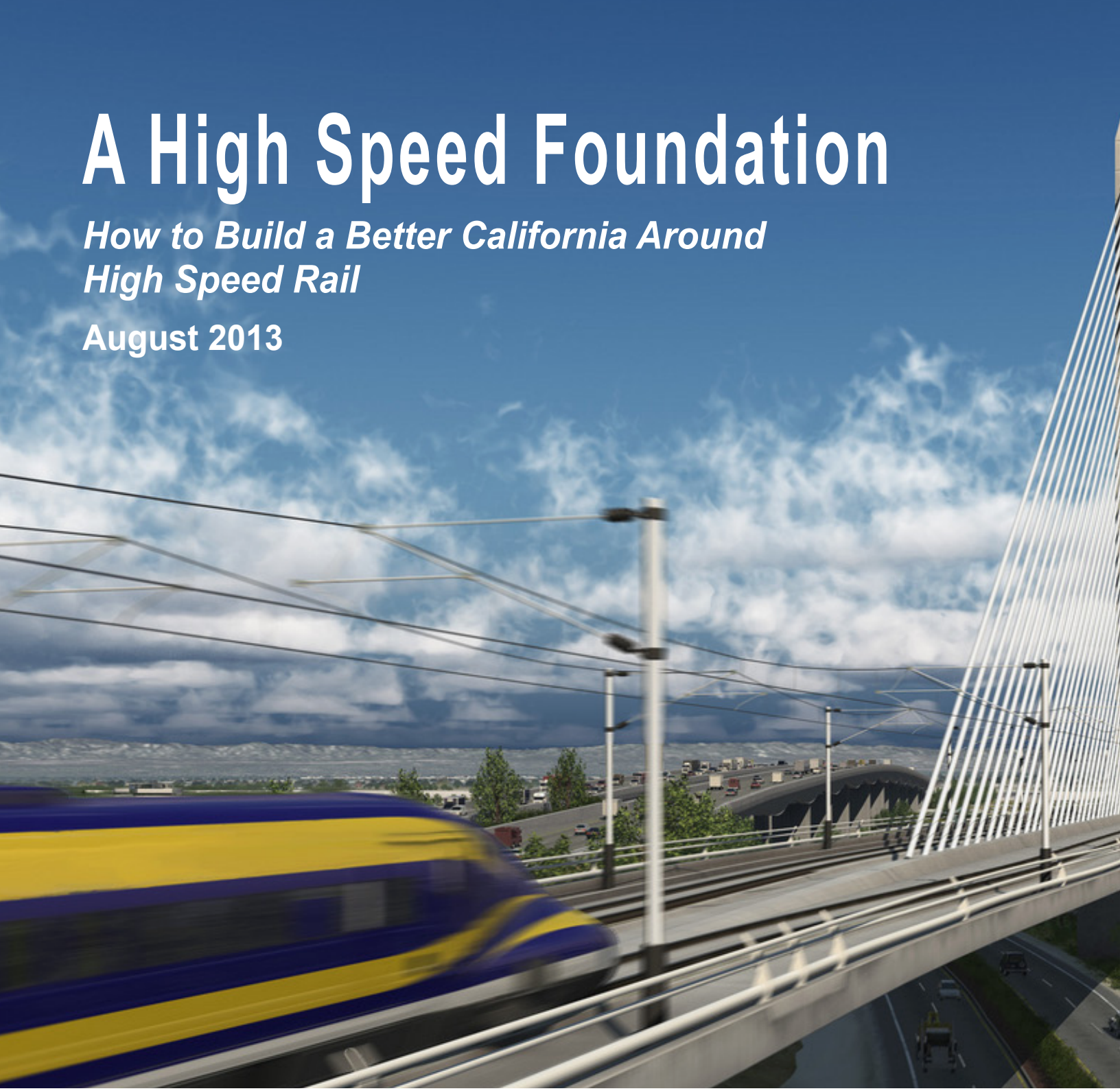
A High Speed Foundation

How to Build a Better California Around High Speed Rail

August 2013



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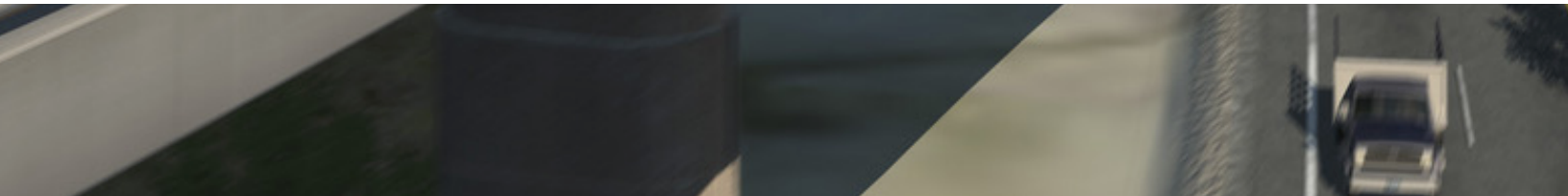

About this Report

This policy paper is the eleventh in a series of reports on how climate change will create opportunities for specific sectors of the business community and how policy-makers can facilitate those opportunities. Each paper results from one-day workshop convenings that include representatives from key business, academic, and policy sectors of the targeted industries. The convenings and resulting policy papers are sponsored by Bank of America and produced by a partnership of the UCLA School of Law's Environmental Law Center & Emmett Center on Climate Change and the Environment and UC Berkeley School of Law's Center for Law, Energy & the Environment.

Authorship

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California High Speed Rail - Initial Operating Section

Source: California High Speed Rail Authority

Executive Summary: High Speed Rail in the San Joaquin Valley

After decades of planning, high speed rail is coming to California. With a recently revised and more cost-effective business plan, officials hope to begin construction in 2013 on "Phase 1," which will connect the San Francisco Bay Area to the Los Angeles Basin by 2028 for an estimated $68.4 billion. "Phase 2" will extend the system at a later date to other major population centers, such as San Diego, Sacramento, and the Inland Empire, with as yet undetermined costs.

High speed rail could offer numerous benefits to California. According to proponents, the system can reduce the need for costly new highway and airport expansions in California's congested short-haul air markets and crowded intercity freeways, which are some of the busiest and most delay-prone in the nation – potentially saving $170 billion over 20 years. High speed rail could also help the state's economy by supporting more convenient and efficient travel as well as increasing traveler productivity. If implemented properly with supporting land use policies, the system could also reduce air pollution and improve public health, as well as help California meet state climate change goals with electrified mass transportation that relies on an increasingly renewable-powered grid.

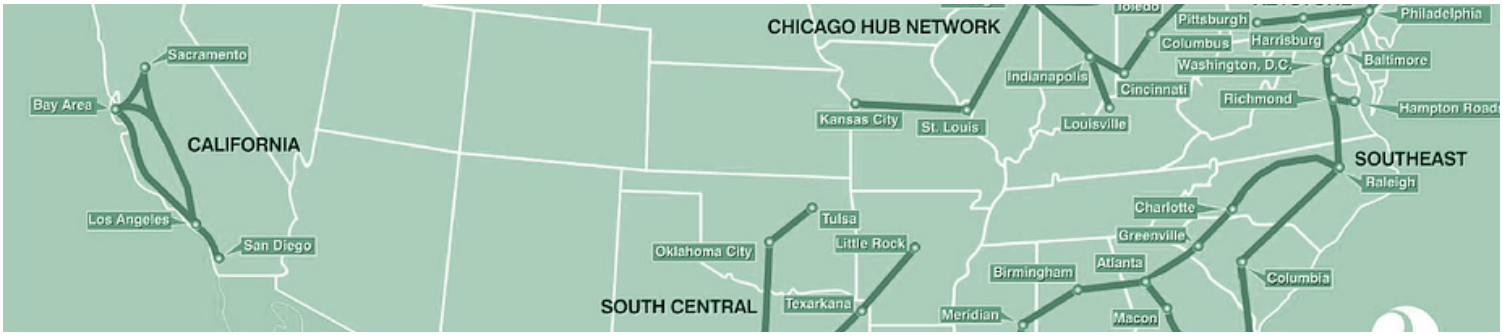
At the same time, the system has the potential to worsen California's development patterns – and therefore the environment, economy, and public health. This risk is particularly a concern in California's San Joaquin Valley (referred to as the "Valley"), where construction begins. The Valley has a history of building low-density, auto-oriented housing projects on valuable agricultural land, including "ranchettes" (rural housing on multiple-acre lots), leading to traffic congestion, poor air quality, and the ongoing loss of the region's invaluable agricultural resources – a $43 billion per year industry. High speed rail could increase this growth and its negative effects around cities connected to stations. To heighten the challenge, the Valley has been politically divided over high speed rail while experiencing some of the worst effects from the recent recession.

Yet if Valley leaders can develop and implement supporting policies, the region could benefit economically and environmentally from the system and its six billion dollar state and federal investment. Proponents believe that construction will generate approximately 100,000 job-years over the next five years (a "job year" is defined as one job sustained for one year, while multiple job years could mean multiple jobs for one year or one job for multiple years), with most of that growth occurring in the Valley. The system could also create new business opportunities in Valley cities connected to the major economic hubs of the state. In addition, high speed rail could help address the region's traffic congestion and severe air quality challenges and provide a faster alternative from Valley airports to the San Francisco Bay Area and Los Angeles and San Diego.

High speed rail representatives, local government officials, agriculture advocates, and business leaders gathered in Fresno in April 2013 for a discussion sponsored by the UCLA and UC Berkeley Schools of Law. The purpose was to identify the primary challenges to implementing high speed rail successfully in the Valley and to suggest strategies and policies. The group focused on four key barriers that could hinder effective high speed rail planning and implementation:

"We have cleaned up our act quite a bit, and we are going to start building this thing. This would be a really good time in trying to hit the reset button about what the benefits are for the Valley among Valley representatives.

-- Dan Richard
California High Speed Rail Authority



Four Key Barriers to Efficient Development around a High Speed Rail Foundation

1) **Lack of a Valley-Wide Organizing Effort to Optimize High Speed Rail Decision-Making:** the eight-county San Joaquin Valley lacks a collaborative mechanism, with business, community and government involvement, to focus on deciding, shaping, and mobilizing support for high speed rail policies and benefits.

2) **Lack of Resources for Planning and Outreach for Station-Connected Development:** Cash-starved local governments and planning departments lack the funds needed to plan for development connected to high speed rail, gather citizen input, and mobilize community support for station-connected plans.

3) **Financial Support for and Lack of Limits on Auto-Oriented Development:** many local governments in the region have historically tended to approve lower-density, single-family developments and ranchettes that require residents to drive to services and jobs, which leads to disinvestment in future high-speed-rail-connected areas, higher costs to municipal budgets, and unmet consumer demand for compact, walkable neighborhoods.

4) **Lack of Financing for High-Speed-Rail-Connected Projects:** high speed rail stations and connected communities require improved center-city neighborhoods and older urban corridors, where historic disinvestment and deteriorating infrastructure may make development projects and upgrades difficult to finance.

Solutions to Overcome the Barriers

This report identifies the steps that government leaders, businesses, and the public can take to ensure that California optimizes growth patterns around high speed rail. These stakeholders will need to:

- Enlist a Valley-wide collaborative entity, including business, community, and government leaders, to develop a vision for regional economic growth and environmental preservation tied to high speed rail, ensure that high speed rail decision-making supports that vision, and mobilize citizens to implement the policies necessary to realize it;
- Support local and regional planning efforts and outreach, including through computer modeling programs and identification of best practices and tools, to implement the vision;
- Demonstrate the costs of development patterns that do not support the regional high speed rail vision by compiling and modeling data on the impacts of this development on municipal budgets, agricultural productivity, and public health; and
- Utilize and support financing programs that can catalyze private investment in thriving, mixed-use pedestrian, bike, and transit-accessible development projects that are connected to mobility hubs and high speed rail stations.

The report contains a summary roadmap of these and other proposed solutions, an overview of high speed rail policies and potential impacts, and a detailed explanation of each barrier and solution.

A Valley-Wide Vision for Regional Economic Development and Environmental and Agricultural Preservation Around High Speed Rail

San Joaquin Valley leaders from the business, nonprofit, and public sectors should identify an eight-county, Valley-wide entity to develop and implement this vision. A locally driven, regional organization could influence federal, state, and local decision-making related to high speed rail to optimize the economic and environmental benefits for the Valley.

Valley leaders should work with the entity to mobilize residents to support the vision and help implement it. The entity should engage all local governments and rally youth and business leaders and other public and nonprofit representatives of all stakeholder groups to promote high speed rail and local development policies that will benefit Valley residents.

Federal and state leaders at the High Speed Rail Authority, Department of Transportation, Strategic Growth Council, Legislature, and other key entities should provide funding, technical support, and coordinated decision-making. The federal and state government should partner with the Valley-wide collaborative by providing financial and technical support, such as modeling software and current data on high speed rail implementation and the likely economic and environmental benefits for Valley communities.

Local and Regional Land Use and Transportation Plans that Implement the Valley-Wide Vision for High Speed Rail

State and local leaders should support land use and transit planning and outreach that reinforces the environmental and economic benefits of high speed rail, particularly in communities with depleted planning resources. Unpredictable and recession-affected development fees have hindered local governments' ability to plan for land use and transit policies that coordinate with high speed rail and to perform the outreach necessary to build public support for the plans.

High Speed Rail Authority and state, regional, and local leaders should gather and promote data on high speed rail economic and environmental benefits. Local governments and Valley Metropolitan Planning Organizations (MPOs) should use data generated by the High Speed Rail Authority, including through mapping and economic-impact models, to help the public visualize the benefits of development coordinated with high speed rail.

Valley leaders should identify and mobilize outreach leaders in each community. Key local leaders can promote the planning process to constituent groups with outreach training from local governments.

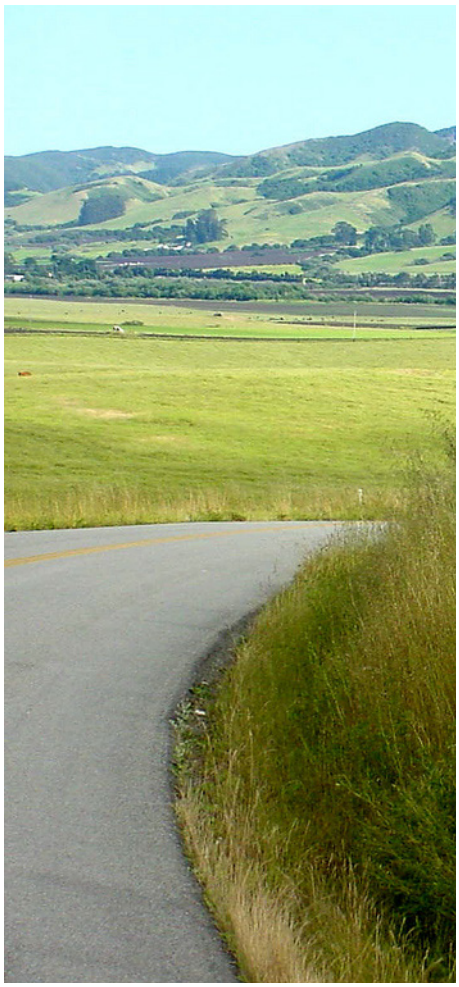
Less Unplanned Development that Converts Farmland and Fails to Support the Vision for High Speed Rail Implementation

State leaders at the California High Speed Rail Authority, the Strategic Growth Council, and their allied agencies and philanthropic organizations should continue to fund and develop computer mapping and modeling software for high-speed-rail-related development scenarios. Computer modeling software like Urban Footprint, Rapid Fire, and other peer-reviewed software can calculate the economic effect of converting farmland under various scenarios, the cost of the public services and infrastructure required to service new proposed developments, and likely property and sales tax revenues for different growth scenarios, in order to mobilize public support for high-speed-rail-coordinated development.

What is High Speed Rail?

"High speed rail" refers to electric rail technology in which steel-wheel trains ride on steel rails at speeds of over 200 miles per hour. Advanced signaling systems can enable the trains to operate at high speeds and reduce the time between trains to as few as three minutes. California expects to adopt technology that can consistently operate at over 220 mph.

Japan first introduced High Speed Rail Since in 1964 with the 130 miles per hour (mph) Japanese Shinkansen (bullet train). The new Shinkansen trains today operate at maximum speeds of 187 mph and have been tested at speeds of nearly 300 mph. European countries next introduced high speed trains, such as the French TGV trains, which regularly operate at 200 mph maximum speeds but have been tested at almost 360 mph. Italy will soon adopt trains that can reach maximum commercial speeds of 224 mph. Similar high speed rail systems now operate in Spain, Korea, Taiwan, and China, with expanding European and Japanese networks that include an extension of the TGV network to the Netherlands. By 2020, high speed rail will connect most of Europe with an electrified and standardized network.[1]



Regional and local Valley leaders should utilize computer mapping programs or other peer-reviewed software to calculate the economic costs of various development scenarios. MPOs and local governments in the Valley can use the data from these models to inform residents about the economically and environmentally beneficial growth patterns associated with high speed rail.

Valley MPOs, with state support, should continue to develop, support, and use "greenprints" to bolster alternative growth scenarios that protect agricultural resources and open space lands. Greenprints that coordinate with high speed rail will help preserve open space and agricultural land by implementing policies to shield them from unplanned development.

Valley MPOs and local governments should continue to develop and implement comprehensive agricultural mitigation policies. Agricultural mitigation policies, which require developers with projects on farmland to protect farmland elsewhere in the region, can help limit high-speed-rail-induced development on farmland around stations and preserve off-site farmland as well.

The High Speed Rail Authority should condition station-area spending on supportive station-area and transit corridor land use planning. State officials should direct high speed rail funds first to communities that allow higher-density, pedestrian-oriented development around station areas, as envisioned by SB 375 (Steinberg, 2008) and prioritized for the state under AB 857 (Wiggins, 2002).

Financing for Development that Optimizes the Economic and Environmental Benefits of High Speed Rail in the Valley

State and local leaders should analyze the likely costs and benefits of developing around high speed rail and prioritize the specific infrastructure needs. The California High Speed Rail Authority and Strategic Growth Council should continue to fund and expand computer mapping and modeling programs to help local governments undertake this analysis and demonstrate the economic benefits of high-speed-rail-connected development patterns.

The State Legislature should allow tax-increment financing for high-speed-rail-connected areas. The state government should pass legislation allowing local governments in areas connected to high speed rail to borrow against projected future property tax increases to finance infrastructure improvements in high speed rail station areas and mobility hubs connected to high speed rail, as SB 1 (Steinberg) proposes.

The State Legislature should ease the formation of infrastructure finance districts for high-speed-rail-connected areas. State legislation could help local governments create infrastructure financing districts, borrowing against future growth in property taxes, to finance improvement projects in high-speed-rail-connected areas, as recommended by SB 33 (Wolk).

The State Legislature and High Speed Rail Authority should provide additional funding for existing infrastructure grant programs. State funds, such as from cap-and-trade auction revenue (see below) or high speed grants, could bolster existing infrastructure grant programs, such as the Transit-Oriented Development (TOD) Housing Program and the Infill Infrastructure Grant (IIG) Program, to fund projects and redevelopment efforts in high-speed-rail-connected areas.

Local leaders should develop public-private partnerships to catalyze investment in high speed rail areas. Public-private partnerships to spur investment in high speed rail communities can take the form of local government seed capital to leverage private investment, assistance with land assembly and rezoning, funding of environmental remediation, gap-financing, and reduced fees, among other options.

The State Legislature, with the High Speed Rail Authority, should create an infrastructure finance bank to support projects connected to high speed rail station areas. Seed funding for an independent infrastructure bank, or a repurposing of the existing state infrastructure bank, with government oversight and accountability could finance meritorious infrastructure projects in high speed rail station areas and connected neighborhoods.

The State Legislature should subsidize loans to local governments borrowing against existing revenue streams in high speed rail areas. As currently done by the federal Transportation Infrastructure Finance and Innovation Act (TIFIA) program, subsidies can help local governments borrow against existing funding streams like local transit sales taxes for high-speed-rail-connected investments.

The State Legislature should direct cap-and-trade auction revenue to redevelopment projects and planning in high-growth Valley communities with high speed rail access. California's recently launched cap-and-trade program generates revenue from the auctioning of allowances (permits to regulated businesses for their carbon emissions), which could be directed to projects in high-growth areas connected to high speed rail.

The State Legislature and local governments should create a permanent source of funding for affordable housing. A housing trust fund would help pay for affordable housing projects in high speed rail areas, as proposed by SB 391 (DeSaulnier), to ensure that these neighborhoods become vibrant job and housing centers that are accessible to Californians of all income levels.

The State Legislature should retool enterprise and empowerment zones to boost development in high-speed-rail-connected areas. Reform of the business tax credit zones could benefit high speed rail areas by stimulating development in these neighborhoods and in connecting corridors.

State leaders should direct pension investment funds to finance credit-worthy projects and infrastructure improvements in high-speed-rail-connected areas. State investment funds like the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS) could invest in infrastructure bonds and other financing tools to build credit-worthy high-speed-rail-connected projects and infrastructure.

A High-Speed History in California

Motivated by the introduction of high speed trains around the world, California leaders began discussing the possibility of building a high speed rail system linking northern and southern cities in the 1970s. After years of study, the state government passed the California High Speed Rail Act of 1996 (SB 1420, Kopp, Chapter 796, Statutes of 1996) to establish the California High Speed Rail Authority (abbreviated here as "Authority"). Consisting of a nine-member board appointed by the Legislature and Governor, as well as professional staff, the Authority has responsibility for designing, acquiring funds for, and building a high speed rail system in the state. Over the following decade, the Authority developed plans for a route between Southern and Northern California and conducted preliminary environmental analysis on the route.[2]

In November 2008, the Authority placed before the state's voters Proposition 1A, which authorized the state to sell up to $9.95 billion in general obligation bonds to partially fund the development and construction of a high speed rail system. $9 billion would help fund the rail system, while the remaining $950 million would upgrade existing passenger rail systems to improve connectivity with the high-speed system. Proposition 1A also contained specific requirements for implementation. For example, the trains must travel at a minimum speed of 220 mph, with specific corridors delineated and an explicit reference to connecting San Francisco to Los Angeles and Anaheim. The initiative specified minimum travel times for each identified corridor, such as two hours and forty minutes between San Francisco and Los Angeles. It also contained accountability and oversight provisions for the use of the bond funds.[3]

Proposition 1A passed with 52.7 percent voter approval at a propitious time. The 2009 federal American Recovery and Reinvestment Act (ARRA or "stimulus") provided $3.5 billion in federal funds for the planning, engineering, and construction of up to 130 miles of a dedicated and grade-separated high speed rail line in the San Joaquin Valley. The federal government granted the ARRA funds through the federal High-Speed Intercity Passenger Rail Program, which is administered by the Federal Railroad Administration (FRA). The 2008 Passenger Rail Investment and Improvement Act established the program to help fund a nationwide network of intercity high-speed rail projects through either new or improved existing rail corridors. Despite this initial federal allocation, however, the federal government has not created permanent and ongoing funding for this program.[4]

As the cost estimates for California's system jumped from $45 billion in 2006[5] to $98.5 billion in 2011,[6] the High Speed Rail Authority drafted a new business plan in 2012 to reduce the costs. Pursuant to SB 783 (Ashburn, Chapter 618, Statutes of 2009), the April 2012 revised business plan proposed to construct the entire 800-mile statewide system in two phases. The "Blended" Phase 1 consists of different construction segments and integrates high speed rail with existing passenger rail systems in urban areas, such as Caltrain on the San Francisco peninsula and Metrolink in Los Angeles County. The total cost of connecting the San Francisco Bay Area to the Los Angeles Basin would be an estimated $68.4 billion, with completion expected in 2028. Phase 2 would later extend the system to other major population centers at undetermined cost.[7]

The first construction on the initial operating segment of Phase 1 will connect Madera to just north of Bakersfield in the San Joaquin Valley. The Authority plans to open the line in 2017 at a cost of $6 billion. The final construction on the initial operating segment will take the line an additional 170 miles to Merced to the north and the San Fernando Valley in Los Angeles County to the south, where the system will connect with Metrolink. This construction effort will cost an estimated $25.3 billion with a 2021 projected completion date. The next effort on Phase 1 would extend the line 110 miles to San Jose by 2026 at an estimated cost of $19.9 billion. The system will connect there with Caltrain. The final effort involves connecting the system the last 110 miles to the San Francisco Transbay Terminal and Los Angeles Union Station by 2028 at a cost of $17.2 billion. The total line in Phase 1 would therefore run 520 miles at a cost of $68.4 billion. The Authority will plan for Phase 2 extensions to other major population centers, such as San Diego, Sacramento, and the Inland Empire, at a later date, with unknown costs.[8]

The Potential Impacts of California's High Speed Rail System on the State's Economy and Environment

San Joaquin Valley Congestion and Mobility

The future of California's economy will in part depend on mobility for business, recreation, and personal travel. But airport and road congestion, already severe, will only worsen as the population grows. In the San Joaquin Valley, residents and businesses lack fast and convenient access to cities within the Valley and to major population and job centers in the San Francisco and Los Angeles areas. Driving options and accessibility are limited by traffic congestion, poor quality roads, and long distances. For example, the 416-mile State Route 99 (sometimes referred to as the "main street" of the Central Valley)[9] has deteriorated over the past decades with higher truck volumes and rapid population growth. As the principal north/south Valley highway, Route 99 serves the region's major cities and provides the main transportation path for people, services, and goods, particularly agricultural products. It also functions as the major connector to the San Francisco Bay Area and the southern Sierra Nevada mountains.[10]

Congestion and road conditions are worsening, particularly around the Valley's urban areas. With an average of 100,000 vehicles per day on Route 99 in Bakersfield, Fresno, Modesto, and Stockton, and truck traffic more than three times the state average near these cities, the highway cannot adequately meet demand, especially during commute hours in urbanized areas.[11] Additional lanes have resulted in increased congestion, with the state's Department of Transportation projecting the traffic volume to increase from 84,000 to 258,000 vehicles by 2035 on Route 99.[12] The narrow right-of-way, particularly in urbanized areas, and adjacent development will restrict the possibility of new lanes to accommodate this growth.[13] In addition, much of the pavement on Route 99 is 30 to 50 years old, exceeding its design life, with heavy truck traffic exacerbating the condition and affecting the quality of life for Valley residents and travelers.[14]

Supporters of high speed rail argue that the system could help relieve this road congestion by providing a faster and more convenient alternative to driving. They estimate that the system, which roughly parallels Route 99, will reduce vehicle miles traveled in the region by 7 to 10 percent. Fresno and Merced counties in particular would experience some of the larger reductions in the state.[15] In addition, the High Speed Rail Authority's environmental analysis indicates that travel times for "intermediate intercity trips" (such as the distances between Valley cities and from these cities to San Francisco or Los Angeles) will be significantly faster than either air or automobile transportation.[16]

High speed rail supporters also predict that the system will provide frequent service to parts of the Valley that are currently not well served by air transportation. Flights from Valley airports to San Francisco or Los Angeles can cost between $250 and $400 or more for roundtrip tickets. But high speed rail could reduce the need for air travel and provide a faster alternative from airports such as Fresno Yosemite International, Merced

Municipal/Macready Field, Chowchilla Municipal, and Madera Municipal.[17] In addition, the system may provide convenient access for Valley travelers flying out of regional airports to connecting national flights.

The San Joaquin Valley Economy

High speed rail has the potential to benefit the Central Valley economy, according to the project's budget and studies on similar systems around the world. The Valley ranks among the hardest-hit by the recent recession, with an average county unemployment rate of 14.9 percent as of February 2013.[18] This unemployment rate is over five percentage points higher than the state as whole and nearly double the nationwide average. In the short term, high speed rail construction will likely bring a $6 billion state and federal investment to the region that may generate approximately 100,000 job-years over five years (equal to 20,000 jobs over five years).[19] In the long term, the advent of train operations could generate new economic activity from businesses and residents locating near Valley rail stations and connected areas, although the extent of this activity is presently unclear.

Recent analysis of the long-term economic benefits of high speed rail indicates that Valley cities could experience sustained prosperity from new business opportunities related to the high speed connection. A study in the United Kingdom showed that cities within two-hours of London by high speed rail had lower unemployment rates, more urban competitiveness, and more economic activity from knowledge-intensive services, than neighboring cities not connected to high speed rail.[20] If this effect repeats in the Valley, it could provide significant benefits to cities like Merced, Fresno, Hanford, and Bakersfield that will be within this two-hour distance of both Los Angeles and San Francisco.

Transportation Options in California

Statewide, high speed rail has the potential to address California's severe air and road congestion problems, according to environmental analysis of the system. The Los Angeles-to-San Francisco short-haul air market represents the busiest in the country, involving hundreds of daily flights for more than five million passengers annually (larger than the New York City-to-Washington, D.C. market). Approximately one out of every four flights on this route is delayed by about an hour, making it one of the most delay-prone in the nation.[21] In addition, the San Diego-to-San Francisco, Los Angeles-to-Sacramento, and Los Angeles-to-San Jose air routes are all in the top 20 short-haul markets in the nation, with millions of passengers annually.[22] California's roads are also severely congested, resulting in billions of dollars in lost time and wasted fuel each year. For example, Los Angeles lost $10.78 billion and San Francisco lost $3.28 billion to congestion in 2011, ranking among the most congested urban regions in the country.[23]

As in the Valley, high speed rail has the potential to divert these air and car travelers to rail, possibly by up to 5 million air travelers by 2040. Based on ridership experience in Japan and Europe, high speed trains can divert up to 90 percent of air traffic for travel under 310 miles (slightly less than the distance between San Jose and Los Angeles) and half of all air travel under 500 miles (covering the distance between San Francisco and San Diego).[24] The system may also attract new riders who would otherwise not have traveled. For example, high-speed rail service between Madrid and Seville, Spain, increased the share of passengers using rail between the two cities from 16 to 51 percent, with total traffic between the two cities increasing by 35 percent overall.[25]

Overall, system backers believe that high speed rail represents a lower-cost method of addressing air and road congestion. Without it, current analysis indicates that California would have to add between 2,300 and 3,000 miles of highway lanes, approximately four to five new airport runways, and between 90 to 115 airport gates. These costs would exceed $170 billion over 20 years, representing more than twice the cost of high speed rail.[26] Furthermore, a successful high speed rail system could recover its costs through fare revenue. Two high-speed rail lines, the Paris-Lyon Train à Grande Vitesse

(TGV) route in France and the Tokyo-Osaka route in Japan, have fully covered both their infrastructure and operating costs after 15 years of service.[27]

High speed rail studies indicate the potential for additional economic benefits beyond avoiding airport and road expansion. The construction investment could result in $8.3 billion more in state gross domestic product and $1.9 billion in new tax revenue.[28] High speed rail may also enable economic activity based on in-person meetings and improved productivity from better integrating northern and southern economies. In addition, the system could provide saved and more productive travel time for passengers compared to automobile or airplane trips, with an economic value as high as $6 billion for the initial segment.[29]

Household Costs

If implemented properly, high speed rail could save citizens money, both via ridership on the system and through increased patronage of public transit systems connected to stations. The Texas Transportation Institute estimated that individual drivers in Valley cities like Fresno and Bakersfield lost between 12 and 15 hours a year to congestion and wasted up to 7 gallons of fuel, at a total cost to the those cities of $41 million each (not including lost productivity from stalled goods movement).[30] Even worse, drivers in Los Angeles and San Francisco lost more than $1,200 each to congestion, while those regions averaged up to 25 gallons of wasted fuel per person from traffic.[31] High speed rail may help citizens avoid this traffic by providing an alternative and by boosting ridership on connected public transit networks. As a comparison, the Texas Transportation Institute estimated that public transit in Fresno and Bakersfield reduced traffic delays by almost a quarter million hours in 2011, at a cost savings of over $5 million.[32]

In addition, more compact development – if spurred by high speed rail – could provide household cost savings in terms of energy and water bills. Future growth scenarios indicate that Californians could save up to 19 million acre-feet of water and reduce building energy use by up to 15 percent with more compact-type development patterns statewide.[33] In the San Joaquin Valley, these scenarios would result in residents saving $9,500 per year in auto and utility costs and $4,000 per year in fuel costs.[34]

Environment and Air Quality

Harmful air pollution in the San Joaquin Valley

With supporting land use policies, high speed rail may be able to help address California's and the San Joaquin Valley's severe air quality challenges. The San Joaquin Valley is arguably the most polluted air basin in the United States. The American Lung Association consistently ranks Bakersfield and Fresno as the top two cities in the nation with the highest concentrations of short-term ambient fine particulate matter, which causes asthma and other respiratory illnesses, especially in children.[35] The American Lung Association also lists Hanford-Corcoran and Modesto in the top five for particulate matter concentrations (with Los Angeles the fifth city) and Merced, Stockton, and Visalia-Porterville in the top fifteen.[36] Premature deaths from particulate matter are now comparable to deaths from traffic accidents and second-hand smoke.[37] The Valley also has one of the worst levels of ozone pollution in the United States,[38] which leads to asthma, reduced lung capacity, and increased susceptibility to respiratory illnesses.[39] The American Lung Association lists Visalia, Bakersfield, Fresno, and Hanford in its top five for ozone levels (with Los Angeles at number one).[40] Statewide, 90 percent of Californians breathe unhealthy levels of one or more air pollutants during some part of the year, according to the California Air Resources Board.[41]

High speed rail could potentially reduce this pollution by decreasing travel from on-road vehicles, such as automobiles and trucks, which contribute a significant portion of the pollution. According to Air Resource Board emissions data, on-road motor vehicles emit roughly 32 percent of the statewide pollution (9,227.24 tons per day out of 29,273.26

tons per day statewide).[42] Gasoline- and diesel-powered automobile usage emits carbon monoxide, sulfur dioxide, and particulate matter pollution, among other pollutants.[43]

If high speed rail diverts automobile trips to cleaner, electrified transportation, it could help ensure that California's growing population does not automatically create more automobile congestion and pollution on the state's major intercity roads and highways. As a result of the projected 7 to 10 percent drop in Valley driving from high speed rail (discussed previously), the system could cause a net regional decrease in emissions of ozone and particulate matter, among other criteria air pollutants.[44]

Risks of climate change

While climate change threatens California's economy, natural resources, and quality of life,[45] the state's Central Valley is particularly vulnerable. Its major economic engine, the agricultural sector, will likely experience damaging weather-related changes in the coming years due to the impacts of climate change. Climate scientists predict changes in crop yield and types, new and expanded ranges of weed and pest invasions and diseases, increased flooding, changes in crop pollination, and more frequent and intense heat waves.[46] As these conditions worsen over the next century, the changed environment may threaten the industry's ability to produce food for the state, the nation, and the world.

High speed rail has the potential to help California meet its statewide climate change mitigation goals to avoid the worst of these impacts and reduce reliance on fossil fuels. To meet these goals, California needs to shift transportation patterns away from fossil fuel-based technologies and toward electrified options such as high speed rail that rely on California's increasingly renewable energy-powered grid. Without this shift, California will likely not be able to meet its greenhouse gas emissions goals and still accommodate increased travel demand from a growing population.[47]

Once fully built, high speed rail could reduce the greenhouse gas emissions that cause climate change. California has committed itself to reducing these emissions, most prominently through the California Global Warming Solutions Act of 2006 (AB 32). AB 32 requires the state to reduce its greenhouse gas emissions to 1990 levels by the year 2020, equivalent to a 30 percent cutback from the business-as-usual scenario projected for 2020.[48] In addition, former California Governor Arnold Schwarzenegger's Executive Order S-3-05 called for an eighty percent reduction from 1990 levels by 2050.[49] In the AB 32 Scoping Plan, the California Air Resources Board, the agency responsible for implementing AB 32, noted that high speed rail represents "part of the statewide strategy to provide more mobility choice and reduce greenhouse gas emissions" and that the system has the long-term potential to reduce greenhouse gas emissions in the transportation sector from land use strategies "by providing opportunities for and encouraging low-impact transit-oriented development."[50]

High speed rail could also help implement SB 375, the state's transportation and land use law to reduce greenhouse gas emissions through regional transportation planning. The law requires regional metropolitan planning organizations to devise plans to meet reduction targets set by the Air Resources Board,[51] with the goal of reducing greenhouse gas emissions statewide

by five million metric tons by 2020 through better land use planning.[52] The SB 375 regional planning effort, called a sustainable communities strategy, mandates that MPOs present a realistic development pattern for each region, including synchronized projections of housing growth and transportation needs, and links future access to state and federal transportation funds to these projected development patterns and reduced driving. With supporting local land use policies, high speed rail could reinforce these regional plans, now under development in the San Joaquin Valley, by serving and connecting to high-growth areas.

If high speed rail can reduce vehicle miles traveled by the estimated four billion miles on California highways by 2040 through diverted trips, it would result in three million fewer tons of carbon dioxide emissions annually.[53] On a daily basis, system proponents argue that it could reduce statewide vehicle miles traveled by as much as 30 million miles, equal to approximately 15,800 tons of carbon dioxide equivalent or roughly 33,000 barrels of unconsumed oil.[54] Furthermore, more compact development patterns, if coordinated with high speed rail, could save another 17 million metric tons of greenhouse gases.[55] To overcome the initial emissions associated with construction, the system may require a 20- to 30-year "payback" of reduced greenhouse gas emissions, depending on diverted automobile and airplane trips and the speed of getting the system operational.[56] However, the California High Speed Rail Authority may mitigate these upfront emissions with carbon offsets and renewable energy investments.

Development and Land Use Patterns

The San Joaquin Valley has a history of building low-density, auto-oriented housing projects on the region's valuable agricultural land, with single-family homes accounting for approximately 90 percent of the average annual residential permits issued in the region between 1990 and 2011.[57] "Ranchettes" (rural housing on lots up to 20 acres in size) have also increasingly taken up more Valley land, estimated by American Farm Land Trust at 27 percent of the urbanized Valley.[58] In addition, the Valley represents California's fastest-growing region, with household population likely to increase 94 percent, from 3.8 million in 2010 to 7.47 million in 2050 (these projections do not include the impact of high speed rail on population growth), according to the California Department of Finance.[59] The increase will require homes for nearly 700,000 new households.[60] High speed rail could encourage more of this auto-oriented development to accommodate the population that will likely concentrate around cities with and nearby stations. Often referred to as "sprawl," this low-density development separates housing from jobs, retail, schools, and services and therefore requires residents to drive for most trips. It often fails to accommodate residents who do not have children and tends to discourage walking, bicycling, or transit trips for all.

The Valley represents California's fastest-growing region, with household population likely to increase 94 percent, from 3.8 million in 2010 to 7.47 million in 2050.

The advent of high speed rail in the Valley could also mean greater loss of the region's invaluable agricultural resources to development. California agriculture is a $43 billion per year industry[61] and represents the world's fifth-largest supplier of food and other agriculture commodities to a national and international market.[62] The sector is extremely diverse, producing over four hundred commodities. Out of the state's 101 million acres, 26.2 million acres are devoted to farming and ranching,[63] including over ten million acres for irrigated cropland.[64] The Central Valley represents approximately $30 billion of this economic activity (not counting the multiplier effects), with seven of the state's top ten producing counties.[65]

Development patterns in the San Joaquin Valley and throughout the state, however, have contributed to the loss of 1.3 million acres of agricultural land since recordkeeping began in 1984, with over 200,000 acres of irrigated farmland lost between 2006 and 2008 alone. Each year, auto-oriented development permanently converts 8.5 square miles of high-quality farmland to urban uses. If this rate continues, the San Joaquin Valley would lose an additional 500,000 acres of land by 2050, including more than 300,000 acres of highly productive irrigated cropland.[66] In response to the potential loss of agricultural land, the San Joaquin Valley "Blueprint" goals and smart growth policies adopted by the eight Metropolitan Planning Organizations of the Valley aim to reduce the loss of quality farmland by more than half to 209,000 acres.

"It is not about the housing product type, it's the neighborhood that you put them in. People want the single family detached house, but it shouldn't be away from services, and it shouldn't be on large lots."

-- Norman Allinder
County of Madera

Depending on the implementation of the system, high speed rail could exacerbate the conversion process. Policy makers lack comprehensive data from other high speed rail system's impacts on land use patterns, and studies appear to be inconclusive about the sprawl-inducing effect of high speed rail. For example, a 2009 study on land use effects in France found that growth concentrated in central cities with high speed rail stations, but outlying areas grew as well. Overall, the study could not definitively conclude that high speed rail was responsible for the changed growth patterns.[67] Valley leaders therefore have reason to be vigilant to ensure that high speed rail does not promote the inefficient and agriculture-converting development patterns of the past.

Valley residents, mirroring national trends, increasingly desire more compact, walkable development

More auto-oriented development around high speed rail station areas would miss an opportunity to meet emerging market demand. Residents of the San Joaquin Valley are increasingly looking for housing in walkable or bikeable communities that do not require a car. This type of "sustainable" development refers to resource-efficient land use where residents live within walking/biking distance of key services and mass transit, and where neighborhoods contain a compact and diverse mix of uses such as housing, offices, and retail. Residents in sustainable developments do not have to drive a car to get to their jobs and run errands, and the compact footprint of these neighborhoods helps preserve open space and farmland.

Recent housing studies indicate that up to 48 percent of total housing demand in the Valley will be for single-family homes on smaller lots (6,000 square feet or less), which represents only 5 percent of the current Valley supply. Residents also increasingly demonstrate a preference for attached homes, such as condominiums, and homes within easy walking distance to services and retail.[68] While the Valley represents a diverse region of rural and urban residents with varying income levels, these market surveys reveal an increasing and unmet demand for attached and smaller-lot housing.

This demand in the Valley mirrors state and nationwide trends. For the first time in California, multiple-family housing units surpassed single-family homes in new construction throughout the state in 2012, with local jurisdictions reporting 23,801 multiple-family housing units and only 20,883 single-family homes statewide.[69] Nationally, a United States Environmental Protection Agency (EPA) survey of residential building permit data in the fifty largest metropolitan areas between 1990 and 2009 showed a substantial increase in the share of new construction built in central cities and older suburbs, including a particularly dramatic rise during the 2005-2009 years covering the real estate downturn compared to 2000-2004.[70] Moreover, in California's major metropolitan regions, the share of residential construction in historic central cities and core suburban communities increased between 1995 and 2008.[71]

High speed rail could encourage more sustainable land use development and transit usage in connected areas

High speed rail could help Valley leaders accommodate this growing demand and organize development patterns in a more efficient and convenient manner. Similar to the impact on development patterns of traditional public transit, such as light and heavy rail, high speed rail could create a new foundation in the Valley for travel and development patterns on a regional scale. First, the system could provide development opportunities within the immediate area surrounding the stations for businesses and commuting residents locating near the station (although the likely expense of the ride may discourage daily commuting on the system). Second, it could support rail and bus rapid transit radiating from the stations to neighboring cities, creating a "super-transit" web of neighborhoods connected by transit to reorganize Valley development patterns. The high speed rail station area could therefore refer to cities relatively far from the immediate station but connected by transit via developed corridors.

Barrier #1: Lack of Valley-Wide Mechanism to Improve High Speed Rail Implementation

The eight-county San Joaquin Valley is a diverse region that has been divided over high speed rail. According to discussion participants, political opposition, lawsuits, and the decentralized nature of local governance in the region have created a leadership vacuum for shaping high speed rail decision-making to reflect local priorities and spur a vision for sustainable economic growth, particularly now that the High Speed Rail Authority revised the system's business plan to make the system more financially feasible. The Valley lacks a coordinated voice and forum to envision high speed rail implementation that will incorporate residents' interests, maximize system benefits, minimize costs and negative impacts to the economy and environment, and mobilize constituents to support complementary land use and economic policies. As a result, individual cities and counties have competed to shape the system with suboptimal results and have failed so far to harness their combined political strength to leverage better state decision-making and federal and state investments.

"Coordination is key. We have to have the right tools, and it has to be done locally and then build up to the regional level."

-- R. Gregg Albright
Parsons Brinkerhoff

SOLUTION: Organize and Support a Valley-Wide Entity to Optimize the Economic and Environmental Benefits of High Speed Rail Implementation

Valley leaders have an opportunity to leave behind the divisions that diminished their political influence over the direction of high speed rail. If local governments, business leaders, and community groups join forces and collaborate, they should organize within one of the existing Valley-wide, eight-county entities to develop a region-wide plan for economic development and environmental preservation. They have an opportunity now to make a unified request for the key high speed rail policies and investments that can support and help implement this vision at the federal, state, regional and local levels. Valley leaders can use the entity to disseminate information about the potential benefits and costs of decision-making related to high speed rail, organize collective responses from Valley constituents, and mobilize residents to help implement decisions that benefit the Valley's economy and environment. Federal and state officials, as well as business and community group leaders, should support this effort and assist with funding for operation.

"If we get the civic infrastructure that connects the planning offices between various cities, this is going to be very important. There are major political obstacles to getting things done because of the lack of cooperation."

-- Mark Scott
City of Fresno

Valley leaders in the public and private sectors should identify an entity to champion this effort and develop a governing structure and strategic plan

Participants advocated housing such a collaboration mechanism within existing nonprofit or government structures. For example, MPOs in the Valley joined to form the San Joaquin Valley Regional Planning Agencies Policy Council, which could serve this purpose.[72] The San Joaquin Joint Powers Authority, which was created by the legislature in part to develop a business plan consistent with high speed rail,[73] and the California Partnership for the San Joaquin Valley could also be possibilities.[74] As another option, the entity could derive its authority from compacts among the various Valley regional planning agencies.

Ultimately, the chosen entity should form an umbrella organization for grassroots leaders, who would work to develop a Valley-wide vision for economic development and environmental preservation via high speed rail implementation. The entity would then work to implement this vision by serving as an interface for high speed rail decisions at federal, state, and local levels. As a core role, the entity should help Valley leaders identify the key needs for high-speed-rail-related investment in the Valley.

Participants recommended that the entity include representation from local businesses, elected officials, and community members, possibly selected through a public call for applications. They wanted the leaders of the entity to assign roles and responsibilities to various local members to hold them accountable for progress developing and implementing the regional vision for economic development and environmental preservation around high speed rail.

"The vision should be Valley-developed, dynamic urban areas that minimizes impacts on nonurban outside lands."

-- Carol Whiteside
California Strategies

Valley leaders should mobilize area residents to support the entity and help implement decisions

The entity should be responsible for implementing favorable high speed rail policies by mobilizing constituents and developing grassroots support. This effort will require outreach and resources, as well as the support of local officials. One possibility would be for leaders to build on outreach and support for SB 375 sustainable communities strategies, such as the regional "blueprint" process conducted by MPOs in the Valley; such regional plans could serve as a building block for developing land use policies around the future high speed rail system. In addition, the entity could rally support from local youth leaders who have worked with key nonprofit entities or are active in their schools. The entity would need to maintain a database of these individuals to call on for support, mobilization, and possible leadership duties. The entity should also perform outreach and secure support from existing Valley organizations in the public and nonprofit sectors.

"Without a vision for economic development in this region, it is hard to think of high speed rail as more than a land use and transportation planning exercise."

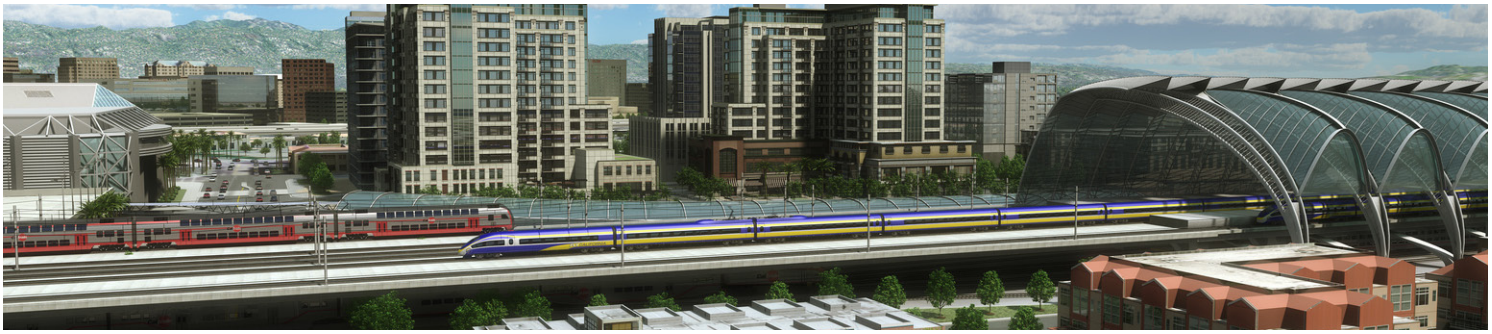
-- Bob Fisher
Strategic Growth Council

Federal and state leaders, businesses, and philanthropic organizations should support this entity

To be successful, the Valley collaborative will require financial resources from federal and state sources as well as local business and philanthropies. Leaders will need to seek funds from available sources. In addition, the federal and state governments should partner with this entity to provide modeling software and current data on high speed rail implementation, as well as updated cost figures, station sites, and proposed alignments. Business and community leaders must be engaged in the process and help to direct and implement the vision.

Federal and state leaders should consider the Valley collaborative planning entity as a possible template for high speed rail implementation in other contexts

Should the Valley entity be successful, the California High Speed Rail Authority as well as federal leaders may find that the regional model could work in other areas expecting high speed rail service. In California, that includes the San Francisco and Los Angeles regions, and nationally, states such as Illinois.



Barrier #2: Lack of Funds for High-Speed-Rail-Related Planning and Outreach

Most local governments fund their planning departments with fees from new development applications and permits. However, during economic downturns, the rate of new real estate projects usually slows, leading to layoffs in planning departments or cutbacks in planning and public outreach budgets. These cuts often happen when planning is most needed, before the next wave of development happens with the recovering economy. This dynamic has hit local governments in high-speed-rail-connected areas particularly hard in recent years. As a result, many local governments that could steer development toward high speed rail lack the resources to undertake comprehensive planning when it is most needed. Many local governments also lack the capacity to launch the public outreach required to maximize public input on the process and to build sustained political support for implementation.

SOLUTION: Direct Resources to Regional and Local Planning and Outreach

Local governments will be critical to implementing a Valley-developed vision for high speed rail implementation and ensuring that the system maximizes the economic and environmental benefits for the region. Cities and counties will need a permanent, long-term source of funding to plan for coordinated development and transit connectivity with high speed rail. Funds are also necessary to undertake the computer modeling necessary to inform the plans and perform the public outreach to build support.

"Local governments simply do not have the capacity for planning and outreach. We are being forced to cut staff more and more and more."

-- Norman Allinder
County of Madera

State and local leaders should support long-term land use and transit planning and outreach related to high speed rail, particularly in communities with depleted planning resources

Unpredictable and recession-affected development fees have not been a reliable source of funds to support local government planning budgets in areas connected to high speed rail. The High Speed Rail Authority currently has a program to fund station-area planning for local governments: the City of Fresno has received funds and Merced may follow. However, more Valley cities should participate in this program, and the Authority should ensure that funding is available for cities that do not have stations but may have transit connectivity to stations.[75] Local leaders, with state support, should work to identify and develop long-term funding for this effort.

In addition to land use planning, local governments need funding and assistance to plan for transit connectivity to high speed rail station areas. The California Department of Transportation (Caltrans) and the High Speed Rail Authority developed a high-speed rail transit connectivity program that provides technical assistance to implement this coordination.[76] Local governments in the Valley should avail themselves of this opportunity, while state leaders should continue to fund this effort. In addition, the High Speed Rail Authority is coordinating with Valley MPOs and cities with stations regarding

improved transit connections. As an early success, Fresno adjusted its bus rapid transit route to serve an area just three blocks from the future high speed rail station, with passengers crossing Fulton Mall between the bus and high speed rail station. However, the Authority still needs to develop specific modeling on the projected use of transit to reach stations and ensure that all Valley cities with connections to high speed rail plan for improved connectivity.

"We used data to mobilize hundreds of people around our general plan, and they understood it. There is a marriage between these kinds of planning concepts and the kind of data and imagery that we can create, and this is the best outreach effort we have had."

-- Keith Bergthold
City of Fresno

Funding is also important to implement effective public outreach, as happened with Envision Utah, the City of Fresno, and the Sacramento Area Council of Governments during their respective planning processes.[77] These efforts require investment in data-collection and public events. Local governments connected to high speed rail often lack the resources to do this work on their own, and the state should support these efforts where necessary.

State and local leaders should gather and promote data on high speed rail benefits

Recent outreach efforts related to SB 375 in the San Joaquin Valley and in the City of Fresno have benefited from computer mapping and modeling programs, which can help the public to visualize the impacts and benefits of new development. The High Speed Rail Authority and Strategic Growth Council, together with philanthropic organizations, funded the development of Urban Footprint, a mapping and modeling software program that can compare data on alternative growth scenarios, such as conventional, auto-oriented versus high-speed-rail-connected development. Economic and development data can also dispel common misconceptions about the planning process and bolster support for the effort. These visualizations and mapping and modeling efforts will require continued investments that the High Speed Rail Authority, local businesses, and private foundations should continue to support and expand.

"The best and most successful outreach and planning efforts have only been with the public's will."

-- Katherine Perez-Estolano
California High Speed Rail Authority

State and local leaders should mobilize outreach leaders in each community

Effective and cost-efficient outreach involves identifying and training key local leaders who can educate constituents about the planning process. These trusted leaders could come from key stakeholder groups like the agricultural and business community or public health advocates. Local leaders will need information on various planning proposals, data about their impacts, and training on how to facilitate and collect input from citizens. Local governments can help identify these individuals and groups, and the state can provide technical assistance to help them develop a training program and access data necessary to inform the public.

Barrier #3: Subsidies for and Lack of Limits on Auto-Oriented Development

The conventional development patterns in the San Joaquin Valley, dominated by auto-oriented, single-family housing developments largely separated from services, retail centers, and jobs, have contributed to the substantial loss of farmland in the region, poor air quality, and economic burdens on residents who spend more time and money on transportation. Many participants felt that this pattern is in part caused by public subsidies for auto-oriented infrastructure and a corresponding lack of policies to accommodate alternative development. The resulting financial pressure to build outward has resulted in disinvestment in existing neighborhoods that are more likely to be connected to high speed rail stations.

"As long as agricultural land is valued more for houses than for producing food, it will continue to be converted to development. Prime agricultural land is a finite resource, and unless we realize that it is in reality an endangered species, we will continue to lose it."

-- Holly King
Triple Crown Consulting

SOLUTION: Promote Policies to Encourage High-Speed-Rail-Coordinated Development that Preserves Open Space and Farmland

State and local leaders need to make the economic case to local decision-makers and their constituents that approving auto-oriented development will not meet emerging market demand, will damage the region's valuable agriculture industry, and will entail costs that hurt municipal budgets. These leaders will also need to implement policies that limit the potential for business-as-usual development and instead encourage private investment in high speed rail station areas and urban corridors and centers.

State and local leaders, with philanthropic partners, should develop and utilize computer mapping programs to calculate the economic costs of various development scenarios

Auto-oriented development patterns in the San Joaquin Valley often mean converting productive, high-value agricultural land to urbanized uses. Compact development around high speed rail station areas, urban centers, and the transit corridors that serve them can counter this trend. Programs like Urban Footprint, Rapid Fire, and other peer-reviewed software could calculate the economic effect of converting farmland under various scenarios, factoring in the types of crops and their value based on current commodity prices, as well as economic activity generated by their production. The model could also calculate the cost of public services and infrastructure – such as fire, emergency, and police services and water and transportation projects – required to service the proposed development patterns, as well as likely property and sales tax revenues. The model should then compare that data to costs and benefits associated with high-speed-rail-connected development. This information would help local officials evaluate the often-unseen range of costs and trade-offs associated with business-as-usual development patterns. The High Speed Rail Authority should work with local government leaders, philanthropic organizations, and Valley stakeholders to continue to develop these programs and encourage their adoption and use by Valley MPOs and local governments.

"Computer-modeled visualizations really helped people in Kern County understand what is meant by mixed use and what its benefits are."

-- Troy Hightower
Kern Council of Governments

State and local leaders should continue to fund and develop "greenprints" to support alternative growth scenarios and protect agricultural resources and open space lands

Greenprints involve local planning efforts that preserve open space, parks, and agricultural land by mapping these areas and recommending consensus strategies that will better manage these lands. These planning efforts are currently underway in a number of California communities and MPOs in the Valley, and state and local leaders should continue funding their development as part of the local planning process around high speed rail stations and regional implementation of SB 375. The High Speed Rail Authority should bolster its efforts to ensure that Valley MPOs incorporate high speed rail and related transit upgrades into the sustainable community strategies.

"We never seem to talk about greenprints and how we could value natural resources."

-- Mike McCoy
Strategic Growth Council

State and local leaders should continue to develop comprehensive agricultural mitigation policies

Some participants believed that local policy makers could reduce the impact of high speed rail on business-as-usual development through comprehensive agricultural mitigation policies, which some Valley local governments have already adopted. Agricultural mitigation policies generally require developers with projects on farmland to facilitate the purchase or protection of farmland elsewhere as compensation. Local governments can institute such policies, with the help of state leaders, to ensure that growth connected to high speed rail minimizes impacts on farmland. If developers build projects on farmland near high speed rail stations and connected areas, that development should preserve as many agricultural resources as possible and contribute to a mitigation fund that can be strategically invested to redirect development away from prime farmland in other areas of the Valley. Cities and counties in the Valley may also need to enter into formal regional agreements to curb development on prime farmland, consistent with the Valley sustainable communities strategies developed pursuant to SB 375.

"We have a national security interest in local food production."

-- Patience Milrod

The High Speed Rail Authority should condition station-area spending on supportive station-area and transit corridor land use planning

State officials should direct high speed rail funds first to communities that allow higher-density, pedestrian-oriented development around station areas, as envisioned by SB 375 and AB 857. Without these supportive land use policies, high speed rail investments may fail to maximize ridership potential and improve regional land use and transportation patterns. The Metropolitan Transportation Commission in the San Francisco Bay Area has pioneered this approach by conditioning future spending on improved land use plans for new rail transit station areas. The MTC offers planning grants and works with local communities to develop realistic development targets for commercial and residential needs.[78]

"The legacy of sprawl in the Valley has a lot of momentum. We are trying to turn a very large ship."

-- Edward Thompson, Jr.
American Farmland Trust

The High Speed Rail Authority adopted a set of principles and guidelines for station-area development that contains detailed goals and implementing pathways for station-oriented, pedestrian- and bike-friendly development.[79] Following the MTC model, the Authority should condition funding for high speed rail stations on local governments engaging in the process the Authority recommends for station-connected development. Some Valley communities, such as Fresno and Bakersfield, have already taken steps to plan for better development around stations, and the Authority funded studies on planning potential in station areas in Fresno and Stockton.[80]

Barrier #4: Lack of Financing for High-Speed-Rail-Connected Development

State and Valley decision-makers will ultimately implement their vision for regional economic development and environmental preservation through permitting and supporting projects that conform to the various plans. These projects connected to high speed rail, either in the immediate station areas or in connected neighborhoods, should feature a mix of uses and access to transit, bikeways and pedestrian paths to maximize system benefits and economic development opportunities. However, these projects often face higher construction costs and deteriorating existing infrastructure. Because urban areas connected to high speed rail have suffered from decades of disinvestment, developers are often unwilling or unable to finance new projects in these areas. To make matters worse, the demise of redevelopment agencies to cover state budget deficits means that local governments lack a well-used tool to finance neighborhood-scale investments in infrastructure and pioneer projects that can catalyze private investments. Despite the loss of redevelopment funds, public sector investment remains critical to boosting station-connected development and creating thriving, vibrant communities that can take advantage of convenient access to high speed rail.

SOLUTION: Develop New Public Sector Financing Tools and Bolster Existing Options

Cities and regional entities responsible for land use decision-making in high-speed-rail-connected areas will require new financing options, including loan funds and tax increment authority to borrow against future increases in tax revenue. In addition, they will need support analyzing the likely economic benefits of specific types of development connected to stations and the likely sales and property tax revenues that projects could generate. These tools should support projects that conform to a Valley-developed plan for growth around the high speed rail system.

State and local leaders should perform an economic analysis of the likely costs and benefits associated with high-speed-rail-connected development plans and catalogue the specific infrastructure needs

State leaders from the California High Speed Rail Authority, Governor's Office of Planning and Research, Strategic Growth Council, and other allied agencies should assist local governments in performing this modeling and analysis. As discussed previously, the High Speed Rail Authority and Strategic Growth Council funded the development of Urban Footprint, a mapping and modeling software program implemented and upgraded by MPOs in Sacramento, San Diego, and Southern California. However, San Joaquin Valley MPOs have not yet adopted the tool. With further refinement to reflect local conditions, the program could compare data on alternative growth scenarios, such as conventional, auto-oriented versus high-speed-rail-connected development. Once data exist that predict likely economic activity (both commercial and development) and

"Real estate developers are not producing different housing products because they do not take on large, community-scale products. It's too risky. Local governments and communities must be the ones to take the lead on community building."

-- John Wright
City of Clovis (retired)

needed infrastructure investments, local officials may be better able to leverage existing financing mechanisms and seek new options to finance projects (along these lines, the Strategic Growth Council has undertaken a study of various infill financing options[81]). The state should then prioritize the most pressing infrastructure needs related to high speed rail to fund or finance.

State leaders should allow for tax-increment financing for high-speed-rail-connected areas

Redevelopment agencies used tax increment financing to borrow against future property tax revenue increases likely to result from land-value improvements funded by the redevelopment agencies' investments. Although the state removed this power and dissolved redevelopment agencies in 2011, state legislation could resurrect this authority under SB 1 (Steinberg) for infill development areas.[82] Valley leaders should support efforts like it that explicitly extend borrowing authority to cover neighborhoods connected to high speed rail.

State leaders should ease the formation of infrastructure financing districts for high-speed-rail-connected areas

Infrastructure financing districts operate similarly to tax-increment financing, in that they use the future growth in property taxes to finance improvement projects, such as water, sewer, and flood control systems and libraries and parks. They differ from redevelopment agencies in that they require the consent of local agencies before diverting the tax increment. They also cannot divert school property taxes or use eminent domain to take property. State leaders should remove the requirement that local voters approve the formation of an infrastructure financing district and improve its bonding potential by extending the term of the bonds from the present thirty years to forty, in order to lower monthly bond payments. SB 33 (Wolk) proposes such a plan, with additional accountability measures included to ensure community oversight over how the districts spend the funds.[83] The state should consider enacting a similar bill that focuses on infrastructure to support the high speed rail system.

State leaders should consider providing additional funding for existing infrastructure grant programs

High speed rail funds and cap-and-trade auction revenue could help bolster existing infrastructure grant programs to ensure that they improve high-speed-rail-connected areas. For example, the Transit-Oriented Development Housing Program and the Infill Infrastructure Grant Program, both administered by the California Department of Housing and Community Development (HCD), could improve high speed rail station areas and connecting corridors with additional funding. The two programs currently receive funding from Proposition 1C, the Housing and Emergency Shelter Trust Fund Act approved by voters in 2006. The initiative authorized the state to sell $2.85 billion in general obligation bonds to fund various housing and development programs.[84] These grants help fund capital improvements in transit-oriented areas, which help enable private financing for additional projects in these neighborhoods, and could expand to focus on high speed rail areas.

Notably, these funds are in immediate need of replenishment. HCD awarded $271 million to 27 developments in 2007 and 2008 through a competitive process, resulting in a total of 6,158 transit-oriented homes and catalyzing more than $1.6 billion in federal and private investments. However, the agency was only able to fund less than a quarter of the 119 applications it received in the most recent funding round, given high demand and lack of funds.[85] Funds may be exhausted in 2013.

Local leaders should develop public-private partnerships to catalyze investment in high-speed-rail-connected areas

Public-private partnerships involve contractual agreements between a public agency and a private sector entity to deliver a service or project of public benefit. These arrangements have been particularly successful in the context of transit-oriented development like the

kind needed for high speed rail station areas and connecting corridors. In this model, local governments provide upfront seed capital to leverage additional private investment in specific projects or neighborhood revitalization efforts. Local governments can also help assemble and rezone land and fund environmental site remediation, if necessary, as well as provide an in-kind match, in-lieu-of fees, or gap financing to help spur private investment.[86]

Valley leaders should look to examples of public-private partnerships in cities like Los Angeles, San Francisco, Denver, Baltimore, and Phoenix. For example, the San Francisco Metropolitan Transportation Commission (MTC) created the successful Transit-Oriented Affordable Housing (TOAH) Fund, which provides $50 million in funding for transit-oriented development around rail stations. MTC's initial $10 million funding leveraged the remaining capital investment from Morgan Stanley and Citi Community Capital.[87] In its first 18 months, the TOAH fund approved five loans to create 650 affordable housing units and a variety of neighborhood amenities and services.[88] A similar program in Denver leveraged investments from private institutions like U.S. Bank and Wells Fargo, in partnership with the city, public agencies, nonprofit organizations, and philanthropic foundations.[89] The Denver fund acquired 7 sites in 2.5 years, enabling the preservation or development of nearly 500 affordable homes, a new library, and a childcare center and attracting investment in surrounding areas. These examples indicate that government-backed risk assumption can catalyze private investments in high-speed-rail-connected projects and neighborhoods.

State leaders should create an infrastructure finance bank and provide loans to local governments to subsidize borrowing costs in high-speed-rail-connected areas

California could provide seed funding for a new state infrastructure bank (or repurpose the state's existing infrastructure finance bank) that would operate as an independent entity with government oversight and accountability. The bank would fund meritorious infrastructure projects explicitly in high speed rail station areas, among other areas that would benefit from investment to further the state's environmental goals. The initial public investment should not require repayment or return but would leverage private capital to finance projects through loans and loan guarantees. User and application fees would cover administrative costs.

In addition, the state could support local governments wishing to borrow against future revenue from funding streams like local transit sales taxes. The federal government currently provides such support through loan guarantees and lines of credit via the federal Transportation Infrastructure Finance and Innovation Act (TIFIA) program, which reduces local borrowing costs. A similar program at the state level could help local governments with infrastructure needs in areas connected to high speed rail to invest in those upgrades now and repay the borrowed funds from future tax revenue later.

State leaders should consider directing cap-and-trade auction revenues to finance projects in high-growth areas with access to high speed rail

California's recently launched cap-and-trade program generates revenue, projected in the billions, from the auctioning of allowances or permits to regulated businesses for their carbon emissions. Although the state's 2013-2014 budget loans auction proceeds to the general fund, the state should direct the revenue in future years to invest in programs that reduce greenhouse gas emissions, per state guidelines.[90] Because transit-oriented development and public transit provide significant reductions, the California Air Resources Board and the legislature should consider explicitly dedicating some portion of this auction revenue to high-growth areas in the San Joaquin Valley that are connected to high speed rail, as proposed legislation like AB 1051 (Bocanegra) would allow.[91]

State leaders should create a permanent source of funding for affordable housing

The demise of redevelopment agencies made the provision of affordable housing in many transit-oriented neighborhoods, such as in likely high speed rail station areas, financially infeasible. Some California cities, such as San Francisco and possibly San Jose, have voted to dedicate general funds or other sources of revenue to permanent sources of support for affordable housing.[92]

Nationwide, nearly 600 such housing trust funds have been established in 43 states, generating more than $1.6 billion a year to help finance affordable housing.[93] The state should create a similar mechanism to fund affordable housing, with an explicit emphasis on affordable housing in high speed rail station areas. As station-connected neighborhoods become vibrant job and housing centers, state and local leaders should ensure that Californians of all income levels can afford a home in these communities.

Federal and state leaders should retool enterprise and empowerment zones to encourage development specifically in high-speed-rail-connected areas

California's enterprise zone program has led to the creation of 42 zones in economically distressed areas, with administrative costs funded by user fees. Businesses that locate within those zones receive specific state and local tax incentives, such as a hiring tax credit of $36,000 or more over five years for each qualified employee hired, sales or use tax credits up to $20 million per year, increased expense deductions, and other state benefits. Some local governments also provide additional incentives. Following a recent call from Governor Brown to retool the program to improve its effectiveness, the state should consider facilitating the establishment of these zones specifically in high-speed-rail-connected areas.[94]

State leaders should direct pension investment funds to credit-worthy redevelopment efforts in high-speed-rail-connected areas

The state should encourage managers of state investment funds like the California Public Employees' Retirement System (CalPERS) and the California State Teachers' Retirement System (CalSTRS) to invest in credit-worthy infrastructure bonds and other financing tools to build high-speed-rail-connected projects in station areas and connecting corridors and communities. The backing of these large funds can help lower the borrowing costs for financing efforts in these areas.

Conclusion: The Future of High Speed Transit

If implemented properly with supportive land use policies, high speed rail could provide California with a reliable, environmentally beneficial mode of transportation that can improve the state's economy and provide a cost-effective alternative to highway and airport expansions. The state, with its local and federal partners, must ensure that the first stage of construction in the San Joaquin Valley does not exacerbate existing environmental and economic challenges. Primarily through the California High Speed Rail Authority, state leaders will need to work with local partners to address these concerns and create a system that can serve as a foundation for beneficial development and transit investments. Ultimately, if the San Joaquin Valley succeeds in this effort, its processes and institutions could serve as a model for how to build high speed rail successfully in the rest of California and the nation.

Participant Bios

R. Gregg Albright
Parsons Brinckerhoff

R. Gregg Albright is a Vice President for Parson Brinckerhoff (PB) and serves as the Director of Planning for the California High Speed Rail Authority's Program Management Team. Gregg is responsible for development of state-wide programs for station area planning, aesthetic design guidelines, sustainability and stakeholder coordination. He has over three decades of planning, project delivery, and policy development experience with a career-long emphasis on establishing sustainable infrastructure solutions. Prior to joining PB, Mr. Albright served as the Deputy Secretary for California's Business, Transportation and Housing Agency where he had the opportunity to influence California's Climate Change and sustainable community planning initiatives. Gregg has also served as a Caltrans' District Director and later Deputy Director of Planning and Modal Programs where he highlighted the nexus between land use and transportation planning and sponsored processes that promoted local, state and federal collaboration.

Norman Allinder
County of Madera

Norman Allinder, AICP, is the Planning Director for Madera County. Norm has experience that includes both private sector and public agency positions. His experience includes preparation of specific and community plans, master plans for entitlement projects that range in size from 100 acres to over 4,000 acres, CEQA review of development proposals, and staff liaison to neighborhood groups. Norm has a Masters Degree in City and Regional Planning from Cal Poly as well as a Bachelors Degree in Architecture from the University of Oklahoma.

Keith Bergthold
City of Fresno

Keith Bergthold has served as both Acting and Interim Planning and Development Director for the City of Fresno since February 2007. Keith holds a Masters Degree in Organizational Behavior from the School of Professional Psychology in Fresno and a BA Degree in Sociology from California State University, Fresno. Keith was born in Fresno, loves to read, and lives with his wife Debbie in Clovis. He also loves BMW motorcycles and long rides to Canada and gratefully travels each day down Highway 168 to explore the possibilities germinating from his work for the City of Fresno.

Bob Fisher
Strategic Growth Council

Robert Fisher and his family have owned Mendocino Redwood Company since 1998 and he has also worked as the director of Sugar Bowl Ski Resort since 2002. He worked for Gap, Incorporated from 1980 to 1999 and has served as director since 1990. Fisher served as interim chief executive officer in 2007, chairman of the board of directors from 2004 to 2007 and president of Gap Brand from 1997 to 1999. At Gap, Incorporated, Fisher was also the chief operating officer from 1995 to 1997, chief financial officer from 1993 to 1995, executive vice president from 1992 to 1993 and president of Banana Republic from 1989 to 1992. He is a member of the Natural Resources Defense Council (NRDC) and serves as vice chairman of the NRDC Board of Trustees. Fisher also serves as chairman of the Conservation International Executive Committee.

Troy Hightower
Kern Council of Governments

Troy Hightower is a Regional Planner at Kern Council of Governments. His work involves Land Use models, Travel models, and 3D visualizations for Blueprint , Climate Change (SB 375), and High Speed Rail. Most notable has been his role as Project Manager for preparation of the Kern HSR Heavy Maintenance Facility proposal, and assisted in preparation of the Bakersfield Station Area Plan funding application package.

Holly King
Triple Crown Consulting

Ms. King is an agri-business consultant and Principal of Triple Crown Holdings. Areas of expertise include feasibility and funding of sustainability options for agricultural operations, agricultural land use and conservation, food systems and agricultural finance. Her expertise was derived from tenures with Wells Fargo Bank as a loan workout specialist, Union Bank as the originator and division head of the bank's Agricultural Production Lending Division, and Great Valley Center as their Director of Agricultural Programs were she built capacity and established a model farmland protection program. Ms. King is a managing partner of Castle Rock Farms in the Klamath Basin (alfalfa) and an active member of her family's farming interests in Kern County (almonds and pistachios). She holds an Agricultural Business degree from University of Nevada, Reno and an MBA from UCLA.

Participant Bios, *continued*

John Lowrie
California Department of Conservation

John currently serves as Division Chief for the Department of Conservation's Division of Land Resource Protection. Prior to joining the Department, John worked with the USDA Natural Resources Conservation Service, (29 years) with a wide variety of project and program management experience on the central coast, northcoast, northeastern, and Central Valley regions of California, including 10 years with the CALFED Bay Delta Program. John has a B.S. in Agriculture from California State University- Chico.

Mike McCoy
The Strategic Growth Council

Mike McCoy is a land use and natural resources planner focused on achieving more collaborative, participatory integrated public planning through connecting scientific, technical, educational, social and governmental resources. He has over 35 years of experience implementing innovative concepts and programs within California that emphasize the role of sustainable planning at the local, regional and state levels. Mike is responsible for the creation of three (3) startup organizations within the University of California: Founding Director of the University of California, Davis Extension's Land Use and Natural Resources program beginning in 1982; Co-director of UC Davis, Information Center for the Environment founded in 1995; and, Founding Director of the Urban Land Use and Transportation Center (ULTRANS) at UCD's Institute of Transportation Studies started in 2008. Most recently before joining the Council, he specialized in the development of information and models for studying and forecasting urban growth, transportation systems use, and environmental impacts.

Gail Miller
California Department of Transportation

Gail Miller has been employed with Caltrans for the past 13 years, and is the current Deputy District Director of Planning and Local Programs. Preceding her appointment as Deputy District Director, Gail served as Senior Environmental Planner and supervised staff involved in CEQA and NEPA environmental compliance for both Caltrans projects and Local Agency projects in Districts 6, 10, and 9. Prior to coming to Caltrans, Gail worked with the City of Fresno in the City Managers' Office. She then worked for the Fresno County Department of Public Works and Development Services where she was responsible for environmental and land use planning. Gail graduated from California State University, Fresno with Bachelors of Science degree in Public Administration.

Patience Milrod
Attorney

Patience Milrod is a lawyer in Fresno. Her work has included litigation on environmental issues in Fresno, Madera, Kings and Merced Counties, as well as leadership on citizens' advisory committees for longterm urban land use plans in Fresno's Tower District, and Downtown. Patience received her law degree from King Hall, UC Davis, and more recently studied in UC Davis' Land Use and Environmental Planning certificate program. This fall, she will be taking a sabbatical from her litigation practice to begin a master's program in public policy at Cornell University in Ithaca, New York. Patience and her husband, Paul Pierce, live in Fresno's Tower District; their daughter, Darrow, is a student at Evergreen State College in Olympia, Washington.

Katherine Aguilar Perez-Estolano
California High Speed Rail Authority

Katherine Aguilar Perez-Estolano is an expert in urban planning, transportation, and stakeholder engagement. As co-founder of ELP Advisors, she has managed numerous transportation planning and community engagement projects. Prior to co-founding ELP Advisors, she was the Executive Director of the Urban Land Institute, Los Angeles District Council (ULI LA), and was formerly the Vice President of Development for Forest City Development where she focused on transit-oriented development and mixed-use projects in emerging markets. Before joining Forest City, Ms. Perez-Estolano was the co-founder and Executive Director of the Transportation and Land Use Collaborative (TLUC) of Southern California, a nationally recognized non-profit that promotes greater civic involvement in planning and development. Previously, she worked as Deputy to Pasadena Mayor William Bogaard on transportation, planning and Latino constituent issues. Ms. Perez-Estolano is an Adjunct Professor at the USC School of Planning and Development. She has also served as an Adjunct Professor at the UCLA School of Policy and was honored to be recognized as a 2009-2010 Senior Fellow of the UCLA School of Public Affairs. Ms. Perez-Estolano received her Master's Degree in Urban Planning and Transportation from UCLA and her Bachelor's Degree in Political Science from California State University Northridge.

Participant Bios, *continued*

Dan Richard
California High Speed Rail Authority

Dan Richard is Chair of the California High Speed Rail Authority. He was a principal of Dan Richard Advisors since 2010 and managing partner and co-founder of Heritage Oak Capital Partners, an infrastructure finance firm, from 2007 to 2009. Previously, he was senior vice president of public policy and governmental relations at Pacific Gas and Electric Company from 1997 to 2006. Richard was an elected member of the San Francisco Bay Area Rapid Transit District from 1992 to 2004, where he served twice as president of the Board. Richard was a principal at Morse, Richard, Weisenmiller & Associates from 1986 to 1996, a firm serving the independent power industry and project finance lending community. He was vice president of Independent Power Corporation from 1983 to 1986. Richard served as Governor Brown's deputy legal affairs secretary from 1982 to 1983 and deputy assistant for science and technology from 1978 to 1979. He was advisor to the chairman of the California Energy Commission from 1978 to 1982. Richard began his career at National Aeronautics and Space Administration, where he was assistant to the deputy associate administrator from 1972 to 1978. He received his Juris Doctor degree from McGeorge School of Law.

Jeff Roberts
Granville Homes

Jeff Roberts was born and raised in Los Angeles. He moved to Fresno to attend Fresno State in 1973. He graduated in 1976 and then pursued his graduate studies in Urban and Regional Planning. Jeff worked for the County of Fresno early in his career but has spent 18 years as a private consultant and the last 12 years as an employee of Granville Homes. Jeff is a Board member of the Building Industry Association and the Millerton Lake Area Chamber of Commerce. He is a past Board member of the Fresno Arts Council and the past President of the Tree Fresno Board of Directors. Jeff has been married to Tina for 32 years. They have a 25 year old son, Andy.

Mark Scott
City of Fresno

Mark Scott was appointed City Manager by Mayor Ashley Swearengin and began his work with the City in April, 2010. Mark was born and raised in Fresno, attending Fresno Unified schools, and graduated from Fresno High and Fresno State. He also has an MBA from the Stanford University Graduate School of Business. He began his local government experience with the City of Clovis, where he was Assistant to the City Manager. Mr. Scott then moved to Dallas/Ft. Worth as Manager of Marketing Planning for American Airlines, responsible for the AAdvantage Frequent Flyer program. In 1983, he began a 20-year career with the City of Beverly Hills, 14 of which were as City Manager. Mark has also served as City Manager for the cities of Spartanburg, SC and Culver City, CA. In Fresno, the City Manager is accountable to the Mayor for overseeing the performance of 14 departments, including police, fire, transportation, water, solid waste, airports, parks and recreation, public works, finance, facilities and various administrative functions. Mark has been married to Carol Scott for 36 years. They have two grown children who live in Richmond, Virginia and Glendale, California.

Bob Smith
Bike Bakersfield & Bakersfield City Council

Bob Smith was elected as a Bakersfield City Councilmember, Ward 4, in November 2012 and serves on the city's planning and development and community services committees. He is also a board member of the Kern Council of Governments. Mr. Smith has had his own consulting civil engineering and land planning firm in Bakersfield for thirty years. In 2005 Mr. Smith founded Bike Bakersfield and continues to be a strong advocate for active transportation, not only for additional bike lanes, bike paths and neighborhood greenways, but for the widening and improvement of those lanes in existence and for the overall safety of those who ride as well. He received his BS degree in civil engineering from California State University Fresno. Bob is married to his wonderful wife, Pamela and has resided in Bakersfield for 33 years. They have four grown children.

Participant Bios, *continued*

Edward Thompson, Jr.
American Farmland Trust

Now responsible for the California programs of American Farmland Trust, Ed Thompson has served in multiple positions and helped initiate a wide variety of projects since joining the staff in 1981. Innovations he has advanced include American Farmland Trust's first strategic plan, the Farmland Information Center, the federal Farm and Ranch Lands Protection Program, the Farming on the Edge report and the concept of Agricultural Conservation Easements. He was instrumental in establishing Purchase of Agricultural Conservation Easements programs in Pennsylvania and Montgomery County, Maryland, and in publishing key reports such as Alternatives for Future Urban Growth in California's Central Valley; The Future Is Now: Central Valley Farmland at the Tipping Point; and Think Globally, Eat Locally: San Francisco Foodshed Assessment. Thompson's career before joining American Farmland Trust includes serving as Washington counsel for the Environmental Defense Fund and director of the Agricultural Lands Project for the National Association of Counties. He holds a B.A. from Cornell University and a J.D. from George Washington University, and has published extensively on farmland preservation issues.

Carol Whiteside
California Strategies

Carol Whiteside is a Partner of California Strategies. Whiteside's reputation as an influential policy expert for the Central Valley was recognized in her work as Founder and President of Great Valley Center in Modesto, where she and her staff worked to improve the quality of life for Central Californians. During her nearly 10 years at the helm of the Center, she successfully raised more than $40 million to promote good public policy and meet the growing challenges in the region. Whiteside was selected by Governor Pete Wilson to serve as the Director of Intergovernmental Affairs, and her expertise in natural-resource and environmental issues grew out of her service as Governor Wilson's appointee as Assistant Secretary of the California Resources Agency. Whiteside was elected Mayor of Modesto and served a four-year term from 1987 to 1991, following terms as a City Council member and Modesto City Schools Trustee President. Whiteside currently is an Executive Committee Chair for the Public Policy Institute of California and has previously served on the California Center for Regional Leadership and The Lincoln Institute for Land Policy in Cambridge, Massachusetts. Whiteside graduated from UC Davis, lives in Modesto with her husband, and has two grown sons.

John Wright
Planner

John Wright served as the Director of Planning and Development Services for the City of Clovis until his retirement from full time work in April 2008. He served as Director for 30 of his 32 years with Clovis. His accomplishments there include the development of a fully funded major facilities streets program, the redevelopment of the downtown into "Old Town Clovis" and the development of some of the first major trails projects in the region. He continues to provide pro bono service to the city in several areas. He is a charter member of the American Planning Association and was honored in 1995 with its Distinguished Leadership award locally. He received the Lifetime Achievement award from the Urban Land Institute in 2008 of which he was a member for more than 34 years. He currently serves on the Board of Directors of both the Clovis Community Foundation and the San Joaquin Valley Housing Collaborative. He serves in his church organizing community service projects and community relations. He assisted the Fresno Council of Governments in the development of the Valley Blueprint and is currently working with them on its implementation. He chairs the San Joaquin Valley Planner's Network, and the valley wide Greenprint Steering Committee. He also serves on the 2014 Fresno Regional Transportation Plan Update Roundtable.

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80 The Authority has funded research on the potential for station-oriented development around the Fresno and Stockton high speed rail stations. Both are available at: http://www.hsr.ca.gov/docs/programs/green_practices/sustainability/Sustainability%20Design%20Concepts%20for%20Stockton%20and%20Merced-1.pdf and http://www.hsr.ca.gov/docs/programs/green_practices/sustainability/Transit-Oriented%20Development%20(TOD)%20Design%20Protocals%20for%20Fresno.pdf (accessed June 20, 2013). In addition, a San Jose State University report documented strong planning and potential for development in the two cities' station areas, albeit with some challenges (oversupply of office space in Fresno, for example, and the need for Bakersfield to link their downtown stations). *See* Daniel Krause, "Planning Transit-Oriented Development Around High-Speed Rail Stations in Fresno and Bakersfield," Masters Planning Report to the Faculty of the Department of Urban and Regional Planning, San Jose State University, December 2010, pp. 120-121. Available at: http://www.ca4hsr.org/wp-content/uploads/2010/12/KRAUSE-FINAL-PLANNING-REPORT-TOD-AT-HSR-STATIONS-WEB-VERSION.pdf (accessed June 20, 2013).

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88 Ibid., p. 13.

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90 Three 2012 laws (AB 1532 [Pérez, Chapter 807]), SB 535 [De León, Chapter 830], and SB 1018 [Budget and Fiscal Review Committee, Chapter 39]) established a fund to receive auction revenue and a framework to administer it. For more information, please visit: http://www.arb.ca.gov/cc/capandtrade/auctionproceeds/final_investment_plan.pdf (accessed June 20, 2013).

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94 *See* Governor Edmund G. Brown, "Governor's Budget: May Revision, 2013-14," May 2013, p. 68. Available at: http://www.ebudget.ca.gov/FullBudgetSummary.pdf (accessed May 17, 2013).

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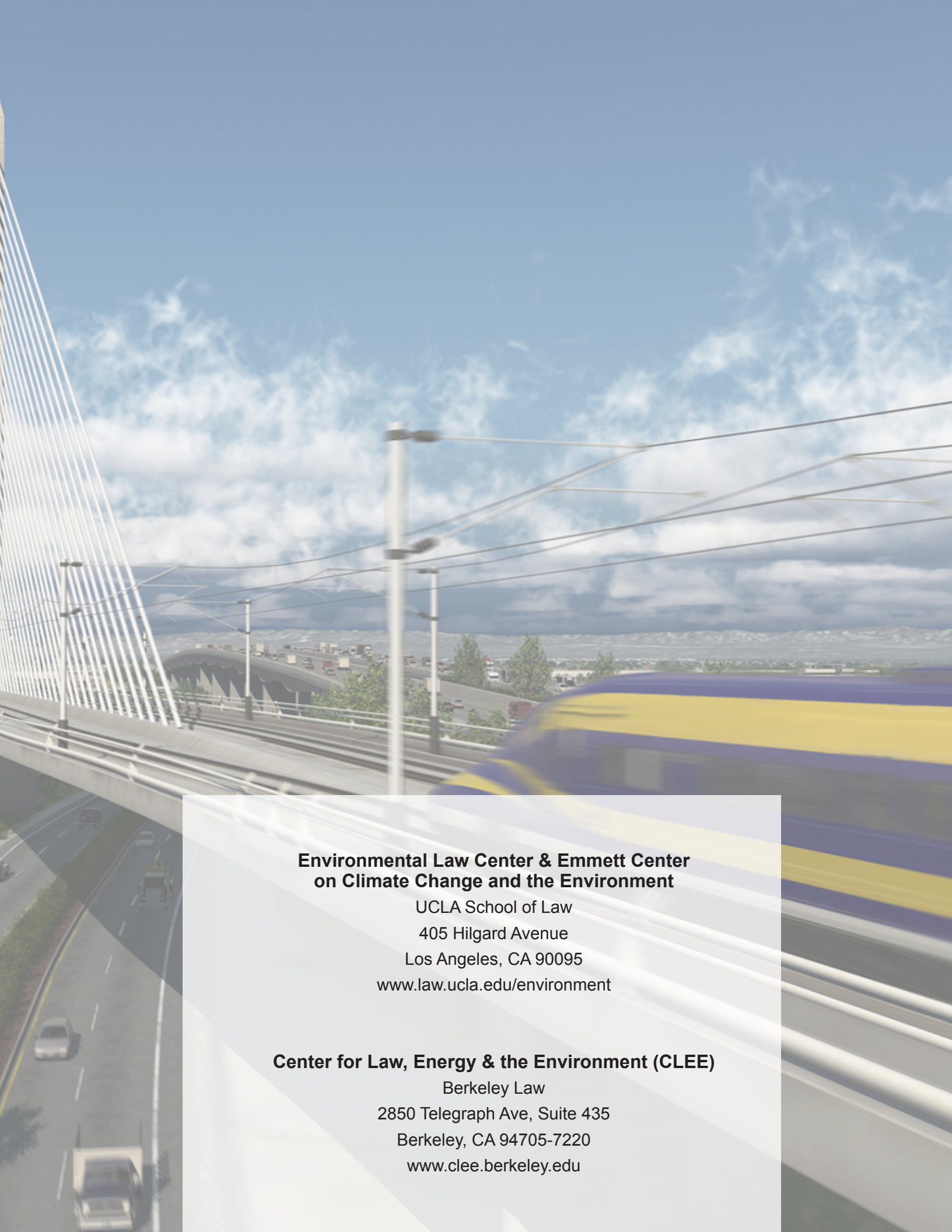

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