One State, Many Visions

Transit Stakeholder Views on Planning for the Future of California's Mobility

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Executive Summary

A Changing Landscape for Public Transit

The importance of long range public transit planning in California is increasing as the State's mobility landscape continues to evolve. While previous decades were characterized by increasing rates of auto ownership and usage and a decreasing share of transit use, the combination of many factors suggests the opposite trends may be the norm in the future. First, the existing, largely private vehicle-based transportation system is neither financially nor economically sustainable, and efforts to increase the sustainability of the transportation system will likely increase the demand for transit. Current revenues for surface transportation systems in California do not cover the costs of operating, maintaining, and expanding capacity to meet the needs of a growing population; increasing revenues for transportation systems will likely mean increases in general taxes and/or increasing taxes and fees for automobile ownership and usage. Such increases are problematic in an economic environment where unemployment, reductions in home equity, and fuel price volatility have eroded households' ability to own, maintain, and operate vehicles. Second, the implementation of statewide initiatives such as Assembly Bill 32 and Senate Bill 375 that seek to reduce energy use and greenhouse gas emissions from transportation mean that transportation and land use planning will increasingly rely on public transit to provide mobility in metropolitan areas. Third, existing highway and roadway facilities in many urban areas are chronically congested, but expansion of such facilities is often difficult because adjacent development makes expanding rights-of-way disruptive and very expensive. Mass transit is able to move many more people per unit of right-of-way than private vehicles on roads, so dedicating a greater share of rights-of-way to transit, whether at-grade or grade-separated, can be an effective way to increase mobility in congested corridors. Addressing these statewide challenges is a central part of the California Interregional Blueprint and the California Transportation Plan creation process. A unique ability to mitigate future transportation challenges makes transit a central element of statewide transportation planning.

About this Study

Given the evolving landscape for public transit in the Golden State, this study examines the goals and objectives of California's many transit operators, and the challenges they face in achieving them. To do this, researchers from the UCLA Institute of Transportation Studies (ITS) conducted interviews with key transit stakeholders in California to identify widely supported long-term goals and short-term strategies for improving public transit in the years ahead. In the summer and fall of 2011, the research team interviewed 23 opinion leaders from transit agencies, county transportation commissions, public advocacy organizations, and other State-wide departments about the public transit priorities they saw as most important to their organizations. The study consisted of a brief online survey and a one hour follow-up interview.

In the online survey, respondents ranked goals and measures based on the importance to their agency. In a nutshell, respondents saw financial sustainability as the top long-term goal and implementing high-quality trunk line services as the top short-term strategy. Long-term goals

form a guiding framework for strategic planning in the State over the next 10 to 20 years (e.g. achieving financial, social, environmental, or economic sustainability, or improving market responsiveness, etc.), while short-term implementable strategies are actions that build momentum and move the State forward in achieving these long-term goals (e.g. developing more trunk line services such as BRT, reforming transit fares, developing pilot programs, and delivering more passenger information systems, to name a few).

Table E-1: Top 3 Long-term Visions and Goals and Short-term Actionable Measures

Top 3 Long-term Visions and Goals	Top 3 Short-term Actionable Measures
1) Financial Sustainability	1) High-quality trunk line services, like BRT
2) Social Sustainability	2) Improvements in pedestrian and bicycle access
3) Market-responsiveness	3) Passenger information systems

Financial sustainability and market-responsiveness speak to an agency's desire to avoid funding shortfalls, both now and in the future. Social sustainability, which refers to providing for the mobility and access needs of the residents and employers, is at the core of many transit agencies' missions. High quality trunk line services and passenger information systems relate to operational strategies to improve the transit experience. The importance of improvements in pedestrian and bicycle access represents an increased understanding of how a transit user's out-of-vehicle experience affects their mobility and perception of service quality. These and other findings are discussed in the following sections.

The Need for Financial Stability

Stakeholders call for financial sustainability because stable finances make it possible for transit agencies to pursue their goals and objectives. Several respondents discussed the impact of unreliable operations funding, especially since 2008. Uncertainty surrounding future funding streams has made it difficult to commit to or engage in multi-year strategic projects. Service adjustments (usually cuts), contingency planning, and applications for funding from alternative sources have taken up a significant and growing share of transit managers' time and resources in the past few years. Respondents universally agreed that their agencies were more starved for operating funds than capital funds, making the prospect of a State Infrastructure Bank that would fund projects in exchange for future revenues less attractive than measures that helped them deliver and operate transit service more cost-effectively. Most respondents support reducing burdens required to apply for funding and meet the funding source's reporting requirements. Such reductions in administrative burden may be accomplished through streamlining and coordinating funding processes, or by developing and deploying new tools to assist agencies in meeting requirements.

Respondents from many transit agencies are wary of increasing revenue by raising fares because of the potential impact on the transit-dependent population. A few respondents saw differentiated fares and automated fare media as an opportunity to mitigate the effects of fare increases on transit-dependent populations.

Many respondents support higher fees for automobile usage, especially when a portion of the revenues is directed to transit. Such policies could increase demand for transit while providing increased revenues for service improvements to meet that demand.

Challenges to Improving Transit Operations

Respondents supported a variety of measures to increase the quality and cost-effectiveness of transit service. High quality trunk line service – Bus Rapid Transit (BRT) or rail transit – was seen as the most important means to achieve these goals. California transit agencies are examining a variety of options to deliver improved transit service to their communities, from limited-stop BRT service with headway-based schedules to extensions of underground heavy rail transit. Due to fiscal constraints, most agencies are looking for cost-effective ways to improve existing bus service by making it faster and more reliable. Bus-only lanes on arterials or bus-only shoulders on highways are seen by many as a cost-effective measure to achieve these goals. However, many respondents expressed concerns over the difficulties in working with local governments and Caltrans to implement such projects. In contrast, transit operators can implement passenger information systems autonomously. Many transit agencies have pursued or are interested in pursuing such systems, which can improve a user's ridership experience by delivering route information and reducing uncertainty of waiting for a transit vehicle.

Barriers to Working with Other Agencies and Jurisdictions

Transit agencies cannot accomplish their missions alone. Most transit operators in California are separate entities from the land use authorities that govern the rights-of-way for transit, bicycle, and pedestrian use, and the development around transit lines, stops, and, stations. Interviewees reported improving non-motorized connections to transit – such as walking and bicycling to and from stops and stations – as the second most important transit-related implementation measure in the State. However, agencies must work with outside jurisdictions to improve sidewalks and bicycle facilities in order to strengthen connections between trip ends and transit facilities. Weak relationships, misaligned goals, or differing strategies among transit agencies, local governments, and State agencies can complicate efforts to improve bicycle and pedestrian connections. Transit managers must also work with local land use authorities to coordinate trip ends – existing and new real estate developments – with current and future transit service. The pursuit of transit-oriented development can also fall victim to strained relations or misaligned goals between transit agencies and local governments.

While transit agencies cannot accomplish their strategic goals alone, the same is true for other public agencies and jurisdictions. The State, regions, and local governments all rely on transit to accomplish a portion of their goals and objectives. Reaching environmental, social, and economic sustainability in California requires a supportive and effective transit system. Shifting more travel from automobiles to transit is a key component of State air quality and greenhouse gas goals. Providing adequate service to transit dependent populations is an important component of social sustainability. Transit service can also provide alternatives to traffic

congestion and supply mobility for trips to work. A strong transit system is necessary to support these broader goals.

Conclusions for Caltrans

The findings of our survey and interviews with key transit stakeholders throughout the State suggest that Caltrans's Division of Mass Transportation can support public transit in several ways. First, it can work to reduce the burdens associated with funding applications and reporting processes, especially for smaller transit operators with limited staff. Second, Caltrans can play a role in identifying and disseminating best practices for projects and interagency agreements throughout the State. Third, Caltrans can provide agencies with programs and workshops to develop their internal capacity to plan strategically. And fourth, Caltrans needs to continue educating key stakeholders about the importance of public transportation in the State, especially in relation to other statewide goals."

1 Introduction

1.1 About the Research

The research team has conducted a series of interviews with transit stakeholders to support Caltrans's efforts in forming a Statewide Transit Strategic Plan (STSP). The California Department of Transportation (Caltrans) desires to develop a unified strategic approach to support transit in the State of California. Through these interviews, UCLA seeks to understand the common needs and priorities shared by many transit operators and stakeholder agencies around the State, and to identify areas in which Caltrans can better support transit operations and planning. By collecting information from respondents at transit agencies about their priorities, opportunities and challenges, the research here focuses on the approach that agencies are taking with short-term implementation measures to achieve their long-term goals and objectives. Local agency needs and priorities will serve as the foundation in Caltrans' effort to identify a statewide vision and support system for transit, with the recognition that while transit operations and planning are performed under the authority (and to meet the needs) of local jurisdictions, Caltrans can play an important role in better communication between local, regional and State governments.

This research report is the second in a series of three reports Caltrans has commissioned to support the creation of a Statewide Transit Strategic Plan. The first, a report on baseline conditions, has been completed by Caltrans and UC Berkeley. The third report on cost-effective improvements to transit in California will be released in the spring of 2012.

1.2 Respondent Selection

Caltrans provided the UCLA research team with a list of 23 individuals who had participated in or expressed interest in Caltrans-led Statewide Transit Strategic Plan activities. In a series of two meetings with UC researchers and Caltrans managers, several of these transit agency participants discussed their general thoughts and observations about the many common (and sometimes competing) long-term goals and short-term action items. From these exploratory discussions, UC researchers crafted a set of statements to articulate the visions and implementable operational items. These earlier discussions, along with the Baselines report, formed the basis of our online survey and helped to guide our interview questions.

In the formal interview phase of this study, UCLA researchers sought additional participation to ensure the sample included a diverse range of views from various geographies, urban forms, and agency sizes. To round out our sample of respondents, the California Transit Association (CTA) also provided assistance in contacting two additional individuals representing transit agencies in Southern California.

UCLA contacted each of the 25 potential respondents by email. Those who did not initially respond received a minimum of four follow-up emails and three follow-up phone calls. Of the 25 individuals the UCLA team contacted, 23 participated in oral interviews.

1.3 Interview Methodology

The UCLA research team sent a short online survey to individuals who chose to participate. The online survey consisted of three introductory questions which confirmed the respondent's participation, use of responses for future research, and confidentiality status of their responses. In a second question, respondents were asked to rank short-term, implementable actions to improve transit service by order of importance in placing their agency's services on a pathway toward achieving long-term visions. Respondents also allocated 100 points among eight pre-defined and two respondent-defined long-term visions and objectives. Respondents allocated a greater number points to those statements which best approximated their agency's overarching goals, objectives, and desired outcomes over the next ten years. A summary of these choices and their ranks is available in section 2 of this report.

The results from the online survey allowed the research team to tailor the oral interview questions to each respondent and agency. Through this process, the research team avoided discussing implementation measures and long-term goals which were not applicable to an agency's geographic area or were not an important part of the agency's strategy for the future. Twenty-two respondents completed the online survey in advance of their oral interview. The online survey took most respondents between seven and twelve minutes to complete.

The UCLA research team completed 23 interviews in September and October of 2011. Interviews followed the short online survey and generally lasted between 45 to 70 minutes. All interviews were conducted either in person or over the telephone, depending on respondents' preferences and scheduling constraints. As was the case in administering the online survey, the UCLA research team provided each respondent with the option to remain anonymous and to hold their responses as confidential. In total, twelve respondents elected to make their responses confidential, and they will not be identified in this report, either by name or by information that could identify their agency.

1.4 Report Organization

In sections 2 through 4, we examine issues internal to transit agencies. In section 2, we present overarching issues facing California's transit agencies and present results from the online survey. In section 3, we discuss financial sustainability and related implementation measures at length. Financial sustainability was seen as the most important long-term objective. Respondents spoke at length about the effects of financial instability and potential strategies to increase the financial sustainability of their agencies. In section 4, we explore respondent's feedback about operational improvements to transit service, which includes two of the top 3 short-term implementation measures. Respondents from transit agencies reported that they

plan to implement a variety of measures to improve service, some of which had been delayed due to financial instability in recent years.

The theme of the sections 5 through 7 relates to factors that are external to transit agencies. In section 5, we highlight many respondents' examples of how they could benefit from a better relationship with outside organizations: local governments, other transit agencies, and Caltrans. In section 6, we discuss the evolution of transit to reflect changing market conditions. Several respondents are aware that demographics and travel behavior will change in their agency's service area, and they had ideas and concerns related to these changes. In section 7 we discuss the role that transit agencies play in pursuing statewide and regional policy goals. While respondents see their agency's primary role as providing mobility, they acknowledge many secondary roles: from reducing pollution to providing lifeline access to employment and healthcare to sustain households and communities.

In section 8, we present conclusions for Caltrans based on the information learned in our stakeholder interviews.

2 Transit Planning in California

This report focuses on the measures and visions that transit agency officials report as the most important priorities for their agencies as they plan for the future. Much of the discussion with respondents concentrated on the short-term implementation measures they saw as most important, and how those measures related to their long-term visions, goals and objectives. Respondents reported that while planning for the future is important, their agencies apply most of their resources to maintaining operations. Planning, both short-term and long-term, is most productive when operations are stable, but achieving such stability is extremely difficult.

Transit agencies are primarily focused on maintaining operations on a daily basis. First and foremost, transit agencies focus on operating service—maintaining vehicles, assigning operators, and providing customer service. Maintaining operations can consume the daily schedules of all managers at smaller transit agencies: complications such as driver absenteeism and sudden vehicle breakdowns must be dealt with immediately to maintain reliable transit service. Management must also work to ensure the agency sustains its business operations: that employees are paid, that operators and maintenance workers receive training, and that the agency has enough cash on hand to cover immediate and future expenses.

Only after operations are stabilized can an agency focus on the development and implementation of strategic projects. Managers from larger agencies reported that they can devote employees or departments to pursuing long-term strategic endeavors, while those from smaller agencies must often focus on meeting the more immediate operational needs first.

Even when agencies are able to engage in strategic planning, such projects require significant expenditures, staff time, coordination with other local governments, and the approval of governing boards. Respondents report that managers and analysts must research and justify projects in staff reports that highlight case studies – examples of implementation elsewhere – to showcase potential successes and strategies and to mitigate potential pitfalls. Examples of past successes mitigate the risk of project failure, making the implementation of well-tested measures more attractive than the implementation of experimental measures. Strategic projects that agencies identify and decide to pursue become components of short range transit plans.

Respondents have strong opinions about their agency's long-term visions and priorities, but these views aren't always expressed in official plans. Most agencies do not create their own long-range plans. For these agencies, capital projects and other long-range strategies are components of county-wide Long Range Transportation Plans or Regional Transportation Plans.

2.1 California Transit Stakeholders' Priorities

Tables 1, 2, and 3 summarize respondent's rankings of short-term implementation measures and long-term visions and goals. Respondents were asked to rank eleven pre-defined short-term measures and two optional respondent-defined measures in order of importance.

Table 1: Respondent's Rankings of Short-term Actionable Measures

Rank		Average	Median	SD
1	High quality trunk line services, like Bus Rapid Transit (BRT)	4.35	3.0	3.65
2	Improvements in pedestrian and bicycle access	4.60	4.5	2.44
3	Passenger Information Systems	5.25	6.0	2.83
4	Transit fare reforms that adjust fare levels	6.05	5.5	3.22
5	Expansion of automated fare media	6.65	6.5	3.01
6	Regulatory and market-entry reforms	6.70	8.5	3.87
7	Higher fees for automobile ownership and usage	7.00	8.0	3.83
8	Improvements in design and operations of State highways and shoulders	7.65	7.0	2.87
9	Development of a pilot program	7.80	8.0	2.73
10	Congestion pricing	8.60	9.0	3.22
11	State Infrastructure Bank	8.65	9.0	2.66

In addition to the eleven pre-identified actionable items, respondents were asked to provide any other actionable and implementable measures they thought were important to their agencies. Many of these implementation measures invoked themes of long-term visions, goals, and objectives as we have noted in Table 2 below. The rank a respondent assigned to each one their self-defined short-term actionable measures appears with each of the statements below.

The tables rank measures and visions by their average values. The average value captures the extreme opinions of respondents who feel strongly about a statement. The median value can be seen as how a moderate respondent might rank a statement. The standard deviation is a numerical approximation for consensus around a statement. For instance, responses to "high quality trunk line services" exhibit a higher standard deviation (3.65) than responses to "State Infrastructure Bank (2.66)," meaning that respondents showed less consensus that high quality trunk-line services should be ranked first as they were that State Infrastructure Bank should rank last.

Respondents saw high quality trunk line services, like Bus Rapid Transit and improvements in pedestrian and bicycle access as the top short-term actionable measures, with passenger information systems and transit reforms that adjust fare levels following.

Table 2: Summary of Other Short-term Actionable Measures

Theme	(Rank) Statement
Financial Sustainability	(1) "Development of Stable and Predictable Funding Sources at the Federal, State and Local Levels" (1) "Increased reliable transit funding, especially operating dollars" (1) "Stable State funding"
Integration with Land Use	(1) "land-use transportation linkages and development" (2) "Transit-oriented design/re-design is fundamental to transit improvement"
Institutional Sustainability	(1) "Changes to State laws to require coordination of transit resources and funding of social service, Medicaid and public transit programs. However, I do not support consolidation of agencies."
Market Responsiveness	(2) "Restructure Service Based on Market Demand to Grow Ridership"
Maintenance and Reliability	(1) "Reinvestment in Existing Infrastructure – 'State of Good Repair'" (2) "Increased reliability of buses purchased to reduce maintenance cost, especially with mandated alternative fuel buses"
Other	(2) "Use of technology, such as mobile data computers to provide real-time demand-response scheduling." (2) "Relief from regulatory restrictions on transit operators"

The research team asked respondents to indicate the importance of various long-range visions and goals by distributing a total of 100 points to indicate the relative importance of eight goal or vision statements. This method has the advantage of allowing an official to indicate the relative importance of each goal (i.e. more points assigned to some goals over others), as well as the magnitude of importance (i.e. distribution of points assigned to each goal). Table 3 below summarizes how respondents allocated points to each vision or goal statement.

Table 3: Respondent's Rankings of Long-term Visions and Goals

Rank	Statement	Average	Median
1	**Financial Sustainability**: A dependable and sustainable funding base that allows near-term actionable needs to be met and also supports long-term strategic planning and investments for capital projects and on-going operations/maintenance. (conditions internal to transit agencies)	29.25	25.5
2	**Social Sustainability**: Transit service improvements that enhance accessibility to job opportunities, medical facilities, education, and recreation for all; as well as other services for disadvantaged populations, while maintaining transit fares that are affordable and do not overly burden the poor.	13.10	10.0
3	**Market-Responsiveness**: Develop transit options that are responsive to changing demographics, lifestyle preferences, and market demands, and that enrich the "service-price points" available to California's traveling public.	12.85	12.0
4	**Integration with land use decisions, vis-á-vis transit-oriented development and smart growth**: Design transit services and improvements that contribute toward transit-oriented development (compact, mixed-use, pedestrian-friendly development oriented to transit) and other forms of smart growth.	12.15	12.0
5	**Streamlining & coordinating funding processes** between State, federal, and, when possible, regional funding sources.	9.85	5.0
6	**Environmental Sustainability**: Transit service improvements that materially contribute toward the reduction of greenhouse gas and local pollutant emissions, energy and land conservation, and the protection of sensitive environments and ecologies.	7.60	7.5
7	**Economic Sustainability**: Removal of hidden subsidies and price distortions- like un-priced congestion and pollution, unpaid-for emergency services, and extensive free parking - that prompt many Californians to drive and puts transit at a competitive disadvantage. (conditions external to transit agencies)	6.80	1.5
8	**Institutional Sustainability**: Improve coordination and integration of transit services, fares, and strategic planning across transit operators, jurisdictional boundaries, and modal options.	6.65	5.0

Most notably, financial sustainability was ranked head and shoulders above the other long-term visions and goals, averaging over twice as many points (29.25) as the second highest ranked goal, "social sustainability" (13.10). The next grouping included social sustainability, market responsiveness, and integration with land-use decisions, all of which averaged within one point of each other, meaning that they are key long-term goals that agencies would like to pursue as they attain greater financial stability. Streamlining and coordinating funding processes follows in importance, but as we'll discuss in section 3.3, this vision is especially important for smaller transit agencies. Respondents ranked environmental, economic, and institutional sustainability as the least important long-term visions.

In the next five sections of the report, the authors discuss these results at length, with supporting information from the interviews.

3 Critical Need for Financial Sustainability

Perhaps not surprisingly, financial sustainability was the single most common theme participants discussed in the oral interviews and was also ranked as the most important long-term vision or goal for transit agencies surveyed, scoring an average of 29.25 points in the online survey, or more than twice as high as the next highest scoring goal.

Financial sustainability has been and continues to be a significant challenge for transit agencies in California. Fares for service and other income rarely cover even half of the cost of operations, let alone capital improvements. Thus, California's transit agencies must rely on a diverse array of outside sources to fund operations and capital expenditures. Many of these sources are outside of the direct control of transit agencies and the funding levels can — and often do — change from year to year. The instability of operating funds from, for example, local sales tax and State sources can lead to unplanned service cuts and deferred maintenance of vehicles and facilities. In addition to year-to-year fiscal volatility, sustained operating deficits can jeopardize an agency's ability to engage in long-term planning in pursuit of goals and visions not related to financial sustainability.

A lack of stable funding sources has created an increasing patchwork revenue quilt that transit managers must stitch together to keep their agencies afloat. Since 1977, average inflation-adjusted transit fares have increased just seven percent per boarding nationally, while inflation-adjusted operating expenditures per boarding increased 72 percent (Taylor 2011).

An increasingly complex system of subsidies has largely, if haltingly, filled the widening gap between revenues and expenditures. Nationwide, total inflation-adjusted public subsidies of transit have increased by 66 percent since 1995 (Taylor 2011), yet much of this growth has gone to new capital investments and not to increased operations or maintenance funding. Voters have often been willing to fund new rail transit lines, transfer facilities, and other big transit capital projects, but have been less inclined to raise taxes to operate these new services. In large cities, federal transit funding can only be used for capital projects, which may influence the balance of capital versus operational funding expenditures. State, regional, and local funding make up the remainder of the subsidies, and nearly all operating subsidies. Urban counties in California have been relatively successful in getting voters to approve local option transportation sales taxes, but these too have typically focused primarily on capital support.

The need for financial stability garnered the highest levels of consensus among our interviewees, who expressed concern not only about overall funding levels but also about the certainty of funding streams into the future. Some respondents would rather have certain, but reduced funding streams rather than uncertain funding streams.

Many of those queried also asserted that an increase in the stability of funding sources would

lead to a more financially sustainable operating model that would enable agencies to better plan for long-term needs.

In addition, several of the shorter-term strategies and other long-term goals respondents discussed were motivated or connected to their agency's long-term goal of financial sustainability. These related goals and strategies are discussed in turn below.

3.1 The Impact of Unstable Funding

As noted above, federal transit subsidies are confined to capital expenditures for agencies operating in urbanized areas with populations greater than 200,000; only in small urbanized areas can federal transit subsidies be used for operations. But even the systems receiving federal operations assistance reported regular shortfalls in operations funding.

Before 2008, transit agencies could count on substantial operations funding assistance from the State. Since then, however, these funds have become less reliable and many of those interviewed reported that their agencies had been forced to make sometimes severe cuts to service and suspend long-term planning and implementation of new strategies. For example, one respondent said that funding instability was wreaking havoc on his agency's most important service expansion goal, saying that: "variations in future funding streams make it hard to commit to Bus Rapid Transit."

Dedicated funding, as defined by the FTA, has three key characteristics. First, specific revenue sources must be selected. Second, the revenue must be designated to be provided to the transit agency. Finally, the revenue must not be subject to appropriations (USGAO 2006). Local sales tax is currently the most common form of dedicated funding and other supporting sources may include income tax, fuel tax, property tax, tolls, and registration fees. Most transit agencies use dedicated funding for a combination of operations and capital expenditures but most heavily rely on it for operations. Secure, dedicated funding can enable more effective long-range planning and may improve agencies' credit ratings. This lowers their cost of borrowing for capital investments in the future. However, dedicated funding may not be able to accommodate for fluctuations in cost and revenue over time, resulting in budget gaps. Dedicated funding may also be highly structured and accompanied by strict regulations that limit the use of funds for specific tasks, potentially reducing the efficiency of transit operations.

Many respondents' agencies rely at least in part on local sales taxes for revenue. In some cases, locally collected revenue makes up to 75 percent of operations funding. Managers at agencies that depend so heavily on local sales tax revenue recognize the risk of depending on one source for the vast majority of operations and are seeking to increase the proportions of other funds. According to Santa Clara Valley Transportation Authority Government Affairs Manager Kurt Evans, "one of the things that we have been trying to do is figure out a way to diversify our funding base so we're not so dependent on sales tax revenue." Though local sales tax revenue is dedicated, it is subject to the ebb and flow of economic activity and thus has the potential decline during recessions. One respondent at a large agency didn't see an opportunity

for new sources of funds to complement funding from sales tax sources, saying that “no new funding sources are on the horizon” and that the agency must make do with what it has.

While several California transit agencies receive operations and capital funding from sales taxes, one respondent lamented that California transit agencies must also pay this tax. According to the respondent, this makes little sense as the State is issuing and financing additional infrastructure bonds just to collect sales tax to pay those bonds. The respondent had previously worked for transit agencies in various states, and agencies did not pay sales taxes in any of those states. By eliminating sales tax for transit vehicle purchases and other capital items, the State could borrow less and reduce bond issuance and financing costs.

Transportation funding is dominated by politics. Transit funding is no exception, as many respondents reported problems since both operations and capital funds are the subject of local, state, and federal legislation. A benefit of the political process has been an ample supply of federal dollars and a strong political will to fund capital projects, including vehicles and infrastructure. Though nationwide, public subsidies account for a hefty 65 percent of all transit funding, capital investments are subsidized at an astounding rate of nearly 100 percent (Taylor 2011). The majority of capital funding is provided by the federal government and this is the primary form of support for transit agencies outside of rural areas.

Respondents are widely aware of the availability and stability of capital versus operating funds. Donna DeMartino (San Joaquin RTD) commented on the instability of operating funds versus capital funds: “we need to be held accountable for our operating costs, but we need some kind of stable funding, and that's the most critical thing we need. You know, to be able to build something and not be able to operate doesn't make any sense.”

Concerns over the financial uncertainty produced by unstable funding were a common thread among respondents. Many noted that such uncertainty and instability makes multi-year planning difficult. According to one respondent, “I could live with (reduced funding) if I knew it was coming, and I knew how many years it was going to be, and I could count on my funding, and I could plan for it. But sometimes the amount of funding and the timing of the funding is such that it negatively impacts our transit system.”

Yet another respondent noted the problems of funding uncertainties posed for his/her system’s customers:

> From an operator’s perspective this is critical. The year-to-year variations are catastrophic for our relations with our public. One year we finished the fiscal year still not knowing what our level of State support would be for the year that just finished, and it was a wide margin in both directions. It makes it very difficult to manage our system.

Even when subsidies are not ultimately cut, uncertainty and delays cause disruptions. Tax revenue shortfalls and partisan bickering over how to cope with them have frequently delayed

the delivery of funds to transit operators by local, state, and federal agencies. Delays in passing a State budget or reauthorizing federal surface transportation funding can cause sudden, unexpected interruptions in funding streams. According to one respondent, such sudden funding interruptions disproportionately affect smaller transit agencies that rely heavily on federal and state assistance that often arrives in an annual lump sum. This respondent from a smaller agency, expressed the view that larger agencies were more insulated from the trauma of sudden funding changes because they have the resources to apply for a range of grants and receive funding allocations from various sources throughout the year.

More stable funding sources, creating a financially sustainable model for transit operations, would enable agencies to better plan for long-term needs. With stable funds for operations and maintenance, transit systems could be more able provide high quality service and attract new riders.

3.2 Mixed Support for Transit Fare Reforms that Adjust Fare Levels

The revenue source transit agencies have most control over is fares. However, many agencies are reluctant to increase fares in response to subsidy shortfalls because of potentially deleterious effects on transit users, especially those who are low-income and/or transit-dependent. Still, representatives from many agencies report that they are looking toward new fare structures that might support the sometimes competing goals of financial stability and social service to vulnerable populations. Transit fare structures fall into two general categories: flat or differentiated.

Flat fares charge same price, regardless of time of day, distance or direction traveled, or quality of service. Flat fares typically charge for a single trip (that may or may not involve transfers) or for unlimited trips during a set time period (such as one day, a week, and most commonly a calendar month). Flat fares are simple for transit users and fare collectors to understand, and are easily administered by transit agencies (Cervero 1990). The majority of transit agencies in California employ largely flat fare systems.

Differentiated fares most often vary by time, distance, and/or direction of travel, as well as service type (TCRP 2003). For example, differentiated fares can vary based on peak and off-peak travel, trip length (distance), service type (local or express), mode (bus, rail, paratransit, etc.), and direction (peak and off-peak). Differentiated fares are considered by many analysts to be more efficient (because they better reflect the variable costs of transit service), effective (because they encourage riders to travel when excess capacity is available), and equitable (because they subsidize all types of riders roughly equally).

Peak period operation, longer trips, and premium service are more expensive for transit agencies to operate. Transit operators must supply vehicles and hired labor to meet peak demand, so operators must frequently make investments in fleet and labor to meet the peak demand for only small portions of the day. Similarly, premium service that typically operates during peak hours often requires expensive fleet and labor investments that go under- or un-

utilized at other times of the day. In addition to time of travel, longer trips generally add expense for transit operators. All things equal, longer trips consume more resources and generate more maintenance costs than shorter trips (McLaughlin, 1993). Shorter trips also turn seats over more quickly, which generates more fare payments per service mile or hour in comparison to longer passenger trips (Lurhsen and Taylor, 1997). These longer trips often occur during peak hours, so not only is peak service more expensive to operate, but higher capital and maintenance costs are incurred due to peak hour trips.

Transit agencies have direct and full control over their fare policies, and many recognize the operational, cost-recovery, and equity benefits of differential fares. However, operators are concerned about implementing such policies in regions where other operators may charge flat fares, or when they are uncertain about riders' responses to complexity of fares.

Because flat fares do not distinguish between time, type, or distance of travel, transit users traveling shorter distances, during off-peak hours, and using non-premium services "cross-subsidize" riders on more expensive routes. In other words, because costs vary but flat fares do not, travelers making short, mid-day trips on local services typically receive little or no subsidy of their trip, while travelers making longer, peak-hour, peak-direction trips on premium services can receive vary large subsidies. This discrepancy in passenger subsidies raises important equity concerns because short distance, off-peak, and non-premium riders are more likely to be transit-dependent, lower-income, and minority than higher income discretionary riders who travel during peak hours.

But despite the efficiency, effectiveness, and equity arguments in favor of differentiated fares, simple flat fare systems are the norm in the industry; passengers, drivers, transit managers, and elected officials are all accustomed to flat fare systems, and many are skeptical of the potential merits of a more nuanced system of charging fares that in most cases requires smart farecard technologies to implement. Given the often visceral reactions of riders and elected officials of fare changes of any sort, most of those interviewed for this research expressed wariness about the potential of fare changes of any sort – either increases to existing flat fares or a phase-in of differentiated fares – to address chronic operating funding shortfalls.

Transit Agency Benefits and Challenges

Despite evidence that suggests differential fares are more equitable and efficient than flat fare structures, transit agencies have been reluctant to design and implement differential pricing. Bob Planthold, a transit stakeholder and member of California Walks, explained that discounted fares are often inconsistent because senior and disabled eligibility, peak-hour applicability, and the fare discount proportion vary between transit agencies, which leads to confusion among riders. Other respondents shared similar concerns that differential fares would confuse transit users, especially visitors and first time riders, and that fare increases would erode the ridership. Many budget-strapped agencies expressed concern about the time and resources needed to develop more widespread usage.

One transit agency, at least, that currently charges differential fares is transitioning to flat fare systems for convenience. For example, the San Joaquin RTD concluded that transfers were mainly a convenience for passengers, and, because of rampant transfer abuse, the cost for producing transfers almost equaled the revenue gained from them. As a result, the agency is eliminating variable fares and transfers and transitioning to a flat-fare system. Similarly, Timothy Papandreou explained that San Francisco MTA's BRT service will have flat fares for simplicity. He said that regional support for combining premium and flat fares exists, but currently BRT routes are segments within a city, a structure that doesn't easily allow for variable fares. Another respondent's system differentiates fares by routes, although individual fares on the routes remain flat. This respondent does not anticipate charging for additional fares or for peak service, and acknowledged that transit agencies are sensitive to the effects of fare increases on transit dependent populations.

Transit agencies are also concerned that having both flat and differential fares in the same region creates inequalities. For example, Papandreou said that an individual seven miles outside of downtown San Francisco can pay a flat two dollars to get into the city on Muni, but a lot more using another transit agency. His preference would be for people living at similar distances to pay similar fares, across different services.

In some cases, transit agencies would like to charge differential fares but regulations prevent them from doing so. There is a growing discrepancy between the cost to provide ADA complementary paratransit service and revenue collected from paratransit fares. According to one respondent, paratransit services cost ten or fifteen times more per passenger than comparable fixed routes. However, transit agencies are legally prohibited from charging more than double regular fares for paratransit service, so fixed route service can effectively cross-subsidize paratransit service through the use of a blended farebox recovery metric. One California transit agency is looking to implement zone-based fares for its fixed route operations in order to increase farebox recovery for providing paratransit service. Agencies must achieve minimum farebox recovery requirements in order to obtain operating funds.

3.3 Reducing Delays by Streamlining and Coordinating Funding Processes

In order to increase access to funding while minimizing the burdens required to apply for it, respondents at transit agencies support streamlining and coordinating funding processes. Transit is funded through a complex web of sources, growing more so over time. Because transit agencies do not collect enough revenue to sustain all their capital and operational costs, they depend on an array of subsidies to fill the funding gaps. Transit agencies may receive funding from federal, state, regional, local sources, or a combination thereof. Many respondents reported greater ease in accessing funding for capital improvements versus operations, which has left many agencies starved for funds to carry out daily activities. In addition, the funding landscape is so complex that agencies are forced to invest enormous amounts of time researching and applying for public support. Finally, each funding source is accompanied by restrictions for its use that can create a cumbersome process to properly expend funds.

As a response to uncertainty surrounding State operations funds, most respondents reported that transit agencies are attempting to modify their financing structures to be more stable and secure. A common strategy is to diversify the agency's funding sources. With more diverse funding sources, agencies are less impacted by changes in each individual funding stream. However, finding new revenue sources is proving difficult. Some respondents believe that all funding sources will increase with an improving economy, but in the meantime they are still left with dwindling and unsecured operations funding.

The Federal Transit Administration provides the majority of federal funding for transit projects through several funding programs. Urbanized Area Funds support capital investments and in smaller metropolitan areas, operations as well. The New Starts program is a competitive discretionary grant program that provides assistance with capital investments and maintenance of fixed guideway services. Several smaller programs also provide funding, the most notable being the Americans with Disabilities Act service.

California transit systems receive two thirds of their funding through State and local sources. The Transportation Development Act provides funding through the Local Transportation Fund and State Transit Assistance Fund. The Public Transportation Account is funded by fuel taxes and provides most of the funding for the State Assistance Fund. Other recent additions, Proposition 42 and Proposition 1B, provide the tools for local agencies and governments to gain further financial support for transit. A number of local and regional special purpose sales taxes have been created to provide funds for transportation, such as Los Angeles County's Measure R.

Some agencies receive operating funds administered by both Caltrans and the FTA. For example, an agency's service area may encompass both rural and urbanized areas, making the agency eligible for FTA-administered 5307 funds and Caltrans-administered 5311 funds. Several respondents expressed frustration with the Caltrans-administered funding process, noting that the process could benefit if Caltrans established a single repository for applications and reporting, rather than making several quests per year for the same documents. Caltrans could look to streamline funding applications and reporting requirements with the FTA in order to reduce the burden on agencies.

Specialized funding requirements may result in inefficient use of resources. For example, some funding sources specify the use of the rolling stock to be purchased. Such measures can prohibit the efficient use of vehicles, for instance, a paratransit vehicle cannot perform traditional transit service. There is therefore redundancy among the transit systems that could be eliminated with more efficient use of vehicles.

Some agencies are in the process of applying to non-traditional sources of revenue. Discretionary grants are available for alternative modes such as ferries, some air quality management districts offer funding for certain transit projects, working with employers to offer transit passes provides more stable revenue, and increasingly, transit agencies are entering into development deals with local governments to fund costs through impact mitigation fees.

Though one-time grants may help to diversify funding sources in the short-term, they are not long-term solutions. These grants often come from discretionary sources, which may be the first to see cuts if economic hardship continues.

Diverse funding sources may provide more financial stability than relying on fewer funding sources. However, the process to apply for these grants may be incongruent with existing application processes and burdensome on the agency. Such burdens can limit an agency's ability to focus on service provision and planning. One representative of a smaller agency with an annual operating budget of less than $10M estimated that his agency spent 2,000 hours per year acquiring funding: researching, applying, and meeting reporting requirements.

Another anonymous respondent suggested the State help with data reporting, because his/her agency's primary job is to help people transport themselves, and that is easily lost in administrative requirements. Respondents were receptive to the idea of web-based tools or software that would allow an agency to enter data and then produce paper or electronic applications to satisfy multiple reporting processes.

Other respondents suggested streamlining PTMISEA (Public Transit Modernization, Improvement, and Service Enhancement Account, enabled by Proposition 1B of 2006) reporting requirements with Federal reporting requirements for ARRA and other sources of capital funds. A few respondents praised the State's PTMISEA administration.

3.4 General Support for Higher Automobile Fees

Interviewees see the potential for both transit funding and ridership gains from higher fees for automobile use. Fees and costs for automobile usage include the price of the vehicles themselves, the cost of operating, insuring, fueling, and maintaining them. These fees and costs are administered or received by various levels of government and the private sector. Fees can either increase the marginal or fixed cost of driving. Any policy which raises new revenue could be used to provide additional funds for transit. Policies which increase the marginal cost of driving, such as increases to the gas tax, increases in parking costs, or pay-as-you-go insurance, have the effect of reducing demand for travel in the short-run, and make car purchases less attractive in the long-run. Policies which increase the fixed cost of driving reduce demand for travel in the long-run by reducing demand for vehicles. A concern with all automobile cost or fee increases, whether they are the result of market forces or policy, is that such a change is regressive: poor households will bear a disproportionate share of impacts unless they can viably substitute carpooling or transit for automobile travel.

Some transit stakeholders support higher fees for automobile usage. Jacquolyn Duerr of the California Department of Public Health stated:

> The consumer sees the price tag for public transit... but does not have a comparable accounting for auto ownership/ usage. The more clearly the full cost of auto ownership and use is identified and paid by the consumer and accounted

for in public budgets, the more attractive and cost effective public transit will be to communities.

Existing literature also supports the idea that the full cost of transportation is not included in the price of either the automobile or transit. Various strategies have been suggested for including the true cost of automobile use in the price of its operation to better reflect the unaccounted costs to the environment, society, and human health. Since the early 20th century automobile infrastructure has been mostly supported by a system of user fees. Most significantly, the gas tax has proved to be a prolific revenue-generating tool. However, the gas tax has not been increased sufficiently to keep pace with inflation and today represents only about a third of all funding to highways (Taylor 2004). Given this shortfall in revenue from the gas tax, there seems to be a funding gap that could be filled with higher registration fees, higher fuel taxes, or a new system of user fees. Re-allocating these higher fees to fund transit could mitigate the environmental and social costs associated with automobile use, as well as increase the attractiveness of transit as a travel mode.

Evidence from research suggests that increasing the price of auto ownership decreases rates of ownership. The most telling factor for predicting car ownership in Sweden is ownership in the previous year (Pyddoke 2009). In general, people were less likely to own a car as the price of ownership increases. So, if the cost of auto ownership increases, auto ownership rates may marginally decrease. The outcome for transit, however, may be a corresponding increase in the proportion of the population which uses transit and the number of trips each person takes per year.

Potential Gains and Challenges for Transit

Transit agencies recognize that the direct, marginal cost for automobile use relative to transit fares suppresses transit ridership. Because automobiles are often more convenient to use than transit, as long as the cost of automobile use is so low, transit agencies will face a challenge in attracting new riders.

Jacquolyn Duerr of the Department of Public Health, who listed higher fees for automobile ownership and usage as the most important short-term measure in the online survey stated, “If we really reflected those costs [of driving], calculated them and reflected them at every decision point, auto use and all the supports for it would be much more costly than public transit.” Thus, better accounting for costs of automobile use through higher and more transparent fees, could be more socially just and economically efficient. Duerr also stated that, “The public does not realize the extent to which vehicle ownership, use, and parking are publicly subsidized.” As such, there is room for better aligning the true costs and price of automobile use that may change public perception of transportation modes resulting in higher ridership rates for transit.

Several agencies noted the direct relationship between higher gas prices and transit ridership increases in recent years. Kurt Evans of the Valley Transportation Authority reported, “I do believe that theoretically that one of the ways to generate ridership on a transit system is to make it more costly to operate a vehicle. …Like a lot of other transit agencies in California and

throughout the country when gasoline was over four bucks, four-fifty, we saw our ridership go up."

Despite the strong and widely-held belief that transit's success depends on the proper pricing of automobile use, transit officials also recognize that shifting such policies rests largely outside of their immediate control.

Leveraging Transportation and Land Use Policies to Support Transit

One of the most important transportation and land use policies that would better align the costs of driving is to charge for parking in congested areas. While this would fundamentally change incentives in favor of transit use, parking fees are regulated by local governments – and not by transit operators – , either directly in publicly-owned parking lots, or indirectly through parking requirements and development approvals that affect supply and demand in local parking markets. Allowing in-lieu parking fees, mandating required parking maximums rather than parking minimums, and charging a market price for parking are some of the central strategies of parking policy reform. These policies collectively increase the effective cost of parking within cities, particularly in urban areas with high land costs and in areas often well-served by transit.

Measures to increase the cost of driving at the State and federal levels include adjustments to fuel taxes, vehicle license and registration fees, and tolls. New measures to increase the marginal cost of driving include pay-as-you-drive insurance and distance-based vehicle fees. Again, strategies that increase the marginal cost of driving in areas where transit service is provided could result in greater transit use, but such strategies require fundamental changes in policy areas outside of the transit sector.

3.5 Conditional Support for Congestion Pricing

Congestion pricing is a locally-administered strategy which can not only reduce traffic congestion in both the short and the long-term, but can also provide transit agencies with a new source of revenue, lower transit operation costs per mile in high-demand corridors, and increase demand for transit as a substitute to automobile travel.

Congestion pricing typically falls into two different categories: area or zone pricing and roadway pricing (Downs 2004). In area or zone pricing scenarios, drivers are tolled to drive into a designated area such as (but not limited to) a congested central business district. Drivers who do not pay the toll are not permitted to enter the cordoned area. Roadway pricing charges users of a particular road based on time of day, direction, traffic conditions, or some combination of these. For example, High-Occupancy Toll (HOT) lanes permit single-occupancy drivers to pay a toll to use lanes reserved for vehicles with multiple occupants (Sullivan 2002). Both forms of congestion pricing employ tolls or fees to better manage traffic flow in a given space or roadway, and, in doing so, reduce traffic congestion.

The 91 Express Lanes project in Orange County, I-15 through Northern San Diego County, and San Francisco-Oakland Bay Bridge are examples of congestion pricing in operation in

California. Varying applications of congestion pricing have been implemented in Singapore, London, Milan, Santiago, and other cities worldwide.

Congestion pricing is derived from basic economic theory. Road space is extremely undervalued (often free), and congestion results because demand for available road space far exceeds supply. As the number of drivers in a constrained space increases, traffic carrying capacity decreases. Drivers instinctively maintain a safe following distance from the car in front of them. If the road becomes crowded with vehicles, drivers reduce their speeds to maintain a safe distance between vehicles. As speeds reduce, the roadway's capacity decreases to a level below the current traffic flow rate, and congestion and delay ensue. Congestion pricing serves to reduce a driver's demand for would-be congested roadways, so that the flow of vehicles on a roadway segment does not exceed the roadway's capacity to accommodate vehicles at a comfortable following distance.

Potential Gains and Challenges for Transit

Although congestion pricing targets individual drivers, the outcomes benefit transit systems in four main ways. First, transit becomes more attractive to drivers when they must pay additional costs, which generates higher ridership for the transit agency. In other words, congestion pricing influences demand for transit services. As one respondent put it, "a lot more people might see transit as an alternative if it's more expensive to drive". A respondent from a Bay Area transit agency, for example, noted increased demand for commuter service in response to an increase bridge tolls. Second, congestion pricing leads to an increase operating speeds for all vehicles on the road, which enables transit vehicles to operate more reliably and effectively. Third, ridership gains and more efficient service produce additional revenue for the transit system, which can be reinvested to further improve service. Sacramento Regional Transit District (RT) General Manager Michael Wiley stated that congestion pricing's main use would be as a revenue generator and providing additional resources for transit. Last, congestion pricing can be more equitable than other forms of transportation finance. Transportation financing schemes like a sales tax impose costs on all individuals, regardless of whether they benefit from the transportation system. Congestion pricing grants direct mobility benefits to individuals who pay the tax, toll, or fee (Small 2005, Small 2001).

An obstacle to implementing congestion pricing is the absence of an active, unified constituency – either drivers or cities – that would benefit from the congestion pricing revenue (King et. al. 2007). Congestion pricing may be appealing because of its revenue-generating potential, especially when these additional revenues can be used to provide increased transit capacity as an efficient and effective alternative to driving. However, transit operators face a chicken-or-egg conundrum in that political and popular support for congestion pricing is difficult to garner without a viable alternative, such as improvements to transit service, and it is difficult to improve transit service without a sustainable revenue source.

Working with Local and Regional Governments

The majority of respondents indicated that congestion pricing is a lower short-term priority, ranking second to last among short-term priority options. Congestion pricing was a more

attractive policy option in urban areas with high levels of congestion. Despite the low ranking, congestion pricing is still important for improving transit service and providing new revenue streams. One respondent cautioned, however, that while congestion pricing might provide additional resources for transit services in urban areas, it may leave rural areas out of the equation.

Of the respondents who ranked congestion pricing as a high or mid-level priority, many mentioned its main goal is to elicit a change in travel behavior for a small number of individuals, which improves mobility for drivers and transit users alike. One respondent, José Luis Moscovich, Executive Director of the San Francisco County Transit Authority (SFCTA), succinctly explained that the main benefit of congestion pricing is its ability to make people think about their transportation choices enough to reduce a small portion of peak hour demand, which creates a ripple effect throughout the overall transportation system. Two respondents suggested HOV lanes should be converted to exclusive transit use.

While academically popular, congestion pricing is politically challenging to implement. Imposing new taxes or fees is often politically unpopular and does not enjoy popular support. Four respondents indicated that government must clearly articulate the benefits of congestion pricing in order to overcome political obstacles and avoid being viewed solely as a revenue generating measure. Moscovich furthered this notion and said that congestion pricing should be framed as part of a broader effort to provide transportation choice, not as a policy tool for forcing users to ride transit or as a panacea for all transportation problems. Another respondent concurred and said, “There’s an assertion that auto users should enjoy 100 percent of benefits from auto use, but the enlightened auto user can be persuaded that investments in transit increase transit use and leave more space for those still in cars, as well as giving drivers more and better alternatives to driving.

Moscovich also cautioned that geographic boundaries pose obstacles to spending congestion pricing revenue on transit. Problems arise when one jurisdiction collects money from a driver who resides in a different jurisdiction. For example, SFCTA could collect revenue onsite from proposed congestion pricing on Doyle Drive (US 101) in San Francisco, but neighboring jurisdictions objected to San Francisco keeping the revenue when other areas contribute a majority of the trips. Moscovich recommends addressing this challenge by sharing revenue across geographic boundaries and making sure funds go to visible projects, not just operations.

3.6 Little Support for a State Infrastructure Bank

Infrastructure banks are institutions designed to finance major infrastructure projects, including transit projects. Support for the creation of a national infrastructure bank has increased in response to the greater scrutiny levied on the existing mechanisms for funding major public works projects – in particular, the lack of a merit-based system for evaluating the cost-effectiveness of a project.

Statewide, the infrastructure bank was not seen as an important implementation measure, scoring last in the online survey. To take advantage of an infrastructure bank, an agency must have a reliable funding stream in order to secure debt for multi-year capital projects. Michael Wiley, General Manager of Sacramento RT, noted that an infrastructure bank would not be particularly helpful to his agency without a significant increase in dedicated revenues. Only with additional resources would RT be able to borrow against those future revenues, thus taking advantage of additional financing avenues provided by an infrastructure bank. However, Wiley said that such a bank could be very significant to his agency if it were to obtain additional funding streams that it could use for future debt service – reflecting the infrastructure bank's primary drawback in that its benefits are only realized if agencies can secure additional funding streams.

4 Operational Improvements to California Transit

Operational improvements use existing vehicles and infrastructure in support of a variety of outcomes, including increased ridership, reduced cost of service, and improved customer satisfaction. Operational improvements are characterized by a low cost and quick implementation compared to capital improvements. Thus, operational improvements can be effective short-term strategies to improve transit service in California.

4.1 Strong Support for High Quality Trunk Line Services

In corridors with high travel demand, high quality trunk line transit lines can help move people quickly and provide a viable alternative to the private automobile. Typically, trunk lines are distinguished from baseline transit service by their speed, frequency, capacity and reliability. Depending on the community's needs, the trunk line service might be an upgraded bus line that features frequent all-day service and improved bus stops with real-time arrival displays. Or in major urban areas, the transportation needs may make it appropriate to invest in heavy rail, light rail or various types of Bus Rapid Transit (BRT). Both urban and suburban operators have or are in the process of adopting BRT.

For instance, while the Los Angeles County Metropolitan Transportation Authority is embarking on construction of over 70 miles of rail (per voter mandate), the more suburban city of San Bernardino is investing in a BRT line to connect Cal State San Bernardino with the city center.

The Federal Transit administration identifies several features, the presence of which determines the type and quality of a BRT system. They include: bus lanes, busways, fare collection, automatic vehicle location, land use, signal priority, stops, shelters, vehicles design, and expressways (Diaz 2009).

Provision of trunk line service was a popular and widely supported strategy among many of the officials we interviewed. In our survey, this short-term implementation strategy ranked as the number one overall priority, with more than half of our respondents indicating trunk line service among their top four priorities. In particular, many readily identified the advantages that potential BRT systems would provide their agencies in terms of operational efficiency and flexibility, capacity, mobility and relative cost.

While full BRT is often viewed as less expensive to construct than rail, there are important tradeoffs to consider within the spectrum of BRT systems. A BRT line with its own dedicated right-of-way, grade separated intersections and transit stations would provide very fast and reliable "rail lite" service, but could easily cost hundreds of millions of dollars. Operational improvements with less capital intensive measures (such as restriping arterial streets to provide

bus lanes, far-side bus stop placement, traffic signal prioritization or preemption, and skip-stop service can also reduce travel times and the cost of providing services.

When funding is limited, the benefits of adding expensive features to one line should be weighed against implementing less expensive measures – i.e. bus-only lanes, upgraded shelters, signal priority – on a greater number of lines. BRT features may also be phased in gradually to build and test ridership gains along a candidate corridor before investing in expensive (and inflexible) rail services. For example, skip-stop service may be added to a high-demand local route to increase capacity of the line, followed by restriping for a peak-hour bus-only lane. When ridership levels can justify the investment, agencies may then consider subsequent implementation of grade-separated services such as fully dedicated busways or rail transit. In other instances where ridership has exceeded bus capacity, agencies may justify the expense of full BRT services or rail transit. Agencies may also want to consider other factors such as mobility improvements, social impacts, and land use effects of new fixed route bus or rail transit services.

Intra-Agency BRT/Express Service Issues

Provision of trunk line service was a popular and widely supported strategy among the metropolitan transportation officials we interviewed. In our survey, this short-term implementation strategy ranked as the number one overall priority, with more than half of our respondents indicating trunk line service among their top four priorities. In particular, many readily identified the advantages that potential BRT systems would provide their agencies in terms of operational efficiency and flexibility, capacity, mobility and relative cost.

José Luis Moscovich, Executive Director of the SFCTA, discussed his agency's plans for a BRT line on Van Ness Avenue. Moscovich said that the process for selecting that corridor began with determining which corridors had the density to support BRT and identifying the service gaps in the city's rapid transit network.

Moscovich reported that his agency did not "believe there is much merit in diluted BRT." He went on to day, "We think that the big bang for the buck is in that perception of permanence, in the limited stops, in the operation that allows boarding an alighting from all doors, and ideally in the use of off-board fare vending machines."

The last feature was believed to be particularly helpful at reducing dwell time, Moscovich noted, which has been a challenge for San Francisco. His agency conducted a study that concluded that transit vehicles spent 50 percent of their time at station stops.

In another region and vastly different operating environment, Donna DeMartino, CEO of San Joaquin Regional Transit District, reported that her agency's BRT program in Stockton has been very successful. Ridership on the first two lines have reached and exceeded historic ridership levels and one more line is expected to open in the next year.

Stockton's BRT lines do not have dedicated bus lanes, but do feature differentiated buses with wider doors, all-door boarding, off-vehicle fare vending, frequent regular service (ten minute headways during peak hours), and traffic preemption at lights. According to DeMartino, traffic preemption has been a decent substitute for dedicated lanes, and has helped to maintain on-time performance and schedule reliability.

DeMartino also viewed BRT as a solution to some of her agency's financial challenges. Rather than thinly spreading service across the region, the flexibility of BRT has allowed San Joaquin RTD to direct the bulk of its resources towards operating eight strong trunk routes and providing reliable service at a much lower operating cost. Admittedly, passengers may be forced to travel further to reach a trunk line, but DeMartino observed that the significantly improved services outweigh the access time for riders.

Another interviewee (who wished to remain anonymous) said that the goal of his/her agency's BRT project was to move buses as quickly as possible by sustaining operating speeds. His/her agency is in the process of developing an initial BRT project, with several more in the works. This first BRT project has not faced project-stopping challenges despite the fact that it did involve re-purposing the public right-of-way in a traditionally auto-oriented community.

A second anonymous respondent said that his/her agency had an objective of speeding up travel times in core service areas, where traffic and close stop spacings make bus travel roughly twice as long as auto travel. The agency's hope was that the investment in easy-to-implement BRT features would pay off by attracting additional riders. This agency was looking in particular at low-cost and easily implemented improvements, like limited-stop service and off-board fare payment.

Kurt Evans of the Santa Clara Valley Transportation Authority (VTA) noted that his agency has identified BRT as an important mobility tool for the greater San Jose region. VTA conducted a study of eight potential BRT corridors and has selected three for initial development by 2016 and three more for subsequent development.

VTA believes that BRT is particularly useful for longer distance trips, for which higher travel speeds are needed to be competitive with automobiles. Evans said, however, that achieving competitive trip times would be difficult without dedicated bus lanes and queue jumping and signal pre-emption at intersections.

Overall, VTA's BRT program seeks to produce light rail-like service, but with much lower capital costs. To do this, Evans believes that VTA needs to focus on passenger amenities like real-time bus arrival information and information kiosks at BRT stations.

Inter-Agency BRT/Express Service Issues

VTA's Kurt Evans said that his agency works closely with the cities along BRT corridors to head off conflicts over the conversion of mixed-flow lanes to transit only lanes.

Likewise, an anonymous transit official from a suburban area noted that his/her agency had a well-developed plan for signal pre-emption on particular BRT routes, but had received push-back from local government such that it remained "unclear if [the agency] would actually pursue [signal priority for BRT]." That agency also has plans for upgrading stops "to make them look better," which had, perhaps understandably, proven far less objectionable to the municipalities.

4.2 Widespread Difficulty in Working with Local and State Traffic Engineering Agencies – Particularly Caltrans

Survey respondents and interviewees also identified several technical, logistical, and administrative hurdles to implementing transit rights-of-way improvements, including improvements needed for BRT and trunk line service – especially when implementation requires Caltrans approval. As many respondents noted, bus-only lanes are frequently a priority for BRT projects because they provide operational benefits and a sense of permanence and recognizability for transit users. Difficulty coordinating with the affected cities and Caltrans regarding rights-of-way improvements for transit was repeatedly cited as a problem by interviewees.

SFCTA's José Luis Moscovich discussed his organization's ultimately unsuccessful efforts to convert a lane on part of Van Ness Avenue – a key section of which is US 101 managed by Caltrans — to bus-only. According to Moscovich, converting a lane of this limited, congested right-of-way to bus-only was in "conflict with the DNA at Caltrans." Moscovich reported that his agency regularly encounters obstacles in securing rights-of-way for BRT transit projects.

Timothy Papandreou of the San Francisco Municipal Transportation Authority (SF MTA) echoed Moscovich's frustration, especially with regard to Caltrans-managed roads. Papandreou noted that Caltrans has an adopted policy encouraging Complete Streets, but this policy often conflicts with other Caltrans goals of reducing traffic delays and increasing vehicle flows. Such conflicts make it confusing for SF MTA when they want to convert a mixed-vehicle travel lane to bus-only. More broadly, Papandreou asserted that vehicle level of service was not the right measure for evaluating traffic impacts and transit projects. Rather, according to Papandreou, evaluations should be based on "people level of service," that calculates the movement of people on a given link via all modes (walking, biking, public transit, and motor vehicles), which he believes would be more conducive to "complete streets" policies and innovative transit projects like BRT.

Interviewees identified several technical, logistical, and administrative hurdles to implementing transit rights-of-way improvements, like bus only lanes that can provide superior operational improvements for operators, and a sense of permanence for riders. Many respondents repeatedly reported difficulty coordinating with the affected cities and Caltrans regarding rights-of-way improvements for transit.

Another transit official interviewed suggested that Caltrans actively encourage municipalities to implement treatments, like dedicated lanes and signal priority for transit vehicles that make BRT most effective. This official also recommended that Caltrans establish street and highway performance standards that incorporate transit into the calculations. For instance, measures that only consider private vehicle level of service could be changed to the sort of multi-modal measure recommended by the SF MTA's Papandreou. This official also expressed his/her wish for Caltrans to allocate funding to provide incentives for sustainable transportation projects like BRT.

Many other interviewees also reported frustration in working with Caltrans on transit treatments on State-managed roads. One anonymous respondent said that it generally "takes longer when you want to do an improvement on a Caltrans street" and there is generally less flexibility with Caltrans than there is with the local governments.

Another thought that the agency should streamline the process for making improvements to bus stops, which can be especially onerous on smaller agencies.

Another spoke of the many years involved in having Caltrans relinquish some right of the way to his local government in order to implement long-sought pedestrian and transit improvements.

And yet another who had sought to implement transit improvements on a Caltrans-managed facility offered this suggestion: "Please, standardize and streamline the process to get a co-op agreement with Caltrans for transit operators, probably for everybody. You know, it takes me longer to get a co-op agreement than to actually do the project." This interviewee also suggested that Caltrans should look toward "a master agreement with a supplemental agreement" because a single, boiler-plate approach does not fit all applications; as a result, amendment efforts involve lots of time, money, and lawyers, which significantly slow the process.

All told, respondents reported having neutral to negative experiences when it came to dealing with Caltrans on transit right-of-way issues. Respondents from larger agencies collectively called for Caltrans to be a more active facilitator of programs that improve transit. While expressing similar concerns, those from smaller agencies reported that the daunting administrative and bureaucratic hurdles involved in dealing with Caltrans often exceeded the administrative capacity of their smaller agencies, which effectively makes it impossible to engage with Caltrans at all.

4.3 Strong Interest in Using Bus-Only Shoulders

In a number of regions throughout the U.S., transit agencies have dedicated excess freeway capacity for the operation of transit vehicles. The systems are known by many names — bus on shoulder, bus-only shoulder, bus bypass lane, or shoulder transit lane — but the objective is the

same: to cost-effectively use existing infrastructure to allow buses to bypass congestion and improve the efficiency of transit operations (Berry 2010).

Using shoulders for bus operations allow transit agencies to maintain reliable bus schedules, encourage motorists to use mass transit, move people cost-effectively without building new roads or rail, provide faster service in congested corridors, and reduce congestion for all vehicles by removing buses from traffic queues.

Caltrans could play a stronger role in formalizing procedures to convert successful trial programs – like the bus-only shoulder pilot – into permanent practices. Respondents reported that technical transfer programs would allow their districts to learn about trial programs, their challenges and successes.

Selecting corridors for a bus-only shoulder (BOS) system depends on how the BOS corridors would fit into the regional transportation network, the ease of accommodating the shoulders into existing infrastructure, and the expected time savings, capacity enhancements and reliability improvements.

In 2005, Caltrans and San Diego's Metropolitan Transit System implemented a trial BOS program modeled after a similar and very successful system in Minneapolis that had been in operation for over a decade. SANDAG's goal was to keep costs low and to increase the reliability of transit services along the corridor ("Buses on Shoulders Demonstration Project" 2005). After ten months, transit vehicles operating on the BOS achieved 99 percent on-time performance, and the project had improved travel times and raised levels of customer satisfaction (Leiter 2006). Similarly, a survey conducted by SANDAG found that the percent of transit riders who agreed with the statement, "traffic congestion is a daily problem for this route" fell from 79 percent to 46 percent after the BOS trial was put into place. The trial program, although successful from the Metropolitan Transit System & SANDAG's point of view, was terminated after two years with no plans for permanent installation.

Many agency representatives expressed interest in operating buses on highway shoulders for all of the reasons stated above. Improvements in design and operations of State highways ranked as the eighth most important short-term priority out of eleven.

One official with a largely suburban agency, for example, said that his/her agency is considering bus-only shoulders during peak times to keep stop and dwell times low. A further phase of BOS programs may include HOV off- and on-ramps on stretches of highway where there are HOV lanes. The respondent reported, however, that safety ranked as the agency's top concern for the bus-only shoulders.

Another representative of a largely exurban transit agency reported that the BOS strategy may have helped to sustain some commuter services that were eventually eliminated. A demonstration project funded by a Congestion Mitigation and Air Quality (CMAQ) grant a few years ago offered commuter service from the exurbs into the job centers. The trial ultimately

failed, the respondent surmised, because riders perceived no time benefit when transit vehicles were stuck in highway traffic. Had the agency been able to utilize certain highway shoulders, trip time variability may have been reduced, and riders may have found greater value in the commuter service. At this point, the agency continues to seek funding and other opportunities for commuter-oriented services.

An official representing an urban transit agency explained that about ten years ago his/her agency tried to push for bus-only shoulders during peak periods on a particularly congested stretch of interstate highway. The representative said it would have saved five or ten minutes on the line that travels that highway. However, Caltrans was unreceptive to the idea, and the agency abandoned its efforts.

Donna DeMartino, CEO of the San Joaquin Regional Transit District, responded more broadly that there needed to be more bus-only lanes on highways, if transit agencies were to be successful at convincing commuters to use buses instead of driving. Her agency runs commuter buses into the Bay Area, but the riders are stuck in traffic just like anyone else — thus diminishing the benefit of using transit. DeMartino wished that highway engineers would design public transportation lanes in every project; it would make a huge difference, she said.

In the future, Caltrans could play a stronger role in formalizing procedures to collaboratively evaluate and convert what operators see as successful trial programs into permanent practices. At the very least, Caltrans could develop technical training or technical transfer programs that would allow districts to learn about trial projects conducted in other parts of the State, along with their successes and their challenges. One lesson the Minnesota DOT learned from a bus-only shoulder project is the need for safety procedures, since freeway shoulders serve as a critical recovery zone for vehicles. The Minnesota DOT established strict guidelines that allow bus-only shoulders to be used only when highway speeds drop below 35 M.P.H. and prohibit transit vehicle speeds from exceeding highway traffic speeds by more than 15 M.P.H. ("Bus-Only Shoulders – A Transit Advantage").

4.4 Passenger Information Systems

Passenger information systems that provide consumers with information such as routes and scheduled timetables, real-time arrival and departure times, expected travel time, and travel alternatives are commonplace in modern public transit systems. Web-based information, especially, can provide up-to-the-minute notice of service adjustments and disruptions. Research indicates that these passenger information systems improve the quality of service for transit customers by reducing the perception of wait time, increasing perceived reliability, facilitating efficient consumer use of the transit system, and reducing the uncertainty of unknown arrival or departure times (Curry and Gook 2009, Dziekan and Kottenoff 2007, Kim et. al. 2009).

Transit Agency Benefits and Challenges

Passenger information systems introduce predictability and control into the transit user experience, and thus users place a high premium on this information. Reflecting the importance

of providing travel information, passenger information systems was ranked as the third most important short-term measure for improving transit service.

Respondents suggested that the main benefit of passenger information systems is giving current transit riders better control over their transit experience, and providing new riders with information to demystify the experience of using transit. The value that passenger information systems provide to customers can be reflected in customers' use of other customer service channels once the system is in place. One respondent reported that her agency experienced a 90 percent reduction in customer service calls after vehicle locator systems were installed in transit buses.

Passenger information systems are effective because, as one respondent described, they "eliminate the unknown." Many others reported similar observations and generally supported the provision of information systems. One respondent reported that information systems are particularly important to transit riders because relative to automobile drivers, transit places riders "at the mercy of the system." A fourth respondent offered that readily available information about how to take transit, and how different systems coordinate, can help increase ridership simply because "it's not easy to figure out how to get places without a car."

Actual passenger information systems vary among respondents. Some transit agencies partner with Google or develop informal data collection methods on their own to help distribute useful information to transit riders. Others "make real time info available to the public to use, adapt, and make apps with however they want" leaving such systems to develop organically and creatively. DeMartino explained that San Joaquin RTD created a textbus system by developing their own software in response to the high price tag and interoperability concerns of commercially available passenger information systems.

Financial and technological barriers prevent the widespread implementation of passenger information systems, particularly for smaller agencies. One respondent reported that smaller agencies are less likely to have resources to commit to integrate their route information with the Google Transit directions service. Additionally, collecting and disseminating accurate and reliable data often depend on extensive GPS and radio infrastructure that is expensive to purchase, operate, and maintain. Moreover, passenger information technology advances faster than budgets can accommodate, and expensive investments can quickly become outdated. Less challenging for passenger information systems implementation is the delivery of information (i.e. how information is displayed, on what devices, and how to reach low-income riders and riders with disabilities, etc.). San Joaquin RTD distributes information through a variety of media, including their website, kiosks at downtown centers, and cell phones. A respondent from a Southern California agency reported that his/her agency is increasing real-time information availability at bus stops on BRT corridors using text messaging programs; through this system, riders can text a bus stop code and receive in return the next three scheduled bus arrival times at that location. These information systems are attractive to transit agencies because of the wide proliferation of cell phones, even among low-income riders.

4.4 Expansion of Automated Fare Media

With the rapid development of communications technology and the growing number of applications for transit, operators have new options for fare collection beyond traditional cash fare systems. Many agencies have introduced automated fare media such as electronic, magnetic stripe contact cards and most recently, smart cards –a contactless, reusable, prepaid card that includes an embedded microchip to monitor fare transactions and stored balance. Smart card systems are also able to incorporate cell phone usage as well, as cell phones can be equipped with Near-Field Communication microchips to allow contactless, immediate fare payment by linking the phone with a credit card or bank account. This technology has already been implemented internationally and is in the process of being launched in the United States.

Transit agency officials with whom we spoke reported that smart cards are a potentially revolutionary advancement due to their benefits, which include user convenience and security,, decreased fare processing time, greater fare flexibility, operational cost savings, service enhancements, centralized fare collection, more efficient fare pricing, and greater capacity for data compilation of ridership and travel behavior.

Considerable obstacles exist in the way of comprehensive smart card adoption, however. Transitioning to an automated fare system requires new and upgraded electronic fare payment infrastructure, equipment, and training and demands significant investments in funding. Additional opposition could potentially arise if the cash fare option is not retained; as this could negatively affect transit-dependent riders who may be unbanked and making transactions solely in cash. The initial cost of purchasing a new smart card and adding transit fares in bulk to the card's stored value could be a financial hardship for the lowest of low-income riders without expendable savings. The majority of smart card systems have been adopted by individual transit agencies, rather than as regional systems that would allow the seamless fare collection across multiple operators. Interviewees reported that the lack of leadership in establishing regional systems, combined with many agencies' reluctance to relinquish control over fare structures and collection, have inhibited the goals of convenient and seamless inter-agency travel with regional smart cards. Transit agencies have faced these obstacles of coordination and collaboration for many years since the rise of smart card applications for transit fare collection; these recent findings from our interviews are similar to those from a 2006 study that found similar challenges (Yoh *et al.* 2006).

Automated Fare Media Advantages and Concerns

The expansion of automated fare media ranked fifth among the eleven short-term transit improvement measures. Some respondents reported that the primary benefits of smart card systems included better ridership tracking (that would provide information about where to prioritize investments and improved customer service), and the ability to reform transit fare policies.

For example, one respondent explained that the widely used flat fare discourages riders from making short, on/off trips – high turnover boardings that transit operators *should* be capturing to fill unused capacity. With smart payment options, more efficient pricing structures detailed in section 3.2 can be implemented, as these card systems could be used to collect distance-based, time-of-day based, or mode-based fares.

One drawback of automated fare media, however, especially with regional implementation among larger transit agencies, is the difficulty of providing new and/or infrequent riders with access to the media.

5 Coordinating with Outside Agencies and Jurisdictions to Improve Transit

Historically, transit investments and decisions have occurred at the local level, but gradual changes that have funneled federal transportation funding through regional planning organizations have shifted transportation decisions toward regional governments. Regional planning bodies – which typically include multiple jurisdictions and governing institutions and which represent urban, suburban, and regional environments – imply high levels of interconnectedness between neighboring transit agencies. Indeed, as the geography of travel expands, transit users crossing jurisdictional boundaries likely expect an integrated and seamless transition between different transit systems (Haynes et. al. 2005).

Transit agencies must function well internally and externally in order to implement strategic projects and plans. Measures to make transit agencies stronger as organizations and measures to work more closely with outside agencies and jurisdictions can support an agency's or region's strategic planning process.

Institutional sustainability ranked last on respondent's list of priorities from the survey. However, participants discussed external coordination issues with other agencies and jurisdictions at length in their interviews. Agency representatives we interviewed perceived coordination as an important means to ends; while it ranked low on priorities, coordination was often an important part of achieving higher priority objectives and goals

5.1 Coordinated Planning among Agencies and Jurisdictions

Though institutional sustainability ranked last among the long-term visions for transit, respondents discussed the benefits of coordinating with other transit agencies, as well as the challenges those relationships pose. One respondent explained the difficulty that riders face when traveling between different cities and boundaries, especially for special needs riders, and indicated the need for more and better coordinated planning. To encourage and facilitate service integration between transit districts, one respondent called for enabling legislation that would create a board with full participation by all jurisdictions whether they actively provide service or are contracted to run limited services.

Our interviewees reported that more frequent and more positive interactions with other transit agencies can create political alliances, which can be leveraged for additional funding. Smaller and more rural transit agencies, especially, depend on partnerships with transit providers in other jurisdictions. Three counties in northeastern California, for example, established a joint non-emergency medical transportation program, and 16 counties joined together to create more authority when applying for transit operations grants.

Additionally, the successful implementation of technological innovations such as regional smart card systems, as discussed previously, often depends on coordination across jurisdictional lines

to capture the full benefits of the technology, and to ensure the long-term viability of their systems.

In addition to working with neighboring transit agencies, developing relationships with other non-transit agencies and departments – such as planning, land use, and social service agencies -- also helps build an alliance to more easily advance transit service. For example, Timothy Papandreou from SF MTA explained that MTA's planning section, which is relatively new, is working together with San Francisco's Planning Department and the Redevelopment Agency to review all new development in the city. This type of multi-agency coordination aims to synchronize land use and transportation decisions. Similarly, Bob Planthold suggested that transit agencies should work closely with public works and other agencies with transportation roles and responsibilities.

He explained that poor road conditions increase the maintenance and repair costs of city fleets, including transit and emergency vehicles; and joint advocacy for street resurfacing and maintenance may save money for the entire city. He observed that transit agencies traditionally have not actively sought allies to help promote better transit service. He cautioned that without political will, multi-agency coordination, and popular support, transit agencies will not be able to make the service improvements and funding decisions necessary to sustain their organizations into the future.

5.2 Consistent Support for Transit-Oriented Development

A transit-oriented development is most commonly defined as a "mixed use, relatively high density, and pedestrian-oriented district that is located within one-half of a mile of a rail, bus, or ferry station" (Renne, J. L, and J. S Wells, 2003). These developments are intended to both promote new transit ridership and support existing transit use by providing liveable places with high levels of transit access to the broader region, and developing more effective public transit hubs (Renne, J. L, and J. S Wells, 2003).

The performance of transit-oriented developments are often measured by: increased transit ridership, reduced vehicle miles traveled, improved pedestrian and bicycle accessibility, effective parking availability and pricing, lowered car ownership rates, an increase in housing options, and achieving balance in the location of jobs and housing. Research shows that those living in a transit-oriented development are more likely to use public transit. In a 2004 study looking at California's major urban rail systems and the connection between transportation usage and transit-oriented developments, Cervero *et al.* found that "transit-oriented development residents have high rates of transit use for their respective communities and that residents living near transit stations are around five times more likely to commute by transit as the average resident worker in the same city" (Lund, H. M, R. Cervero, and R. Willson, 2004).

Research literature identifies several factors in addition to transit service and location that influence the success of transit-oriented developments: housing affordability, density, parking policies, and the attractiveness of the development as a point of destination (rather than merely

as a connection hub). For example, Cervero *et.al*. (2004) found that housing attributes, cost and/or quality are generally more important than rail accessibility in residential housing decisions, implying that successful transit-oriented developments must not only provide access to transit but must do so in an affordable manner. Additionally, there is no clear consensus in the literature that high densities are critical to successful transit-oriented developments, but often support the high ridership numbers needed to justify fixed guideway investments.

Lowering parking requirements for parcels near high quality transit service also has a positive effect on ridership and most importantly on housing prices. Finally, transit-oriented developments that serve as public and community places of destination attract more use than those designed and intended merely as transfer hubs.

Both the empirical studies that have attempted to discern the components of successful transit-oriented developments and the findings from our interviews suggest that integrating transit and land use planning is critical for the future of mobility in California.

Agency Strategies for Integrating Land Use and Transit Planning

In the online survey of our study, respondents reported that the integration of transit and land use ranked fourth out of the eight long-term visions and objectives. Although this ranked relatively high (top half) among the choices, respondents differed in their strategies for achieving better integration. For example, those from large agencies serving urban areas reported that transit-oriented developments are critically needed in order to increase ridership and improve service in dense areas. Respondents from agencies located in rural areas with larger geographic service areas, however, reported less focus on transit-oriented developments *per se*, but preferred generally concentrating development in town centers and along existing transit lines – particularly as a strategy to provide mobility to transit-dependent populations in an era of fiscal constraint. Regardless of whether respondents supported transit-oriented development, the objective and vision for better integrated transit and land use decisions was clear.

Local and Regional Challenges in Integrated Planning: From Housing to Schools

Reflecting the importance of integrated planning, San Francisco County Transportation Authority's José Luis Moscovich said:

> Probably the single most important thing that can be done is [to] integrate land use decisions. Land use intensity--type, choices--in particular has an overwhelming explanatory power in terms of the transportation outcome. If you build low density sprawl you're going to get everybody driving because you can't serve it with transit. Land use will explain economic sustainability... [the] sprawl pattern is unsustainable. But we don't control it, nor does Caltrans--we can influence it, we can show consequences, but ultimately we have no control over it. Therefore you can't choose economic sustainability over land use integration because they are not separate... [one is consequence of the other].

> In other words if you make the wrong land use decisions, you can throw all the money you want at it and you still won't have a solution, it won't be sustainable. From [land use decisions] flow the [other elements in this list, as well as] investment in transportation. The effect would be felt all the way down the line.

Improving the integration of land use and transit decisions is critical, and in our interviews with other representatives, this was evident as many spoke about transportation's role as a regional connector and reported on the need for regional and local policies — particularly those that affect housing affordability. Many reported that land use authorities are at times reluctant to approve sufficient density and unit types necessary to attract transit riders. Bob Planthold of California Walks also added that in addition to transit near affordable housing (and vice versa), these also needed to be high-quality pedestrian connections.

But coordinating decisions made by different authorities and agencies is difficult for new developments, particularly in the context of current economic conditions and historical planning guidelines. Michael Wiley of Sacramento RT pointed out that the Great Recession had stalled new development and expanded transit service. Even before the Great Recession, the potential of new transit-oriented developments was often limited by the existing built environment and the results of previous policy and planning decisions. Wiley said it was difficult to "shoe-horn" successful transit-oriented developments into areas around new light rail corridors that had previously been used for industry. These converted freight corridors often lacked the water, sewage, and electricity infrastructure necessary to support housing development.

Improving the integration of land use and transit decisions is critical. In our interviews many spoke about transportation's role as a regional connector and reported on the need for regional and local policies to support transit — particularly those that affect housing affordability and the siting of new development and schools.

Another (anonymous) respondent pointed out that in California public transit provides a critical service to schools, yet operators are not often consulted on new school siting and construction. Often, these new campuses are built on the outskirts of operators' service areas or far from existing routes. Serving these schools forces transit agencies to modify routes, which can be costly and inefficient. Marjorie Kirn of Merced Council of Governments, also provided an example of this coordination problem with higher education planning, which resulted in higher costs, an inability to serve new developments, and service redundancy. Because of UC Merced's location, service from Merced County Transit ("The Bus") ends about one mile from campus, leaving a gap in that is now filled by shuttle service. This *post hoc* service provision, though providing a necessary link, is less than ideal, creating a forced transfer for riders to campus and adding costs to an agency already stretched thin. Kirn foresees that the public transit system will be able to better serve the university in 15-20 years as the university develops towards the city; yet better coordinated planning processes may have initially prevented or mitigated this problem.

5.3 Strong Support for Improving Bicycle and Pedestrian Access

Bicycling offers the potential to serve as a first- and last-mile connector to and from transit, and offers many benefits: riders occupy less road space than private autos, emit no harmful pollutants, confer health benefits to the user, and require significantly less storage space (parking) than a car. Bicycles and can extend the geographic reach of transit services, thus enhancing the usefulness of the transit network. Similarly, high quality pedestrian connections provide safe, secure and comfortable access to the transit network. Yet, despite these benefits, transit agencies often have little control over the networks of infrastructure leading to stations and stops.

Today, transit agencies can directly influence bicycle access to transit by providing bicycle parking at stations and allowing passengers to transport their bicycles on train cars or bus-mounted bike racks. Indirectly, transportation agencies can provide funding to municipalities for building bicycle infrastructure (such as bike lanes and other street treatments). Despite the ability to allocate funding, however, transit agencies often lack direct control over the design, engineering, placement, and prioritization of bicycle and pedestrian facilities that connect to stations and stops. Although local governments control rights-of-way, transportation agencies could support coordinated municipal planning through financial and technical assistance in creating bicycle and pedestrian master plans.

Improvements to pedestrian and bicycle access ranked second highest in short-term priorities, with 75 percent of respondents listing this among their top five priorities. Support was consistent regardless of operating environment. Some also stressed the importance of mobility for disabled populations, and the concepts of universal design – that what is good for the disabled is good for everyone.

In our surveys, “improvements in pedestrian and bicycle access” ranked as the second overall short-term priority, with 75 percent of respondents listing this category among their top five priorities. Support for transit and pedestrian improvements was found regardless of operating environments.

Timothy Papandreou of SFMTA supported these non-motorized modes because they would increase transit ridership and therefore bring all the associated benefits such as reduced congestion and emissions.

Papandreou also noted the potential for biking to replace shorter trips that otherwise might have been served by transit, thus helping to also relieve overcrowding on transit vehicles. Granted, not every agency suffers from such a (perhaps attractive) problem.

Another interviewee from an urban area expressed similar support for transit and said his or her agency has successfully provided bicycle racks on buses, conducted public information campaigns, delivered special training to transit vehicle drivers and retrofitted pre-ADA stations.

An official from a largely suburban service area said that his/her agency carries 25,000 bicycles per month and is now running into capacity limits. Whereas bicycles are often thought of as a supplement to transit use, the reverse is also the case in this county. Its bicycle plan identifies buses as strategy to help bicyclists cover longer distances. In coordinating non-motorized strategies with other municipal agencies, this particular operator has an in-house program that works closely with cities and development agencies to create bus stops with turnouts, and private developers fund almost all of bicycle and pedestrian amenities in the area.

Among rural operators, support for bicycling and pedestrian improvements was generally positive. One representative from a rural transit agency said that his or her agency's bus stops are often sticks in the sand with few sidewalks. His or her agency aggressively pursues and depends heavily on grants to support pedestrian improvements, but even with these efforts, final determinations and decisions are ceded to local municipalities.

A couple of interviewees also stressed the importance of providing access to those with limited physical mobility. Bob Planthold, Chair of the Board of Directors of the advocacy group California Walks, believes that transit agencies invest too little in bicycle and pedestrian access overall, and that particular attention should be paid to those with limited physical mobility rather than to able-bodied travelers like bicyclists. Planthold emphasized that building and repairing sidewalks should be a priority. Similarly, a representative with a large urban transit operator echoed Planthold's comments, saying that his/her agency needs to work more closely with cities to improve sidewalks and bicycle facilities in general, but that it was particularly important to balance the needs of the able bodied versus riders with disabilities. His/her agency embraced the concept of universal design – that what is good for the disabled is good for everybody. This agency installed wide fare gates not only to accommodate riders in wheelchairs, but to the benefit of those traveling with bicycles, strollers, and luggage as well. Concerned about conflicts between bicycles and wheelchairs on trains, the agency increased the amount of space available to both by removing seats on specially-designated train cars.

6 Evolution of Transit in Response to Market Conditions

Transit agencies recognize that the next few decades will bring changes in California's demographics and markets that are likely to affect the way we must plan for mobility.

6.1 High Levels of Support for Meeting New Transit Demands

Market-responsive transit services include adjusting existing fixed-route service to meet changing market demands or adding flexible services like ride-sharing, employer-based programs, or independent on-demand services.

Market-responsiveness was ranked third most important as a long-term vision or goal. Respondents saw that evolving with markets and developing innovative ways to cost-effectively deliver transit service were essential to long-term financial sustainability.

Tailoring existing fixed-route service to market demands may require that an agency shift from a coverage-based approach (*i.e.* providing service equally over a wide area), to a performance-based approach (*i.e*. concentrating service where it is most utilized). Agencies can optimize their services by analyzing line ridership on a regular basis, adjusting schedules, routes, and service types as needed. One downside of a performance-based approach, however, is that this type of performance-based operations planning may reduce or eliminate service in low-ridership areas with transit dependent populations.

The importance of meeting ridership demands was clear among our respondents, who ranked market-responsiveness as the third most important of eight long-term visions and goals for agencies. In general, respondents saw that evolving with markets and developing innovative ways to cost-effectively deliver transit service were essential to their agencies' long-term financial sustainability. Interviewees were also interested in learning from successful strategies employed elsewhere.

Market-responsive Strategies Can Increase Transit Use

Kurt Evans commented on the Valley Transportation Authority's transition from a coverage-based system to a more market-driven, performance-based system. Previously, Valley Transportation Authority had sought to "provide transit service to every nook and cranny regardless of whether it was used or not." According to Evans, the Authority then "undertook an analytical process where we identified what are our transit-intensive origins and what are the destinations and [then conducted] market research that you typically find in the private sector," finding that 80 percent of the agency's ridership was only on 19 of the 80 routes operated by the agency. Based on the market study, the agency also adjusted the type of service it offered. Evans added, "For the first time ever we implemented express service. We have never had that before, and we found out that there's a market for it."

Evans also stated that Valley Transportation Authority introduced Wi-Fi in response to changing market conditions. In his view, "(High tech companies) can't have their best and brightest sitting in traffic congestion wasting time. Otherwise they just can't compete on the economic stage... employees have to be productive." Service adjustments (such as the introduction of express service) and new amenities (such as Wi-Fi) can be cost effective strategies to attract more choice riders by offering a higher level of service. Evans reported that after instituting Wi-Fi service in light rail stations,

> We have been receiving comments from people who are saying, 'Look, it takes me longer to ride light rail than it is to drive, but I'm taking light rail because I can use Wi-Fi and make productive use of this time.' Those are improvements on the light rail system that help you build ridership and don't cost a whole lot of money.

The Kings County Area Public Transit Agency has successfully expanded its vanpool program to reach new markets for transit in the Central Valley. Since 2001 the Agency has operated vanpool service, beginning with a single van serving county employees and expanding to almost 400 routes serving 23 counties statewide. The program (now called CalVans) has been able to expand transit service to residents of low population density areas, connecting workers to jobs in ways that fixed-route transit systems could not. The program, funded through a combination of grants (5307, 5311, JARC), sales tax, State Transit Assistance, and operating revenue, has been financially self-sustaining from the day it began service.

Employer-provided shuttles are not a new introduction to California transit service, but in recent years these shuttles have offered a higher level of service. Many shuttles provided by technology companies offer premium services, such as onboard coffee, at-seat working surfaces, and Wi-Fi internet. Employers see these services as essential to attracting top quality talent and keeping these employees productive and out of their cars. New service innovations developed for employer-provided shuttles may prove to be successful strategies for the public transit sector. As mentioned above, the Valley Transportation Authority noticed increases in rider satisfaction after it implemented Wi-Fi.

6.2 Mixed Support for Regulatory and Market-entry Reforms

Privately provided demand-responsive and/or flexible route transit can possibly meet new and emerging transit needs. These services include paratransit, taxis, airport shuttles, and employer-based systems. The most common form of paratransit service today is Americans with Disabilities Act-mandated complementary transit service, but new paratransit models can serve non-ADA populations.

As California's most transit dependent population becomes more suburbanized, transit agencies face a new challenge. While low-income transit dependents have traditionally concentrated in in urban cores for the last few decades, a new trend shows that these populations are increasingly concentrating in suburbs. These low-density areas make the provision of traditional forms of

transit very expensive. Innovations in transit service – such as smaller vehicles operating on-demand service aided by new technology – may help bridge this gap in service and funding.

However, expanding demand-responsive and flexible route transit beyond ADA-mandated complementary paratransit may prove difficult. Agencies must either provide the service directly, collaborate with private companies, or support regulatory and market-entry reforms that allow private companies to operate competing service. One respondent was supportive of such changes, saying, "We embrace the concept of mobility management where, regardless of who the transportation provider is, if you can match a destination and a service provider that goes to areas, especially outside of where we have fair coverage, we would embrace that quite a bit." Rather than viewing non-traditional, demand-responsive service from other providers as competition, this respondent sees the potential for collaboration to grow a better service:

Support for regulatory and market entry reforms was very mixed. Those that supported it saw collaboration with private providers as a way to deliver better service and to serve riders with different travel needs. Others, however, reported that introducing more private providers into the transit mix would create fragmentation of services, inefficiency, and competition for space at transit stops.

> The idea would be to identify all of the service providers and try to set up contracts with them, whether they're private, community-based, social services, veterans for instance … and then match riders with destinations that they go to. We just see that as enhancing our ability to help people get to where they need to go, not as a competing service.

San Joaquin Regional Transit District currently has several partnerships, "helping different organizations in the transit district, kind of pooling the money and providing trips based on trip source and cost, and the best service for the consumer."

While some respondents supported regulatory and market entry reforms, not all did. The measure averaged sixth out of eleven possible measures, but it had the highest standard deviation of any measure, indicating a great deal of dissensus. A few respondents thought that private competition was unnecessary, and fragmentation between services and systems would lead to inefficiencies. Respondents were also concerned about the safety of private transit services and how they would compete for limited space at transit stops.

7 Transit's Support for Local and Regional Policy Goals

The State, regions, and local governments ask that public transit agencies perform a wide range of roles. While our interviews suggest that transit managers view their primary roles as providing mobility to those who cannot or choose not to drive, transit agencies are also asked fulfill other environmental, economic, and social sustainability roles as well. Many of the stakeholders we spoke with viewed these other roles as integral to transit's mission (but not all feel this way).

A few interviewees suggested that strategic transit planning not pursue goals in isolation, but rather recognize their interdependence. One respondent expressed the view that it was impossible to rank more and less important visions and objectives as "all are interdependent and equally important." The respondent added that the State needs to take a holistic approach in strategic planning for transit, one that encompasses the many roles transit plays: not just providing mobility, but also contributing to environmental, economic, social, and institutional sustainability.

7.1 Environmental Sustainability

Most California transit agencies have environmental sustainability goals in their mission or values statements. Environmental sustainability can have different meanings for different agencies, including sustainable operations (e.g. energy efficiency and maintenance supplies), sustainable fleets (e.g. switching to vehicle technologies with less environmental impact), or sustainable transportation systems (that account for an agency's effect on reducing motor vehicle travel) and associated environmental benefits.

Working outside the Agency

Online survey respondents ranked Environmental Sustainability as the sixth most important long-term vision or goal for their agencies. Most saw it as important, but just not as important as other, more direct objectives like mobility for those without. For example, Donna DeMartino of San Joaquin RTD said: "This is what we're here for: we're trying to protect the environment by eliminating vehicles on the road, improve the quality of everyone's life by reducing congestion." There is a perception among those interviewed that environmental goals are inherent in their mission and vision. Nonetheless, a lack of clear cut environmental sustainability implementation measures and constrained financial resources combined to make this a relatively low-rank long-term goal.

Many of those interviewed appeared to view environmental sustainability from an internal fuels and fleets perspective. Several respondents mentioned that their agencies had cleaned their fleets in the past two decades, either by switching to natural gas or clean diesel. Funding and fuel efficiency were seen by many respondents as the two biggest barriers towards achieving environmental sustainability goals. One respondent expressed concern that agencies pushed

to adopt advanced technology vehicles before they are fully tested might be stuck with vehicles that are expensive to maintain and/or have shortened lifespans compared to conventional transit vehicles. Such implementation measures can compete with other goals for scarce financial resources and might require dedicated funding streams to encourage agencies to field-test such vehicles. Others suggested that agencies could learn from these experiences.

State legislation and associated policies to address air quality and greenhouse gas (GHG) emissions, such as AB 32 and SB 375, have caused transit managers to view environmental sustainability from a transportation-systems perspective. Several respondents pointed out that public transit could play a vital role in reducing GHG emissions and helping regions reach air quality goals. Shifting trips from automobiles to transit will be a key regional SB 375 implementation strategy, and newfound support for transit-oriented development and priority for transit vehicles will help support a number of other transit agency goals. Thus, some of those interviewed saw the pursuit of air quality and greenhouse gas goals as complementary rather than competing with other transit agency goals, while others were not so sure.

7.2 Social Sustainability

Social sustainability refers to transit service that enhances accessibility to job opportunities, medical facilities, education, and recreation for all at fares that do not overly burden the poor. Transit operators are often forced to manage trade-offs between social sustainability, environmental sustainability, economic sustainability, and other long-term goals and objectives. Policies focused primarily on any one of these goals may affect an agency's ability to pursue the others.

In a recent review of sustainable finance strategies for public transit, Paget-Seekins (2010) points out "aligning policies to charge the true costs of transportation (to decrease environmental externalities) could be counter to goals of increasing transportation mobility and accessibility for low-income populations."

Working with Local and Regional Governments

Respondents ranked social sustainability second out of eight long-term goals and visions presented in the online survey. One respondent indicated transit needs to be an option for everyone. The respondent further expressed a sentiment reflected by most public transit officials "this is (...) our main job function- that's what transit does and it is critical." Respondents saw social sustainability, specifically enhancing the mobility of those who would be less mobile without transit, as a key component of public transit's mission. Although the central importance of social sustainability was uniformly recognized among the stakeholders surveyed and interviewed, those from agencies with a large elderly constituency and those geared towards serving populations with disabilities emphasized social sustainability as an especially important long-term goal.

The main barriers to achieving social sustainability goals identified by respondents relate to financing of needed and new services and the cost of Americans with Disabilities Act (ADA)

compliance. Due to the higher cost of providing ADA-compliant services, like dial-a-ride, some respondents sought alternatives to meet the disabled population's mobility needs through less costly services. One innovation discussed by a respondent was that agencies could enhance fixed-route service and educate disabled travelers to consider using fixed-route services for more trips. Moving some dial-a-ride users onto the fixed-route service could produce cost savings, which some respondents suggested would help agencies pursue multiple goals under financial constraints.

Changing demographics and serving an increasing elderly population is of concern to many of those interviewed. As one respondent remarked, the aging of the population is increasing the transit-dependent population, which will affect both travel patterns and fare revenues. Serving healthcare facilities has become an increasingly important factor in many areas.

Linda Deavens, with Paratransit, Inc., a Sacramento non-profit organization which provides mobility to individuals with disabilities and to the elderly, asked: "What is transit's responsibility: to focus on GHG reduction? Shouldn't it be more focused on keeping people mobile? Especially for those who don't have options?" Donna DeMartino, CEO, San Joaquin RTD, pointed out that transit gets people to jobs and provides mobility for high school students and the elderly, which are populations with otherwise limited mobility – but transit is also being asked to pursue environmental and economic goals and maintain its own financial sustainability. DeMartino and others suggested that expanding sustainability mandates in the face of declining resources posed enormous challengers for transit.

7.3 Economic Sustainability

Decades of research on the "external" costs of transportation has shown that the prevailing private-vehicle-oriented surface transportation system imposes profound costs on society at large that are not borne by individual drivers. These substantial costs that are "externalized" on to society amount to a large-scale subsidy of driving that makes it a more affordable choice – for the individual – than it otherwise would be.

There are several long-term ways to internalize the externalities of motor vehicle use, including but not limited to: reducing or eliminating subsidies for parking; increasing vehicle registration fees and dedicating revenues to alternative modes such as public transit; imposing congestion charges to reduce congestion delays; and imposing extra fees on vehicles that consume more fuel or produce more emissions. While this is no groundswell movement toward increasing vehicle use fees, some cities are experimenting with more market-based approaches to parking pricing and more congestion-priced highway facilities are in operation and on the drawing board.

However, those interviewed suggested that policy makers must carefully consider the equity of changing the costs of driving. Particular attention should be given to those who lack an effective alternative to driving, and/or are not be able to live or work in more transit-accessible areas. Those individuals are likely to bear the brunt of pricing the cost of driving closer to its actual market rate.

Many of those interviewed discussed that, even within the context of our existing transportation system, transit agencies play a critical role in the economic sustainability of entire communities. As the recent shocks in the price of oil have shown, communities with good public transit – and land uses that support alternatives to the car – were better able to weather those gas price increases. Conversely, residents of auto-dependent communities proved much more vulnerable to high gas prices.

While higher gas prices – or increases in other driving costs – could lead to greater transit ridership. Such an outcome presents a double-edged sword for transit agencies statewide. For some, it could help improve fare-box recovery ratio. But for agencies already running many services at full capacity, more passengers could mean having to identify new outside revenues to buy more vehicles and increase frequency.

In our survey of long-term visions and objectives, economic sustainability ranked seventh out of eight categories. Timothy Papandreou of SFMTA suggested that transportation as a critical issue for the long-term economic health of densely-developed, transit-oriented San Francisco; Papandreou said that the primary barrier for employment growth in San Francisco is transportation access, followed by housing. In his view, a good transportation system – with efficient, reliable transit – is key to economic growth. However, Papandreou said that in his view the State has failed to recognize the central regional economic role played by high-quality public transit in San Francisco and thus has failed to financially support transit at a level commensurate with its value.

8 Conclusions for Caltrans

8.1 Potential for Consensus around Common Themes

In commissioning this study, Caltrans's Division of Mass Transportation seeks to understand which aspects of transit planning and operations show the greatest potential for statewide consensus. Based on our surveys and interviews, we have categorized themes into four levels of support: very high, generally high, mixed, and low. Themes that enjoy higher levels of support are prime candidates for inclusion in a consensus-based Statewide Transit Strategic Plan.

Themes with Very High Support

Study participants showed universal or near-universal support for four themes. Caltrans will likely find a high level of support for elements of the Statewide Transit Strategic Plan.

First and foremost, interviewees universally supported financial sustainability. Interviewees' believe that transit agencies need more certainty and consistency in funding streams in order to deliver transit service more cost-effectively. The lack of fiscal stability in recent years has proven disruptive to travelers and transit employees, and wasteful as service has had to be cut hastily and long-planned projects scrapped. Financial sustainability is thus critical to the pursuit of all other goals and strategies.

Statewide support is highest for:

- *Financial sustainability*
- *High quality trunkline service*
- *Social sustainability*
- *Integration with land use decisions*

Interviewees expressed strong support for high-quality trunk line service that is competitive with automobile travel. While BRT was more popular in urban and suburban areas, those in rural areas also saw the need for high-quality fixed-route service upon which users could depend. Respondents from urban, suburban, and rural areas all supported better integration between land use decisions and transit service, especially transit-oriented developments along transit trunk lines.

Many interviewees saw transit's most important role as providing mobility to those who cannot or choose not to use an automobile. Transit has long been and will continue to be a social safety net, even as markets and demographics change.

Themes with Generally High Support

Survey and interview respondents suggested that transit agencies will likely support elements of the Statewide Transit Strategic Plan that address the following themes provided that the plan adequately addresses the more pressing themes outlined in the previous section.

Statewide support is generally high for:

- *Streamlining and coordinating funding processes*
- *Improved coordination with other agencies and jurisdictions*
- *Improvements to bicycle and pedestrian access*
- *Development of pilot programs*
- *Passenger information systems*
- *Automated fare media*
- *Market-responsiveness*

Many interviewees expressed a strong desire to see streamlined and coordinated funding application and monitoring processes. Those in smaller agencies, especially those that served both rural and urbanized areas, complained about the heavy burdens of existing funding and reporting processes.

Many also supported the development of pilot programs to test new ideas and identify and disseminate best practices throughout the State.

Additionally, many of those interviewed sought to improve their agency's coordination with other agencies and jurisdictions. Improved coordination can pave the way for better integration between transit and land use, including improving bicycle and pedestrian connections to transit. Improving coordination with outside agencies and jurisdictions proved more popular with respondents than addressing internal frictions that affect corporate culture, relationships with labor, or board oversight, which also fall under the umbrella of institutional sustainability. Caltrans will likely find more support for elements of a Statewide Transit Strategic Plan that address external coordination issues than those that may appear to meddle in issues internal to agencies.

Many of California's transit operators are seeking to adopt new and emerging strategies to improve their service, and thus would be likely to support statewide measures to aid these efforts. Interviewees suggested that transit agencies are looking to improve service through new technology and new communication systems to provide passengers with instantaneous and relevant information. The stakeholders interviewed also see a number of opportunities to move to automated fare media, including streamlining interagency transfers, speeding boardings, and introducing new fare structures.

Most transit agencies are also looking to become more responsive to changing market conditions. In some cases, market conditions may warrant the introduction of premium commuter services; in others, changes in customer markets and demographics may lead to new service needs as transit-dependent individuals shift to areas that are not currently well-served served by transit. Transit managers will thus need to identify and respond to these changing conditions, and would likely support State efforts in this regard.

Themes with Mixed Support

Elements of the Statewide Transit Strategic Plan that address themes with mixed support will likely be most successful if targeted at areas where report is stronger.

Perhaps not surprisingly, respondents from urban areas found congestion pricing considerably more attractive than did respondents from rural areas. In more congested urban areas, various forms of road pricing can provide new revenues and high occupancy toll lanes can provide mobility benefits to transit users. Support for improvements to the design and operation of State highways was higher in more congested areas where automobiles and transit vehicles compete for space. In these areas, which are predominately urban and suburban, respondents frequently suggested that Caltrans prioritize the movement of transit vehicles, either in existing lanes or on shoulders.

Statewide support is mixed for:

- *Congestion pricing*
- *Regulatory and market-entry reforms*
- *Higher fees for automobile use*
- *Transit fare reforms*

Some respondents supported regulatory and market-entry reforms that would introduce new privately provided transit service. Others thought that mobility was a public service and should be publicly provided. Reform-oriented efforts to support more privately-operated transit services that allowed regions and agencies to opt in or out would likely enjoy more support than a uniform statewide approach.

Respondents who thought that the cost of automobile use did not reflect autos' impacts on traffic, public health, and the environment supported higher fees for driving. Several respondents expressed the view that the State legislature would not support higher fees for automobile use, but that local and regional officials might support such measures if they could control the new funds that would be generated.

Support for adjustments to transit fares and fare structures was mixed, with many respondents acknowledging the potential for fare changes to drive service improvements, but also expressing concern that new fare structures might be too complicated and that an overall increase in fares would disproportionately affect the poor.

Themes with Low Support

Finally, our survey and interview findings suggest that Caltrans will likely have trouble developing consensus around several themes that earned less support in our interviews.

Statewide support is low for:

- *State Infrastructure Bank*
- *Environmental sustainability as a unifying strategy*

The concept of a State Infrastructure Bank to ease financing of capital improvements is most popular with agencies that have certain future funding streams to repay loans. But most others do not see the need, saying that declining and unreliable operations funding was a far more pressing concern. However, support for such a bank may grow if agencies' financial positions improve in the future.

While respondents understand their agency's contribution to State and regional environmental sustainability goals, they didn't see them as a central motivating factor for the work of agencies. Instead, respondents tended to see environmental sustainability as an ancillary benefit of providing mobility and better integrating transit and land use.

8.2 How Caltrans Can Help California's Transit Agencies

Our statewide transit stakeholder survey and interview results suggest that there are many ways that Caltrans' Division of Mass Transportation can support California's transit agencies through a Statewide Transit Strategic Plan or related efforts.

Interview data suggest no clear answers on specific improvements needed for transit that could be applied to any majority of operators in the State (and in fact, interviews with some local operators provided conflicting information). Perhaps reflecting the differences in local operating environments, local objectives and mandates for transit services, and the often varying mix of stakeholders that are unique to each operator – such variation presents a challenge for Caltrans in designing and implementing a statewide strategic plan for transit. While operational improvements should be left to those who arguably know the local conditions best (i.e. transit operators), the State could support and facilitate transit operations and planning with the following strategies and actions.

First, the Division can work to streamline processes required to apply for funding and meet reporting requirements at the State level. The Division of Mass Transportation can work with other divisions of Caltrans and with other State agencies to align State application and reporting requirements with federal requirements, or develop and deploy tools that agencies can use to prepare and deliver reports to meet a range of requirements. The application and reporting burdens on public transit agencies are substantial, especially for smaller agencies with limited staff. Reducing the bureaucratic burdens on these staff will allow transit managers and planners to devote more time and resources to strategic projects and planning.

Second, Caltrans can play an important role in the identification and dissemination of best practices for transit. Road treatments such as bus-only shoulders, bus-only lanes, and enhancements for bicycles and pedestrians will likely be central elements in many California transit agencies' future plans. Experimentation and evaluation through pilot projects can create new knowledge about successful strategies and potential pitfalls, which can lead to a set of best transit practices for the State. The identification and dissemination of best practices information can greatly enhance the implementation of successful projects across the State. With better information about pilot projects, transit agencies will devote fewer resources to researching new strategies, and governing boards may view thoroughly-studied strategies as less risky. Caltrans can also help by creating model agreements and implementation procedures based on pilot project evaluations. Such documents can help both transit agencies and Caltrans districts and other street management local jurisdictions.

Third, transit operators that regularly interact with other agencies or local jurisdictions could benefit from assistance in developing and maintaining these often complex and multi-faceted relationships. Given its unique role as California's overseer of public transit in the State, Caltrans's Division of Mass Transportation is in a position to create or identify model interagency or inter-jurisdictional agreements and procedures. While a given agency in California may engage in few interagency or jurisdictional agreements, Caltrans's Division of Mass Transportation can compile information on agreements around the State in order to provide examples or identify best practices to interested transit agencies.

Fourth, Caltrans's Division of Mass Transportation can continue to work to educate the public and other stakeholders about the importance of public transit to California. Images of the car-crazy Golden State notwithstanding, transit use in California greatly exceeds national averages, especially in the largest and most congested metropolitan areas. Yet public officials and voters do not always appreciate the critical role that public transit plays in State mobility. For example, the fiscal crisis associated with the Great Recession of 2008-2011 has been extremely difficult for most transit agencies; managers have had to devote a significant portion of their time to coping with funding shortfalls and uncertainty through contingency planning, service adjustments (usually cuts), and searches for additional funds. Further, many transit agencies were forced to stall the implementation of strategic plans and projects as they were forced to contract their operations. Future strategic transit planning efforts, critical to State and regional environmental, economic, and social policy goals, will be most successful if public officials around the State are committed to supporting stable funding for public transit. As one respondent put it, "the importance of transit gets lost in the shuffle of what the legislature is doing." While Caltrans cannot directly lobby on behalf of California's transit agencies, the Department can educate stakeholders about the importance of public transit in achieving other statewide goals. Documents such as the Baselines Report and the Statewide Transit Strategic Plan can serve to remind outside stakeholders about transit's critical role in achieving many statewide goals and objectives.

Finally, while Caltrans will play a role in statewide strategic transit planning, it can also fill a critical gap in local transit planning by offering strategic planning workshops. Caltrans can also support intra- and inter-agency coordination through programs which enhance an agency's ability to plan for and implement change. Most agencies create federally-mandated Short Range Transit Plans, but not all create their own long-range plans. Many agencies may benefit from Caltrans-convened statewide or regional workshops and programs in connecting their Short Range Transit Plans to their long-range visions, goals, and objectives.

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