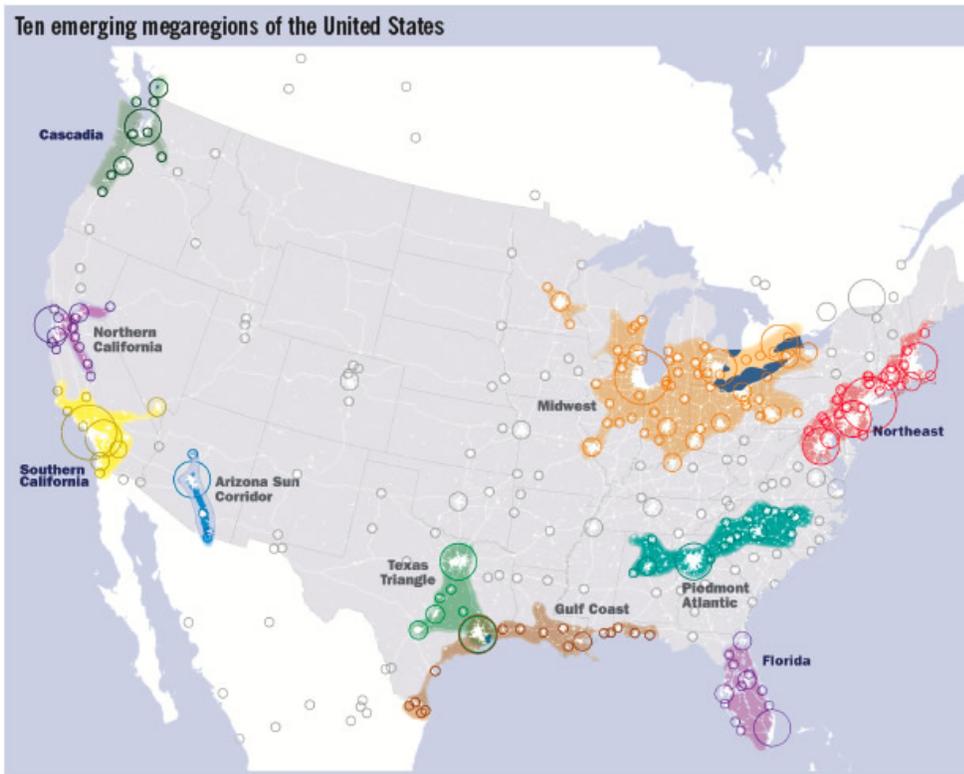
The United States population is projected to grow by more than 45 percent in the next half-century. The total population today of more than 303 million will surpass 400 million before 2050.¹ Unlike Europe and Japan, we face the question of where our growing population will go. In an era when people distrust government, dislike taxes and in many cases are opposed to growth itself, how will we provide the infrastructure to enable a continued high quality of life for a country that will be much larger than it is today?

Demographic trends suggest that America's growth will be clustered, virtually all of it going to 10 to 12 large "megaregions" of the country. Other parts of the country will actually lose population.

A group of civic organizations, think tanks, universities and public agencies, led by the Regional Plan Association of New York, has been working over the last several years to lay the foundations for a proactive planning approach to the country's growth. Under the name America 2050, this group of organizations is creating a national framework or approach to guiding the country's physical evolution.² The RPA has identified 10 megaregions in the United States. One of the megaregions is in Northern California.

¹ Current population from "Population clocks" of US Census, www.census.gov. Projected population growth from US Census, www.census.gov/population/projections/nation/summary/np-t1.txt

² The historian of city planning in America, Robert Fishman, has written a piece for the RPA about the two great national planning efforts in American history, the 1808 Gallatin Plan commissioned by Thomas Jefferson, which proposed a network of canals and roads, as well as a land distribution system, to settle the West; and the 1908 efforts of Theodore Roosevelt, which proposed a series of massive land conservation programs, dams and inland waterways to bring prosperity to the South and West of the country. See Robert Fishman, "1808 – 1908 – 2008: National Planning for America," Regional Plan Association, July 8–13, 2007 (<http://www.rpa.org/pdf/temp/America%202050%20Website/Fishman%20National%20Planning%20Final.pdf>)



Source: Regional Plan Association, America 2050

Most of the nation's growth will be concentrated in 10 emerging megaregions.

SPUR has initiated conversations with the University of California, the Bay Area Council, the Great Valley Center and others about the future of Northern California. This region of 14 million people is projected to add at least 10 million more people by 2050. How we plan for and accommodate that growth is the defining question for urban planning in Northern California today. Whether we become a series of interconnected and sustainable cities ringed by greenbelts or a continuous blanket of urban sprawl between the coasts and the Sierra will be defined by the actions we take over the coming years.

The Northern California megaregion

GENERAL

Megaregion is 35% of the state's land and 37% of its population.

POPULATION IN 2006

Entire megaregion 14 million
 Urbanized core 11.6 million

POPULATION IN 2050

Entire megaregion 24 million
 Urbanized core 19.1 million

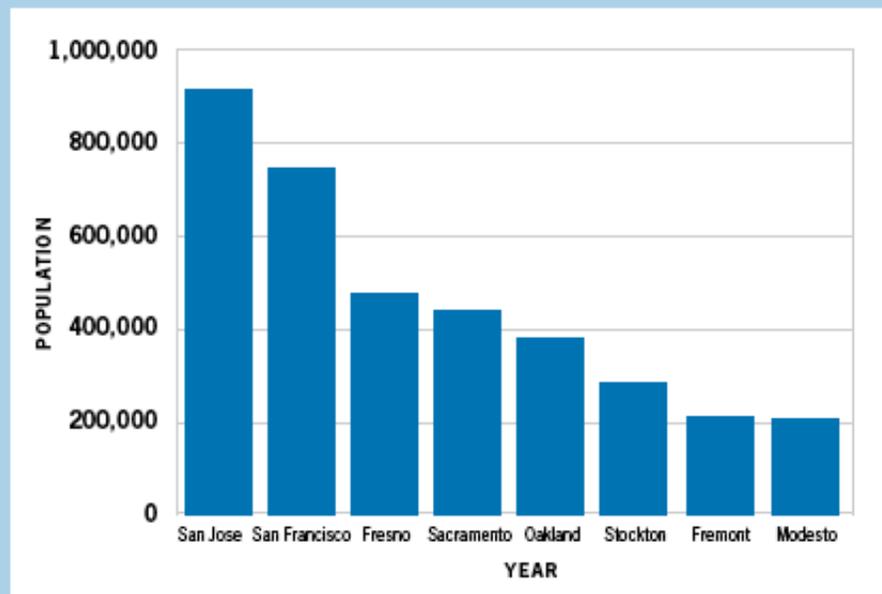
TOTAL JOBS (2005)

Entire megaregion 5.7 million
 Urbanized core 4.9 million

EDUCATION

- > Home to 5 of 10 University of California (UC) campuses.
- > Home to 10 of 23 California State University (CSU) campuses.
- > 20.3% of adults in the megaregion have a college degree compared with 18.8% of the state. Nearly 22% of the urban core have a college degree.

LARGEST CITIES IN NORTHERN CALIFORNIA (2006)



Source: Employment Development Department, Department of Finance, Bureau of Labor Statistics, American Community Survey

HISTORIC RELATIONSHIPS THAT HAVE DEFINED THE REGION

How do we know we have a megaregion? If nothing else, it is because the cities and suburbs of Northern California are increasingly growing together. Growth has outstripped the traditional nine-county Bay Area and has leapt north, south and east, joining with Sacramento and its suburbs. There is increasingly a single urbanized area with limited undeveloped land along Interstate Highway 80 from Vallejo through Vacaville, Fairfield, Dixon, Davis, Sacramento, Roseville, Rocklin and to Auburn. Heading east past Interstate Highway 580, we see a string of cities from Dublin and Livermore to Tracy and Manteca. Along State Highway 99 to the north and south is another series of increasingly contiguous cities from Sacramento through Elk Grove and Lodi to Stockton, Manteca, Modesto, Turlock and beyond. From San Jose south along U.S. Highway 101 we see a string of sprawl past Morgan Hill and Gilroy and south toward Salinas. Even Los Banos, more than 80 miles from San Jose in the Central Valley, is a fast-growing low-cost suburb of Silicon Valley. Its growth trajectory looks similar to Tracy's and is further evidence of our emerging megaregion.

But the economic connection between the coastal cities and interior lands far from the Bay Area is not new for Northern California. In fact, our emerging megaregion is overlaid on top of a rich set of historical relationships.

Since Gold was discovered in El Dorado County in 1848, San Francisco and Sacramento have been deeply enmeshed with the Sierra Nevada. Both cities served as headquarters for the natural resource exploitation of the Sierra, providing the jumping-off point for industrialists to manage first mining (gold in the Sierras and silver in Nevada), then logging, then agriculture — and eventually serving as a proving ground for a template for natural-resource exploitation around the entire Pacific Rim. Companies such as Wells Fargo and the Bank of California emerged as the financiers for these industries. The Bank of Italy (later Bank of America) emerged as the lead financier of agribusiness in the Central Valley. Other prominent San Francisco companies such as Chevron (formerly Standard Oil), Del Monte, Pacific Gas and Electric and Bechtel all grew out of this process.

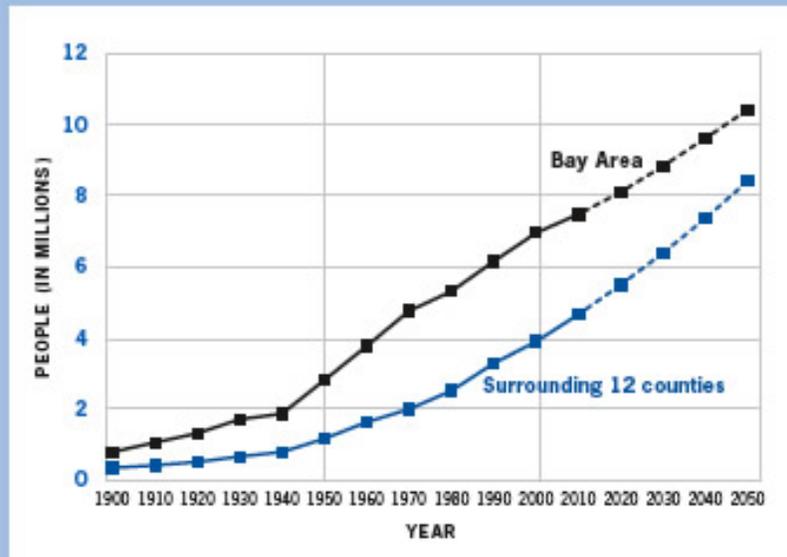
Geographer Gray Brechin describes this relationship between San Francisco and the broader region, stretching up into the Sierras, with the Italian word *contado*, a phrase for territory or hinterland, which encompasses villages that pay tribute to the central city, provide natural resources and are economically — if not politically — subjugated.³ It has been more than half a century since the powerful in San Francisco even had the ambition to exercise that kind of influence — major independent economies have taken root in Silicon Valley, Emeryville, Oakland, Napa and Sacramento; the region's port and industrial center moved to the East Bay — and yet it is helpful to remember the early economic geography as we explore for resonances that explain the way our region functions today.

The early economic geography was itself grafted onto the physical geography of the region, with the waters of the Sierra draining into California's two great rivers, the Sacramento and the San Joaquin, which in turn flow through the Delta and into the Bay. San Francisco was the closest port to ships from around the world; Vallejo, Benicia, Stockton and Sacramento provided access to seagoing ships inland. These river systems still provide the drinking water for the urbanized Bay Area, with the San Francisco Public Utilities Commission providing most of its water from the Tuolumne River and the East Bay Municipal Utility District getting most of its water from the Mokelumne River — two major rivers that drain the Sierra into the San Joaquin.

³ Gray Brechin, *Imperial San Francisco: Urban Power, Earthly Ruin*, Berkeley: University of California Press (1999)

Finally, it is worth noting that the old rural hinterland — the source of food, energy, water and raw materials that feed the urban metabolism — has become the playground for city-dwellers. Under the influence of the modern environmental movement, the natural areas came to be seen as having recreation and aesthetic value in their own rights and were redefined as the places of leisure for urbanites to hike, camp, ski and boat. In short, there has been an interconnected Northern California region for quite a long time, defined by physical, economic and cultural geography.

CHANGE IN POPULATION, BAY AREA AND SURROUNDING 12 COUNTIES, 1900-2050



Note: Neighboring counties are defined as Mendocino, Lake, Colusa, Yolo, Sacramento, Placer, San Joaquin, Stanislaus, Merced, San Benito, Monterey, and Santa Cruz counties.

Source: www.census.gov/population/cencounts/ca190090.txt

At the beginning of the 20th century, Northern California was a relatively unpopulated place with under a million residents. Then during WWII, the population exploded in the Bay Area. As growth has somewhat slowed in the Bay Area, it has picked up in the surrounding 12 counties which are projected to surge past 8 million by 2050.

Today, a new set of connections is being layered onto the old ones. New communities are being built all along Highways 80 and 50 up into the foothills of the Sierra. High cost housing in the inner core of the Bay Area has prompted private land owners and local governments in San Joaquin, Stanislaus and Merced counties to rezone prime agricultural land to support new housing tracts for new mega-commuters — heading either west to the Bay Area or north to Sacramento. The phenomena of compressed work weeks — people who visit their work address less than five times a week — extends feasible commuting distances for people who officially work in the Bay Area well into the Sierra and even to Reno.

Four key patterns of regional integration are the evidence for an emerging Northern California megaregion that connects the Bay Area and greater Sacramento:

- A contiguous spatial integration through rampant land consumption and sprawling development.
- A corridor network integration through increased commuting and goods movement on interstates between counties and across hundreds of miles.
- An economic integration through trade relationships, employment location and use of different parts of the region as platforms for lower cost production.
- A cultural integration with shared youth culture and a growing second home market.

Land Consumption

The nine-county Bay Area will grow to 8.7 million by 2030, an increase of 1.5 million. During the same period, the surrounding 12 counties are forecasted to grow to 6.6 million, an increase of 2.1 million.⁴

As anyone stuck in traffic congestion in the Altamont Pass or on Sunol Grade knows, travel demand is exploding on the 580/680 corridor connecting the Central Valley, Tri-Valley and Silicon Valley. Throughout the fast growing and congested corridors, there has been an obvious landscape transformation as subdivisions, office parks and strip malls have replaced farmlands and open fields. By 2040 another 1 million acres of land could be consumed for urban growth in the San Joaquin Valley alone, nearly tripling the current extent of urbanization.⁵

Since the 1970s, our region's growth has increasingly taken place outside the traditional nine-county Bay Area. Between 1972 and 2004, the only Bay Area counties that more than doubled the number of people per square mile were Solano and Sonoma. However, every county in the Sacramento and San Joaquin Valleys more than doubled the number of people per square mile.⁶ Over the coming decades there will be further growth and integration of the Bay Area and Central Valley.

⁴ *State of California, Department of Finance, Population Projections for California and Its Counties 2000–2050, 2007.* www.dof.ca.gov/html/DEMOGRAP/ReportsPapers/Projections/P1/P1.php

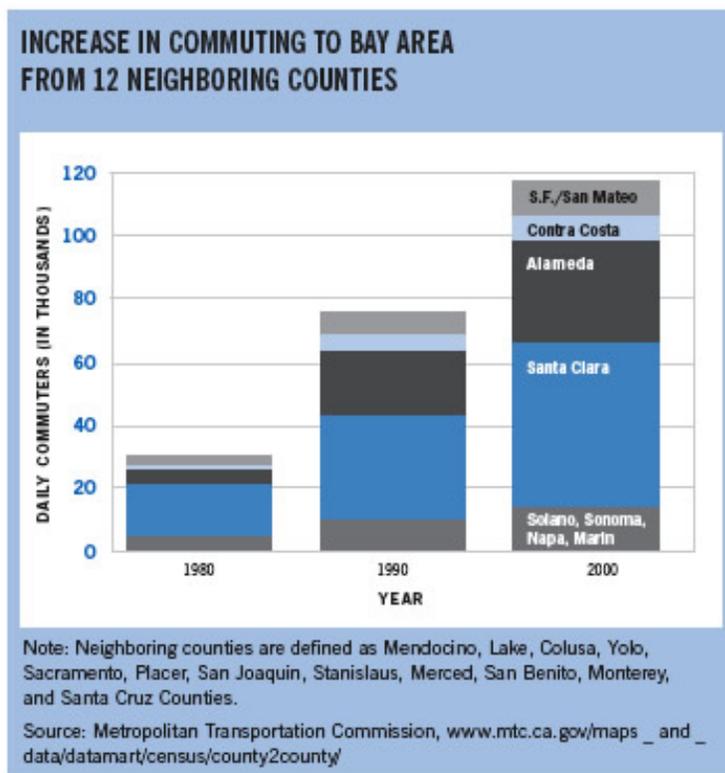
⁵ "Urban Development Futures in the San Joaquin Valley," Michael B. Teitz, Charles Dietzel and William Fulton, February 2005. www.ppic.org/main/publication.asp?i=341

⁶ *Rand California.* ca.rand.org/stats/community/popdensity.html Note: The one exception was Yolo County that saw 93 percent growth over that period, greater than all Bay Area counties except Solano and Sonoma (at 130 percent and 116 percent respectively)

Transportation Flows and Commute Patterns

Today, Northern California has strongly defined job centers in key counties — Santa Clara, Alameda, San Francisco and Sacramento — with commuters arriving from ever further away to reach these jobs.

As new residents settle into the subdivisions beyond the historic boundaries of the Bay Area, the megacommuter becomes an increasing reality.⁷ Between 1990 and 2000, thousands of new daily commuters began arriving in the traditional nine-county Bay Area from further outlying counties. Between 1980 and 2000, the number of commuters from 12 neighboring counties into the Bay Area nine-county core nearly quadrupled from 30,000 to over 117,000 daily. Given that the vast majority of commuters were driving alone, nearly 90,000 new cars were added to already congested roadways from these trips alone.⁸



Commuting into the Bay Area from surrounding counties has quadrupled between 1980 and 2000 with the biggest growth going to Alameda and Santa Clara counties.

⁷ Still, most commute patterns are within, not between counties. Among the top 25 largest commuter flows in California, only three are between counties — and the 25th is the only one in Northern California (Contra Costa to Alameda) with about 96,000 daily commuters.

⁸ The growing challenges of Northern California congestion — on highways and rail — and the need for appropriate transportation investments has resulted in new collaborations and studies. Both the major transportation planning agencies in Northern California (the Metropolitan Transportation Commission in the Bay Area and Sacramento Area Council of Governments in greater Sacramento) have recently completed studies of goods movements through and from their respective regions. The Bay Area report extended the traditional nine-county focus and included central San Joaquin County in their analysis.

Economic Integration

If the old northern California economy revolved around the command and control of resource flows from the hinterlands into the central cities, today's patterns of economic integration provide much more potential for the sharing of economic benefits.

For example, the biotech and biomedical industries were formed in the Bay Area in the 1970s (tied to the University of California, San Francisco, the University of California at Berkeley and Stanford University) but then began expanding beyond those boundaries towards Sacramento. In 1986, UC Davis (in Yolo County) began its own ag-biotech program and is now an international leader in that aspect of biotech.⁹ In more recent years, major biotech firms such as Genentech are locating in Vacaville, also in Yolo County and along the Highway 80 corridor.

Other technology sectors formed in Silicon Valley had a similar migration. Starting in the 1980s, major Silicon Valley firms opened branch plants for manufacturing and back-office work in the suburbs around Sacramento. For example, Hewlett Packard has a major facility in Roseville, outside Sacramento. While these firms also expanded in other locations around world, the choice of the Central Valley was based on the close proximity to the headquarter firm as well as access to a lower cost business climate.

One of the megaregion's economic engines — the Port of Oakland — has also been engaged in collaborations that reinforce the megaregional concept. It has a joint operating agreement with an inland port in Shafter, over 250 miles away at the southern end of the San Joaquin Valley. Unlike most other ports in the West Coast, the Port of Oakland is export-oriented. Of the total value of nearly \$80 billion that flows through the port, a larger share is exports than imports.¹⁰ In this way, the Port serves an important economic function for the technology economies of the Bay Area and agriculture economies of interior Northern California to get goods to foreign markets.

⁹ *Bay Bio, History of the Industry*. www.baybio.org/wt/home/Industry_Statistics

¹⁰ *MTC, Goods Movement Study (2002)* www.mtc.ca.gov/planning/rgm/



In recent years, San Jose has become Northern California’s largest city. As employment in Silicon Valley has recovered, the southern part of the megaregion is again luring residents and commuters. The way to San Jose along Highways 1, 5 and 101 define the southern edges of the megaregion.

Cultural Integration

In the 20th century, “California” as an idealized place and identity was developed and reinforced by infrastructure, investment, foresight and marketing. Yet, while outsiders perceived California as a more or less unified economic and political entity, residents increasingly saw the distinctions between north and south and identified strongly with one or the other.

Water formed a part of the divide between north and south. Northern California made ample use of the waters of the Sierras for economic development and growth, but as Southern California laid claim to different Sierra waters, residents of Northern California felt — with righteous indignation — that “their” water was being taken for use by Los Angeles to feed its growth.

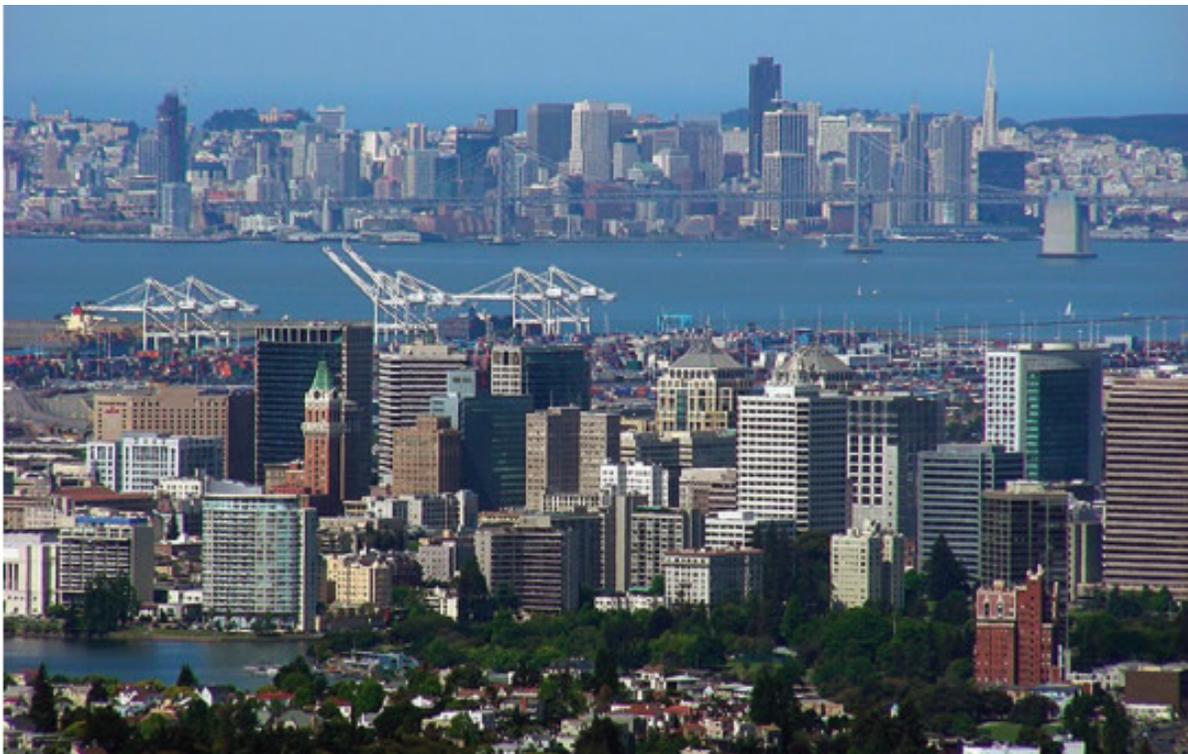
In the 1960s and 1970s, the identity of the north revolved more around environmental consciousness and alternative culture. Consider, for example, Ernest Callenbach’s 1975 novel, *Ecotopia*, which postulated the secession and creation of a new society by Northern California, Washington and Oregon (but not including Southern California).¹¹

¹¹ *Youth culture has also spawned different linguistic markers that continue to reinforce a cultural identity of Northern California as distinct from Los Angeles. While Southern California was the genesis of the “Valley Girl” speech patterns in the 1980s, in more recent years, Northern California spawned the expressions of “hecka” and “hella” as synonyms for “very” or “extremely”. These “Norcal” words are used to reinforce a geographic identity that extends east from the Bay Area and includes Sacramento and its suburbs. The derivations of these words are likely in Berkeley. See: *Berkeley High School Slang Dictionary*, Rick Ayers, Berkeley High School. See also Jennifer Roth-Gordon. *Slang and the Struggle Over Meaning*. www.brown.edu/Departments/Race_Ethnicity/rothgordon/JenRothGordon_diss_total_noimages.pdf Residents of “SoCal” would be identified as a Northern Californian by use of these words. See Colleen Cotter, *Lonely Planet USA Phrasebook: Understanding Americans & Their Culture*, 2001.*

This notion of cultural integration is perhaps the least empirical of the four indicators of an emerging Northern California. However, it is among the most important when we begin tackling solutions. Ultimately, the way we grow and how we live will be an expression of our identities.

DEFINING THE MEGAREGION

To determine our own megaregional boundary, we mapped four key features: travel times, population growth and land consumption, environmental features and pre-existing, government-defined regional groupings. Based on these maps, we propose to define the Northern California megaregion with both a core and sphere of influence. The core area combines the primary urban areas around San Francisco Bay with the greater Sacramento region and includes the nearby commuting counties in the Central Valley, foothills and central coast. The sphere of influence extends south to the Fresno area, east into the undeveloped Sierra counties and Reno and north beyond Santa Rosa past Ukiah. For our maps and analysis, see Appendix I: Mapping the Megaregion.



Downtown San Francisco and downtown Oakland both offer a model of concentrated employment along transit with nearby housing. Making better use of the existing urban cores throughout the megaregion will reduce urban sprawl and automobile reliance. Northern California today must invest in extensive transit between and within communities to increase mobility and access. We have a choice about whether or not we channel the projected growth in a way that improves the quality of life.

SOLVING PROBLEMS AT THE MEGAREGIONAL SCALE

Looking at the long history of regional planning efforts, both in the Bay Area and elsewhere, we find mostly failure. Why would anyone propose a new, larger region when we haven't even begun to do real planning for the nine counties that currently constitute the official nine-county Bay region?

The answer, simply, is that there are certain problems that are taking place at this larger scale. We can choose to ignore them but that doesn't make the problems go away. Sprawl, fueled by the economic dynamism of the Bay Area, is filling up the Central Valley, with the possibility of even more unchecked growth over the next half-century. Exurban development is eating up the Sierra foothills, with second homes, retirees and those active in the work force but who have either flexible schedules or compressed work weeks.

The functional economic region of daily commuting comes increasingly to match the hinterland region that supplies our water and the cultural region of the weekend getaway.

Because development is clearly taking place at the megaregional scale, transportation problems occur at the same scale. So the basic physical planning questions — How should human settlement be arranged over the land? And what kind of infrastructure is necessary to support those land use patterns? — can only be answered by a strategy that is cognizant of the larger scale.

This doesn't mean we should be creating some sort of megaregional government. It is impossible to imagine a new jurisdictional level being acceptable within the highly ossified political structure of America. What it means is that we have to discover new strategies that can solve some of the specific problems we are facing at the megaregional scale.

Our hypothesis is that the right approach is to think in terms of campaigns, projects and initiatives rather than to create new general-purpose institutions of governance or coordination. At this early stage in the process, when civic groups and government officials in Northern California have barely begun to even recognize their shared fate, we cannot predict what the answers will be. But we can suggest a few ideas that seem interesting.

A Northern California Rail Network

Given the interrelated problems we face with sprawl, car dependency, long commutes and loss of farmland, one of the most obvious things Northern California is missing is a regional rail network that could out-compete the automobile for inter-city trips. Such a rail network would facilitate daily commuting and greater economic cooperation, reduce pollution from driving and, most importantly, provide an armature to structure the next 50 years of growth in the region.

This first proposal for action is at the top of the list of many other megaregions in America. The Regional Plan Association's work on the Northeast Corridor, linking the five major cities of the Northeast (Boston, New York, Philadelphia, Baltimore and Washington) along with many smaller sub-centers, is perhaps the best example. The RPA has convened business leaders and economic policy organizations to build political support for increased investment in the Northeast Corridor, working on a multiyear funding authorization for Amtrak in Congress (currently the Lott-Lautenberg Senate Bill) and, in the longer run, exploring a long-term capital plan for the corridor and branch lines and alternative models of governance for the core line.

In many ways, the Northeast's identity as a coherent region is defined by the existence of the only moderately high-speed rail line in America (75–150 mph versus 200 mph in Europe and Japan), running like a spine through the major cities, as well as the multiple regional rail services that share the Corridor with Amtrak. So this is a region with a high degree of awareness about what it has to lose from any decline in service — and what it has to gain from new rail linkages. In the Northeast, the expanding commute distances and merging of formerly distinct urban commute sheds is at least partially structured by the preexisting network of old rail lines. As housing throughout the New York metropolitan region becomes unaffordable for many, development pressure follows New Jersey Transit, Metro North and the Long Island Railroad commuter services that extend radially from Manhattan. With Amtrak's Acela Express service cutting travel time from Philadelphia to New York, people are referring to Philadelphia as the "sixth borough." Of course, the East suffers from car-based sprawl as well, but the possibility of channeling growth along upgraded (rather than new) rail lines into restored (rather than new) town centers is very real.

The West has old rail lines, too, many of which linked cities and towns that were built before the automobile. The Altamont Commuter Express, bringing commuters from more affordable housing in Stockton to work in Silicon Valley, is a potential analogue to the East Coast dynamic. But the West has a much higher proportion of building stock that was built around the assumption of cars, highways and endless petroleum. For us, the expanding commute distances that comprise the emerging megaregion are truly terrifying signals of environmentally destructive sprawl.

And this is precisely why we need a high-speed network — in fact, we need it more than the Northeast does. We simply have no other hope of structuring growth into socially and environmentally productive forms without it.

While California's planned High Speed Rail system is often referred to as "S.F. to L.A.," the reality is that it may have its biggest impacts on travel within Northern California and within Southern California. It is within each of the state's two great areas of urbanization that High Speed Rail can actually restructure patterns of growth and development.¹²

¹² *The fight over the alignment in Northern California (Pacheco pass to the south vs. Altamont through the East Bay) is partly a fight over the purpose of the network: the Pacheco alignment may be better for North-South travel, while Altamont is more useful for connecting the Bay Area to Sacramento.*



Downtown Sacramento as seen from Yolo County to the west. The capital of the state presents an evolving vision of an urban center with a downtown job core, commuter rail and increasingly dense, near-to-downtown neighborhoods. Nevertheless, Sacramento is still plagued by challenges of regional job and housing sprawl which are stretching commutes and consuming farmland and open space. Making concentrated growth a success in Sacramento is inevitably part of Central Valley landscape preservation campaigns.

A Landscape Preservation Campaign for the Central Valley

If infrastructure investments have sometimes managed to galvanize people across large geographies, so too have efforts to protect natural landscapes. The movement to save San Francisco Bay, which did so much to cement the identity of the Bay Area as a region, is perhaps the best example close to home. On a national scale, consider the Appalachian Trail. From the first proposal of the idea by Benton MacKaye in 1921, the landscape was preserved through countless thousands of appropriations by legislatures, fundraising drives, activist campaigns and acts of generosity. There is no “government” that manages it all, but the Appalachian Trail is an idea that has been realized through cooperation across a large region.

One of the key implications of a megaregional analysis is that we need to do a better job protecting the Central Valley, not as an attempt to turn it into a nature preserve but as an attempt to save farming as a viable part of the economy of the state. Drawing the Central Valley into the megaregional discussion is not without its challenges. Central Valley communities have been largely left out of the prosperity of the Bay Area and are understandably eager for growth and development; talk of preservation or growth management by people closer to the coasts can sound condescending and unwelcome. The aggrieved farmers who defend their right to sell land to developers as potentially their only path to any kind of

economic security require some sort of a thoughtful response. And yet the answer can't be to do nothing and allow most of the Valley floor to be converted into subdivisions and office parks.

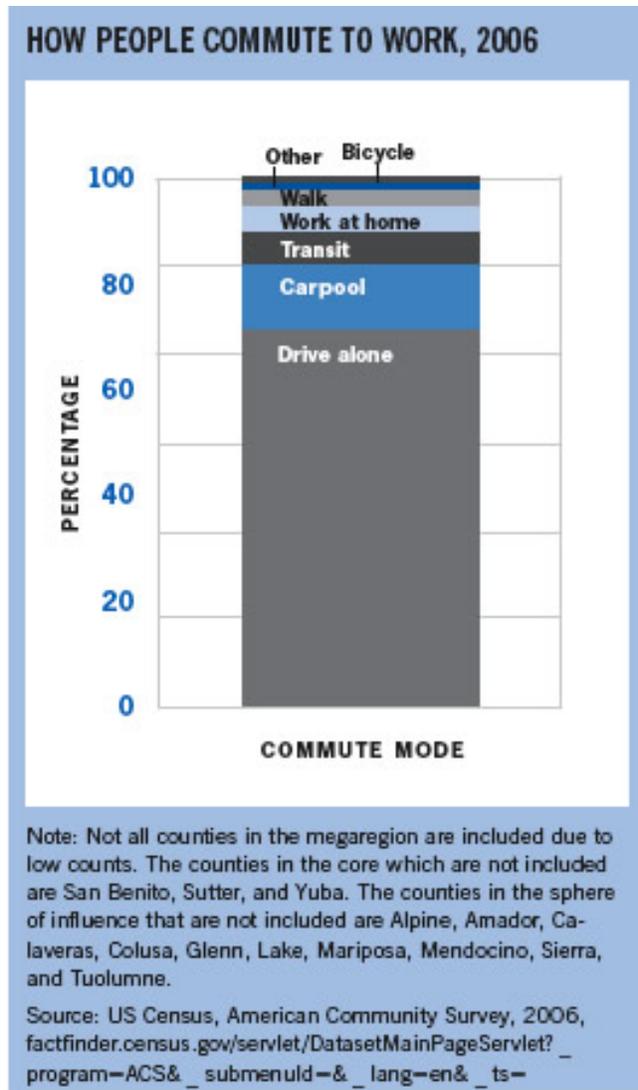
We see many signs of hope in the efforts of civic organizations. The most important of all is the Great Valley Center, which is providing broad and thoughtful leadership on a whole series of planning and economic development issues for the Central Valley.¹³ The Irvine Foundation, which studied patterns of philanthropy across the state, has made a major commitment to direct funding to the Central Valley as a way to begin addressing imbalances in funding for civic efforts.¹⁴ The Tuolumne River Trust works across a slice of the megaregion, asking people who drink water from the Tuolumne River — 2.5 million people in San Francisco, San Mateo and Santa Clara counties — to care about the health of the river system and the land it flows through.¹⁵ Perhaps it is time to begin a series of campaigns to save specific pieces of habitat as a way of drawing attention to the Central Valley's precariousness.

Or perhaps we need also to work at a much larger scale, using the power of the state government. Do we need a reform of the Williamson Act that would provide real financial incentives to keep land under agriculture? What would it take to finally get Caltrans out of the sprawl-enabling business, to use state infrastructure money to support only center-oriented growth? Is it possible to imagine transfer-of-development-rights programs working among counties in California, allowing builders inside cities to buy extra development rights from farmers in the form of easements? Or do we simply need to spend a lot more money on habitat acquisition, through organizations such as the Nature Conservancy and the Trust for Public Land? These are the kinds of conversations we need to be having across the megaregion.

¹³ See www.greatvalley.org. For example, in the "Valley Futures" project they ask the following questions: "What will living in California's Great Central Valley be like in 2025? Will the residents of the San Joaquin Valley come together to craft a multiethnic New Eden with clean air, a diverse economy and a strong agricultural industry? Will the six-county Sacramento Region mature into a world-class center of jobs and innovation driven by collaborative leadership and foresight? And further north, will the people of the rural North Valley create The Good Life by making the most of their fragile natural resources while meeting the challenges of growth?"

¹⁴ See James M. Ferris and Elizabeth Graddy, "Philanthropic Activity in California's Central Valley: 1996–2002," August, 2004: www.usc.edu/assets/cppp/dl.php?file=central_valley_report.pdf

¹⁵ See www.tuolumne.org

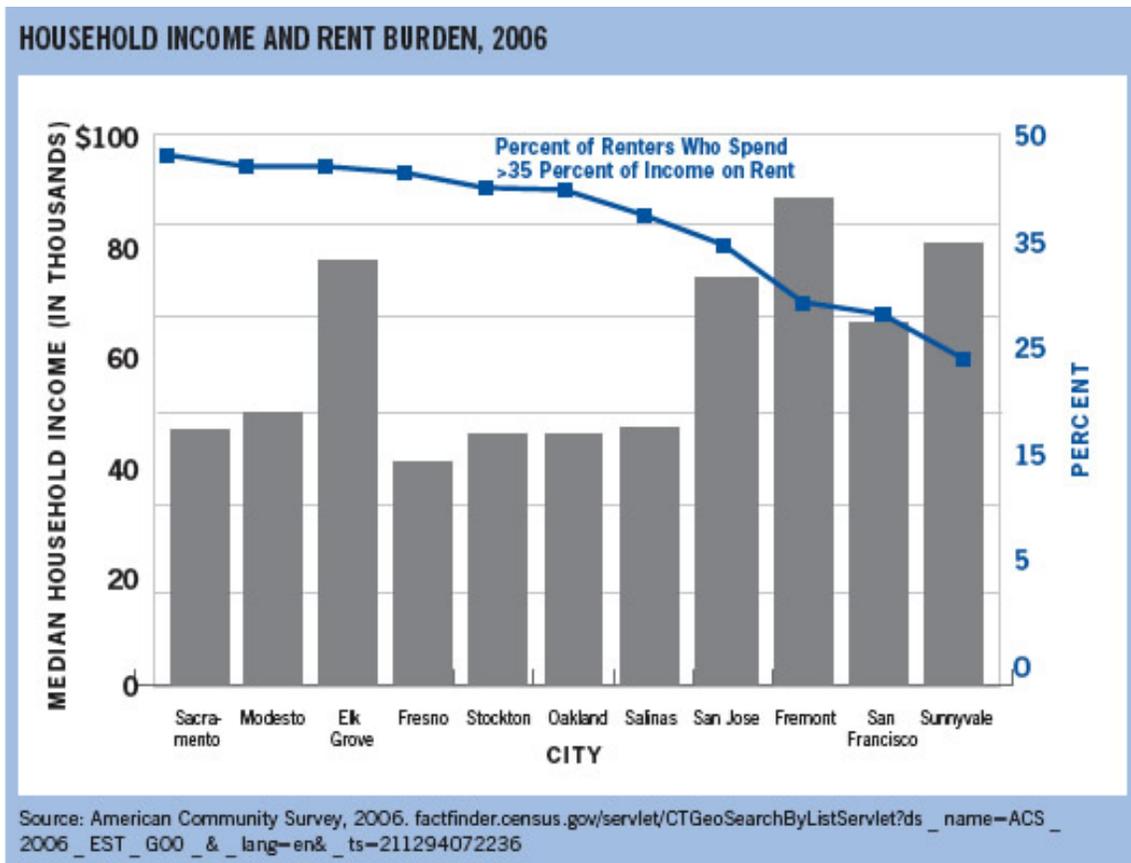


Traveling to work by car is the most common commute form throughout the megaregion. Part of the goal of more closely linking our centers will be to increase the share taken by transit as well as walking and bicycling.

An Equity Agenda for Northern California

One of the main benefits of megaregional thinking is the opportunity to further link underperforming parts of the region with the dynamic centers. The real goal is to find a way to create good jobs and affordable housing throughout the megaregion without exacerbating sprawl.

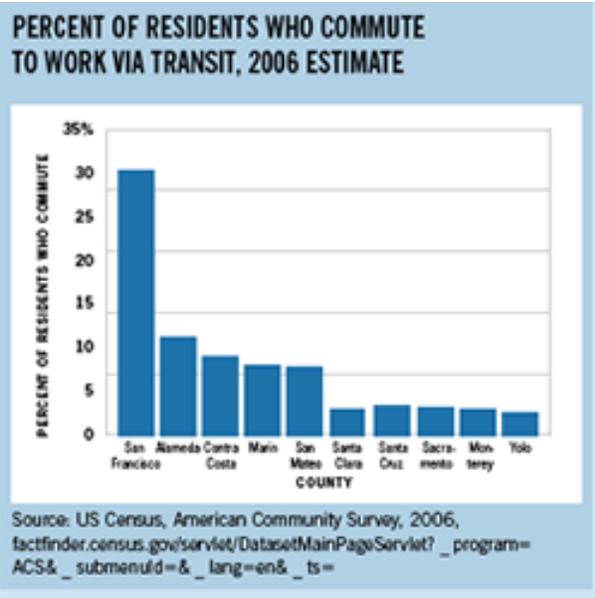
Over recent decades, most new jobs created in California tended to be at either the high end of the income spectrum or the low end, with fewer job opportunities at or near the median income. This is particularly true in the Bay Area, where fast-growing industries range from financial services at the high end to hospitality at the low end. The middle segment of the population, in both income and education, often moves out of the high-cost regions to seek affordable housing, particularly in the Central Valley. So far we see tremendous population growth in the Central Valley, but little job growth in high-wage emerging industries.



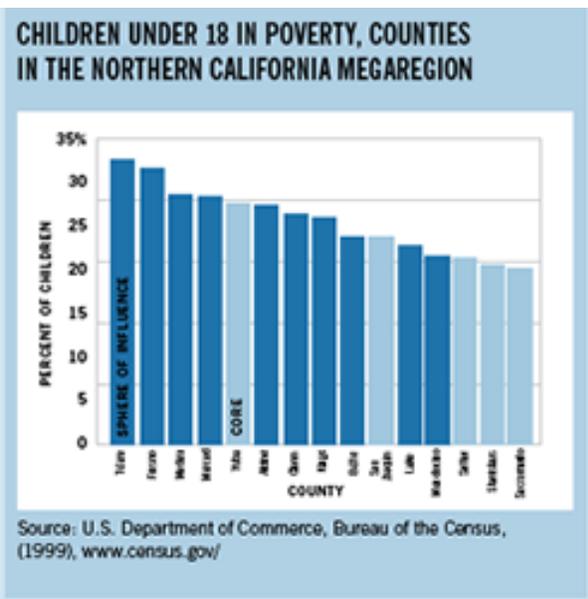
Despite having a lower cost of living, some communities in the Central Valley face a much higher cost of living burden with greater than 40 percent of renters spending more than 35 percent of income on rent. Only Oakland had a similar (though slightly lower) level of rent burden. This graph also shows that the higher the average household income, the lower percent of people are overspending on rent. An equity agenda for Northern California invariably must address the income and affordability gaps between coast and interior.

The Northeast offers an interesting comparison for Northern California. While there is substantial housing pressure on some of the Northeast's "hot market" cities (New York, Boston, Washington, D.C.), the Northeast also contains many "cold market" cities that have experienced disinvestment over the past several decades (Baltimore, Philadelphia, New Haven). The Regional Plan Association has suggested that one potential strategy is to better link "hot market" cities with "cold market" cities through enhanced transportation. The equity benefits, these studies argue, are twofold: First, residents of hot-market cities would be able to access affordable housing opportunities in cold-market cities; and second, residents of cold-market cities would be able to access job opportunities in hot-market cities.

Once again, it will be difficult for this model to translate well to California. The Northeast is a much older region than Northern California and has many more older, transit-oriented cities located in close proximity to its major cities than Northern California does. Nevertheless, better transit linkages between Northern California's cold-market cities and its existing job base could be one solution to easing the region's housing pressure. This is particularly true for the older central cities of the Central Valley: Sacramento, Stockton and Modesto.



Transit is a very small share of all trips to work in most counties in Northern California. Only San Francisco and Alameda counties have greater than 10 percent of their residents take transit to work. No county outside of the Bay Area has more than 5 percent of residents who commute to work via transit.



Poverty is a major challenge for many counties in the megaregion. In particular, counties in the Central Valley face the highest incidence of poverty, particularly for children. Poverty is also greater among the sphere of influence counties relative to the core counties. In the Bay Area, Alameda and San Francisco counties have the highest poverty among children at 13.5 percent each.

The goal for Northern California is then to concentrate new jobs and housing in core areas at the coast and inland, including existing downtowns such as Sacramento, Oakland, Stockton and Modesto. We should then create direct transit linkages between these nodes to enable workers from throughout the megaregion access to the greatest range of job opportunities. Further, we should look to build economic districts around other key transportation nodes such as high-speed rail stops and airports, so long as there are plans for transit linkages to the airports. This approach must be linked with a strategy to create career-

ladder employment opportunities for low wage workers in high-cost regions, because fewer middle-income jobs remain, as well as to retain and grow the industries in the lower cost regions that offer middle income employment.

Our perspective is that the megaregion approach will help create new middle-income opportunities that spread the prosperity of California to a broader range of households and communities. While the competitiveness of the coastal regions in the Northern California megaregion depends on our leading-edge universities, entrepreneurs and an abundance of risk capital, the economic opportunities for the inland regions of the state will depend on building bridges to these innovative industries, particularly in manufacturing and other industries.



The waters of the Tuolumne River, captured by the O'Shaughnessy dam in Hetch Hetchy, flow from the Sierra Nevada providing power to Central Valley communities and drinking water to millions in the Bay Area. This infrastructure initially linked the coast to its distant hinterland in the mountains. Today it reinforces a shared ecology and the need for working on common problems across the megaregion.

CONCLUSION

While the scale of our region is expanding today largely because of changes in daily commute patterns (the compressed work week, the need to live far away to find affordable housing), today's patterns have their roots in the economic organization of the late 19th century. While no one is suggesting that we do away with our existing councils of governments or metropolitan planning organizations, we need to recognize that for some purposes those old boundaries are outmoded. We need to invent new strategies appropriate to the problems of the emerging scale of our Northern California region. We need to recognize the shared fate of the Bay Area and Sacramento, the Central Valley and the Sierra. We need to build on the incredible economic strength and natural abundance of our region.

We have a choice today to shape a Northern California future that offers hope and optimism amidst dramatic change. Growth properly managed can increase mobility and yield opportunities to share California's prosperity to an ever-wider population. But if not properly managed, growth will fuel the creation of separate and distinct communities and continue to draw resources out of older communities while destroying viable agriculture and natural lands.¹⁶ We believe it will be useful to think in terms of a Northern California megaregion for many kinds of planning problems we will face in the years ahead. Our hope is that this article can begin a conversation with citizens, planners, public officials and community leaders around the region about the future of Northern California and our opportunities for working together.

¹⁶ *There is a long list of authors who have written about the loss of the dream of California. From Peter Schrag's Paradise Lost to Richard Rice's The Elusive Eden to Mike Davis' The Ecology of Fear to Robert O. Self's American Babylon, it has been popular for writers of California to describe the state as having lost its sense of promise with a hopeless future. We offer the megaregion as part of a new vision of optimism for the state whereby we become better able to manage growth.*

APPENDIX I: MAPPING THE MEGAREGION

To determine our own megaregional boundary, we mapped four key features: travel times, population growth and land consumption, environmental features and pre-existing, government-defined regional groupings. Our intent is to share our thought process and methods in a transparent way and to build up to a reasonable composite definition of the region. Some analysis is presented at the statewide level and some at the megaregional level (i.e. Northern California).

Based on these maps, we propose to define the Northern California megaregion with both a core and sphere of influence. The core area combines the primary urban areas around San Francisco Bay with the greater Sacramento region and includes the nearby commuting counties in the Central Valley, foothills and central coast. The sphere of influence extends south to the Fresno area, east into the undeveloped Sierra counties and Reno and north beyond Santa Rosa past Ukiah.

The Northern California megaregion has 14 million people and over 5.7 million jobs.¹⁷ Over the next several decades, the Northern California megaregion is projected to grow slightly faster than the state as a whole and will increase its share of the state's population to 40 percent by 2050.

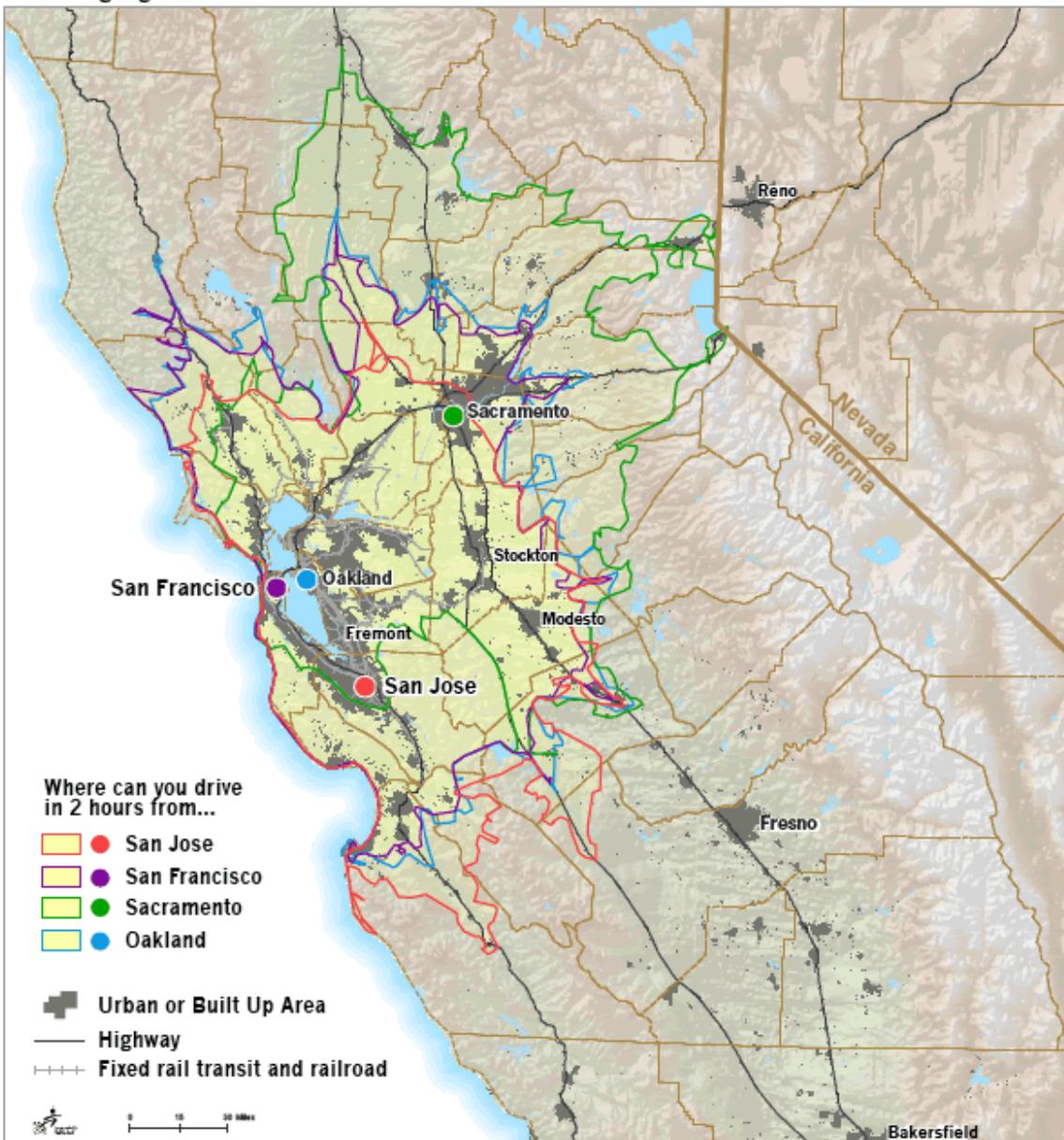
When we look at the difference between the core and sphere-of-influence counties in the megaregion, there is a striking contrast. The core of the Northern California megaregion is defined by connecting the commute sheds of greater Sacramento with the Bay Area. These 21 counties account for nearly 85 percent of the population of the megaregion. Beyond the core are the sphere-of-influence counties to the north (to Mendocino), east (to the Sierras and Reno) and south (beyond Fresno). There are 16 counties in California and five in Nevada. These counties in the sphere of influence of the core and are thus a part of the Northern California megaregion. They are growing faster than the core; have higher unemployment and lower wages; and are more Latino and far less Asian or black than the core or the State of California as a whole. They also take up a larger share of the state and have 4 million more acres of land.¹⁸

As a whole, our Northern California megaregion is one of the most prosperous and dynamic regions in North America, if not the world. Its residents are highly educated, it has a diverse and growing economic base and its natural lands range from Yosemite to Big Sur and from Lake Tahoe to Point Reyes. The megaregion combines several commute sheds and overlaps strongly with the San Francisco Bay's watershed and historic hinterland. In short, this is a region that we should feel proud to call home.

¹⁷ Note: All data presented is for California counties only. The proposed Nevada counties in the sphere of influence of the megaregion are not included in the data.

¹⁸ These data are based on comparing the counties in the Northern California sphere of influence with the State of California as a whole but does not include data on the Nevada counties.

The driving region: Two hour car travel from central cities of Northern California



Source: ESRI, GreenInfo analysis

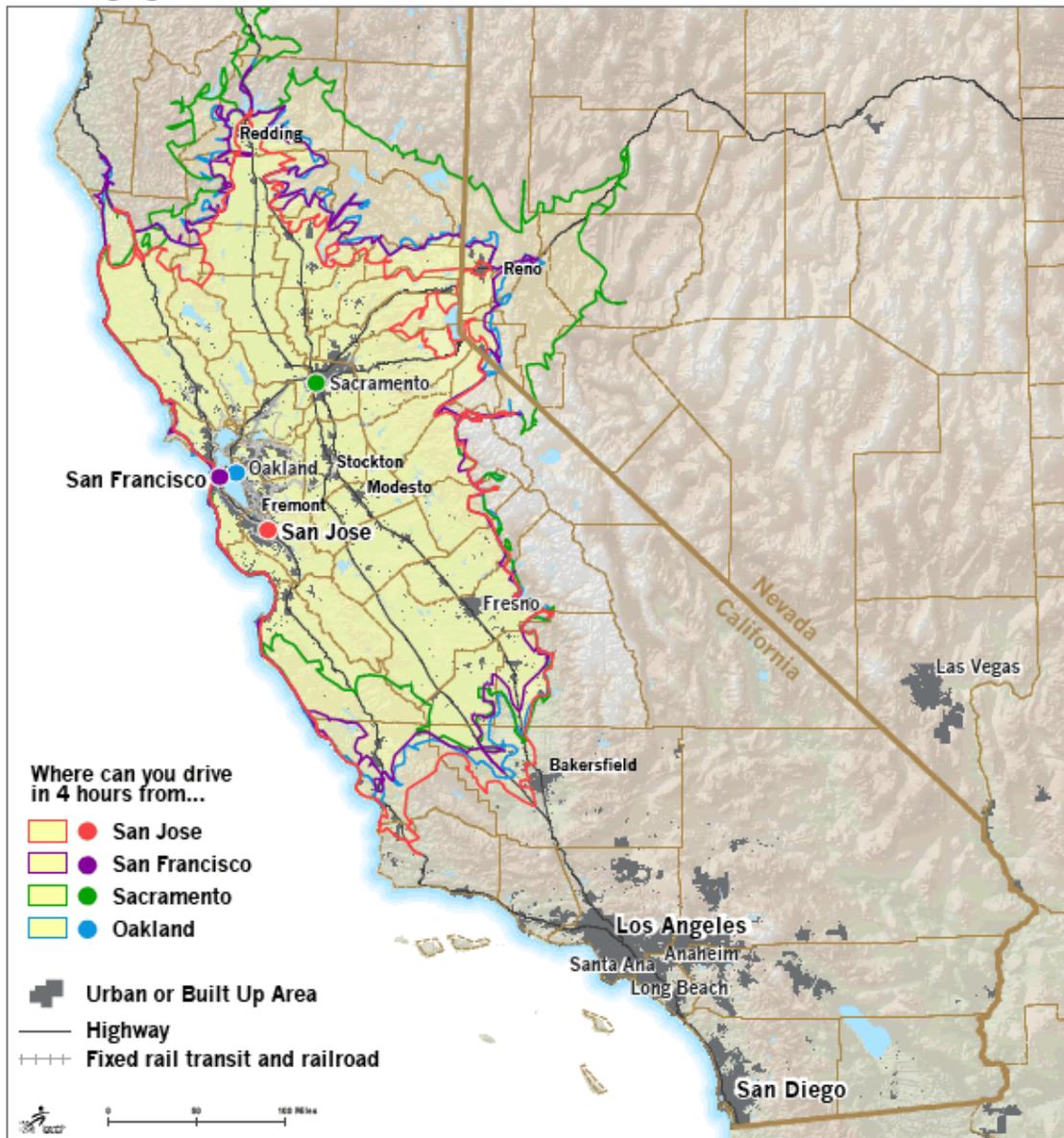
Travel time provides one of the most common-sense ways to define the region we live in. This is how we experience our options for where we work and play in our daily lives. So we begin by looking at the areas accessible within a two-hour and four-hour driving distance, from each of the four central cities of the region: San Francisco, San Jose, Sacramento and Oakland.¹⁹ (We can only hope that in the not too distant future, high speed, inter-county transit extends the places that are accessible beyond what can be reached by car during the same time periods.)

¹⁹ Robert Lang argued that a megalopolis should be no more than a day's drive from one end to the other. Our driving distance maps show that even the four-hour distance from each of the four central nodes creates an extent that could be traversed end to end in nine hours.

Two hours of driving from these cities reveals a region that extends east to Lake Tahoe on Highways 80 and 50, north to Red Bluff on I-5 and Ukiah on Highway 101, and south to Merced on Highway 99, King City on Highway 101 and Big Sur on Highway 1.

Two hours from the core cities yields an end-to-end driving time of nearly six hours (without traffic) from the northeastern end of Lake Tahoe to Big Sur. Interestingly, none of the four key central cities can reach Fresno within two hours, thus suggesting, in part, that Fresno is not core to the Northern California megaregion. When we extend this out to four hours from each of the central cities, we still maintain a region that can be traversed in one day. From Yreka in the north 550 miles south to Santa Maria south of San Luis Obispo, we have a region that is less than 9 hours driving time.

The driving region: Four hour car travel from central cities of Northern California

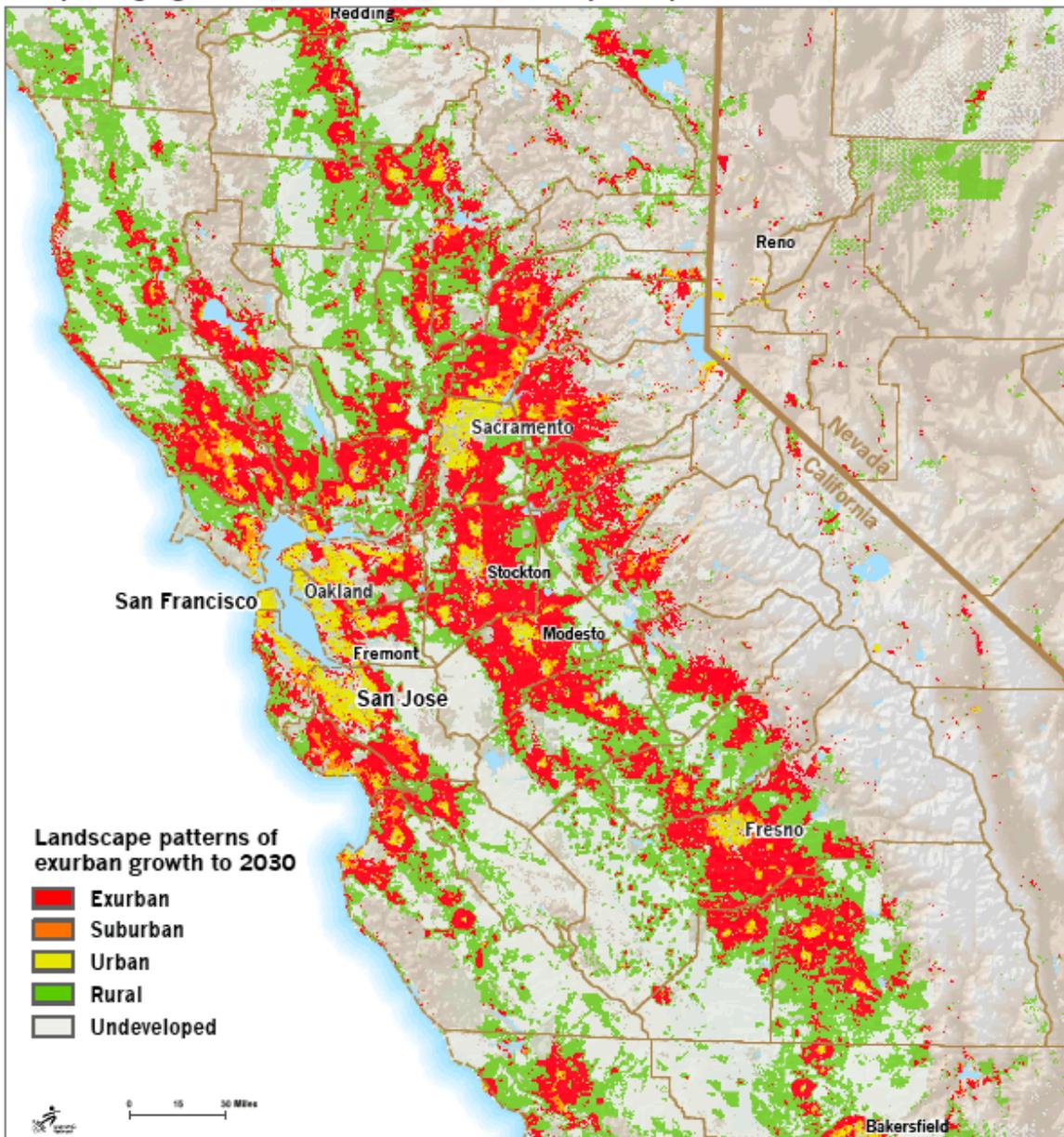


The travel-time maps above reveal several main conclusions that are relevant to the definition of the megaregion:

- The two-hour driving distance reveals a 31 county area.²⁰
- Central and southern San Joaquin County are equally accessible to the Bay Area or Sacramento. At either two or four hours, the distances traveled from the central cities to the San Joaquin Valley are quite similar. This suggests that businesses and residents in many of these fast-growing communities have nearly equal access to the main central cities. For example, Merced is equidistant from Sacramento and the East Bay (specifically Oakland). Fresno is nearly the same distance from Sacramento and San Francisco.
- Accessibility to the “Redwood Empire” north of Sonoma County is limited. Only southern Mendocino County can be reached within two hours from Oakland and San Francisco, and a limited part of Lake County from Sacramento. Even at four hours, much of the coastal north is inaccessible

²⁰ *This is similar to the NY-NJ-CT region, which has about a 2-hour radius of driving time from NYC.*

The sprawling region: Exurban and rural land threatened by development

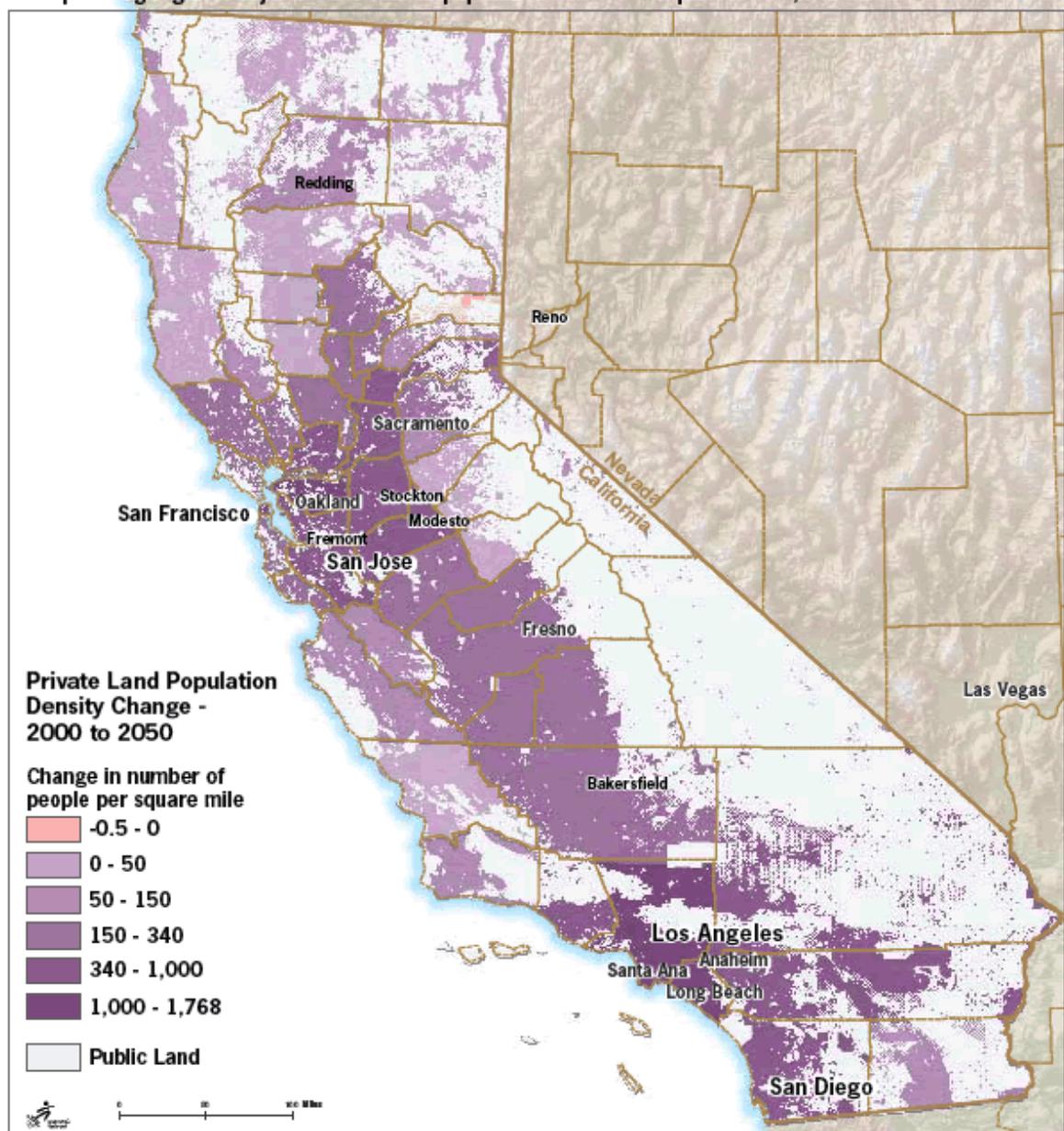


Source: David M. Theobald, 2005. www.ecologyandsociety.org/vol10/iss1/art32/

One key constant in California has been tremendous population growth. Future projections show the growth moving from the coast and accelerating in all of the Central Valley counties, many of the foothills counties, and east of Los Angeles in the “Inland Empire” and north of San Diego. The state’s Department of Finance has detailed population growth for each county in California to 2050. Using these projections, we identified where the growth will go — both on an aggregate county level as well as how that growth will be distributed onto private land shown as an increase in density (based on county land area divided by projected population growth).

Using population-growth projections, we can identify where the megaregion will grow if today’s assumptions are correct.

The sprawling region: Projected increase in population densities on private land, 2000-2050



Source: CA Department of Finance, 2007. www.dof.ca.gov/Research/Research.php

The population growth map above reveals several key conclusions:

- California has two distinct megaregions in the north and south. They are merging together in the San Joaquin Valley.
- The potential for continued sprawl and loss of open space may be greater in Northern California than Southern California because of the greater presence of privately owned land in the north that can be converted into sprawl development. For the most part, Southern California is surrounded by federally owned land. While the inner Bay Area has a protected greenbelt and much of the

- Sierra Nevada in Northern California are permanent open space, most of the land in the Central Valley and to the north and south along Highway 101 is in private hands and thus in danger of sprawl development.
- The threat of exurban growth is not only along Interstate Highway 80 and Highway 99. The foothills, the rural areas of Lake County and the area inland of Monterey Bay are all threatened by significant exurban growth. Unlike the Central Valley growth, there is no real prospect of serving these areas with high-speed rail, so the transportation challenges here require special attention.

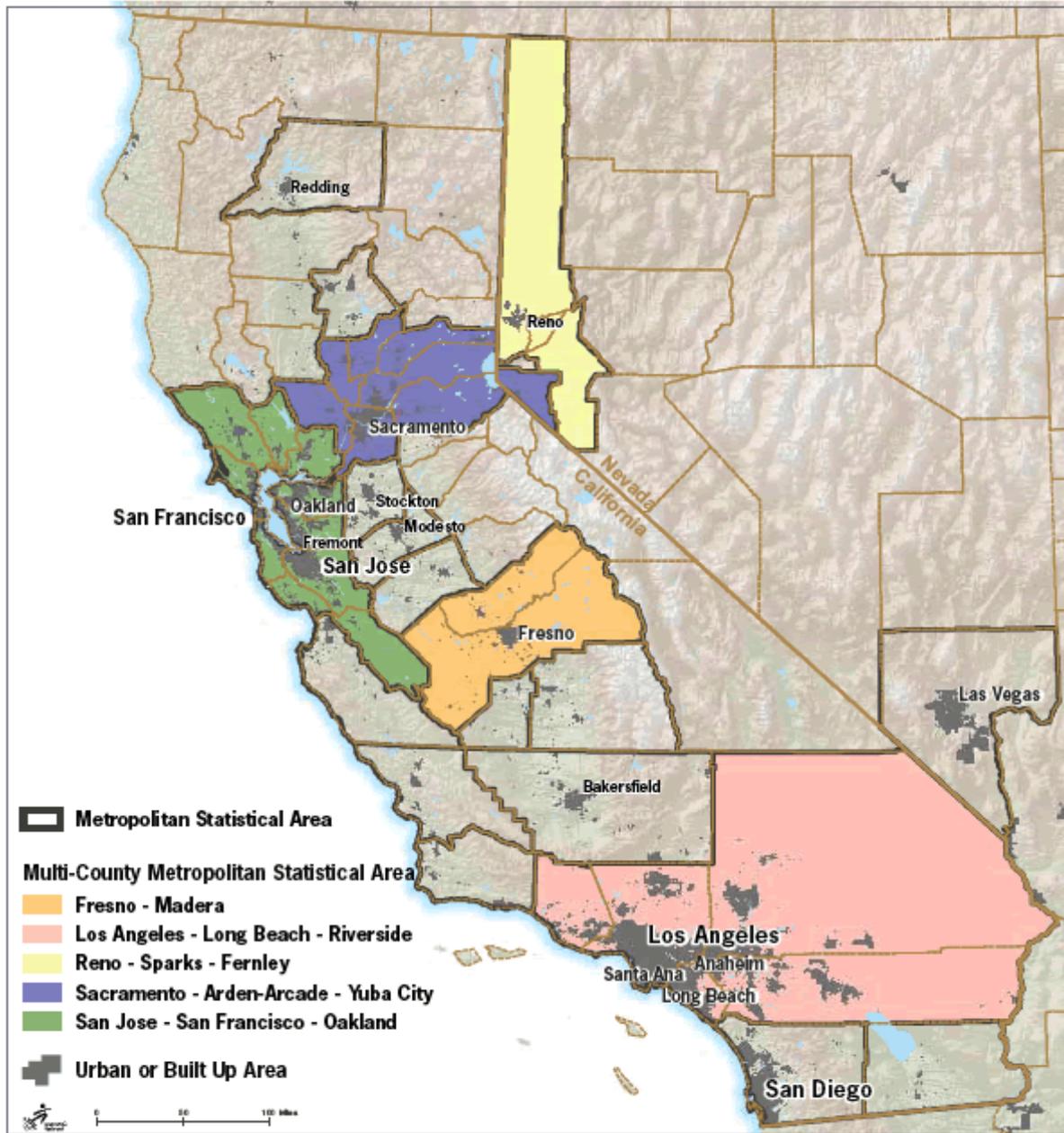
The population-growth maps reaffirm the need for the megaregional thinking to begin planning for and managing the growth that is occurring in the San Joaquin Valley. It is no longer the problem of another region, but a problem generated by both our lack of growth and lack of proper planning within the core of the megaregion.



We have mapped Census defined regions such as “Metropolitan Statistical Areas” and the larger “Core Based Statistical Areas,” which are the Census Department’s version of a megaregion. Those maps reveal four contiguous census “megaregions” — the Bay Area, Sacramento, Reno and Fresno. When we look at the contiguous MSAs we include the three fast-growing Central Valley counties of San Joaquin (Stockton), Stanislaus (Modesto) and Merced (Merced), each as its own distinct MSA. To the north, only Butte County (Chico) is contiguous. To the south, every county is a contiguous MSA, in part because the counties to the south are all quite large.

The metropolitan planning organizations and councils of governments help clarify which counties are appropriate in the Northern California megaregion. We mapped the cross-county councils of government. The three COGs — Bay Area, Monterey Bay and Sacramento — extend from Monterey County to Lake Tahoe (other counties have councils of government but they are not cross-county).

The government-defined region: Census-defined metropolitan regions



These two maps above allow for the following conclusions:

- The core of the megaregion combines the Bay Area commute shed with greater Sacramento.
- Monterey and San Benito counties are in the core of the megaregion. They are both in a cross-county COG, while San Benito is part of the greater Bay Area census area. They are also captured in the Association of Bay Area Governments' 17-county commute shed (which also includes the Central Valley counties of San Joaquin, Stanislaus and Merced).
- The “north coastal range” counties of Mendocino, Lake, Glenn and Colusa are not in the core of the megaregion as they are neither in MSAs nor the neighboring COGs. > Greater Fresno (Madera, Fresno, Inyo and Kings counties) is outside the core of the megaregion.
- Extending the core of the megaregion to Tahoe and the Nevada border (and perhaps beyond) is logical as the Sacramento CSA includes a county in Nevada.

The bioregion: Rivers and waterways that drain into the San Francisco Bay



Source: US EPA, www.epa.gov/owow/watershed/

The waters that flow from the Sierra Nevada into the Great Central Valley all pass through the San Francisco Bay to the ocean. These waters begin as snowpack (and glaciers) in the high Sierra and make their way into the Sacramento or San Joaquin rivers, into the Delta and then the Bay. Mapping this area with the addition of the adjacent coastal portions of the state, as an approximation of our “bioregion,” yields a map that captures all the major cities and most of the counties in Northern California.

Interestingly, the upper boundary of the watershed shares the county boundaries with Mono and Inyo counties in the high desert beyond. We draw these conclusions from the watershed map above:

- The Sierra Nevada as the historic hinterland of the Bay Area is a part of the Northern California megaregion because it captures the critical natural resource flow of water.
- The Great Central Valley is intrinsically linked to the Bay Area through the natural flows of the rivers.

For the Northern California Megaregion, water is important. The river system helped define the routes of commerce, which structured the early economic geography, so it is no coincidence that the water system and the historic contado (or hinterland) of San Francisco overlap.

SPUR's proposed core and sphere of influence map of the Northern California megaregion



Source: SPUR analysis

Finally, we present a composite map of the proposed boundaries of the Northern California megaregion. Each of the prior maps shows a slightly different region. In part, this reaffirms the concept that the

megaregional boundaries depend on what one is trying to use it for. When we look at population growth, we see a booming Central Valley that continues to expand south past Fresno toward Bakersfield and to the northern boundary of the Central Valley. But we suspect that both ends of the Central Valley are in fact not very tied to the core of the region. We argue that the Northern California megaregion has both a core and a sphere of influence. The core includes the historic centers and the most accessible areas of growth, particularly for firm and family relocations (which tend to be within a localized area). The core includes all the counties in the Bay Area and Sacramento councils of government, plus the three fast-growing Central Valley counties (San Joaquin, Stanislaus and Merced). This is a 21-county area.

Surrounding that core are a number of closely related counties that are the sphere of influence. To the north we include Mendocino and Lake counties. We also include the relatively unpopulated Glenn and Colusa counties (with I-5 running through them) and Butte County (with Chico). To the east we include Sierra County (the one county projected to decline in population by 2050) and Nevada County (which includes Truckee) and then the foothills and Sierra counties of Alpine, Amador, Calaveras, Tuolumne and Mariposa. We are also proposing to include five counties in Nevada: Washoe, Storey and Lyon that make up the Reno CSA, Douglas which is in the Sacramento CSA and Carson City County, which is right beyond Lake Tahoe. To the south we combine the Fresno CSA (Fresno and Madera) with the two closely connected agricultural counties of Kings (Hanford) and Tulare (Visalia), which retain close linkages with Fresno. This Northern California Megaregion on the map takes up the large center of the state.

We arrived at this provisional definition of the megaregion by layering all the maps presented here and looking at the available data on connections between places. The overlap we have found between the bioregion, driving distance and the areas of growth is something that appears unique among the 10 megaregions in the United States. We have a “thick” set of relationships that define Northern California.

Our composite map of the Northern California megaregion excludes the far north and south ends of the Valley:

- Bakersfield, Kern County. Although a part of the watershed and connected via contiguous MSAs, Bakersfield cannot be reached within four hours of any of the key central cities. It also has the greatest gaps in potential exurban growth between it and the rest of the San Joaquin Valley cities. In this way we will exclude Kern County from even the extended version of the megaregion.
- Redding, Shasta County. Although Redding is within four hours of all the main central cities in Northern California, though not by much, it is a part of its own MSA that does not connect to any other one in Northern California. Growth in Redding is being driven more by trends in retirement and tourism than from the economic growth in greater Sacramento. As such, Redding and Shasta County are outside the boundaries of the megaregion.

APPENDIX II: HISTORY OF THE MEGAREGION CONCEPT

The megaregion concept was inspired by Jean Gottman who coined “the megalopolis” in the early 1960s to describe the urbanized northeast corridor between southern Maine and northern Virginia.²¹ Even when that megaregion was first identified, there was a recognition that other regions in the United States would see growing integration. At the time, sociologist Jerome Pickard predicted that by 2000 there would be three major urbanized areas in the country.

The largest would be an “Atlantic Seaboard” megaregion extending from southern Virginia to Maine and west to Chicago and Milwaukee. The second largest would be a “California” one extending from Santa Rosa to Tijuana and including Sacramento. The third largest would be called the “Florida Peninsula” and include the entire state minus the panhandle and the Everglades.

While Pickard failed to identify the tremendous growth in and around Atlanta and Houston (as anchors of their respective egaregions), he did identify that the largest megaregions would grow by connecting preexisting metropolitan regions with each other. More recently, the notion of connecting existing metropolitan regions has been explored by Robert Lang, a leading demographer.

He has argued for the notion of a “megapolitan” region that has the following criteria:²²

- Will have more than 10 million residents by 2040.
- Can be traversed by car from one end to the other in less than a day’s drive.
- Combines two or more metropolitan areas (that have a strong central city) and are located between 50 and 200 miles apart.
- Connects contiguous metropolitan and micropolitan areas (with counties as the base unit).
- Has an established transportation infrastructure between its centers.
- By 2040 will have commuting flows of at least 15 percent between the larger and the smaller areas within the megapolitan area (this is also referred to as reaching an “employment interchange measure” of 0.15 by 2040).²³

The other prominent methodological approach to megaregion geography comes from the Regional Plan Association, the convener of the America 2050 project, of which SPUR is a participant.

The RPA has identified five major categories and layers of relationships that define megaregions.

- Environmental systems and topography
- Infrastructure systems

²¹ www.america2050.org/2005/11/reinventing_megalopolis_the_no.html

²² www.lincolnst.edu/pubs/PubDetail.aspx?pubid=1039 and www.mi.vt.edu/ (see Presentation to the Civic Council Board Retreat by Robert Lang, Ph.D. on March 3, 2007)

²³ The Employment Interchange Measure (EIM) is defined by the Bureau of the Census as the sum of the percentage of commuting from the smaller area to the larger area and the percentage of employment in the smaller area accounted for by workers residing in the larger area. www.census.gov/sdc/www/metrostandards.ppt

- Economic linkages
- Settlement patterns and land use
- Shared culture and history

The RPA's criteria are less stringent than Robert Lang's, relying on either a more broad-based or more intuitive set of relationships (depending on your perspective) to define the boundaries. Of the map of the ten megaregions in the US, some have fairly contiguous development (the Northeast, the Tucson-Phoenix "Sun Corridor," the two regions in California).

Others cover much larger areas with widely separated urban places (the Midwest, the Piedmont-Atlantic Region). The RPA is interested in the traditional physical planning connections like integrated labor markets, infrastructure and land-use systems across networks of metropolitan regions. But the RPA is also interested in cultural connections, communications flows and landscapes.

The megaregion concept is also being used in Europe and Asia as a way to organize large, often cross-national, regions. These emerging "global integration zones" use high-speed rail and separated goods movement systems to increase mobility and competitiveness. While sometimes large in scale (i.e. London to Paris to Brussels), this approach links individual metropolitan regions over a broad area. The resultant megaregions have strong urban centers or "central cities" that each generate their own growth and dynamism but also retain a strong connection to each other.

APPENDIX III: AN EXAMPLE OF MEGAREGIONAL PLANNING: THE REGIONAL RAIL PLAN

The Regional Rail Plan undertaken by BART and the Metropolitan Transportation Commission is one of the first official planning efforts to actually work at the megaregional scale, and therefore it deserves special mention here. This plan was conceived of as the successor to the 1957 BART Plan, with the ambition to guide transportation and development for another half-century. And it was framed to take in not just the Bay Area, but also Sacramento and the core commuting areas of the Central Valley.

MTC adopted the plan in September of this year, providing the following major ideas for the region:

- The BART system is essentially complete, aside from needing to tie it off at logical major transfer points. The next set of investments in rail will be in modern, rapid, European-style passenger trains, connecting to BART just as Paris' RER, a commuter rail network more formally known as the Réseau Express Régional, complements the urban subway system, the Métro.
- The Regional Rail Plan recommends upgrading the Altamont Commuter Express corridor to two dedicated passenger tracks running rapid, frequent, electrified trains. While ACE has been successful in this corridor, it is highly constrained by the single track it shares with slow-moving freight trains. It is further limited by regional funding policies that direct resources to where people live rather than where they work. The challenge will be getting the three regional transportation planning and funding agencies in the corridor to work together to prioritize rail improvements over endless freeway widenings.
- With ridership second only to the Northeast Corridor, the Capitol Corridor (Bay Area to Sacramento, along the edge of the Bay and Delta) will also see a huge increase in passenger demand between San Jose, Oakland and Sacramento. But its narrow trackway is edged on both sides by environmentally sensitive wetlands and the Bay, limiting options for widening and straightening the track. More importantly, it is owned by Union Pacific, which expects a doubling of freight demand by 2020, limiting speed, frequency and reliability of passenger trains in the important I-80 corridor. As a result, the Regional Rail Plan urges a high-speed rail connection from San Francisco to Sacramento via the Altamont Pass, which would also serve Central Valley commuters traveling to jobs throughout the Tri-Valley and inner Bay Area.
- These are examples of the kinds of infrastructure projects that make sense at the megaregional scale.