

San Luis Obispo County Highway 101 Bus Rapid Transit Applications Study

Final Report

June 2013



FEHR & PEERS

with:



For:



San Luis Obispo County Highway 101 Regional Bus Rapid Transit Applications Study

Report Appendices

June 2013



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For:



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Appendices

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APPENDIX A: SUMMARY OF RECENT BRT PLANNING EFFORTS



REGIONAL AND COUNTYWIDE PLANS

This section summarizes the studies as they relate to region-wide efforts. In order to make express transit a competitive form of transportation in San Luis Obispo County, it needs to be convenient, an efficient use of time, and interconnected to the surrounding transportation system. According to the Regional Transit Authority's Short Range Transit Plan (2010), between the years of 2000 and 2025, San Luis Obispo County's population is expected to grow 41 percent, with a majority of development occurring outside a one-quarter mile radius of a transit route. The demand for an express transit system will support this growing population.

While there has been past discussion to pursue legislation to modify the vehicle code to support the use of freeway shoulders by transit buses, concerns from Caltrans remain. These concerns relate to sight distance, merging, potential for rear end collisions and pedestrian safety on highway on/off ramps. As discussed in more detail below, full (separated) BRT is not appropriate for SLO County, mainly due to the demographic characteristics.

Consequently, guidelines are needed for express bus stops to help local and regional services evaluate how to best accommodate express bus services. Elements of BRT systems could be implemented into the existing express bus transit system to improve its operations in the short-term. These improvements include expanding express bus service using some of the "rapid" characteristics of BRT such as limited stops, stops that minimize the need for travel on local streets, and more efficient fare collection systems. For the longer term, another BRT feasibility study should be conducted to determine if changes in demographics are trending to more favorable conditions for BRT.

1. EXPRESS BUS STOP STUDY (1998)

Summary

Express bus service is a type of fixed route transit service designed to provide faster service to a select number of destinations by not serving all areas near the route. This study evaluated the potential for expanding express bus service primarily in northern San Luis Obispo County along the US 101 corridor between San Luis Obispo and San Miguel. Consideration was also given to other planned or existing freeway corridors in the county.



In order to be successful, express bus service should be competitive in convenience, pricing and travel time to carpooling or driving alone. Elements which would encourage commuters to ride express bus service include:

- Convenient and safe local transit, bike, pedestrian and auto connections to/from the express bus service on both ends of the trip.
- No out of direction travel from residence to reach the express bus stop.
- Short distance between park and ride lot/ local transit connection and the express bus stop, particularly for the commute to work.
- Express bus service should have limited travel time on local streets

There are four different express bus routing options:

- Express with remote stops – Bus primarily travels on freeway, stops located on local streets.
- Local to express – The morning trip begins as local service and completes trip in a business district via the freeway. A park and ride lot is typically the last stop prior to the route terminus.
- Freeway express with local system support – The bus route primarily runs on the freeway. Express bus stops are located on on/off ramps or adjacent to the mainline and near a park and ride with connections to local transit.
- Express combination – Combination of all three routing types.

There are three types of express bus stop configurations:

- Remote location – Examples include park and ride lots; low cost but longer travel time
- Ramp/street level – On ramp/off ramp; low to moderate cost; shorter travel time; potential for design issues for pedestrian access, merging etc.
- Mainline/freeway level – On highway shoulder; significant time savings; higher costs and design issues.

Key Findings

An express bus stop screening and selection process was developed to evaluate potential sites in North County. Criteria used in the evaluation included: ridership demand, park and ride lot design and connectivity, accessibility/efficiency for express bus, cost effectiveness, safety/security. Thirteen express bus stop configurations were evaluated in eight different locations in North County:

- Niblick Road and Spring Street
- Las Tablas Road and US 101



- Templeton Community Park
- Vineyard Drive and US 101
- Atascadero City Hall
- Curbaril Road and US 101
- Santa Rosa Road and US 101
- Santa Barbara Road and US 101.

Due to concerns (particularly from Caltrans) about sight distance, merging, potential for rear end collisions and pedestrian safety on highway on/off ramps, it was determined that further engineering evaluation would be required before final site selection could take place. The study recommended developing guidelines for express bus stops, consider/incorporate express bus service in PSR's, RTPs and transit plans, and evaluate ways local and regional services could accommodate express bus service.

2. SLOCOG BRT FEASIBILITY STUDY (2006)

Summary

This study provides a thorough overview of Bus Rapid Transit (BRT) operations and how they relate to other similar transit systems (e.g. traditional buses, light rail). The study discusses the different elements of BRT systems and how they compare to other types of transit systems. These include running ways, stations, vehicles, fare collection, intelligent transportation systems, and service/operating plans. The study also provides a discussion on alternatives to BRT including regular transit, express buses, carpooling, vanpooling, and light rail. The study continues with case studies of successful BRT systems in Eugene, Oregon; Cleveland, Ohio; Seattle, Washington; and Los Angeles, California. These particular cities were chosen to compare how BRT systems function in medium-size and large cities. The study notes that all of these case study cities have more favorable demographic characteristics for BRT than SLO County.

Key Findings

The 2006 BRT Feasibility Study concludes that full (separated) BRT is not appropriate for SLO County in 2006. This is mainly due to the demographic characteristics of SLO County. Compared to the case study locations, SLO County has a lower total population, lower population density, and low usage on existing transit services. It is also noted that the population centers that would be served by the BRT system are "sprawled" with a low proportion of the population that would be within walking distance from any one stop BRT station location. Increasing the number of stops to a BRT corridor can quickly deteriorate the "rapid" characteristic of BRT. This issue could be mitigated by ensuring that the local transit route would



provide for convenient transfers. This study concludes that a full BRT system would not be anticipated to have a high enough level of use to justify costs.

The study recommends that elements of BRT systems could be implemented into the existing express bus transit system to improve its operations in the short-term. These improvements include expanding express bus service using some of the “rapid” characteristics of BRT such as limited stops, stops that minimize the need for travel on local streets, and more efficient fare collection systems. Ridership could also be increased by adding amenities to stops, improving vehicles to provide quicker ingress/egress, and providing for efficient transfers to existing local transit routes.

For the longer term, the study suggests conducting another BRT feasibility study ten years out to determine if changes in demographics are trending to more favorable conditions for BRT. It is also noted that “incorporating express bus stops into future interchange Project Study Reports (PSR’s) or other applicable engineering studies along the Route 101 corridor will provide means for future express service throughout the County, as well as paving the way for future BRT stops.” If US 101 is widened to six lanes, designating the additional lane as a peak commuter period HOV lane could improve express bus and possible future BRT operations.

3. REGIONAL TRANSIT AUTHORITY SHORT RANGE TRANSIT PLAN (2010)

Summary

RTA serves three primary corridors in San Luis Obispo County: North County, South County and North Coast. Route 9 serves the North County Corridor along US 101 between San Luis Obispo and Paso Robles. This corridor has the largest population base. Route 10 serves the South County Corridor along US 101 between San Luis Obispo and Santa Maria in Santa Barbara County. A higher proportion of Route 10 passengers use RTA for commuting purposes to full-time jobs and the route has experienced a stronger increase in ridership. The North Coast corridor is served by Route 12 A and 12 B along Highway 1 as far as San Simeon. The document presents a thorough overview of other recent planning efforts as well as a detailed evaluation of RTAs services. This Short Range Transit Plan presents the most viable service plan for RTA routes along with service options which emphasize regional service and minimize local service. A five year capital and financial plan is also presented.



Key Findings

Between 2000 and 2025, San Luis Obispo County’s population is expected to grow 41 percent. Recent population growth has occurred in the unincorporated areas of the County. The majority of new developments are occurring outside a one-quarter mile radius of a transit route. In comparison to peer counties, San Luis Obispo County has a shorter commute time, higher median household income, lower

#	STOP	CITY
1	Cal Poly Campus Mont Gym	SAN LUIS OBISPO
2	Osos St. @ Palm St.	SAN LUIS OBISPO
3	Nipomo St. @ Higueras St.	SAN LUIS OBISPO
4	Santa Rosa St. @ Railroad Ave.	SAN LUIS OBISPO
5	South St. @ Beebee St.	SAN LUIS OBISPO
6	Los Osos Valley Rd. @ Maguinita Ave.	SAN LUIS OBISPO
7	Los Osos Valley Rd. @ Los Palos Dr.	SAN LUIS OBISPO
8	Ontario Rd. @ Bob Jones Trail (Flag Stop)	AVILA BEACH
9	Shell Beach Rd. @ Encanto Ave.	SHELL BEACH
10	Prime Outlets	PISMO BEACH
11	Dolliver St. @ Hinds	PISMO BEACH
12	Kennema St. @ 9th St.	GROVER BEACH
13	El Camino Real @ Maloyon Rd.	ARROYO GRANDE
14	Arroyo Grande City Mall	ARROYO GRANDE
15	Thompson Ave. @ Nipomo High School	NIPOMO
16	Toth St. @ Canillo St.	NIPOMO
17	Bradley Rd. @ Jones St.	SANTA MARIA
18	Nicholson St. @ Cypress St.	SANTA MARIA
19	Church St. @ Palisade Dr.	SANTA MARIA
20	Town Center Mall Transit Terminal	SANTA MARIA
21	Cypress St. @ Railroad Ave.	SANTA MARIA



unemployment and lower population density. The public participation effort revealed passenger dissatisfaction with RTA on-time performance. Routes 9 and 10 travel along the US 101 corridor and therefore have the greatest relevance to this study.

Route 9 – On weekday afternoons, two express trips travel between the SLO Government Center and the Paso Robles train station for a total trip time of 53 minutes (bypass Santa Margarita) as opposed to the regular trip time of 1 hour and 7 minutes. Two semi-express trips (eliminate stop at Cal Poly

campus) operate in the northbound direction. Three express trips occur in the mornings in the south bound direction. Route 9 operates with less frequency and during a shorter daily span of service on weekends.

Route 9 Recommended Service Plan - Limit Cal Poly stops to one. Maintain service along El Camino Real, however, consider reducing number of stops. The regional option is to change all regular runs into express runs with limited local service.

Route 10 – Route 10 runs between the SLO Government Center and the Santa Maria Transit Center. The route travels south on US 101 from San Luis Obispo to the SCAT transfer center at the Pismo Beach Prime Outlets. The route makes two stops in Arroyo Grande before getting back on US 101 to Santa Maria. Two express trips have limited service in San Luis Obispo, Pismo Beach and Santa Maria. Route 10 operates with less frequency and during a shorter daily span of service on weekends.

Route 10 Recommended Service Plan – The only significant change to this route is the elimination of the stop at the Santa Maria Transit Center. The regional option would also eliminate stops at the SLO Amtrak Station and SLO Greyhound Station as these stops are served by SLO Transit.

¹ Route 12 A and 12 B have since been replaced by Routes 11, 12, 13, 14, and 15 in August 2011.



4. SOUTH COUNTY TRANSIT PLAN - BRT ASSESSMENT (2011)

Summary

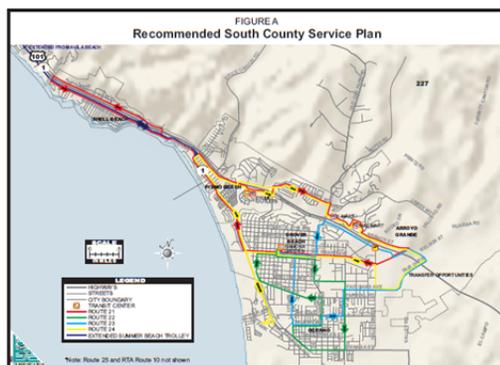
The South County Short Range Transit Plan is a five year transit plan for the South County Area Transit (SCAT) program, which serves the southern portion of San Luis Obispo County, focusing on the Five Cities area (Arroyo Grande, Grover Beach, Oceano, Pismo Beach, and Shell Beach), as well as Avila Beach. The plan begins with a review of demographics and commute patterns and an analysis of SCAT services. One chapter explores BRT concepts and compares South County to other areas with successful BRT systems. The primary focus of the plan is to make specific recommendations about SCAT services, institutional structure and marketing strategies for the next five years.

The report provides potential conceptual BRT improvements for the following locations:

- Spyglass Drive
- Prime Outlets/ 4th Street
- Halcyon Park-and-Ride
- Los Berros Road/ Thompson Road
- Willow Road
- West Tefft Street

Key Findings

Much of the South County area economy is based on tourism. Although the South County population is fairly transit dependent, the largest transit dependent groups are youth and elderly. Census data demonstrates that only 0.2 percent of South County residents commute on public transit. Roughly 70 percent of residents have a commute time of less than 25 minutes. These factors make BRT a less attractive option for South County residents. However, as part of the public outreach process, a group of employees of Avila Beach businesses requested commuter service to Avilla Beach from the Five Cities areas.



employees of Avila Beach businesses requested commuter service to Avilla Beach from the Five Cities areas.

Chapter 11 of the document provides an overview of successful BRT systems in Los Angeles, Alameda County, Santa Clara, San Francisco and Sacramento as well as a description of BRT elements such as traffic signal priority and "jump-queue lanes". In comparing these BRT service areas with South County communities, it was found that



the number of employees per acre and dwelling units per acre and presence of traffic congestion on adjacent roadways in South County communities was below recommended thresholds for BRT service. However, the existing configuration of US 101 on/off ramps and local streets results in longer travel time and distance for RTA Route 10 to pick up passengers in South County. Locating RTA Route 10 bus stops on US 101 on-ramps with nearby connections provided by SCAT would solve this issue, particularly at the Spyglass Road interchange and the area around the Pismo Factory Outlets center. Golden Gate Transit in Marin County has been successful with freeway on/off ramp bus stops. In Washington State, the SR 520 corridor contains short bus only lanes adjacent to the freeway. Both systems connect to park and ride lots. In contrast to findings from the 1998 Express Bus Stop study, Caltrans has implemented new policies to support the implementation of BRT on the state highway.

The study concluded that although South County would benefit from improved connections between SCAT local routes and RTA regional services on US 101 in the form of on-freeway bus stops, the cost of large-scale modifications to US 101 interchanges to accommodate BRT and freeway bus stops outweighs the benefits. However, relocation of bus stops and limited improvements to existing ramps, acceleration / deceleration and intersections may be warranted. Any future US 101 interchange projects should incorporate BRT type strategies that may speed RTA Route 10 operations.

5. SAN LUIS OBISPO COORDINATED TRANSIT CENTER STUDY (2011/12)

Summary

This Technical Memorandum reviews conceptual design alternatives for a new downtown transit center in San Luis Obispo. The purpose of the transit center is to provide a transfer location for San Luis Obispo Transit (SLO Transit), San Luis Obispo Regional Transit Authority (RTA) and other services. Needs analysis in other technical memorandums indicated that the transit center building should be 5,200 square feet, include space for passenger amenities and 14 bus bays in the short term and 16 in the long term. Two locations have been identified as potential sites: an upgrade of the existing site on Osos Street between Monterey Street and Mill Street, or a new location on Higuera Street between Santa Rosa and Toro Streets. Multiple site concepts were developed and outlined in Technical Memorandum 5, designed to accommodate up to 16 buses at a time.



Key Findings

Differences between the Higuera Street concept alternatives are:



- Lane configurations on Higuera Street. Some options would maintain the current one-way southwest-bound operation of Higuera Street, while others would convert it to two-way operation.
- Street parking configuration
- Whether or not the required 16 bus bays can be accommodated
- Bus ingress/egress
- The maximum distance staff and transit users must walk to make a transfer
- Lots need to be acquired and demolition required for project
- Possible square footage of transit center and passenger amenities (shelter etc.)
- Proposed nearby traffic calming and pedestrian facilities for safety

Differences in the Osos Street concept alternatives include:

- The exact location of the new transit center
- On-street parking configuration
- How many existing bus bays will remain
- Possible square footage of transit center and passenger amenities (shelter etc.)
- The total number of bus bays accommodated
- The maximum distance staff and transit users must walk to make a transfer
- Whether bus bays are provided along Mill Street

The key difference between these options with regards to the current US 101 BRT study is the differences in potential ingress and egress routes for the various bus routes. For instance, some of the Higuera options would require all buses to enter via Toro Street, while others would also allow buses to enter from Santa Rosa Street.

6. NORTH COUNTY TRANSIT PLAN (2012)

Summary

The North County Transit Plan, led by SLOCOG as well as the City of Atascadero, City of Paso Robles, and the San Luis Obispo RTA, provides a comprehensive evaluation of public transportation services for the years FY 2012/13 to FY 2018/19.



North County is serviced by three transit providers: RTA operates Route 9 and Atascadero and Paso Robles provide local services. They serve local, regional, and interregional trips with a range of transit users, including commuters, transit dependent individuals, college students, and tourists. The plan provides recommendations for these three agencies to work together to collaborate, evaluate existing service, and consolidate. The three service plans developed from the outreach process include:

- 1) Minor Shift to Express Service- Add peak period express service on Route 9 but reduce midday service. Add services to Templeton and Twin Cities Hospital.
- 2) Major shift to Express Service- Dramatically shift resource on Route 9 to express services and limit regional connections. Add services to Templeton and Twin Cities Hospital.
- 3) Consolidated Fixed Route Services under RTA- A single transit operator in North County and consolidate services so RTA Route 9 can provide a single-seat ride to most North County destinations.

The focus groups and Committee identified Alternative 3 as the favorable alternative with one important modification. This version, named “3B”, consolidates the Paso Robles Dial-a-Ride (to be operated by Runabout).

Key Findings

The three major alternatives evaluated (briefly identified above) include:

Alternative 1- Partial Service Delineation

This alternative shifts regional resources towards faster and more direct services on Highway 101 by primarily altering Route 9. This includes doubling express service on Route 9 compared to existing conditions, focusing on two timed transfer locations, less frequent midday service, service to downtown Templeton and Twin Cities Hospital, and more park-and-ride facilities. Alternative 1 is not anticipated to result in an increase in revenue service hours over existing levels. The fixed route ridership for this alternative is 383,000 or 3.8% higher than existing.

Alternative 2- Focus on Express Service

Alternative 2 further directs Highway 101 corridor resources to express service by shortening the regional route to operate only between Santa Margarita and San Miguel. In addition to implementing all of the elements within Alternative 1, Alternative 2 has additional express service, reduces regional service, and has additional timed transfers. This does not assume an increase in revenue service hours. The fixed route ridership is estimated to be 391,000 or 6% higher than existing.



Alternative 3- Consolidated Fixed Route North County Service

Through operating all fixed route transit services in North County through RTA, with the exception of the two Dial-a-Ride services in Paso Robles and Atascadero, the operational efficiency increases through eliminating duplicate services. The El Camino Shuttle and Paso Express Route C would be replaced. Some of the key service features include the North County regional route, serving as Route 9, but modified to include service to Templeton, Pasada Lane and Twin Cities Hospital, and Cuesta College. Alternative 3 also includes timed transfers and park-and-ride facilities. Similar to the other 2 alternatives, there is no increase in revenue service hours. The fixed route ridership for Alternative 3 is estimated to be 387,000, or approximately 5% higher than existing fixed route ridership.

All of these alternatives do not include additional express service in North County. With the cost savings from consolidating fixed route services in North County, resources can be reinvested in additional services. This could include expanded service hours, providing service on Highway 41 between Atascadero to Morro Bay, and connecting Highway 46 between Paso Robles and Shandon. The preferred alternative includes revising Alternative 3, the most favorable option, to consolidate Paso Robles Dial-a-Ride service to operate by Runabout.

North County Population and Ridership Base

Atascadero and Paso Robles are projected to absorb 75% of North County growth in the next decade. Growth is expected to occur at a higher rate within the North County compared to the County as a whole. Atascadero State Hospital, Paso Robles Public Schools, and Atascadero Unified School District are the three largest employers in the North County.

Surveys were conducted as part of the North County Transit Plan to better assess the needs for the transit riders. A Ridecheck analysis from May 2011 was done for Paso Express Route A and B, North County Shuttle, and RTA Route 9. The results provide details on the boarding and alighting, load summary, and time of day data. Furthermore, the on-board passenger surveys were administered on the North County Shuttle, Paso Express Routes A and B, and RTA Route 9 in May 2011. Most respondents were between 25-59 years of age and had a household income below \$10,000. While the North County Shuttle and Paso Express riders are mostly students, RTA Route 9 notes they were mostly full time employed individuals. Most of the survey North County Shuttle respondents reported traveling to and from home, school, and work. Respondents also rated the amenities very high for the North County Shuttle and Paso Express. The Paso Express had an overwhelming majority of respondents having left their home; the other origins include work, school, shopping, medical/dental. Similarly, Route 9 trip purpose data shows that most of trip origins noted having left their place of residents. The Route 9 respondents noted that the majority of



their destinations were to work or home. Paso Express and Route 9 respondents ranked more frequent bus service as their highest for desired services. Paso Express ranked Sunday service second for desired services where Route 9 respondents ranked more express bus services as a close second to more frequent bus service.

Organization, Financing, and Implementation

In assessing the organizational structure of the agencies, four alternatives were developed:

- 1) Status quo with more formalized Coordination- Three separate transit providers with more specialized coordination and marketing
- 2) Administrative Consolidations- Consolidate to streamline administrative functions and RTA serves as lead agency
- 3) Partial Consolidation- Consolidate all fixed route services plus the Paso Robles Dial-a-Ride with RTA; all routes would be part of one transit system and local and regional service could be better integrated. This option was the preferred alternative.
- 4) Full Consolidation- Local and regional services would operate under a single agency, inclusive of fixed route and Dial-a-Ride services.

Priorities for improving services consist of maintaining local preference for service delivery, improving needs of El Camino Real riders, enhancing express service, improving tourist market accommodations and customer service. The details of the stakeholder interviews provide insight into the strengths and weaknesses of the existing services. In order to improve efficiency and cost effectiveness, the plan provides options for organizational and administrative structures.

The report's financial plan section compares the cost savings associated with the preferred alternative and funding sources used to pay for operating and capital costs. The four primary sources for funding are the 1) FTA Section 5307 funds and Small Transit Intensive Cities, 2) State Transportation Development Act and State Transit Assistance, 3) Fare revenues, and 4) Cuesta College. The plan also identifies potential funding sources that can supplement transit service.

Finally, the report includes an implementation plan to summarize next steps within administrative, service operations, marketing, financial planning, and monitoring efforts. A formal Technical Committee will first need to be organized in order to help RTA assume the role of day-to-day operations. Significant internal restructuring and outreach will need to occur before the existing services are consolidated. Marketing will be critical to inform existing riders about the upcoming changes. Another critical next step will be to carefully assess the vehicles that will be needed for the deployment of new services.



CALTRANS POLICY

This section summarizes the major state-wide efforts relating to BRT policy and implementation. Caltrans recognizes and supports BRT as a solution to increase capacity and reduce traveler delay. However, policies would need to be developed and revised to allow such facilities on US 101. Furthermore, procedures and standards would need to be put in place to guide development of such facilities. Caltrans does not currently see these facilities as feasible alternatives on US 101 in San Luis Obispo County but supports further evaluation of planning and reviewing alternatives.

1. CALTRANS POLICY ON BRT IMPLEMENTATION SUPPORT ON CALIFORNIA'S HIGHWAY SYSTEM (2007)

Summary

This is a policy document that is consistent with existing directives to reach context-sensitive solutions through a collaborative, interdisciplinary approach involving all stakeholders in the development of transportation infrastructure.

Key Findings

Caltrans recognizes and supports the concept and implementation of Bus Rapid Transit as a potentially cost-effective strategy to maximize people throughput, reduce traveler delay, increase capacity, and foster energy savings on the California State Highway System (SHS), as well as other roadway systems. The intent of DP 27 is to clearly establish a corporate expectation for conducting business between Caltrans and local BRT agencies. DP 27 summarizes the various roles internal to Caltrans that should foster the integration of BRT on SHS.

2. DEPUTY DIRECTIVE 98: INTEGRATING BUS RAPID TRANSIT INTO STATE FACILITIES (2008)

Summary

This is a policy document that outlines Caltrans' supports for the integration of Bus Rapid Transit (BRT) projects and operations on the California State Highway System (SHS) where most effective, through partnerships with BRT stakeholders.



Key Findings

The document lays out responsibilities for relevant Deputy Directors, District Directors, and Division Chiefs, Deputy District Directors, and all employees for the integration of BRT systems into SHS as appropriate. These responsibilities range from developing/maintaining/revising policies, procedures, standards, guidance, and manual related to planning, reviewing, and integrating BRT with other modes on the SHS to internal Caltrans coordination responsibilities

3. DECISION DOCUMENT: AUTHORITY FOR USE OF FREEWAY SHOULDERS BY TRANSIT BUSES (2008)

Summary

Use of shoulders for anything other than emergency vehicles is currently prohibited in California. Without legislation, any project will need to be a pilot project. This memorandum illustrates the support to pursue legislation to modify vehicle code to support the use of freeway shoulders by transit buses to facilitate bus movement by bypassing congested areas. Bus use of shoulders to bypass congestion has been in operation for more than ten years in other parts of the U.S. The decision document outlines the criteria to address safety, operations, and maintenance of these facilities.

Key Findings

The fiscal impact of these facilities includes increased maintenance such as drainage facilities or repaving and increased need for enforcement. Impacts to policies include the need to revise the Highway Design Manual. There are several risks involved with such legislation, including increased potential for tort liability, emergency vehicle conflicts, and increasing collisions due to speed differentials. Their recommended action is to allow transit buses to use freeway shoulders when they are 12 feet wide, have improved shoulders for increased loading, adjusted drainage facilities, adjust cross slope, and establish freeway service patrols.

4. STATEWIDE BRT PROJECT INVENTORY (2009)

Summary

This is a spreadsheet that summarizes statewide BRT projects. Information presented (as available) include:

- District,
- County,



- Project Name,
- Status (Planned, Operational, or Future) and Year
- Capitol Cost
- Project Agency
- Route Miles
- Bus Features (Mixed Flow, Low Floors, Signal Priority, Enhanced Doors, Smart Card Reader, On/Off Board Collection, Pre/On-Board, cash & Passes
- Description
- Contact
- County
- Route,
- Begin Post Mile
- End Post Mile

The spreadsheet includes 37 projects, including mention of a potential future project in San Luis Obispo County, but with no other project information available.

Key Findings

This document will be relevant to compare BRT systems on State Highways that have similar characteristics as the one proposed on US 101. Many of the existing BRT systems on State Highways operate on State Routes/major arterials, such as El Camino Real (SR 82).

5. SOUTH COUNTY BRT ASSESSMENT CORRESPONDENCE WITH CALTRANS DISTRICT 5 (2011)

Summary

This letter represents the Caltrans response to the SLOCOG “South County BRT Assessment”, which is summarized in the next section on Regional and Countywide Plans. Caltrans supports the goal of providing efficient, direct and dependable transit service on US 101. Transit efficiency on the local road system is a primary concern, suggesting that BRT efficiencies on the local road system be emphasized over US 101 interchange improvement (i.e. transit signal priority at local intersections). Secondly, building a complete interconnected network will be challenging for US 101, thus reducing the opportunity to get consistent and predictable travel times.



Key Findings

The current transit operations do not justify major change to US 101 interchanges. The letter recommends future efforts evaluate potential investments in transit and park and ride facilities.

The letter also includes an attachment providing detailed Caltrans comments. They recommend the need to assess maintenance of the system. Their specific design recommendations include:

- Locating bus shelter 30 feet from edge of traveled way
- Use of 100 foot long acceleration lanes
- Keeping sidewalks away from highway ramps.

Furthermore, Caltrans does not currently envision any new park and ride facilities on state property due to maintenance and liability concerns.

6. BUS ON SHOULDER CONCEPT STUDY CORRESPONDENCE WITH CALTRANS DISTRICT 5 (2008)

Summary

This letter represents Caltrans' response to the "Bus on Shoulder Concept Study", summarized in the next section. They recognize BOS one of several strategies to maximize traveler throughput, reduce traveler delays, and increase capacity. Incorporating BRT strategies on the local roadway system, such as traffic signal priority lanes, can also improve transit efficiency.

Key Findings

A full comprehensive BRT study should be conducted to evaluate all alternatives since a 10 foot shoulder is the minimum to accommodate BOS and 12 feet around structures. The State Highway Operation Protection Program (SHOPP) funds are constrained and BOS may not be an appropriate use of funds as it essentially helps to complete a discontinuous system over an uncertain timeframe.

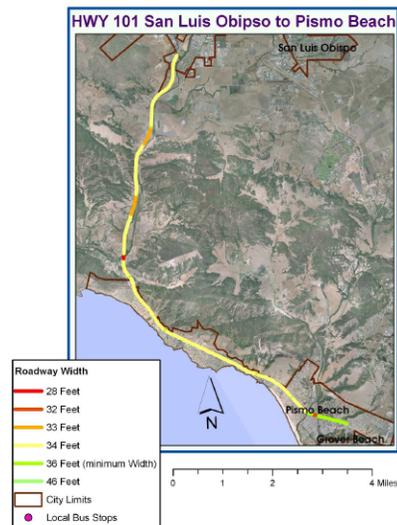
EVALUATION AND IMPLEMENTATION

This section provides a summary of specific information on the evaluation, design, and feasibility for implementing BOS, bus stops on freeway ramps or other BRT-related improvements. The "Bus on Shoulder Concept Study" (2008) provides a specific evaluation to the southern section of San Luis Obispo County, summarizing the operational characteristics and facility constraints within the corridor.



1. 2008 BUS ON SHOULDER CONCEPT STUDY (SOUTH COUNTY)

Summary



This study looks at the applicability of integrating Bus Only Shoulders (BOS) on segments of US 101 in southern San Luis Obispo County through evaluating case studies in Miami-Dade Florida, Minneapolis-Twin Cities, Minnesota, and San Diego, California. The Caltrans response to this analysis was summarized above in the “Caltrans” section. These systems range in size of 5 to 230 miles. BOS can increase bus efficiency and ridership in areas like San Luis Obispo which do not have a large enough population or employment bases to support a fully integrated BRT system. BRT is most successful when the population exceeds 750,000 and employment in CBD between 50,000- 75,000. The current population of San Luis Obispo County is at 263, 824. The benefit of BOS rather than light rail is that it can be

added incrementally to reduce large capital costs. This study evaluates time savings, a strong performance measure, in addition to the appropriate infrastructure/ policy environment for implementing BOS.

Key Findings

The criteria applied to the study segment was broken into 1) policy (ie TDM techniques, support for regional bus integration), 2) infrastructure (ie identify areas to widen 10-12 ft shoulders), and 3) implementation (higher peak hour volumes, LOS, and congestion than other segments). Some recommendations for SLOCOG include adding a transit shoulder lane option to their RTP and supporting legislation. Furthermore, the evaluation of automatic vehicle locators (AVL) on buses could help track performance and determine areas for time savings. There are currently no nationally recognized or consistent criteria to determine the locations and applications of BOS. California Vehicle Code does not permit the use of highway shoulders for traversable lanes, but the 2006 Decision Document recommends supporting legislation to allow this.

The study segment evaluated in the report connects the City of San Luis Obispo with the Five Cities area, totaling 65,000 in population. The segment in particular has higher congestion and a bus that operates as “express” along this corridor. The report demonstrates that the overall width of the southbound roadway of this segment does not meet the minimum requirement of 36 feet. The factors evaluated in the study include inside/outside shoulder, depth, grade, drainage, and frequency of entry/exit ramps. The study inventories each of these factors, in addition to annual and peak month ADT and peak hour volume.



The study evaluated the operating procedures for BOS, including a summary of features to be assumed in the system. A total of 10 features were identified, some of which include a transit-only lane to be used when mainline speeds are below 35 mph, not exceeding speed differential of 15 mph, and identifying hours of operation. The segment should have low LOS, high daily and peak hour vehicle traffic to justify transit enhancements.

2. STANDARDS/GUIDELINES FOR MARIN COUNTY BUS STOPS US 101



Our team reached out to both Marin Transit and Golden Gate Transit regarding standards for Marin County bus stops on US 101 and found that they do not have guidelines in place for the use of bus stops (or bus “pads”). When the bus stops were originally constructed, they were intended for use by Greyhound Commuter Services to make freeway bus services to San Francisco more efficient. They have stayed in place mostly due to BART not extending to Marin.



As part of the “South Novato Transit Hub Study”, improvements are being evaluated for the Rowand Boulevard/ Highway 101 and Ignacio/ Bel Marin/ Highway 101 interchanges in Marin County. The Rowand Boulevard improvements include relocating the westbound local bus stop near the southbound bus pad to create a better transfer connections and improve pedestrian safety for the northbound bus pad. The enhancements at the Ignacio/ Bel Marin location include relocating local bus stops near the southbound bus pad and restriping and widening the intersection with Enfrente Road. At the northbound bus pad, improvements include relocating local bus stops to improve transfer opportunities and provide pedestrian enhancements, including new sidewalk, raised median and raised Pedestrian Island. The Ignacio/Bel Marin enhancements recommend the consideration of bus activated signal phasing and queue jumps phases.



The majority of these existing facilities include a small bus shelter and seating, such as illustrated in the photos. The bus pads are generally between one to three miles apart. The bus pads are designed for efficient boarding and alighting. The area to support the bus shelters is small, generally consisting of an island between the highway off/on ramps and a local street. Furthermore, the facilities typically include enhanced pedestrian crosswalks, such as zebra striping, and a surface level park-and-ride lot nearby.

The types of off-ramps that service the Marin County bus pads range in design, including clover leafs (partial and full), and diamonds. The cloverleafs are frequently more inaccessible for pedestrians due to their expansive design and placement of the bus pads. Despite the design of the off-ramp, all of the bus pads include short deceleration ramps off the main highway and short acceleration ramps for time efficiency.

3. PREFERENTIAL BUS TREATMENT IN SAN LUIS OBISPO (2011/12)

Summary

Cal Poly seniors and graduate students analyzed specific corridors throughout the city for their public transportation course's final project (CE 424 Fall 2011). During peak PM hours, students measured bus delays and other problems associated with bus movements, and proposed various solutions to improve bus efficiency and safety. Improvements ranged from transit signal priority (TSP) for buses, queues jumps, bus-stop relocations, bus bays, bus only lanes, all-door boarding, and off-bus fare collection. In addition to transit concerns, the students also addressed improvements for pedestrians and bicyclists.

Key Findings

The proposed bus treatments are cost-effective solutions that greatly reduce bus delays, improve bus travel times, and increase overall efficiency. The students of the public transportation class analyzed transit issues and proposed short and long-term solutions for the following intersections:

- Santa Rosa Street and Foothill Boulevard
- California Boulevard and Foothill Boulevard
- Santa Rosa Street and Mill Street
- Santa Rosa Street and Palm Street
- Santa Rosa Street and Monterey Street
- Santa Rosa Street and Higuera Street
- Santa Rosa Street and Marsh Street



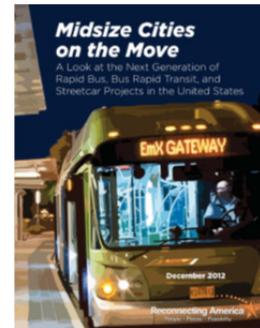
- Higuera Street and Madonna Road
- Higuera Street and South Street
- Higuera Street and South Street/Santa Barbara Street
- Los Osos Valley Road and Madonna Road
- Broad Street and Tank Farm Road



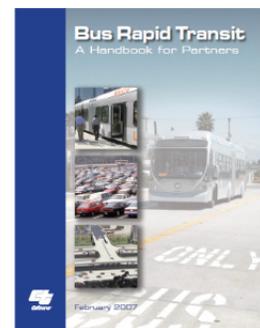
ADDITIONAL BRT RESOURCES

Several additional documents provide useful context and information relating to BRT design and implementation. They include:

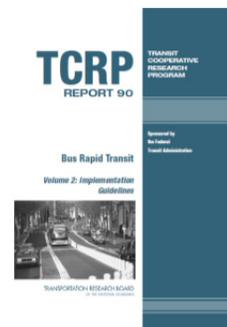
- **Midsize Cities on the Move: A Look at the Next Generation of Rapid Bus, Bus Rapid Transit and Streetcar Projects in the United States**, Reconnecting America, 2012



- **Bus Rapid Transit: A Handbook for Partners**, Caltrans, 2007



- **Transit Cooperative Research Program, Report 90: Bus Rapid Transit, Volumes 1 and 2**, Transportation Research Board, 2003



- **Transit Cooperative Research Program, Report 118: BRT Practitioner's Guide**, Transportation Research Board, 2007



APPENDIX B: SUPPLEMENTAL DATA



This Appendix covers various data sets, their sources, and brief analyses of that data. The topics include:

- 1) Demographic Trends
- 2) Existing Bus Operations
- 3) RTA Bus Fleet Characteristics
- 4) Park and Ride Lots
- 5) Caltrans US 101 Engineering and Planning Studies

SAN LUIS OBISPO COUNTY DEMOGRAPHIC TRENDS

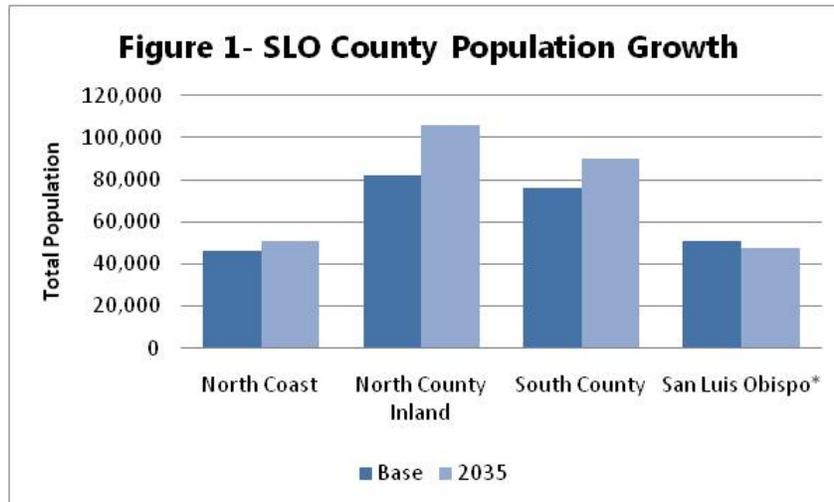
The land use data contained within SLOCOG’s Travel Demand Model summarizes existing and projected future demographic characteristics within the County. This data is valuable to better understand factors that influence travel behavior. The demographic characteristics summarized below include population and employment trends for the model’s Baseline 2010 to projected Future Year 2035. For the purposes of this analysis, the traffic analysis zones (TAZ), which summarize the population and employment data, were aggregated into north, central, and South County based on the jurisdictions identified within the North and South County Transit Plans.

Figure 1 presents the SLOCOG model estimates and shows the majority of population growth to occur in the North County¹ (nearly 30 percent from 2010 to 2035). The South County population is projected to grow 18 percent to nearly 90,000 residents, while the North Coast population is projected to grow by nearly 10 percent from 2010 to 2035. Figure 2 presents the majority of the employment growth to occur in San Luis Obispo, which is projected to grow by 34 percent. Furthermore, Figures 1A and 2A present the population and employment growth per TAZ between 2010 and 2035.

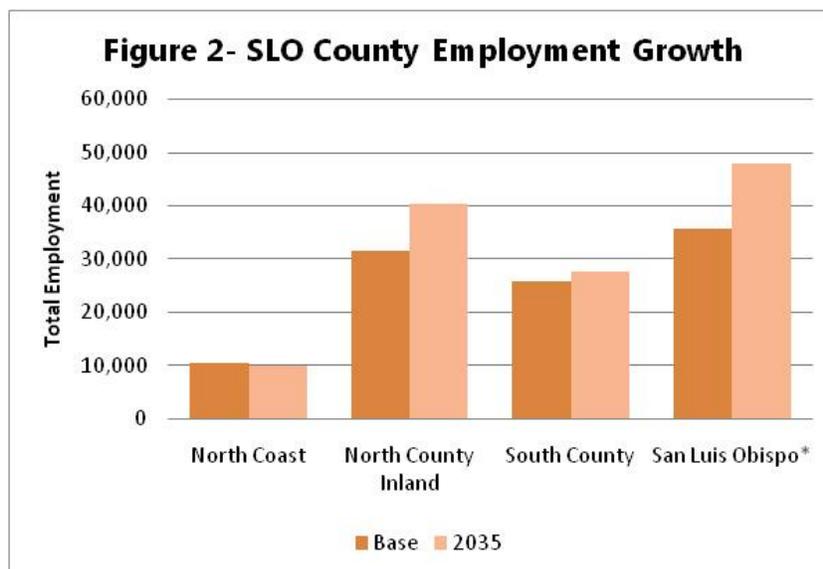
The population and employment trends are a driving force to future travel demand within San Luis Obispo County. The areas with higher population and jobs within the County are more likely to have a higher demand for public transit services. In particular, BRT service operates the most effectively in areas serving a higher jobs and population density because they serve a higher ridership base.

¹ North coast includes communities of: Cambria, Cayucos, Los Osos, Morro Bay. North County inland communities include: Atascadero, Heritage Ranch, Paso Robles, San Miguel, Santa Margarita, Shandon, Templeton, County jurisdiction. South County includes: Arroyo Grande, Grover Beach, Nipomo, Oceano, Pismo Beach, and County jurisdiction.



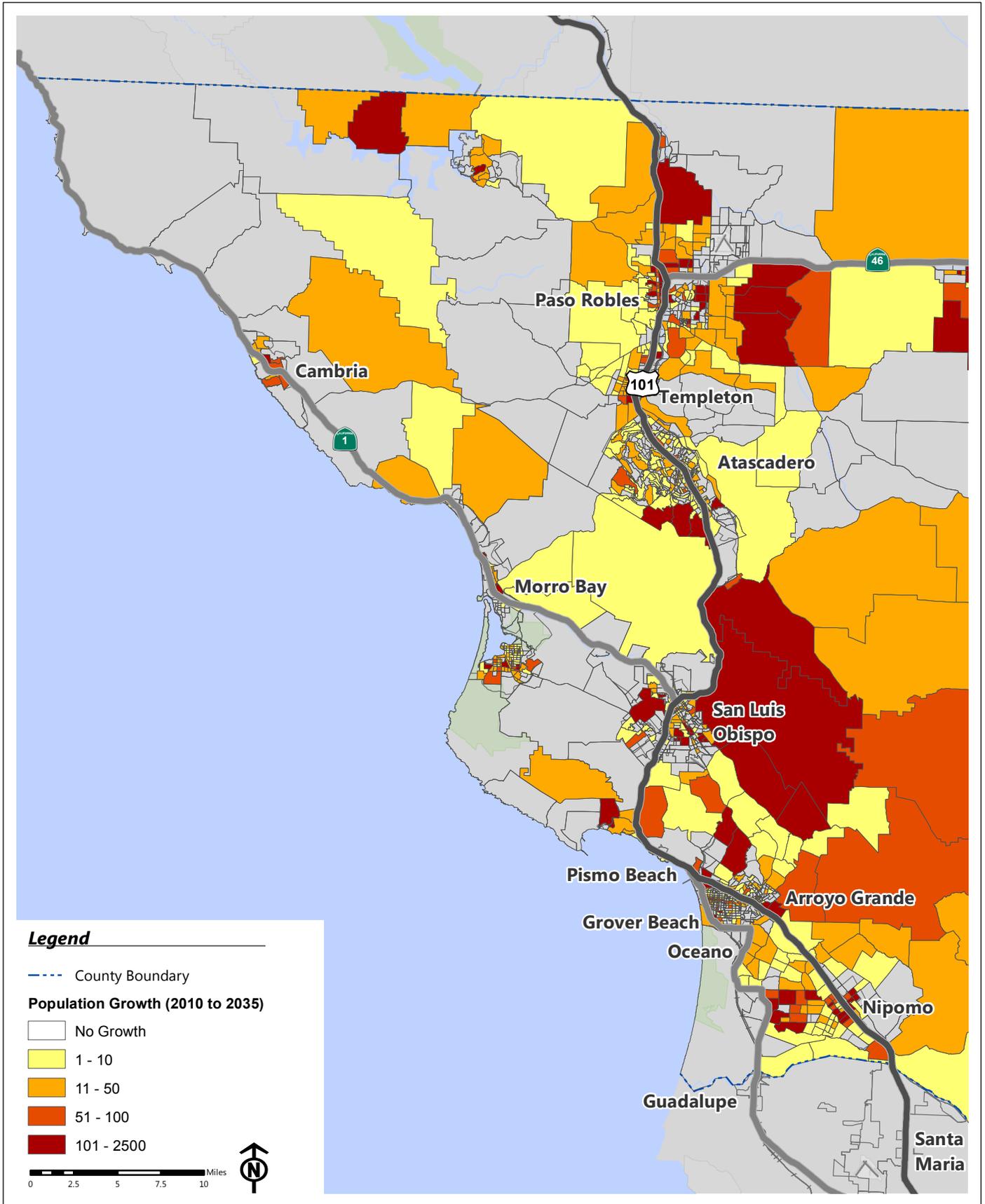


**Note- Population and employment data extracted from SLOCOG travel demand model, which is in the process of being updated in 2013. Growth in the County subareas subject to change.*

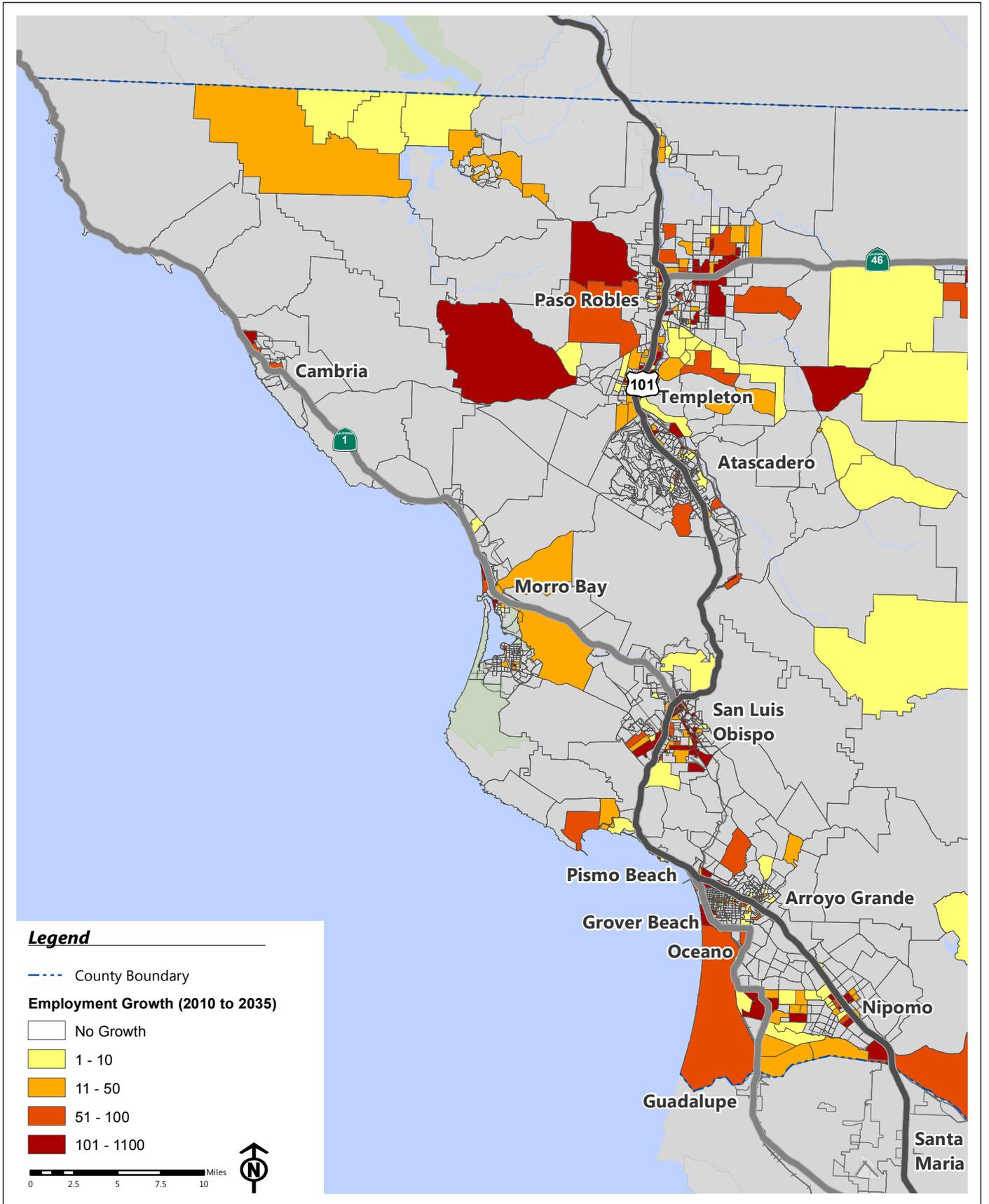


**Note- Population and employment data extracted from SLOCOG travel demand model, which is in the process of being updated in 2013. Growth in the County subareas subject to change.*





**San Luis Obispo County
Population Growth (2010 - 2035)**



San Luis Obispo County

EXISTING BUS OPERATIONS

The following section summarizes the 1) ridership, 2) boarding and alighting, and 3) travel time data for RTA Routes 9 and 10.

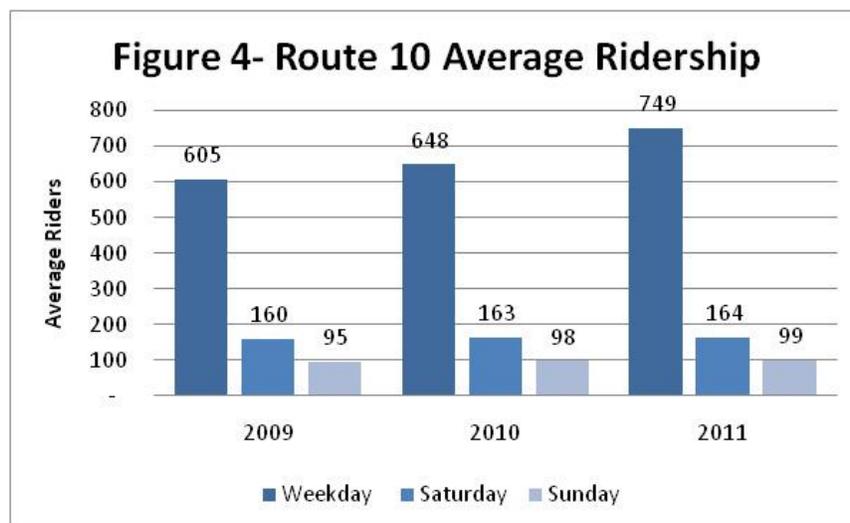
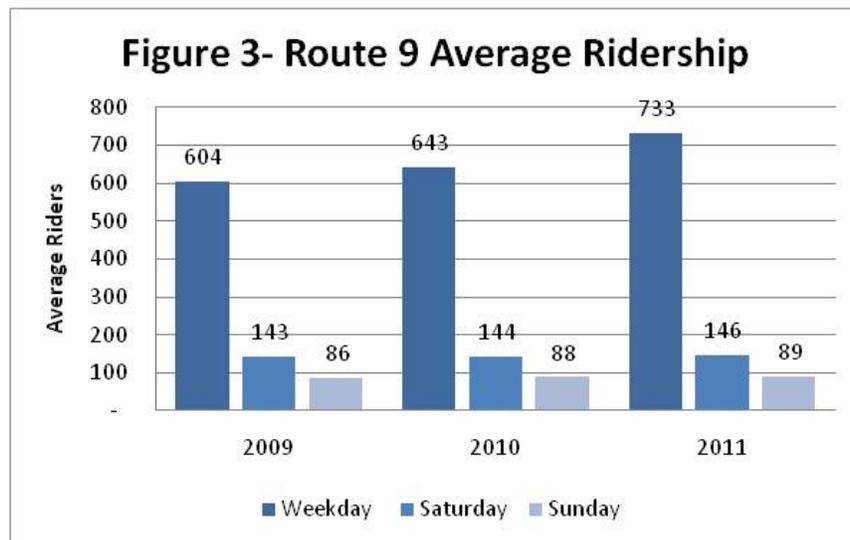
BUS ROUTE 9 AND 10 RIDERSHIP

Figures 3 and 4 illustrate the average weekday ridership for Routes 9 and 10. The average ridership data for each route increased from approximately 600 to 750 average weekday riders from 2009 to 2011. The onboard surveys from the North County Transit Plan (March 2012) and the RTA Short Range Transit Plan (2009) summarize the ridership trends and ridership base.

The North County Transit Plan states that 62 percent of trips on Route 9 originate from home and 17 percent from work. The trip destinations indicate 39 percent travel to work and 29 percent to their home. Of the survey responses, 46 percent walk to the bus stop and 51 percent walk from the bus to their destination. Interestingly, responses show that 41 percent have access to a car and another 16 percent have access but it is an inconvenience. This indicates that Route 9 serves a vital connection for many passengers along the US 101 corridor and a high proportion are “discretionary riders”. Furthermore, 39 percent of responses indicate riding two to four days per week and another 44 percent ride the bus five or more days a week. The amenities that passengers identified for needing improvement include extending service hours later into the day, increasing the frequency of service, and increasing the number of express buses. Route 9 commuters desire to have faster and more frequent service to increase the convenience of transit ridership over driving.

The onboard surveys summarized in the RTA Short Range Transit Plan and South County BRT Assessment report that the most popular trip purpose for Route 10 was traveling to and from work (49 percent) and school (26 percent). Similar to Route 9, 72 percent of Route 10 passengers use the route four or more days per week. The survey responses show 41 percent walk to the bus stop. Trip duration was rated as the most important aspect of their commute trip. Similar to Route 9 passengers who reported the desire to have more express bus services, the time spent traveling by bus continues to be a barrier for the entire corridor. Express bus services, such as BRT, can improve the travel time and frequency barriers which Route 9 and Route 10 passengers observe today.

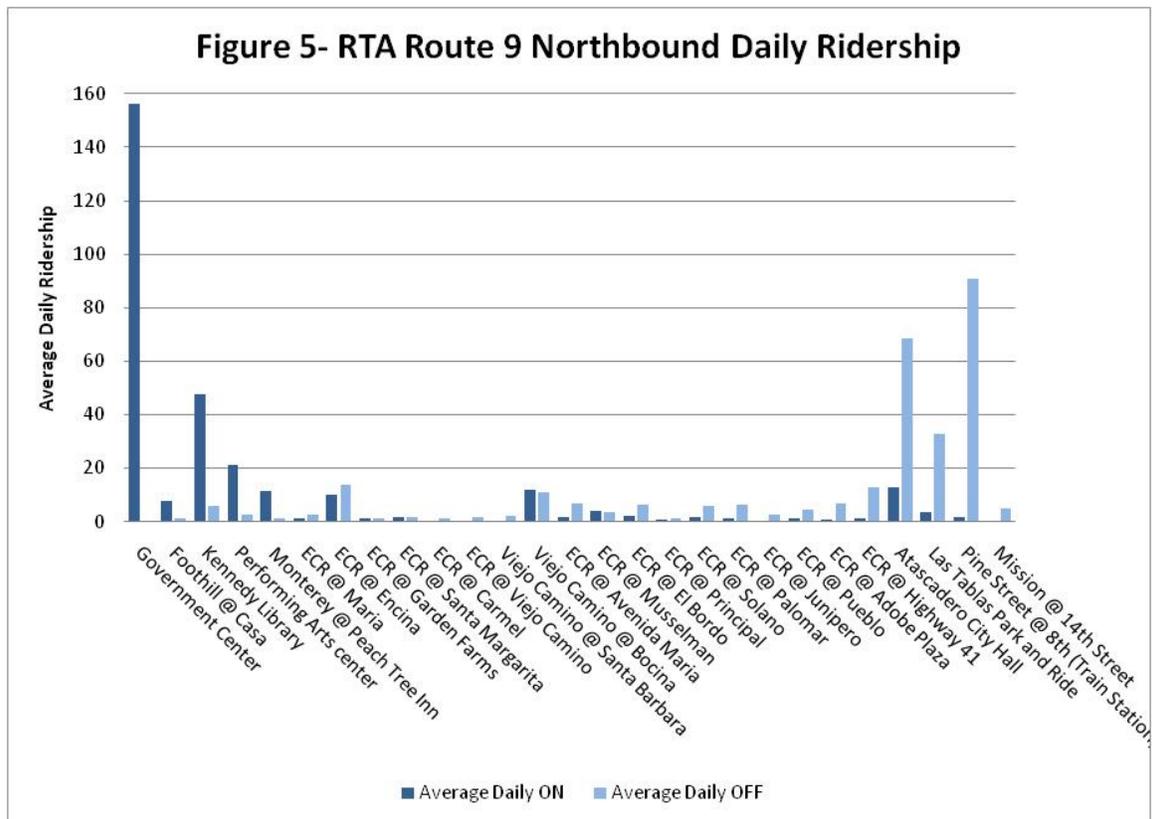


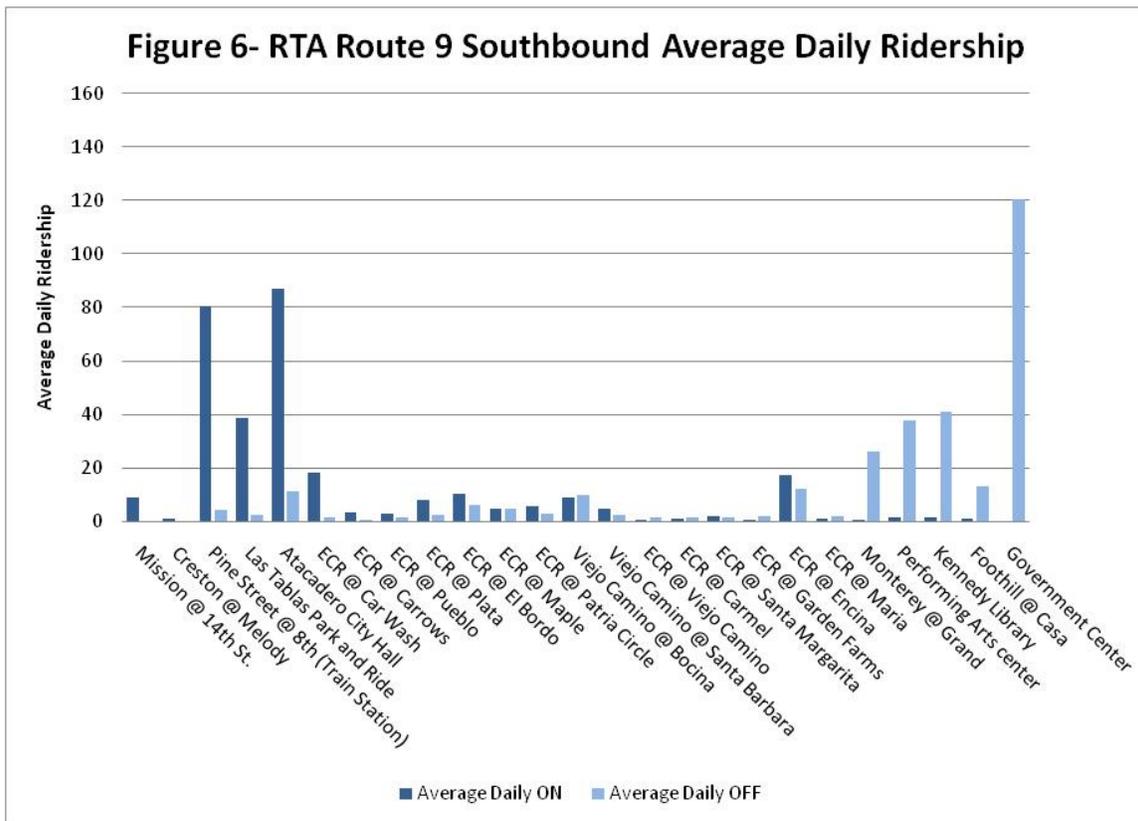


BOARDING AND ALIGHTING

The Route 9 and Route 10 boarding and alighting data is an important element to understanding the existing transit service demand based on the utilization of bus stops.

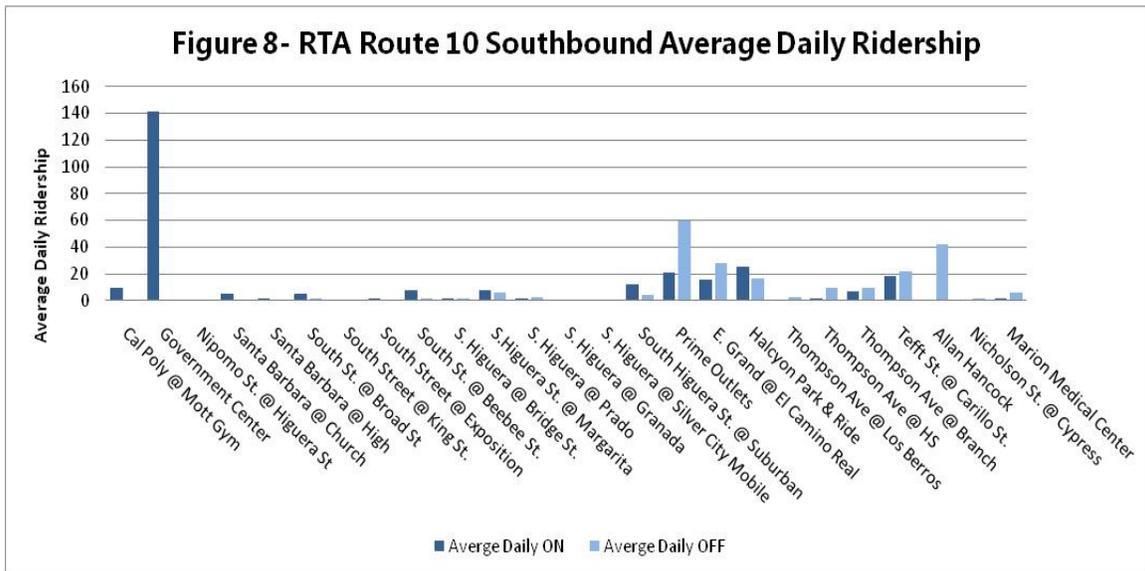
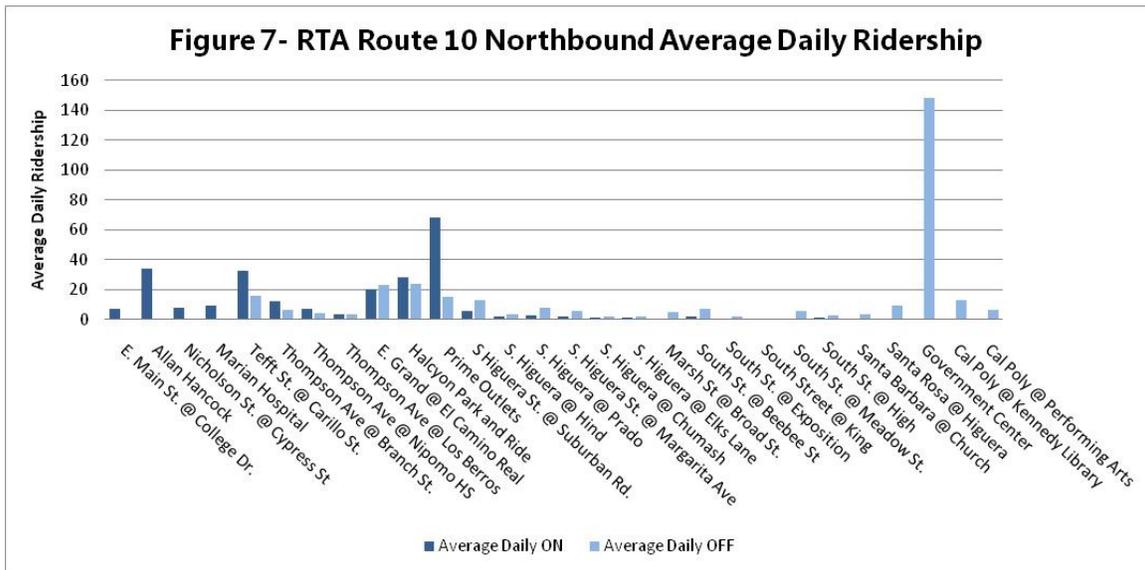
Figures 5 through 8 present boarding and alighting data collected by RTA in 2010. Between April 12-16, boarding and alightings were recorded on every trip for Routes 9 and 10. Figure 5 illustrates the highest number of average daily northbound boardings occurs at the County Government center in San Luis Obispo with 156 passengers, and the highest number of alightings is at Pine and 8th Streets in Paso Robles with 91 passengers. In the southbound direction, Figure 6 illustrates the average highest number of boardings occurs at Atascadero City Hall with approximately 87 daily passengers and the highest number of alightings is at the County Government Center at 121 daily passengers.





Figures 7 and 8 present the average daily ridership data collected by RTA in April 2010 for Route 10. Route 10 now terminates at the Santa Maria Transit Center. In the northbound direction, the highest number of boardings occurred at the Town Center Mall stop in Santa Maria and the Prime Outlets/5 Cities Drive stop in Pismo Beach, with 38 passengers each. The highest number of average daily alightings was at the SLO Government Center with 148 passengers. In the southbound direction, the highest observed number of average daily boardings occurred at SLO Government Center with 142 passengers. The average number of daily lightings occurred at the Prime Outlets/5 Cities Drive stop, with 60 passengers.





TRAVEL TIME RESULTS

Travel time runs conducted for Routes 9 and 10 inform how well the buses are meeting their scheduled departure and arrival times. The Route 9 data that was provided by SLOCOG includes 5 southbound and 4 northbound travel time runs from April 2012. Both regular and express routes were surveyed. The Route 10 results were extracted from the South County BRT Assessment Report (March 2011). This data indicates the areas within each of the routes that typically have the most congestion and increased bus route delays.

Route 9 Travel Time

Table 1 below demonstrates a comparison of the average travel time observed for the northbound and southbound Route 9 travel time runs. On average, both the northbound and southbound directions operate with delays. The regular schedule traveling northbound experienced the largest discrepancy between actual and scheduled travel time with a 5 minute delay; the express travel time runs and the southbound regular service results indicate a 3 minute average delay from the beginning to the end of the route.

The segments along northbound Route 9 which experienced the highest delays were between the SLO Government Center (beginning of the line) and the Santa Rosa at Foothill bus stop. Although the route is only one mile in length, the average travel time results indicate an average travel time of 4 minutes and 25 seconds with an average speed of 24 miles per hour (mph); this delay is likely due to the five signals the bus crosses between the two stops. The northbound route between the Cal Poly Campus- Kennedy Library and El Camino Real at Encina experienced an average of a 3 minute delay between the scheduled time and actual arrival time. The heavy Cal Poly campus traffic between classes causes the majority of the delay observed for transit vehicles.

The southbound results demonstrate the distance between the Atascadero City Hall and the Viejo Camino bus stop at Bocina experienced approximately 14 minutes of travel time for 3 miles, or approximately 21 mph. The route experiences delays along El Camino Real and traffic from Highway 41. The 0.8 mile distance between the Cal Poly Campus-Kennedy Library bus stop and the Santa Rosa at Foothill stop took an average of 4 minutes, averaging a speed of 20 mph. Transit signal priority is one example of a BRT improvement that would reduce the transit delays observed within each of these scenarios.

Figure 3A compares the observed travel time for Route 9 to the distance between stops to illustrate the choke points for Route 9 along the US 101 corridor. The closely spaced stops and circuitous route in Atascadero and Santa Margarita contribute to the reduced bus speeds on this segment. In order to create



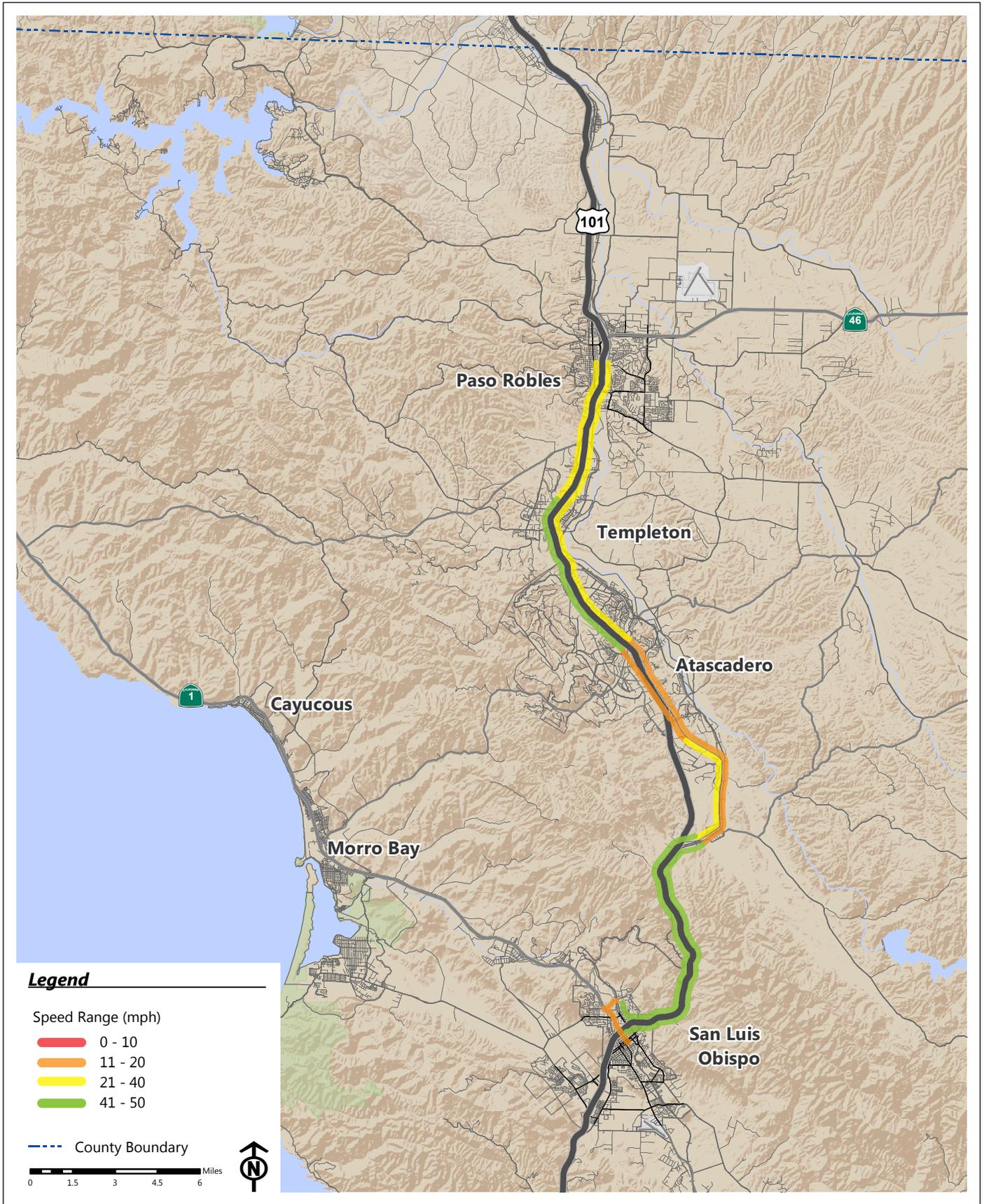
effective strategies that reduce Route 9 travel time, opportunities for more direct routing with fewer stops should be considered.

TABLE 1: ROUTE 9 AVERAGE TRAVEL TIME

	Scheduled Time (hours:minutes)	Actual Travel Time (hours:minutes)
Regular, Northbound	1:07	1:12
Regular, Southbound	1:07	1:10
Express, Northbound	0:55	0:58
Express, Southbound	0:50	0:53

Source: Fehr & Peers, 2012.

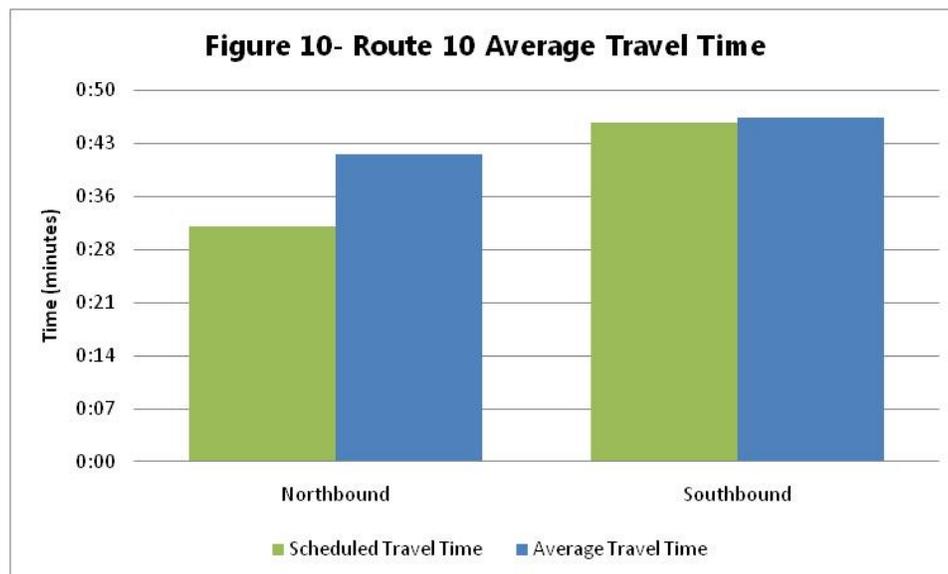




Route 10 Travel Times

Figure 10 below demonstrates a comparison of the average travel time observed for the northbound and southbound Route 10 travel time runs. The green bars present the scheduled travel time in order to compare against the observed results. On average, the northbound route experienced more delays than the southbound direction; the travel time surveys observed a nine minute delay between scheduled and actual travel time.

Route 10 experienced the highest delays in the northbound direction between Tefft at Carillo (beginning of the line) and Thompson and Nipomo High School; the data indicates that the 1 mile stretch took an average of 4 minutes and 30 seconds, or about 25 mph. Depending on the time of the route, the delays from the pedestrians accessing the school causes additional delays for Route 10. The northbound route between 5 Cities Drive at Prime Outlets and South Higuera at Suburban (end of the line) experienced over a 5 minute delay from the actual arrival time to the scheduled time. The congestion on US 101 between San Luis Obispo and Pismo Beach and the traffic near the outlet mall typical during the weekday evenings causes additional delays for Route 10 buses. The southbound travel time results indicate that the 5 Cities Drive/ Prime Outlets and the El Camino Real/ Halcyon Park-and-Ride experienced the most delays in this direction with an average speed of 32 mph to travel the 2.5 mile distance, or an average travel time of 8 minutes (2 minutes over the scheduled time).



RTA BUS FLEET CHARACTERISTICS

Intelligent Transportation Systems (ITS) can improve transit operations and efficiency through sophisticated technologies that better meet passenger needs. ITS elements can help improve the ridership on the RTA bus fleet in several ways, including communicating travel time data to passengers, improving bus routing, and allowing the purchase of bus tickets online. The following section summarizes RTA's existing ITS elements and plans for future expansion.

Existing Bus Fleet

RTA has the following ITS elements on their existing bus fleet: 1) smart card readers 2) mobile data terminals 3) in vehicle surveillance (1 bus equipped) and 4) scheduling software. GFI Genfare provides RTA's automatic fare collection system, which includes automated fare boxes on board buses. Customers can purchase the prepaid cards at a pass outlet during business hours. The magnetized cards can hold different pass types, including daily RTA-only, daily regional transit, 7-day RTA and SCAT, 31-day RTA only, and 31-day Regional passes. These cards must be swiped upon boarding; future plans include upgrading the fareboxes and smart cards to be able to "tap-and-go" on board. The Mobile Data Terminals (MDTs) are currently used on Runabout, the County's complementary ADA, which connects to the RTA's computer aided scheduling software. The MDTs provide RTA schedulers the ability to assign ADA paratransit trips to vehicles in real-time based on demand and passenger loads. MDTs are not installed on RTA's fixed bus routes. The in-vehicle surveillance system is currently installed on one bus vehicle. New buses will come enabled with this feature and RTA has a small amount of funding to add in-vehicle surveillance to older buses. Without a computer aided dispatch system in place for fixed routes, the ability to implement a demand responsive system is limited.

Future Technology Changes to Bus Fleet

RTA has funding for seven new fixed route buses, comprising approximately one-third of their fleet. These new buses are scheduled for delivery in July 2013 and will feature several ITS technologies. RTA also has identified funding to purchase an additional eight buses that will include ITS technologies, and those buses will be delivered in 2014 and 2015. A GPS-based Automatic Vehicle Location (AVL) system will provide real-time updates of all vehicle locations. Once that system is fully implemented, RTA can better monitor on-time performance and other operating parameters, while passengers can access vehicle arrival predictions at their bus stop. The AVL system allows planners to perform statistical analysis of on time performance at the segment level rather than relying on human reporting. RTA's long term goal is to equip their entire bus fleet to be equipped with AVL within the next three to five years.



In addition to AVL, all RTA fixed route buses currently have validating fareboxes that have the capability of accepting embedded-chip proximity cards, often referred to as “smart cards.” The “tap-and-go” smart card system can speed the passenger boarding process, since the rider will not be required to carefully swipe the magnetic strip on their pass through the slot on the farebox. Future upgrades might include the ability to reload value on smart cards online using a credit card rather than having to pay in person at pass outlets. In addition to smart cards, RTA has partial funding to install a single off-board vending machine in Downtown San Luis Obispo. RTA is working with SLO Transit to secure funding for the installation of the vending machine within the next year, although the exact location and final security features have not been identified yet.

The new RTA buses will come equipped with an Automatic Passenger Counter system, which provides geo-coded and time-stamped information of passenger boarding and alighting activity. The APC system will enable RTA to optimize planning for future additional capacity and to better plan for passenger amenities based on passenger loading by bus stop.

The new buses will also be equipped with an automated stop annunciation system in order to notify passengers of upcoming stops along the route. The entire bus fleet is expected to be equipped with automated next stop annunciation system in the next five years.

PLANNED CHANGES TO BUS OPERATIONS

SLOCOG’s transit planning studies for both the North and South County recommend improvements to their transit services to best meet the future needs of residents and visitors. The improvements for Routes 9 and 10 are summarized below to demonstrate the existing service plans for these bus routes.

According to the North County Transit Plan (March 2012), the preferred alternative for Route 9 includes consolidating all North County fixed route services and local dial-a-ride operations in Paso Robles. The Atascadero dial-a-ride service will continue to be operated by the City of Atascadero. The plan recommends investing in additional express service and expanded service hours. The projected weekday service levels include 5 express trips and 27 northbound and southbound regional trips (Figure 8-18 North County Transit Plan).

The South Country BRT Assessment (March 2011) notes how future corridor roadway plans will affect Route 10. One alternative for the Brisco Road interchange plans include adding “hook ramps” and an auxiliary lane, which could result in realigning the northbound Route 10 routing. Additionally, an alternative for Grand Avenue includes improving weaving and operations at the interchange and



rerouting Route 10 from El Camino Real to Oak Street or Bell Street. Adding a Route 10 stop at the Spyglass Drive interchange allows for transfers between Route 10, South County Area Transit (SCAT) Route 21, and the seasonal Avilla Trolley. A park-and-ride facility at Willow Road or Los Berros Road would require rerouting Route 10 off of Thompson Avenue and onto Willow Road.

The RTA Short Range Transit Plan (2011) notes that there will only be one stop serving Cal Poly, thus rerouting Routes 9 and 10. Route 9 no longer provides direct service to Cal Poly after 11:13 AM. Route 10 weekday and weekend service removes a stop at the Santa Maria Greyhound Station. Route 10 only extends into downtown San Luis Obispo on two northbound morning trips and one southbound trip. The plan also proposes constrained alternatives which eliminate several mid-morning runs to streamline the schedule. If there is future demand, RTA could expand service to provide additional runs during peak times.

PARK AND RIDE LOTS

According to Figure 2 in the main report, there are 18 park and ride lots within San Luis Obispo County in addition to three (3) informal lots which are not illustrated in the map. These three (3) informal lots are all located in South County and include:

- Los Berros
- Von's Nipomo Parking Lot
- RTA Nipomo Bus Stop

The parking lots range in size from 10 to 70 available spaces. The lot with the highest capacity is in Arroyo Grande at Halcyon Road with 84 spaces. While some of the park-and-ride lots had an average occupancy between 2010 and 2012 of fifteen to twenty percent, several others were between 115 to 160 percent occupied. The Walmart Park-and-Ride lots in Paso Robles had the highest observed average occupancy at 346 percent. There are several park-and-ride lots that are over one-hundred percent occupied, indicating that vehicles are parking in unmarked spaces and more capacity may be needed to serve the demand. In summary, the data indicates a range in utilization of existing park-and-ride facilities, with some that have very low utilization and others that are consistently under parked.

In order to compare trends in different areas of the County, Figure 11 presents the trend in park-and-ride facilities from 2005 to 2012 separated by North and South County. There is a decrease in occupancy



within the lots in South County but an increase in the North County. These numbers do not include unofficial park and ride lots as there is no way to measure the total supply.

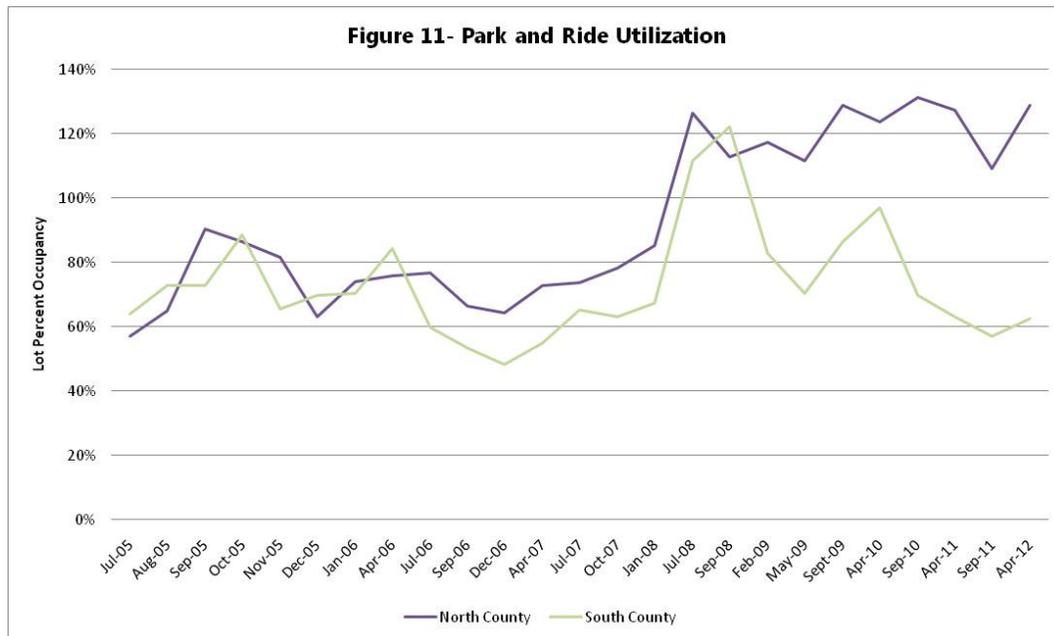
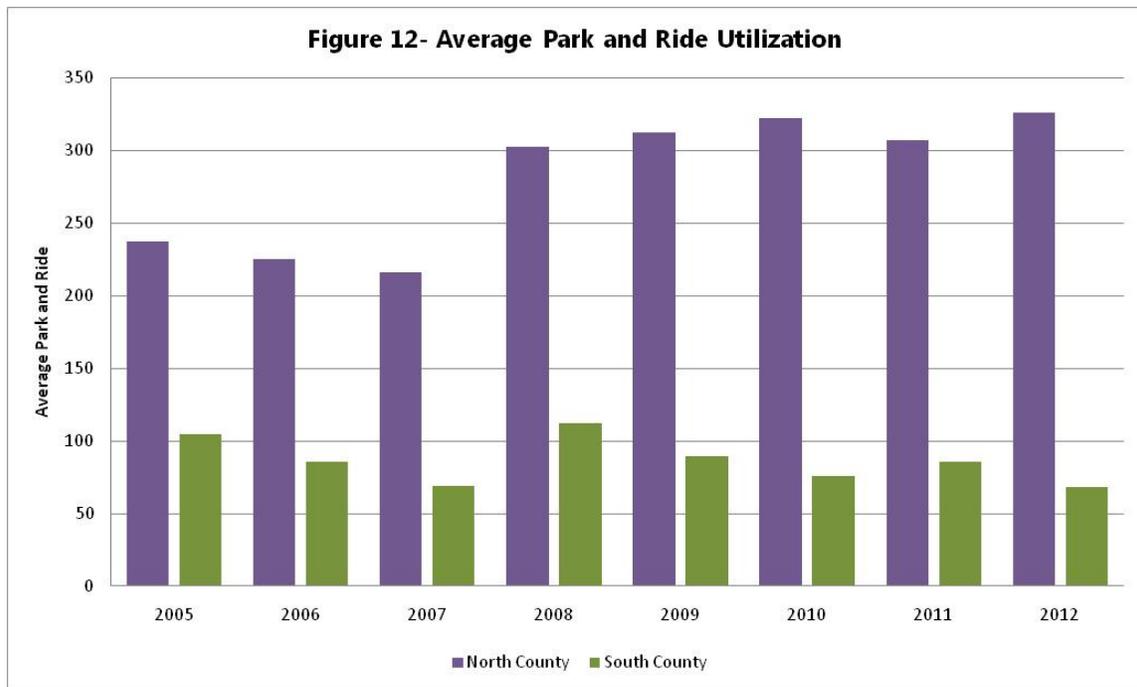


Figure 12 presents the total number of observed vehicles parked (including unofficial park-and-ride vehicles). Within the North County, the park-and-ride utilization has steadily increased since 2005. The South County has observed a steady trend with peak utilization in the summer months and slight decrease in the winter months.

The park-and-ride lot capacity and occupancy trends are indicative of the existing demands serving San Luis Obispo County. The park-and-ride demand presents an idea of where there are opportunities to improve transit service and opportunities to capitalize on existing transit demand.



CALTRANS US 101 ENGINEERING AND PLANNING DOCUMENTS

This section discusses planned interchange improvements and studies within San Luis Obispo County. These plans range from higher level corridor studies highlighting opportunities for interchange improvements to conceptual designs detailing configuration changes. These US 101 improvements exist in both the northern and southern areas of the County. As the BRT improvements on Highway 101 will need to coordinate and be mindful of these designs in place.

The ten engineering and planning studies include:

Countywide

- US 101 Corridor Mobility Master Plan (future study to be led by SLOCOG)

North County

- North County Corridor Study (SLOCOG, 2010)
- City of Atascadero Interchange Operational Improvement Study (City of Atascadero, 2010)
- Atascadero Del Rio Interchange (ongoing design and environmental review)
- US 101 / SR 46 West / Vine Street interchange improvements (construction partially complete) conceptual design

Central County

- SR 1 Major Investment and Corridor Study (City of San Luis Obispo, 2010) near Cal Poly SLO
- Bob Jones Trail Connection Plan (City of San Luis Obispo, underway)
- Los Osos Valley Road Design Interchange (environmental document completed, design underway)

South County

- US Route 101 Corridor System Management Plan: Santa Maria to Arroyo Grande (Caltrans, 2012)
- Willow / US 101 Interchange Design (County of San Luis Obispo, 2004)
- Brisco Road / Halcyon Road Design (City of Arroyo Grande, environmental review, 2012)

HIGHWAY 101 TRAFFIC CONDITIONS

Figure 3 in the main report presents select 2010 Annual Average Daily Travel (AADT) data from the Caltrans Traffic Data Branch. The average of the data points collected along Highway 101 in 2010 is



approximately 47,500 AADT. The range in traffic volumes is from 20,000 in San Miguel to about 58,000 in San Luis Obispo. The AADT identifies the areas along the corridor that typically have the most traffic and therefore have the highest travel demand. The areas with the highest concentration of trips highlight opportunities for the future BRT to serve this travel demand. Figure 5-A in this Appendix demonstrates that the sections of US 101 that travel through Templeton and San Luis Obispo contain the highest daily traffic volumes.

The typical weekday countywide travel patterns on US 101 include trips to and from employment in San Luis Obispo and the Cal Poly campus. The peak morning direction is southbound from communities north of San Luis Obispo and northbound from communities to the south of San Luis Obispo; in the evening, the travel patterns are generally reverse. The RTA Short Range Transit Plan (RTA SRTP 2010) states that with the exception of San Luis Obispo, Paso Robles and Atascadero are home to the greatest amount of residents within the entire county. The plan also states that the South County corridor ridership of Route 10, serving San Luis Obispo City to Santa Maria, draws from a population base larger than both the North County Corridor and North Coast Corridor. The demand for transit service is growing to help serve the densely populated coastal and inland communities along the US 101 corridor.

US 101 traffic conditions are critical to the implementation and applicability of BRT integration. The congested segments of US 101 will help determine the strategies and criteria for the application of transit enhancements along this corridor. These daily traffic volumes provide a high level overview of the level of traffic this corridor services within San Luis Obispo County. Traffic data along US 101 and local streets within the County provides insight into potential areas of future congestion and opportunities to relieve highway traffic demand through BRT.



APPENDIX C: FOCUS GROUP QUESTIONS & RESULTS

FOCUS GROUP QUESTIONS

The guided focus group discussion conducted as part of the outreach effort revolved around the following four (4) questions. The main facilitator read a question that was also mounted on the wall on a large format poster. Approximately 15 minutes of guided discussion was dedicated to each question. The response summary is described below as Tier 1 or Tier 2. Tier 1 responses were an initial comment made by more than one attendee and/or issues mentioned multiple times during the question period. Tier 2 responses were only mentioned once and/or later in the discussion surrounding any question.

1. What is your perception of bus transit in the SLO Region?

Tier 1

- While generally perceived as “adequate,” service does not run late or early enough (particularly to serve later classes at Cal Poly or provide more/better choices for professionals)
- The perceived lack of communication/collaboration between local and regional services makes transfers difficult.
- The lack of communication/provision of arrival/connection information to riders is a challenge to riding the bus.
- The lack of easily available information on where to purchase tickets, what discounts may be available (incremental 1 week/2week/3week passes may be attractive to some)
- There is a negative social stigma (perceived) associated with riding the bus.

Tier 2

- Transit is not as popular in San Luis Obispo County due to a perceived need for a car
- Bus transit is an untapped/underutilized resource
- Buses may not be “rapid” enough
- Traveling from North County to South is hindered/made much more difficult at the transfer between routes in San Luis Obispo. Transferring should be made as convenient as possible so it is easier to travel from county line to county line.
- It is difficult to figure out how bus system works, where stops are, how to transfer
- The perceived lack of services and materials available in Spanish

2. Do you take the bus? Why or why not?

Tier 1

- Economics: riding the bus is cheaper than maintaining car (yes)



- Environmental (congestion, pollution): Automobile travel and traffic congestion is perceived as “bad” for the environment (yes)
- Bus service does not run early/late enough (no)

Tier 2

- Transit is seen as contributing to the social good of the region (yes)
- Transit is reliable enough (yes)
- Riding the bus is less stressful than driving or car/van-pooling (yes)
- Riding transit is a more efficient use of time (yes)
- Many trips and/or stops are not served by public transit (no)
- There are not enough “express” routes, and service is not frequent enough (no)

3. What services and amenities would make you consider taking the bus more often?

Tier 1

The key services and amenities mentioned by respondents that would make them consider riding transit more frequently were:

- Wi-Fi
- Increased comfort/high-back chairs
- Improved visibility/feeling of safety while waiting at stops
- Improved integration with/between local & regional services

Tier 2

Other amenities mentioned included:

- More frequent weekend service
- Adequate (car) parking near stops
- Remove the bars on the benches that prevent people from lying down Enforcement and display of rules on loud music
- RTA improvements in the South County area are an example of positive improvements
- Real time arrival information
- Elimination or modification of “bag limits” to avoid space limitations on board.



- More bike racks
- Ticket dispensers at bus stops

4. Would you use bus transit more often if better services and amenities were available in the SLO Region?

Tier 1

Respondents noted they would be likely to ride the bus more frequently if the following improvements were made:

- Better communication between local & regional services and for riders, ETA, etc.
- Later/earlier service
- Better communication/coordination with Cal Poly schedules
- Rural or exurban areas need more attention/service/better communication

Tier 2

- Work and leisure, weekday and weekend needs are different, and may need different service levels/frequency and different branding/messaging in order to get more people to ride the bus.



APPENDIX D: WEB SURVEY QUESTIONS & RESULTS



BRT WEB SURVEY RESULTS

This appendix describes the detailed results and findings of the web survey conducted as part of the BRT Applications Study outreach effort.

DEMOGRAPHIC SUMMARY

- The majority of survey respondents are ages 45 to 64 (68 percent). Another 22 percent of respondents are aged 26 to 44.
- The plurality has their Bachelor's degree as their highest level of education (45 percent).
- 92 percent of respondents have access to an automobile for their commute.
- 38 percent use their automobile as their primary mode of transportation, 28 percent use the bus, 12 percent bike, 6 percent walk, 12 percent carpool/vanpool, and 4 percent used some combination of the above.
- 41 percent of respondents work in the government sector and another 25 percent work in the private sector. Only five percent are students.
- The greatest number of respondents have a total household income of over \$100,000 (28 percent). Another 25 percent earn between \$50,000- \$69,000 and 22 percent between \$70,000-\$99,999.
- The City of San Luis Obispo is best represented among survey respondents, with 37 percent living in the City, and 87 percent reporting working there.
- 69 percent had used RTA services in the past month and another 20 percent used SLO Transit. The remainder used some combination of these agencies. Of the responses, 41 percent had never ridden SLO Routes 9 and 10; however, another 28 percent ride these routes frequently.
- 71 percent of respondents have lived in SLO County for over 10 years.

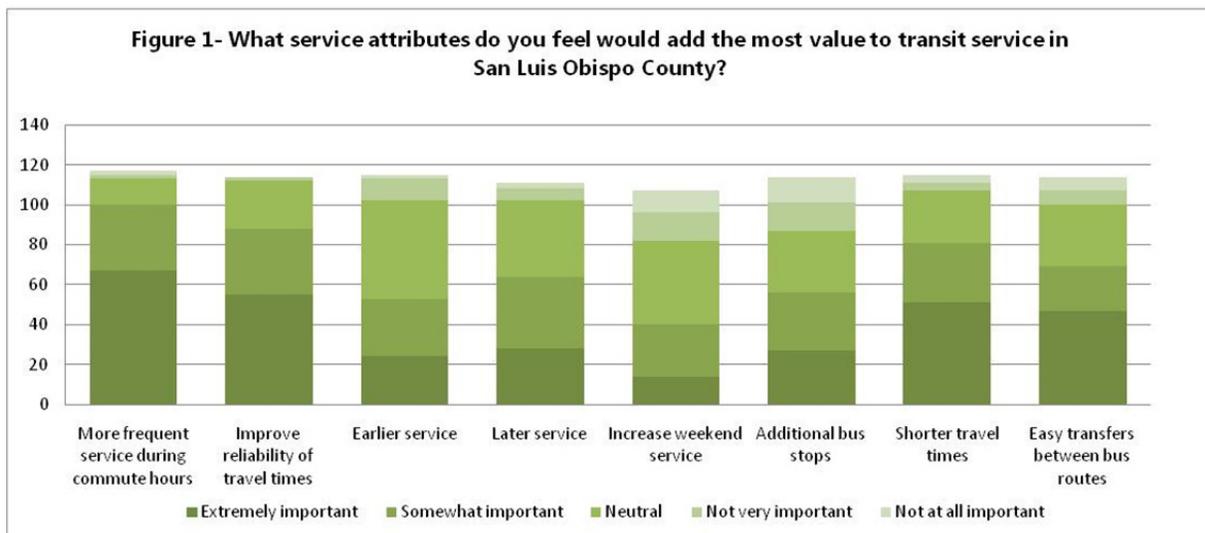
TRANSIT SERVICE IMPROVEMENTS SUMMARY

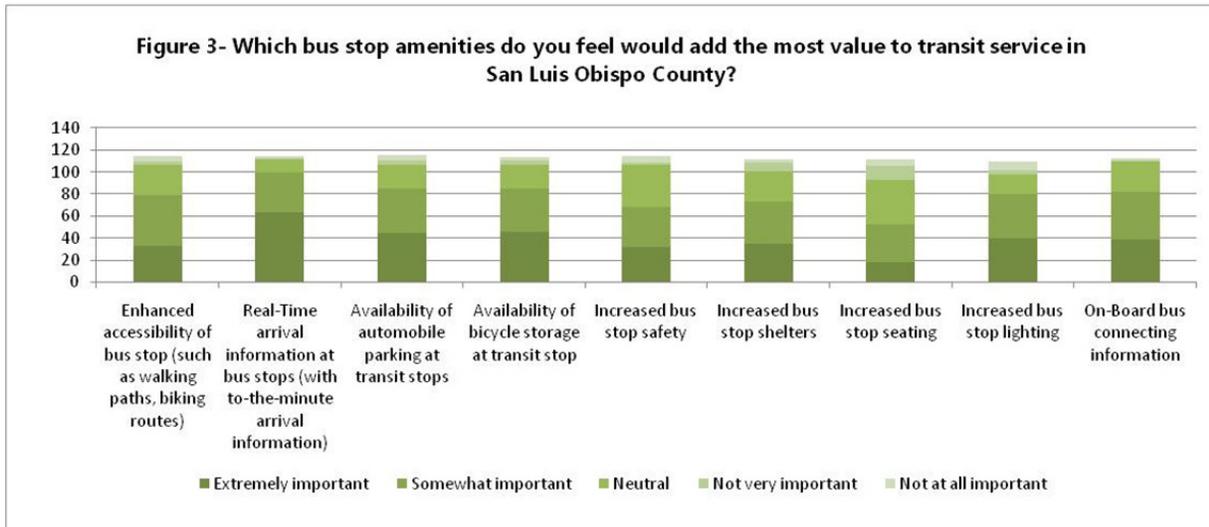
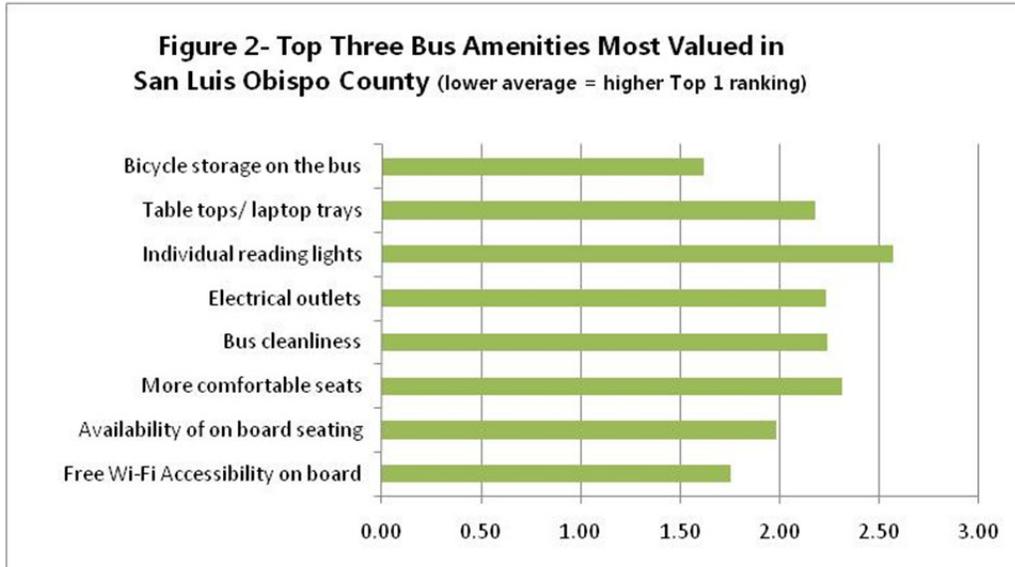
Respondents were asked to rank potential bus transit improvements in three categories: transit service, on-board bus amenities and bus stop amenities.

- More frequent service during commute hours ranks the highest among service amenities (85 percent ranked it as somewhat or extremely important) (Figure 1).



- Improving the reliability of travel times ranks the second highest (75 percent feel it is somewhat or extremely important).
- Shorter travel times is the third highest-ranked service amenity (70 percent feel it is somewhat or extremely important).
- Bicycle storage on board ranks the highest for top three on-board bus amenities (38 percent rank as their top choice). The second highest-ranked amenity is free Wi-Fi accessibility (20 percent) and availability of on board seating (20 percent). Bus cleanliness is also highly ranked, with many respondents identifying it as their second and third ranked on-board amenity (Figure 2).
- The majority of responses rank real time arrival information at bus stops with an “extremely important” ranking (55 percent). The second and third highest ranking in the “extremely important” category is bike storage at the bus stop (39 percent) and automobile parking (38 percent). Increased bus stop lighting and bus stop seating are identified as the least important amenities (Figure 3).
- The largest barrier facing those that only ride the bus once a week or less is that it takes too long (23 percent), that service hours are not convenient (17 percent), it does not run often enough (9 percent), and does not provide the flexibility of making multiple stops (9 percent).
- 85 percent of responses support paying a small fare increase if transit service and amenities improved significantly.





TRANSIT CHOICE RIDERS

Approximately 92 percent of respondents noted having access to an automobile for their commute. Of these responses, 25 percent ride transit as their primary commute to work or school. This subset of the responses reflect the “choice riders”, or those that choose to commute using the bus even when a private vehicle is available. In general, the “choice riders” demonstrate similar responses to the overall survey sample population. They rank more frequent service, more reliable travel times, and shorter travel times as the highest service amenities. The “choice riders” are different from the overall survey population in the following categories:

- A higher proportion are University / School Employees (32 percent of choice riders compared to 16 percent of the overall survey sample)
- A higher proportion live in Atascadero (29 percent compared to 14 percent of the overall survey sample)
- A high proportion use RTA services (86 percent compared to 69 percent of the overall survey sample)
- A higher proportion note riding RTA Route 9 and 10 frequently (64 percent compared to 28 percent of the overall survey sample)
- While transit choice riders rank the same top three on board amenities, the ranking varied slightly compared to the overall survey population. The availability of on board seating has slightly more responses as the number one choice (29 percent) compared to bicycle storage and Wi-Fi (each 20 percent).
- Transit choice riders have slightly different bus stop preferences. Car parking is the most important (57 percent), real time information (54 percent), and bus stop shelter and bus stop lighting rank third (both at 39 percent). Bike storage ranks fourth at 32 percent.



APPENDIX E: CANDIDATE BRT IMPROVEMENTS



SUMMARY OF BRT IMPROVEMENTS

BUS STOP IMPROVEMENTS

Several types of bus stop improvements could be implemented to improve overall transit access and improve the visibility of transit service within San Luis Obispo County. Potential bus stop improvement projects relate both to improvements to stops themselves as well as access to bus stops. Candidate bus improvement projects that have been identified by project stakeholders and members of the public are listed in Table 1 below. A more detailed description of each candidate project follows.

TABLE 1: CANDIDATE BUS STOP IMPROVEMENT PROJECTS

Short / Medium Term Projects (1-5 Year Implementation)

Regional Improvements:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Additional bike parking at high ridership stops • Real time stop information • New shelters at high ridership stops • Expanded park and ride facility in North County at Santa Barbara interchange in Atascadero • New bus stops at Spyglass Drive (South County) • Expanded park and ride facilities in North County at Santa Rosa interchange in Atascadero | <ul style="list-style-type: none"> • Reconfigure stops at Las Tablas (Templeton) park and ride facility in North County • New/expanded park and ride facilities at Los Berros or Willow interchange • New hook ramp or park and ride stops in South County near Brisco Road interchange • New bus stops on highway ramps in North County at SR-46 west interchange • Provide fare kiosks at high ridership stops |
|--|---|

Local Improvements:

- | | |
|--|--|
| <ul style="list-style-type: none"> • Bus Stop pedestrian access improvements (North County) • Bus Stop pedestrian access improvements (South County) • Bus Stop bike access improvements (North County) | <ul style="list-style-type: none"> • Bus Stop bike access improvements (South County) • Add new park and ride capacity at Paso Robles intermodal station |
|--|--|

Long Term Projects (5+ Year Implementation)

- New bus stops at new/reconfigured interchanges
- New downtown SLO transit center

Source: Fehr & Peers, 2013



Short / Medium Term Bus Stop Improvements (Regional)

Additional Bike Parking at High Ridership Stops

This improvement would involve the addition of new, high-quality, secure bike parking/lockers at top 5-10 highest bicycle ridership stops. New bicycle parking will allow more passengers to access stops via bicycle and have a secure place to park their bicycle while traveling by transit. Bicycle parking also eliminates the uncertainty of whether a bus will have available on-board bicycle storage.

Real Time Stop Information

The addition of real-time information displays at all express bus stops would help promote the efficiency and reliability of Express Bus service. With the new AVL-based system currently being deployed by RTA, the addition of real time prediction capabilities to bus stops is technically possible.

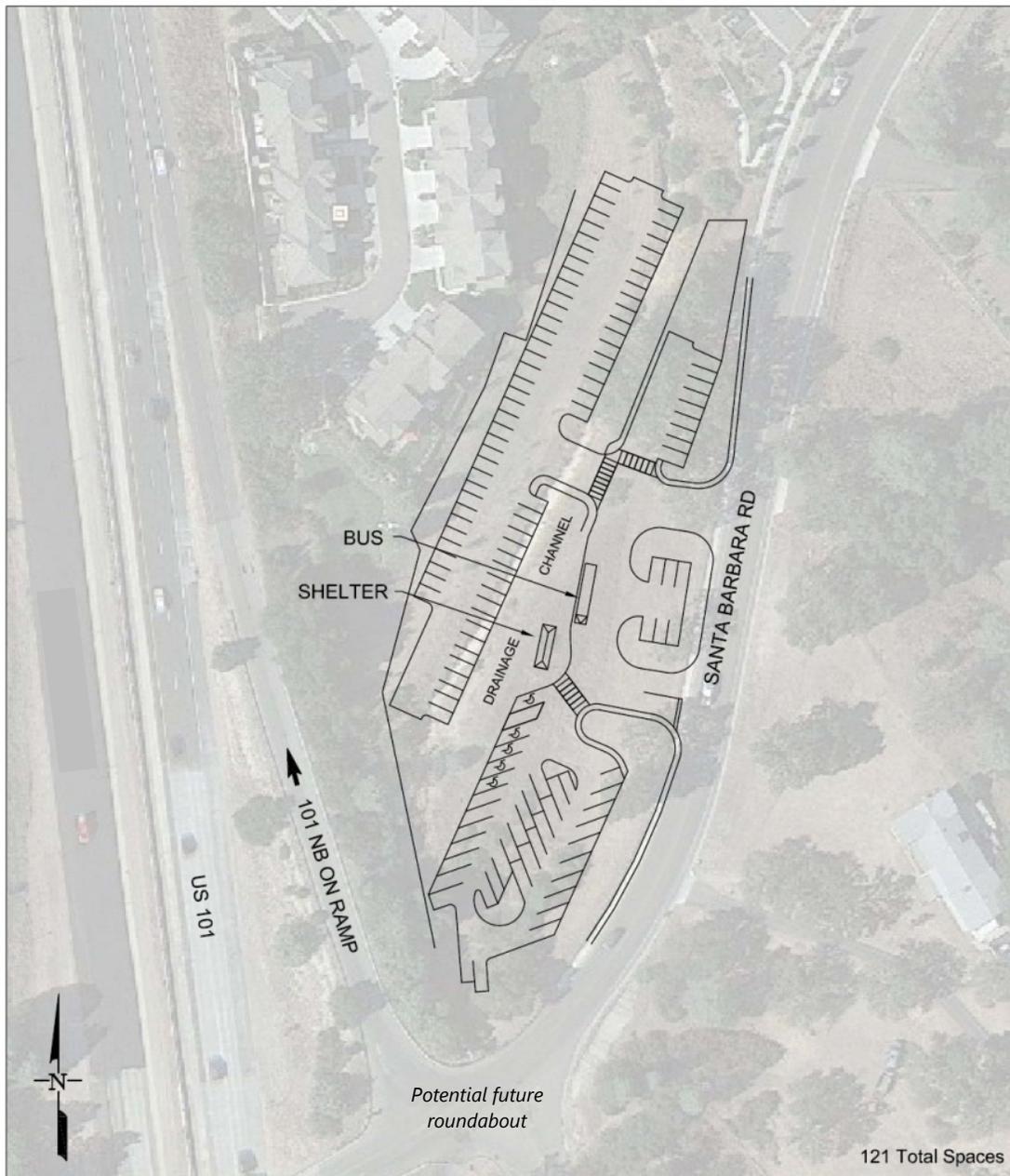
New Shelters at High Ridership Stops

New bus shelters at high-ridership stops will promote a safer, more comfortable waiting area for buses. Shelters also provide mounting opportunities for real-time information displays that are protected from weather.

New Santa Barbara Interchange Park and Ride Facility in Atascadero

The expansion of park and ride facilities in Atascadero would help serve increased demand for regional bus service in the North County, and it would also serve as an important stop in providing more direct express service from North County to San Luis Obispo. A new park and ride facility with 121 spaces could be constructed in the northeast quadrant of the Santa Barbara interchange. This would substantially increase park and ride capacity and provide new bus stops to serve Route 9. The park and ride lot would require rerouting of Route 9 to bypass Santa Margarita, or having only Route 9 Express buses serve the stop. Northbound buses would access the US-101 northbound ramps adjacent to the lot. Southbound buses would use the Santa Barbara Road overcrossing in order to access the US-101 southbound ramps. The proposed area shown below may be a potential drainage site with environmental sensitivity, in which case mitigation measures or alternative placement may need to be considered. Also, roundabouts planned to be constructed at the ramps by the City should be incorporated into the design.





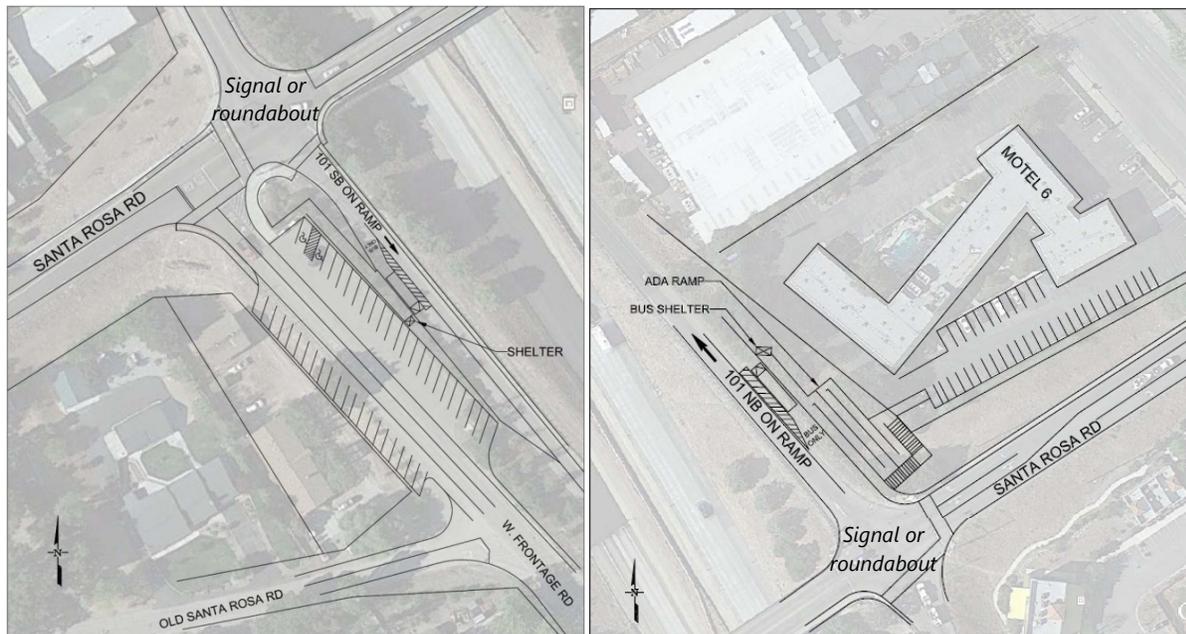
Santa Barbara Interchange Park and Ride Layout

Expanded Park and Ride Facilities at Santa Rosa Interchange in Atascadero

The Santa Rosa Avenue interchange is a central location that provides a good opportunity to expand park and ride facilities. An existing facility on the west side of Highway 101 is small, and could be expanded to provide additional angled parking on both sides of the street. New on-ramp bus stops on each side of the interchange would provide more direct routing for buses exiting and re-entering Highway 101.



Expanding park and ride facilities in Atascadero would only serve Express Bus runs, unless local Route 9 service was rerouted to bypass El Camino Real in Atascadero. Parking capacity issues such as sharing parking with Motel 6 or ensuring that on-street parking is not misused should be considered. Also, roundabouts planned to be constructed at the ramps by the City should be incorporated into the design.

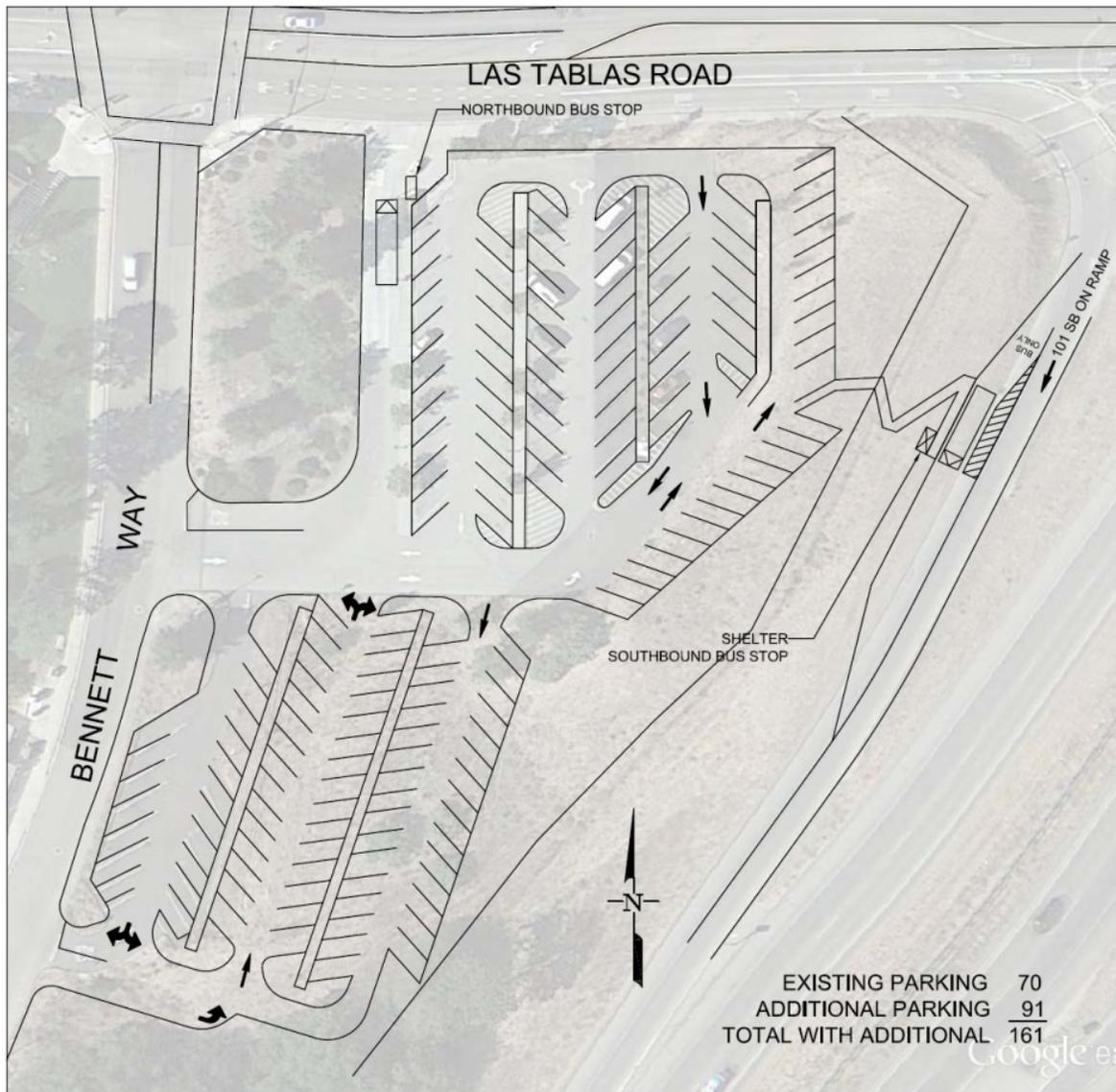


Santa Rosa Interchange Park and Ride Layout

Expand Las Tablas Park and Ride in Templeton

This project would involve addition of a southbound on-ramp bus stop at Las Tablas Rd interchange, as well as a potential future northbound on-ramp stop on the east side of Highway 101. It would also expand park and ride capacity by approximately 90 spaces to accommodate expected future demand.





Las Tablas Road Interchange Expanded Park and Ride Layout

New Bus Stops at Spyglass Drive (South County)

This project would create new bus stops consistent with potential improvements identified in the South County BRT Study to provide new freeway on-ramp bus stops at the Spyglass Drive interchange in Shell Beach. These stops would provide access for bus riders from the Shell Beach area, and avoid potential backtracking to the nearest stops that currently exist in Pismo Beach at the Premium Outlets.



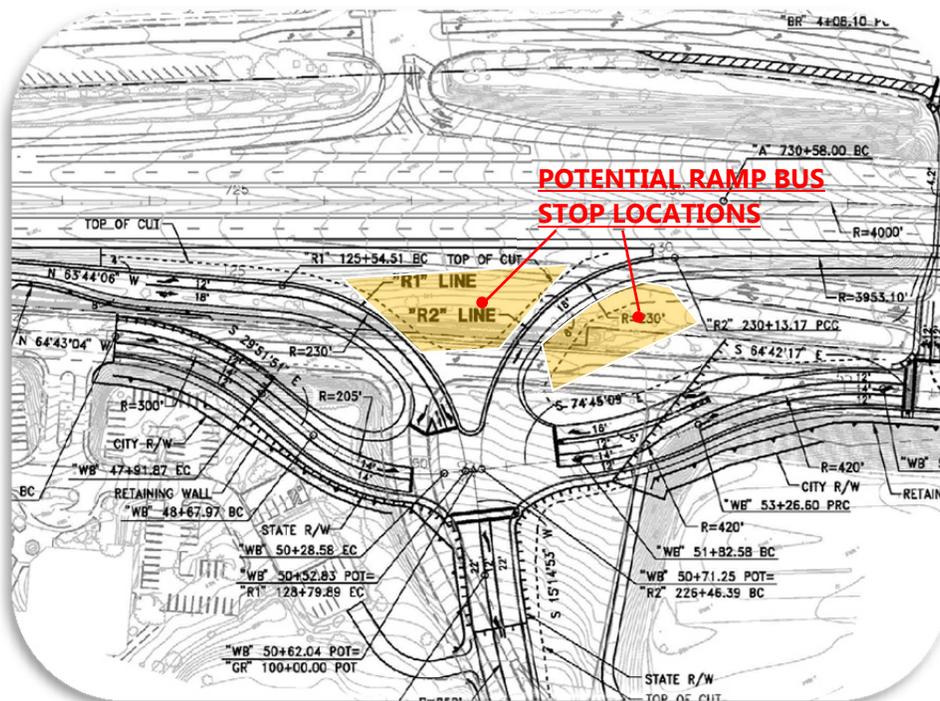


Spyglass Drive Bus Stop Layout



New Bus Stops in South County at Brisco Road Interchange

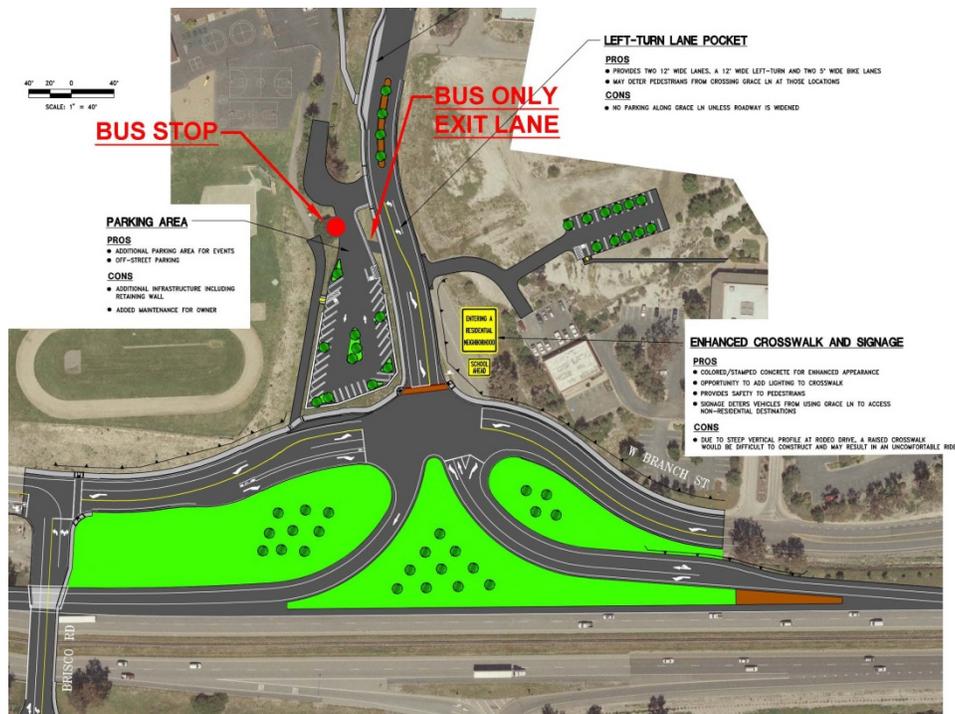
There are two different options for bus stops at the Brisco Road Interchange. For Option 1, this project would implement new bus stops on northbound and southbound highway ramps to serve Park and Ride and provide more direct routing through area. The Brisco Road interchange is currently under design, so there is an opportunity to provide bus stop access in the northbound direction as part of the new “hook” freeway ramps that are included in one design alternative for the interchange. Providing a new bus stop on highway ramps would reduce bus circulation time on local streets at the interchange, and it would significantly improve bus travel times. The potentially close proximity between transit users and vehicular traffic on US-101 may present a safety constraint, and a ramp bus stop based on the current freeway ramp configuration is not considered acceptable to Caltrans. The distance between the bus stop and the existing park-and-ride lot more than a third of a mile away also means pedestrians would need a pathway to walk from one stop to another, which may also require new sidewalks to be built in some areas. A second option, called Option 2, would place the northbound bus stops at a park and ride lot which is currently planned on a vacant parcel adjacent to the frontage road. This would eliminate the safety and accessibility concerns raised by Caltrans, though there would be a corresponding increase in bus travel times as buses would need to circulate into the park and ride lot, and then exit via a bus only driveway (if adequate turn around space is not available inside the lot) to re-enter northbound Highway 101.



Brisco Road Interchange – Option 1: Bus Stop on Freeway Ramp

Note: A bus stop layout based on this type of a freeway ramp configuration is not considered acceptable to Caltrans



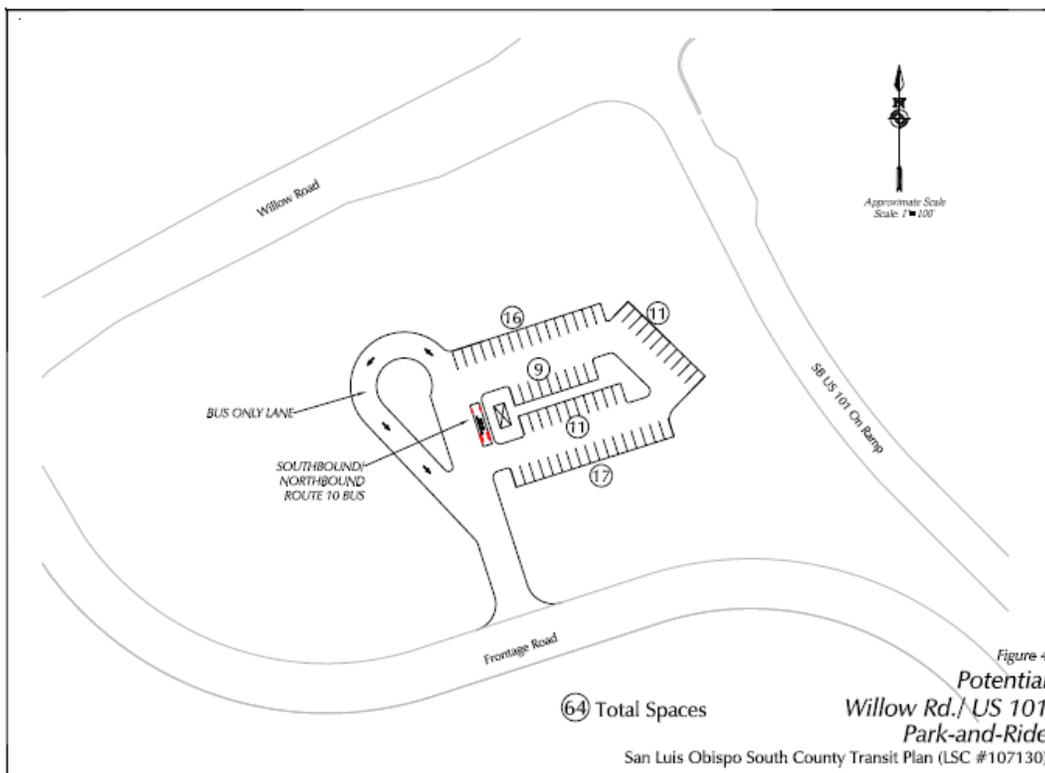
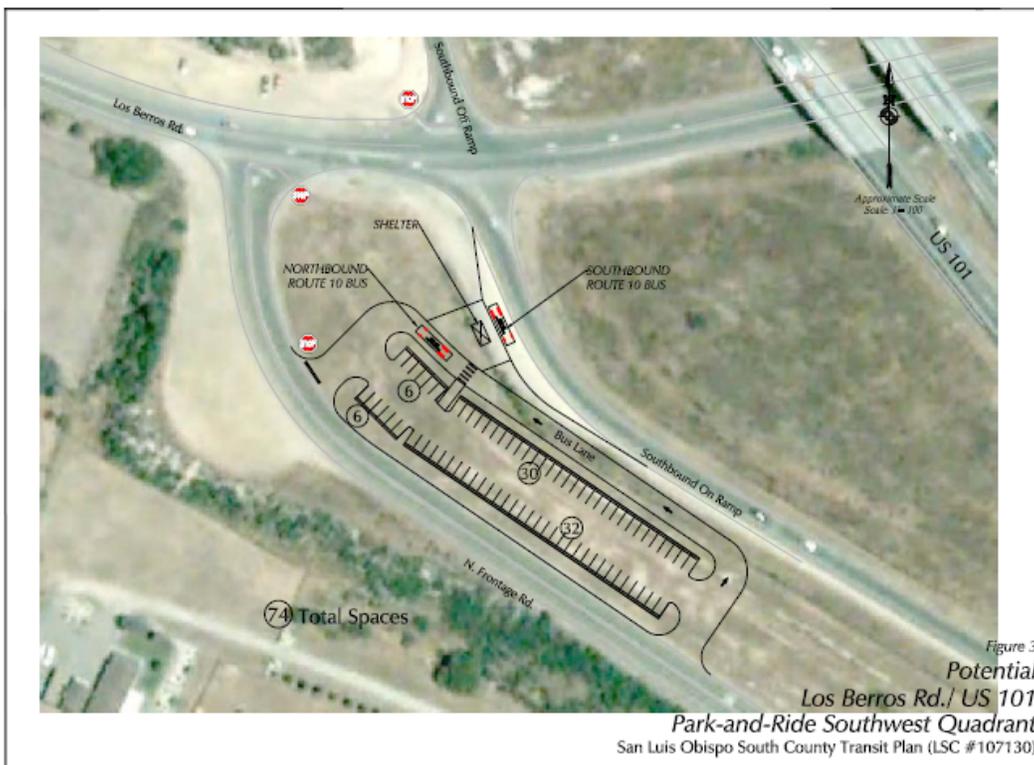


Brisco Road Interchange – Option 2: Bus Stop at Park and Ride Lot on Frontage Road

New/Expanded Park and Ride Facilities at Los Berros or Willow Interchange

The potential project would create new stops consistent with potential improvements identified in the South County BRT Study to provide new park and ride capacity at either the Los Berros or Willow interchanges. Since a new near-term lot is being constructed at the W Tefft Street interchange just south of the Willow interchange, the Los Berros interchange would be preferable in terms of stop spacing.





Park and ride Options at Los Berros and Willow Road Interchanges



New Bus Stops on Highway Ramps in North County at SR-46 West

Implementation of new on-ramp stops at SR-46 west could be made in conjunction with planned future interchange improvements. New stops may also be able to utilize nearby hotel parking lots as park and ride spaces.

Fare Kiosks

Fare kiosks are currently planned for downtown San Luis Obispo but could be considered at other locations to facilitate quick and efficient boarding and provide passenger information. Fare kiosks should be located at high ridership locations as they allow passengers to purchase tickets in advance a bus arriving, thus speeding up boarding time. Locations where fare kiosks could be considered in the future include Paso Robles, Atascadero, Cal Poly, and at the Prime Outlets in Pismo Beach.

Short / Medium Term Bus Stop Improvements (Local)

Bus Stop Pedestrian Access Improvements

Pedestrian improvements in North County would focus on highest ridership locations, including downtown Paso Robles and Atascadero. In the south county, pedestrian improvements would also focus on high ridership locations, including the Prime Outlets and in Arroyo Grande.

Pedestrian access improvements include a range of opportunities to improve walking access to bus stops, such as:

- New crosswalks with enhanced striping to improve visibility
- New sidewalk connections to eliminate gaps or provide access to bus waiting areas
- New curb ramps or pedestrian bulbouts to improve street crossings
- Widening or reconfiguring existing sidewalks to improve ADA accessibility

Bus Stop Bike Access Improvements

Similar to pedestrian improvements, bicycle access improvements should generally focus on highest ridership locations, but additional consideration should be given to bus stops along existing or planned bicycle routes. For example, improving bicycle access to the Paso Robles Intermodal Station would allow for the bus stops to serve a broader coverage area including portions of downtown Paso Robles and east Paso Robles.



Bicycle access improvements to bus stops would typically consist of the following:

- New Class II bicycle lanes or buffered bike lanes on streets providing access to stops
- New Class I multi-use trail connections that facilitate bus stop access
- Improved bicycle crossings of interchanges and high-conflict areas, including colored pavement treatments
- Addition of bicycle route signage that notes directions and distances to major bus stops or transit centers
- Addition of bicycle detection at signalized intersections that currently do not have detection capabilities for bikes

Access improvements should also be considered in conjunction with providing improved parking for bicycles at stops.

Add New Park and Ride Capacity at Paso Robles Intermodal Station

Park and ride capacity in Paso Robles around the intermodal station is somewhat limited. While a project is underway to add 24 additional spaces around the intermodal station in 2013, additional supply is likely to be needed in the near future. In order to further increase supply, it may be possible to use local on-street parking on select blocks as designated/permitted park and ride spaces. In addition, because park and ride demand in Paso Robles is high, this improvement could also provide new park and ride spaces in East Paso Robles that would be served by select Route 9 runs. A centralized location, such as the Walmart parking lot on Niblick Road, would serve bus patrons that live on the east side of Highway 101. Route 9 runs serving East Paso Robles would begin their route and then stop at the Paso Robles Intermodal station before continuing southward.

Long Term Bus Stop Improvements

Corridor Focus of Bus Stops at Interchanges

As a long term improvement, the addition of new bus stops at interchanges not currently identified for improvements or new park and ride locations, such as Prime Outlets/4th Street in Pismo Beach, could be considered. While improvements to new interchanges would typically be more costly and may not provide as great a benefit as short/medium term interchange improvements identified above, a comprehensive strategy to focus BRT access on the Highway 101 corridor could be considered. A focused strategy minimizing routing on surface streets would allow service speeds to improve and travel times to be reduced. This strategy will be beneficial to consider as part of the ongoing Highway 101 Corridor Master Plan being led by SLOCOG.



New Downtown SLO Transit Center

A new downtown transit center in San Luis Obispo is currently being planned because the existing location is at capacity cannot accommodate near term or future growth. While full funding has not yet been identified, this long term option would provide a high benefit to BRT service in the County by improving bus efficiency and ease of transfers in downtown.

TRANSIT SERVICE IMPROVEMENTS

Several types of improvements could be implemented to improve the quality and frequency of transit service within the County. Candidate bus service projects to support BRT are listed in Table 1 below. A more detailed description of each candidate project follows.

TABLE 2: CANDIDATE TRANSIT SERVICE IMPROVEMENT PROJECTS**Short / Medium Term Projects (1-5 Year Implementation)**

- Create a targeted marketing and branding strategy for express bus service
- Partner with major employers and Cal Poly to provide reduced cost RTA monthly transit passes to employees
- Increase Route 10 service frequency
- Increase Route 9 service frequency
- Route 9 realignment through SLO - Direct to downtown, then to Cal Poly
- Route 10 realignment through SLO - Direct to downtown via Marsh
- Special express bus fare structure
- Provide earlier service for Routes 9 and 10
- Provide later service for Routes 9 and 10
- Feeder route access improvements for efficient transfers
- Consolidate stops on Route 10 in San Luis Obispo
- Consolidate stops on Route 9 in Atascadero
- Route 9 realignment through Atascadero, excluding El Camino Real and bypassing Santa Margarita
- Additional transit improvements to downtown intersections in San Luis Obispo for Routes 9 and 10
- Provide additional weekend service

Long Term Projects (5+ Year Implementation)

- Transit Signal Priority in San Luis Obispo for Routes 9 and 10
- Transit Signal Priority for Other Areas
- Bus priority on US 101 Main Line in congested segments

Source: Fehr & Peers, 2013



Short / Medium Term Service Improvements

Targeted Marketing and Branding Strategy

A key aspect to improving the visibility of transit service in the County is to develop and implement a targeted marketing and branding strategy. Such a strategy would involve developing a marketing plan focused on reaching targeted audiences, including “choice” riders who have access to alternate forms of transportation but would be interested in taking the bus.

Monthly Transit Pass Partnership with Major Employers and Cal Poly

A potential strategy for broadening the market of potential bus transit riders would be to form a partnership with major employers in the region to offer reduced price monthly transit passes to employees and students. This would help improve ridership and create new incentives to take the bus. Additional ridership demand would in turn permit RTA to expand service offerings in a more comprehensive way, including adding more express service.

Increase Service Frequency

Increase service frequencies of Routes 9 and 10 are an option to provide better service and increase travel choice for commuters using Routes 9 and 10. Currently bus travel times for Routes 9 and 10 are somewhat limited for commuters, and there are only a few express runs each day. This means that some passengers may not have bus departure times that serve their needs, so they are required to take other forms of transportation. Increased frequencies to 3 buses per hour in peak commute times (in the peak direction) would improve the ability for more passengers to use Routes 9 and 10 for commute or other purposes.

Route 9 Realignment through SLO

Route 9 currently goes to Cal Poly before heading to downtown. This route adds about ten minutes of travel time for passengers alighting at downtown. A potential strategy for improving service for passengers traveling to downtown is to allow some runs to travel direct to downtown, and then to Cal Poly.

Route 10 Realignment through SLO

Route 10 currently exits at South Higuera in San Luis Obispo and travels on surface streets for several miles prior to entering downtown. This adds unnecessary travel time for passengers traveling to downtown or Cal Poly. A potential BRT strategy would be to permit some express runs to travel direct to



downtown via the Marsh Street interchange, excluding South Higuera. South Higuera would continue to be served by local Route 10 runs, and potential some express runs.

Special Express Bus Fare Structure

A special express bus fare structure would help distinguish BRT service from local service. Express bus fare structures are used on many areas for express runs that focus on maximum efficiency and faster travel times than local service. In addition to allowing passengers to pay more for higher speed, more efficient service, it would also result in increased revenues to implement additional enhancements. Typical fares for express route range from 50 to 100 percent higher than local fares. RTA currently employs a graduate fare structure depending on the length of trip, so an express bus fare structure could also vary in accordance with variation in local base fares.

Provide Earlier and/or Later Service

Input from the public outreach process resulted in strong support for expanding service times for Routes 9 and 10, particularly for extending weekday service past 8:30 pm in the evenings for passengers with evening appointments or classes. While expanded service is not necessarily a characteristic unique to BRT service, it could be considered as a complementary strategy that benefits both local service as well as BRT service in the corridor.

Feeder Route Access Improvements

In an urban BRT system, feeder routes are commonly designed to provide access to the high capacity BRT corridor and allow for efficient transfers between routes. In San Luis Obispo county, there are a limited number of feeder routes, but some improvements could be considers to better integrate local service with express service on Routes 9 and 10. This includes potential connections with Paso Express (Routes A, B and C) and South County Area Transit systems (Routes 21 and 24), as well as RTA Routes 12 and 14 to Cuesta College and Morro Bay.

Consolidate Bus Stops on Route 10 in San Luis Obispo

There are many Route 10 stops on Route 10 in San Luis Obispo. These stops are generally spaced close together and do not have high ridership levels. As a way of improving bus travel times on Route 10 for both express and local service, some stops could be consolidated.

Consolidate Bus Stops on Route 9 in Atascadero

Atascadero currently has a number of bus stops along El Camino Real. Based on the North County Transit Plan recommendation, Route 9 service will be integrated with the El Camino Shuttle, which will add additional stops to the route north of downtown Atascadero. Travel along El Camino Real is oftentimes a



source of delay for Route 9. By consolidating stops to a regular spacing interval more consistent with BRT service, travel times could be substantially improved.

Route 9 Realignment through Atascadero

Another option to improve bus travel time and efficiency is to realign Route 9 in Atascadero to exclude El Camino Real and bypass Santa Margarita. While this would better service new park and ride stops in Atascadero at Santa Rosa and Santa Barbara interchanges, it would require more detailed study to better determine local service needs along El Camino Real if Route 9 were realigned.

Downtown Intersection Improvements in San Luis Obispo

Certain types of intersection improvements would help improve the efficiency and reliability of transit through downtown San Luis Obispo. Intersection improvements supporting transit include bus “bulbs” or curb extensions that permit buses to stop in a travel lane while loading and unloading passengers. Bus bulbs reduce transit delay by eliminating the need for buses to wait to reenter traffic when leaving a bus stop. Additional improvements could include the addition of a “queue jump” lane that allows buses to move ahead of a line of stopped vehicles, and consideration of new traffic signal timing and phasing strategies that would reduce delay for buses.

Additional Weekend Service

Additional weekend service on Routes 9 and 10 received strong support as part of the outreach process. While additional service on weekends is not a BRT improvements, it could be considered to promote marketing that Routes 9 and 10 can effectively service weekday as well as weekend travel. Introduction of express service on weekends could also be considered as part of this strategy.

Long Term Bus Service Improvements

Transit Signal Priority in San Luis Obispo

While not likely to be a cost effective short term strategy, Transit Signal Priority (TSP) could be implemented in San Luis Obispo for a rerouted Route 9 (along Monterey and California Streets) and for Route 10 (along Higuera). TSP would provide additional travel time saving for buses at intersections where delays are high, though it typically is only installed at intersections where transit frequencies are high. The added benefit of TSP in San Luis Obispo is that it could benefit not only Routes 9 and 10 but also other San Luis Obispo City Transit routes.



Transit Signal Priority in Other Cities

Transit Signal Priority (TSP) could also be implemented in other cities in the County where bus delays are high due to long signal cycle lengths or congested conditions. While TSP is typically only worthwhile if transit frequencies are high and delay savings are substantial, some intersections where multiple routes come together, such as in Pismo Beach and Arroyo Grande would be potential long term candidates for TSP outside of downtown San Luis Obispo.

Bus Priority on Highway 101

Bus priority on Highway 101 is a long term strategy that would allow buses to bypass congested sections of the freeway. Bus priority would typically involve buses traveling on shoulders that are designed to accommodate bus travel. Dedicated busways are another example of bus priority on freeways, but they are generally only considered in urban areas with high transit frequencies. Implementation of this strategy would involve working with Caltrans District 5 to permit bus-on shoulder operations on select segments of US-101 where bus delays are likely to increase in future. Obtaining State Highway Operation and Protection Program (SHOPP) funds to construct bus-on-shoulder areas could be limited by funds available, however.

ON-BOARD AMENITIES

TABLE 3: ON-BOARD AMENITIES PROJECTS

Short / Medium Term Projects (1-5 Year Implementation)

- Procure separate BRT motorcoaches
- On board Wi-Fi
- Increase on-board bicycle storage

Long Term Projects (5+ Year Implementation)

- Provide new fleet of electric or fuel cell buses

Source: Fehr & Peers, 2013

Short / Medium Term Improvements

Procure Separate BRT Motorcoaches

Separate BRT motorcoaches would serve as a way to highlight BRT service as distinct from local bus route, thus providing an important differentiation that could improve the visibility of bus transit in the County. RTA is planning on procuring several new buses in 2014, so there is an opportunity to specify that the



upcoming procurement includes a separate bus type that could be used for BRT or express bus runs. Separate BRT motorcoaches would enable the following amenities to be included:

- High-back reclining seats
- Tray tables/drink holders
- Electrical outlets
- Overhead lighting

On Board Wi-Fi

On-board wi-fi is an improvement that is being considered by many transit agencies as they seek to provide service that meets the needs of today's commuters. Wi-fi, if fast and reliable, can be one way of attracting new riders, because it offers the possibility of using time on board the bus for work or other purposes where internet access is useful.

Increase On-board Bicycle Storage

RTA buses currently have a very high capacity for bicycle storage, with space for three bicycles in the front of most buses and another two bicycles in the back. While this storage is greater than is provided by many other transit agencies, there are still times when bicycle racks are all utilized on a particular bus. There are opportunities to further increase bicycle storage, which involve providing additional racks inside of vehicles (typically near the front of the bus), or providing storage in bays underneath vehicles. Providing underneath storage is not possible with RTA's current fleet of buses, so a new bus type would be necessary to provide this type of bicycle storage.

Long Term Improvements

Zero Emission Buses

In the longer term, a potential strategy of providing sustainable, high visibility and attractive BRT service would be to switch to an entirely new type of bus vehicle, either electric or hydrogen fuel cell. These types of buses are not currently in widespread production, but an increasing number of prototypes have been developed and tested. As a result, this technology is expected to become available in the next 5-10 years and could be considered when RTA procures new motorcoaches in the future.



**APPENDIX F: COMMENTS RECEIVED ON CANDIDATE BRT
IMPROVEMENTS**

COMMENTS ON BRT PROJECTS

This section includes a summary of comments received on candidate improvements, including comments from Caltrans and the City of Atascadero.



DEPARTMENT OF TRANSPORTATION

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*Flex your power!
Be energy efficient!*

June 28, 2013

Ronald L. De Carli, Executive Director
San Luis Obispo Council of Governments
1114 Marsh Street
San Luis Obispo, CA 93401

Dear Mr. De Carli:

US 101 REGIONAL BUS RAPID TRANSIT APPLICATIONS STUDY

Thank you for the opportunity to review your agency's draft 2013 *San Luis Obispo County Highway 101 Regional Bus Rapid Transit Applications Study*. We recognize and appreciate San Luis Obispo Council of Governments for addressing our main concerns in this study.

We agree that identifying potential funding sources for capital improvements, along with ongoing operations and maintenance costs, is a key next step for prioritizing projects. The final study should also specify that comprehensive operational and geometric analyses are necessary prior to implementation. It should also note that, if a proposed highway improvement requires a deviation of design standards, Caltrans must approve the deviation prior to commitments on the specific geometrics.

We respectfully reiterate our request that your agency include all of our comments submitted to date in the final plan as an appendix. These comments remain applicable to the next phase of this study and final implementation as well.

In conclusion, we agree with the study's recommendation for SLOCOG to seek funding at the federal, state and local levels to support bus ridership and improved transit service region-wide. This includes pursuing grant funding and local partnerships with a priority on initial investment package improvements.

We look forward to continuing our work with SLOCOG to develop the most efficient, safe and sustainable regional transportation system for all users. If you have any questions, please contact Cindy Utter at 805-549-3648 or email cindy.utter@dot.ca.gov.

Sincerely,

A handwritten signature in black ink, appearing to read "Larry Newland".

LARRY NEWLAND, AICP
Planning Branch Chief, South

DEPARTMENT OF TRANSPORTATION

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*Flex your power!
Be energy efficient!*

April 22, 2013

Ronald L. De Carli, Executive Director
San Luis Obispo Council of Governments
1114 Marsh Street
San Luis Obispo, CA 93401

Dear Mr. De Carli:

SLOCOG REGIONAL BRT APPLICATIONS ALONG US 101 CORRIDOR STUDY

Thank you for the opportunity to review Technical Memos #5 and #6 regarding your agency's study titled *Regional Bus Rapid Transit (BRT) Applications along the US 101 Corridor*. We appreciate your agency's extensive public outreach and planning efforts conducted on this important regional study. Going forward, this plan should seek to acknowledge and balance the mobility needs for safe and efficient travel through and across the corridor for all users.

This study would be stronger with a more in-depth evaluation and/or discussion on how well improving the interchanges for BRT—mostly estimated in the millions of dollars—compares with incorporating other local transit improvements ranging from \$10,000 to \$500,000. The expanded subject would address the potential benefits and time savings of the major proposed improvements as well as consider the estimated costs for long-term operations and maintenance along with other clear advantages.

The plan should acknowledge that this is the first comprehensive regional study on BRT in this county. As such, it should specify its limitations and provide recommendations for the next study effort, if applicable.

Overall, the plan would greatly benefit with more discussion of the following: potential solutions, prioritized and cost-estimated improvements, implementation and funding strategies, and recommended next steps and/or actions the San Luis Obispo Council of Governments (SLOCOG) should take for full plan realization.

We offer the attached comments for your consideration and hope they will assist you in the next steps. Please note these are in addition to our informal comments submitted in October 2012 on this study (also attached). We respectfully request that your agency include all of our comments submitted to date in the draft plan as an appendix.

Ronald L. De Carli, Executive Director

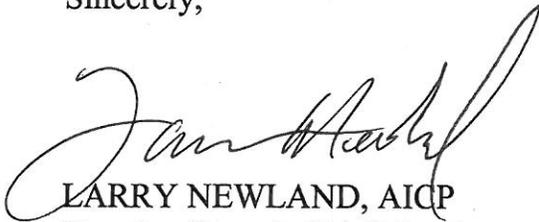
April 22, 2013

Page 2

We appreciate the opportunity to continue working closely with SLOCOG on developing the most efficient, safe and sustainable regional transportation system for all users, and we look forward to reviewing the draft BRT study in the next few weeks.

If you have any questions, please contact Cindy Utter at 805-549-3648 or email cindy.utter@dot.ca.gov.

Sincerely,



LARRY NEWLAND, AICP
Planning Branch Chief, South

Attachment – Specific Comments

/cu

Attachment

Additional Comments by Caltrans

Proposed new hook ramp stops in South County at the US 101/Brisco Road interchange

Caltrans does not support the new bus ramp stops proposed on US 101 north and southbound at Brisco Road. Please consider the following major concerns regarding these proposed improvements at this interchange:

- The City of Arroyo Grande has not yet selected a build alternative for the US 101/Brisco Road interchange project. If the hook ramp alternative is chosen, it would have non-standard design features such as a short weaving section. The proposed bus stop located between the hook on-ramp and off-ramp is not ideal. Such a stop is located in Marin County within Caltrans' right-of-way. However, the Transportation Authority of Marin (TAM) has recognized the non-standard and outdated hook ramp design that has existed for more than 50 years since the freeway was built.

An active project, titled the US 101/Greenbrae/Twin Cities Corridor Improvements, is under way in Marin County to replace these hook ramps and relocate the bus stops within the hook ramps to adjacent frontage road locations where it's safer and more accessible for transit users.

- Hook ramps are not an ideal location for a bus stop as the passenger refuge area would be exposed to high speeds next to the mainline and on the off-ramp as well. Jeopardizing the safety of the transit users' by placing them at unsafe locations for a slight gain in traveling time is not acceptable. There are other methods to expedite travel for buses on the local system such as a bus-only lane and/or traffic signal pre-emption at signalized intersections for BRT buses.
- Accessibility is a major issue. At this interchange, the existing park-and-ride lot is located on the southbound side of US 101, more than a third of a mile away from the proposed bus stop on the northbound side. Please consider that every other proposed BRT bus stop in this planning document is situated adjacent to a park-and-ride lot.

Caltrans recommends relocating the proposed US 101/Brisco Road ramp bus stops to the adjacent frontage road (West Branch Street) and next to a new park-and-ride lot, or use existing shopping center parking spaces to provide safer and more accessible bus stops. Please note that the BRT study proposes two other bus stops located off-system, one at the US 101/Santa Barbara Road interchange and the other at the US 101/Willow Road interchange. It is an acceptable option to place the bus stops off-system.

Bus on Shoulders along US 101

Please note that highway shoulders provide numerous important functions. Safety and efficient traffic operations can be adversely affected if any of the following functions are compromised:

- Shoulders provide space for emergency storage of disabled vehicles. Particularly on high-speed, high-volume highways such as urban freeways, the ability to move a disabled vehicle off the travel lanes reduces the risk of rear-end crashes and can prevent a lane from being closed, resulting in severe congestion and safety problems on these facilities.
- Shoulders provide space for enforcement activities. This is particularly important for the outside (right) shoulder because law enforcement personnel prefer to conduct enforcement activities in this location. Shoulder widths of approximately eight feet or greater are normally required for this function.
- Shoulders provide space for maintenance activities. If routine maintenance work can be conducted without closing a travel lane, both safety and operations will be improved.
- Shoulders provide an area for drivers to maneuver to avoid crashes. This is particularly important on high-speed, high-volume highways or at locations where there is limited stopping sight distance.
- Shoulders provide emergency responders with a clear path when the travel lane(s) is blocked.
- Shoulders improve bicycle accommodation. For most highways, cyclists are legally allowed to ride on the travel lanes. A paved or partially paved shoulder offers cyclists an alternative to ride with some separation from vehicular traffic. This type of shoulder can also reduce risky passing maneuvers by drivers.
- Shoulders increase safety by providing a stable, clear recovery area for drivers who have left the travel lane. If a driver inadvertently leaves the lane or is attempting to avoid a crash or an object in the lane ahead, a firm, stable shoulder greatly increases the chance of safe recovery.
- Shoulders improve stopping sight distance at horizontal curves by providing an offset to objects such as barrier and bridge piers.
- On highways with curb and enclosed drainage systems, shoulders store and carry water during storms, preventing water from spreading onto the travel lanes.

- On high-speed roadways, shoulders improve capacity by increasing driver comfort.

By law, highway shoulders are not travel ways. Allowing buses to use the shoulders would require legislative changes to the Streets and Highways Code and/or Vehicle Code, and establishment of a new set of guidelines governing the shoulder usage would also be required.

New Bus Stops at Spyglass Drive (South County) – Please clarify that a new bus stop at this location was identified as a *potential improvement* in the 2011 *San Luis Obispo South County Bus Rapid Transit Assessment* rather than a recommendation. Please note the same clarification is needed on Page 9 in reference to a new park and ride lot at either the US 101/Los Berros or US/101 Willow Road interchanges.

SLOCOG Regional BRT Applications Along US 101 Study

October 17, 2012

Caltrans' comments on materials issued to date

General:

- 1) The study should address the comparison and detailed cost-benefit analysis of improving US 101 for BRT elements versus the local streets and roads for these elements. This main task is the reason the original scope of work (project limits and various tasks) on this study was revised and expanded at Caltrans' direction with additional funding secured for more in-depth analysis.

Specific:

1) **Memo 2**

- Page 14 – Please note that the *hook ramps* at US 101/Brisco Road in Arroyo Grande is just one alternative design option.
- Page 19 – For better reference, please include the name of the organization along with the completion dates, or current status, for all of the studies listed on this page.
- Page 19 – Please include the following studies on this page along with the current status:
 - SLOCOG's US 101 Corridor Mobility Master Plan (countywide, now under way).
 - City of San Luis Obispo's Bob Jones Trail Connection Plan (LOVR to Octagon Barn, under way).
 - Pismo Beach Complete Streets Plan (under way).
 - Caltrans US Route 101 Corridor System Management Plan (Santa Maria to Arroyo Grande, completed June 2012).
- Page 21 – Please list and briefly describe the interchange projects under way along the US 101 corridor offering opportunities to incorporate BRT services within their designs (Paso Robles, Atascadero, San Luis Obispo and Arroyo Grande).

- 2) **Cover Page, Memo 4** -- Proposed Evaluation Measures Box – Under Sustainability Measures, please consider including such system performance measures (or indicators) as vehicle miles traveled (VMT), vehicle trips per day, intersection density, average

distance to transit (residential and non-residential), distance to commercial outlets, and distance to parks/recreation.

3) Preliminary List of Improvements

- As referenced in our previous correspondence to your agency (dated Oct. 30, 2008): Regarding proposed bus on shoulder (BOS) improvements, please note that opportunistic widening of the highway's shoulders to accommodate buses is not an appropriate use of limited and severely constrained State Highway Operation and Protection Program (SHOPP) funds. Even if it could be accomplished this way, the result would be a discontinuous system of BOS completed over an uncertain timeframe. If the limits of a future SHOPP project did coincide with the entire corridor study area, the scope of work to accommodate the full width and structural section necessary to carry a bus would require another funding source.
- Please consider making the short, mid and long-term timeframes for improvements consistent with those listed in the 2010 Regional Transportation Plan (page 4-55).
- For clarity, please consider adding the word *bus* to the list of bus stop improvements for pedestrian access.
- As referenced in our previous correspondence to your agency (dated May 12, 2011): Please consider that the proposed park and ride lot at US 101/Los Berros Road is likely supportable as shown on page 35, Figure 3, of SLOCOG's 2011 *San Luis Obispo South County Bus Rapid Transit Assessment*.

Caltrans District 5 Traffic Operations Comments

- 1) Caltrans District 5 Traffic Operations will not support the proposed designs of placing a bus stop between two hooked ramps such as proposed at the US 101/Brisco Road new northbound ramps and the US 101/Los Osos Valley Road northbound ramps. They are unsafe designs as they place pedestrians in close proximity to high speed traffic.
- 2) Issues to consider as SLOCOG moves forward with the BRT study:
 - All proposed stop locations should comply with Americans with Disability Act (ADA) requirements and standards.
 - Occasionally, Caltrans will need to conduct ramp closures, both planned and unplanned (emergency closures). The study needs to consider how these closures would affect BRT service. Would Caltrans be required to coordinate with SLOCOG and/or RTA on planned closures? Would RTA provide temporary stop location(s) or close the stop all together?

- Typically, the shoulder area provides emergency parking for disabled vehicles to move off of the traveled way. Does SLOCOG/RTA have a contingency plan in case the stop is blocked or used by a disabled vehicle? The stopped bus should not block the travel way.
- The BRT study should include a quantitative analysis showing the measure of effectiveness (other than travel time) with the proposed new BRT bus service. The travel speed on US 101 is not guaranteed over time as congestion increases with the rise in traffic volumes.



CITY OF ATASCADERO

6907 EL CAMINO REAL, ATASCADERO, CA 93422

Telephone (805) 461-5000 * Fax (805) 461-7612

April 16, 2013

Ms. Eliane Wilson, Transportation Planner
San Luis Obispo Council of Governments
1114 Marsh Street
San Luis Obispo, CA 93401

RE: Review Comments of *Regional BRT Applications Study Technical Memo #5 & #6*

Dear Ms. Wilson,

On behalf of the City of Atascadero I have reviewed the draft document prepared by Fehr & Peers Consulting Engineers dated April 5, 2013 and have the following comments:

General Comments

1. An analysis is needed on proposed or expected ridership increases, and how the projection folds into the implementation plan. It is important to know whether the proposed BRT system represents a reduction to current routes and proposed express routes associated with the North County Consolidation program.
2. The City would request that a fully developed plan be prepared that includes an overall master plan for implementing a BRT Program as well as a funding program that conceptualizes a potential funding source for the program.
3. The BRT plan should clearly set out the interim steps required to implement the program, i.e. initial use of existing transit centers, triggers for on-ramp improvements, capital improvement priorities, etc.
4. The City requests a finance and funding discussion be added that identifies realistic funding sources and the impact to existing TDA funding so that the City can fully evaluate the effect of expected future capital costs and ongoing operational costs.

Atascadero Specific Site Comments

1. *Santa Barbara Road P&R Site*
 - a. The conceptual site is shown on property owned by the City of Atascadero and the Dove Creek Homeowners Association. There is also a major drainage swale that bisects the proposed site. The proposed site is also in an environmentally sensitive

riparian area that is used as a wetland impact mitigation site for the Dove Creek development.

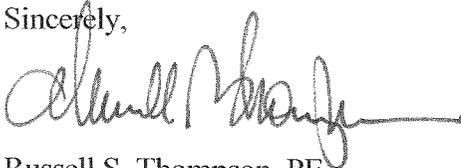
- b. The City plans to construct modern roundabouts at the ramp heads for the freeway interchange. The improvements should be planned to accommodate the easterly roundabout footprint.
- c. Project costs appear to be unrealistically low given the highly constrained site, property acquisition, and site environmental and engineering challenges.

2. *Santa Rosa Road P&R Site*

- a. The City plans to construct modern roundabouts at the ramp heads for the freeway interchange. The improvements should be planned to accommodate the easterly roundabout footprint.
- b. Parking at the easterly facility, should agreement not be reached with the Motel 6 Property owner for daytime parking, will impact on-street City parking facilities along El Camino Real. Street widening and pedestrian facilities along Santa Rosa Road to El Camino Real would be required. These facilities would need to consider the future roundabout footprint.
- c. Project costs appear to be unrealistically low given the highly constrained site, property acquisition, and site environmental and engineering challenges.

We urge SLOCOG and their consultant to complete an implementation component as well as associated potential funding strategies prior to beginning the BRT program to the Board for approval. We look forward to continued involvement in this project development.

Sincerely,



Russell S. Thompson, PE
Public Works Director

xc: Ron DeCarli, Executive Director SLOCOG
File

**APPENDIX G: CANDIDATE BRT IMPROVEMENTS – DETAILED
PRIORITIZATION RESULTS**

Table G-1: SLOCOG BRT Applications Study: Candidate Project Evaluation Matrix for Near and Medium Term Projects

June 2013

Category	Number	Type	Improvement	Benefits Category								Cost Category			Tier	
				Transit Operations	Transit Ridership	Traffic Operations	Sustainability	Pedestrian and Bicycle Conditions	Parking and Drop Off	Urban Design, Placemaking and Landscaping	Overall Benefits Score (Weighted)	Capital Cost Range	Operating Cost Range	Other Factors		
		Local (L) or regional (R)		Bus access and travel time, reliability	Increased ridership	Effect on traffic and transit speeds and delays, safety	Support for Caltrans "Smart Mobility" measures	Access to transit for bicyclists and pedestrians, bicycle and pedestrian connectivity and safety	Park-and-ride capacity and access; parking conflicts with buses; improved pick-up/drop-off	Sense of identity for transit in County; community identity	Overall ability to meet evaluation criteria	Order of magnitude range of capital/construction costs	Range of ongoing operating and maintenance costs	Feasibility, constructability		
				Weighting	4.5	4.3	4.3	3.3	4	4	3.1					
Bus Stop Improvements	B1	R	Additional bike parking at high ridership stops	Add new high-quality, secure bike parking/lockers at top 5-10 highest bicycle ridership stops	+	+	+	++	+++	+	++	42	\$10-100k	\$\$	High	Tier 1
	B2	L	Bus Stop pedestrian access improvements (North County)	Pedestrian improvements in North County would focus on highest ridership locations, including downtown Paso Robles and Atascadero	o	+	+	++	+++	+	+++	40	\$10-500k	\$	High	Tier 1
	B3	L	Bus Stop pedestrian access improvements (South County)	Pedestrian improvements in South County would focus on highest ridership locations, including Arroyo Grande	o	+	+	++	+++	+	+++	40	\$10-500k	\$	High	Tier 1
	B4	L	Bus Stop bike access improvements (North County)	Improvements in North County would focus on highest ridership locations, including downtown Paso Robles and Atascadero	o	+	+	++	+++	+	++	37	\$10-500k	\$	High	Tier 2
	B5	L	Bus Stop bike access improvements (South County)	Improvements in South County would focus on highest ridership locations, including Arroyo Grande and Nipomo	o	+	+	++	+++	+	++	37	\$10-500k	\$	High	Tier 2
	B6	R	Real time stop information	Add real-time information displays at express bus stops	++	+++	+	++	o	+	++	43	\$1-5M	\$\$	High	Tier 1
	B7	R	New shelters at high ridership stops	Add new high-quality transit shelters at top 5-10 highest ridership stops	+	++	+	+	+	+	+++	38	\$100-500k	\$	High	Tier 2
	B8	L	Add new park and ride capacity at Paso Robles intermodal station	Use local on-street parking on select blocks as designated/permitted park and ride spaces; consider additional park and ride locations in east Paso Robles	++	++	+	+	++	++	++	47	\$100-500k	\$	Med	Tier 1
	B9	R	New/expanded park and ride facility in North County at Santa Barbara interchange in Atascadero	May require rerouting of Route 9 to bypass Santa Margarita, or having only Route 9 Express buses serve stop. Option to keep Route 9 on El Camino in Atascadero or to provide service only on US-101	++	++	+	+	+	+++	+	44	\$2-6M	\$	Med	Tier 1
	B10	R	Provide new bus stops at Spyglass Drive (South County)	Create new stops consistent with South County BRT Study recommendation	+++	++	+	+	+	+++	+	49	\$1-5M	\$	Med	Tier 1
	B11	R	New/expanded park and ride facilities in North County at Santa Rosa interchange in Atascadero	Would require rerouting of Route 9 to bypass El Camino in Atascadero or to provide service only on US-101	++	++	+	+	+	++	+	40	\$3-6M	\$	Med	Tier 2
	B12	R	Reconfigure stops at Las Tablas (Templeton) park and ride facility in North County	Would involve addition of on-ramp stops at Las Tablas Rd interchange	+++	++	+	+	+	+++	+	49	\$1-3M	\$	High	Tier 1
	B13	R	New hook ramp or park and ride stops in South County near Brisco Road interchange	Implement new ramp or park and ride stops at northbound and southbound ramps to serve Park and Ride and provide more direct routing through area	+++	++	+	+	+	+++	+	49	\$1-5M	\$	Med	Tier 1
	B14	R	Provide fare kiosks at high ridership stops	Fare kiosks are planned for downtown SLO but could be considered at other locations to facilitate boarding	++	++	+	+	+	+	++	39	\$100-500k	\$\$	High	Tier 2
	B15	R	New/expanded park and ride facilities at Los Berros or Willow interchange	Create new stops consistent with South County BRT Study recommendation	+	++	+	+	+	++	+	36	\$1-5M	\$	Med	Tier 3
	B16	R	New ramp stops in North County at SR-46	Implement new on-ramp stops at SR-46 in conjunction with planned interchange improvements	+	+	+	+	+	+	+	27	\$1-5M	\$	Med	Tier 3
Service Improvements	S1	R	Create a targeted marketing and branding strategy for express bus service	Marketing strategy would include media outreach, press releases, advertisements, partnerships with local agencies, etc.	+	++	+	++	o	+	+++	37	\$100-500k	\$\$	High	Tier 2
	S2	R	Partner with major employers and Cal Poly to provide reduced cost RTA monthly transit passes to employees	Reduced cost transit passes would provide a broader market opportunity for choice riders. Would need to be accompanied by other improvements in service	++	+++	++	+++	o	+	++	50	\$20-100k	\$\$	High	Tier 1
	S3	R	Increase Route 10 service frequency	Increase weekday service frequency during peak hours to 3 buses per hour (in peak direction)	++	+++	++	++	o	+	++	47	\$1-5M	\$\$\$	High	Tier 1
	S4	R	Increase Route 9 service frequency	Increase weekday service frequency during peak hours to 3 buses per hour (in peak direction)	++	+++	++	++	o	+	++	47	\$1-5M	\$\$\$	High	Tier 1
	S5	R	Route 9 realignment through SLO - Direct to downtown, then to CalPoly	To serve higher ridership stops first, realign Route 9 through San Luis Obispo to serve downtown transit center first, then travel to Cal Poly	+++	+	++	++	o	++	++	47	\$100-500k	\$	High	Tier 1
	S6	R	Route 10 realignment through SLO - Direct to downtown via Marsh, excluding S Higuera	To improve travel times, realign Route 10 to serve the downtown transit center directly from Marsh, eliminating South Higuera Stops	+++	+	++	++	o	++	++	47	\$100-500k	\$	High	Tier 1

Category	Number	Type	Improvement	Benefits Category								Cost Category			Tier	
				Transit Operations	Transit Ridership	Traffic Operations	Sustainability	Pedestrian and Bicycle Conditions	Parking and Drop Off	Urban Design, Placemaking and Landscaping	Overall Benefits Score (Weighted)	Capital Cost Range	Operating Cost Range	Other Factors		
		Local (L) or regional (R)			Bus access and travel time, reliability	Increased ridership	Effect on traffic and transit speeds and delays, safety	Support for Caltrans "Smart Mobility" measures	Access to transit for bicyclists and pedestrians, bicycle and pedestrian connectivity and safety	Park-and-ride capacity and access; parking conflicts with buses; improved pick-up/drop-off	Sense of identity for transit in County; community identity	Overall ability to meet evaluation criteria	Order of magnitude range of capital/construction costs	Range of ongoing operating and maintenance costs	Feasibility, constructability	
Service Improvements	S7	R	Special express bus fare structure	Develop separate express bus fare structure, with higher fares for express routes that provide a higher level of amenity and service (improvement should be paired with new bus fleet or other significant service changes that reduce travel times)	+	++	++	++	o	+	+++	41	\$20-100k	\$	High	Tier 1
	S8	R	Route 9 realignment through Atascadero, excluding El Camino Real and bypassing Santa Margarita	Realign Route 9 through Atascadero to eliminate El Camino stops, replace with on-freeway stops at Santa Rosa and Santa Barbara	++	o	++	++	+	+	++	38	\$100-500k	\$	Low	Tier 2
	S9	R	Consolidate stops on Route 10 in San Luis Obispo	Consolidate closely-spaced or redundant stops to improve travel times and increase reliability	++	o	++	++	+	+	++	38	\$100-500k	\$	Med	Tier 2
	S10	R	Consolidate stops on Route 9 in Atascadero	Consolidate closely-spaced or redundant stops to improve travel times and increase reliability	++	o	++	++	o	++	++	38	\$100-500k	\$	Med	Tier 2
	S11	R	Additional transit improvements to downtown intersections in San Luis Obispo for Routes 9 and 10	Implement intersection improvements for key downtown intersections to improve bus waiting experience and reduce delay (e.g. queue jump lane, bus bulbouts, new signal phasing)	++	+	+	+	+++	o	+++	42	\$100-500k	\$	Med	Tier 1
	S12	R	Provide earlier service for Routes 9 and 10	Begin service on Routes 9 and 10 at 4:30 or 5:00am on weekdays (instead of 5:30-6:00am)	++	+	+	++	o	+	++	34	\$1-5M	\$\$\$	High	Tier 2
	S13	R	Provide later service for Routes 9 and 10	Extend service hours on Routes 9 and 10 to 11pm on weekdays (instead of 8:30pm)	++	+	+	++	o	+	++	34	\$1-5M	\$\$\$	High	Tier 2
	S14	R	Feeder route access improvements for efficient transfers	Implement feeder route changes for routes 12, 15 and El Camino Shuttle to promote and better serve express service	++	+	+	++	+	+	+	35	\$1-5M	\$\$	Med	Tier 2
	S15	R	Provide additional weekend service	Add 2-3 additional runs for Saturdays and Sunday on Routes 9 and 10	++	+	+	+	+	+	+	32	\$1-5M	\$\$	High	Tier 2
On Board Improvements	O1	R	Procure separate BRT motorcoaches	A separate BRT motorcoach fleet would have enhanced on-board amenities, including comfortable seats, outlets, reading lights, table tops, additional bike storage, etc	++	+	++	+++	++	++	+++	57	\$3-10M	\$\$\$	High	Tier 1
	O2	R	On board Wi-Fi	Add on-board wi-fi for all Route 9 and 10 runs	+	+++	+	++	o	+	+++	41	\$1-2M	\$	High	Tier 1
	O3	R	Increase on-board bicycle storage	Add on-board storage racks in front and back of buses to accommodate 7-8 bikes per bus (2-3 front and 5 back)	o	+	+	++	+++	+	+	34	\$\$	\$	Low	Tier 3
<p>Source: Fehr & Peers, 2013</p> <p>Notes:</p> <p>1. Caltrans Smart Mobility criteria include factors related to: how well improvements are integrated with land use, consideration of all travel modes, overall performance of transportation system, reduced Vehicle Miles Travelled (VMT) and vehicle trips</p>				<p>Key:</p> <p>o: does not meet + : minimally meets ++: partially meets +++: mostly/fully meets</p>								<p>Note: Operating Costs are evaluated on a relative scale for costs related to operating and maintaining various improvements (high = \$\$\$, medium = \$\$, low = \$)</p>			<p>High benefit/cost: Tier 1 Moderate benefit/cost: Tier 2 Low benefit/cost: Tier 3</p>	

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Highway 101 Regional Bus Rapid Transit Applications Study



Final Report

Prepared for:



June 2013

FEHR & PEERS

with:

LSC Transportation Consultants

Lisa Wise Consulting

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EXECUTIVE SUMMARY

PROJECT PURPOSE AND OBJECTIVES



Population and employment growth in the San Luis Obispo County area has put pressure on the County's transportation system and resulted in the need to strategically plan for future transportation investments. In addition to population and employment growth, the general population in the county is aging as well. This has meant that transit services are becoming even more important as a way for aging residents to get around. A growing student population has also increased the need for County transit services as higher costs of living restrict private automobile access. Against this backdrop, current economic conditions have meant that there is less funding to provide better service while new funding opportunities are limited.

SLOCOG has been proactive in anticipating the transit needs in the county and has embarked on a series of studies to better improve local and regional transit service and has initiated a study to evaluate Bus Rapid Transit (BRT) opportunities along the Highway 101 corridor, specifically focusing on San Luis Obispo Regional Transit Authority (RTA) Routes 9 and 10.

This purpose of the Regional BRT Applications study is to further advance past transit planning work that has been occurring in the County and provide an assessment of the most effective BRT strategies that can be pursued along the US 101 corridor at interchanges and along streets serving these interchanges. Specifically, the goal is to identify BRT elements that are most suitable for the area, provide a ranking of their effectiveness and propose a timeline for integrating these elements into future projects and programs.

The key project objectives are:

- **Streamline regional transit service in San Luis Obispo County**
- **Attract new transit riders in the County**
- **Evaluate most cost-effective transit improvements in order to develop a prioritized implementation plan**

Utilization of highway bus routes has been around for several decades and operated successfully in many parts of the country. To date, the San Luis Obispo region has evaluated several options to improve their transit system to accommodate their growing population and employment. The San Luis Obispo region



values transit service as an important way to support accessibility for their diverse population. These efforts are reflected in the series of studies conducted to evaluate methods to better improve local and regional transit service. Those past studies serve as an important and useful foundation for the Regional BRT Applications Study.

BACKGROUND CONDITIONS

A great deal of data on demographic and travel conditions also helped inform this study. Data includes socioeconomic trends, transit operations, and utilization of transportation services. Ridership data for Route 9 and Route 10, park-and-ride utilization, population and employment growth, future bus service expansion and technology enhancements are summarized within this report. This data was compiled in order to inform and aid in identifying potential BRT improvements which would most benefit the region. The key conclusions from this evaluation include:

- The majority of population growth is occurring in the North County (about 10 percent along the North Coast and about 30 percent in inland communities) from 2010 to 2035. The Central County is projected to have only minimal change in population, but it is expected to have the highest employment growth between 2010 and 2035 (34%). The South County population is expected to grow by about 18% through 2035.
- Ridership data for Routes 9 and 10 show a steady increase from 2009 to 2011 from 600 to 750 daily riders, ranging from about 5 to 15 percent annual growth. On board surveys indicate the ridership base consists of a high proportion of choice riders and consists of regular riders using the bus 4 or more days a week.



RTA Routes 9 and 10



- The travel time data for Route 9 and 10 indicates inefficiencies causing additional delays along these routes. The close bus stop spacing and the circuitous routes in Atascadero and San Luis Obispo result in additional transit delays along the corridor.
- RTA plans to upgrade their bus fleet to include new GPS technology and computer software to provide Automatic Vehicle Location (AVL) and on board stop announcements; these upgrades provide the foundation for the types of amenities BRT can utilize to increase efficiency. These ITS technologies will be integral to SLOCOG’s plans for future BRT.
- Park-and-ride is well utilized in the County with several lots observed to exceed capacity. These lots offer opportunities to connect regional transit by improving the “last mile connection” and should expand as the County develops BRT along US 101. Evaluating the utilization of these lots will help to consolidate underutilized lots and add more facilities.
- There are several interchange projects underway along the US 101 corridor that offer opportunities to incorporate BRT services within their designs, including in Paso Robles, Atascadero and Arroyo Grande.

PUBLIC INVOLVEMENT AND OUTREACH

An extensive public engagement effort is a key element to receiving insightful feedback on transit barriers and opportunities. The project team worked with SLOCOG to hold a focus group to introduce BRT concepts and gain a better understanding of the awareness and responsiveness to BRT along US 101. Furthermore, the public engagement process included two e-Newsletters, a Facebook page, and a web survey tool to collect data on transit improvements in San Luis Obispo County. A project Open House was held in January 2013 to update participants on the study and obtain feedback regarding proposed BRT improvements and recommendations.

e-Newsletter #1

SLO County US 101 Corridor

BUS RAPID TRANSIT (BRT)

Welcome to the SLO Bus Rapid Transit (BRT) Applications Study e-Newsletter, the first of two e-documents keeping SLO County residents informed and showcasing the project's goals, objectives, funding sources, project team members, deliverables, and examples of BRT in other communities. Ongoing and current information can be found on the project Facebook page: www.facebook.com/SLOCountyRegionalBRTApplicationsStudy. The Facebook page is also a forum for gathering input from the community, so do not hesitate to post your questions or comments.

PROJECT BACKGROUND

In March of 2012, the San Luis Council of Governments (SLOCOG) initiated a BRT Applications Study for the US 101 corridor. The project is funded by a Federal Transit Administration Section 5304 planning grant. Amongst several targeted activities, the grant is aimed at supporting activities that “protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns”. SLOCOG has targeted safe, efficient and attractive public transportation as a critical planning tool to preserve the unique lifestyle in San Luis Obispo and accommodate for anticipated growth in population.

The US 101 Corridor BRT goals include:

- Streamlining and improving the quality of bus transit service in San Luis Obispo County;
- Developing strategies to attract new transit riders in the County; and
- Identifying the most cost-effective transit improvements that can be implemented along the US 101 corridor.

The benefits of BRT can be substantial, including lower environmental impacts (compared to automobile travel), less traffic congestion, faster, more reliable transit service, and higher quality bus stops and other amenities for bus riders.

PROJECT TEAM AND SCOPE

A team of experts was hired through a public competitive bid process lead by SLOCOG. The consultant team includes: Fehr & Pein, a transportation planning and engineering firm in San Jose; USC Transportation Consultants, a multi-modal transportation engineering, research and design firm based in Lake Tahoe, as well as the SLO-based land use planning, economics and public outreach firm, Lisa Wise Consulting, Inc. Throughout the project, the team will be working to review past transit planning work in the County and assess the most effective and feasible strategies to consider along the US 101 corridor in the future. The team will be compiling a great deal of data for this analysis as well as seeking input from SLO county residents, employees and other stakeholders through a focus group, online survey and open house. The final report will include results from the technical evaluations, identification of strategies for planning and phasing, and strategies for investing and developing the most feasible BRT improvements. The project is slated to be completed in May of 2013. Please refer to the project timeline for more specific dates and tasks.

E-newsletter from June 2012





January 2013 Open House in Downtown San Luis Obispo

The focus group session indicated that better communication between local and regional services and later and earlier transit services are existing barriers facing transit in the US 101 corridor. Participants also indicated that Wi-Fi, more comfortable seats on board, and better safety as bus stops would increase transit ridership; increasing visibility at bus stops, such as through effective lighting, may help improve safety at bus stops.

The web surveys provided important insight into the existing transit ridership trends, barriers, and opportunities for improvement. Despite the high number of participants who have access to a vehicle (92 percent), 28 percent use transit as their primary travel mode. More frequent service during commute hours, improving travel time reliability, and shorter travel times are the top three existing service barriers. BRT, which will provide more express service and have more reliable travel times, can address many of these barriers. Additional bicycle storage, both on board buses and at the bus stop, also ranked high for important amenities.

Survey responses indicate the willingness of riders to pay higher fares to have transit improvements that will alleviate these barriers from their trips; this indicates an opportunity for SLOCOG and RTA to investigate fare structures for BRT as a way of partially offsetting the cost of certain improvements. Based on the outreach process to date, service improvements that reduce travel time, increase frequency, and extend service hours earlier and later in the day were noted as being of greatest benefit.



EVALUATION OF CANDIDATE BRT IMPROVEMENTS

The evaluation framework was developed to help guide the evaluation process for identifying and prioritizing potential projects in the County. They fall into several categories, which are summarized below:

- **Transit Ridership:** the ability level of a project in supporting increased ridership
- **Transit Operations:** the efficacy of a project in improving bus access, travel time, and service reliability
- **Traffic Operations:** the capacity of a project to improve roadway safety, reduce modal conflicts, and maintain acceptable traffic congestion
- **Sustainability:** the ability level of a project to integrate “Smart Mobility” measures and the magnitude at which a project affects system performance
- **Pedestrian Conditions:** the effectiveness of a project in addressing pedestrian access, safety, and/or connectivity
- **Bicycle Conditions:** the effectiveness of a project in addressing bicycle access, safety, and/or connectivity
- **Parking and Drop Off Zones:** the capacity of a project to reduce parking conflicts and improve both drop-off/pick-up activities and parking supply and access
- **Urban Design, Placemaking and Landscaping:** the efficacy of a project to create a sense of identity for transit and improve community identity
- **Construction/Cost:** the relative constructability and cost-effectiveness of a project

Also reflected in the evaluation process is public input received from outreach efforts that have occurred as part of this study. Options that would increase transit speeds, improve amenities and provide more service all received strong public support.

PRIORITY BRT PROJECTS

Candidate projects are organized into three main categories supporting overall BRT operations in the County. They are:

- **Bus Stop Improvements**
- **Transit Service Improvements**
- **On-Board Amenities**



Based on the evaluation criteria developed as part of the project, the process of prioritizing projects was completed. Nine categories comprise the evaluation framework, which also accounted for public input from the various outreach efforts that occurred. Projects are also organized into implementation timeframe, resulting in some projects that have an implementation timeframe of less than 5 years, while others have a longer implementation timeframe.

In all, over 30 different projects and types of projects were evaluated through the prioritization process. Top tier (or Tier 1) projects are those that scored highest in the prioritization process. These include 18 projects, or project categories, that would be most effective at achieving the goals of the study to improve transit service in the County.

TABLE E-1: TOP TIER (TIER 1) PROJECTS

Project Category / Description	Relative Cost Range	Ridership Generating Potential	Next Steps/Actions
B1 Additional bike parking at high ridership stops	Low	Moderate	Pursue funding with local agencies (RTA lead)
B2 Bus Stop pedestrian access improvements (North County)	Low/Med	Moderate	Pursue funding with local agencies (RTA lead)
B3 Bus Stop pedestrian access improvements (South County)	Low/Med	Moderate	Pursue funding with local agencies (RTA lead)
B6 Real time stop information	High	High	Conduct evaluation of implementation costs, pursue grant funding
B8 Add new park and ride capacity at Paso Robles intermodal station	Med	Moderate	Develop service plan and park and ride space plan for additional capacity (RTA and Paso Robles)
B9 New/expanded park and ride facility in North County at Santa Barbara interchange in Atascadero	Med/High	Moderate	Develop service plan and park and ride space plan (RTA and Atascadero)
B10 Provide new bus stops at Spyglass Drive (South County)	Med/High	Moderate	Pursue funding with local agencies (RTA lead)
B12 Reconfigure stops at Las Tablas (Templeton) park and ride facility in North County	Med/High	Moderate	Develop service plan (RTA lead)
B13 New bus stop and park and ride lot in South County near Brisco Road interchange	Med/High	Moderate	Review Design Options (Arroyo Grande, Caltrans) and Develop service plan (RTA lead)
S2 Partner with major employers and Cal Poly to provide reduced cost RTA monthly transit passes to employees	Med	High	Meet with Cal Poly, major employers to identify implementation strategy (SLOCOG Rideshare, with RTA)



TABLE E-1: TOP TIER (TIER 1) PROJECTS

Project Category / Description		Relative Cost Range	Ridership Generating Potential	Next Steps/Actions
S3	Increase Route 10 service frequency	Med/High	Moderate	Evaluate opportunities and develop service plan (RTA lead)
S4	Increase Route 9 service frequency	Med/High	Moderate	Evaluate opportunities and develop service plan (RTA lead)
S5	Route 9 realignment through SLO - Direct to downtown, then to Cal Poly	Low/Med	Moderate	Develop service plan (RTA lead)
S6	Route 10 realignment through SLO - Direct to downtown via Marsh, excluding S Higuera	Low/Med	Moderate	Develop service plan (RTA lead)
S7	Special express bus fare structure	Low	N/A (combined with other strategies)	Develop plan for integrating fare structure with other BRT improvements (RTA/SLOCOG)
S11	Additional transit improvements to downtown intersections in San Luis Obispo for Routes 9 and 10	Med	Moderate	Pursue funding with local agencies (San Luis Obispo/RTA)
O1	Procure separate high-quality motorcoaches	High	High	Develop specifications for motorcoaches (RTA/SLOCOG)
O2	On board Wi-Fi	Med/High	High	Conduct evaluation of implementation costs, pursue grant funding

Source: Fehr & Peers, 2013



New, distinctive bus stop shelters can improve the quality and comfort of waiting for the bus, and in addition can be used to provide real-time transit arrival information to passengers



RECOMMENDED BRT STRATEGY AND FUNDING

A major goal of this study is to identify ways to better serve transit riders who have multiple travel choices available but would consider taking transit if the quality, reliability and efficiency of service meets their needs. An important way of capturing choice riders in San Luis Obispo County is to provide opportunities for County residents to drive to BRT stops and transfer to a bus to travel to their ultimate destination. Because the County is geographically diverse and since only a small percentage of residents live within walking distance of Route 9 and 10 stops, providing park and ride capacity to serve a broader segment of the county population is important.

INITIAL INVESTMENT PACKAGE

As a result, projects that involve streamlining bus service at freeway interchanges would integrate effectively with other types of bus stop and service improvements to meet the demands of the choice rider market in the county. These strategies are combined in an overall “Initial Investment Package” of BRT improvements. These projects would provide bus stop improvements, service enhancements and park and ride capacity to support increased ridership on Routes 9 and 10 – particularly Route 9 and 10 express routes that could be branded as BRT-type service. This service would strongly support streamlining transit service and attracting new bus riders within San Luis Obispo County.

This plan does not call for a system that meets the standard industry definition of “Bus Rapid Transit”, in that it does not envision dedicated transit right-of-way, consistent high-platform loading, or pre-payment of transit fares before boarding the bus. Rather, this study has identified that the appropriate strategy for regional services in San Luis Obispo County is an enhanced express bus program that utilizes some of the amenities also seen in successful BRT systems (such as high amenity buses, improved running times, and unique branding) while avoiding the costly capital elements of a “full BRT” strategy.



New express buses and on-board WiFi are two potential BRT improvements for San Luis Obispo County



TABLE E-2: SLOCOG BRT INITIAL INVESTMENT PACKAGE

Proposed Recommendations Package (to be Implemented in Next 2-3 years)	Additional Projects to Be Included In Package (If Funding is Available)
<ul style="list-style-type: none"> • Pursue motorcoach procurement, with BRT-style on-board amenities (comfortable seats, outlets, reading lights, table tops, etc.) • Real time transit information • Implement on-board WiFi • Include new bus stop and park and ride lot near new Brisco Road interchange (freeway ramp or park and ride stop, subject to review/approval by Caltrans) • SLO realignment for Routes 9, 10 to provide direct express routes to downtown transit center • Add secure bicycle parking at highest bicycle access stops • Develop new express bus fare structure (to be rolled out with motorcoach procurement) • Develop unique service branding and marketing strategy 	<ul style="list-style-type: none"> • Develop partnerships with major employers and Cal Poly for reduced cost transit passes • Add additional express bus runs (2-3 runs per day), expanding span of service • Implement bicycle and pedestrian access improvements at 5 locations • Install new, distinctive transit shelters (in conjunction with new stops and/or high ridership locations) • Develop new park and ride lots at Santa Barbara and Santa Rosa interchanges in Atascadero • Implement new bus stops at Spyglass interchange in Shell Beach • Add new park and ride capacity at Paso Robles intermodal station (beyond additional spaces being provided in 2013)

Source: Fehr & Peers, 2013

NEXT STEPS

A key next step in moving forward with top priority projects involved identifying potential funding sources for capital improvements and ongoing operations and maintenance costs. Key funding sources for pursuit include Federal Transit Authority (FTA) grants, statewide grants through Caltrans and other agencies, and regional or local sources. SLOCOG should pursue a combination of grant funding and partnership with local jurisdictions to include projects within local capital improvement and impact fee programs, with a priority on initial investment package improvements.



CHAPTER 1: INTRODUCTION AND REVIEW OF PRIOR BRT PLANNING EFFORTS

SECTION 1-1: PROJECT PURPOSE AND OBJECTIVES

San Luis Obispo County has experienced both population and employment growth in recent decades, which has resulted in the need to manage the County's existing transportation system and proactively plan for future transportation investments. The general population in the County is aging as well, which means that transit services are becoming even more important as a way for aging residents to get around. A growing student population has also increased the need for County transit services as higher costs of living restrict private automobile access. Against this backdrop, there are major challenges to funding new transportation projects.

DEFINITION OF BRT

SLOCOG has recently embarked on a series of studies to better improve local and regional transit service. This study called for including an evaluation of Bus Rapid Transit (BRT) opportunities along the US 101 corridor. BRT is commonly defined as a unique type of bus transit service because of its speed and reliability, distinct identity and image, flexibility in fitting into the local context, as well as its quality and permanence. The Federal Transit Administration defines BRT in the following way:

"BRT is an enhanced bus system that operates on bus lanes and other transitways in order to combine flexibility of buses with the efficiency of rail. By doing so, BRT operates at faster speeds, provides greater service reliability and increased customer convenience. It also uses a combination of advanced technologies, infrastructure and operational investments that provide significantly better services than traditional bus service."

BRT IN SAN LUIS OBISPO COUNTY

BRT in the context of San Luis Obispo County does not meet the standard definition as defined above, in that it does not envision dedicated transit right-of-way, consistent high-platform loading, or pre-payment of transit fares before boarding the bus. This study instead evaluates strategies for regional services that could enhance the County's express bus service in a way that promotes the general goals of faster speeds, greater service reliability and increased customer convenience.



STUDY PURPOSE

The purpose of this study is to further advance past transit planning work that has been occurring in the County and assess most effective BRT strategies that can be pursued along the US 101 corridor at interchanges and along streets serving these interchanges. Specifically, the goal is to identify BRT elements that are most suitable for the area, provide a ranking of their effectiveness and propose a timeline for integrating these elements into future projects and programs. Several key project objectives were established at the outset of the study, including:

- Streamline regional transit service in San Luis Obispo County
- Attract new transit riders in the County
- Evaluate most cost-effective transit improvements in order to develop a prioritized implementation plan

REPORT ORGANIZATION

This report is organized into several sections, including the following:

- *Chapter 1: Introduction and Review of Prior BRT Planning Efforts*
- *Chapter 2: Supplemental Data Collection and Analysis*
- *Chapter 3: Public Involvement and Outreach*
- *Chapter 4: Evaluation Criteria*
- *Chapter 5: Evaluation of Candidate BRT Improvements*
- *Chapter 6: Conclusions*



SECTION 1-2: REVIEW OF PRIOR EFFORTS

The purpose of this section is to provide a summary of relevant studies for BRT in San Luis Obispo County. These studies are broken up into three categories, including:

- 1) Regional and Countywide Studies
- 2) Caltrans Policy Documents, and
- 3) Evaluation and Implementation Materials.

Within each category, the relevant studies and policy documents are summarized to assess key findings applicable to this project.

Utilization of highway bus routes has been around since the early 1950s. According to the Institute of Transportation Engineers (ITE) report, “Bus Stops for Freeway Operations” (1971), these facilities provide access to fast transit service in areas where other transit alternatives consist of time consuming off-expressway travel. To date, the San Luis Obispo region has evaluated several options to improve their transit system to accommodate their growing population and employment. The San Luis Obispo region values transit service as an important way to support accessibility for their diverse population. These efforts are reflected in the series of studies conducted to evaluate methods to better improve local and regional transit service. This chapter will serve to summarize the work that has been occurring to date within the County and at the statewide level.

These studies highlight the benefits and challenges of Bus on Shoulder (BOS) systems, including improving system ridership and efficiency with lower capital costs and more flexibility. A large challenge is that there is currently no nationally recognized or consistent criteria for BOS; without these systems being included in the California Vehicle Code, any program will need to go through an experimentation process. The Decision Document (2008) recommends that legislation be passed to amend the California Vehicle Code to allow for BOS in certain circumstances.

The following documents are summarized in Appendix A:

REGIONAL STUDIES

- 1998 Express Bus Stop Study (SLOCOG, RTA, Caltrans District 5)
- 2006 SLOCOG BRT Feasibility Study (SLOCOG)
- 2010 Regional Transit Authority Short Range Transit Plan (Prepared by Majic Consulting for RTA)



- 2011 South County Transit Plan- BRT Assessment (Prepared by LSC Transportation Consultants for SLOCOG)
- 2012 North County Transit Plan (Prepared by Nelson\Nygaard for SLOCOG)
- 2011/12 San Luis Obispo Coordinated Transit Center Study (Prepared by Dokken Engineering with LSC Transportation)

CALTRANS POLICY DOCUMENTS

- 2007 Caltrans Policy on BRT Implementation Support on California's Highway System
- 2008 Deputy Directive 98, Integrating Bus Rapid Transit into State Facilities
- 2008 Decision Document: Authority for Use of Freeway Shoulders by Transit Buses
- 2008 Bus on Shoulder Concept Study correspondence with Caltrans District 5
- 2009 Statewide BRT project inventory
- 2011 South County BRT Assessment correspondence with Caltrans District 5

EVALUATION AND IMPLEMENTATION

- 2008 Bus On Shoulder Concept Study (Jessica Berry, Cal Poly San Luis Obispo Thesis)
- Standards/ Guidelines Review for Marin County Bus Stops on US 101
- Preferential Bus Treatment in San Luis Obispo (Professor Eugene Jud's Cal Poly San Luis Obispo Public Transportation Class Project Fall 2011)

SECTION 1-3: OVERVIEW OF BRT CONCEPTS AND COMPONENTS

Based on the results of the background studies, a matrix of highway-related candidate BRT improvements and elements was compiled. The following table provides a summary of BRT stop amenities, design features, and ITS applications that relate to rapid or express bus service. The list of twelve candidate concepts is broken up into 1) Bus Pad Location and Amenities, 2) Preferential Treatment- Technical Amenities, and 3) Preferential Treatment- Design Elements.

This matrix was used as a reference for developing a more detailed set of potential BRT concepts and elements to be evaluated.



TABLE 1.1: TYPICAL HIGHWAY-RELATED BUS RAPID TRANSIT (BRT) TREATMENTS

Improvement	Description	Image	Example Location	
Bus Pad Location & Amenities				
1	Location: On Ramp/Off Ramp Stop	Locating the bus pad on the on/off ramp is low to moderate in cost and helps shorten travel time. It may create additional design issues for pedestrian access as these facilities can be difficult to get to. Bus routing can also be challenging if the ramp design is indirect for transit vehicles.		Industrial Way in Larkspur, California (US-101) - Provides an example for efficient exiting and entering the freeway through providing a bus-only link between the two ramps – so the vehicle does not fully exit the freeway.
2	Location: Mainline/ Freeway Level Stop	Locating the bus pad on the highway shoulder creates significant time savings by not forcing the transit vehicle to fully exit the freeway in order to stop at the bus pad. Depending on the freeway ramp configuration, bus pads can sometimes be located in between on- and off-ramps. Design considerations include right of way constraints and merging. It is generally higher in cost compared to the on/off ramp option. Pedestrian access can sometime be challenging.		Puente Avenue in Baldwin Park, California (I-10) - This bus pad is on the freeway level which does not require the vehicle to exit the off-ramp to access the bus pad.
3	Location: On Street Express Bus Stop	Buses fully exit the freeway and travel on streets to reach local destinations. They re-enter the freeway at the next ramp or can even backtrack to the upstream ramp.		Highway 17 Express Route, Scotts Valley, California (local stop)
4	Freeway Bus Stop Passenger Amenities	There are several examples of amenities to improve bus stop facilities and enhance passenger comfort by making stations and stops more attractive. Examples include: glassed walled covered shelters, trash cans, and benches. Intermodal facilities can even offer shops and restaurants. Platforms should make boarding and alighting faster and easier.		Mountlake Terrace in Washington (I-5) - This freeway station includes bus only ramps and a covered pedestrian bridge providing access to a parking structure. This location helps reduce collisions with buses merging with on/off ramps. The facility itself provides a covered bus shelter and waiting area, bicycle lockers, and local artwork

TABLE 1.1: TYPICAL HIGHWAY-RELATED BUS RAPID TRANSIT (BRT) TREATMENTS

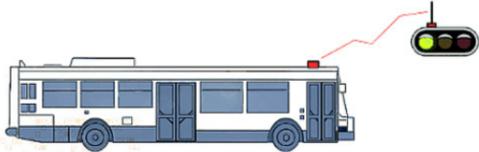
Improvement		Description	Image	Example Location
5	Off- Vehicle Fare Payment	Enabling the system to have payment machines at stations allows passengers to pay before boarding. This will make the process of boarding buses faster and easier.		New York, Metro Transportation Authority
Preferential Treatment- Technical Amenities				
6	ITS: Automatic Vehicle Location (AVL) and Real-Time Passenger Information (RTPI)	ITS improves the reliability, passenger safety, and operations efficiency by relying on wireless technology to monitor various components to the transportation system on the vehicles themselves and at the stations. AVL can provide real time passenger information, such as to the minute arrival information and delays, through online tracking and bus monitoring.		Several agencies in California utilize AVL, including San Francisco Muni, AC Transit, Los Angeles County Metro, Community Transit (Snohomish County), and Foothill Transit.
7	ITS: Transit Signal Priority	Installing a detector will trigger when transit vehicle approaches a signal, sending information to request accommodating transit through an intersection. It can greatly help to reduce overall traffic delays by extending the signal green time for buses or by shortening the signal phase for side streets to minimize bus signal delay. The maintenance cost is relatively small. TSP can also be combined with dedicated “queue-jump” lanes (described below) that allow buses to bypass lengthy vehicle queues at congested intersections.		Some of the agencies within California that utilize TSP includes: Los Angeles County Metro, Santa Clara Valley Transportation Authority, Sacramento Regional Transit District, and City of Glendale, and AC Transit.
Preferential Treatment- Design Elements				
8	Park-and-ride	Providing parking facilities at bus stops can facilitate transit and rideshare use. Bicycle parking can also help facilitate transit utilization. They should be designed to facilitate effective and convenient connectivity to the bus stop itself. Park-and-ride lots are generally on the side of a freeway, requiring pedestrian connectivity through a bridge or underground pathway to connect to both sides of the roadway. If right-of-way permits, some park-and-ride facilities can be located in the center of the freeway.		South Everett Freeway Station in Washington on (I-5) - Provides a park-and-ride in the middle of the freeway with freeway level bus access.

TABLE 1.1: TYPICAL HIGHWAY-RELATED BUS RAPID TRANSIT (BRT) TREATMENTS

Improvement		Description	Image	Example Location
9	Fully Grade-Separated Transit-ways	Exclusive transit-way provides complete separation from mixed flow traffic. Although typically the most expensive option, it can be most successful in reducing trip time.		<i>Pittsburg Grade Separated Bus Way</i>
10	At Grade Transit-way	These facilities are physically separated and utilize fully designated transit ways separated by medians or other barriers. They need to secure right-of-way.		<i>TransMilenio system in Bogotá, Columbia</i>
11	Bus Only Lane	Bus Only Lanes utilize existing infrastructure and provide a designed bus lane within the infrastructure to restrict other vehicles use of the lane. They are enforced with physical barriers or pavement markings. Helps buses minimize delays with other vehicle traffic and improve travel time. Bus-only lanes are typically used in corridors with high bus frequencies.		<i>EmX BRT Corridor, Eugene, Oregon</i>
12	Queue Jump Lanes	Queue jump lanes are stretches of roadway designed for use by buses or BRT vehicles only and can bypass traffic queues at traffic signals. They are designated for exclusive bus use and are typically used in conjunction with transit signal priority (TSP) applications.		<i>Olive Way, Seattle, Washington</i>

Source: Fehr & Peers, 2013

CHAPTER 2: SUPPLEMENTAL DATA COLLECTION AND ANALYSIS

The purpose of this chapter is to summarize supplemental transportation data along the potential US 101 Bus Rapid Transit (BRT) route. The evaluation includes socioeconomic trends, transit operations, and utilization of transportation services. Ridership data for San Luis Obispo Regional Transit Authority (RTA) Route 9 and Route 10, park-and-ride utilization, population and employment growth, future bus service expansion and technology enhancements are summarized within this chapter. This data was compiled in order to inform the next phase in the SLOCOG BRT project, which includes identifying potential BRT improvements. Identifying specific strategies is a critical next step to implementing an effective BRT system along the US 101 corridor in San Luis Obispo County. The data provided in *Chapter 1* and this chapter provides the foundation to evaluate system-wide BRT recommendations.

The supplemental data compiled for this analysis is organized into the following seven (7) categories. Additional detail on supplemental data is provided in Appendix B:

- 1) Demographic Data — Population and employment growth data within SLOCOG Travel Demand Model
- 2) Existing Bus Operations — Route 9 and Route 10 ridership, boarding/alighting, and travel times
- 3) Bus Fleet Characteristics — Summary of RTA’s planned bus fleet technology enhancements
- 4) Planned Changes to Bus Operations — Future Route 9 and Route 10 service changes identified in the North County Transit Plan and South County BRT Assessment
- 5) Park and Ride Lots — Capacity and utilization within San Luis Obispo County
- 6) Caltrans US 101 Engineering and Planning Studies — Interchange designs and plans
- 7) US 101 Traffic Conditions — Traffic conditions on the US 101 corridor in the County



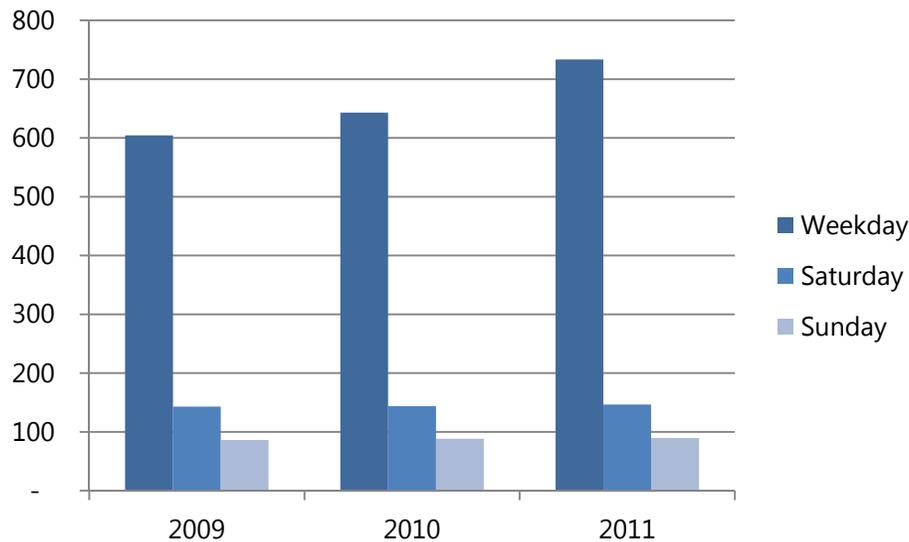


SECTION 2-1: BACKGROUND DATA SUMMARY

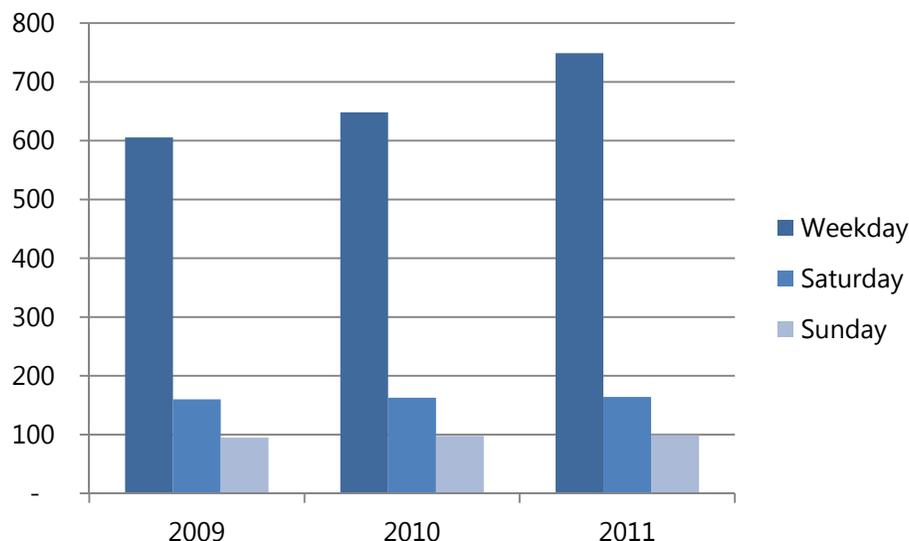
The data summarized in Appendix B consolidates the results from a range of data sources to help inform an understanding of travel behavior along the US 101 corridor. The findings from this data help identify existing and future travel demand within San Luis Obispo County and indicate the types of BRT enhancements which would benefit this growing region. The key conclusions from this evaluation include:

- The majority of population growth is occurring in the inland portion of North San Luis Obispo County (22% from 2010 to 2035).
- The Central County is projected to have the highest employment growth from 2010 to 2035 (24%).
- The ridership data for Routes 9 and 10 show a steady increase from 2009 to 2011 from 600 to about 750 daily weekday riders, or about 10 percent annual growth. On board surveys indicate the ridership base consists of a high proportion of choice riders and consists of regular riders using the bus of 4 or more days a week.

Route 9 Average Daily Ridership



Route 10 Average Daily Ridership



- The travel time data for Route 9 and 10 indicates inefficiencies causing additional delays along these routes. The close bus stop spacing the circuitous routes in Atascadero and San Luis Obispo result in additional transit delays along the corridor. Intelligent Transportation Systems (ITS) technologies, including transit signal priority and AVL could reduce many existing barriers that add unnecessary delay.
- San Luis Obispo RTA plans to upgrade their bus fleet to include new GPS technology and computer software to provide AVL and on board stop announcements; these upgrades provide the foundation for the types of amenities BRT can utilize to increase efficiency. These ITS technologies will be integral to SLOCOG’s plans for future BRT.
- Park-and-ride is well utilized in the County with several lots observed to exceed capacity (See Figure 2). These lots offer opportunities to connect regional transit by improving the “last mile connection” and should expand as the County develops BRT along US 101. Evaluating the utilization of these lots will help to consolidate underutilized lots and add more facilities.
- There are several interchange projects underway along the US 101 corridor that offer opportunities to incorporate BRT services within their designs, including in Paso Robles, Atascadero, San Luis Obispo and Arroyo Grande (See Figure 3). Additionally, SLOCOG has

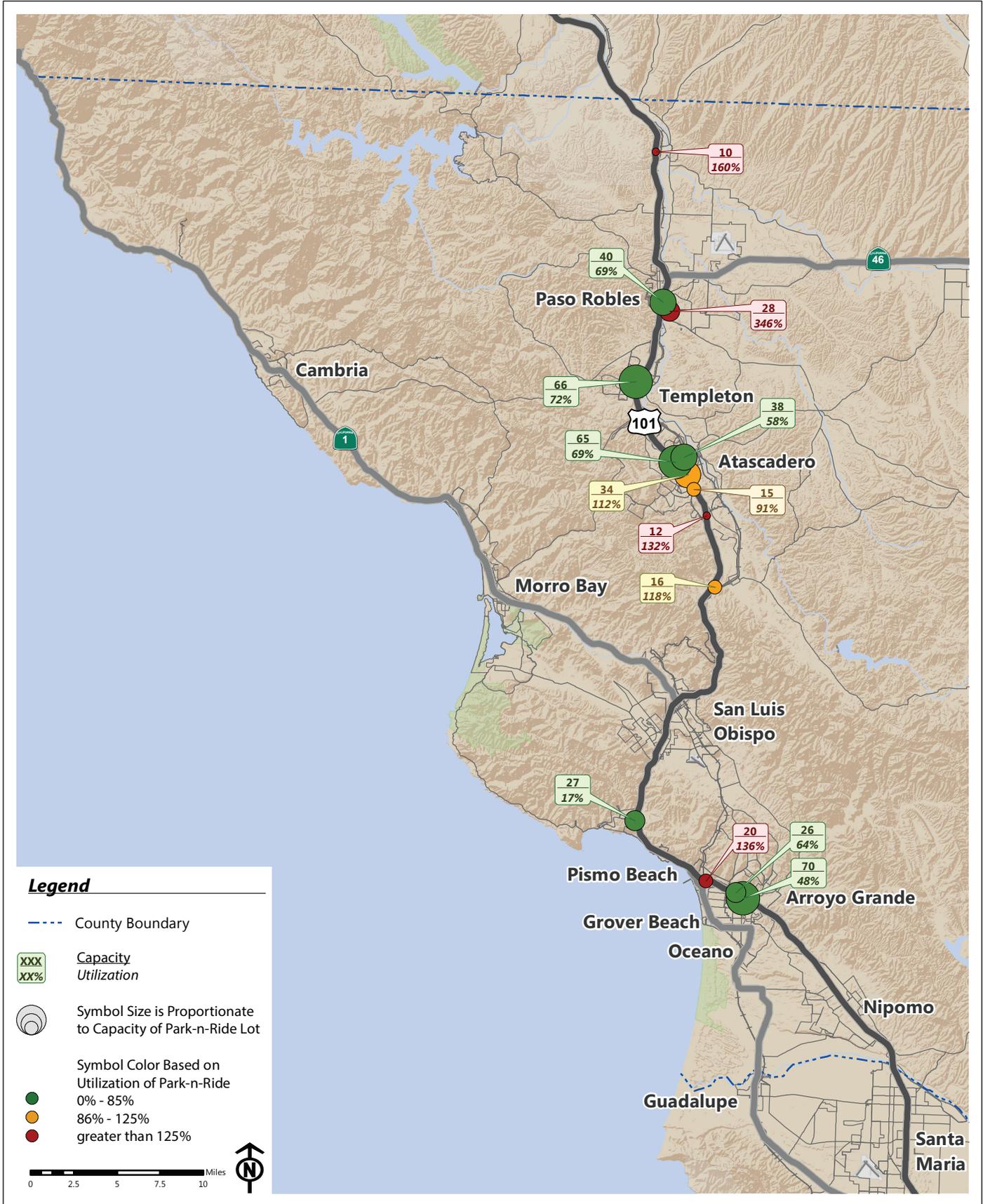


The existing park and ride lot at the Santa Barbara interchange in Atascadero is regularly over capacity.

recently begun work on the Highway 101 Corridor Master Plan, which will develop a set of recommendations for improving travel along Highway 101.

- The typical weekday countywide travel patterns on US 101 include trips to and from employment centers in San Luis Obispo and the Cal Poly campus. The peak morning direction is southbound from communities north of San Luis Obispo and northbound from communities to the south of San Luis Obispo; in the evening, the travel patterns generally reverse. The RTA Short Range Transit Plan (2010) states that with the exception of San Luis Obispo, Paso Robles and Atascadero are home to the greatest number of residents within the entire county. The plan also states that the South County corridor ridership of Route 10, serving San Luis Obispo City to Santa Maria, draws from a population base larger than both the North County Corridor and North Coast Corridor. The growing population base in the county supports the need for additional transit service options along the US 101 corridor.
- US 101 traffic conditions are critical to the implementation and applicability of BRT integration. Figure 3 presents select 2010 Annual Average Daily Travel (AADT) data from the Caltrans Traffic Data Branch. The average of the data points collected along Highway 101 in 2010 is approximately 47,500 AADT. Daily traffic volumes range from about 20,000 in San Miguel to about 58,000 in San Luis Obispo, which provides insight into potential areas of future congestion and opportunities to relieve highway traffic demand through BRT.





San Luis Obispo County



San Luis Obispo County

CHAPTER 3: PUBLIC INVOLVEMENT AND OUTREACH

The purpose of this chapter is to provide an overview of the data obtained for the SLOCOG Bus Rapid Transit (BRT) study through the project's outreach process. The public engagement effort is a key element to receiving insightful feedback on transit barriers and opportunities. This evaluation contains several opportunities to gather input through both in person meetings and on-line forums. The project team worked with SLOCOG to hold a focus group to introduce BRT concepts and gain a better understanding of the awareness and responsiveness to BRT along US 101. Furthermore, the public engagement process includes two e-Newsletters, a Facebook page, and a web survey tool to collect data on transit improvements in San Luis Obispo County.

This chapter is divided into the following sections to summarize each of the public engagement efforts identified above:

- Project Stakeholder Group
- Focus Group Meeting
- E-Newsletter
- Facebook Page
- Web Survey
- Project Open House

SECTION 3-1: STAKEHOLDER GROUP

A project stakeholder group was convened at the outset of the project to identify overall project vision, goals and objectives. The stakeholder group includes staff from SLOCOG, RTA, Caltrans, the County, the Cities of Arroyo Grande, Pismo Beach, San Luis Obispo, Paso Robles and Atascadero.

The group reviewed important background information, including the status on the interchange projects on US 101 and the North and South County Transit Plans. Three main project objectives were identified as the following:

- Streamline transit service in San Luis Obispo County
- Attract new transit riders in the County



- Evaluate most cost-effective transit improvements in order to develop a prioritized implementation plan

Furthermore, the group agreed that an emphasis on the project's outreach strategy would be critical to obtaining broad input from all market segments. The first outreach meetings were held May 2012 to obtain input about needs for the corridors and better understand potential target market segments. The second round of outreach was held in early 2013 to present and obtain feedback on draft BRT concepts.

SECTION 3-2: FOCUS GROUP

In May 2012, ten San Luis Obispo County residents attended a 90 minute Focus Group meeting associated with the US 101 BRT Applications Study. The event was held at the Lisa Wise Consulting, Inc. (LWC) office in San Luis Obispo. The attendees were chosen based on their use of transit services and the area of the region they reside in. Attendees included three (3) representatives from the northern section of the study area, four (4) from the central area (including a Cal Poly student) and three (3) participants from the southern portion. Seven of the ten participants were regular transit riders, including regular riders of Route 9 and Route 10.

The Focus Group methodology employed open-ended questions that rely on respondents to drive the process in a conversational manner. This method is aimed at identifying and prioritizing the group's perspective and does so by facilitating the recording of sequence (order topics are mentioned) and frequency (how often).

KEY TRANSIT ISSUES

There were 4 core questions used in focus groups, relating to user perceptions, usage, and desired improvements of bus transit in the SLO region. The three most common issues universally cited throughout the focus group included:

- Communication amongst and between local & regional service providers, and between service providers and riders is a major issue affecting the perception of transit in San Luis Obispo County.
- Integration and better coordination/cooperation between local and regional services would help improve transit in the County.
- Later and earlier service would better serve passengers, particularly for Cal Poly students and faculty that have late-evening classes and business/civil workers that must arrive at work early in the morning.

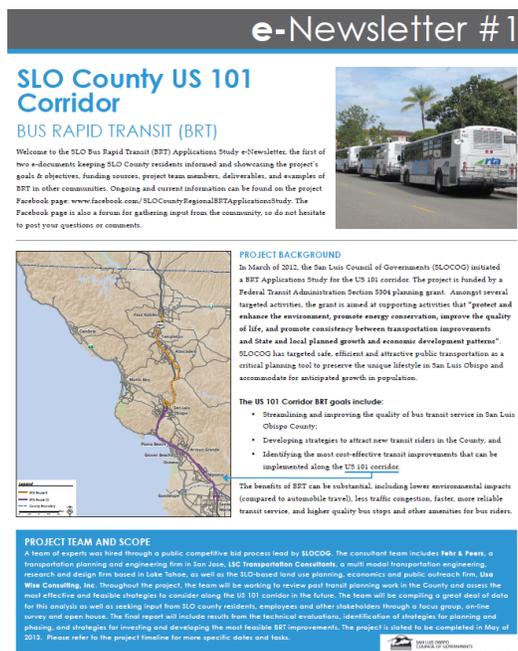


Additional detail on questions and focus group responses is summarized in Appendix C.

SECTION 3-3: E-NEWSLETTERS

The SLOCOG BRT study produced two e-Newsletters to showcase the project’s goals, objectives, results, and deliverables. The purpose of the first E-Newsletter, published in June 2012, was to inform the public about the project and generate opportunities to provide feedback. The mailing list was derived from the SLOCOG rideshare database. Several thousand who get the monthly rideshare newsletter indicated they were interested. Other sources include the online survey and people who signed up at the focus groups. The e-Newsletter provided an overview of the study, including its funding sources, purpose of the study, goals of BRT, and project team members. The E-document provided a link to the project’s Facebook’s page as well as the web survey instrument.

The second e-Newsletter was distributed in early 2013. It summarized the main categories of projects that were being considered and provided updates on the previous project outreach activities and overall project schedule.



Front Page of E-newsletter published in June 2012



SECTION 3-4: FACEBOOK PAGE

The purpose of the SLO County Regional BRT Study Facebook website is to provide a location for the public to easily access updates on the project. The Facebook page provides notifications for upcoming meetings and links to project information, such as the E-Newsletter and Web Survey. Furthermore, it provides a method for the public to share their concerns or ideas relating to BRT in San Luis Obispo County. The site is maintained throughout the course of the project to provide the most current meeting dates and results.



SECTION 3-5: WEB SURVEY

In order to improve bus ridership within the US 101 corridor, the on-line survey tool gathered information from the public to guide bus-related transit improvements. The consultant team developed the survey through the SurveyMonkey web interface. Through posting a link to the survey on the SLOCOG BRT website, Facebook page, and E-Newsletter, a total of 125 responses were collected during the summer of 2012. Survey announcements were also distributed at the 2012 Mid-State Fair in Paso Robles using printed cards.

The survey results assist to better understand the preferences for the types of service and bus stop amenities that existing and future transit users in the County most value. Participation in the survey was voluntary and confidential. Participants had the opportunity to participate in a drawing to win a \$25 gift card to Bello Mundo Café in downtown San Luis Obispo.

The survey consisted of 24 questions capturing mainly demographic data and bus transit preferences. The first ten (10) questions assessed demographic factors in order to facilitate a summary of the sample set. These questions verified travel patterns, primary travel modes, job occupations, age, and place of residence/work. The remainder of the survey assessed barriers to riding transit and preferences for transit service, on board amenities, and bus stop amenities. The results of this web survey are summarized in Appendix D and will help to identify key opportunities for investment in transit services in the County.

The web surveys provide important insight into the existing transit ridership trends, barriers, and opportunities for improvement. Despite the high number of participants who have access to a vehicle (92 percent), 28 percent of survey respondents use transit as their primary travel mode. The top three transit



improvements most highly ranked by respondents were: More frequent service during commute hours, improving travel time reliability, and shorter travel times. Additional bicycle storage, both on board buses and at the bus stop, also ranked high for important amenities. Survey responses indicate some transit riders would be willing to consider higher fares to have transit improvements that will alleviate current barriers to taking transit. As a result, the surveys suggest that there may be some benefit to evaluating fare structures for BRT as a way of partially offsetting the cost of certain improvements.

SECTION 3-6: OPEN HOUSE

As part of the second round of public outreach activities, a project Open House was held in January 2013 to update participants on the study and obtain feedback regarding proposed BRT improvements and recommendations. The Open House was held in downtown San Luis Obispo at the City Library. The format was designed to encourage interaction from participants and allow them to ask questions about the proposed BRT improvements. It also included a ratings exercise to elicit feedback on top project priorities and preferences.





January 2013 Open House in Downtown San Luis Obispo

Based on feedback gained from the Open House, the highest priority projects were faster, more convenient service, and increased service frequency. Other improvements that participants rated as high priorities were improved pedestrian and bicycle access to bus stops and increase on-board bus amenities. Enhancement to park and ride lots supporting transit service did not score as highly as other categories for project participants. A detailed summary of project rankings is listed below:

TABLE 3.1: PROJECT OPEN HOUSE RATING EXERCISE RESULTS

Improvement Category	Rating Score
Faster, More Convenient Service	7
More Frequent Service and Expanded Hours	6
Pedestrian and Bicycle Access Improvements	3
Improved Bus Quality and On-Board Amenities	3
Integrate Park and Ride Lots into Freeway Interchanges	1

Notes: Scoring based on participant ratings at Open House. Top choice improvements equaled two points, and secondary priority improvements equaled one point.



SECTION 3-7: OUTREACH CONCLUSIONS

The focus group session indicated that better communication between local and regional services and later and earlier transit services are existing barriers facing transit in the US 101 corridor. Participants also indicated that Wi-Fi, more comfortable seats on board, and better safety as bus stops would increase transit ridership; increasing visibility at bus stop, such as through effective lighting, may help improve safety at bus stops. These improvements are an indication of the investments that should be considered for increasing transit ridership within the US 101 corridor in San Luis Obispo County. This project includes undertaking an effort to increase the communication between SLOCOG, RTA, and local transit service providers.

The web surveys provide important insight into the existing transit ridership trends, barriers, and opportunities for improvement. Despite the high number of participants who have access to a vehicle (92 percent), 28 percent use transit as their primary travel mode. More frequent service during commute hours, improving travel time reliability, and shorter travel times are the top three existing service barriers. BRT, which will provide more express service and have more reliable travel times, can address many of these barriers. Additional bicycle storage, both on board buses and at the bus stop, also ranked high for important amenities.

Survey responses indicate the willingness of riders to pay higher fares to have transit improvements that will alleviate these barriers from their trips; this indicates an opportunity for SLOCOG and RTA to investigate fare structures for BRT as a way of partially offsetting the cost of certain improvements.

Based on the outreach process conducted as part of the study, service improvements that reduce travel time, increase frequency, and extend service hours earlier and later in the day were noted as being of greatest benefit.



CHAPTER 4: EVALUATION CRITERIA

The purpose of this chapter is to summarize the proposed evaluation framework for the SLOCOG Regional BRT Applications Study.

EVALUATION FRAMEWORK

The evaluation framework was developed to help guide the evaluation process for identifying and prioritizing potential projects in the County. The proposed evaluation matrix is presented below:

TABLE 4.1: SELECTED BRT EVALUATION MEASURES

Category	Evaluation Measure Description
Transit Operations	Does a project improve bus access and travel times?
	Does a project improve service reliability?
Transit Ridership	Will project support increased ridership in the County?
Traffic Operations	Does a project result in acceptable levels of traffic congestion, as measured by LOS and travel time?
	Does a project reduce impacts to transit operations from conflicts with other travel modes?
	Does a project help to improve roadway safety?
Sustainability Measures	Does a project integrate with “Smart Mobility” measures adopted by Caltrans, including applying a multimodal and integrated land use approach to plans, programs, and projects?
	How does the project affect measures of system performance, including vehicle miles traveled (VMT), daily vehicle trips and accessibility to nearby destinations? ¹
Pedestrian Conditions	Does a project facilitate pedestrian access, safety, &/or connectivity to local destinations?



TABLE 4.1: SELECTED BRT EVALUATION MEASURES

Category	Evaluation Measure Description
Bicycle Conditions	Does a project facilitate bicycle access, safety, and/or connectivity?
Parking and Drop Off Zones	Does a project improve parking supply and park-and-ride access? Does a project reduce parking conflicts with buses? Does a project improve drop-off/pick up activities?
Urban Design, Placemaking and Landscaping Treatments	Does a project create a sense of identity for transit in SLO County? Does a project improve community identity?
Construction/Cost	What is a project’s relative constructability? What is the magnitude of expected capital costs? What is the magnitude of ongoing operating and maintenance costs? Comparing the expected costs to the projects benefits, how cost effective is a project?

Source: Fehr & Peers, 2013

Notes:

1. While measuring system performance will be a qualitative assessment, a detailed level of review is possible in the future to help inform recommendations about next-steps



EVALUATION CRITERIA WEIGHTING

Through discussion with the project stakeholder group, each evaluation category was assigned a relative weighting score from 1 (low importance) to 5 (high importance). The weighting results used in the evaluation process are as follows:

TABLE 4.2: WEIGHTING OF EVALUATION CRITERIA

Category	Weighting
Transit Operations	4.5
Transit Ridership	4.3
Traffic Operations	4.3
Sustainability	3.3
Pedestrian and Bicycle Conditions	4.0
Parking and Drop Off	4.0
Urban Design, Placemaking and Landscaping	3.1

Note: Weighting based on a score of 1 (low importance to 5 (high importance). Excludes Construction/Cost category as cost is quantified separately in the evaluation process.



CHAPTER 5: EVALUATION OF CANDIDATE BRT IMPROVEMENTS

The purpose of this chapter is to summarize the results of the project evaluation that was conducted using the evaluation framework for the SLOCOG Regional BRT Applications Study.

The evaluation framework was developed to help guide the evaluation process for identifying and prioritizing potential projects in the County. They fall into several categories, which are summarized in Chapter 4.

Also reflected in the evaluation process is public input received from outreach efforts that have occurred as part of this study. Options that would increase transit speeds, improve amenities and provide more service have all received strong public support. This chapter presents the results of the evaluation of each candidate project against the evaluation framework.

SECTION 5-1: CANDIDATE PROJECTS

Candidate projects are organized into three main categories supporting overall BRT operations in the County. They are:

- Bus Stop Improvements
- Transit Service Improvements
- On-Board Amenities

Projects are also organized into implementation timeframe, resulting in some projects that have an implementation timeframe of less than 5 years, while others have a longer implementation timeframe. Types of candidate projects are listed below in Table 5.1 and are described in further detail in Appendix E. Comments received on the candidate projects are summarized in Appendix F.



TABLE 5.1: CATEGORIES OF CANDIDATE PROJECTS

Candidate Bus Stop Improvement Projects	
Short / Medium Term Projects (1-5 Year Implementation)	
Regional Improvements:	
<ul style="list-style-type: none"> • Additional bike parking at high ridership stops • Real time stop information • New shelters at high ridership stops • Expanded park and ride facility in North County at Santa Barbara interchange in Atascadero • New bus stops at Spyglass Drive (South County) • Expanded park and ride facilities in North County at Santa Rosa interchange in Atascadero 	<ul style="list-style-type: none"> • Reconfigure stops at Las Tablas (Templeton) park and ride facility in North County • New/expanded park and ride facilities at Los Berros or Willow interchange • New bus stop or park and ride lot in South County in Brisco Road interchange area • New bus stops on highway ramps in North County at SR-46 west interchange • Provide fare kiosks at high ridership stops
Local Improvements:	
<ul style="list-style-type: none"> • Bus Stop pedestrian access improvements (North County) • Bus Stop pedestrian access improvements (South County) • Bus Stop bike access improvements (North County) 	<ul style="list-style-type: none"> • Bus Stop bike access improvements (South County) • Add new park and ride capacity at Paso Robles intermodal station
Long Term Projects (5+ Year Implementation)	
<ul style="list-style-type: none"> • New bus stops at new/reconfigured interchanges • New downtown SLO transit center 	



TABLE 5.1: CATEGORIES OF CANDIDATE PROJECTS

Candidate Transit Service Improvement Projects	
Short / Medium Term Projects (1-5 Year Implementation)	
<ul style="list-style-type: none"> • Create a targeted marketing and branding strategy for express bus service • Partner with major employers and Cal Poly to provide reduced cost RTA monthly transit passes to employees • Increase Route 10 service frequency • Increase Route 9 service frequency • Route 9 realignment through SLO - Direct to downtown, then to Cal Poly • Route 10 realignment through SLO - Direct to downtown via Marsh • Special express bus fare structure • Provide earlier service for Routes 9 and 10 	<ul style="list-style-type: none"> • Provide later service for Routes 9 and 10 • Feeder route access improvements for efficient transfers • Consolidate stops on Route 10 in San Luis Obispo • Consolidate stops on Route 9 in Atascadero • Route 9 realignment through Atascadero, excluding El Camino Real and bypassing Santa Margarita • Additional transit improvements to downtown intersections in San Luis Obispo for Routes 9 and 10 • Provide additional weekend service
Long Term Projects (5+ Year Implementation)	
<ul style="list-style-type: none"> • Transit Signal Priority in San Luis Obispo for Routes 9 and 10 • Transit Signal Priority for Other Areas • Bus priority on US 101 Main Line in congested segments 	
Candidate On-Board Amenities Projects	
Short / Medium Term Projects (1-5 Year Implementation)	
<ul style="list-style-type: none"> • Procure separate BRT motorcoaches • On board Wi-Fi 	<ul style="list-style-type: none"> • Increase on-board bicycle storage
Long Term Projects (5+ Year Implementation)	
<ul style="list-style-type: none"> • Provide new fleet of electric or fuel cell buses 	

Source: Fehr & Peers, 2013



SECTION 5-2: PROJECT PRIORITIZATION

Based on the evaluation criteria developed as part of the project, the process of prioritizing projects was completed. Nine categories comprise the evaluation framework, which also includes public input from the various outreach efforts that have occurred.

In all, over 30 different projects and types of projects were evaluated through the prioritization process. Detailed results of the proposed project prioritization are summarized in Appendix G.

TOP TIER PROJECTS

Top tier (or Tier 1) projects are those that scored highest in the prioritization process. These include 18 projects, or project categories, that would be most effective at achieving the goals of the study to streamline transit service in the County and increase ridership.

TABLE 5.2: TOP TIER (TIER 1) PROJECTS

Project Category / Description	Relative Cost Range	Ridership Generating Potential	Next Steps/Actions
B1 Additional bike parking at high ridership stops	Low	Moderate	Pursue funding with local agencies (RTA lead)
B2 Bus Stop pedestrian access improvements (North County)	Low/Med	Moderate	Pursue funding with local agencies (RTA lead)
B3 Bus Stop pedestrian access improvements (South County)	Low/Med	Moderate	Pursue funding with local agencies (RTA lead)
B6 Real time stop information	High	High	Conduct evaluation of implementation costs, pursue grant funding
B8 Add new park and ride capacity at Paso Robles intermodal station	Med	Moderate	Develop service plan and park and ride space plan to provide additional capacity beyond planned 2013 expansion (RTA and Paso Robles)
B9 New/expanded park and ride facility in North County at Santa Barbara interchange in Atascadero	Med/High	Moderate	Develop service plan and park and ride space plan (RTA and Atascadero)
B10 Provide new bus stops at Spyglass Drive (South County)	Med/High	Moderate	Pursue funding with local agencies (RTA lead)



TABLE 5.2: TOP TIER (TIER 1) PROJECTS

Project Category / Description		Relative Cost Range	Ridership Generating Potential	Next Steps/Actions
B12	Reconfigure stops at Las Tablas (Templeton) park and ride facility in North County	Med/High	Moderate	Develop service plan (RTA lead)
B13	New bus stop and park and ride lot in South County near Brisco Road interchange	Med/High	Moderate	Review Design Options (Arroyo Grande, Caltrans) and Develop service plan (RTA lead)
S2	Partner with major employers and Cal Poly to provide reduced cost RTA monthly transit passes to employees	Med	High	Meet with Cal Poly, major employers to identify implementation strategy (SLOCOG Rideshare, with RTA)
S3	Increase Route 10 service frequency	Med/High	Moderate	Evaluate opportunities and develop service plan (RTA lead)
S4	Increase Route 9 service frequency	Med/High	Moderate	Evaluate opportunities and develop service plan (RTA lead)
S5	Route 9 realignment through SLO - Direct to downtown, then to Cal Poly	Low/Med	Moderate	Develop service plan (RTA lead)
S6	Route 10 realignment through SLO - Direct to downtown via Marsh, excluding S Higuera	Low/Med	Moderate	Develop service plan (RTA lead)
S7	Special express bus fare structure	Low	N/A (combined with other strategies)	Develop plan for integrating fare structure with other BRT improvements (RTA/SLOCOG)
S11	Additional transit improvements to downtown intersections in San Luis Obispo for Routes 9 and 10	Med	Moderate	Pursue funding with local agencies (San Luis Obispo/RTA)
O1	Procure separate high-quality motorcoaches	High	High	Develop specifications for motorcoaches (RTA/SLOCOG)
O2	On board Wi-Fi	Med/High	High	Conduct evaluation of implementation costs, pursue grant funding

Source: Fehr & Peers, 2013. Note that no ranking within the tier is reflected in this table.



ATTRACTING CHOICE TRANSIT RIDERS

A major goal of this study is also to identify ways to better attract new transit riders, including “choice riders” who have multiple travel choices available but would consider taking transit if the quality, reliability and efficiency of service meets their needs.

Currently, many choice riders do not commute by transit and contribute to the County’s increasing traffic congestion on Highway 101. Attracting choice riders to transit would not only meet the goals of increasing ridership but would also benefit to all residents of the County by reducing traffic congestion and improving air quality.

One way of capturing choice riders in San Luis Obispo County is to provide opportunities for County residents to drive to BRT stops and transfer to a bus to travel to their ultimate destination. Because the County is geographically diverse and since only a small percentage of residents live within walking distance of Route 9 and 10 stops, providing park and ride capacity to serve a broader segment of the county population is important.

There are several projects that would work effectively to meet the demands of the choice rider market in the county. These projects (some of which are part of the Tier 1 package, but some of which fell just short), would provide park and ride capacity, but also support increased ridership on Routes 9 and 10, particularly express routes that could be branded as BRT-type service. The list of recommended park and ride improvement projects is listed in Table 5.3 on the following page.

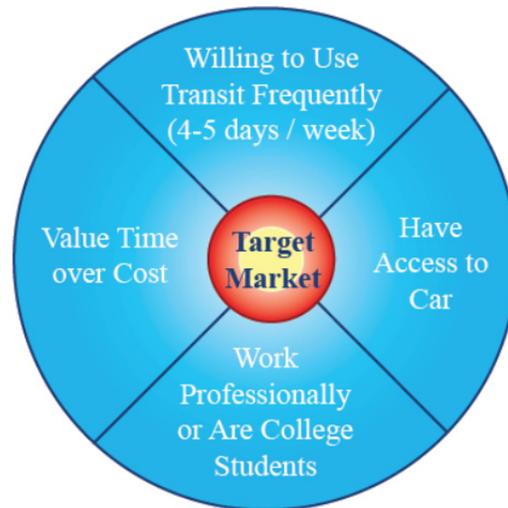


Illustration of target market for choice transit riders (Source: VTA Express Bus Business Plan)



In the outreach survey conducted as part of the study, buses with on board Wi-Fi were valued as one of the highest priority on-board amenities.



TABLE 5.3: PROJECTS SUPPORTING ADDITIONAL BRT RIDERSHIP

Project	Capital Cost Range	Operating Cost Range	Ridership Generating Potential	Potential Next Steps/Actions
New/expanded park and ride facility in North County at Santa Barbara interchange in Atascadero	\$2-6M	Low	High	Evaluate potential environmental constraints, seek funding for site planning/design
Provide new bus stops at Spyglass Drive (South County)	\$1-5M	Low	High	Seek funding for site planning/design
New/expanded park and ride facilities in North County at Santa Rosa interchange in Atascadero	\$3-6M	Low	High	Seek funding for site planning/design
Reconfigure stops at Las Tablas (Templeton) park and ride facility in North County	\$1-3M	Low	Moderate/High	Seek funding for site planning/design
New bus stop and park and ride lot in South County near Brisco Road interchange	\$1-5M	Low	Moderate/High	Integrate stops with current interchange design process

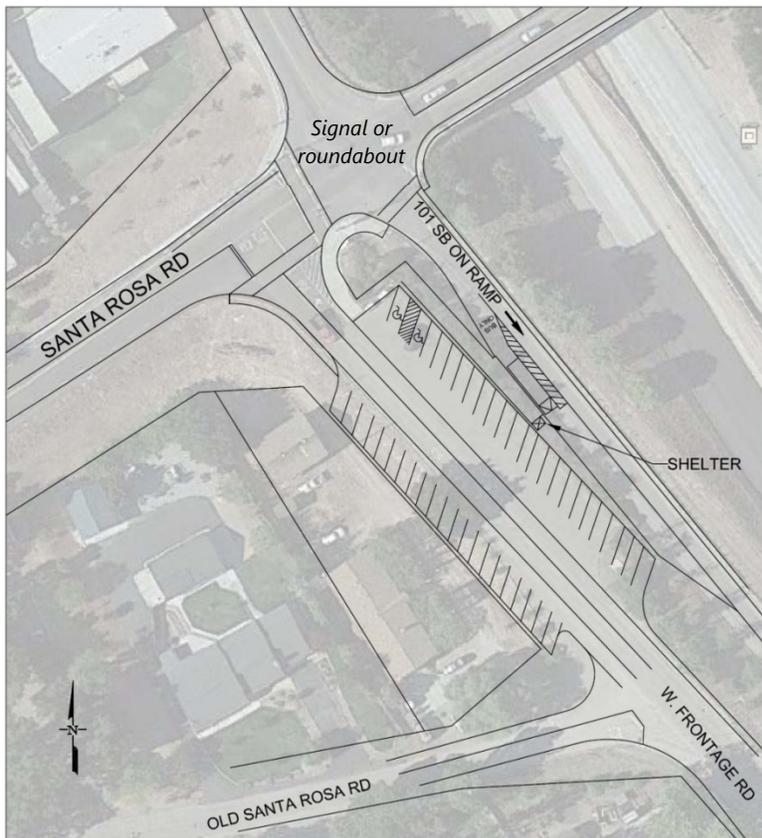
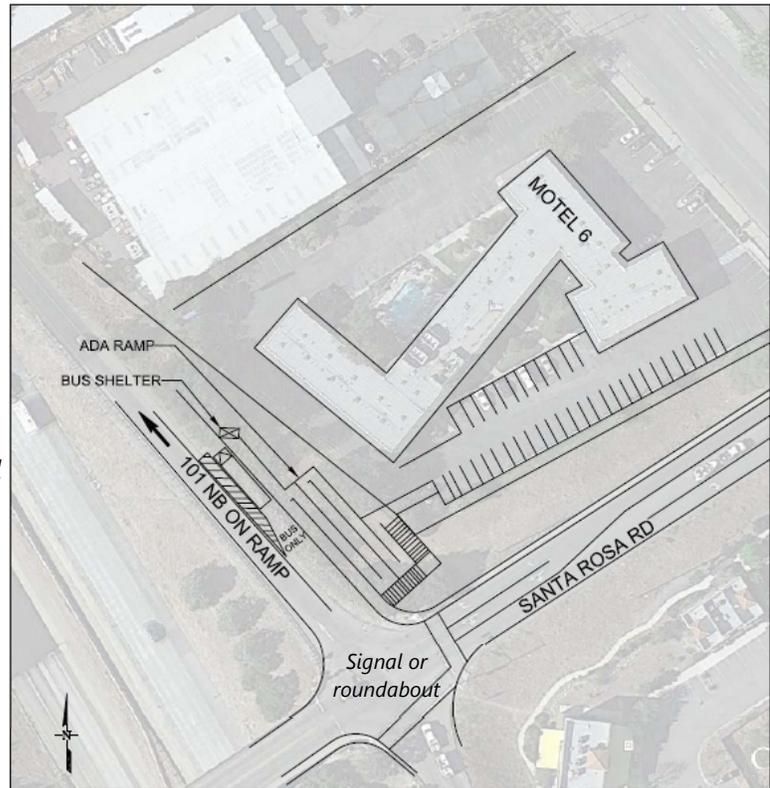
Source: Fehr & Peers, 2013 Note that no ranking within the tier is reflected in this table.



Example of bus stops on freeway ramps in Marin County, CA which allows for buses to efficiently exit and re-enter the freeway thereby improving travel speeds.



The Santa Rosa Road interchange in Atascadero is one location where additional park and ride capacity, along with new on-ramp bus stops in both directions, is recommended. This potential project would add new park and ride spaced on the west side of Highway 101. There is an additional opportunity for shared-parking to be used at the motel on the east side of the freeway (Concepts for other park and ride locations are shown in Appendix E).



RECOMMENDED INITIAL INVESTMENT PACKAGE

Projects that involve streamlining bus service at freeway interchanges would integrate effectively with other types of bus stop and service improvements to meet the demands of the choice rider market in the county. These strategies are combined in an overall “Initial Investment Package” of BRT improvements that comprise the most cost effective strategies for improving transit service and increasing ridership. These projects would provide bus stop improvements, service enhancements and park and ride capacity to support increased ridership on Routes 9 and 10 – particularly Route 9 and 10 express routes that could be branded as BRT-type service. Branding of this service, along with new motorcoach procurement by RTA, associated bus stop enhancements and on-board amenities, would streamline service along the Highway 101 corridor and attract new bus riders.

TABLE 5.4: RECOMMENDED SLOCOG BRT INITIAL INVESTMENT PACKAGE

Proposed Recommendations Package (to be Implemented in Next 2-3 years)	Additional Projects to Be Included In Package (If Funding is Available)
<ul style="list-style-type: none"> • Pursue motorcoach procurement, with BRT-style on-board amenities (comfortable seats, outlets, reading lights, table tops, etc.) • Real time transit information • Implement on-board Wi Fi • Incorporate new bus stop and park and ride lot near new Brisco Road interchange • SLO realignment for Routes 9, 10 to provide direct express routes to downtown transit center • Add secure bicycle parking at highest bicycle access stops • Develop new express bus fare structure (to be rolled out with motorcoach procurement) • Develop unique service branding and marketing strategy 	<ul style="list-style-type: none"> • Develop partnerships with major employers and Cal Poly for reduced cost transit passes • Add additional express bus runs (2-3 runs per day), expanding span of service • Implement bicycle and pedestrian access improvements at 5 locations • Install new, distinctive transit shelters (in conjunction with new stops and/or high ridership locations) • Develop new park and ride lots at Santa Barbara and Santa Rosa interchanges in Atascadero • Implement new bus stops at Spyglass interchange in Shell Beach • Add new park and ride capacity at Paso Robles intermodal station (beyond additional 24 spaces being provided in 2013)

Source: Fehr & Peers, 2013

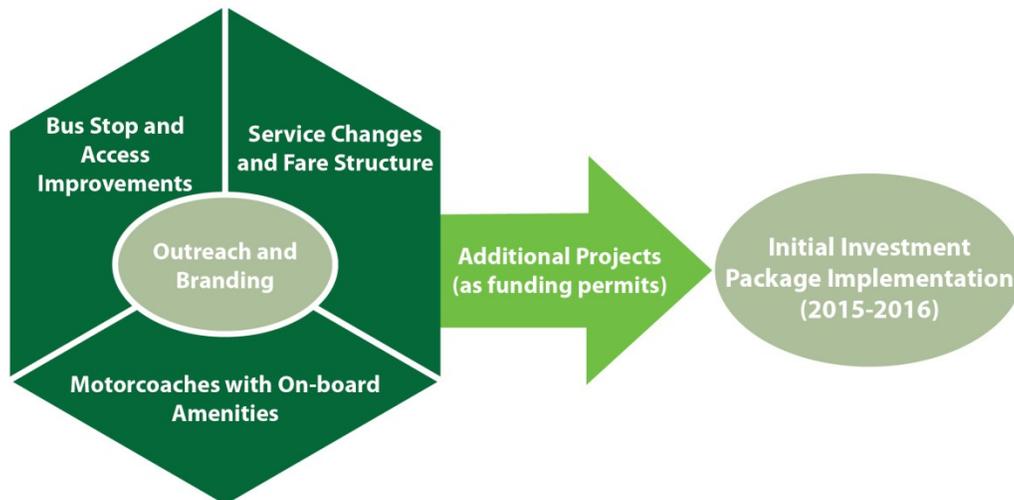
This plan does not call for a system that meets the standard industry definition of “Bus Rapid Transit”, in that it does not envision dedicated transit right-of-way, consistent high-platform loading or pre-payment of transit fares before boarding the bus. Rather, this study has identified that the appropriate strategy for regional services in San Luis Obispo County is an enhanced express bus program that utilizes some of the



amenities also seen in successful BRT systems (such as high amenity buses, improved running times, and unique branding) while avoiding the costly capital elements of a “full BRT” strategy.

Implementation Steps

The implementation strategy for the initial investment package is to provide bus stop, service and amenity improvements as soon as can realistically be achieved subject to funding and approval constraints. There are several factors influencing timing of the initial investment package, including the need to coordinate service and route changes with the timing of new bus procurement, as well as with construction of fixed facilities. The implementation timeframe of the Initial Investment Package is within the next two to three years, or by approximately 2016. The following flow chart illustrates the potential next steps for implementation of the Initial Investment Package.



Example of bus stop bicycle parking in Arroyo Grande – similar improvements are recommended at other high ridership locations such as Paso Robles and Pismo Beach

SECTION 5-3: FUNDING PLAN

A key next step in moving forward with top priority projects involves identifying potential funding sources for capital improvements and ongoing operations and maintenance costs. Key funding sources for pursuit include Federal Transit Administration (FTA) grants, statewide grants through Caltrans and other agencies, and regional or local sources. SLOCOG should pursue a combination of grant funding and partnership with local jurisdictions to include projects within local capital improvement and impact fee programs, with a priority on initial investment package improvements.

TABLE 5.5: POTENTIAL BRT PROJECT FUNDING SOURCES

Fund Source	Administrator	Application Cycles	Eligibility
Federal			
Small Starts	FTA	Rolling	New fixed- guideway systems and bus corridors
Very Small Starts	FTA	Rolling	New fixed- guideway systems and bus corridors
Transit Capital and Operating Grants for Urbanized Areas	FTA	Annual	Transit capital and operating for areas with population of 50,000 or more
Partnership for Sustainable Communities: Bus Livability	USDOT, EPA, HUD	Annual	Bus and related equipment and facilities
Partnership for Sustainable Communities: TIGER	USDOT, EPA, HUD	Typically Annual	Projects with significant impact on the nation or region
Congressional Earmark	FTA, FHWA	Annual	No requirements
Transportation, Community, and System Preservation	FHWA, Caltrans	Annual	Transit, complete streets, streetscaping, pedestrian, bicycle, traffic calming, and other projects
State			
State Highway Operation and Protection Program	Caltrans	Rolling 4-year program	Collision reduction, major damage restoration, bridge preservation, roadway preservation, mobility enhancement



TABLE 5.5: POTENTIAL BRT PROJECT FUNDING SOURCES

Fund Source	Administrator	Application Cycles	Eligibility
Bicycle Transportation Account	Caltrans	Annual	Bicycle projects in a Board-adopted bicycle transportation plan
Highway Safety Improvement Program	Caltrans	Annual	Major roadway safety upgrades like new traffic signals
Propositions 1B Public Transportation Modernization, Improvement, and Service Enhancement Account Program	Caltrans	Annual	Vehicles, facility improvements, BRT improvements,
Toll Credits	Caltrans	Annual	While not an additional funding source, use of toll credits can avoid need for local match of Federal grants
Regional and Local			
FTA Formula Section 5307, 5309	SLOCOG	Annual	Transit capital projects
Transportation Development Act	SLOCOG	Annual	Transit operations and capital projects, bicycle and pedestrian projects
Development Agreements and Impact Fees	Local Jurisdictions	Varies	Can ensure transit-related elements are considered in new developments - can range from requiring developers to fund or construct bike/ped infrastructure, bus stop amenities and/or provide dedicated operating funding streams
Local Employers	Local Jurisdictions	Varies	Could include subsidized bus passes and/or funding from groups of employers for enhanced service during peak hours serving those businesses

Source: Fehr & Peers, 2013



CHAPTER 6: CONCLUSIONS

The purpose of the Regional BRT Applications Study is identify the most effective BRT strategies that should be pursued along the Highway 101 corridor. While the study does not call for a system that meets the standard industry definition of Bus Rapid Transit”, it identifies an appropriate strategy for streamlining regional bus services in San Luis Obispo County. The recommended strategy contains several key elements:

- An enhanced express bus program operated by RTA that utilizes some of the amenities also seen in successful BRT systems (such as high amenity buses, improved running times, and unique branding).
- Several of these elements should be pursued on a short to medium term basis over the next two to three years. These elements comprise an Initial Investment Package and include strategies such as implementation of on-board Wi-Fi, improved bicycle parking and route realignment to provide faster service to downtown San Luis Obispo. Other improvements, such as additional express bus runs, are subject to funding availability but would also serve to provide better, higher quality transit service to County residents.
- Improvements to expand park and ride capacity in the corridor should also be pursued to streamline regional transit service and improve operating speeds. These improvements will be beneficial in attracting additional “choice riders” to these routes who have access to private automobiles but would ride transit if high quality service exists.
- Several strategies would require implementation over a longer period of time subject to funding constraints. These include elements such as bus-on-shoulder operations on Highway 101, advanced technology buses such as fuel cells and a new downtown transit center in San Luis Obispo.

A key next step in moving forward with top priority projects involved identifying potential funding sources for capital improvements and ongoing operations and maintenance costs. This strategy avoids the costly capital elements of a “full BRT” strategy, and it identifies leading funding sources at the Federal, State and local level to support increased bus ridership and improved service within the County. We recommend that SLOCOG should pursue a combination of grant funding and partnership with local jurisdictions to include projects within local capital improvement and impact fee programs, with a priority on initial investment package improvements.



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