THE BOARD OF SUPERVISORS OF THE COUNTY OF STANISLAUS
ACTION AGENDA SUMMARY

DEPT: Public Works **BOARD AGENDA #** *C-1

Urgent ☐ **Routine** ☒ **AGENDA DATE** November 4, 2014

CEO Concurs with Recommendation YES ☐ **NO** ☐ **4/5 Vote Required YES** ☐ **NO** ☒
(Information Attached)

SUBJECT:

Approval to Accept Findings and Recommendations Provided in the Stanislaus Regional Transit Comprehensive Operations Analysis Completed by Pacific Municipal Consultants

STAFF RECOMMENDATIONS:

1. Accept the Stanislaus Regional Transit Comprehensive Operations Analysis (COA) study prepared by Pacific Municipal Consultants to evaluate existing transit services provided in Stanislaus County.

2. Authorize the Transit Manager to implement the COA's recommended Service and Financial Plans to improve and enhance transit services in the County.

3. Direct Transit staff to continue discussions with the City of Turlock regarding the feasibility of merging the transit systems.

FISCAL IMPACT:

Funding from the Local Transportation Fund, Federal Transit Administration and Caltrans will be used to pay for recommended service improvements resulting from the COA study. Cost for implementing the service changes and improvements will be included and budgeted in the Public Works - Local Transit System's Annual Budget beginning in Fiscal Year 2015-2016 to meet the County's financial obligations. Funding for transit operations is through the local transportation funds derived from the ¼ cent of California's general sales tax.

BOARD ACTION AS FOLLOWS:

No. 2014-558

On motion of Supervisor Withrow , **Seconded by Supervisor** Chiesa
and approved by the following vote,
Ayes: Supervisors: O'Brien, Chiesa, Withrow, Monteith, and Chairman De Martini
Noes: Supervisors: None
Excused or Absent: Supervisors: None
Abstaining: Supervisor: None

1) X **Approved as recommended**
2) _____ **Denied**
3) _____ **Approved as amended**
4) _____ **Other:**
MOTION:

Christine Ferraro

ATTEST: **CHRISTINE FERRARO TALLMAN, Clerk** **File No.**

DISCUSSION:

On April 23, 2013, the County Public Works Transit Division, which manages the Stanislaus Regional Transit (StaRT) system, received approval from the Board of Supervisors to conduct a comprehensive planning study of transit services offered in the County. The contract was awarded to Pacific Municipal Consultants to evaluate the efficiency and effectiveness of existing transit services as well as analyze performance of all fixed routes, deviated fixed routes, shuttle, demand response, and the non-emergency medical services. Key objectives of the study entailed:

- Analyzing performance of StaRT services to develop a service plan that best meets the needs of current and future StaRT customers;
- Understanding existing and potential markets for transit service that will help increase ridership and market share in StaRT's service area;
- Examining the efficiency and effectiveness of the current system and providing recommendations to improve productivity, including the farebox recovery ratio;
- Insuring that StaRT is better able to provide services consistent with local and regional social and economic developments, as well as population growth in the County;
- Examining the proportion of transit services provided in the Urbanized Areas (UZA) and rural communities of the County's service area;
- Developing and recommending new service strategies and configurations that will best meet growing transit needs in Stanislaus County;
- Providing recommendations that will make transit service more user-friendly and cost-effective; and
- Offering recommendations to help StaRT deploy innovative solutions and Intelligent Transportation Systems technology to enhance transit services in the County.

In addition to the key objectives, the study looked at the feasibility of consolidating the County's transit system with transit services provided in the City of Turlock. In October 2014, the County Public Works Transit Manager met with the City of Turlock transit staff to discuss analyses provided in the study about possibly merging both systems. Based on the discussions held, the City of Turlock transit staff stated they would be interested in having further conversations with the County to see if consensus can be reached to move forward with the merger.

Findings from the study have resulted in recommended actions that require approval from the Board of Supervisors before implementing. Among the recommended actions are strategies to realign and enhance existing transit services to assure long term viability of StaRT routes and focus resources where the majority of current and new transit riders use of the system.

The recommended actions are intended to ensure that StaRT is able to achieve and maintain the proposed 15% farebox ratio being considered by the Stanislaus Council of Governments beginning Fiscal Year 2015-2016. Other recommended actions consist of improving on-time performance on highly used routes, such as Routes 10, 15, 40 and 60; increasing capacity on most routes, and simplifying schedules on two of StaRT's busiest routes, Routes 10 and 60.

Further actions recommended entail implementing the Americans with Disabilities Act (ADA) Complementary Paratransit Service due to reclassification of the County transit system as a Small Urban System. Overall, the findings identified service improvements recommended by the public to improve transit service which are comprised of increasing service frequency, expanding early morning and evening service, and implementing Sunday service.

Staff recommends acceptance of the COA study final report and request approval of the Service and Financial Plans to enable staff to move forward with recommended actions that include:

1. Finalize and adopt the COA service and financial plans;
2. Establish a Service Policy and Standards to guide implementation of transit services in the County;
3. Create an Operations and Planning Committee composed of StaRT staff and Storer Transit System, Inc.;
4. Evaluate, develop and identify a list of unproductive service trips and/or revenue hours to improve the farebox recovery ratio;
5. Develop a Service Monitoring and Performance Program that includes performance measures implemented by the Stanislaus Council of Governments as part of the Transportation Development Act Claims Procedures;
6. Implement strategies identified in the service plan to increase frequencies on most routes, simplify route schedules to address challenges with schedule adherence, and improve the overall health of the transit system to assure compliance with the farebox ratio;
7. Review current fare structure and restructure existing fare media to adhere to the Federal Transit Administration Half Fare Policy for Seniors and Persons with Disabilities; and
8. Implement the Americans with Disabilities Act (ADA) Paratransit Complementary service, including developing an ADA Complementary Paratransit Service plan as well as establishing an ADA certification process to certify ADA service users.

The attached Executive Summary provides a summary of the COA study and outlines strategies to improve and enhance transit services in the County. Staff will seek approval from the Board in the future for additional service planning activities, prior to implementation.

POLICY ISSUES:

The recommended actions are consistent with the Board's priority of A Well-Planned Infrastructure System and Efficient Delivery of Public Services by providing a transit system that is compliant with Federal and State efficiency standards.

STAFFING IMPACT:

The transit staff will continue working on implementing the recommendations outlined in the COA study and will also continue working with the City of Turlock transit staff regarding possible merger of the two transit systems.

CONTACT PERSON:

Matt Machado, Director of Public Works. Telephone: 209-525-4130.

ATTACHMENTS:

1. Stanislaus Regional Transit Comprehensive Operations Analysis Report
2. Stanislaus Regional Transit COA, Executive Summary

EL:dm
H:\Eunice Lovi\BOS\FY 14-15\FY 14-15 Transit TDA Claim\FY 14-15 TDA Claim_BOS 10.21.14

StaRT

Stanislaus Regional Transit

Comprehensive Operations Analysis

Executive Summary

June 2014

PMC®

in association with

Bellecci & Associates

DWL TRANSIT CONSULTING

IBI GROUP

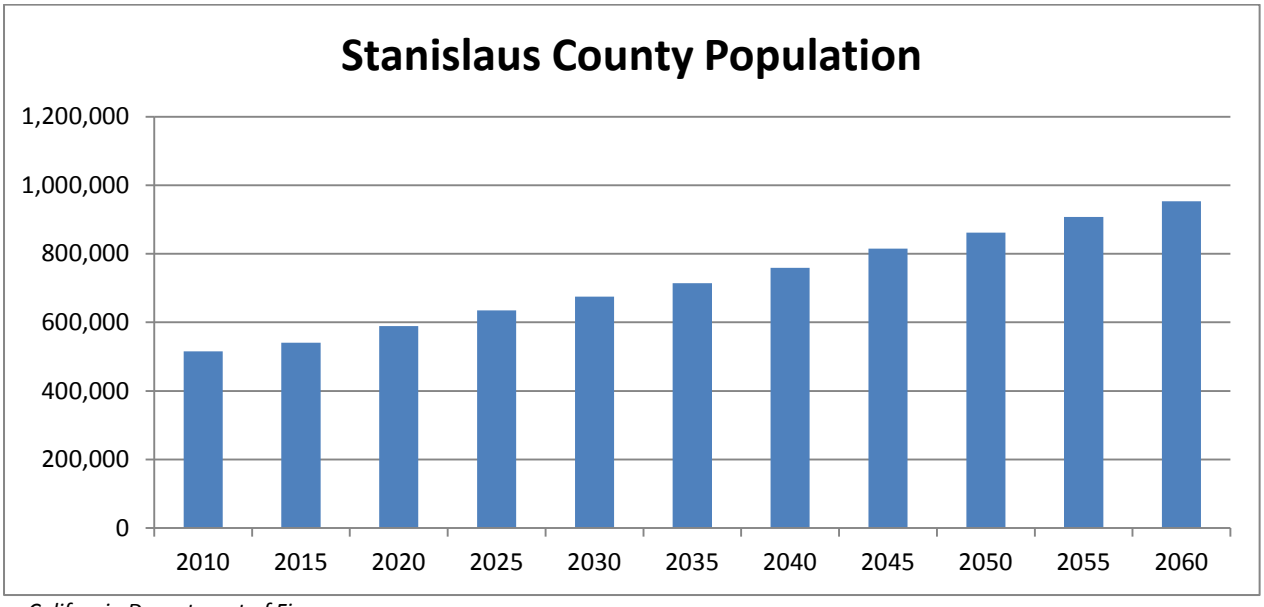
Table of Contents

Executive Summary

This Comprehensive Operational Analysis (COA) was conducted for the Stanislaus Regional Transit (StaRT) to examine existing services and provide recommendations to improve overall mobility for citizens of Stanislaus County. It is a planning document to guide the decisions associated with administering public transit services operated by the Transit Division in the County's Public Works Department. The purpose of the COA is to provide an in-depth review of transit services, assess the efficiency and effectiveness of the services as well as to gain better knowledge of the customers, and direct transit investment where it is most needed. The analyses identified strengths in addition to opportunities for improvement that meets current and future transit demand. The various sections include:

A. Community Assessment and Existing Conditions: This section includes an overview of existing StaRT services and other transportation services in the County; socio-demographic data of the markets served by transit; general economic development patterns; and historic performance metrics of each StaRT transit mode and bus route. The 2010 U.S. Census data indicates that Stanislaus County experienced a 15.1 percent population increase from 446,997 in 2000 to 514,453 in 2010. The California Department of Finance estimates the County's population will increase to 540,853 residents in 2015 and 589,156 residents in 2020. The County's population projection as estimated by the California Department of Finance is illustrated in Figure 1.

Figure - 1
Stanislaus County Population Projection



Source: California Department of Finance

Non-Hispanic Whites comprise approximately 46.7 percent of the total population while Hispanics, who can be classified as any race, comprise 41.9 percent of the population. Figure 2 on the next page provides a summary of the County's population by city and unincorporated communities.

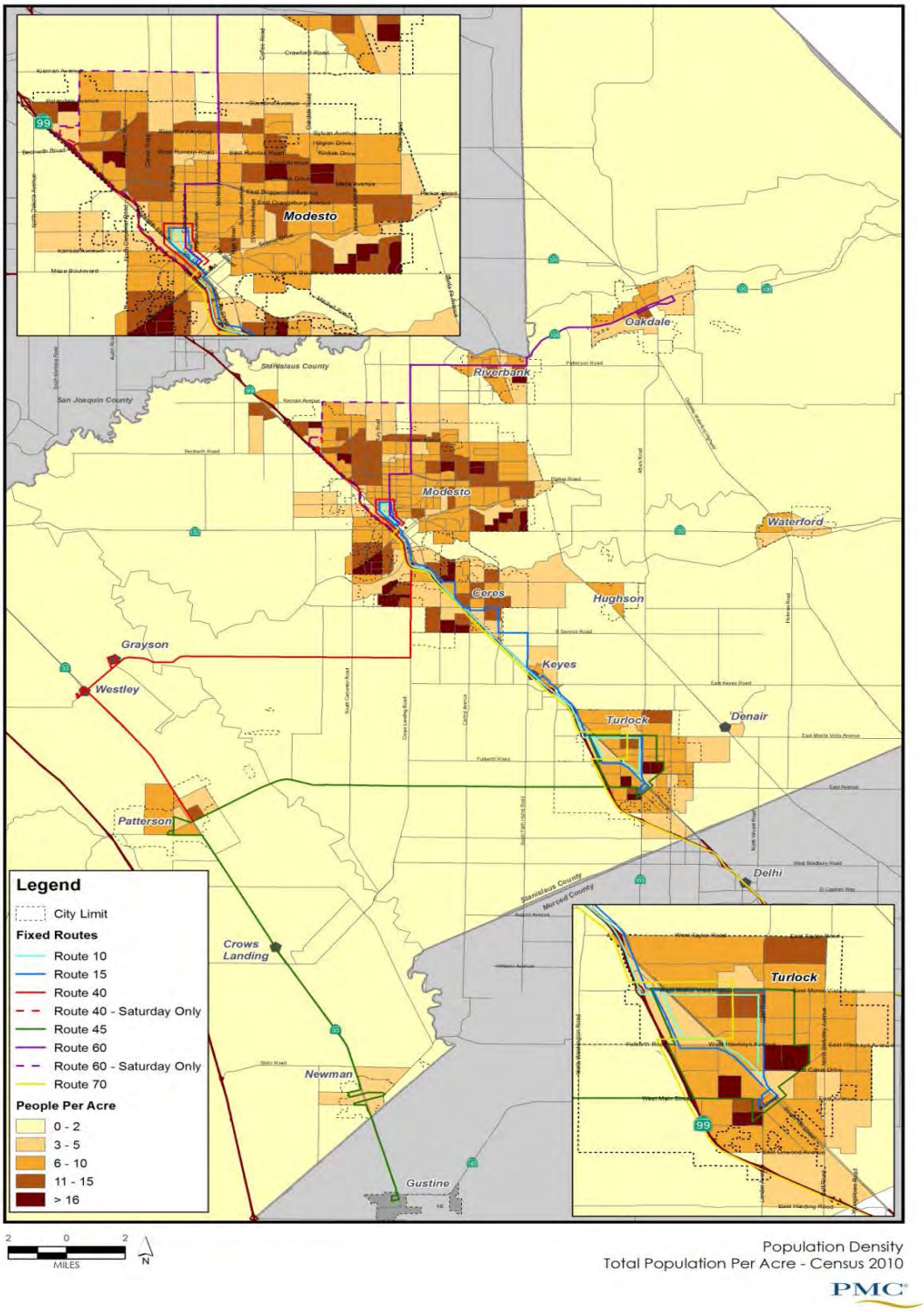
Figure - 2
StaRT Service Area Demographics

City/Jurisdiction	2010 US Census Population	Change from 2000 US Census	Population 65 years & older	Land area (in square miles)
Ceres	45,417	31.20%	7.70%	8
Hughson	6,640	66.80%	10.80%	1.8
Modesto	201,165	6.50%	11.70%	37.1
Newman	10,224	44.10%	8.50%	2.1
Oakdale	20,675	33.40%	12.40%	6.1
Patterson	20,413	75.90%	6.30%	6
Riverbank	22,678	43.30%	8.40%	4.1
Turlock	68,549	22.80%	11.70%	16.9
Waterford	8,456	22.10%	7.30%	2.4
Unincorporated County	110,236	3.10%	10.80%	1430.2
Total Stanislaus County	514,453	15.10%	10.70%	1,514.70

Sources: American Fact Finder Census 2010 Table P12, American Fact Finder Census 2000 Table GCT-P5

The most densely populated tracts in StaRT's service area are in the Modesto and Turlock urbanized areas. Some areas exceed 16 residents per acre in Modesto, Ceres and Turlock and include areas along Yosemite Boulevard, Floyd Avenue, Prescott Road, Pelandale Avenue, and Paradise Avenue in Modesto; Hatch Road, Whitmore Avenue, and Service Road in Ceres; and Geer Road, West Main Street, and East Canal Drive in Turlock. Sections in StaRT's service area with the greatest senior population densities are in the City of Modesto located at the intersection of Prescott and West Rumble Road, along Standiford Avenue, East Briggsmore Avenue and East Orangeburg Avenue. Figure 3 on page 4 highlights the population density in the County.

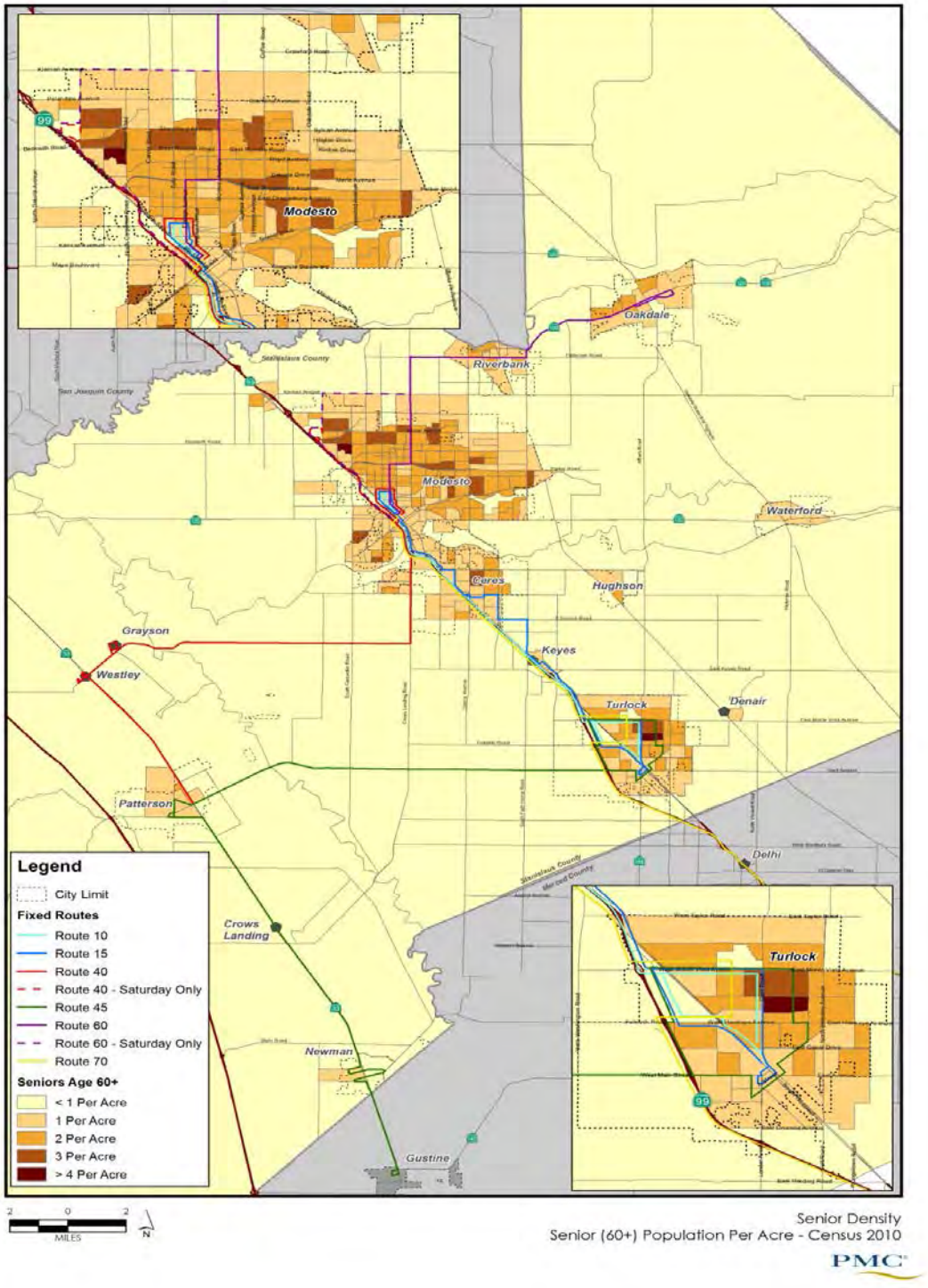
Figure - 3
Population Density



In the City of Turlock, a relatively high density of seniors is located along Geer and Tuolumne Roads; while in the City of Ceres, this density is located between Hatch, Fowler, and Mitchell Roads. In addition, high concentrations of employers are located along the Highway 99 corridor linking the two urbanized areas of Modesto and Turlock. The highest density of employers is located in the northwestern area of Modesto bordering Highway 99, Standiford Avenue and Briggsmore Avenue. In addition, there is a

relatively high concentration of employers in the Oakdale area. Figure 4 below depicts senior resident density in the County.

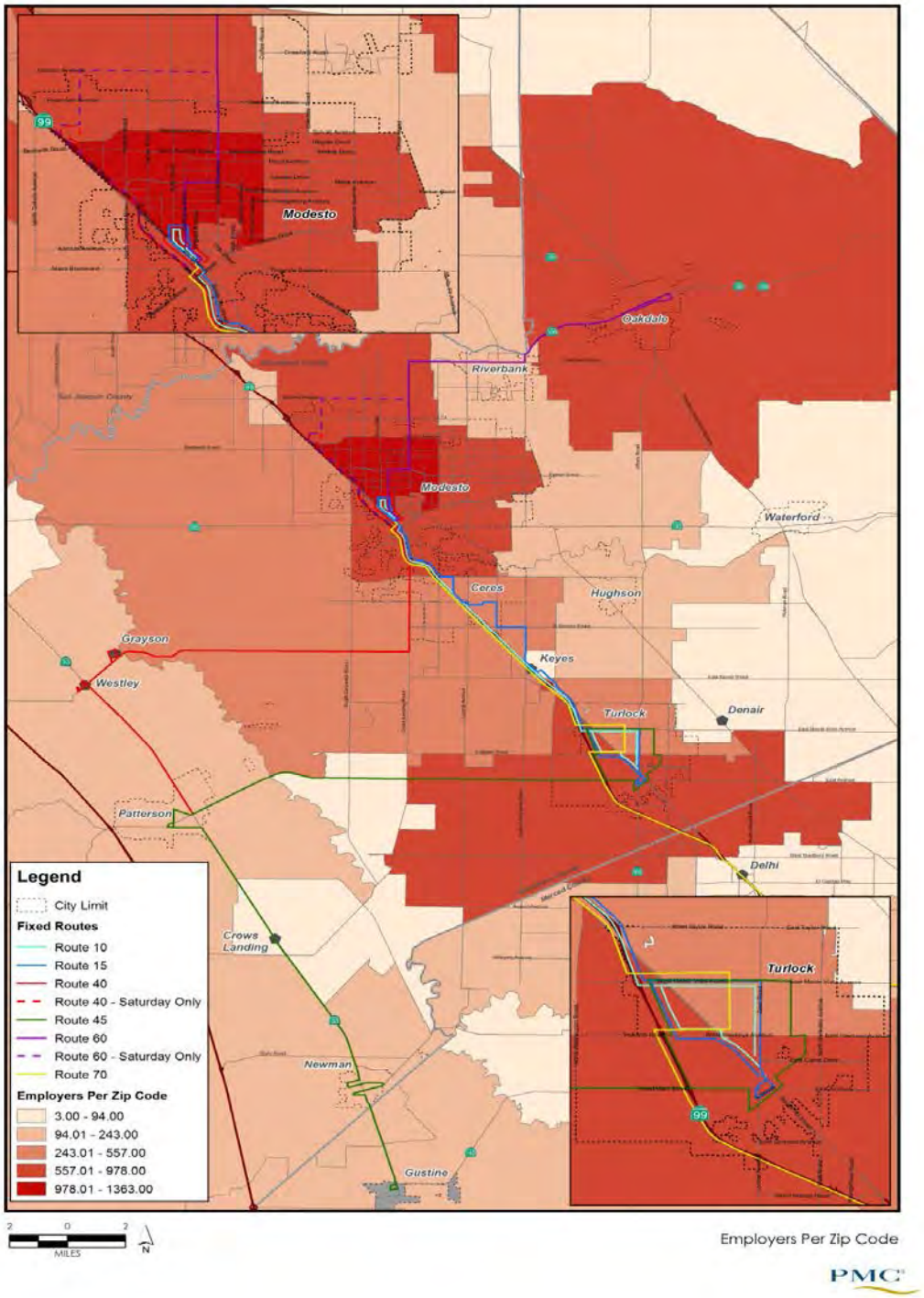
Figure 4
Senior Resident Population



Agriculture, distribution centers, food processing, government services and viticulture are the mainstays of the local economy. Over the past decade, residential construction has fueled economic growth as Stanislaus County became a bedroom community for commuters traveling to jobs in the Bay Area. While major employment centers, facilities and services are dispersed throughout the County and local

cities, most major attractors are located in the Modesto urbanized area. Employment centers and facilities where trips are likely to take place include colleges and universities, community centers, libraries, medical facilities, post offices, senior centers, government services, transportation centers, museums, and other points of interest. Employers' density by zip code is shown in Figure 5.

Figure - 5
Employees Density by Zip Code

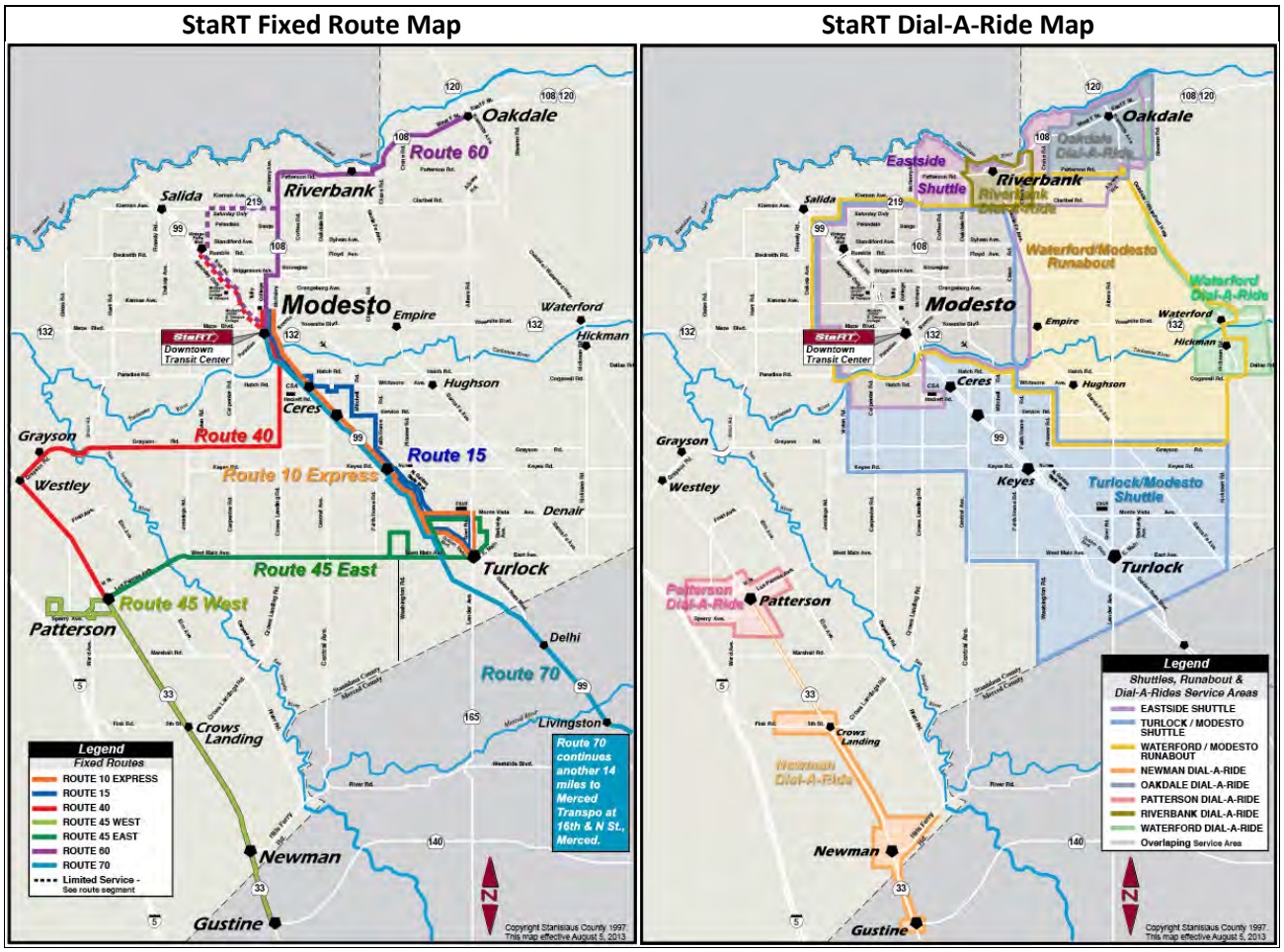


StaRT services including fixed routes and shuttles currently serve many of these areas. With regard to developing areas, future plans include the Crows Landing Logistics Center development site which is located on the West Side of Stanislaus County adjacent to Interstate-5. The County of Stanislaus as well

as some local jurisdictions within the County is currently working on new development strategies. The City of Patterson, for example, has undertaken new development initiatives to expand the Keystone Business Area including completion of the new Amazon distribution facility.

StaRT is headquartered in the County seat of Modesto and is administered by the Transit Division of the Public Works Department. Staffing is characterized by the lean administration at the County level combined with operations contracted to Storer Transit Systems of Modesto, an independent private contractor. Storer operates all four modes of transit services offered by StaRT: intercity fixed route, deviated fixed route, demand response (Dial-A-Ride) service and the non-emergency transportation service to the Bay area. Service adjustments were implemented in August 2012 and 2013 to improve StaRT's service. A new fixed route service between Turlock and Patterson was added in 2013 and new trips and/or buses were added to existing routes to improve frequency. Running times were also adjusted to improve on time performance. Two new Dial-A-Ride services serving the cities of Oakdale and Riverbank were added to replace services formerly provided by the Riverbank-Oakdale Transit Authority (ROTA) system. The current StaRT system map is presented in Figure 6 below followed by a brief summary of services provided by each individual route, including route maps on the next several pages.

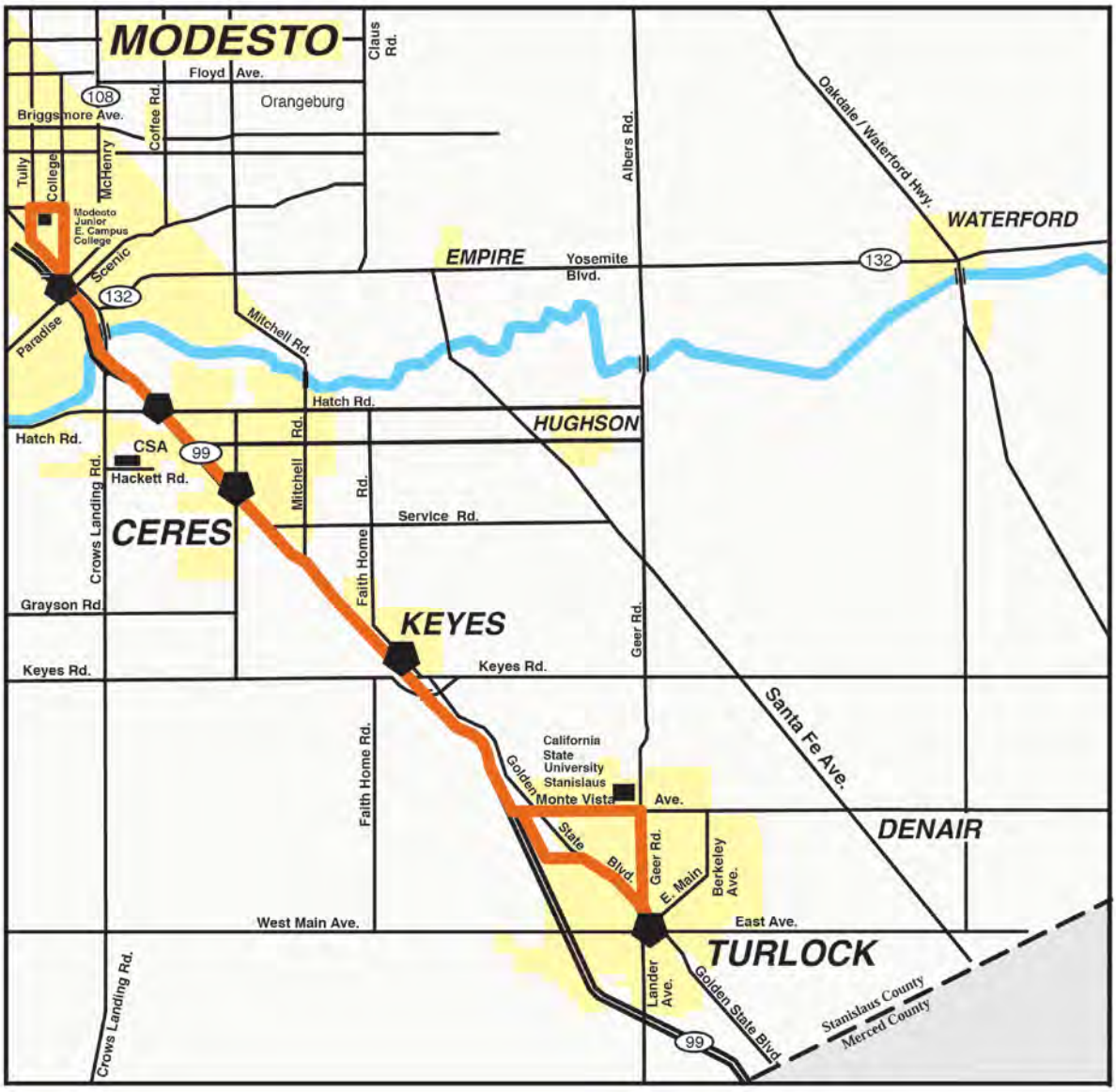
Figure - 6
Current StaRT System Map



Route 10 Express – Modesto-Turlock

Route 10 Express provides 18 round trip services between Modesto and Turlock, Monday through Friday from 5:05 am and 10:35 pm. This route does not provide service on Saturday. The route map is shown in Figure 7.

Figure 7

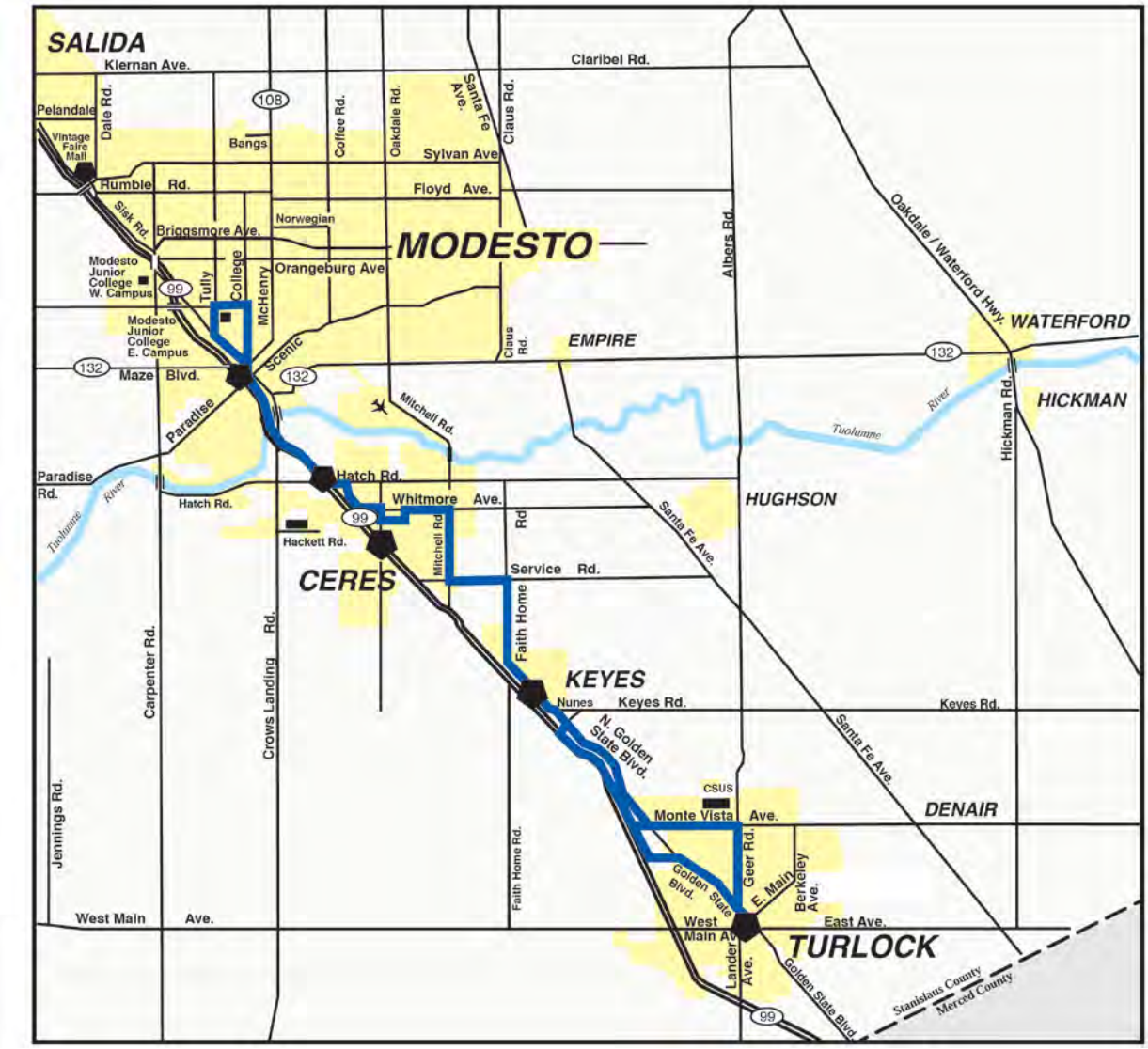


Source: StaRT

Route 15 – Modesto-Ceres-Keyes-Turlock

Route 15 operates Monday through Friday from 4:30 am to 10:07 pm and Saturday from 6:30 am to 8:22 pm and provides service between Modesto, Ceres, Keyes, and Turlock. On weekdays, more than nine round trips are provided between Modesto and Turlock, and more than seven round trips are provided on Saturday. Saturday service on this route is combined with Route 60. The route map is shown in Figure 8.

Figure 8

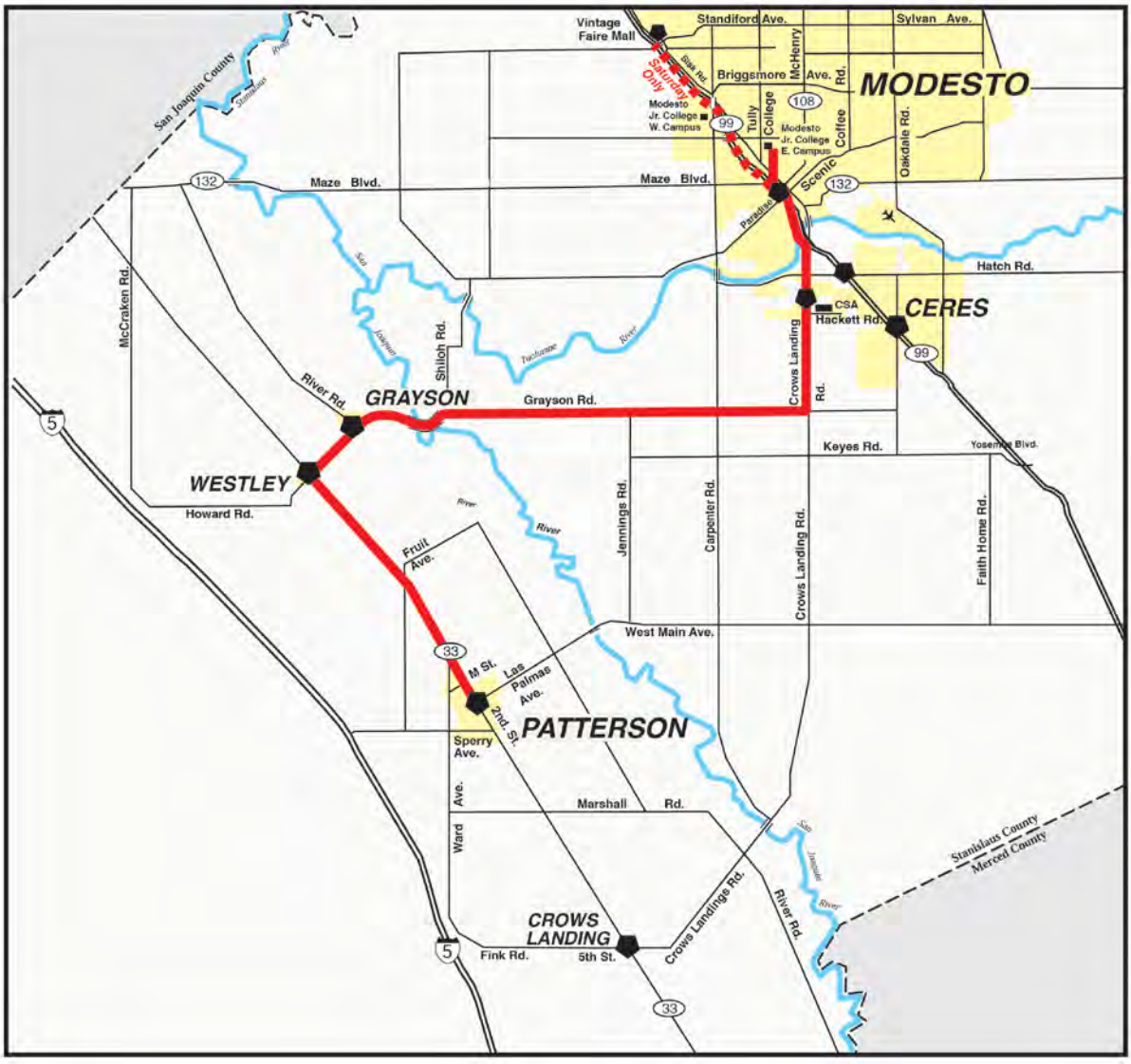


Source: StaRT

Route 40 – Modesto-Grayson-Westley-Patterson

Route 40 operates between Modesto and Patterson, Monday through Friday from 5:20 am to 9:07 pm and Saturday from 6:30 am to 8:13 pm. More than eight trips are provided on weekdays between Modesto, Grayson, Westley, and Patterson. On Saturday, more than five round trips are provided throughout the day with one return trip offered at 7:28 pm from Patterson to Modesto. The route map is shown in Figure 9.

Figure 9

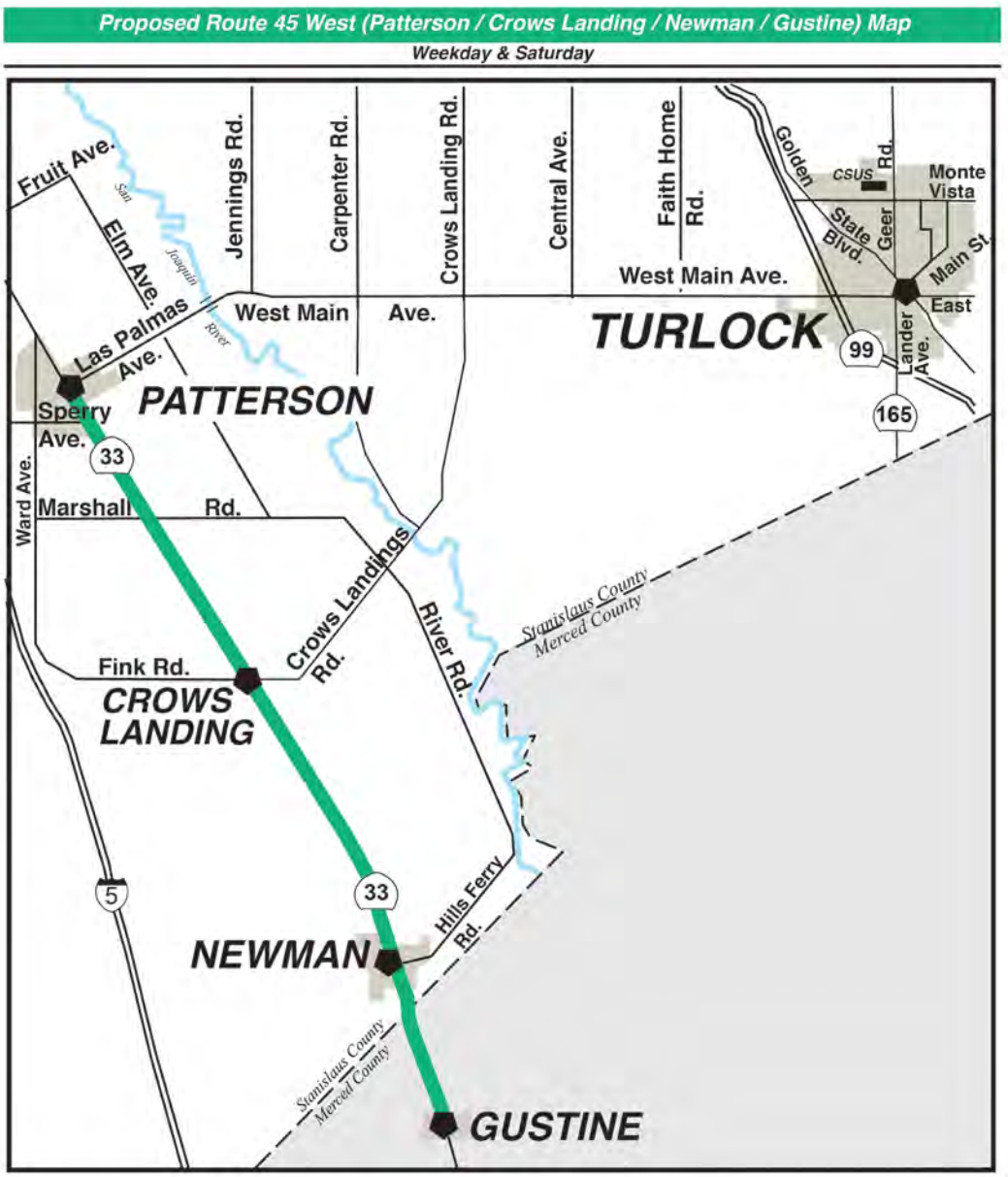


Source: StaRT

Route 45-West – Patterson-Crows Landing-Newman-Gustine

Route 45-West operates between Patterson and Gustine, Monday through Friday from 5:30 am to 9:18 pm and Saturday from 5:45 am to 8:37 pm. Eleven round trips are offered on weekdays, and more than six round trips are offered on Saturdays. The route map is shown in Figure 10.

Figure 10

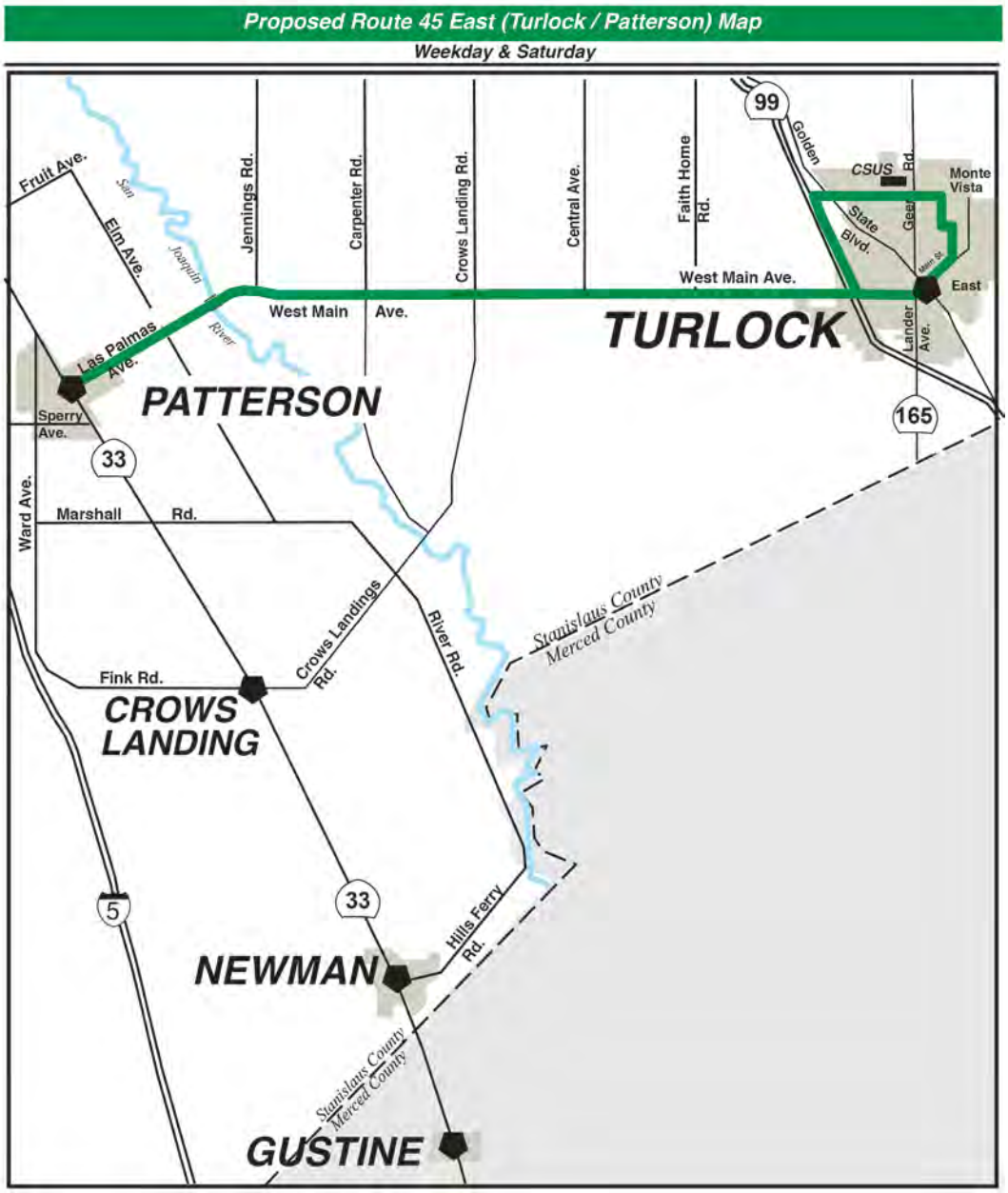


Source: StaRT

Route 45 East – Turlock-Patterson

Route 45 East provides service between Turlock and Patterson, Monday through Friday from 6:20 am to 8:05 pm and Saturday from 6:25 am to 7:10 pm. Seven round trips are offered on weekdays, and more than five round trips are offered on Saturday. The route map is shown in Figure 11.

Figure 11

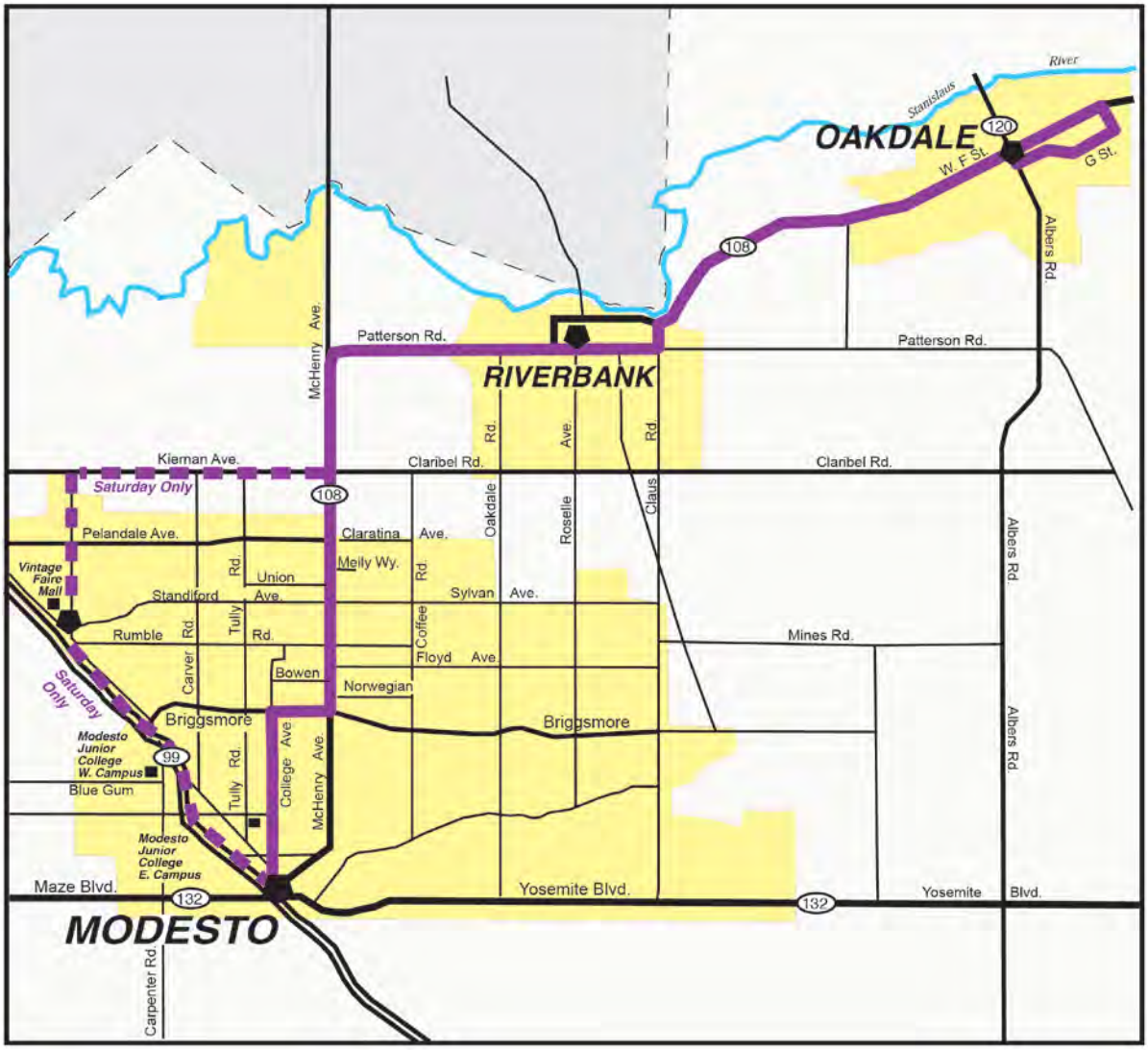


Source: StaRT

Route 60 – Modesto-Riverbank-Oakdale

Route 60 provides services Monday through Friday from 5:15 am to 9:14 pm and Saturday from 6:15 am to 8:36 pm. More than twelve round trips are offered on weekdays between Modesto and Oakdale with stops in Riverbank, and seven trips are provided on Saturdays. The route map is shown in Figure 12.

Figure 12

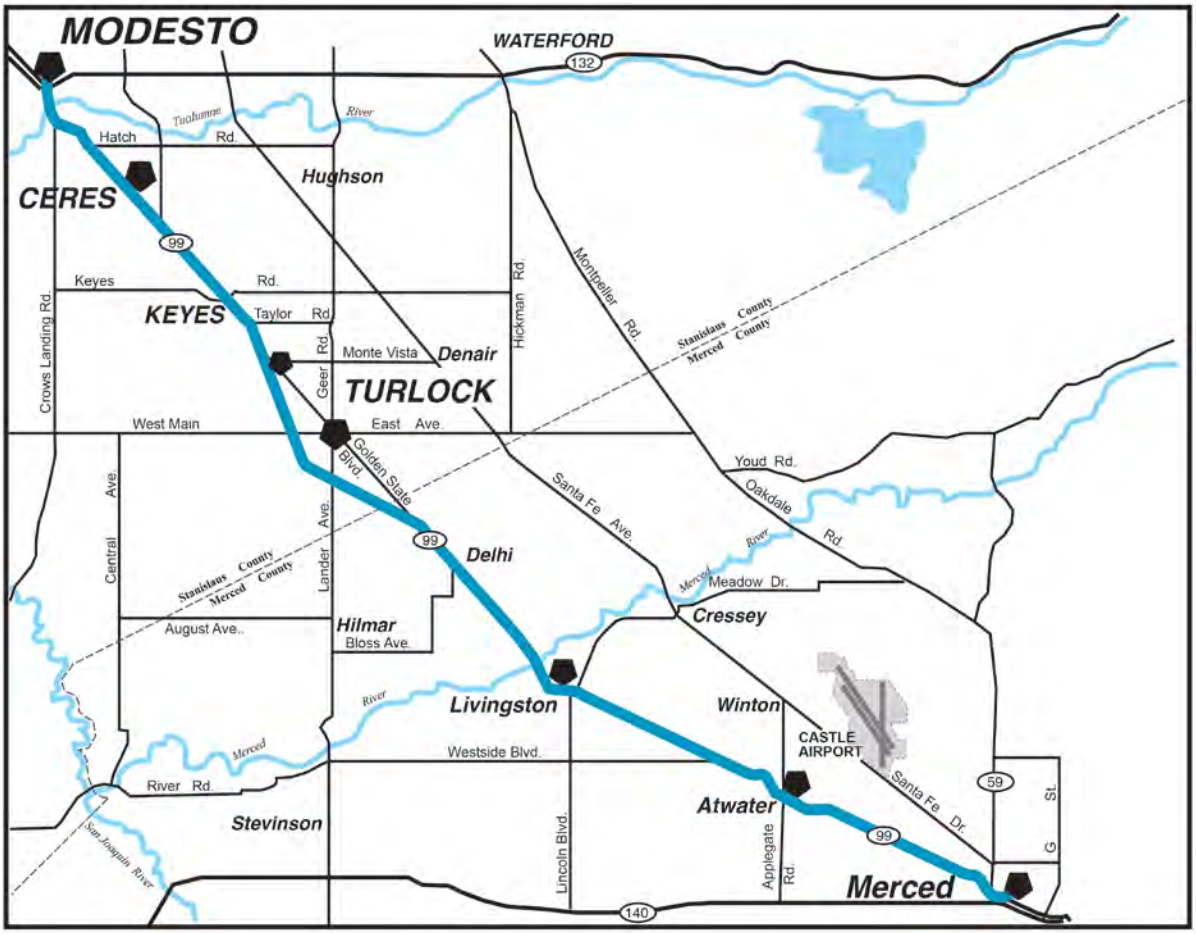


Source: StaRT

Route 70 – Modesto-Turlock-Riverbank

Route 70 operates between Modesto, Turlock, and Riverbank on Monday through Friday from 6:00 am to 6:35 pm. In the morning, one trip is provided from Modesto with a stop in Turlock before continuing to the Merced Transportation Center. The bus returns in the afternoon with stops in Turlock then travels to Modesto. No service is provided on Saturday. The route map is shown in Figure 13.

Figure 13

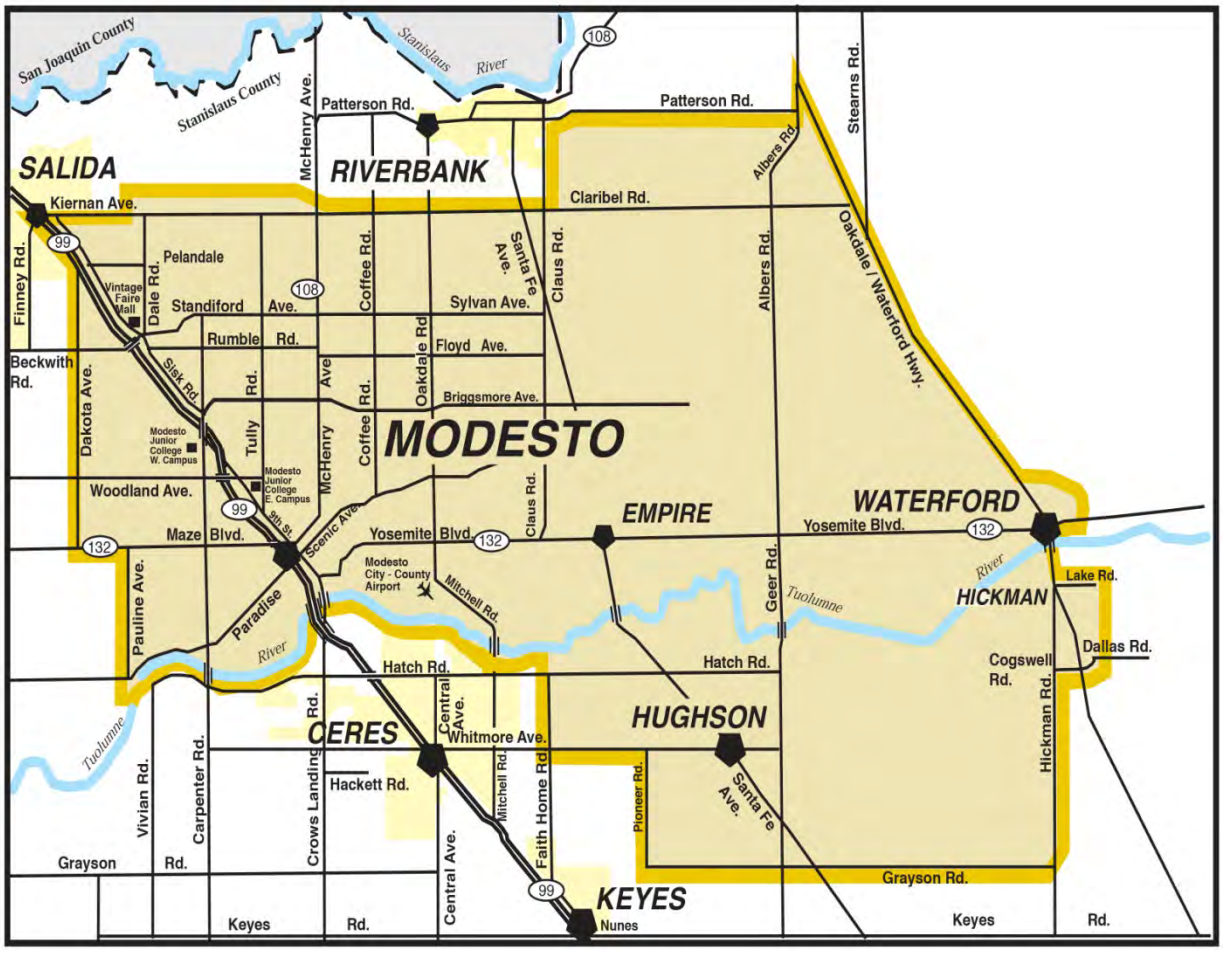


Source: StaRT

Waterford/Modesto Runabout

The Waterford/Modesto Runabout is a deviated fixed route that combines a limited intercity fixed route with scheduled stops and demand responsive service (curb-to-curb). Riders can use the service at the designated fixed stop without reserving a ride in advance and be dropped off at other designated fixed stops. For curb-to-curb service, riders must follow the rules for Dial-A-Ride service. This bus operates Monday through Friday from 6:00 am to 7:25 pm and Saturday from 6:45 am to 6:40 pm. Seven round trips are offered on weekdays between Modesto, Empire, Hughson, and Waterford. On Saturday, four round trips are provided. The route map is shown in Figure 14.

Figure 14



Source: StaRT

Dial-A-Ride Service

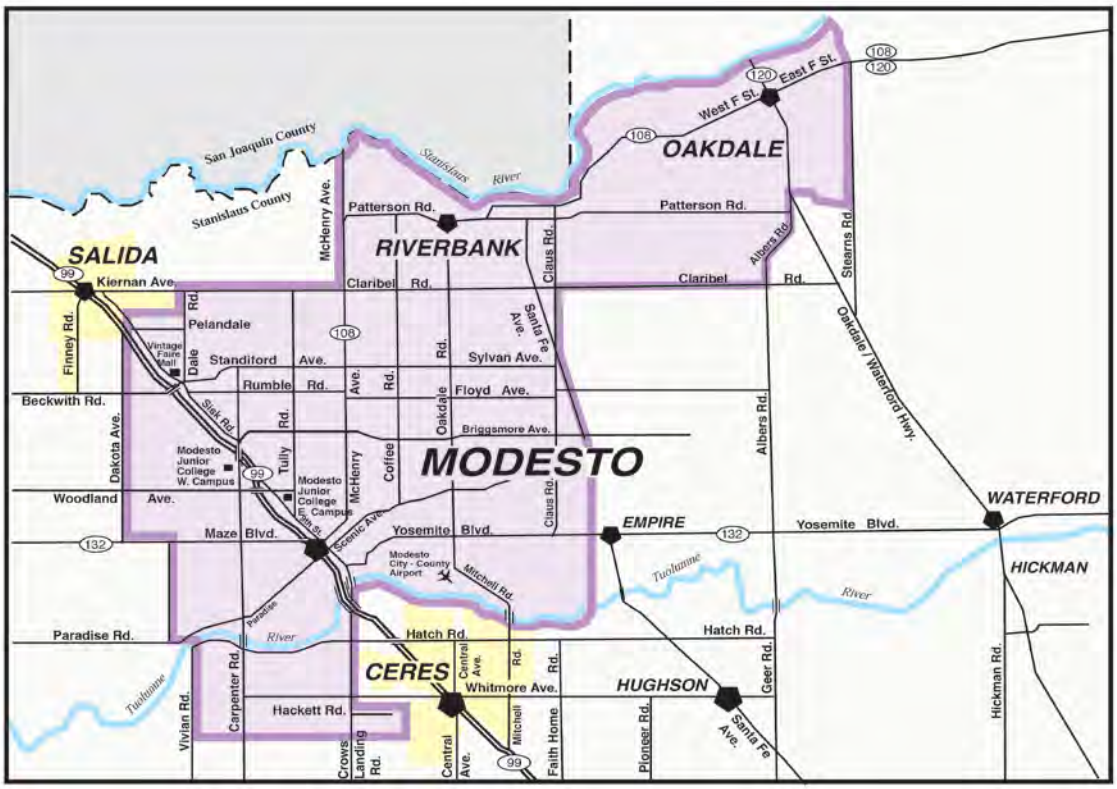
StaRT offers seven curb-to-curb dial-a-ride services that provide demand response services between and within communities. Dial-A-Ride service is available to the general public as well as to seniors and persons with disabilities. Two new dial-a-ride services were added in August 2013 to serve the cities of Riverbank and Oakdale which replaced dial-a-ride service previously offered by the Riverbank-Oakdale Transit Authority (ROTA). Dial-A-Ride (DAR) service is available on weekdays and Saturdays.

To schedule curb-to-curb service, riders may call and make reservations up to seven days in advance and no later than four hours before the ride. Cancellations are required no less than two hours prior to the scheduled pick up time. Reservations canceled with less than two hours' notice are considered no-shows.

Eastside Shuttle

The Eastside Shuttle provides intercity demand response service at specific time intervals Monday through Saturday between 6:00 am to 5:30 pm. Three round trips are provided between Modesto, Riverdale, and Oakdale. Riders can use the service at the designated fixed stops without reserving a ride in advance and be dropped off at other designated fixed stops. The route map is shown in Figure 15.

Figure 15

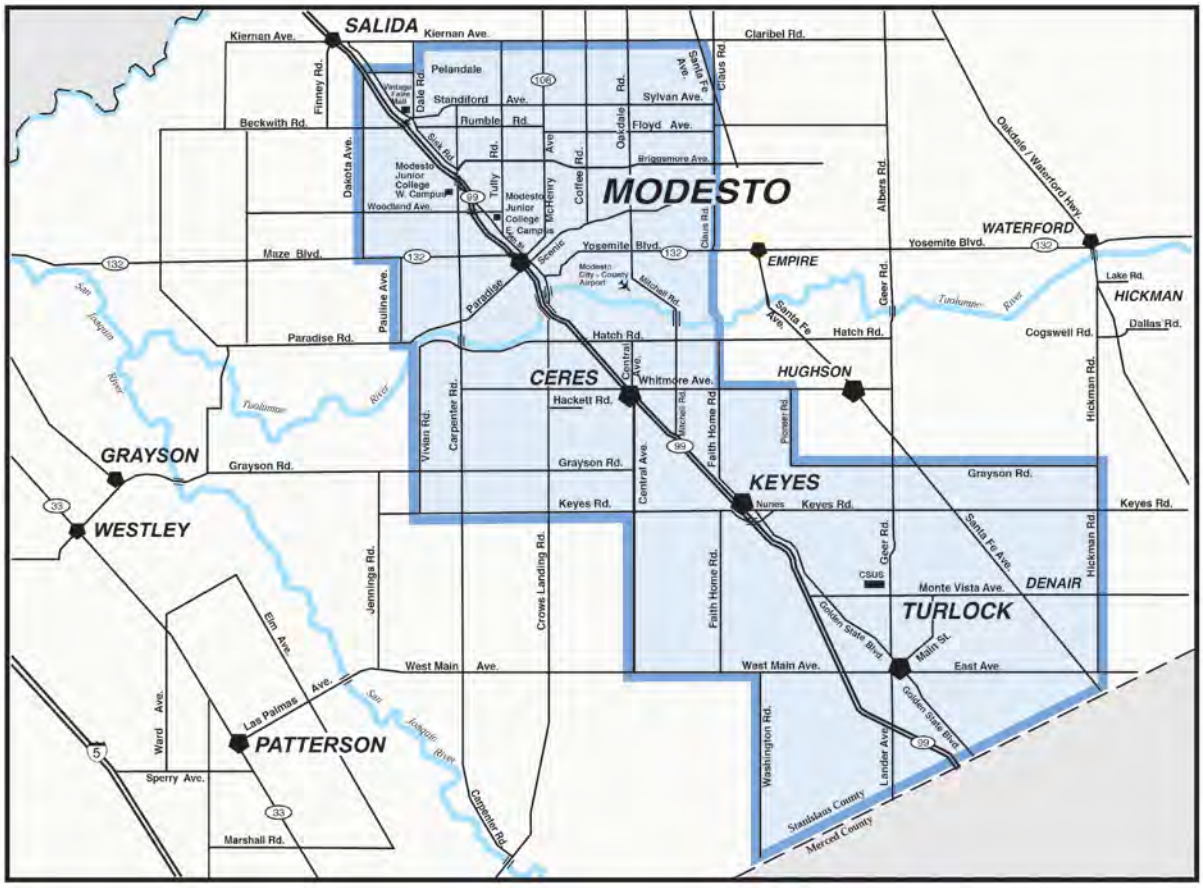


Source: StaRT

Turlock/Modesto Shuttle

Similar to the Eastside Shuttle, the Turlock/Modesto Shuttle provides intercity demand response service at specific time intervals throughout the day, Monday through Saturday from 7:00 am to 6:30 pm. Four round trips are provided between Modesto, Ceres, Keyes, and Turlock. The route map is shown in Figure 16.

Figure 16

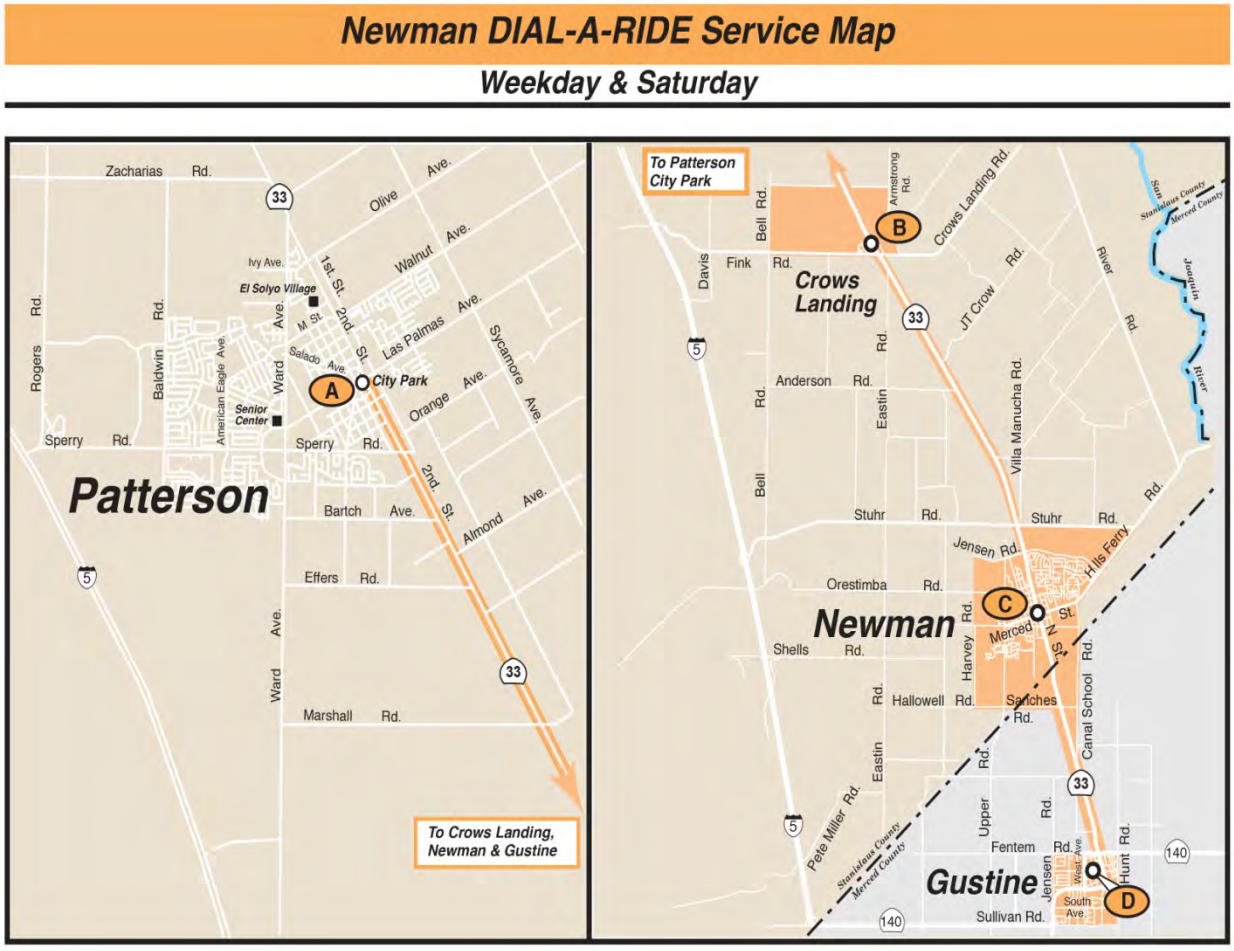


Source: StaRT

Newman Dial-A-Ride

Newman Dial-A-Ride provides curb-to-curb service in Newman, Crows Landing, and Gustine with one designated fixed stop in each community. This service is offered Monday through Friday from 7:00 am to 6:00 pm and Saturday from 8:00 am to 4:30 pm. The route map is shown in Figure 17.

Figure 17



Source: StaRT

Oakdale Dial-A-Ride

Oakdale Dial-A-Ride is a new service offered by StaRT as of August 2013 to replace ROTA's DAR service. This bus provides curb-to-curb service within the City of Oakdale, Monday through Friday from 6:30 am to 5:30 pm. Service is not available on Saturday; however, riders can use the Eastside Shuttle for their transportation needs in Oakdale. The route map is shown in Figure 18.

Figure 18

Source: StaRT

Patterson Dial-A-Ride

This curb-to-curb service is offered within the City of Patterson only. Service is available Monday through Friday from 7:00 am to 6:00 pm and Saturday from 8:00 am to 4:30 pm. The route map is shown in Figure 19.

Figure 19

Source: StaRT

Riverbank Dial-A-Ride

Similar to the Oakdale Dial-A-Ride service, this is a new service offered by StaRT to serve the city of Riverbank after the discontinuation of ROTA DAR service. Riverbank Dial-A-Ride service is available Monday through Friday from 6:30 am to 5:30 pm with no service on Saturday. Riders can use the Eastside Shuttle service on Saturday. The route map is shown in Figure 20.

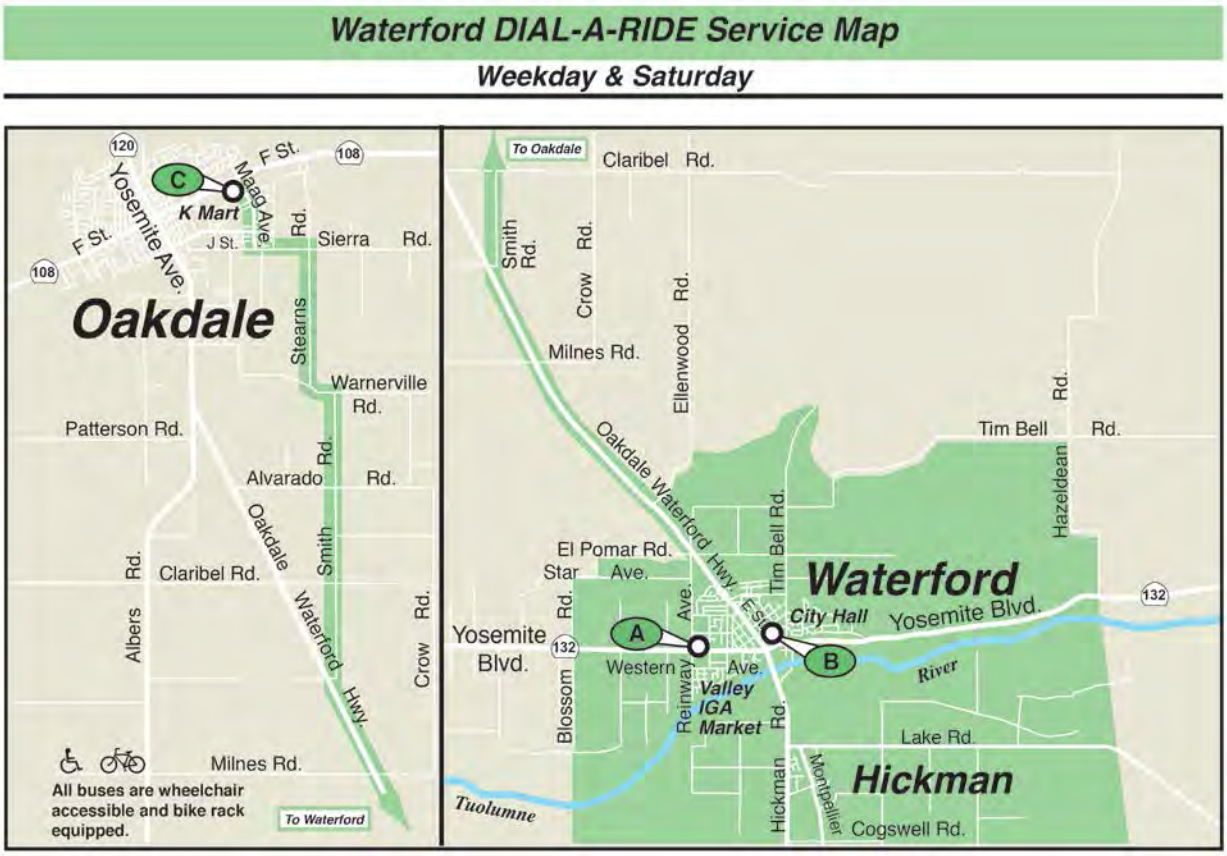
Figure 20

Source: StaRT

Waterford Dial-A-Ride

Similar to Newman Dial-A-Ride, Waterford Dial-A-Ride provides curb-to-curb service with designated fixed stops in the communities of Hughson, Waterford, Hickman, Empire and Oakdale. This service is available Monday through Friday from 8:30 am to 4:45 pm and Saturday from 9:00 am to 4:30 pm. The route map is shown in Figure 21.

Figure 21



Source: StaRT

Medivan

The Medivan shuttle provides non-emergency medical transportation on a reservation basis for residents to access medical appointments at facilities in the Bay Area. Major destinations served include Livermore, Palo Alto, Stanford and the University of California (U.C.), San Francisco Children's Hospital. Advance reservation is required to use this service and if passengers require an attendant for assistance, the attendant must pay a fare of $3.00 one-way to accompany the passenger.

B. Evaluation of Transit Needs and Services: This section entails findings from 1) a comprehensive set of customer data collected from over 400 completed surveys (combined on-board buses and online) and 100 percent ridechecks covering all routes; 2) customer data collected from an on-line survey posted on the StaRT website; and 3) in-person interviews conducted with County transit staff, transit contractor, and numerous stakeholder jurisdictions that contribute to StaRT services. For each route segment, the total number of boardings observed and the three highest boardings per stop and per trip are recorded. The boardings per stop identify the specific locations while the boardings per trip identify

the time of day of greatest bus stop activity. The section also includes an evaluation of current and future transit service opportunities using operations and customer service data.

An example of the survey results obtained are for Route 15, the main truck line between Modesto and Turlock which includes stops in Ceres and Keyes. This route operates weekdays and Saturdays with two hour headways. Hours of operation are from 4:30 a.m. to 10:00 p.m. on weekdays, and from 6:30 a.m. to 8:30 p.m. on Saturdays. There were 76 survey participants on Route 15. Sixty-four percent of trips originated from home, followed by 18 percent from a fixed-stop. Thirty-six percent of trips originated from Ceres, followed by 17 percent from Modesto and 17 percent from Salida.

The second part of the survey pertained to destinations along the route. Thirty-four percent of respondents indicated that their destination was work; followed by 22 percent who were going home, 19 percent recreational/personal and 15 percent were going to school. Forty percent were traveling to Modesto, 32 percent were going to Salida and 23 percent were going to Ceres. Seventy-one percent indicated that their bus arrived on time. In rating customer service, 86 percent rated the service from "good" to "excellent," and 64 percent rated the driver's performance as "excellent."

When queried about what improvements that they would like to see on StaRT, 34 percent desired more frequent service, 26 percent desired Sunday service and 10 percent desired later service during evening hours. Of those respondents desiring more frequent service, 86 percent wanted to see increased frequency on Route 15. In the rider profile section, 28 percent of riders surveyed were between the ages of 25 and 44, followed by 26 percent of riders between the ages of 19 and 24. Fifty-one percent of riders identified their gender as female, 49 percent identified as male, 43 percent were students, and 65 percent did not have a valid driver's license.

In addition to the surveys conducted on the fixed route, survey questionnaires were also completed by riders on the demand responsive service. The surveys were distributed by StaRT's contractor with 25 responses received and categorized according to the route's origin and destination. When queried about trip origin, 67 percent started their trip from home and 21 percent from work. Forty percent of the trips originated from Oakdale, 20 percent from Turlock, followed by 16 percent from Modesto and 12 percent from Riverbank. In accessing the bus, 55 percent were picked up from home, 23 percent walked and 14 percent accessed the bus by carpool. Of those who walked, 75 percent walked five or more blocks and 25 percent walked one block.

The trip destinations/purpose varied with 30 percent going to work; 20 percent going to school; 17 percent going home; and 17 percent going to medical appointments. Modesto was the highest rated destination (50 percent), followed by Oakdale (27 percent) and Turlock (14 percent). Of those traveling to school, 100 percent were going to Modesto Junior College. In reaching their destination from the bus, 63 were dropped off and 21 percent walked the remaining distance. Of those who walked, 50 percent walked one block and 50 percent walked five or more blocks. Forty-two percent of rides were subscription based, followed by 17 percent that were reserved five to seven days in advance and 17 percent reserved two to four days in advance. Regarding on-time performance, 96 percent indicated that the bus arrived on-time.

When asked about the main reason for their trip, 36 percent were going to work; 32 percent were going to school/college; 16 percent had a medical/dental appointment; and 12 percent were going shopping. Transit dependency rated highly among the respondents as 88 percent did not have access to a car, and 76 percent did not have a valid driver's license. In rating customer service, 64 percent rated the service

"excellent," and 62 percent rated the driver's performance as "excellent." The four top service improvements cited include more frequent service (33 percent); later evening service (21 percent); more Saturday service (17 percent); and Sunday service (17 percent).

Survey demographics for the demand responsive services include 76 percent female and 24 percent male. Forty percent were between the ages of 45 and 64, followed by 16 percent who were between the ages of 25 and 44, and 16 percent who were age 80 and older. Students comprised 38 percent, followed by 21 percent retirees. Household income of most respondents ranked low with 52 percent earning less than $15,000 annually, and 24 percent earning between $15,000 and $24,999 annually. When asked about how they found out about StaRT, 48 percent mentioned other means, 17 percent mentioned the website and 13 percent learned about the service from StaRT brochure/schedule.

C. Goals, Policies, and Standards Framework: This section provides a summary of recommended objectives and service policies as well as service standards and new service warrants for StaRT. The objectives, policies, and service standards were developed to provide policy guidelines for StaRT and serve as a "toolkit" to direct ongoing operation of existing services as well as guide the planning of future services. Objectives include 1) maximizing service availability, reliability, and convenience; 2) maximizing operating efficiency without negatively impacting service quality; 3) operating a productive service that remains affordable to the key transit markets; 4) ensuring ongoing service monitoring, evaluation, and planning; 5) establishing a formal role for StaRT in the development approval process; 6) adhering to prudent budgeting and financial practices; and 7) promoting public/private partnerships to increase transit revenue and ridership.

Efficiency standards use operational performance data to measure performance of a transit system. Standards can be set by federal or state requirements as well as by local community or county goals, objectives, and service priorities adopted by StaRT. While service standards vary from agency to agency, industry practice generally uses the following three categories for service performance and design: 1) Efficiency standards; 2) Service quality/reliability standards; and 3) Service design standards. Based on the proposed 15% system-wide farebox recovery ratio, the following passenger revenue recovery ratios are recommended for the following service groupings:

- Intercity Fixed Route – 15% to 20%.
- Shuttle Services – 10%
- Dial-A-Ride Services – 10%.

A high average passenger revenue recovery ratio for intercity fixed route service is recommended to ensure StaRT is able to maintain the system-wide fare recovery ratio of 15% proposed by the Stanislaus Council of Governments. Historic performance trends for StaRT provided in Figures 22 and 24 highlight performance indicators that include farebox calculation, operating cost per mile, and average fare per passenger. Figure 22 on page 25 features system-wide performance including all modes of service.

Figure 22
StaRT System-wide Performance Indicators

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	*% Change FY 2009-2013*
Operating Cost	$3,275,960	$3,360,444	$3,501,873	$3,487,745	$3,682,648	***12.4%***
Total Passengers	305,495	294,397	323,011	356,698	374,635	***22.6%***
Vehicle Service Hours	40,083	39,779	40,344	41,107	44,716	***11.6%***
Vehicle Service Miles	805,754	809,654	834,635	832,235	876,769	***8.8%***
Passenger Fares	$361,282	$345,202	$397,413	$465,000	$496,528	***37.4%***
Operating Cost per Passenger	$10.72	$11.41	$10.84	$9.78	$9.83	***-8.3%***
Operating Cost per Vehicle Service Hour	$81.73	$84.48	$86.80	$84.85	$82.36	***0.8%***
Operating Cost per Vehicle Service Mile	$4.07	$4.15	$4.20	$4.19	$4.20	***3.3%***
Passengers per Vehicle Service Hour	7.6	7.4	8.0	8.7	8.4	***9.9%***
Passengers per Vehicle Service Mile	0.38	0.36	0.39	0.43	0.43	***12.7%***
Average Fare per Passenger	$1.18	$1.17	$1.23	$1.30	$1.33	***12.1%***
Fare Recovery Ratio (without exclusion of new services)	11.03%	10.27%	11.35%	13.33%	13.48%	***22.3%***
Fare Recovery Ratio (with exclusion of new services)	13.99%	12.28%	13.16%	13.61%	13.61%	***-2.7%***

Source: Annual Fiscal & Compliance Audits & Internal Performance Reports

(1) The fare recovery ratio uses audited operating cost which exclude depreciation and vehicle leases, and match the operating costs and fare revenues in the table.

(2) The fare recovery ratio uses audited operating costs which exclude depreciation and vehicle leases, as well as new services. This ratio is allowable under the TDA statute.

Figure 23 on page 26 denotes performance indicators for the StaRT fixed route service from FY 2009 through FY 2013 while Figure 24 on the same page presents performance indicators for the shuttle and demand response services for the same time period.

Figure 23
StaRT Fixed Route Performance Indicators

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	*% Change FY 2009-2013*
Operating Cost	$1,858,560	$1,838,981	$1,992,885	$2,219,733	$2,285,671	***23.0%***
Total Passengers	266,775	259,047	288,652	322,926	330,555	***23.9%***
Vehicle Service Hours	24,075	24,512	25,429	26,774	28,808	***19.7%***
Vehicle Service Miles	555,414	559,821	583,632	589,004	610,843	***10.0%***
Passenger Fares	$282,793	$275,498	$318,024	$389,636	$425,741	***50.5%***
Operating Cost per Passenger	$6.97	$7.10	$6.90	$6.87	$6.91	***-0.7%***
Operating Cost per Vehicle Service Hour	$77.20	$75.02	$78.37	$82.91	$79.34	***2.8%***
Operating Cost per Vehicle Service Mile	$3.35	$3.28	$3.41	$3.77	$3.74	***11.8%***
Passengers per Vehicle Service Hour	11.1	10.6	11.4	12.1	11.5	***3.6%***
Passengers per Vehicle Service Mile	0.48	0.46	0.49	0.55	0.54	***12.7%***
Average Fare per Passenger	$1.06	$1.06	$1.10	$1.21	$1.29	***21.5%***
Fare Recovery Ratio	15.22%	14.98%	15.96%	17.55%	18.63%	***22.4%***

Source: Internal Performance Reports

Figure 24
StaRT Dial-a-Ride Performance Indicators

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	*% Change FY 2009-2013*
Operating Cost	$1,232,482	$1,163,210	$1,177,628	$1,186,230	$1,396,977	***13.3%***
Total Passengers	38,720	35,350	34,359	33,772	44,080	***13.8%***
Vehicle Service Hours	16,008	15,267	14,915	14,333	15,908	***-0.6%***
Vehicle Service Miles	250,340	249,833	251,003	243,231	265,926	***6.2%***
Passenger Fares	$78,489	$69,702	$79,389	$75,364	$70,787	***-9.8%***
Operating Cost per Passenger	$31.83	$32.91	$34.27	$35.12	$31.69	***-0.4%***
Operating Cost per Vehicle Service Hour	$76.99	$76.19	$78.96	$82.76	$87.82	***14.1%***
Operating Cost per Vehicle Service Mile	$4.92	$4.66	$4.69	$4.88	$5.25	***6.7%***
Passengers per Vehicle Service Hour	2.4	2.3	2.3	2.4	2.8	***14.6%***
Passengers per Vehicle Service Mile	0.15	0.14	0.14	0.14	0.17	***7.2%***
Average Fare per Passenger	$2.03	$1.97	$2.31	$2.23	$1.61	***-20.8%***
Fare Recovery Ratio	6.37%	5.99%	6.74%	6.35%	5.07%	***-20.4%***

Source: Internal Performance Reports

Additional information is provided from findings of the Transportation Development Act (TDA) Triennial Review Verification of StaRT's performance indicators completed in May 2013 by the Stanislaus Council of Governments and are summarized below.

1. Operating costs systemwide increased 12.4 percent based on audited data from FY 2009 through FY 2013. Using unaudited data, fixed route operating costs increased 23 percent over the same timeframe. Dial-a-Ride operating costs increased 13.3 percent. The increase in operating costs are attributed to higher fuel costs for additional buses, increased service hours, higher employees' health and retirement expenses as well as the expiration of the federal alternative fuel excise rebate tax program. The cost of fuel for StaRT, specifically the cost of gasoline, has a base rate of $2.35 as indicated in the operations contract, which may increase depending on the cost of fuel throughout the year.

2. Ridership increased 22.6 percent systemwide over the five-year period. Fixed route ridership increased 23.9 percent while Dial-a-Ride ridership increased by 13.8 percent. Annual increases in fixed route ridership exceeded 11 percent during FYs 2011 and 2012. Fixed route ridership trends led the overall systemwide increase during those years. The increase in ridership is attributed to the extended service hours on Route 10 Express which is highly utilized by college students.

3. Fixed route revenue service hours and miles increased 19.7 and 10 percent, respectively. Dial-a-Ride revenue service hours decreased 0.6 whereas revenue service miles increased 6.2 percent. Systemwide, vehicle service hours increased 11.6 percent and vehicle service miles increased 8.8 percent. The increase in revenue hours and miles reflects service expansion involving the major trunk routes between Modesto and Turlock.

4. Operating cost per passenger decreased 8.3 percent systemwide. The indicator exhibited a slight decrease of 0.7 percent on the fixed route and a decrease of 0.4 percent on Dial-a-Ride. The trends for this indicator reflect a much greater increase in passenger trips than for operating costs.

5. Operating cost per vehicle service hour increased 0.8 percent systemwide based on audited cost data. For fixed route, the cost per hour increased 2.8 percent using unaudited data. Dial-a-Ride exhibited a higher increase of 14.1 percent. The trends in this indicator demonstrate that the increase in operating costs have exceeded the increase in revenue service hours over the audit period.

6. Passengers per vehicle service hour systemwide exhibited an increase of 9.9 percent from 7.6 to 8.4 passengers. Fixed route passengers per hour increased by 3.6 percent; however, passengers per hour on Dial-a-Ride exhibited a higher increase of 14.6 percent.

7. The fare recovery ratio, when including new services over the past three years, increased systemwide. When excluding new services, the farebox ratio decreased slightly. This shows that new services have improved over time to help maintain the farebox ratio above the current required standard. When new services are excluded, the farebox ratio remained above the required standard which is also a positive trend with existing services. Farebox ratio for fixed route increased from 15.22 percent to 18.63 percent while Dial-a-Ride saw a decrease from 6.37 percent to 5.07 percent. Systemwide passenger fare revenues increased 37.4 percent based on audited data. For fixed-route, revenues increased 50.5 percent whereas Dial-a-Ride fare

revenues decreased by 9.8 percent. The rise in fare revenues is attributed to the fare increase implemented in August 2011 as well as higher fixed route ridership.

It is recommended that StaRT establish standards to help evaluate service performance and design to help achieve recommended performance indicators. As part of the study, service warrants are provided as a tool for evaluating new services or service extensions when appropriate. A new fixed route or route extension could be introduced when ridership forecasts based on population, school enrollment, or job density are sufficient to achieve minimum passenger revenue recovery ratios by service type.

New services should be introduced on a trial basis and given a minimum of twenty-four months to achieve the required minimum passenger revenue recovery ratio. Additionally, new service expansion and/or service frequency increases should always be assessed in terms of potential ridership and the achievement of the minimum passenger revenue recovery benchmark. Prior to the recommendation and implementation of new services, an analysis of ridership potential and passenger revenue recovery should be completed.

As with most transit agencies, efficiency standards are used to set parameters for the productive operations of transit services and to help guide operations and planning within available operating budgets and funding ceilings. Efficiency standards use operational performance data to measure performance of a transit system. Monitoring operational efficiency and productivity requires data such as operating cost, passenger revenue recovery, vehicle revenue miles, vehicle revenue hours, and boardings (revenue passenger trips).

It is also recommended that StaRT establish a monitoring program to monitor, track and evaluate service and should be kept simple to free up administrative resources for marketing service, problem solving and planning. Efficiency performance should be monitored and reviewed by StaRT on a monthly basis with recommendations that StaRT considers limiting its range of performance measurements to a few key indicators that could include:

- **Operating Cost per Passenger:** Calculated by dividing all operating and administrative costs by total passengers (with passengers defined as revenue trips). The subsidy cost per passenger is a further refinement of this measure and is calculated by subtracting farebox revenue from gross operating and administrative costs and dividing by total passengers.
- **Operating Cost per Service Hour:** Calculated by dividing all operating and administrative costs by the total number of vehicle service hours (with service hours defined as time when the vehicle is actually in passenger service).
- **Passengers per Revenue Hour:** Calculated by dividing the total number of passengers (revenue trips) by the total number of vehicle service hours. The number of passengers per hour is a good measure of service productivity and critical to the establishment of design standards and benchmarks for the expansion of transit service. Passengers per service hour should be calculated for each service type and for different time periods, such as peak, midday, Saturdays, Sundays, and evenings (if introduced). Minimum passengers per hour standards should be established to achieve the minimum passenger revenue recovery ratio benchmark (see below).
- **Passenger Revenue Recovery Ratio:** Calculated by dividing all passenger revenue by total operating and administrative costs. Passenger revenue recovery ratio benchmarks evaluate both system efficiency (though operating cost) and productivity (through boardings).

Passenger revenue recovery ratio benchmarks are critical to the establishment of benchmarks for passengers per revenue hour and service design.

The indicators selected are consistent with operating and cost data already collected by StaRT. Efficiency performance standards should be defined, monitored, and assessed separately for fixed route, shuttle and dial-a-ride services.

Service performance standards need to be tied to minimum passenger revenue recovery ratio benchmarks. The cost per service hour and the cost per passenger will likely increase annually as operating costs increase. While it is more difficult to control increases in the cost per revenue hour because of increasing labor (wages and benefits) and fuel costs, the cost per passenger can be more effectively controlled and potentially lowered by increasing service productivity. As operating costs increase, a greater number of passengers carried per revenue hour will be necessary to meet the approved passenger revenue recovery benchmark.

This could be accomplished through a shift from less productive service coverage to services with higher ridership potential. Less productive services can be reduced through the overall elimination of specific services or through a more "surgical" approach that eliminates specific bus trips with low ridership. The latter approach avoids the complete elimination of specific services while maintaining more productive service coverage hours of each StaRT service. Based on the proposed 15% system-wide farebox recovery ratio, the following passenger revenue recovery ratios are recommended for the following service groupings:

- Intercity Fixed Route – 15% to 20%.
- Shuttle Services – 10%
- Dial-A-Ride Services – 10%.

D. Technology System Plan: The Transit Technology Plan provides a future system concept to enable StaRT to deploy transit technologies in a systematic way that will help achieve prescribed objectives. They include applicable technological advances to meet transit service quality and efficiency requirements while enhancing transit customer experience. The section also identifies systems that will also improve transit service monitoring and evaluation. As the current Intelligent Transportation System (ITS) environment for StaRT is very lean with most processes being done manually, there is opportunity for further investment in ITS to automate several key functional elements including vehicle locating capabilities, digital communication, announcements and message signs, computer aided schedules, transit passenger and fare management, transit maintenance, and customer service/information. The deployment of this complete system will help to improve customer satisfaction, promote efficiency in the organization, and integrate existing reporting systems and streamline reporting and management tasks. A future system concept could include the following key interfaces:

- Between the Computer-Aided Dispatch & Automatic Vehicle Location (CAD/AVL) system StaRT (and their contractor's) administrative functions (e.g. payroll, attendance, transit revenue calculator);
- Between the CAD/AVL system, Vehicle Health Monitoring (VHM) system, and the current or future Maintenance Management system for tracking of fuel, parts, and work orders;
- Between on-board devices (AVL, Mobile Data Terminals (MDT), Farebox, Destination Signs, Automatic Passenger Counters (APC) Automatic Stop Announcements (ASA), etc.) and the

On-Board Computer (OBC) to improve transit operation and simplify the bus operators' login procedure. With this interface, bus operators will have fewer distractions while driving; and

- For StaRT vehicles to interact with signal controllers to receive soft priority (i.e. extended green or pre-empted red) at selected intersections.

Overall, the deployment of a complete system will help to improve customer satisfaction, promote efficiency, and address organizational needs that may be lacking. The new system will integrate existing reporting systems and streamline reporting and management tasks.

A series of technological programs have been defined which represents distinct packages that may be pursued in order to fully achieve the proposed system concept. Within these packages are certain technologies requiring significant integration that are best implemented as a bundle through a single contractor to reduce both the cost and the risk to StaRT and funding partners. Recommended software packages include Smart Bus System Deployment, Rostering and Dispatch Software, Advanced Traveler Information Systems, Automatic Passenger Counters (APCs), and Transit Signal Priority. These packages could be undertaken as part of a complete year-by-year initiative, or as individual separate projects. However, one key consideration is that since CAD/AVL plays such a central role in the operation of the other systems, it will be necessary to deploy this first. The following summarizes ITS programs that should be considered as StaRT continues to evaluate its technology needs which include different priority levels.

- Low Priority – This issue somewhat impacts StaRT or their contractor's operational, fleet maintenance, service planning and administrative performance;

- Medium Priority – The issue moderately impacts Transit's operational, fleet maintenance, service planning and administrative performances; and

- High Priority – The issue significantly impacts Transit's operational, fleet maintenance, service planning and administrative performances.

Operations - Dispatching

Current Need	Priority
A system to monitor vehicle location and system performance remotely.	High
The system should allow for the storage and playback of Automatic Vehicle Location (AVL) data.	High
The system should also store and provide reports for historical operation performance (early, late, on-time) data.	High

Conventional Dial-A-Ride & Paratransit Service

Current Need	Priority
A system with electronic login.	High

Current Need	Priority
A login system that interfaces with the HR/finance system.	High
There should be a single point of log on.	High
A system that provides StaRT with real-time service adjustment tools, such as: • Short-turns • Add or remove trips	High
A system that allows StaRT (or their contract operator) to replay information in real-time (i.e. bread crumb vehicle tracking)	High
A system that allows the driver to covertly notify dispatch about an incident.	High
The system should allow for dynamic scheduling which provides operators with automatic updates to their manifests while they are en route. • Operators will be able to see cancellations • Dispatch can add in new trip requests and Operators will see the new trip pick up time/location and drop off location The system should also allow the operators to log certain information, such as (non exhaustive list): • successful pick-ups (passenger info, time) • passenger drop-offs (passenger info, time) • No-show passenger	High
A system that supports scheduling Dial-a-Ride service based on the routing and business rules.	High
A system that allows transit vehicles to be given priority at traffic lights.	Medium

Service Planning

Current Need	Priority
A system that can assign both fixed route and paratransit operators and vehicles to the next day's rosters based on StaRT's business rules.	High
A system that logs operational performance statistics (e.g. schedule adherence) and allows StaRT to assess schedule performance. This will provide StaRT with objective metrics in order to refine future schedules.	High
Automatic Passenger Counters (APCs) A system that keeps track of	High

Current Need	Priority
passenger boarding and alightings at stops to more effectively plan service.	

Customer Service

Current Need	Priority
All systems must be ADA compliant.	High
A system that can disseminate real-time passenger information (e.g. predicted arrival times) to customers, whether via: • wayside signs; • web; • telephone service; and • mobile devices.	High
A system that can automatically provide customers with schedule information or if need be to redirect to a person (e.g. in case of a complaint).	High

Administrative

Current Need	Priority
A system that should allow StaRT to create maps (e.g. route maps).	Medium
A system to track the various types of customer interactions and allow for reporting to management.	Medium
A system to allow for the automatic tracking of complaints (e.g. issue type, who is resolving the issue, when it was resolved and how).	Medium
An automatic interface between systems to streamline the report creation process.	High
A system to automatically track sales and distribution of tickets and passes.	Medium
Central systems should be both established and to offer low maintenance products, and provided as hosted services.	High

E. Consolidation Assessment: This section provides a high-level assessment for integration of transit between StaRT and Bus Line Service of Turlock (BLST). A preliminary analysis showed service duplication between the two systems along major corridors in Turlock including Monte Vista Avenue, Geer Road, Golden State, Countryside Drive, and Fulkerth Road. Several StaRT routes and the Turlock/Modesto Shuttle currently operate service in Turlock and run along similar major corridors as the BLST system. Residents in the city can also rely on the County's transit service when BLST transit

service ends at 5:30 PM since the County provides transit service beyond 5:30 PM in addition to traveling to different segments of the County by transferring between routes. A summary of expected benefits and potential challenges of merging the two transit services are provided.

Benefits:

- More opportunities for BLST riders to connect with other StaRT routes to travel to different places in the County.
- Improves access to available services and enhances travel options to areas lacking fixed route service.
- Creates one unified system that benefits current and future passengers, as well as clients of social service agencies and college/university students that use public transportation.
- Increases schedule flexibility that supports and facilitates regional travel.
- Offer potential lower fares to BLST patrons as there is no need to pay for transfers.
- Improves demand responsive service coordination.

Challenges:

- Review, restructure and integrate fares into one fare structure to ensure adherence to the Federal Transit Administration Half Fare Policy.
- Need for additional staffing in the County's Transit Division to help with increased responsibilities
- Coordination with Federal, State and Regional entities to ensure StaRT complies with all regulations.
- Train staff to become familiar with federal financial activities such as applying for grants through the Transportation Electronic Award Management (TEAM) the required electronic filing system.
- Training staff to develop required federal and State reports such as Title VI, EEO and National Transit Database [NTD], Americans with Disabilities Act (ADA) Paratransit service, as well as understanding the process and the preparation for Federal Transit Administration (FTA) Triennial Reviews/Audits.

A series of conceptual service integration options have been developed to offer a springboard for the County and Turlock to hold further discussions for consolidation. These options are provided to be considered as part of the strategy in evaluating and defining service overlap that currently exist among the two systems while continuing to serve the primary ridership markets in the City, as well as to allow for the opportunity for both short- and long-distance travel. Options include 1) Status Quo; 2) Turlock BLST Fixed Route during Weekday Peaks; and 3) Local Flexroute Services and are summarized below, including:

1. **Status Quo**
    - Turlock local routes are pulsed throughout the day from the current Turlock Regional Transit Center at the intersection of Dels Lane, Hawkeye Ave, and Golden State Boulevard.

- All StaRT services – Routes 10, 15, 45 East and 70 would follow existing alignments and limit BLST start/end points at the Transit Center (to reduce overlaps).
- Transfers between StaRT services and BLST local service would be required at the transit center.
- Local StaRT service remains the same for local trips.
- Turlock/Modesto Shuttle service remains the same for intercity service.

2. Turlock BLST Fixed Route during Weekday Peaks

- Turlock fixed routes would operate only during the AM and PM peaks to provide service primarily to the schools and CSUS.
- StaRT services would continue to operate along current routes in Turlock during peak and off peak periods.
- StaRT routes 10, 15 and 45 East would provide an off peak fixed route structure for local travel within Turlock.
- Local off peak service in Turlock would be provided by a general public DAR service. The DAR would also meet ADA requirements.
- Local DAR would be restricted to ADA only during peak period and to the general public during off peak period for local trips.
- Turlock/Modesto Shuttle service still remains the same for intercity service.

3. Local Flexroute Services

- Two to three zonal flexroutes would be established to provide peak and off-peak local service. Subscription service would be offered during the peaks for work related trips and school trips.
- Flexroutes would pulse from the Turlock Regional Transit Center to facilitate good connections between flexroutes and with Merced and StaRT regional routes.
- StaRT services – Routes 10, 15 45 East and 70 through the City would limit local service start/end points to the Transit Center (assumes good connections with local flexroutes).
- Flexroutes would replace local DAR and meet ADA requirements.
- Turlock/Modesto Shuttle service still remains the same for intercity service.

There are potential net administrative cost savings to be achieved by transferring transit management from the City to StaRT which could occur as economies of scale might affect staff utilization to manage a larger transit system. The additional staffing responsibilities that may result from consolidating the two systems include planning for services for a larger system and managing federal urbanized grants, reporting, and auditing requirements which are currently conducted by the City of Turlock. The same functions are currently performed by the County, except for federal funding drawdowns; although this function can be performed by the County.

Though StaRT does not currently receive federal Section 5307 urban grants under the Transportation Development Act (TDA) Cost Sharing Agreement, the County has been designated as a Small Urban

System due to the 2010 Census population and is working with City of Modesto Transit to become a subrecipient to receive FTA Section 5307 urban formula funds. In addition, the County hopes to work with StanCOG to become a direct FTA grant recipient. Current County staff, especially the Transit Manager, is experienced with managing and administering Section 5307 funds and is very experienced with using the Federal Transportation Electronic Award Management (TEAM) and Economic Clearing House Operation (ECHO) web-based financial application programs to administer and drawdown grant funds. Other reporting requirements including TDA claims, Americans with Disabilities Act Paratransit service, Federal Title VI Program, and FTA National Transit Database would be conducted by the County, for which the County already performs some of these activities for FTA and Caltrans.

The merger of the two transit systems may offer possible challenges that will need to be addressed, whether they are operational, administrative, financial, and/or institutional in nature. A number of possible challenges include restructuring of fares, increased staff responsibilities, coordination and training. Detailed discussions would need to be held between the County of Stanislaus, City of Turlock, StanCOG, and Caltrans for the implications on TDA funding for both jurisdictions from potential consolidation and the applicability of the Transit Cost Sharing Procedures. This process would be similar to discussions held between StanCOG, the County, and ROTA when StaRT and ROTA merged their transit services with final approval from Caltrans. Furthermore, additional discussions will need to be held between the County, City, Caltrans, and the FTA given that both the County and City receive federal transit funds. Final approval of the merger, if both entities agree to the consolidation, will also need to be received from the FTA.

F. Service Recommendations: The proposed service recommendations are intended as suggestions or a possible "menu" of service changes for consideration by StaRT management based on Stanislaus County priorities and transit vision. The recommendations are organized by service type and prioritized by potential market and productivity gains as well as additional service enhancements for increased funding capacity. Service recommendations are identified as proposed service changes and grouped into the following options:

- Option 1: Status Quo (no change)
- Option 2: Address Farebox Recovery Ratio Challenges
- Option 3: Improve On Time Performance
- Option 4: Increase Capacity on Selected Routes
- Option 5: Establish Clock-face Headways on Routes 10 and 60
- Option 6: Formalizing ADA Requirements
- Option 7: Improve Productivity
- Option 8: Minimize Service Overlaps
- Option 9: Address Public Service Expansion Requests

Achieving a sustainable minimum farebox recovery ratio of 15% as proposed is identified as a critical objective of the COA service plan. Option 2 addresses the issue of farebox recovery through potential elimination of unproductive fixed route trips and service coverage during early and later trips. Under

the proposed COA service plan, potential reduction in unproductive service hours would free up revenue hours to be applied to service enhancements outlined in Options 3, 4, and 5.

Approximately 68% of StaRT transit services are operated within urbanized areas. This includes the redefined Modesto Urbanized Area as well as the cities of Turlock, Riverbank, Oakdale, Hughson, Merced, and the community of Keyes. The proposed blended 15% urban/rural system minimum farebox recovery ratio for StaRT to be established by StanCOG will take effect beginning FY 2015-16 in comparison to the current 10% farebox requirement for StaRT as a rural service provider. However, StaRT is no longer considered as a rural service due to the recent classification to a Small Urban System within a Large Urbanized Area. Achieving and sustaining the proposed minimum farebox recovery ratio of 15% is identified as a critical objective of the COA service plan. A series of recommended actions are offered to address this issue including reallocating quantifiable resources (i.e. revenue hours) among transit services for service enhancement, assessing the ratio of non-revenue to revenue hours, and making adjustments that increase route productivity and efficiency. Conceptual schedules and service modifications are provided for each route and service in the COA full report.

Given StaRT's reclassification, the transit system will now be required to provide ADA complementary paratransit service within its service area. StaRT's ADA requirements are limited to specific times when there is no Dial-a-Ride coverage in the different communities served and to a small service area within ¾ miles of StaRT's fixed routes. StaRT should provide service within the ADA regulations to manage potential ADA paratransit service demand. Key elements of an ADA Complementary Paratransit Plan should consider and include:

- **Establishing a formal ADA certification process within its service area**: This would include a functional assessment of all applicants to ensure each is ADA certifiable.

- **Limit the service area**: Restrict service to local origins and destinations within ¾ miles of a StaRT fixed route within the specific communities where service is required. Intercommunity trips should be accommodated by transferring ADA paratransit riders to a fixed route.

- **Limit ADA service hours**: Restrict StaRT's ADA paratransit obligation to those specific, local StaRT fixed route hours (as defined by the published schedules) when an alternative local Dial-a-Ride is not available.

- **Apply ADA trip negotiation criteria to all trip requests**: Under ADA regulations, a transit agency can negotiate trip pick-up times up to 60 minutes before or after (two hour window) the registrant's requested pick-up time or up to 60 minutes before the registrant's requested drop-off time. In some situations this allowable trip negotiation could move pick up or drop off times into the local Dial-a-Ride coverage hours.

- **Advance scheduling requirement**: Limit trip requests to a minimum of one day in advance.

By applying the above limitations, StaRT could effectively manage potential ADA paratransit demand within its service area and comply with ADA regulations. By limiting requests to a one day advance booking, StaRT could serve ADA trip requests through the contractor's extra board. Other alternatives would be to start or finish local Dial-a-Ride service shifts early or late to accommodate specific requests. With regard to Modesto, Ceres, and Turlock coverage, StaRT could investigate and potentially consider a contractual arrangement with Modesto Area Express (MAX), Ceres Area Transit (CAT), or BLST to provide extended service hours on an as needed basis.

Key issues addressed by the COA service plan include addressing system-wide farebox recovery, improving on-time performance/schedule adherence issues, and minimizing service overlaps in Modesto, Turlock, and Merced. A formal monitoring and evaluation program is recommended and is critical to effectively meet current and changing mobility needs of primary transit markets that comprise students, seniors, persons with disabilities, and low income persons. Monitoring and evaluation is critical to service efficiency and long-term sustainability.

G. Financial and Capital Plan: A Ten Year Operating Budget and Capital Plan are developed that supports the recommended service structure. Short- and long-term service plan financial impacts and capital replacement schedules are provided. The Capital Plan has been prepared to provide for adequate development, maintenance, and replacement of capital assets. Retaining this project plan in the 10-year program is essential in order to garner funding from local, state, and federal sources. The Capital Plan includes the procurement of bus vehicles, improvements to bus stop shelters and amenities, technology infrastructure, and communications equipment.

StaRT has undertaken an aggressive bus replacement program due to the age and/or mileage of current vehicles in the fleet. Capital funds are programmed over the next several years for replacement of aging vehicles that have exceeded their useful lives, both from age and mileage according to the FTA bus service life schedule. Replacement of vehicles will increase the reliability of the service and reduce delays and missed connections caused by vehicle roadcalls. The replacement program follows the service life span categories for buses and vans recommended by the Federal Transit Administration.

No new significant funding source for transit is assumed for the financial plan, although changes are based on local growth assumptions and current legislation such as MAP-21 that changes formula allocation programs. The financial plan is based on reasonably conservative assumptions regarding funding availability. However it should be recognized that any forecasts of future subsidy funding are quite uncertain under present economic challenges. Given the student, disabled, elderly, and low income markets served by StaRT, no increases in the current fare structure are recommended or should be carefully examined. Increases in fares could have a negative impact on the ridership market.

The need to meet farebox requirements has been addressed in the Service Recommendations options. In particular, Option 3: Address Farebox Recovery Challenges and Option 7: Improve Service Productivity will impact the farebox recovery ratio more effectively than fare increases. The issue of fare increases could be explored in the future as part of the efforts to increase productivity and reduce poorly performing service. However, a transfer policy is recommended in support of the establishment of local Dial-A-Rides as feeders to fixed route and shuttle services, which should have a positive impact on ridership.

The financial plan is based on reasonably conservative assumptions regarding funding availability. However, it should be recognized that any forecasts of future subsidy funding are quite uncertain under present economic challenges.

- LTF growth is based on projected sales tax growth over the next five years. An economic forecast provided by Caltrans shows expected retail sales growth of 19.1% in Stanislaus County for the next five years. On an average basis over the five year period, the annual growth rate is projected to be 3.82%. It is assumed that growth in LTF revenues reflects the annual growth rate.

- Fare revenues are projected to increase at a rate of 5.0% per year during the ten year period. Using limited data since the last fare increase in FY 2012, fare revenues systemwide have increased slightly above 5%. Given the variety of services and fare media used by StaRT patrons, there is a need to simplify and restructure the existing fare structure. Figure 25 on page 38 features the current fare structure.

Figure 25
Current StaRT Fare Structure

FARE TYPES	General Public	Seniors (65+)/Disabled *(Valid ID Required)*	Students *(Valid ID Required)*
Fixed Routes	$1.50 ***(Free Transfers)***	$1.25 ***(Free Transfers)***	--
20-Ride Card*	$27.00	$18.00	$25.50
31-Day Pass*	$45.00	--	--
Dial-A-Ride(s) *(Reservations Required)*	$1.50 ***+$1.50 Out of Area***	$1.25 ***+$1.50 Out of Area***	--
Medivan *(Bay Area Medical Appointments)*	$10.00 ***(One-Way)*** $3.00 ***(Attendant One-Way)***	--	--
Prepaid Fast Fare Cards	$5.00 / $10.00 ***increments***	--	--
Shuttle Service *(Curb-to-Curb/Reservations Required)*	$2.75 ***+$1.50 Out of Area***	$2.25 ***+$1.50 Out of Area***	--
Ticket Book- 20 One-Way Rides*	$27.00	$18.00	--
Waterford/Modesto Runabout *(Reservations required for curb-to-curb)*	$1.50 ***(Fixed Stop)*** $2.75 ***(Curb-to-Curb)*** ***+$1.50 Out of Area***	$1.00 ***(Fixed Stop)*** $2.25 ***(Curb-to-Curb)*** ***+$1.50 Out of Area***	--
***Not valid on Route 70. Valid only on Fixed Route Buses and Waterford Runabout (Fixed Stops only)**			
Children age five (5) and under ride free when accompanied by a paying adult. Two (2) children age five (5) and under may ride free for each paid adult fare. Minimum age for a child without adult supervision is nine (9) years old. Children eight (8) and under must be accompanied by someone sixteen (16) years or older.			
NO REFUNDS ARE AVAILABLE. DAMAGED TICKETS WILL NOT BE REPLACED. EXACT FARE IS NOT REQUIRED. CHANGE CARDS WILL BE GIVEN IF CHANGE IS OWED AFTER PAYMENT OF FARE.			

Due to the recent classification of StaRT as a small Urban System, StaRT is required to implement a Half Fare Program for seniors and persons with disabilities to comply with FTA Regulations. The existing fare structure should also be analyzed to determine if an additional fare should be charged for the ADA paratransit service. Additionally, further consideration should be given to the implementation of a college/university pass program as well as enhancement of the existing fare media by considering and initiating smart card technology.

- State Transit Assistance funds are assumed to increase at the projected rate of inflation Consumer Price Index (CPI) forecasted by Caltrans as a conservative measure.

- Federal funds may increase due to the small urban status classification of StaRT by the FTA. As a result, in addition to Section 5311 rural transit funds of about $540,000 that StaRT has historically received, projections are that the County may also receive between $500,000 and $700,000 in Section 5307 urban transit revenue. After operations costs are accounted for, remaining federal funds are assumed to be available for capital expenditures. The amount for FY 2013-14 is carried forward until FY 2021-22 when funding levels increase by CPI.

- Proposition 1B PTMISEA funds are assumed to continue to be allocated at current estimates for the duration of the program's ten year life which extends through June 30, 2016. Although the delay of bond sales has impacted the availability of PTMISEA funding, annual allocations based on State Controller estimates are assumed through the end term of the program.

- Operating costs are separated between purchased transportation and all other expenditure. Both costs are assumed to grow by the projected rate of inflation based on contracted rate increases for the private operator and tight controls implemented by the County over administrative expenditures. With urbanized status granted for the transit system, County transit staff will need to increase marginally to address additional federal transit monitoring and reporting requirements.

- Capital projects include procurement of replacement bus vehicles, park and ride lease, bus stop facilities improvement, and technology infrastructure. Capital cost of contracting is assumed to continue at current allowable rates of contracted costs. Bus procurement is the largest capital expense that improves service reliability and enhances customer ride experience. Intelligent transportation system procurement via AVL and APCs will provide the County with improved data monitoring, tracking and reporting tools to better manage efficiencies of the system.

H. Implementation Plan: This section provides a critical path timeline for the implementation of the StaRT COA including phasing of actions to be taken for each recommendation. The service changes and enhancements proposed in the COA can be implemented within a three fiscal year timeframe. Monitoring, evaluation and service planning provide the analytical framework for annual service prioritization and budget planning and will be on-going. The critical path/steps are shown in Figure 26 on page 41 and summarized below to include:

1. Establishing a StaRT Operations and Planning Committee that is made up of StaRT planning and Storer management and operations representation (including dispatch, road supervisor and driver representation).

2. Approving and adopting the policy framework for the objectives, policies, performance standards, and design standards.

3. Finalizing and adopting COA financial and service plans.

4. Confirming and identifying service reduction candidate list with additional sampling of GFI trip-by-trip data, shuttle, and Dial-a-Ride summary reports and review with StaRT Operations and Planning Committee. This activity will include a review with Storer management to determine and mitigate any unforeseen impacts on the current contract bid prices, including any increases in deadhead, non-revenue hours and miles.

5. Reducing unproductive services to improve farebox recovery to achieve the proposed 15% farebox recovery ratio remains a critical element of the proposed COA service plan. Unproductive hours are needed to implement proposed service enhancements.

6. Increasing cycle times on Routes 10, 15, 40 and 60 to improve on-time performance and service reliability. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

7. Implementing ADA Complementary Paratransit Service Plan to include demand management strategies identified in the Service Recommendations section. This activity will include establishment of a StaRT ADA registration and certification program, the development of trip assignment protocols, and the establishment of coordination protocols with MAX, CAT and BLST.

8. Establishing Route 10 and 60 Clock-face Headways to simplify schedules to improve service attractiveness and, in the case of Route 60, increase frequency and capacity. If there are sufficient surplus revenue hours available, this activity can be implemented in conjunction with Activity 6. If not, it may have to be postponed to a later year when revenue hours and/or funding are available.

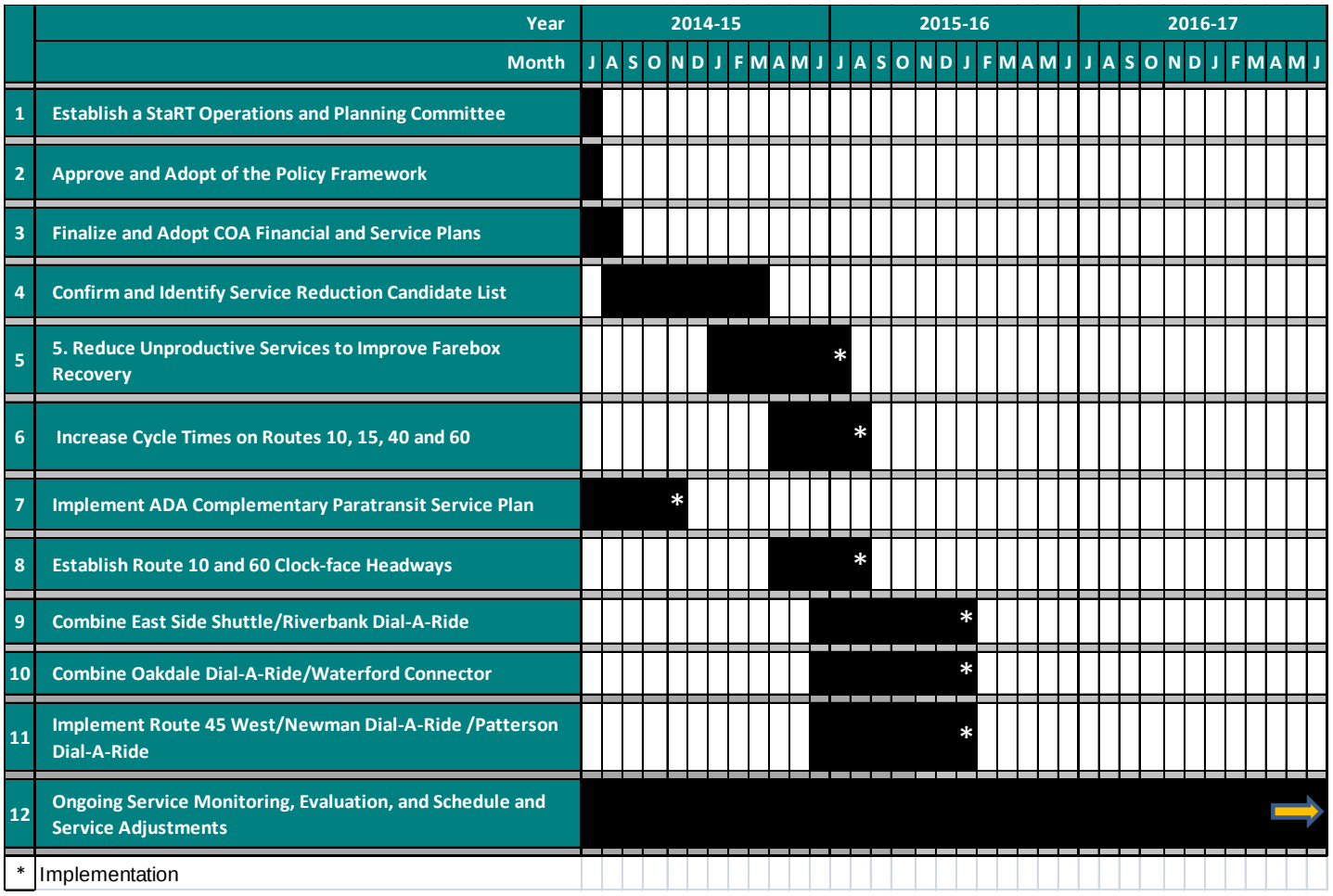
9. Combining the Eastside Shuttle/Riverbank Dial-A-Ride to improve productivity. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

10. Combining Oakdale Dial-A-Ride/Waterford Connector to improve productivity. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

11. Implementing Route 45 West, Newman Dial-A-Ride, and Patterson Dial-A-Ride as part of the productivity improvement. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

12. Implementing on-going service monitoring, an evaluation schedule, and service adjustments in order to evaluate and analyze service needs, funding realities, and operating conditions. ` Change through time and corrections are required to sustain a relevant transit system. This may include further service adjustments to maintain the proposed 15% farebox recovery ratio. Ongoing monitoring, evaluation, and service planning provide the analytical framework for annual service prioritization and budget planning.

Figure 26
Proposed StaRT COA Implementation Plan Timeline



StaRT

Stanislaus Regional Transit

Comprehensive Operations Analysis

June 2014

PMC®

in association with

Bellecci & Associates

DWL TRANSIT CONSULTING

IBI GROUP

Table of Contents

I. Introduction

This Comprehensive Operational Analysis (COA) was conducted for the Stanislaus Regional Transit (StaRT) to examine existing services and provide recommendations to improve overall mobility for the citizens of Stanislaus County. It is a planning document to guide the decisions associated with administering public transit services operated by the Transit Division in the County's Public Works Department. The purpose of the COA is to provide an in-depth review of transit services and assess the efficiency and effectiveness of services and to gain better knowledge of the customers as well as direct transit investment where it is most needed. The analyses identify strengths as well as opportunities for improvement that meets future transit demand.

Stanislaus Regional Transit (StaRT) was established in 1981 as the primary public transit service system in Stanislaus County, California, to serve population centers in the County and several communities in neighboring Merced County to the south. As the principal inter-city transit operator in Stanislaus County, StaRT has been balancing service needs with funding and cost constraints while making effort to foster regional transit coordination. From its beginnings, StaRT has evolved from providing only lifeline service to becoming a major trunk carrier connecting larger cities today as well as meeting transit needs of smaller cities and unincorporated communities in the Stanislaus region.

Report Organization

The COA is divided into sections that include the identification and implementation of service plan recommendations for StaRT. The various sections include:

II. Community Assessment and Existing Conditions: Includes an overview of existing StaRT services and other transportation services in the County; socio-demographic data of the markets served by transit; general economic development patterns; and historic performance metrics of each StaRT transit mode and bus route.

III. Evaluation of Transit Needs and Services: Includes findings from 1) a comprehensive set of customer data collected from on-board surveys and 100 percent ridechecks covering all routes; 2) customer data collected from an on-line survey posted on the StaRT website; and 3) in-person interviews conducted with County transit staff, transit contractor, and numerous stakeholder jurisdictions that contribute to StaRT services. This section also includes an evaluation of current and future transit service opportunities using operations and customer service data.

IV. Goals, Policies, and Standards Framework: Development of performance and service design standards including goals, objectives, and supportive policies to guide future service delivery.

V. Technology System Plan: Applicable technological advances to meet transit service quality and efficiency requirements while enhancing transit customer experience. Identification of systems that will also improve transit service monitoring and evaluation.

VI. Consolidation Assessment: Assessment of potential merger of Stanislaus Regional Transit and City of Turlock Transit services.

VII. Service Recommendations: Organized by service type and prioritized by potential market and productivity gains as well as additional service enhancements for increased funding capacity.

VIII. Financial and Capital Plan: Short and long term service plan financial impacts and capital replacement schedule.

IX. Implementation Plan: Phasing of actions to be taken for each recommendation including timeline.

II. Community Assessment and Existing Conditions

This section provides the environmental setting by which current transit services are provided by the County. Existing conditions include a description of County demographics such as population and employment by geographic area, overview of public transit services in the County, transportation services provided by social service agencies and other providers, and a detailed review of StaRT services and performance trends.

Stanislaus County Population and Demographics

Population Overview

Stanislaus County is located in the northern San Joaquin Valley bordered by San Joaquin County to the north, Merced County to the south, Alameda and Santa Clara Counties to the west and Calaveras, Mariposa, and Tuolumne Counties to the east. The county was named after the Stanislaus River and established in 1854 as a part of Tuolumne County. The County is governed by a five-member Board of Supervisors, which serves as the main legislative body as well as the StaRT Board.

The county and incorporated cities experienced significant growth between the 2000 and 2010 U.S. Census based on data collected during the two Censuses. There are nine incorporated cities ranging in size from approximately 6,000 to 200,000 residents. The city of Modesto is the county seat and the largest city in the county. Patterson saw the highest percentage increase in population, followed by Hughson and Newman.

Demographic Profile

Stanislaus County

Based on the 2010 U.S. Census, Stanislaus County's population was 514,453, which increased 15.1% since the 2000 Census. In 2013, The California Department of Finance estimated that the county currently has 524,124 residents. The senior population, comprised of residents aged 65 and over, is 10.7 percent countywide.

A demographic snapshot of the cities and the County within StaRT's service area is presented below in Figure II-1 on page 4.

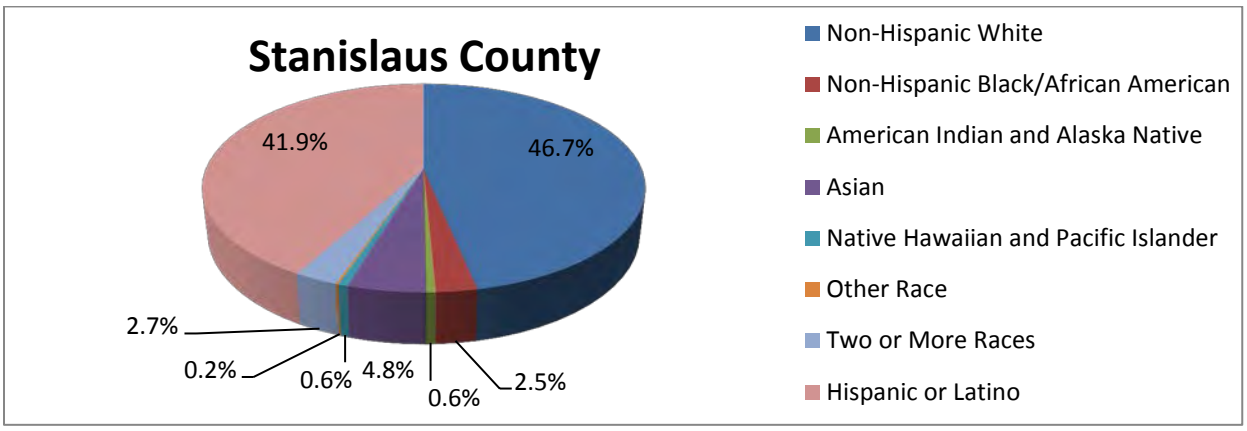
Figure II-1
StaRT Service Area Demographics

City/Jurisdiction	2010 US Census Population	Change from 2000 US Census	Population 65 years & older	Land area (in square miles)
Ceres	45,417	31.20%	7.70%	8
Hughson	6,640	66.80%	10.80%	1.8
Modesto	201,165	6.50%	11.70%	37.1
Newman	10,224	44.10%	8.50%	2.1
Oakdale	20,675	33.40%	12.40%	6.1
Patterson	20,413	75.90%	6.30%	6
Riverbank	22,678	43.30%	8.40%	4.1
Turlock	68,549	22.80%	11.70%	16.9
Waterford	8,456	22.10%	7.30%	2.4
Unincorporated County	110,236	3.10%	10.80%	1430.2
Total Stanislaus County	514,453	15.10%	10.70%	1,514.70

Sources: American Fact Finder Census 2010 Table P12, American Fact Finder Census 2000 Table GCT-P5

According to the 2010 Census data, non-Hispanic Whites and Hispanics have almost equal population. Non-Hispanic Whites comprise approximately 46.7 percent of the total population. Hispanics, who can be classified as any race, comprise 41.9 percent of the population. Figure II-2 provides an overview of Stanislaus County's racial and ethnic groups.

Figure II-2
Stanislaus County's Racial and Ethnic Groups



Source: 2010 U.S. Census

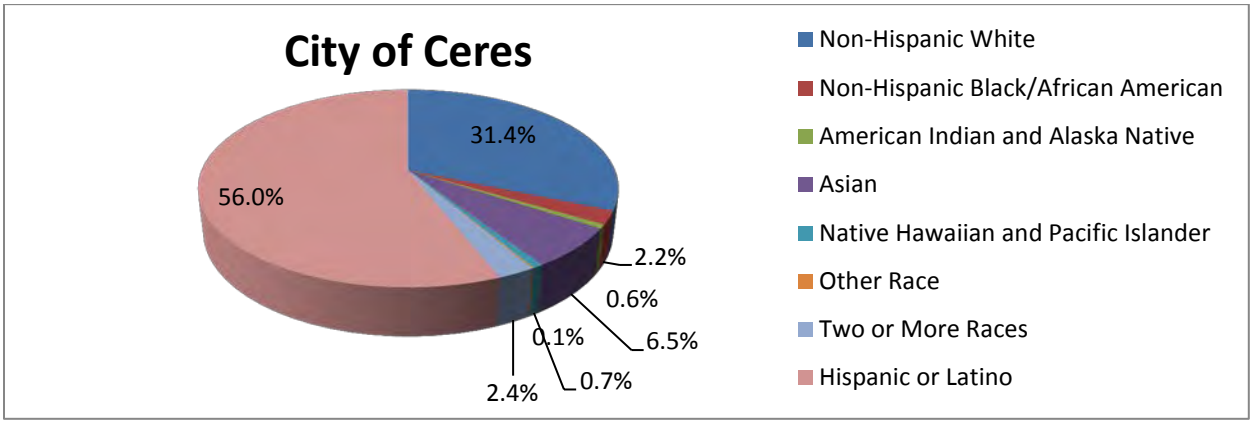
City of Ceres

Located directly south of the Tuolumne River and Modesto, Ceres is the third largest city in Stanislaus County. In 2010, the city's population grew by 31.2 percent since the 2000 U.S.

Census. The senior population, comprised of residents aged 65 and over is 7.7 percent. The 2013 population for Ceres is estimated to be 46,320 as reported by the State Department of Finance. The city covers an 8 square mile area.

According to the 2010 U.S. Census, Ceres' population was 45,417 with Hispanics comprising more than half of the city's population. Non-Hispanic Whites comprise approximately 31.4 percent of the total population. Asians comprise 6.5 percent of the population. Figure II-3 provides an overview of Ceres' racial and ethnic groups.

Figure II-3
Ceres Racial and Ethnic Groups



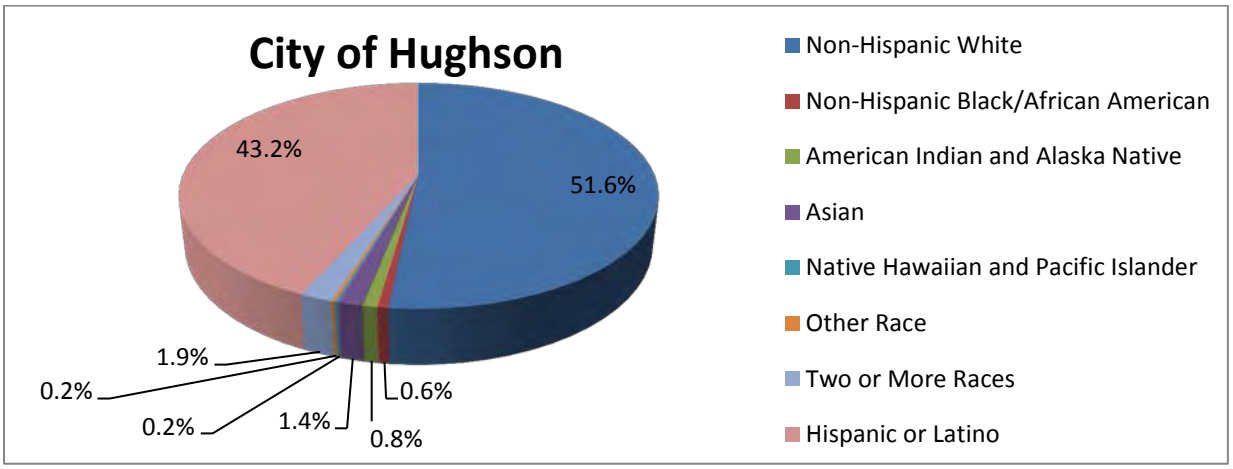
Source: 2010 U.S. Census

City of Hughson

City of Hughson is the smallest city in the county. In 2010, the population grew to 66.8 percent since the 2000 U.S. Census. In contrast to the 2010 Census data, the 2013 California Department of Finance estimates show Hughson currently has 6,979 residents. Persons aged 65 years and older comprise 10.8 percent of the population.

Based on the 2010 census data, non-Hispanic Whites comprise more than half of the total population at 51.6 percent. Hispanics, who can be classified as any race, consist of almost half of the city's population at 43.2 percent. An overview of Hughson's racial and ethnic groups is provided in Figure II-4 on the following page.

Figure II-4
Hughson Racial and Ethnic Groups



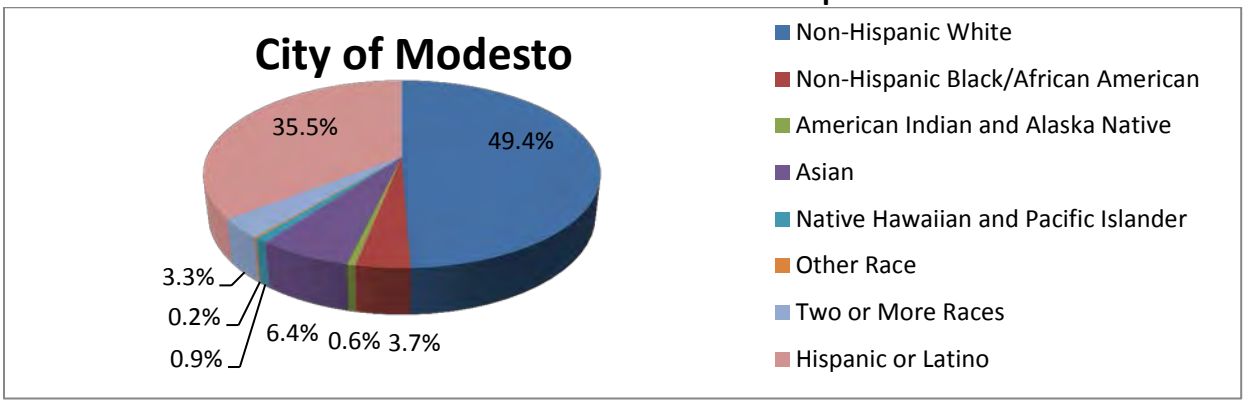
Source: 2010 U.S. Census

City of Modesto

Modesto is the largest city in the county with an estimated population of 205,987 in 2013 as reported by the State Department of Finance. Based on the 2010 U.S. Census, Modesto's population was 201,165, which grew by 6.5 percent since the 2000 U.S. Census. Seniors aged 65 and over is 11.7 percent of the population. The city encompasses a 37 square mile area.

In 2010, non-Hispanic Whites comprised nearly half of the population, followed by Hispanics. Non-Hispanic Whites comprise 49.4 percent of the population with Hispanics at 35.5 percent. Asian and non-Hispanic African American comprise 6.4 percent and 3.7 percent of the population respectively. An overview of Modesto's racial and ethnic groups is provided in Figure II-5.

Figure II-5
Modesto Racial and Ethnic Groups



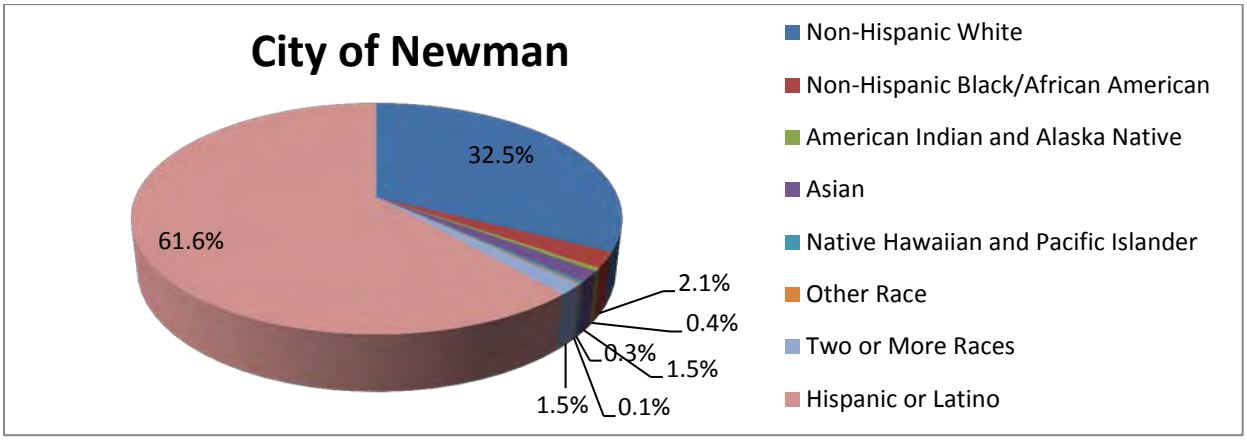
Source: 2010 U.S. Census

City of Newman

The City of Newman's population grew by 44.1 percent over the last decade since the 2000 U.S. Census. In contrast to the 2010 Census data, the 2013 California Department of Finance estimates show Newman currently has 10,643 residents. Persons aged 65 years and older are comprised of 8.5 percent of the population.

Based on the 2010 census data, Hispanics, who can be classified as any race, comprise more than half of the total population at 61.6 percent. Non-Hispanic Whites comprise nearly 32.5 percent of the city's population with other races noted at 2 percent or less. An overview of the City of Newman's racial and ethnic groups is provided in Figure II-6 below.

Figure II-6
Newman Racial and Ethnic Groups



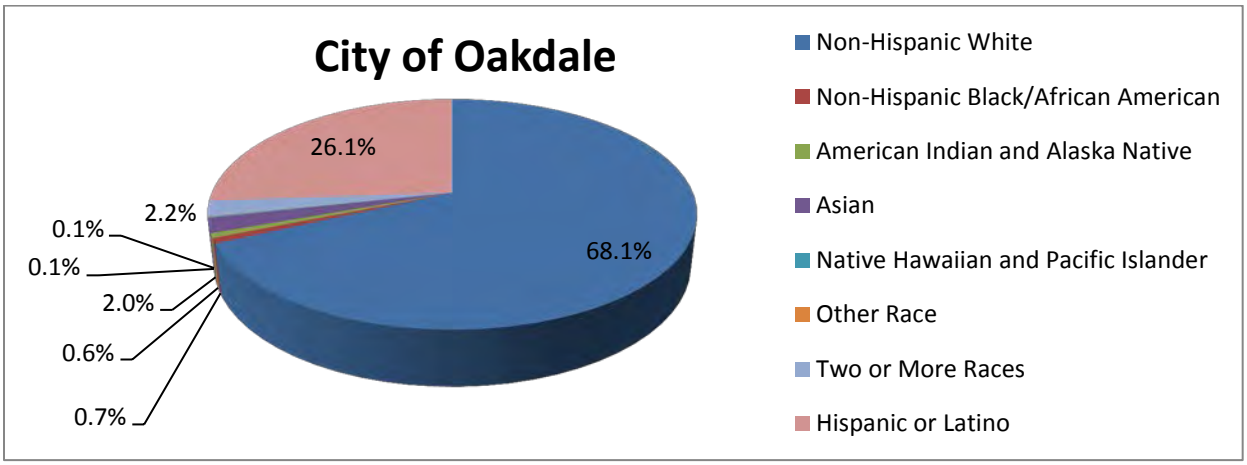
Source: 2010 U.S. Census

City of Oakdale

The City of Oakdale's population grew by 33.4 percent over the last decade since the 2000 U.S. Census. In contrast to the 2010 Census data, the 2013 California Department of Finance estimates show the city's population currently at 21,234. Persons aged 65 years and older are comprised of 12.4 percent of the population. The city covers an area of 6.1 square miles.

According to the 2010 census data, the majority of the city's population is comprised of non-Hispanic Whites at 68.1 percent. Hispanics, who can be classified as any race, comprise of 26.1 percent of the total population. American Indians and other ethnic groups comprise 5.7 percent of the population. An overview of Oakdale's racial and ethnic groups is provided in Figure II-7.

Figure II-7
Oakdale Racial and Ethnic Groups



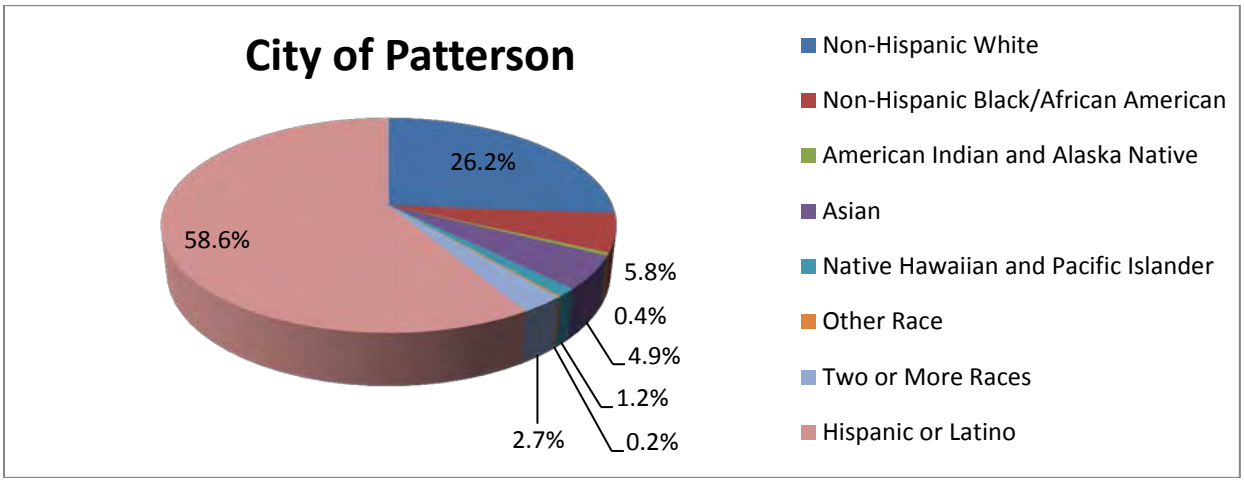
Source: 2010 U.S. Census

City of Patterson

The City of Patterson's population increased to 75.9 percent in the last decade since the 2000 U.S. Census. In 2013, the California Department of Finance estimated the city's population to be 21,234 residents. Persons aged 65 years and older is 6.3 percent of the population. The city covers an area of 6 square miles.

The 2010 U.S. census shows that the majority of the city's population is comprised of Hispanics at 58.6 percent while Non-Hispanic Whites comprise 26.2 percent of the population. Non-Hispanic African American and Asians comprise 5.8 percent and 4.9 percent of the population respectively. An overview of the City of Patterson's racial and ethnic groups is provided in Figure II-8 below.

Figure II-8
Patterson Racial and Ethnic Groups



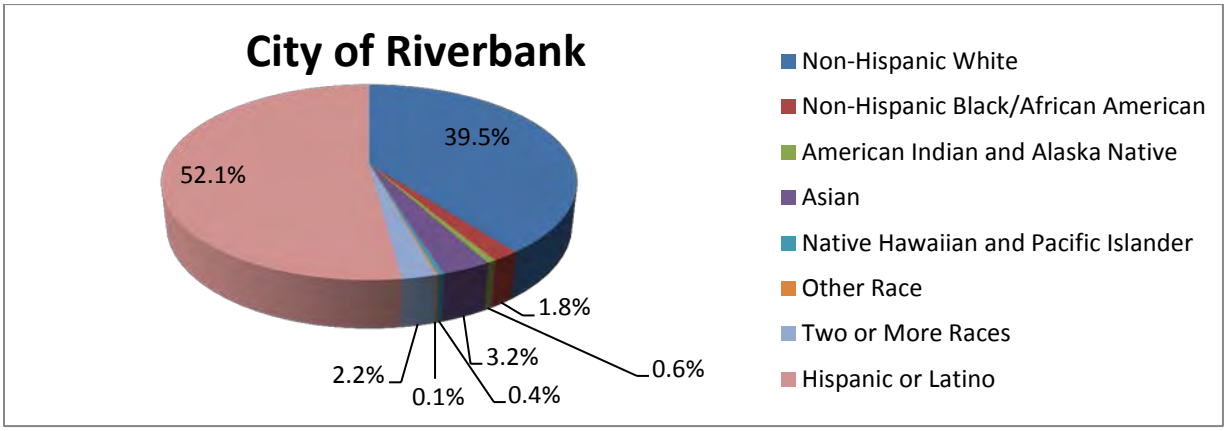
Source: 2010 U.S. Census

City of Riverbank

The City of Riverbank encompasses an area of 4.1 square miles in Stanislaus County. Since the 2000 U.S. Census, the city's population has increased 43.3 percent over the last decade. The California Department of Finance estimates the city's population at 23,149 residents in 2013. Persons aged 65 years and older is 8.4 percent of the population.

The 2010 U.S. Census data shows that the majority of the city's population includes Hispanics and non-Hispanic Whites. Hispanics are more than half of the population at 52.1 percent while non-Hispanic Whites comprise another 39.5 percent. Riverbank's racial and ethnic groups profile is provided in Figure II-9.

Figure II-9
Riverbank Racial and Ethnic Groups



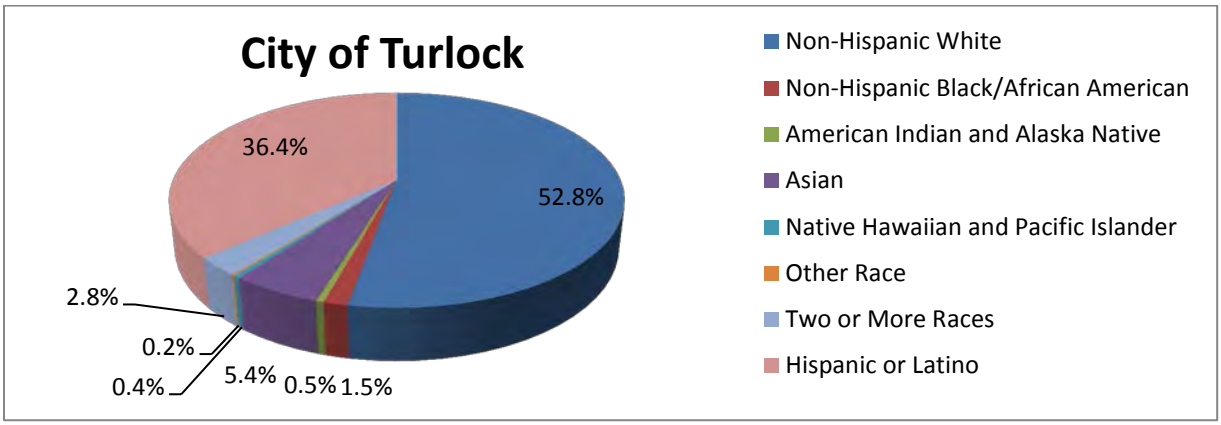
Source: 2010 U.S. Census

City of Turlock

The City of Turlock is the second largest city in the County. The city's population grew 22.8 percent over the past decade since the 2000 U.S. Census. Persons aged 65 years and older comprise 11.7 percent of the city's population. In 2013, Turlock's population was estimated at 69,888 by the California Department of Finance. The city encompasses a 16.9 square mile area.

The 2010 U.S. Census data shows non-Hispanic Whites comprise just more than half of the city's population at 52.8 percent. Hispanics comprise another 36.5 percent of the population. An overview of Turlock's racial and ethnic groups is provided in Figure II-10.

Figure II-10
Turlock Racial and Ethnic Groups



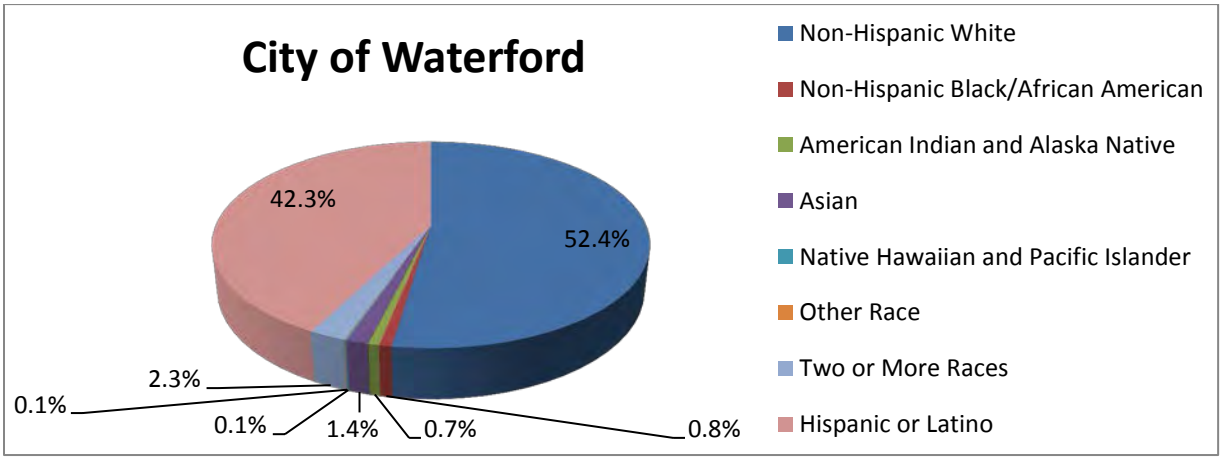
Source: 2010 U.S. Census

City of Waterford

Waterford's population increased 22.1 percent in the past decade since the 2000 U.S. Census. Persons aged 65 years and older comprise 7.3 percent of the city's population. In 2013, Waterford's population was estimated to be 8,598 by the California Department of Finance. The City covers an area of 2.4 square miles.

In 2010, the U.S. Census data indicated that non-Hispanic Whites and Hispanics comprised nearly 95 percent of the City's population. Non-Hispanic Whites comprised more than half of the population at 52.4 percent while the Hispanic population comprised an additional 42.3 percent. An overview of Waterford's racial and ethnic groups is provided in Figure II-11.

Figure II-11
Waterford Racial and Ethnic Groups



Source: 2010 U.S. Census

Population and Employment Density

Figure II-12 shows the population density in StaRT's service area with most of the densely populated tracts in the Modesto and Turlock urbanized areas. Some areas exceed 16 residents per acre in Modesto, Ceres and Turlock and include areas along Yosemite Boulevard, Floyd Avenue, Prescott Road, Pelandale Avenue, and Paradise Avenue in Modesto; Hatch Road, Whitmore Avenue, and Service Road in Ceres; and Geer Road, West Main Street, and East Canal Drive in Turlock.

Figure II-13 shows the density of the senior population in StaRT's service area. Areas with the greatest densities are in the City of Modesto located at the intersection of Prescott and West Rumble Road, along Standiford Avenue, East Briggsmore Avenue, and East Orangeburg Avenue. In the City of Turlock, a relatively high density of seniors is located along Geer and Tuolumne Roads while in the City of Ceres this density is located between Hatch, Fowler, and Mitchell Roads.

Figure II-14 includes the concentration of employers by zip code in StaRT's service area. High concentrations of employers are located along the Highway 99 corridor linking the two urbanized areas of Modesto and Turlock. The highest density of employers is located in the northwestern area of Modesto bordering Highway 99, Standiford Avenue, and Briggsmore Avenue. In addition, there is a relatively high concentration of employers in the Oakdale area. Similarly, in Figure II-15 there are high concentrations of employees located along Highway 99 in Modesto and Turlock as well as in Oakdale.

Figure II-12 Population Density

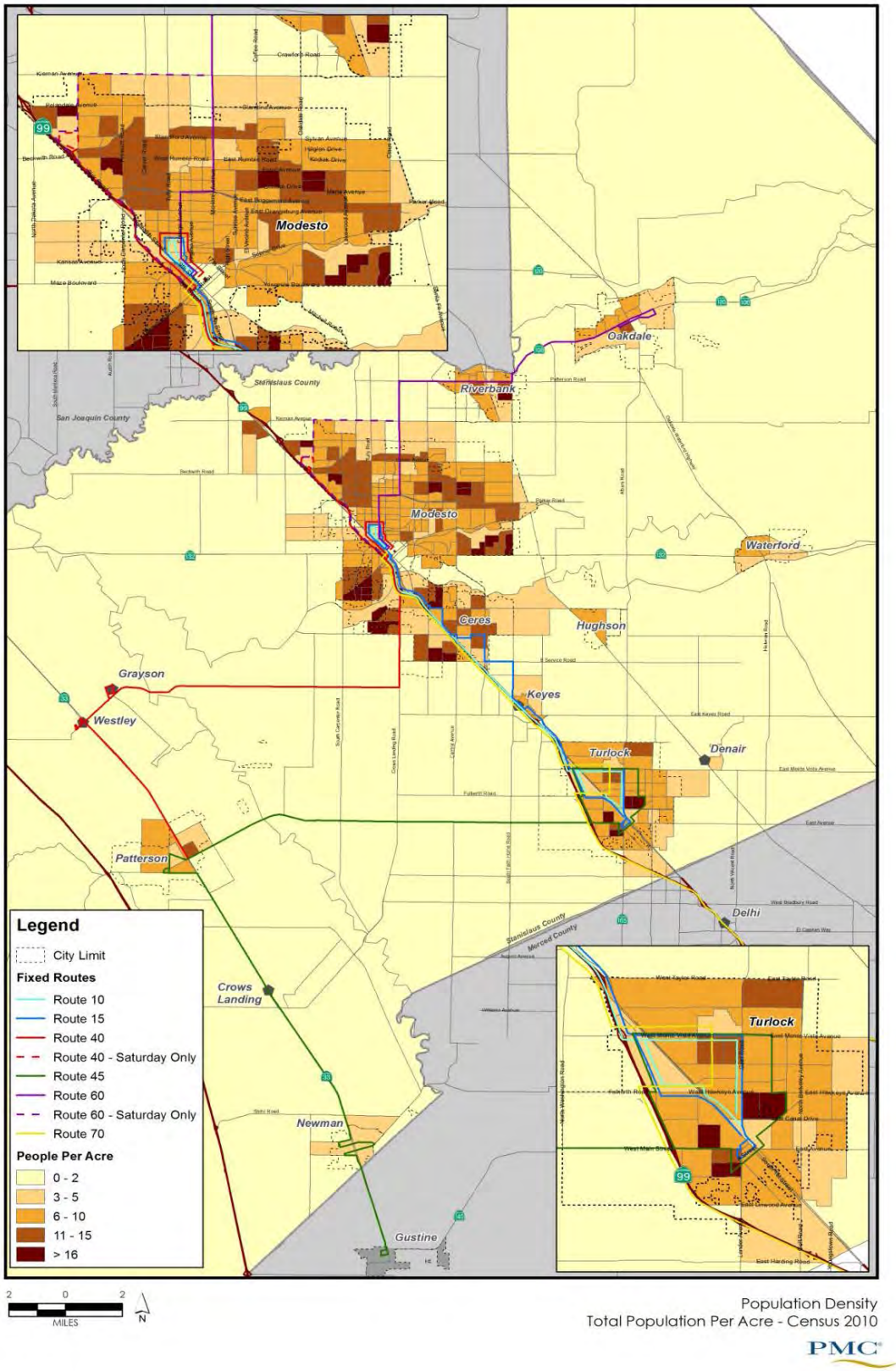


Figure II-13 Senior Resident Density

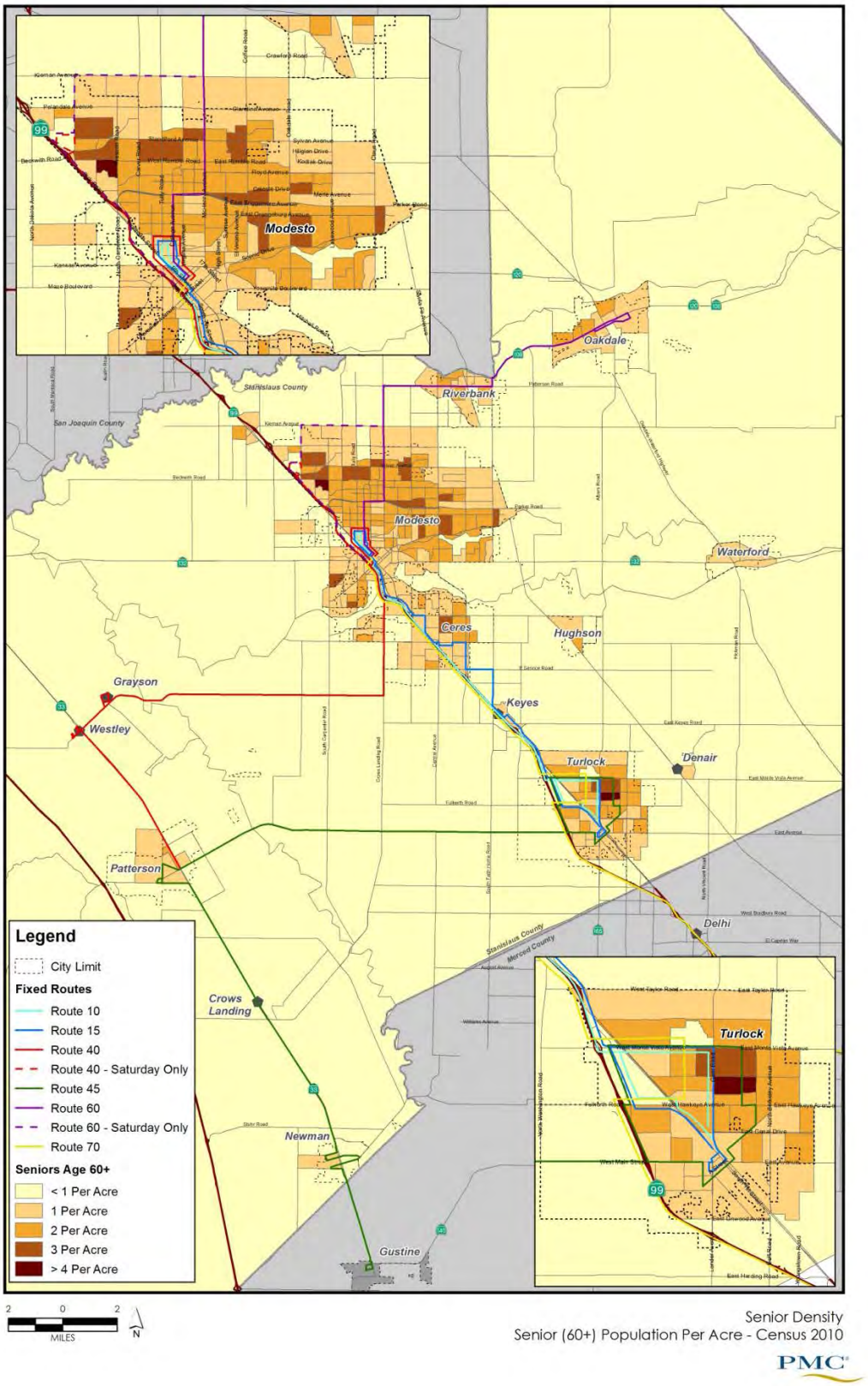
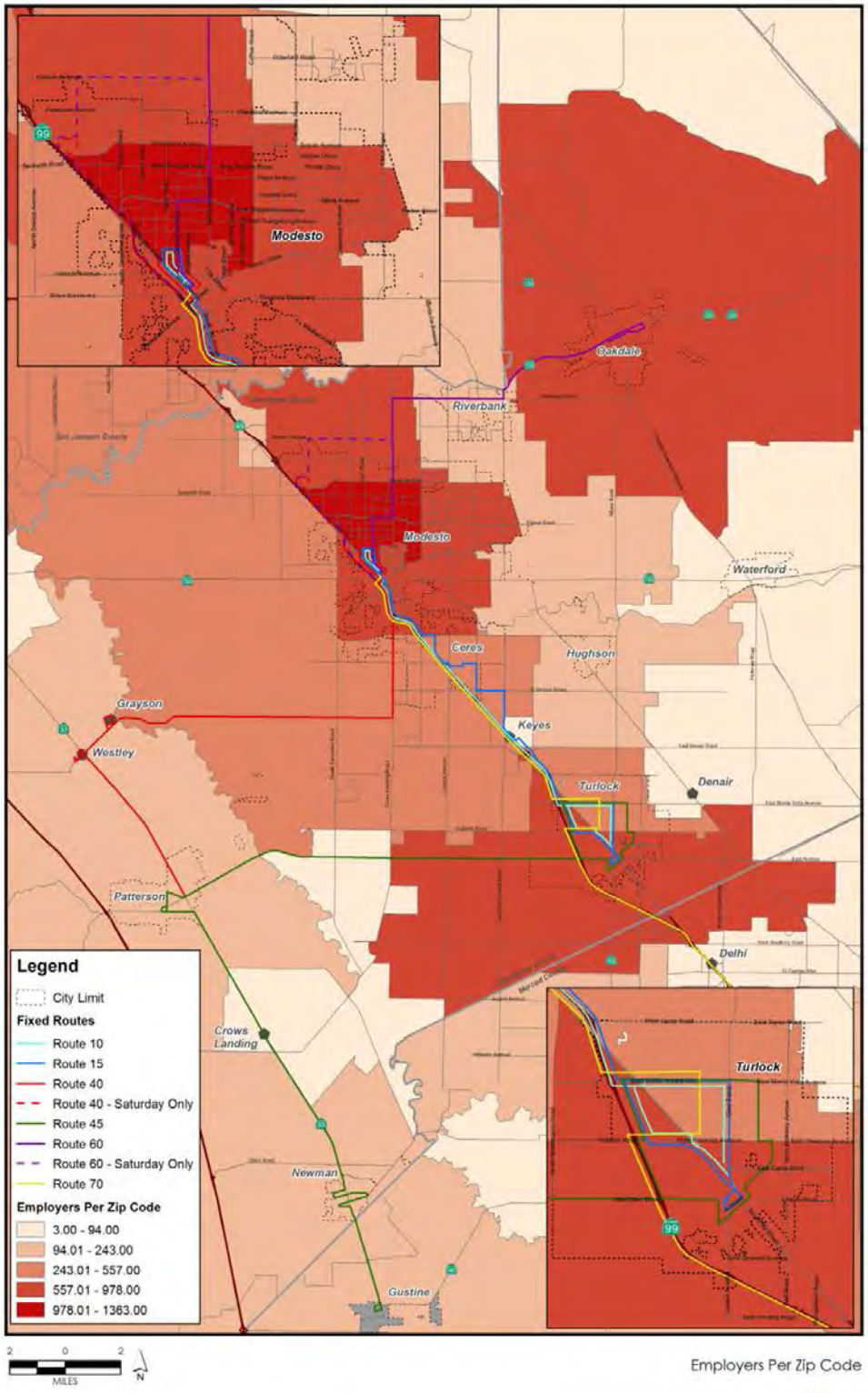


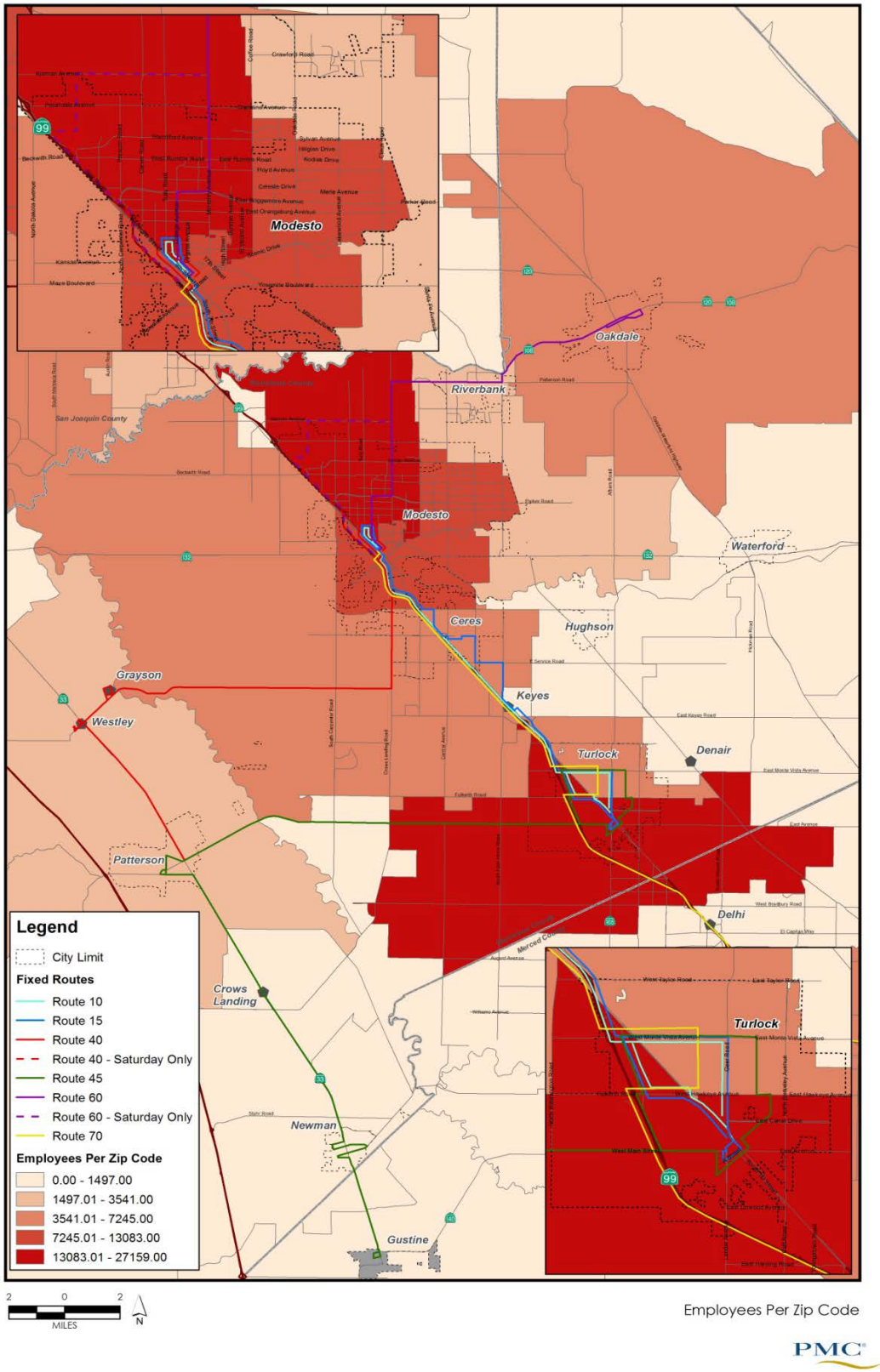
Figure II-14 Employer Density by Zip Code



Employers Per Zip Code

PMC

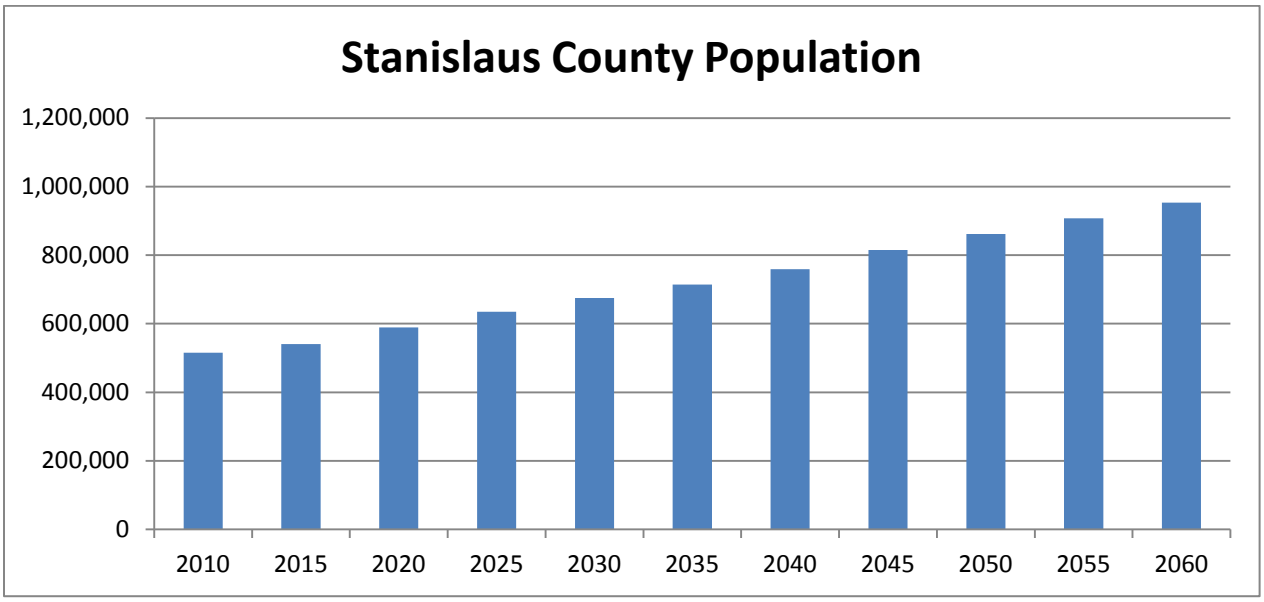
Figure II-15 Employer Density by Zip Code



Population Projections

The 2010 U.S. Census data indicates that Stanislaus County has experienced a 15.1 percent population increase from 446,997 in 2000 to 514,453 in 2010. The California Department of Finance estimates the County's population will continue to increase. It is projected that in 2015, the County's population will increase to 540,853 residents and 589,156 residents in 2020. The County's population projection as estimated by the California Department of Finance is illustrated below.

Figure II-16
Stanislaus County Population Projection



Source: California Department of Finance

Stanislaus County Economy and Job Concentrations

Overview of Stanislaus County Economy

Agriculture, distribution centers, food processing, government services, and viticulture are the mainstays of the local economy. Over the past decade, residential construction fueled economic growth as Stanislaus County became a bedroom community for commuters traveling to jobs in the Bay Area. Major highways traversing Stanislaus County include Interstate 5 and State Routes (SR) 4, 33, 99, 108, 120, 132 and 165. SR-99 is the main north-south highway connecting the larger cities of Modesto, Ceres, and Turlock. Interstate 5 (I-5) runs north-south through the western portion of the county adjacent to the cities of Newman and Patterson.

While major employment centers, facilities, and services are dispersed throughout the County and local cities, most major attractors are located in the Modesto urbanized area. Employment centers and facilities where trips are likely to take place include colleges and universities, community centers, libraries, medical facilities, post offices, senior centers, government

services, transportation centers, museums, and other points of interest. StaRT services including bus routes and shuttles currently serve many of these areas. The *Stanislaus County Transportation Guide* lists numerous points of interest around the County and current transit systems that serve each of the locations.

In June 1999, the Economic Development staff in Stanislaus County's Chief Executive Office convened a meeting of representatives from all nine county cities, the various Chambers of Commerce, the Economic Development Corporation, Convention and Visitor Bureaus, and interested businesses and citizens. The primary intent was to establish a regional marketing and development strategy for travel and tourism. The concept was unanimously well received by the group that also resulted in the formation of the Travel and Tourism Roundtable that serves as a task force. A Strategic Plan through year 2013 was developed and included initiatives to promote Stanislaus County's open space, rich agricultural traditions, and the potential for tourism fueled by the County's strategic location.

With regard to developing areas, future plans include the Crows Landing Logistics Center development site which is located on the West Side of Stanislaus County adjacent to Interstate-5. The County of Stanislaus as well as some other local jurisdictions within the County is currently working on a new development strategy. The City of Patterson, for example, has undertaken new development initiatives to expand the Keystone Business Area including completion of the new Amazon distribution facility.

Among the economic development resources within the County, the Stanislaus Economic Development & Workforce Alliance is a private-public organization that blends economic and workforce development activities to provide professional one-stop services to existing and prospective companies in Stanislaus County. The Alliance was formed when the Stanislaus County Economic Development Corporation and the local Workforce Investment Board were merged and was designed to streamline the County's job creation and workforce training efforts.

Overview of StaRT

Governance & Funding

The County of Stanislaus is governed by a five-member Board of Supervisors, which serves as the administrative and legislative body. The Board approves the County's annual budget and allocates funding for 25 County Departments and agencies, including the Department of Public Works.

StaRT is headquartered in the County seat of Modesto and is administered by the Transit Division of the Department of Public Works. Staffing is characterized by the lean administration at the County level combined with operations contracted to Storer Transit Systems of Modesto, an independent private contractor. Storer operates all four modes of transit services offered by StaRT: intercity fixed route, deviated fixed route, demand response (Dial-A-Ride) service and the non-emergency transportation service to the Bay area.

Funding

Grant funding allocated towards supporting transit services is derived from local, state, and federal sources. Transit funding support is derived from the Transportation Development Act which is comprised of two programs, the Local Transportation Fund (LTF) and State Transit Assistance (STA). On an annual basis, a Program of Projects (POP) for Federal Transit Administration (FTA) Section 5311 formula grant funding is developed and presented to the County Board of Supervisors for approval as part of the Transportation Development Act Claims. All POPs are forwarded to Stanislaus Council of Governments (StanCOG) for concurrence and submitted to Caltrans. StaRT maintains a grant reporting spreadsheet that tracks the type, amount, and status of each federal assistance grant. The County also utilizes Congestion Mitigation and Air Quality (CMAQ) funding toward new capital projects such as Genfare fareboxes and commuter subsidies for the County's Rideshare Program.

Organizational Structure

The Transit Division, which is part of the County Public Works Department, is comprised of a Transit Manager and four support staff including the Staff Services Coordinator, Staff Services Analyst/Mobility Coordinator, Associate Planner, and Administrative Clerk III. Transit staff administers the StaRT contract with Storer Transit Systems, coordinates with StanCOG on transit related issues including participation in the Unmet Transit Needs process, facilitates funding for County transit, and oversees the required monitoring and reporting of all transit matters to the Board of Supervisors. The Transit Division staff also works with appropriate external oversight and funding agencies. The Staff Services Coordinator works under general direction to plan, coordinate, direct, and perform a variety of specialized administrative services in the areas of customer service, financial services, fare policies, and scheduling. The Staff Services Analyst/ Mobility Coordinator is responsible for marketing related activities and public outreach for StaRT services, while the Associate Planner is responsible for grants and manages capital projects. The Administrative Clerk III is a part-time position and is shared with the Engineering and Development Services Divisions.

Operations

The County contracts with Storer Transit Systems, Incorporated to operate StaRT transit services. The County recently selected Storer to operate StaRT service from 2014 through 2019 through a Request for Proposal as a result of the expiration of the 2008 to 2013 contract. The Request for Proposal (RFP) process also included proposals to operate transit systems in Modesto and Ceres. Storer provides the County an extensive monthly management report detailing StaRT operational performance. The management report contains the billing invoice along with an hourly and daily ridership summary, an employee roster, hours, mileage, preventative maintenance summary, fare revenue breakdown, and customer service activities.

Storer employs a staff of approximately 125 employees company-wide, of which 80 to 90 are full-time drivers. The contractor also maintains a pool of part-time drivers who work on

average between 16 and 20 hours weekly. The utilization of part-time staff helps to limit overtime.

Qualified candidates are required to have a good work history and a clean H-6 printout from the Department of Motor Vehicles (DMV). A General Public Paratransit Vehicle (GPPV) certificate is required for Dial-A-Ride. A Verification of Transit Training (VTT) certificate issued by the DMV is required for fixed-route operations.

Storer utilizes StrataGen dispatching software the demand response service which is configured to accept same-day reservation and allows for open return reservations for passengers with medical appointments. The software has eliminated the need for drivers to have a manifest. Dispatchers are also trained as drivers to serve as back-up operators when needed. Dispatchers are assigned specifically to specific service modes.

Transit Services Provided and Areas Served

StaRT operates four modes of transit services: intercity fixed route, deviated fixed route, dial-a-ride, and the non-emergency medical transportation service to the Bay Area. In August 2011, major schedule changes and fare increases were implemented. Scheduled time changes were implemented to improve on time performance, hours of service in the evenings were extended, and most fare categories received a $0.25 fare increase.

Additional service adjustments were implemented in August 2012 and 2013 to improve StaRT's service. The existing Route 45 serving the cities of Patterson and Turlock was split into two routes; Route 45-East and Route 45-West which was implemented as individual fixed route service between Turlock and Patterson in 2013. New trips and/or buses were added to existing routes to improve frequency with running times also adjusted to improve on-time performance. Two new Dial-A-Ride services serving the cities of Oakdale and Riverbank were added to replace services formerly provided by Riverbank-Oakdale Transit Authority (ROTA) system.

Fixed Routes

Fixed routes connect most major cities and communities whereas demand response services provide localized service within the cities of Newman, Patterson, and Waterford featuring designated fixed stops.

StaRT's fixed route services and recent improvements are listed on page 20 in Figure II-17 with service adjustments as of August 2013. In August 2011, the County implemented a $0.25 fare increase for most fare categories. Transfers between StaRT routes and the routes of other agencies were included in the higher fare. New fare media were also introduced that consisted of a 20-ride bus card.

The fare structure is shown in Figure II-17.

Figure II-17
StaRT Fare Structure

Fare Type/Media	Current Fare
General Fare ***Routes 10, 15, 40, 45 & 60***	$1.50
Senior/Disabled ***Routes 10, 15, 40, 45 & 60***	$1.25
General Fare - ***Route 70***	$2.75
Senior/Disabled - ***Route 70***	$2.25
General Fare ***Turlock/Modesto & Eastside Shuttles***	$2.50 (Out of Area - $1.50 Additional)
Senior/Disabled ***Turlock/Modesto & Eastside Shuttles***	$2.00 (Out of Area - $1.50 Additional)
General Fare ***Waterford/Modesto Runabout***	$1.50 (Fixed Stop) $2.75 (curb-to-curb) (Out of Area - $1.50 Additional)
Senior/Disabled ***Waterford/Modesto Runabout***	$1.25 (Fixed Stop) $2.25 (curb-to-curb) (Out of Area - $1.50 Additional)
General Fare *Dial-A-Ride-**Newman/Patterson/Waterford***	$1.50 (Out of Area - $1.50 Additional)
Senior/Disabled ***Dial-A-Ride-Newman/Patterson/Waterford***	$1.25 (Out of Area - $1.50 Additional)
Medivan – ***Bay Area***	$10.00
Medivan – Attendant	$3.00
Transfers to MAX, StaRT, BLAST, CAT, CDAR, & eTrans (No transfer on route 70 and between routes 10 and 15)	Free
Fast Fare Cards	$5.00-$10.00
31-Day Pass	$45.00
20-Ride Card – General Fare	$27.00
20-Ride Card – Senior/Disabled	$18.00
20-Ride Card – Student	$25.50
20-Ride Ticket Books – General Fare	$27.00
20-Ride Ticket Books –Senior/Disabled	$18.00

Source: StaRT

StaRT's Senior and Persons with Disabilities discount card is acceptable proof of eligibility for the Senior/Disabled fares, passes, and ticket books. *Americans with Disabilities Act of 1990* (ADA) identification from other transit systems and agencies is acceptable.

Revenue Fleet

The County fleet is comprised of 38 buses including both County owned and contractor owned vehicles. The County owns 23 vehicles including 18 large fixed route buses, four dial-a-ride vehicles, and one trolley vehicle. The small paratransit buses and trolleys were acquired as part

of the merger with the Riverbank-Oakdale Transit Authority in FY 2012. Six new fixed-route vehicles were delivered in late 2013, and one additional fixed-route vehicle was delivered in early 2014. The contractor, Storer, owns the remaining 15 dial-a-ride vehicles used for StaRT service. All StaRT vehicles are wheelchair accessible and comply with the Americans with Disabilities Act of 1990. The fixed route buses are also equipped with bike racks, each of which holds two or three bikes. Figure II-18 on page 22 shows the vehicle fleet inventory.

Existing Facilities

The Transportation Center is located in Downtown Modesto on 9th and I St. Passengers coming into the Center can easily transfer to other StaRT routes or City of Modesto (MAX) routes to continue on to their final destinations.

StaRT vehicles are stored and maintained at Storer's facilities in Modesto. Larger transit vehicles are serviced at the Storer maintenance facility located at 3519 McDonald Avenue while paratransit and smaller transit vehicles are serviced at Storer's facility located at 1216 Doker Drive. Storer also maintains a third facility located at 318 Beard Avenue. The Doker facility has two service bays and one lift. Vehicles undergo preventative maintenance inspections every 30 days or 2,500 miles that include brakes, steering, and suspension. Storer utilizes ManagerPlus software to track and monitor maintenance activities. Fueling is conducted at the Stanislaus County Public Works facility located at 1716 Morgan Road in Modesto.

The contractor has been recognized by the CHP for its outstanding safety record. In 2010, Storer was one of three bus operators that received the State Transportation Achievement Recognition or STAR Award. Storer was singled out for its nearly 60 years in business and for passing its 84 consecutive inspections in tour bus, school bus, and GPPV operations.

Figure II-18
StaRT Fleet Inventory

VEH#	Owner	VIN #	Year	Make/Model	Type	*Capacity
16	County	1FDXE45S16DB18749	2006	FORD STARCRAFT	Low Floor - 25'	12
17	County	1FDXE45S16DB18748	2006	FORD STARCRAFT	Low Floor - 25'	12
19	County	4UZAACB389CAF2704	2008	CHEVROLET Freightliner	Low Floor - 30'	18 or 19
20	County	1FD4E45S48DB52027	2008	FORD E-450	Low Floor - 25'	12
21	County	1FD4E45S48DB52043	2008	FORD E-451	Low Floor - 25'	12
321	County	4DRASAAM9DJ184338	2013	Champion Defender	High Floor 32'	30
410	County	1VHBH6C2236502225	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
420	County	1VHBH3C2136502246	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
430	County	1VHBH3C2336502247	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
440	County	1VHBH3C2336502248	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
450	County	1VHBH3C2736502249	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
460	County	1VHBH6C2136502250	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
470	County	1VHBH6C2336502251	2003	Daimler Chrysler ORION V - CNG	High-floor -40'	44
475	County	1VHGH3W2886704462	2008	Daimler Bus NA ORION VII - CNG	Low - floor - 40'	37
480	County	1VHGH3W2586704452	2008	Daimler Bus NA ORION VII - CNG	Low - floor - 40'	37
485	County	1VHGH3W2786704453	2008	Daimler Bus NA ORION VII - CNG	Low - floor - 40'	37
601	County	5FYC8FB03DC042866	2013	XN40 NEW FLYER - CNG	Low - floor - 40'	35
602	County	5FYC8FB03DC042867	2013	XN40 NEW FLYER - CNG	Low - floor - 40'	35
603	County	5FYC8FB03DC042868	2013	XN40 NEW FLYER - CNG	Low - floor - 40'	35
604	County	5FYC8FB03DC042869	2013	XN40 NEW FLYER - CNG	Low - floor - 40'	35
605	County	5FYC8FB03DC042870	2013	XN40 NEW FLYER - CNG	Low - floor - 40'	35
606	County	5FYC8KB06EC044332	2014	XN40 NEW FLYER - CNG	Low Floor - 35'	30
607	County	1N9MNALG8EC084107	2014	El Dorado National EZ-Rider II	Low floor - 32'	27
300	Contractor	1FD4E45SX8DB51447	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
305	Contractor	1FD4E45S18DB51448	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
310	Contractor	1FD4E45S38DB51449	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C

VEH#	Owner	VIN #	Year	Make/Model	Type	*Capacity
315	Contractor	1FD4E45S98DB51455	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
320	Contractor	1FD4E45S98DB51454	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
325	Contractor	1FD4E45SXDB51450	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
330	Contractor	1FD4E45S18DB51451	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
335	Contractor	1FD4E45S38DB51452	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
340	Contractor	1FD4E45S58DB51453	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
345	Contractor	1FD4E45S08DB51456	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
350	Contractor	1FD4E45S78DB56539	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
355	Contractor	1FD4E45S38DB56540	2008	El Dorado	Dial A Ride Van	4/ W/C 20 P/ 8P W/ 4 W/C
360	Contractor	1FDEE3FL7DDA25191	2013	Starcraft	ADA Shuttle Bus	14P / 12 P & 2 W/C
365	Contractor	1FDEE3FL9DDA25192	2013	Starcraft	ADA Shuttle Bus	14P / 12 P & 2 W/C
370	Contractor	1FDEE3FL0DDA25193	2013	Starcraft	ADA Shuttle Bus	14P / 12 P & 2 W/C

* Note: Capacity of County owned vehicles is based on passengers w/o wheelchair usage. Each vehicle is equipped with two wheelchair tie downs

Source: Stanislaus Regional Transit

Existing Technology

The current Intelligent Transportation System (ITS) environment is very lean with most processes done manually. StaRT administers the operating contract to Storer Transit Systems. The former has basic management tools in place for contract administration – monitoring performance and service planning. Storer is responsible for operations and service delivery.

Both Storer and StaRT's systems are not presently integrated and often the transfer of information between systems is manually done. These manual processes are prone to human error and are labor intensive - diverting staff resources.

Conventional Transit Services – The County develops the schedules which Storer uses in building operator runs as well as maintains data/management reporting "manually" within an Excel spreadsheet application. Other functionalities are addressed as follows:

- GFI (GENFARE) fareboxes are used for bus fare collection and are proving to be reliable.

- Stop annunciation – currently operators call-out stops (Only in English. Need for bilingual capability).

- Vehicle maintenance including preventative maintenance schedules are tracked with an in-house software application.

- Each bus is equipped with on-board camera equipment (x 9 cameras) to enhance the overall safety and security of both customers and bus operators including DriveCam.

- Customer service regarding real-time bus information is done verbally and relies on dispatcher's acknowledge of vehicle locations throughout the day. For the most part – customers are given "scheduled" rather than "real time" vehicle information. Currently there is no Web-based "where's my bus" application.

- The tracking of vehicles is performed via radio or through spot checks. There is no automated vehicle locating (AVLs) capabilities.

- StaRT's *Easy Rider* trip planner, using Google Maps, is designed to help transit riders find their way from points A to B in Stanislaus County. Transit riders can use *Easy Rider* to plan their trips around Stanislaus County as well as adjoining Counties and Cities who also use Google Maps for their trip planning. The following Stanislaus County transit operators are partners in this process with Google Transit:

    - Stanislaus Regional Transit (StaRT) – www.srt.org
    - Modesto Area Express (MAX) – www.ModestoAreaExpress.com
    - Ceres Area Transit (CAT) – http://www.ci.ceres.ca.us/CeresAreaTransit/CAT.html
    - Bus Line Service of Turlock (BLST) – www.blastbus.com

Demand Response/Dial-a-Ride Services – Storer uses StrataGen scheduling software. Within the StrataGen application, Storer is able to maintain a comprehensive client database; record reservations; generate batch schedules (advanced booked and regular/subscription trip bookings) utilizing the StrataGen scheduling algorithm; undertake trip management/dispatch functions; and generate standard management reports. In the absence of digital data transfer capabilities (MDTs), driver manifests are generated on paper. Changes (cancellations, no-shows, or trip insertions) are communicated by radio and noted manually on the paper manifests.

Opportunities/*A Way Forward*

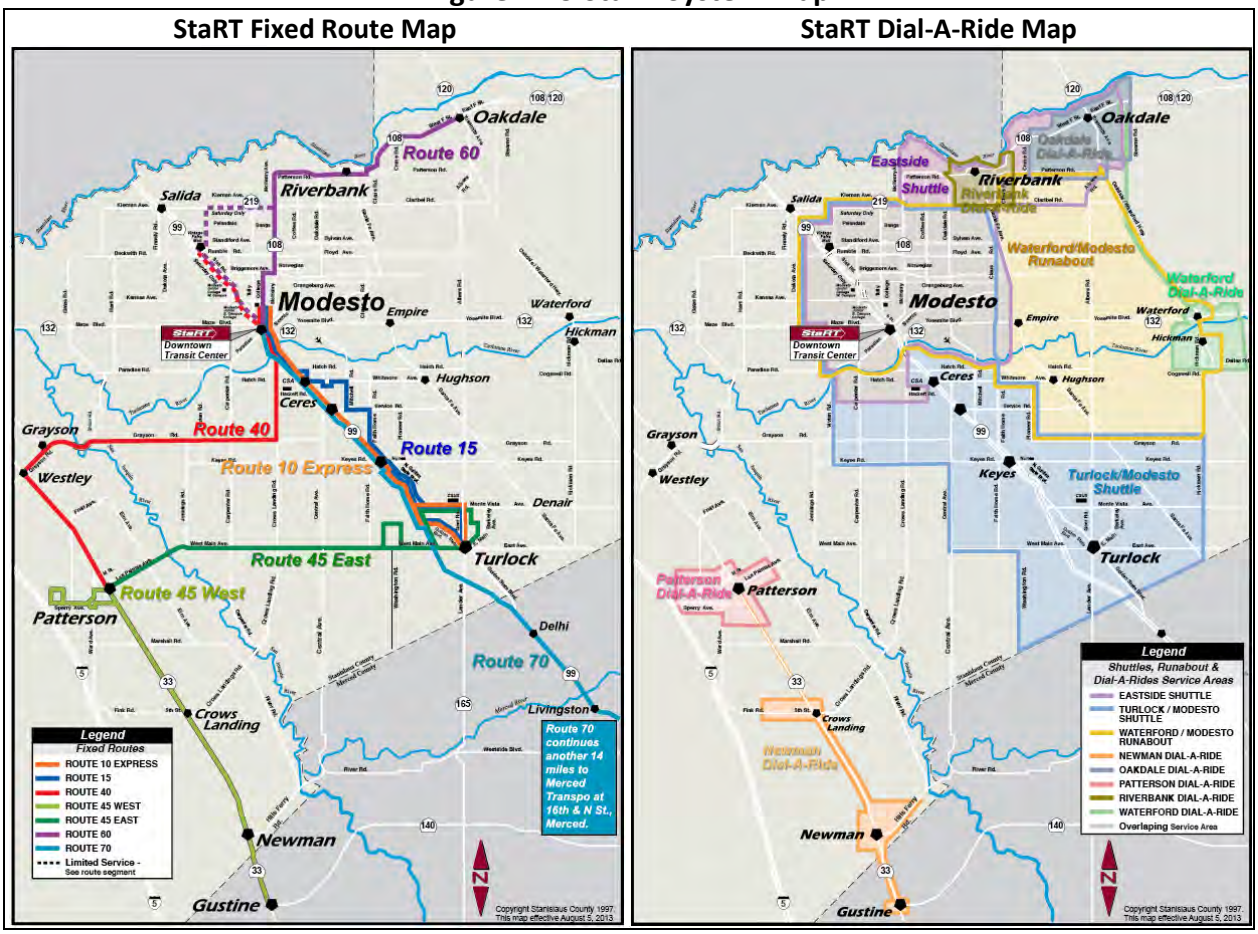
In discussions with StaRT and Storer officials, there is recognition of limited application of technology in the respective operations, and there is an opportunity to automate several key functional elements including:

- vehicle locating capabilities (AVLs);
- digital communication (MDTs);
- announcements and message signs;
- CAD, schedules, run-cutting, etc.;
- transit passenger and fare management (APCs);
- transit maintenance – on-board diagnostics;
- improved customer service/information including real-time vehicle arrival/departure information; etc.

Detailed StaRT Services

The system consists of eight intercity fixed routes, seven demand response services (Dial-A-Ride), and a non-emergency medical service to the Bay Area. A system map for all fixed-route and demand response services is shown in Figure II-19 below.

Figure II-19 StaRT System Map



Source: StaRT

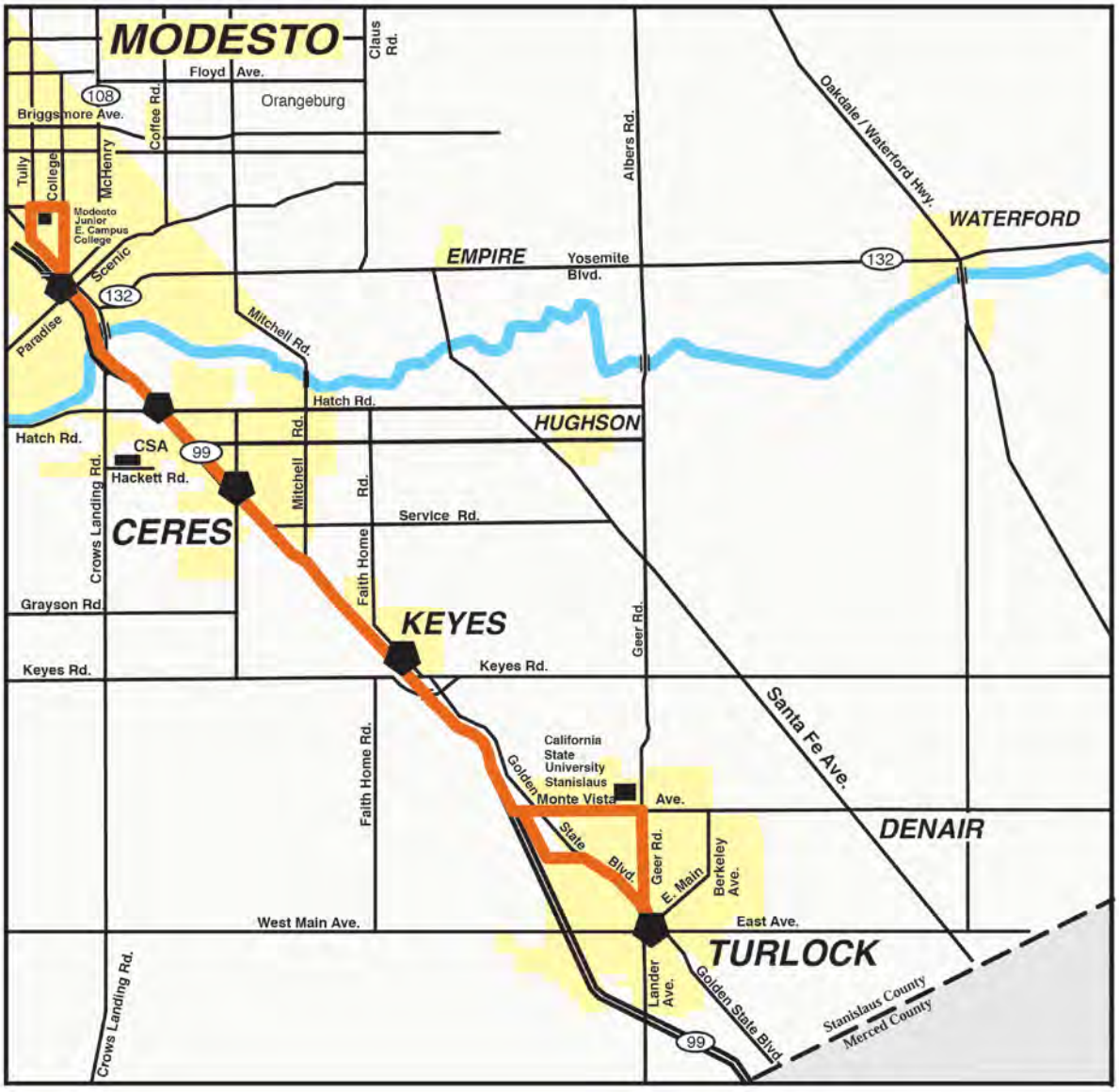
Intercity Fixed Route

StaRT offers eight fixed routes between cities to serve major population centers and several communities along these routes. Fixed routes provide stops at specific locations and times. Buses leave at scheduled times and stops at all designated bus stops and are not allowed to depart early from designated bus stops. Fixed route service is available on weekdays and Saturdays.

Route 10 Express – Modesto-Turlock

Route 10 Express provides 17 round-trip services between Modesto and Turlock, Monday through Friday from 5:05 am and 10:35 pm. This route does not provide service on Saturday. This route map is shown in Figure II-20.

Figure II-20

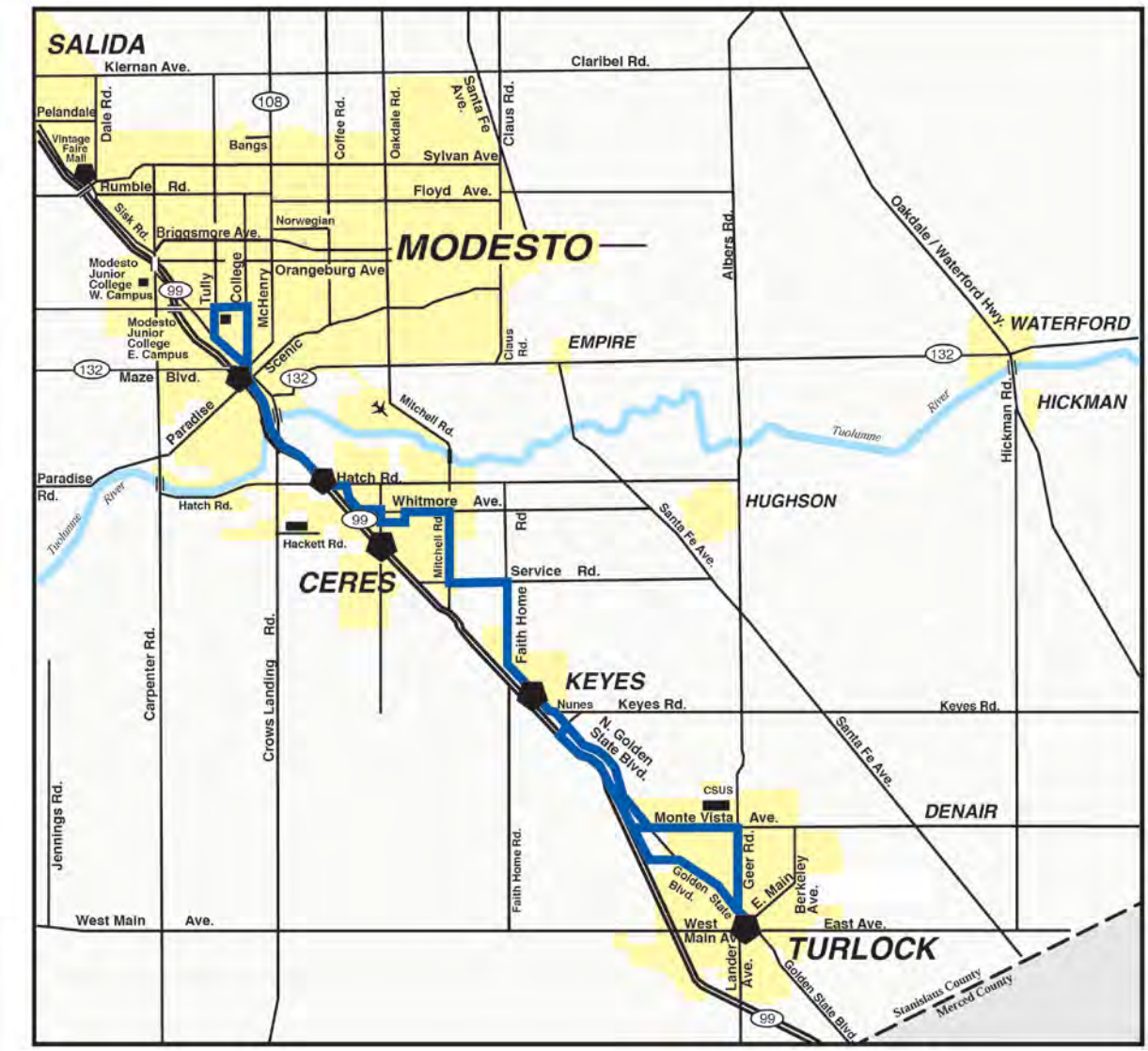


Source: StaRT

Route 15 – Modesto-Ceres-Keyes-Turlock

Route 15 operates Monday through Friday from 4:30 am to 10:07 pm and Saturday from 6:30 am to 8:22 pm and provides service between Modesto, Ceres, Keyes, and Turlock. On weekdays, nine round trips are provided between Modesto and Turlock, and seven round trips are provided on Saturday. Saturday service is combined with Route 60. This route's service map is shown in Figure II-21.

Figure II-21



Source: StaRT

Route 40 – Modesto-Grayson-Westley-Patterson

Route 40 operates between Modesto and Patterson, Monday through Friday from 5:20 am to 9:07 pm and Saturday from 6:30 am to 8:13 pm. Eight trips are provided on weekdays between Modesto, Gray, Westley, and Patterson. On Saturday, five round trips are provided throughout the day with only one return trip offered at 7:28 from Patterson to Modesto. This route's service map is shown in Figure II-22.

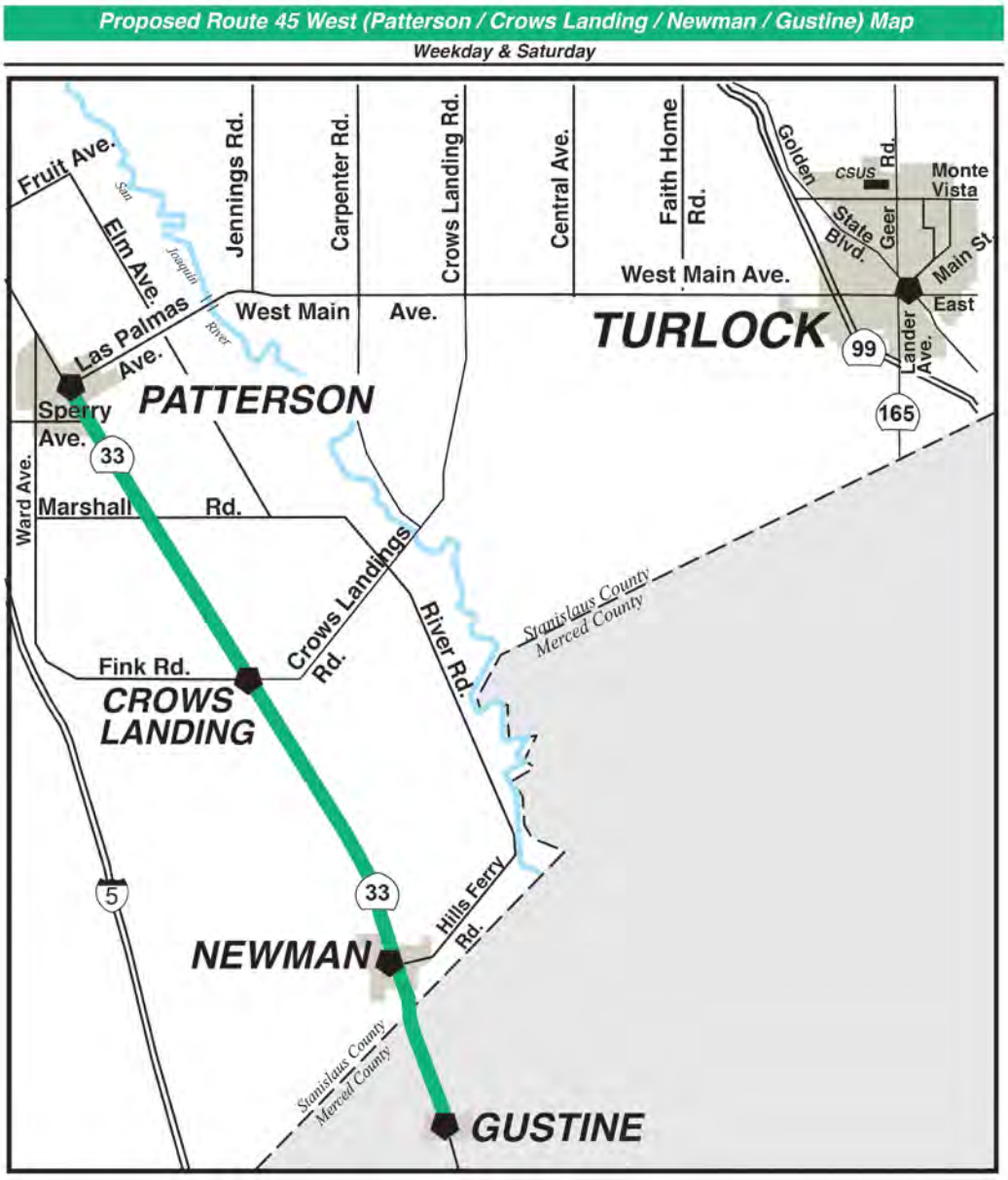
Figure II-22

Source: StaRT

Route 45 West – Patterson-Crows Landing-Newman-Gustine

Route 45 West operates between Patterson and Gustine, Monday through Friday from 5:30 am to 9:18 pm and Saturday from 5:45 am to 8:37 pm. Eight round trips are offered on weekdays within six round trips offered on Saturday. This route's service map is shown in Figure II-23.

Figure II-23

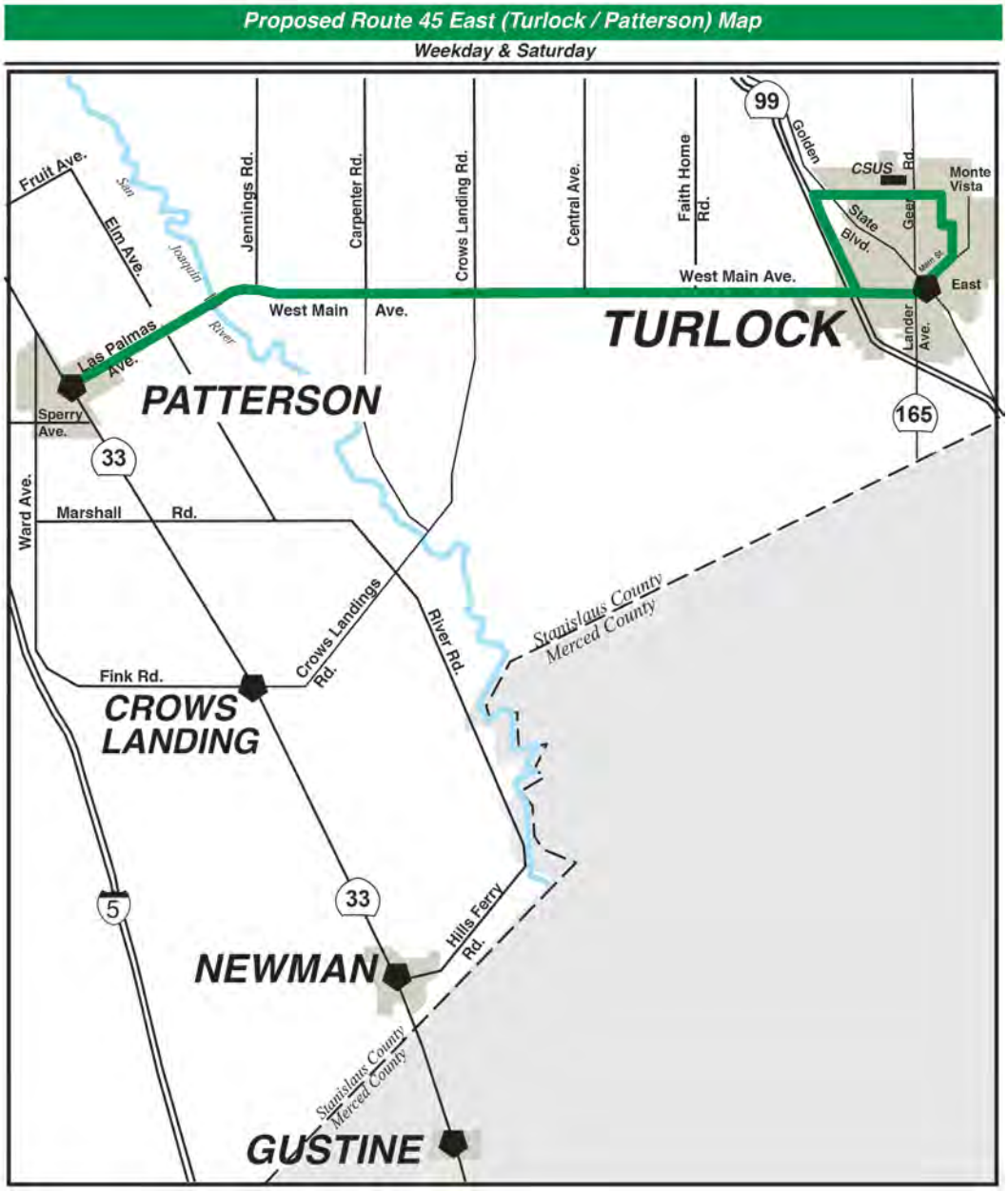


Source: StaRT

Route 45 East – Turlock-Patterson

Route 45 East provides service between Turlock and Patterson, Monday through Friday from 6:20 am to 8:05 pm and Saturday from 6:25 am to 7:10 pm. Seven round trips are offered on weekdays and with five round trips offered on Saturday. The route map is shown in Figure II-24.

Figure II-24

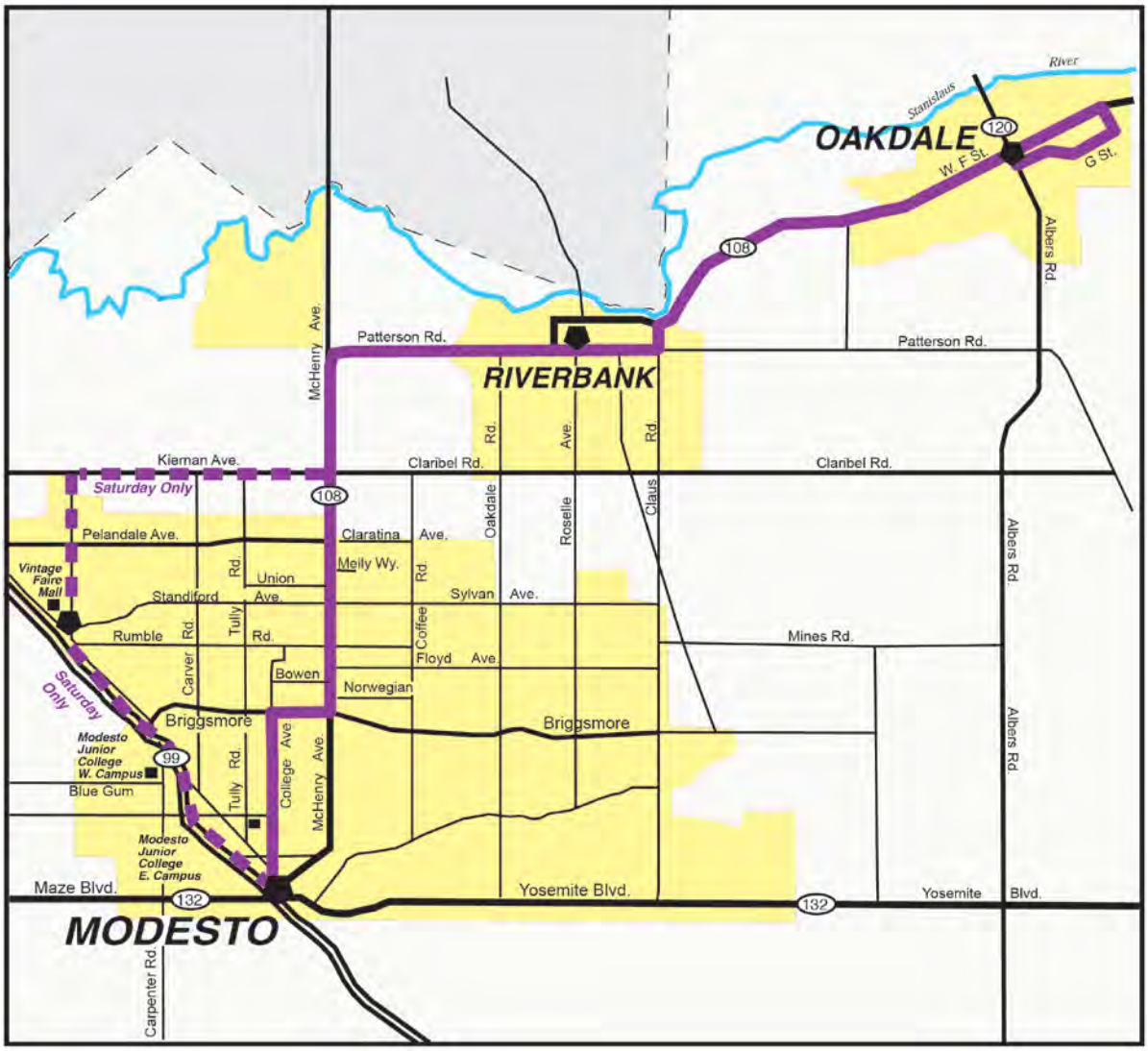


Source: StaRT

Route 60 – Modesto-Riverbank-Oakdale

Route 60 provides services Monday through Friday from 5:15 am to 9:14 pm and Saturday from 6:15 am to 8:36 pm. Twelve round trips are offered on weekdays between Modesto and Oakdale with stops in Riverbank. On Saturday, this route is combined with Route 15 with seven trips provided. This route's service map is shown in Figure II-25.

Figure II-25

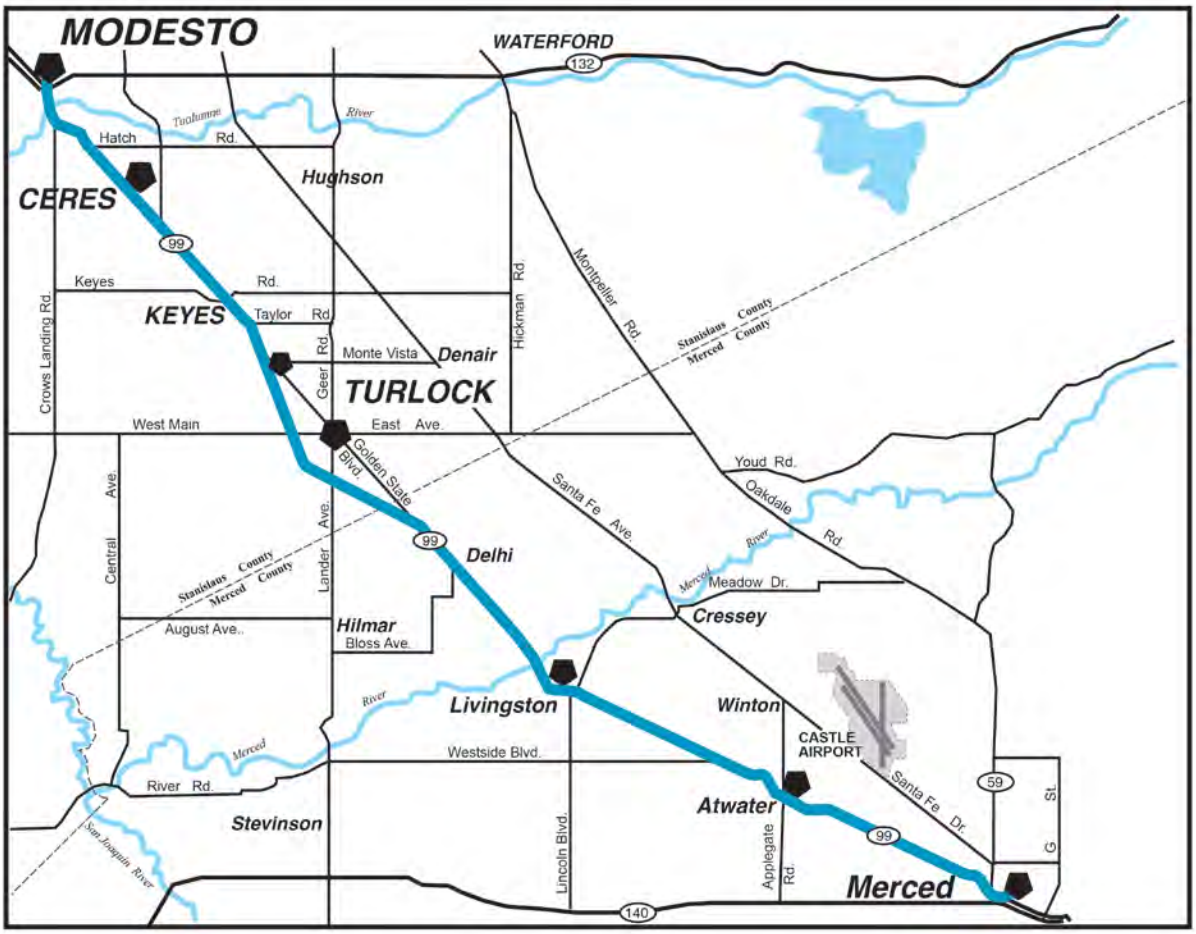


Source: StaRT

Route 70 – Modesto-Turlock-Riverbank

Route 70 operates between Modesto, Turlock, and Riverbank, Monday through Friday from 6:00 am to 6:35 pm. In the morning, one trip is provided from Modesto with a stop in Turlock before continuing to Merced Transportation Center. The bus returns in the afternoon, stopping in Turlock and then Modesto. No service is provided on Saturday. This route's service map is shown in Figure II-26 below.

Figure II-26

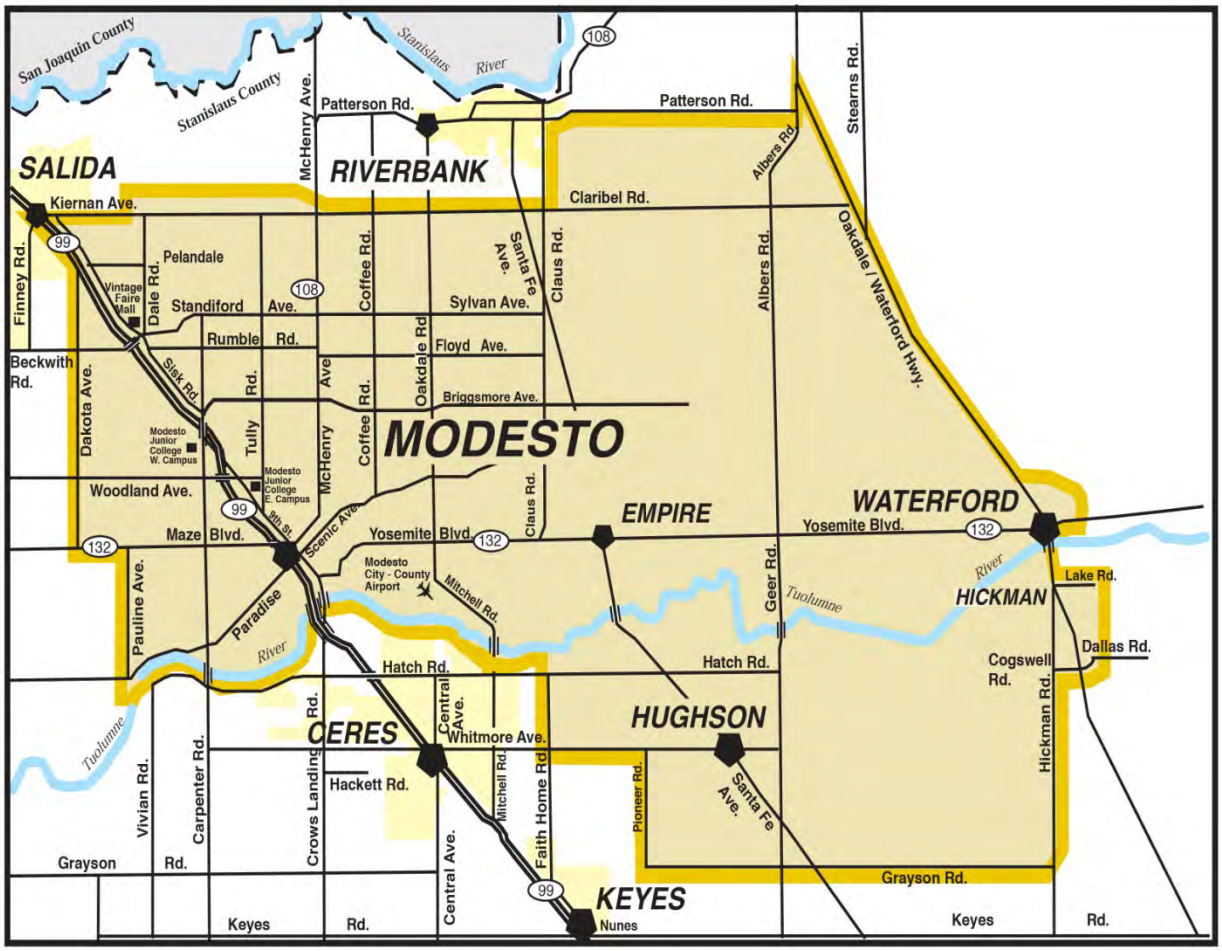


Source: StaRT

Waterford/Modesto Runabout

The Waterford/Modesto Runabout is a deviated fixed route that combines a limited intercity fixed route with scheduled stops and demand responsive service (curb-to-curb). Riders can use the service at the designated fixed stop without reserving a ride in advance and be dropped off at other designated fixed stop. For curb-to-curb service, riders must follow the rules for Dial-A-Ride service. This route is operated Monday through Friday from 6:00 am to 7:25 pm and on Saturday from 6:45 am to 6:40 pm. Seven round trips are offered on weekdays between Modesto, Empire, Hughson, and Waterford. On Saturday, four round trips are provided. This route's service map is shown below in Figure II-27.

Figure II-27



Source: StaRT

Dial-A-Ride Service

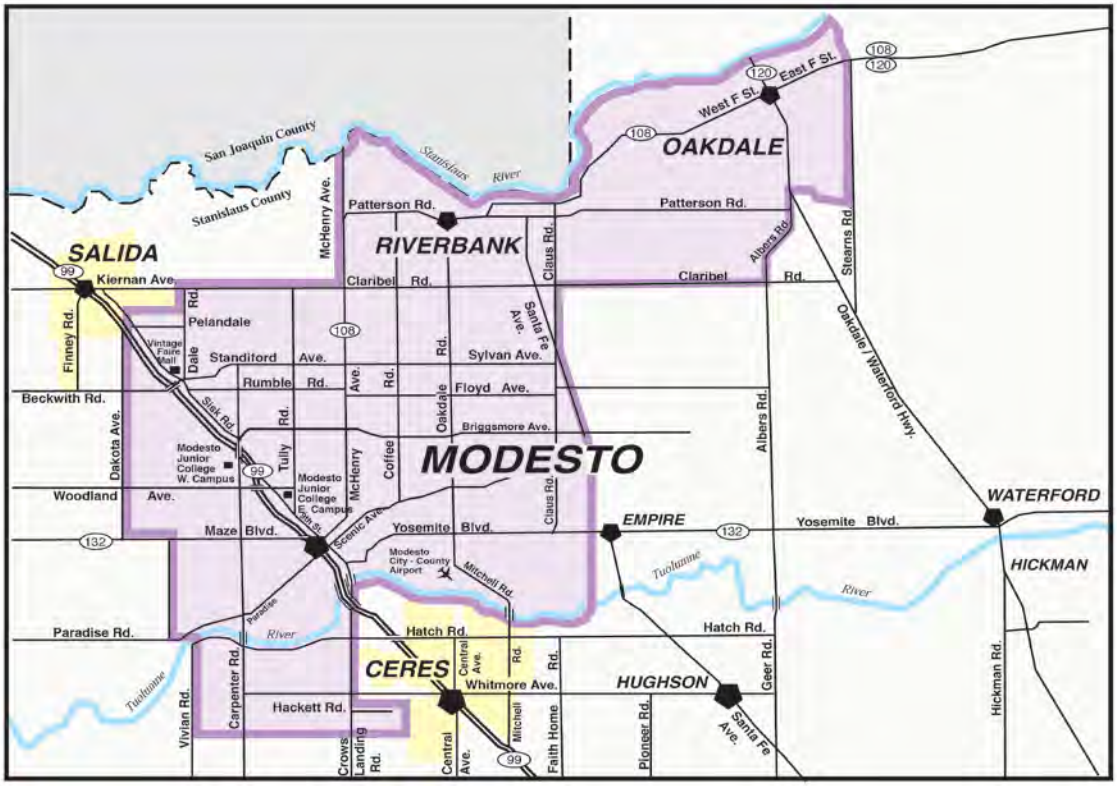
StaRT offers seven curb-to-curb dial-a-ride routes that provide demand response services between and within communities. Dial-A-Ride service is available to the general public as well as to seniors and persons with disabilities. Two new dial-a-ride services were added in August 2013 to serve the cities of Riverbank and Oakdale to replace dial-a-ride service previously offered by the Riverbank-Oakdale Transit Authority (ROTA). Dial-A-Ride service is available on weekdays and Saturdays.

To schedule curb-to-curb service, riders may call and make reservations up to seven days in advance and no later than four hours before the ride. Cancellations are required no less than two hours prior to the scheduled pick up time. Reservations cancelled with less than two hours' notice are considered no-shows.

Eastside Shuttle

The Eastside Shuttle provides intercity demand response service at specific time interval Monday through Saturday between 6:00 am to 5:30 pm. Three round trips are provided between Modesto, Riverdale, and Oakdale. Riders can use the service at the designated fixed stop without reserving rides in advance and can be dropped off at other designated fixed stops along the route. This route's map is shown in Figure II-28.

Figure II-28

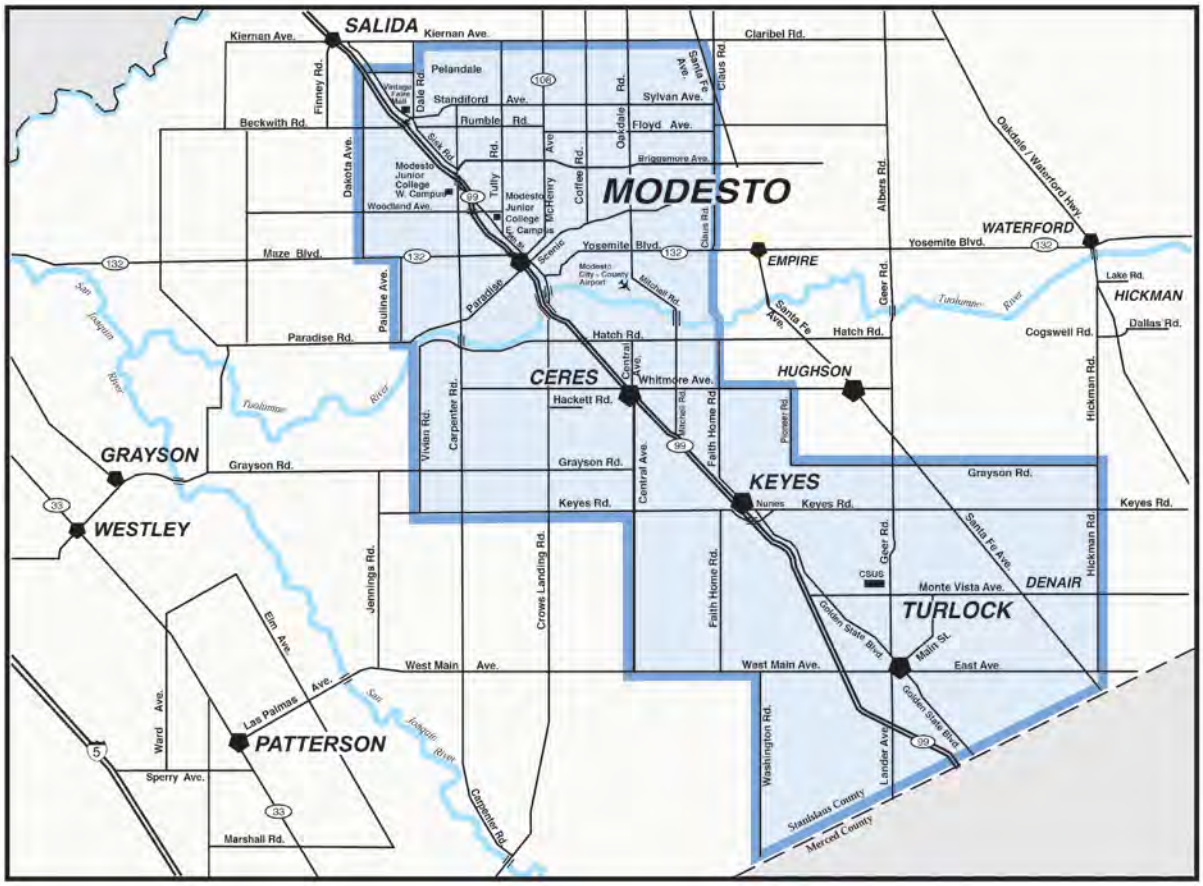


Source: StaRT

Turlock/Modesto Shuttle

Similar to the Eastside Shuttle, the Turlock/Modesto Shuttle provides intercity demand response service at specific time interval throughout the day from Monday through Saturday, 7:00 am to 6:30 pm. Four round trips are provided between Modesto, Ceres, Keyes, and Turlock. This route's service map is shown in Figure II-29 below.

Figure II-29

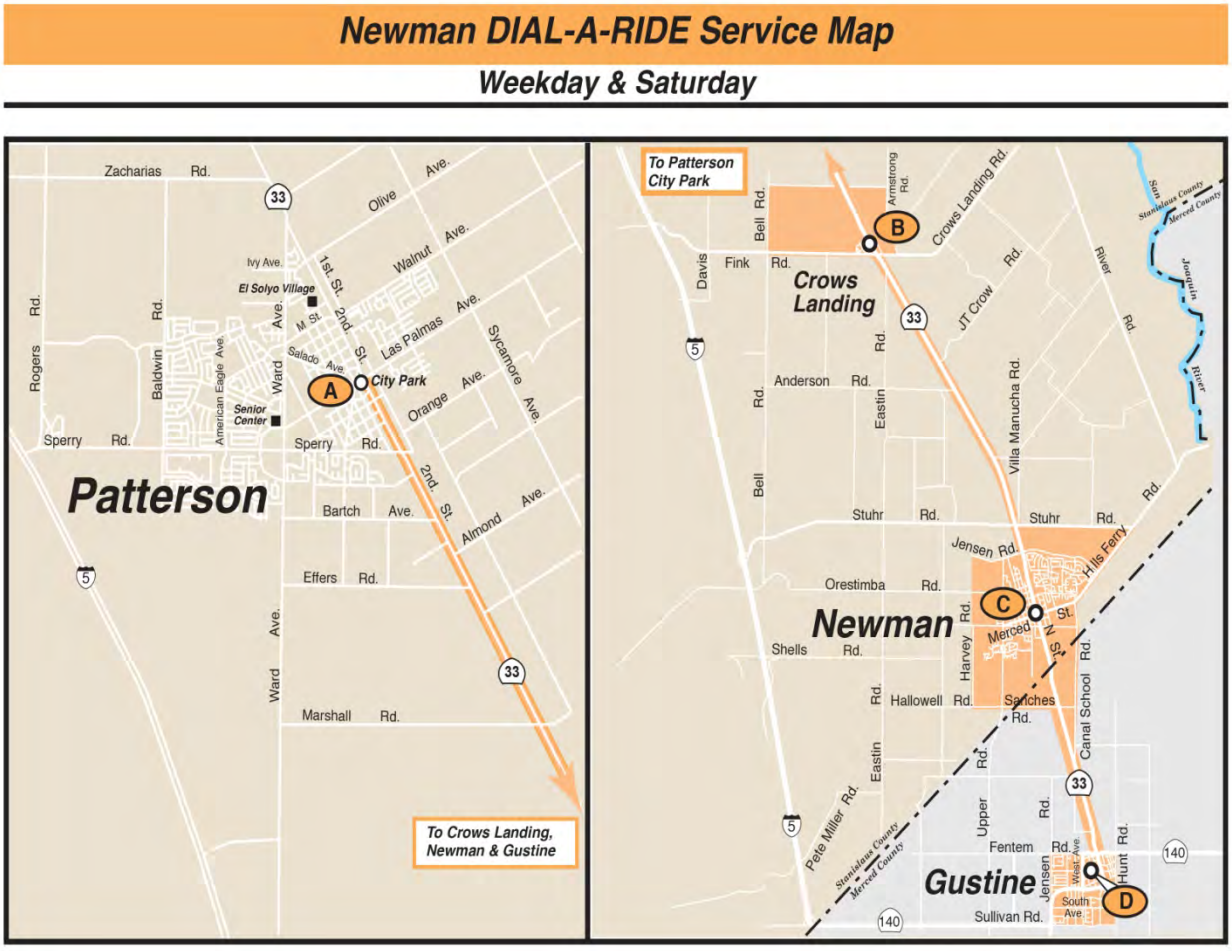


Source: StaRT

Newman Dial-A-Ride

Newman Dial-A-Ride provides curb-to-curb service in Newman, Crows Landing, and Gustine with one designated fixed stop in each community. This service is offered Monday through Friday from 7:00 am to 6:00 pm and Saturday from 8:00 am to 4:30 pm. This route's map is shown in Figure II-30.

Figure II-30



Source: StaRT

<u>Oakdale Dial-A-Ride</u>

Oakdale Dial-A-Ride is a new service offered by StaRT as of August 2013 to replace ROTA's DAR service. This bus provides curb-to-curb service within the City of Oakdale, Monday through Friday from 6:30 am to 5:30 pm. Service is not available on Saturday, but riders can use the Eastside Shuttle for their transportation needs in Oakdale. This route's service map is shown in Figure II-31 on page 38.

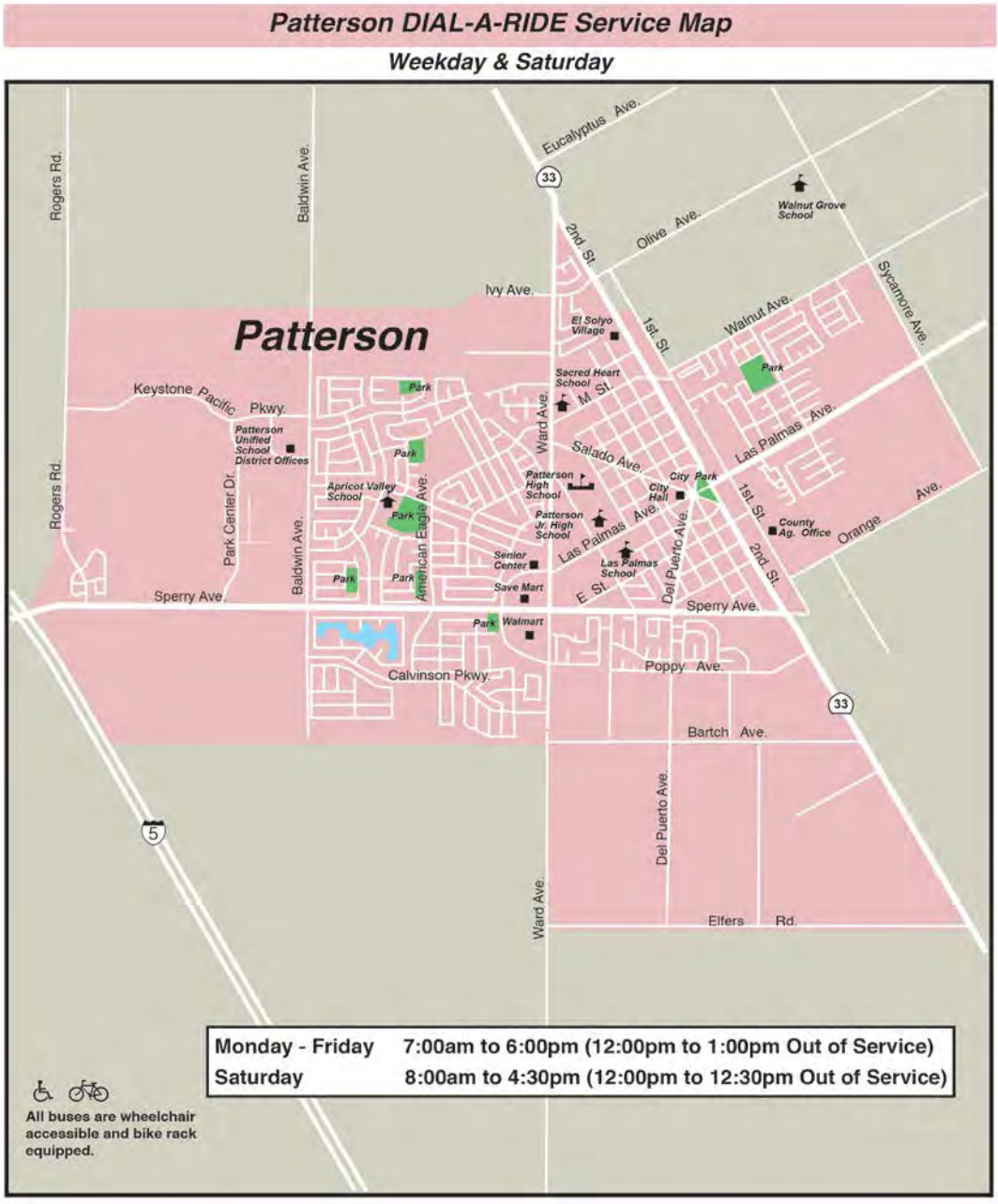
Figure II-31

Source: StaRT

Patterson Dial-A-Ride

This curb-to-curb service is offered within the City of Patterson only. Service is available Monday through Friday from 7:00 am to 6:00 pm and Saturday from 8:00 am to 4:30 pm. This route's service map is shown in Figure II-32.

Figure II-32



Source: StaRT

Riverbank Dial-A-Ride

Similar to the Oakdale Dial-A-Ride service, this is a new service offered by StaRT to serve the city of Riverbank after the dissolution of ROTA DAR service. Riverbank Dial-A-Ride service is available Monday through Friday from 6:30 am to 5:30 pm with no service on Saturday. Riders can use the Eastside Shuttle service on Saturday. This route's service map is shown in Figure II-33 on page 40.

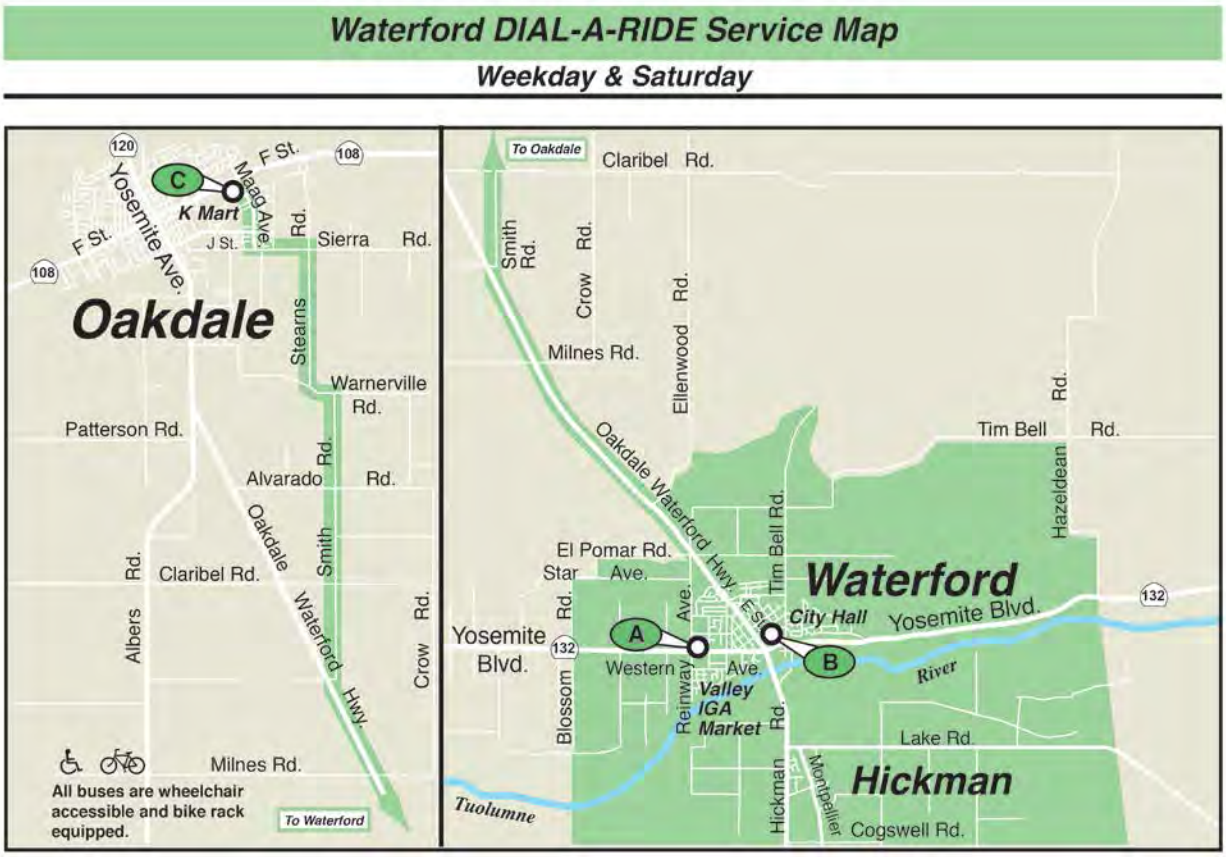
Figure II-33

Source: StaRT

Waterford Dial-A-Ride

Similar to Newman Dial-A-Ride, Waterford Dial-A-Ride provides curb-to-curb service with designated fixed stops in its servicing communities of Waterford, Hickman, and Oakdale. This service is available Monday through Friday from 8:30 am to 4:45 pm and Saturday from 9:00 am to 4:30 pm. This route's service map is shown in Figure II-34 on page 41.

Figure II-34



Source: StaRT

Medivan

The Medivan shuttle provides non-emergency medical transportation on a reservation basis for residents to access medical appointments at facilities in the Bay Area. Major destinations include Livermore, Palo Alto, Stanford, and the University of California (U.C.) San Francisco Children's Hospital.

Reservation to use this service is required at least two weeks in advance. If a passenger requires an attendant for assistance, the attendant must pay a fare of $3.00 one-way to accompany the passenger.

Connectivity Between StaRT Services and other Regional Providers

Free transfers are offered between StaRT fixed routes and to Modesto Area Express (MAX), Ceres Area Transit (CAT), Ceres Dial-A-Ride (CDAR), Dial-A-Ride Turlock (DART), and Bus Line Service of Turlock (BLAST). Free transfer is not valid on Route 70, between Route 10 and Route 15, Eastside Shuttle, Turlock/Modesto Shuttle, Waterford/Modesto Runabout, and StaRT's Dial-A-Ride services. However, free transfer can be used on the Waterford/Modesto Runabout service for fixed stops only.

Riders must request their free transfer ticket from the bus driver at the time of boarding and must be used within four hours of receiving the transfer ticket. Transfer tickets can only be used for the continuation of a trip in one direction and may not be used for a return trip.

Other Public Transit and Transportation Providers Serving Stanislaus County

This section describes other public transit and transportation providers in the County to provide a regional perspective to the connectivity of StaRT with other transportation services.

Modesto Area Express (MAX) and Modesto Area Dial-A-Ride (MADAR)

The City of Modesto administers fixed-route and demand-response transit services within the city limits and surrounding. The current fixed route transit service was first established in July 1973, and demand response service was implemented in November 1978. The fixed route service is branded under the name of MAX, which stands for Modesto Area Express. The demand-response service is branded under the name of MADAR, which stands for Modesto Area Dial-A-Ride. Both systems are operated under contract with private transportation providers. Modesto owns and maintains all the fixed route buses.

MAX operates 21 fixed routes plus two commuter services to the Altamont Commuter Express (ACE) station in Lathrop and the Bay Area Rapid Transit (BART) station in Pleasanton/Dublin. Service hours for MAX are Monday through Friday from 6:00 a.m. to 7:45 p.m., Saturday from 7:45 a.m. to 7:00 p.m., and Sunday from 8:45 a.m. to 6:00 p.m. The two main transit hubs in the MAX system are Downtown Modesto Transportation Center located on 9th Street between I and J Streets and the Vintage Faire Mall located in northwest Modesto. In addition, MAX passengers can transfer to other local systems such as Stanislaus Regional Transit (StaRT), Ceres Area Transit (CAT) and Ceres Dial-A-Ride (CDAR).

MAX also provides connections to intercity commuter services such as ACE, Amtrak, and BART. The ACE Express service runs three morning trips and three afternoon trips between the Vintage Faire Mall and the Lathrop/Manteca ACE Station. The Modesto BART Express is a subscription-based commuter service that runs two morning and two afternoon trips between the Downtown Transportation Center and the Dublin/Pleasanton BART station. Given the high demand, there is often a waiting list for this service. In addition, both MAX and MADAR provide service to the Modesto Amtrak Station located in east Modesto. MAX Route 25 provides hourly headways to and from Amtrak, Monday through Friday.

MAX's fixed-route system does not operate on New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

Dial-A-Ride

MADAR is a complementary demand response service within the Modesto Urbanized Area including unincorporated areas adjacent to Modesto such as Empire and Salida. MADAR primarily serves persons with disabilities and seniors 65 years of age and older. General public service is available during certain hours during the week and on Sunday. For seniors and the disabled, MADAR operates Monday through Friday from 4:45 a.m. to 6:00 p.m. and Saturday from 8:00 a.m. to 7:00 p.m. For the general public, MADAR is available Monday through Friday from 6:00 p.m. to 11:00 p.m. and Sunday from 8:00 a.m. to 6:00 p.m. This service operates throughout the year including holidays.

Registration is required for trips on MADAR. Reservations for Americans with Disabilities Act (ADA) trips are accepted up to two weeks in advance or as soon as two hours in advance. Disabled individuals who are not ADA certified or who are 65 or older must call at least two hours before on the day they wish to ride. Their request will be filled on a space available basis only. These individuals may only call and request service on the actual day they wish to ride. For general public trips, reservations can be accepted up to one week in advance. Applications are available from the City of Modesto as well as the Senior Citizens Center, Stanislaus County Main Library, King-Kennedy Memorial Center as well as from MADAR. Certification is conducted by the Valley Mountain Regional Center, United Cerebral Palsy Association, Independent Living Center, Stanislaus County Department of Veteran's Affairs, and the Area Aging Agency.

Ceres Area Transit (CAT) and Ceres Dial-A-Ride (CDAR)

The City of Ceres administers two modes of transit services (fixed-route and demand-response) on a contracted basis. The fixed route service branded as Ceres Area Transit (CAT) comprises four routes (Routes A, B, C, & D). Ceres Dial-A-Ride (CDAR) provides demand responsive service to the general public. CDAR service area encompasses the Ceres city limits as well as adjacent unincorporated areas. Both CAT and CDAR are operated under contract by Storer Transit Systems and overseen by an Administrative Analyst with the City.

CAT Fixed Route Service

CAT Routes A, B, and D run during the weekdays, and Route C runs on the weekend as a hybrid of the two weekday routes. All routes originate and terminate at CAT's transfer hub located at the intersection of Hatch Road and Herndon Road adjacent to the K-Mart shopping center. This transfer point provides interline connections with Modesto Area Express Routes 29 and 42 and Stanislaus Regional Transit (StaRT) Routes 15 and 40. A second transfer hub is located on Magnolia Avenue in front of the Ceres Community Center.

The routes are structured in a one-directional orientation on most corridors providing coverage throughout most areas of the City, including school campuses and major shopping centers. Route C operates only on weekends and serves many of the destinations of Routes A and B. Route D, implemented in August 2012, operates primarily as a tripper service for local middle

and senior high school students on weekdays. Service days and hours for CAT vary according to route, but service operates daily.

Ceres Dial-A-Ride

CDAR provides general public curb-to-curb demand response service within the CAT service area as well as to unincorporated areas adjacent to Ceres. CDAR operates Monday through Friday from 6:00 a.m. to 8:00 p.m., Saturday from 10:00 a.m. to 6:00 p.m., and Sunday from 8:00 a.m. to 4:00 p.m. Reservations are required at least 90 minutes in advance. Regularly scheduled trips can be reserved up to 14 days in advance.

Bus Line Service of Turlock (BLAST) and Dial-A-Ride Turlock (DART)

The City of Turlock administers two modes of transit services on a contracted basis. The fixed route service, branded as Bus Line Service of Turlock (BLAST), comprises four routes (Routes A, B, C, & D). BLAST has been in service since November 1999. Dial-A-Ride Turlock (DART) provides complementary ADA paratransit service in the BLAST service area as well as demand responsive service to the general public within the city of Turlock and adjacent unincorporated areas such as the community of Denair. DART has been operating since 1975. Both BLAST and DART are operated under contract by First Transit and overseen by the City's Transit Planner.

BLST fixed routes originate and terminate at BLAST's transfer hub located at the intersection of Dels Lane and Hawkeye Avenue near Donnelly Park. The routes are structured in a one-directional orientation providing coverage throughout most areas of the city including school campuses and major shopping centers. Service hours for BLAST are Monday through Friday from 6:40 a.m. to 5:30 p.m. and Saturday from 9:25 a.m. to 4:00 p.m.

Dial-A-Ride

In addition to the fixed route services described above, DART provides complementary demand response service within the BLAST service area as well as to unincorporated areas adjacent to Turlock such as Denair. Within the BLAST service area, DART service is available only to persons with disabilities, seniors 65 years of age and older, Medicare card holders, and elementary school students. For trips outside of the BLAST service area, DART service is available to the general public. DART has the same service hours as BLAST within that service area. In the Denair area, DART operates Monday through Friday from 9:00 a.m. to 4:00 p.m. and Saturday from 9:00 a.m. to 3:00 p.m.

Reservations on DART can be accepted at least two hours in advance. After using DART regularly for two weeks, riders can take advantage of the subscription service. This service allows for riders to be picked up from the same place at the same time every day.

Transportation Provided by Social Service Agencies in Stanislaus County

A wide range of social service agencies and non-profit organizations either subsidize the use of Stanislaus County public fixed route transit and demand response services, or directly provide transportation services for their senior and/or disabled clients. The approach taken by area agencies and non-profits is defined by particular travel requirements of their clients. The range of clients includes seniors, persons with physically disabilities, and the developmentally disabled. While some clients can use fixed route transit or curb-to-curb dial-a-ride, others require supplemental service in areas or operation times beyond transit or dial-a-ride coverage, or require a higher level of door-through-door assistance.

Other Transportation Providers

Other transportation alternatives available in the County include non-profit, private, and public non-emergency transportation providers; park and ride lots and commuter vanpools; local taxi and limousine services; and friends, neighbors or family members serving as volunteer drivers. Regional transportation services include airport shuttles and regional buses such as Greyhound, charter bus carriers, and casino bus. Also, Amtrak rail offers passenger rail transportation from two stations in Stanislaus County, one in Modesto, and one in Denair/Turlock. The Amtrak San Joaquin route offers multiple daily trips between the Bay Area and Bakersfield, with stops in Stockton, Denair/Turlock, Modesto, Merced, Martinez, and Fresno.

StaRT Historic Performance Trends

This section reviews StaRT's performance in providing transit service to the community in an efficient and effective manner. Covered in this review are five specific performance indicators, which are contained in the following tables. Farebox calculation, operating cost per mile, and average fare per passenger are included as well. Findings from the analysis are contained in the section following the tables.

The following charts shown on the next several pages provide the performance indicators for StaRT's system-wide, fixed route, and Dial-a-Ride. The figures are provided to depict trends in the performance indicators. It is noted that operating costs and fare revenues for the combined services system-wide are based on audited numbers, while the individual charts for fixed route and dial-a-ride operating costs and fare revenues are unaudited. The annual fiscal audits do not provide a modal breakdown.

Figure II-35
StaRT System-wide Performance Indicators

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	*% Change FY 2009-2013*
Operating Cost	$3,275,960	$3,360,444	$3,501,873	$3,487,745	$3,682,648	***12.4%***
Total Passengers	305,495	294,397	323,011	356,698	374,635	***22.6%***
Vehicle Service Hours	40,083	39,779	40,344	41,107	44,716	***11.6%***
Vehicle Service Miles	805,754	809,654	834,635	832,235	876,769	***8.8%***
Passenger Fares	$361,282	$345,202	$397,413	$465,000	$496,528	***37.4%***
Operating Cost per Passenger	$10.72	$11.41	$10.84	$9.78	$9.83	***-8.3%***
Operating Cost per Vehicle Service Hour	$81.73	$84.48	$86.80	$84.85	$82.36	***0.8%***
Operating Cost per Vehicle Service Mile	$4.07	$4.15	$4.20	$4.19	$4.20	***3.3%***
Passengers per Vehicle Service Hour	7.6	7.4	8.0	8.7	8.4	***9.9%***
Passengers per Vehicle Service Mile	0.38	0.36	0.39	0.43	0.43	***12.7%***
Average Fare per Passenger	$1.18	$1.17	$1.23	$1.30	$1.33	***12.1%***
Fare Recovery Ratio (without exclusion of new services)	11.03%	10.27%	11.35%	13.33%	13.48%	***22.3%***
Fare Recovery Ratio (with exclusion of new services)	13.99%	12.28%	13.16%	13.61%	13.61%	***-2.7%***

Source: Annual Fiscal & Compliance Audits & Internal Performance Reports

(1) The fare recovery ratio uses audited operating cost which exclude depreciation and vehicle leases, and match the operating costs and fare revenues in the table.

(2) The fare recovery ratio uses audited operating costs which exclude depreciation and vehicle leases, as well as new services. This ratio is allowable under the TDA statute.

Figure II-36
StaRT Fixed Route Performance Indicators

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	*% Change FY 2009-2013*
Operating Cost	$1,858,560	$1,838,981	$1,992,885	$2,219,733	$2,285,671	***23.0%***
Total Passengers	266,775	259,047	288,652	322,926	330,555	***23.9%***
Vehicle Service Hours	24,075	24,512	25,429	26,774	28,808	***19.7%***
Vehicle Service Miles	555,414	559,821	583,632	589,004	610,843	***10.0%***
Passenger Fares	$282,793	$275,498	$318,024	$389,636	$425,741	***50.5%***
Operating Cost per Passenger	$6.97	$7.10	$6.90	$6.87	$6.91	***-0.7%***
Operating Cost per Vehicle Service Hour	$77.20	$75.02	$78.37	$82.91	$79.34	***2.8%***
Operating Cost per Vehicle Service Mile	$3.35	$3.28	$3.41	$3.77	$3.74	***11.8%***
Passengers per Vehicle Service Hour	11.1	10.6	11.4	12.1	11.5	***3.6%***
Passengers per Vehicle Service Mile	0.48	0.46	0.49	0.55	0.54	***12.7%***
Average Fare per Passenger	$1.06	$1.06	$1.10	$1.21	$1.29	***21.5%***
Fare Recovery Ratio	15.22%	14.98%	15.96%	17.55%	18.63%	***22.4%***

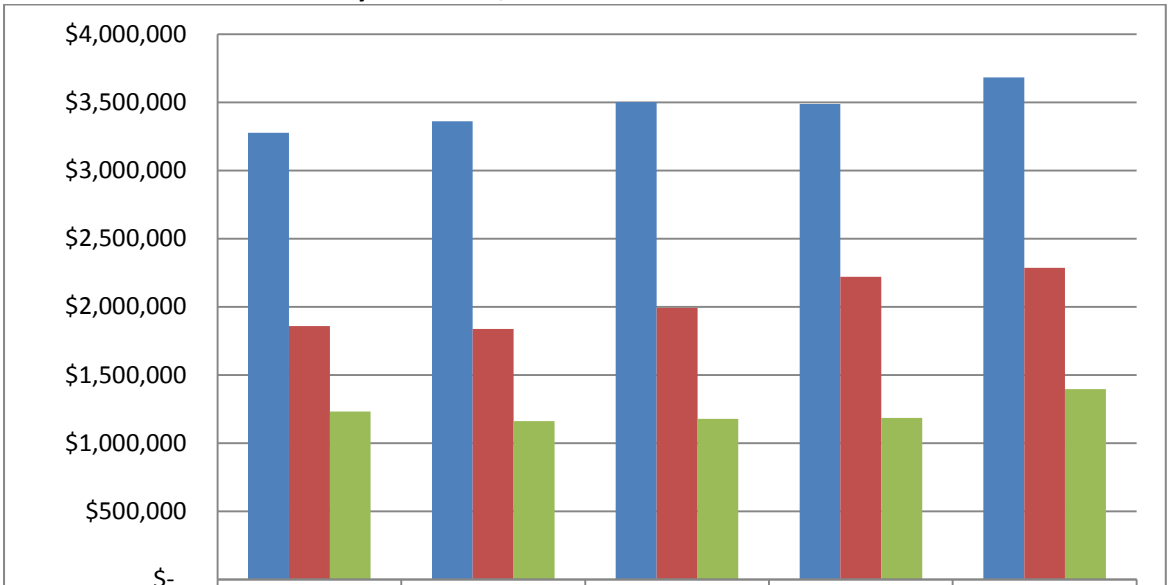
Source: Internal Performance Reports

Figure II-37
StaRT Dial-a-Ride Performance Indicators

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	*% Change FY 2009-2013*
Operating Cost	$1,232,482	$1,163,210	$1,177,628	$1,186,230	$1,396,977	***13.3%***
Total Passengers	38,720	35,350	34,359	33,772	44,080	***13.8%***
Vehicle Service Hours	16,008	15,267	14,915	14,333	15,908	***-0.6%***
Vehicle Service Miles	250,340	249,833	251,003	243,231	265,926	***6.2%***
Passenger Fares	$78,489	$69,702	$79,389	$75,364	$70,787	***-9.8%***
Operating Cost per Passenger	$31.83	$32.91	$34.27	$35.12	$31.69	***-0.4%***
Operating Cost per Vehicle Service Hour	$76.99	$76.19	$78.96	$82.76	$87.82	***14.1%***
Operating Cost per Vehicle Service Mile	$4.92	$4.66	$4.69	$4.88	$5.25	***6.7%***
Passengers per Vehicle Service Hour	2.4	2.3	2.3	2.4	2.8	***14.6%***
Passengers per Vehicle Service Mile	0.15	0.14	0.14	0.14	0.17	***7.2%***
Average Fare per Passenger	$2.03	$1.97	$2.31	$2.23	$1.61	***-20.8%***
Fare Recovery Ratio	6.37%	5.99%	6.74%	6.35%	5.07%	***-20.4%***

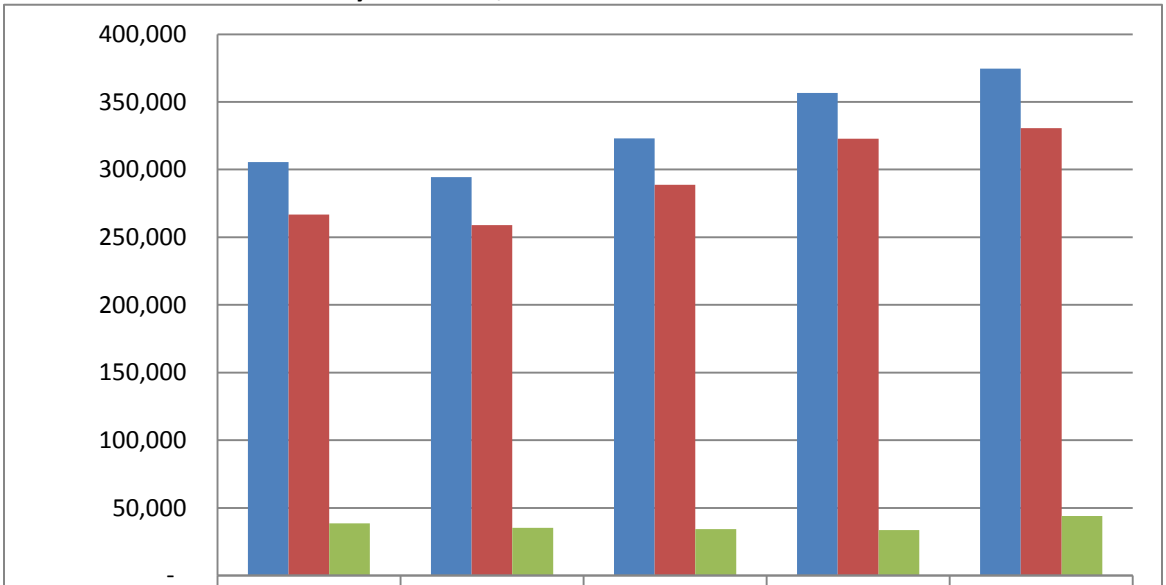
Source: Internal Performance Reports

Figure II-38 Operating Costs
System-wide, Fixed Route & Dial-a-Ride



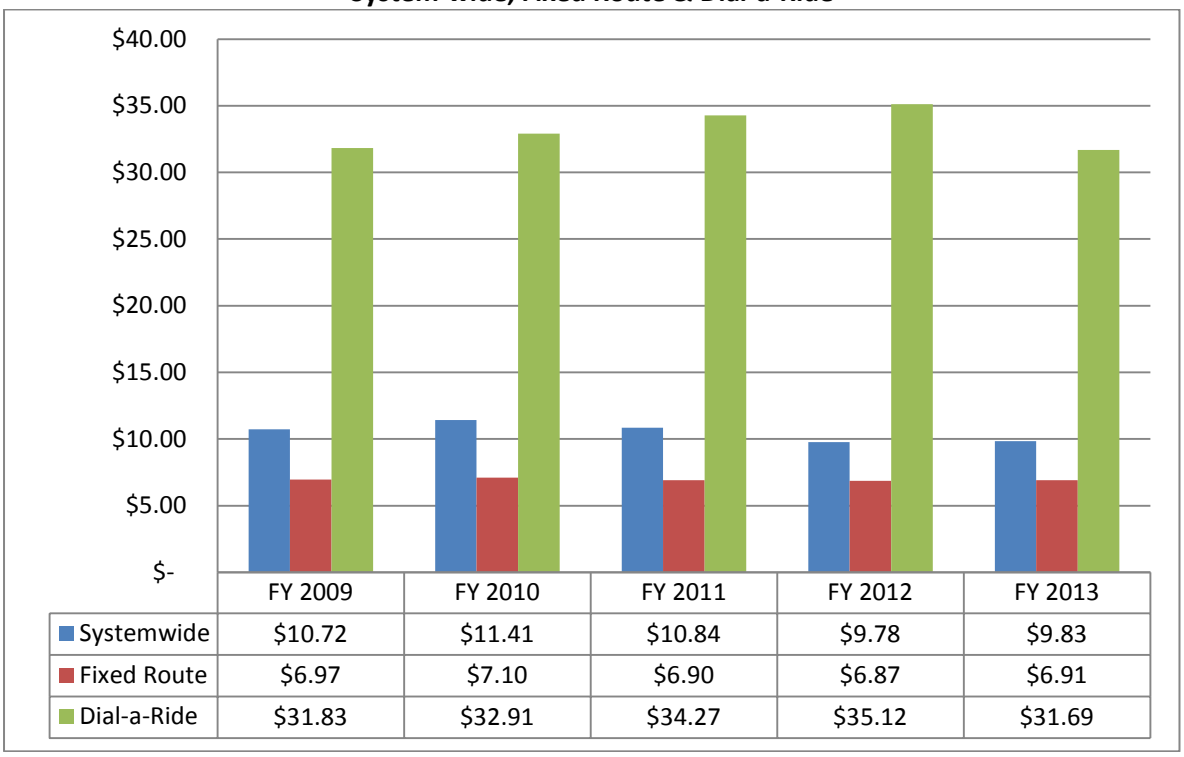
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Systemwide	$3,275,960	$3,360,444	$3,501,873	$3,487,745	$3,682,648
Fixed Route	$1,858,560	$1,838,981	$1,992,885	$2,219,733	$2,285,671
Dial-a-Ride	$1,232,482	$1,163,210	$1,177,628	$1,186,230	$1,396,977

Figure II-39 Ridership
System-wide, Fixed Route & Dial-a-Ride



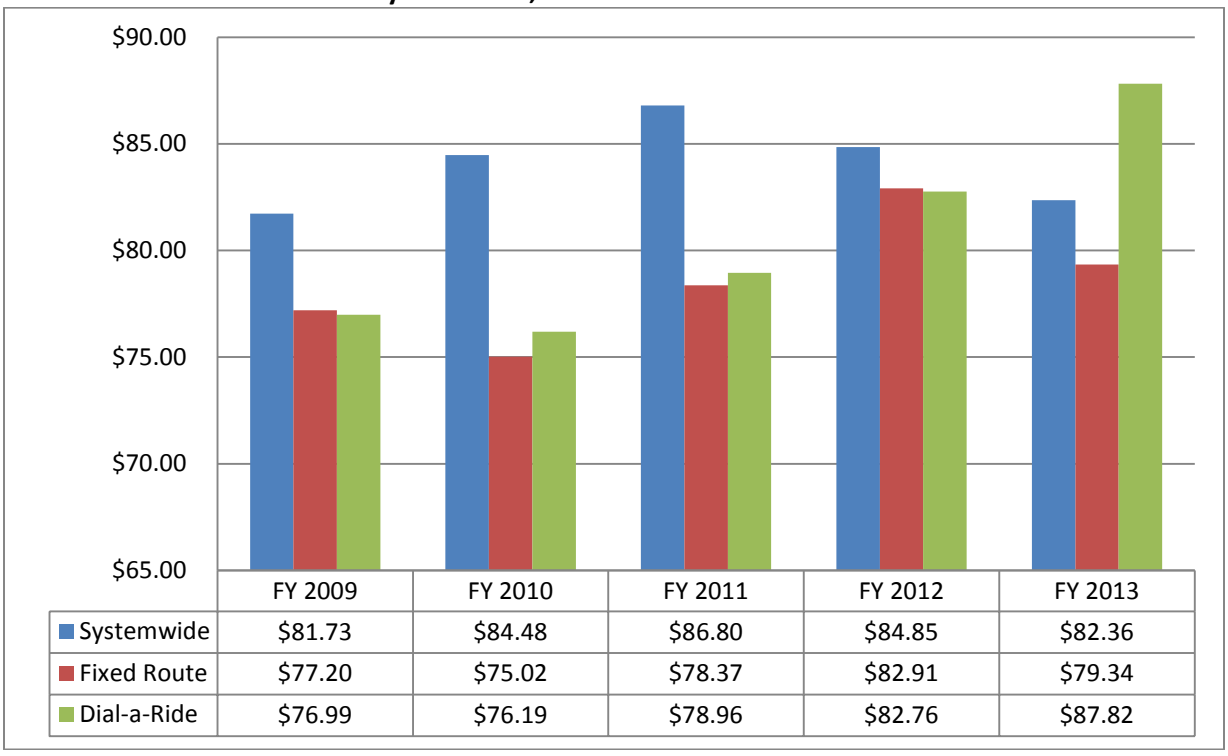
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Systemwide	305,495	294,397	323,011	356,698	374,635
Fixed Route	266,775	259,047	288,652	322,926	330,555
Dial-a-Ride	38,720	35,350	34,359	33,772	44,080

Figure II-40 Operating Cost Per Passenger
System-wide, Fixed Route & Dial-a-Ride



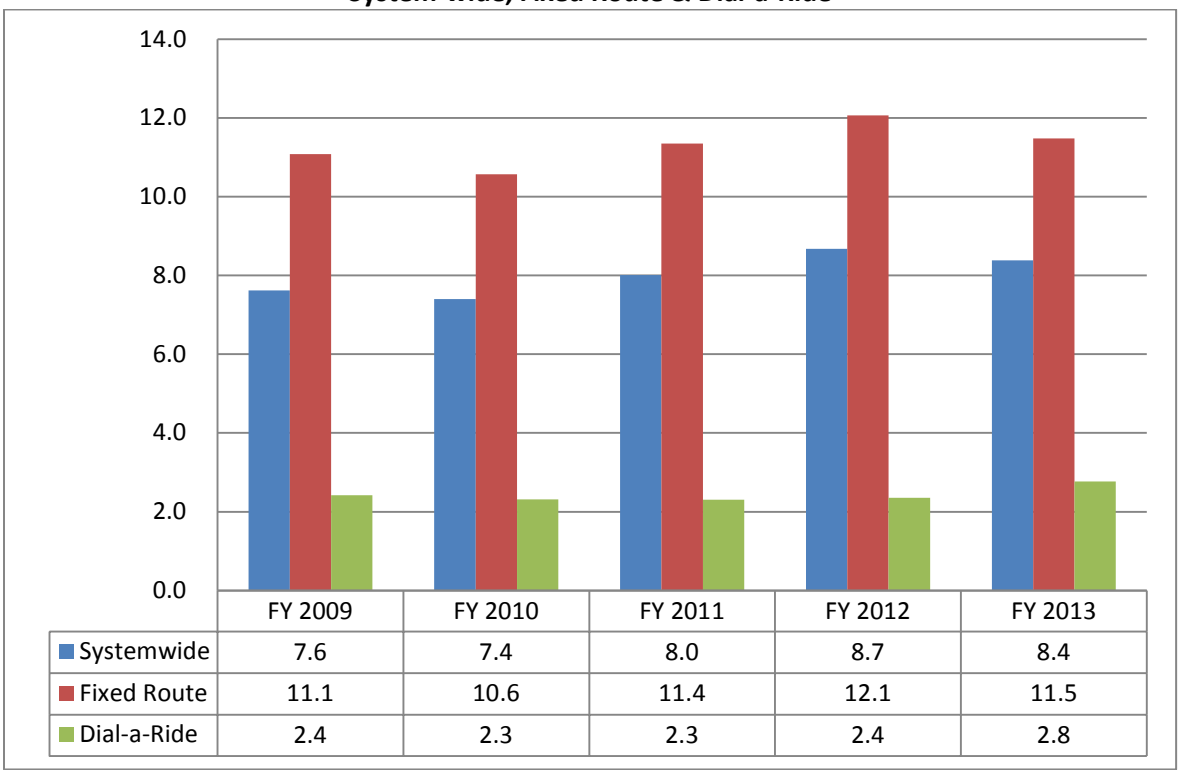
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Systemwide	$10.72	$11.41	$10.84	$9.78	$9.83
Fixed Route	$6.97	$7.10	$6.90	$6.87	$6.91
Dial-a-Ride	$31.83	$32.91	$34.27	$35.12	$31.69

Figure II-41 Operating Cost Per Vehicle Service Hour
System-wide, Fixed Route & Dial-a-Ride



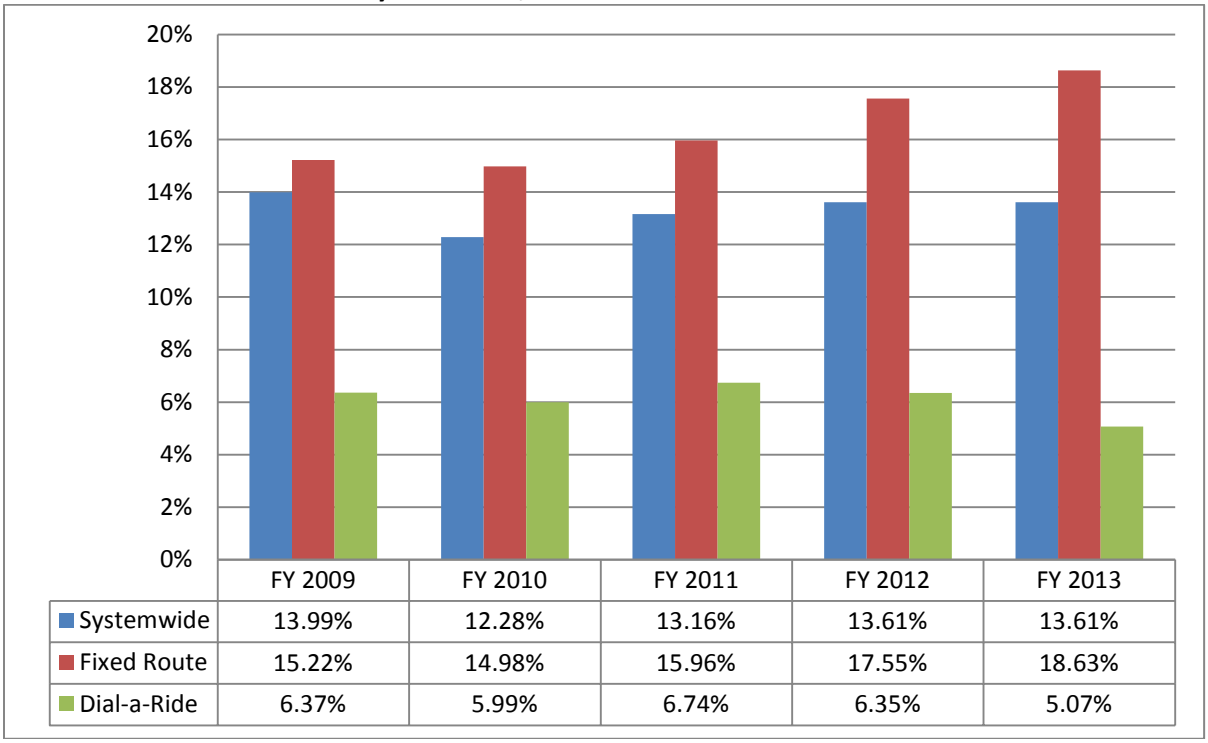
	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Systemwide	$81.73	$84.48	$86.80	$84.85	$82.36
Fixed Route	$77.20	$75.02	$78.37	$82.91	$79.34
Dial-a-Ride	$76.99	$76.19	$78.96	$82.76	$87.82

Figure II-42 Passengers Per Vehicle Service Hour
System-wide, Fixed Route & Dial-a-Ride



	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Systemwide	7.6	7.4	8.0	8.7	8.4
Fixed Route	11.1	10.6	11.4	12.1	11.5
Dial-a-Ride	2.4	2.3	2.3	2.4	2.8

Figure II-43 Fare Recovery Ratio
System-wide, Fixed Route & Dial-a-Ride



	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Systemwide	13.99%	12.28%	13.16%	13.61%	13.61%
Fixed Route	15.22%	14.98%	15.96%	17.55%	18.63%
Dial-a-Ride	6.37%	5.99%	6.74%	6.35%	5.07%

Findings from TDA Triennial Review Verification of Performance Indicators

1. Operating costs system-wide increased 12.4 percent based on audited data from FY 2009 through FY 2013. Using unaudited data, fixed route operating costs increased 23 percent over the same timeframe. Dial-a-Ride operating costs increased 13.3 percent. The increase in operating costs are attributed to higher fuel costs for additional buses, increased service hours, higher employees' health and retirement expenses as well as the expiration of the federal alternative fuel excise rebate tax program. The cost of fuel for StaRT, specifically the cost of gasoline, has a base rate of $2.35 as indicated in the operations contract, which may increase depending on the cost of fuel throughout the year.

2. Ridership increased 22.6 percent system-wide over the five-year period. Fixed route ridership increased 23.9 percent while Dial-a-Ride ridership increased by 13.8 percent. Annual increases in fixed route ridership exceeded 11 percent during FYs 2011 and 2012. Fixed route ridership trends led the overall system-wide increase during those years. The increase in ridership is attributed to the extended service hours on Route 10 Express which is highly utilized by college students.

3. Fixed route revenue service hours and miles increased 19.7 and 10 percent, respectively. Dial-a-Ride revenue service hours decreased 0.6 whereas revenue service miles increased 6.2 percent. System-wide, vehicle service hours increased 11.6 percent and vehicle service miles increased 8.8 percent. The increase in revenue hours and miles reflects service expansion involving the major trunk routes between Modesto and Turlock.

4. Operating cost per passenger decreased 8.3 percent system-wide. The indicator exhibited a slight decrease of 0.7 percent on the fixed route and a decrease of 0.4 percent on Dial-a-Ride. The trends for this indicator reflect a much greater increase in passenger trips than for operating costs.

5. Operating cost per vehicle service hour increased 0.8 percent system-wide based on audited cost data. For fixed route, the cost per hour increased 2.8 percent using unaudited data. Dial-a-Ride exhibited a higher increase of 14.1 percent. The trends in this indicator demonstrate that the increase in operating costs have exceeded the increase in revenue service hours over the audit period.

6. Passengers per vehicle service hour system-wide exhibited an increase of 9.9 percent from 7.6 to 8.4 passengers. Fixed route passengers per hour increased by 3.6 percent; however, passengers per hour on Dial-a-Ride exhibited a higher increase of 14.6 percent.

7. The fare recovery ratio, when including new services over the past three years, increased system-wide. When excluding new services, the farebox ratio decreased slightly. This shows that new services have improved over time to help maintain the

farebox ratio above the current required standard. When new services are excluded, the farebox ratio remained above the required standard which is also a positive trend with existing services. Farebox ratio for fixed route increased from 15.22 percent to 18.63 percent while Dial-a-Ride saw a decrease from 6.37 percent to 5.07 percent. System-wide passenger fare revenues increased 37.4 percent based on audited data. For fixed-route, revenues increased 50.5 percent whereas Dial-a-Ride fare revenues decreased by 9.8 percent. The rise in fare revenues is attributed to the fare increase implemented in August 2011 as well as higher fixed route ridership.

Historic performance statistics on a route level are provided for the past four years in the following figures. They include for each fixed route, shuttle, and dial-a-ride. Route 10 (Express Service between Modesto and Turlock) and Route 60 (Modesto-Riverbank-Oakdale) are the most productive by way of annual ridership and farebox ratio recovery.

Figure II-44

ROUTE STATS FY 2008/09								
STATISTICS							ROUTE	
Route	Passengers	Cost	Revenue	FB Ratio	Rev. Days	Rev. Hrs.	Av. Hrs./ Day	Miles
Route 10 - MT	81,217	$287,897.91	$78,248.21	27.18%	254.00	3,635.50	14.31	92,029
Route 15 - MT	50,857	$344,242.51	$56,267.77	16.35%	306.00	4,495.00	14.69	83,216
Route 40 - WSS	37,093	$258,531.84	$31,787.89	12.30%	306.00	3,191.50	10.43	97,263
Route 45 - WRA	18,775	$269,900.90	$23,576.15	8.74%	306.00	3,685.25	12.04	94,791
Route 60 - MRO	64,311	$383,597.45	$71,683.66	18.69%	306.00	4,992.75	16.32	97,010
Route 70 - Merced	2,383	$84,438.52	$5,907.94	7.00%	254.00	937.75	3.69	37,686
Turlock Shuttle	6,599	$238,433.54	$17,958.03	7.53%	306.00	3,350.50	10.95	59,504
Waterford RA	12,139	$228,949.55	$15,321.04	6.69%	306.00	3,136.50	10.25	53,419
Eastside Shuttle	5,094	$196,123.85	$12,200.94	6.22%	306.00	2,686.50	8.78	41,486
Medivan - Bay Area	4,062	$181,973.71	$22,482.50	12.35%	250.00	2,492.25	9.97	55,938
PDAR	12,826	$198,765.57	$14,346.69	7.22%	306.00	2,722.75	8.90	24,312
NDAR	7,436	$194,982.42	$7,992.27	4.10%	306.00	2,671.75	8.73	45,275
WDAR	2,703	$152,201.60	$3,508.76	2.31%	306.00	2,085.00	6.81	23,825
Sub-Total	**305,495**	**$3,020,039**	**$361,281**	**11.96%**	**3,818**	**40,083**	**10.50**	**805,754**

Figure II-45

ROUTE STATS
FY 2009/10

ROUTE STATISTICS								
Route	Passengers	Cost	Revenue	FB Ratio	Rev. Days	Rev. Hrs.	Av. Hrs./ Day	Miles
Route 10 - MT	76,837	$280,372.86	$71,040.36	25.34%	255.00	3,670.50	14.39	92,118
Route 15 - MT	47,809	$340,145.36	$55,602.43	16.35%	306.00	4,615.75	15.08	84,724
Route 40 - WSS	35,101	$246,393.30	$32,034.85	13.00%	306.00	3,271.00	10.69	85,419
Route 45 - WRA	18,382	$275,607.85	$21,747.43	7.89%	306.00	3,697.50	12.08	105,033
Route 60 - MRO	67,000	$373,301.01	$75,087.33	20.11%	306.00	5,036.25	16.46	99,680
Route 70 - Merced	2,204	$92,359.18	$4,663.11	5.05%	239.00	1,083.75	4.53	37,501
Turlock Shuttle	7,003	$252,040.70	$17,322.44	6.87%	306.00	3,273.50	10.70	62,239
Waterford RA	11,714	$230,802.09	$15,323.53	6.64%	306.00	3,136.50	10.25	55,346
Eastside Shuttle	4,354	$190,411.53	$10,710.92	5.63%	306.00	2,491.25	8.14	39,304
Medivan - Bay Area	3,169	$177,634.32	$20,623.00	11.61%	248.00	2,293.00	9.25	57,693
PDAR	11,115	$201,664.49	$12,522.23	6.21%	306.00	2,689.50	8.79	24,341
NDAR	6,723	$198,064.78	$5,391.46	2.72%	306.00	2,618.50	8.56	44,562
WDAR	2,986	$143,393.95	$3,133.28	2.19%	306.00	1,901.75	6.21	21,694
Sub-Total	**294,397**	**$3,002,191**	**$345,202**	**11.50%**	**3,802**	**39,778**	**10.46**	**809,654**

Figure II-46

ROUTE STATS
FY 2010/11

ROUTE STATISTICS								
Route	Passengers	Cost	Revenue	FB Ratio	Rev. Days	Rev. Hrs.	Av. Hrs./ Day	Miles
Route 10 - MT	93,014	$322,168.14	$85,476.26	26.53%	257.00	4,006.25	15.59	106,003
Route 15 - MT	48,943	$360,389.39	$60,529.11	16.80%	302.00	4,707.75	15.59	84,722
Route 40 - WSS	35,207	$252,327.37	$38,254.19	15.16%	307.00	3,229.00	10.52	72,733
Route 45 - WRA	17,857	$289,576.45	$23,549.95	8.13%	308.25	3,710.75	12.04	120,238
Route 60 - MRO	77,849	$428,514.96	$84,393.05	19.69%	307.00	5,509.50	17.95	108,351
Route 70 - Merced	3,247	$100,862.54	$8,467.02	8.39%	261.00	1,151.00	4.41	37,856
Turlock Shuttle	6,357	$246,988.24	$18,657.70	7.55%	307.00	3,055.50	9.95	61,847
Waterford RA	12,535	$239,046.84	$17,355.24	7.26%	307.00	3,136.50	10.22	53,729
Eastside Shuttle	4,757	$196,720.80	$11,032.52	5.61%	307.00	2,508.00	8.17	40,882
Medivan - Bay Area	2,931	$186,383.41	$25,201.42	13.52%	250.00	2,321.00	9.28	57,850
PDAR	9,411	$202,312.56	$12,635.03	6.25%	307.00	2,619.00	8.53	22,633
NDAR	7,554	$199,584.78	$7,852.64	3.93%	307.00	2,545.00	8.29	45,385
WDAR	3,349	$145,637.63	$4,009.15	2.75%	307.00	1,866.50	6.08	22,406
Sub-Total	**323,011**	**$3,170,513**	**$397,413**	**12.53%**	**3,834**	**40,365**	**10.53**	**834,635**

Figure II-47

ROUTE STATS
FY 2011/12

ROUTE STATISTICS								
Route	Passengers	Cost	Revenue	FB Ratio	Rev. Days	Rev. Hrs.	Av. Hrs./ Day	Miles
Route 10 - MT	103,459	$388,887.61	$108,006.81	27.77%	256.00	4,576.50	17.88	109,138
Route 15 - MT	55,320	$394,440.35	$66,369.80	16.83%	309.00	4,788.75	15.50	85,762
Route 40 - WSS	37,582	$283,042.41	$43,608.07	15.41%	305.00	3,362.50	11.02	72,643
Route 45 - WRA	20,304	$323,963.83	$33,257.97	10.27%	309.00	3,850.75	12.46	121,185
Route 60 - MRO	88,326	$484,970.24	$105,854.96	21.83%	309.00	5,887.75	19.05	109,343
Route 70 - Merced	5,164	$94,468.33	$13,911.72	14.73%	256.00	1,147.50	4.48	37,665
Turlock Shuttle	6,878	$256,882.47	$14,344.58	5.58%	309.00	3,092.00	10.01	63,736
Waterford RA	12,271	$249,959.78	$18,626.02	7.45%	309.00	3,159.50	10.22	53,268
Eastside Shuttle	4,471	$187,668.82	$9,767.26	5.20%	309.00	2,252.00	7.29	36,713
Medivan - Bay Area	2,931	$194,613.17	$23,320.60	11.98%	248.00	2,333.50	9.41	57,447
PDAR	9,218	$201,165.68	$15,493.64	7.70%	309.00	2,467.25	7.98	21,391
NDAR	7,014	$193,081.96	$7,500.81	3.88%	309.00	2,324.50	7.52	41,498
WDAR	3,760	$152,818.15	$4,935.74	3.23%	309.00	1,864.25	6.03	22,446
Sub-Total	**356,698**	**$3,405,962**	**$464,997**	**13.65%**	**3,846**	**41,106**	**10.69**	**832,235**

III. Ridecheck Analysis and Passenger Survey

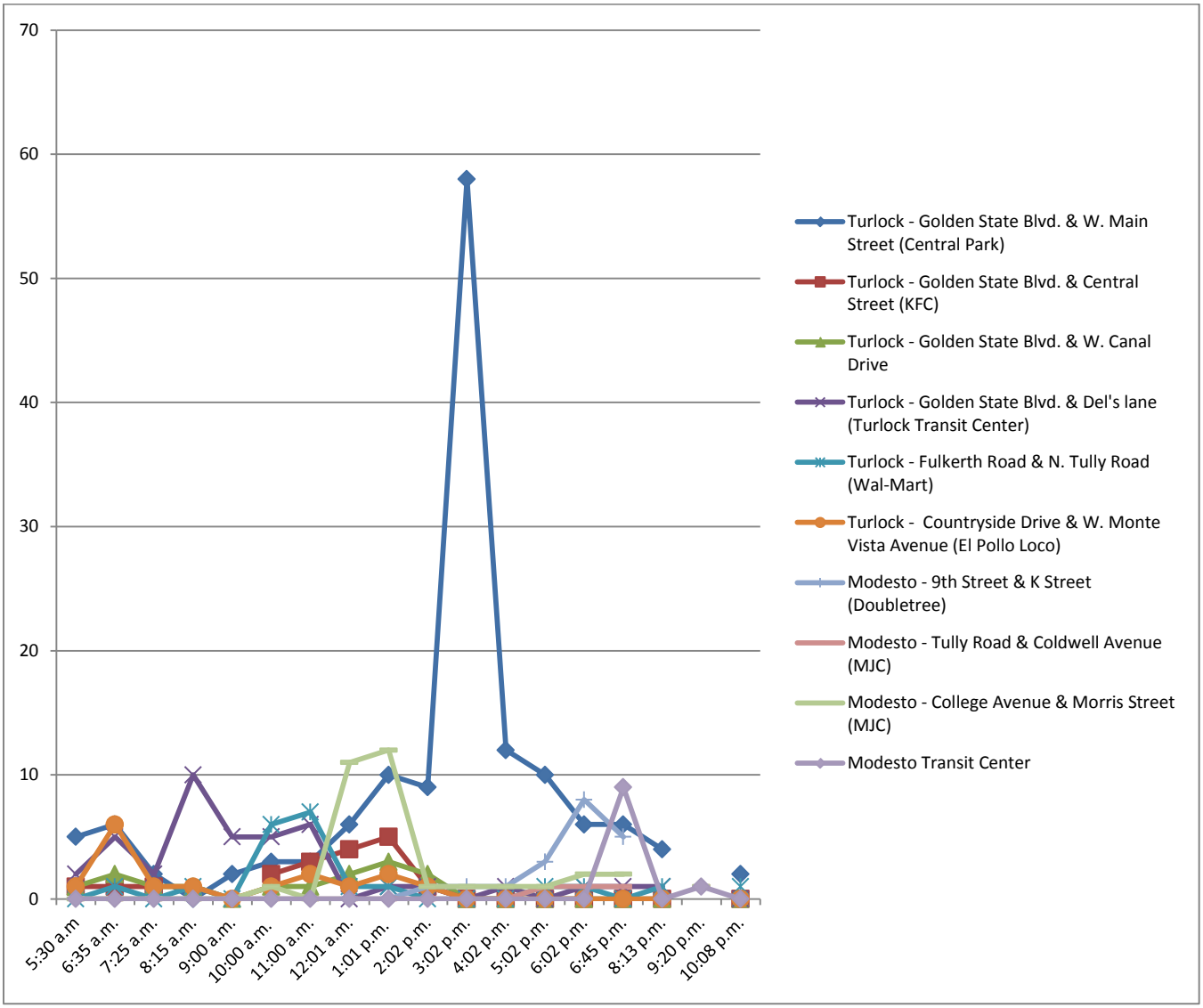
Ride checks

Ride checks were conducted on all StaRT routes during the weeks of October 7 and November 11, 2013 as part of the COA. Ridecheck data are critical to the identification of: potential schedule adherence problems; effectiveness of system connectivity (between StaRT routes and with other transit systems); productive and unproductive bus trips by time of day; the relative importance of bus stops; and key trip origins and destinations. The PMC team partnered with a Modesto-based personnel services firm to recruit and screen local surveyors. PMC team members provided training and supervision of the survey crew in the field.

The data are summarized and presented in matrix and graphical format. For each route segment, the total number of boardings observed, and the three highest boardings per stop and per trip are recorded. The boardings per stop identify the specific locations while the boardings per trip identify the time of day of greatest bus stop activity.

Route 10 Express – Northbound
Ridecheck Summary – October 8, 2013

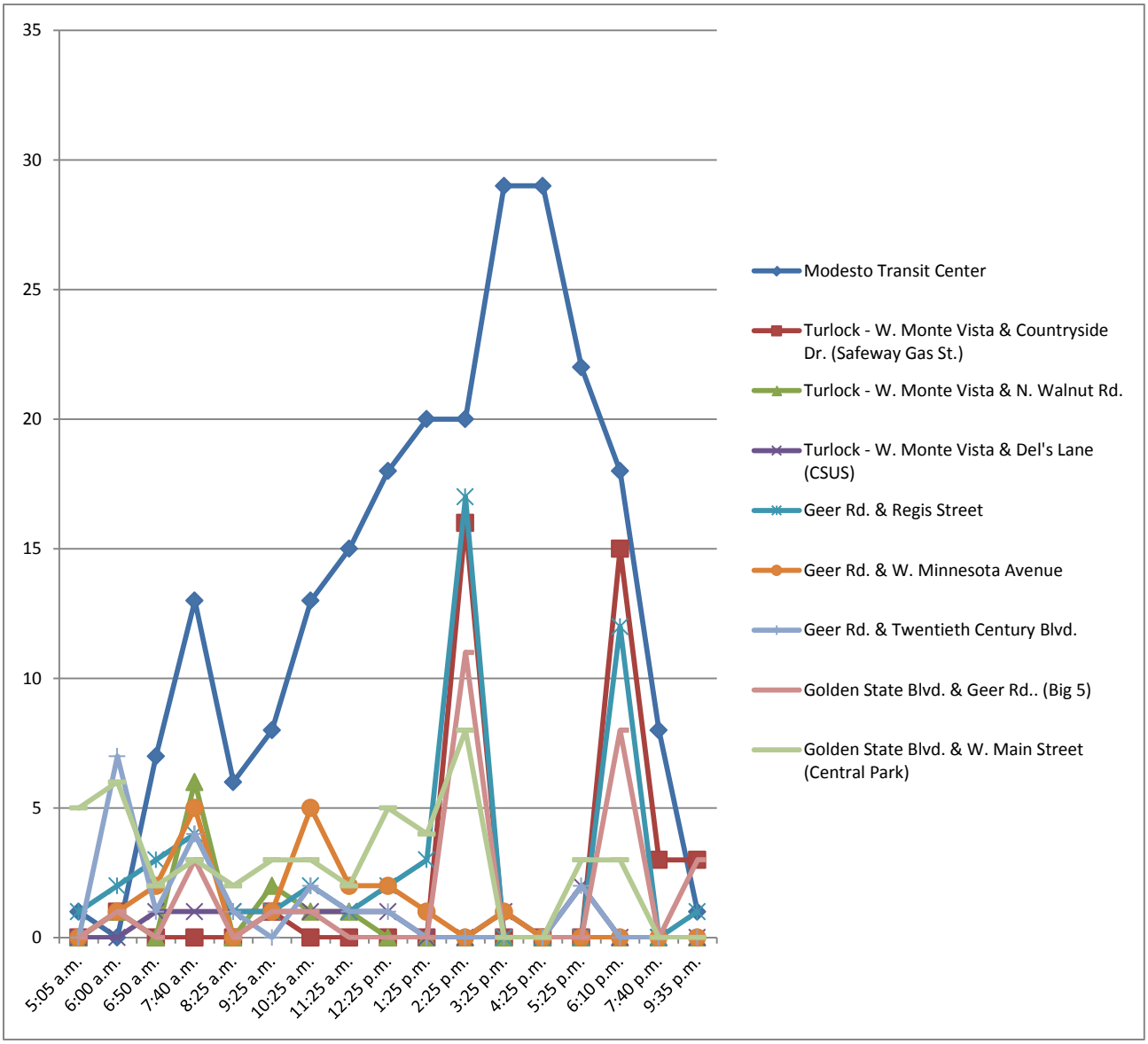
Total Number of Boardings Observed	**320**
Highest Number of Boardings Observed per Stop	
Turlock - Golden State Blvd. & W. Main Street (Central Park)	**144**
Turlock - Golden State Blvd. & Del's lane (Turlock Transit Center)	**41**
Modesto - College Avenue & Morris Street (MJC)	**33**
Highest Number of Boardings Observed per Trip	
3:02 p.m.	**60**
1:01 p.m.	**34**
12:01 p.m.	**25**



Route 10 Express – Southbound

Route 10 Express – Southbound
Ridecheck Summary – October 8, 2013

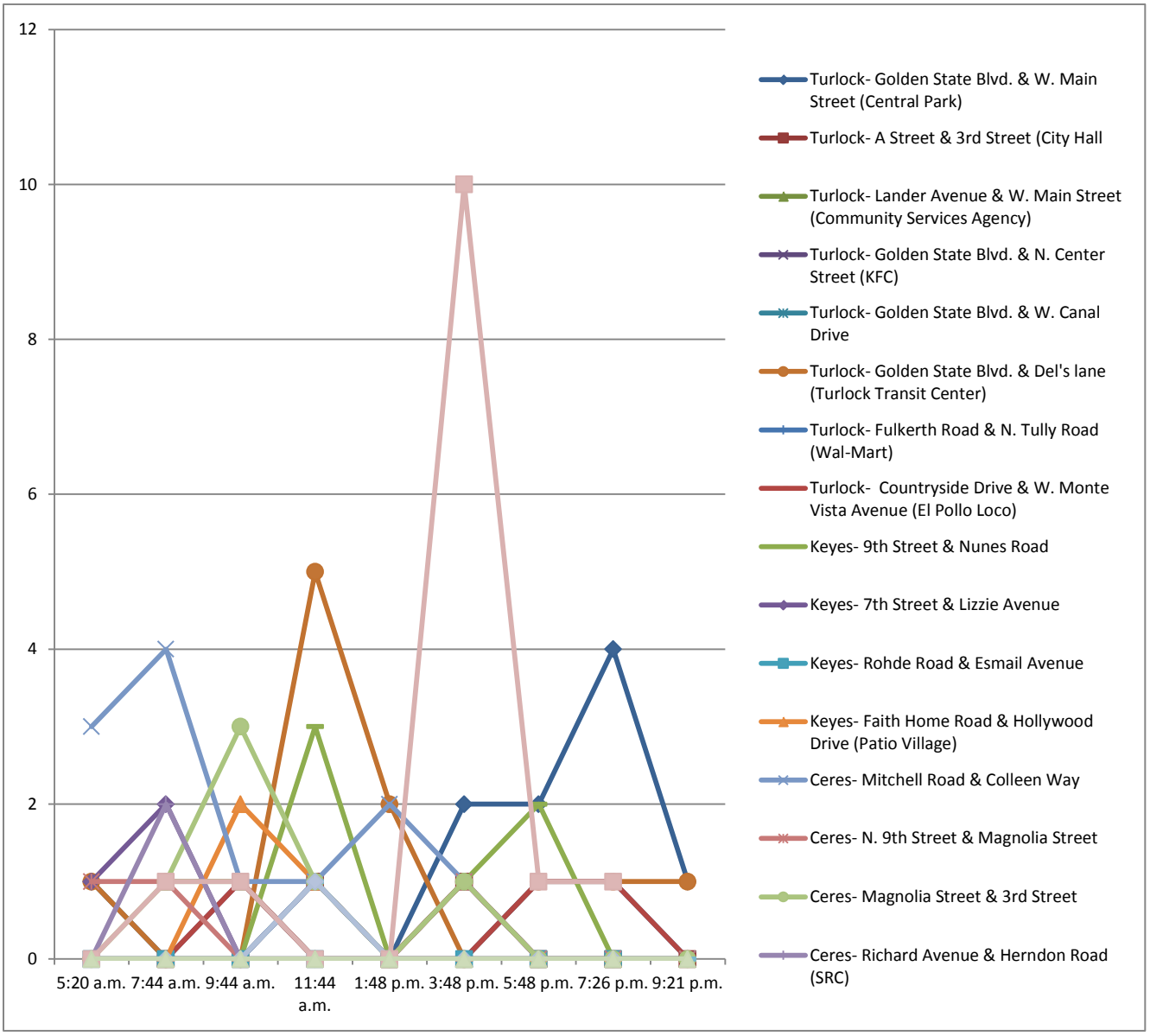
Total Number of Boardings Observed	**454**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**228**
Geer Rd. & Regis Street	**50**
Golden State Blvd. & W. Main Street (Central Park)	**49**
Highest Number of Boardings Observed per Trip	
2:25 p.m.	**72**
6:10 p.m.	**56**
7:40 a.m.	**39**



Route 15 – Northbound Weekday Service

Route 15 Northbound Weekday Service
Ridecheck Summary – October 10, 2013

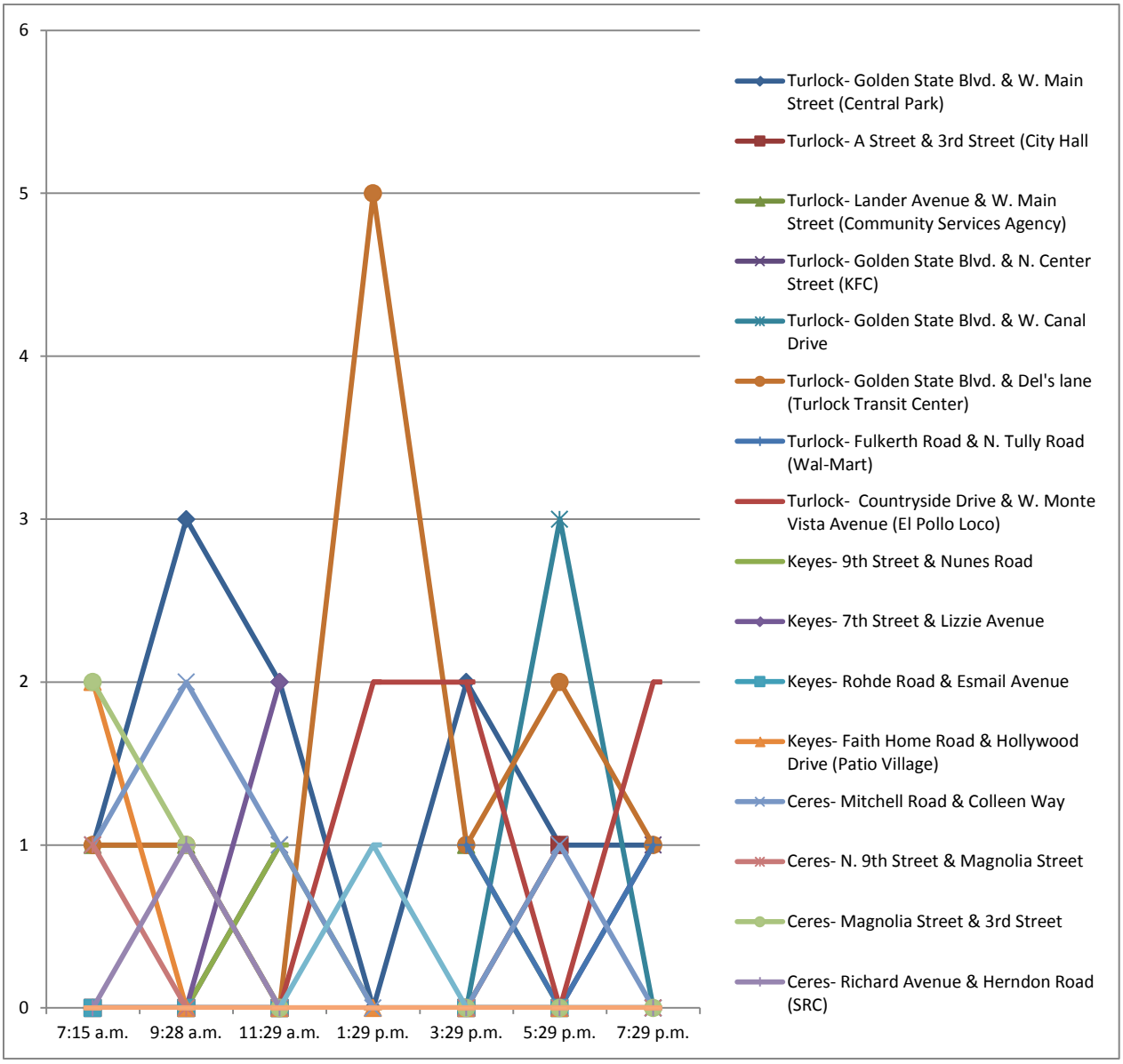
Total Number of Boardings Observed	**85**
Highest Number of Boardings Observed per Stop	
Modesto- College Avenue & Morris Avenue (MJC)	**14**
Ceres- Mitchell Road & Colleen Way	**12**
Turlock- Golden State Blvd. & Del's lane (Turlock Transit Center)	**11**
Highest Number of Boardings Observed per Trip	
3:48 p.m.	**18**
11:44 a.m.	**16**
7:44 a.m.	**12**



Route 15 – Northbound Saturday Service

Route 15 Northbound Saturday Service
Ridecheck Summary – October 19, 2013

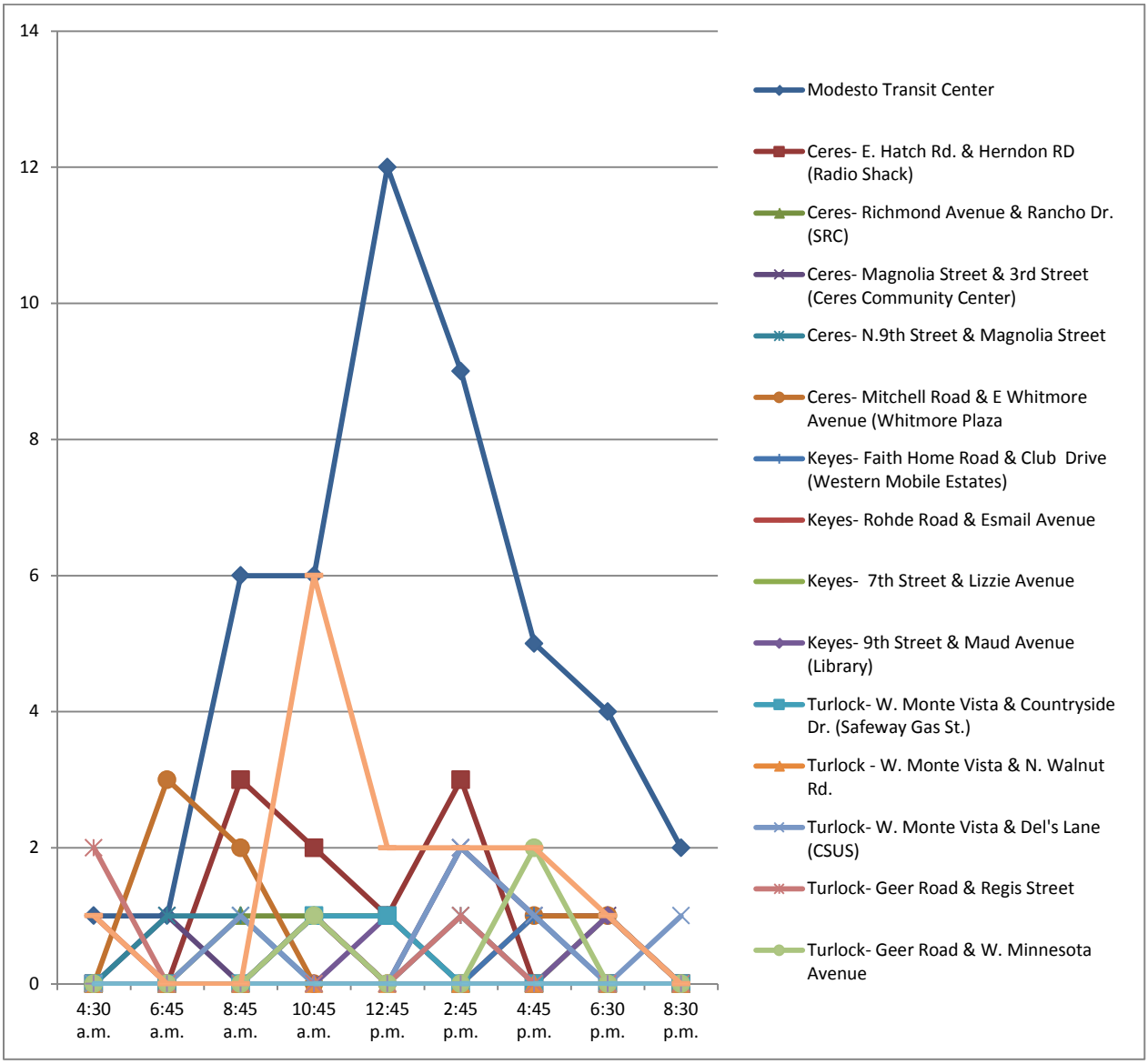
Total Number of Boardings Observed	**54**
Highest Number of Boardings Observed per Stop	
Turlock- Golden State Blvd. & Del's lane (Turlock Transit Center)	**11**
Turlock- Golden State Blvd. & W. Main Street (Central Park)	**10**
Turlock- Countryside Drive & W. Monte Vista Avenue (El Pollo Loco)	**6**
Highest Number of Boardings Observed per Trip	
7:15 a.m. & 9:28 a.m.	**9**
1:29 p.m. & 5:29 p.m.	**8**
11:29 a.m. & 3:29 p.m.	**7**



Route 15 – Southbound Weekday Service

Route 15 Southbound Weekday Service
Ridecheck Summary – October 10, 2013

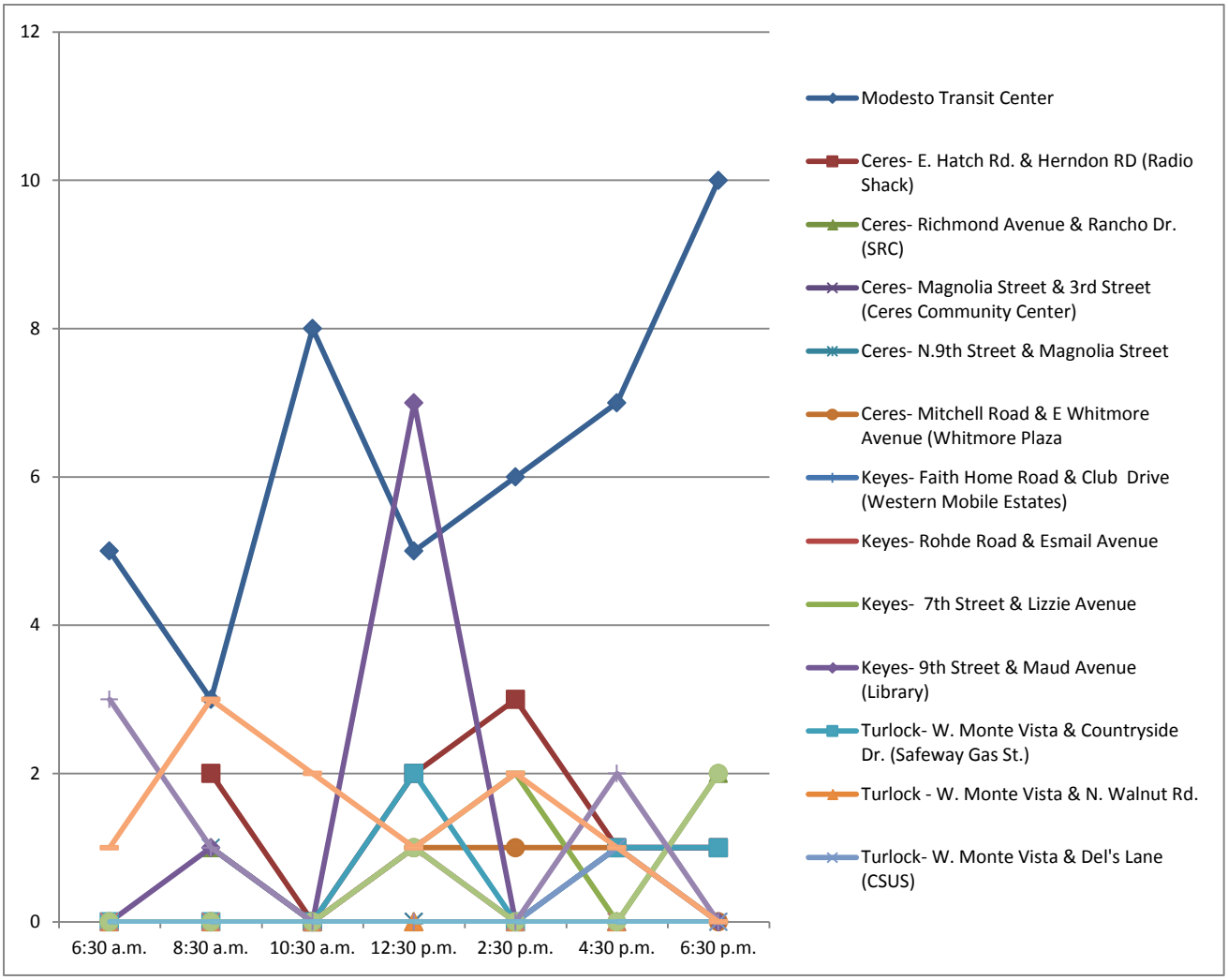
Total Number of Boardings Observed	**108**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**46**
Turlock- Golden State Blvd. & W. Main Street (Central Park)	**14**
Ceres- E. Hatch Rd. & Herndon RD (Radio Shack)	**9**
Highest Number of Boardings Observed per Trip	
10:45 a.m. & 2:45 p.m.	**20**
12:45 p.m.	**18**
8:45 a.m.	**14**



Route 15 – Southbound Saturday Service

Route 15 Southbound Saturday Service
Ridecheck Summary – October 19, 2013

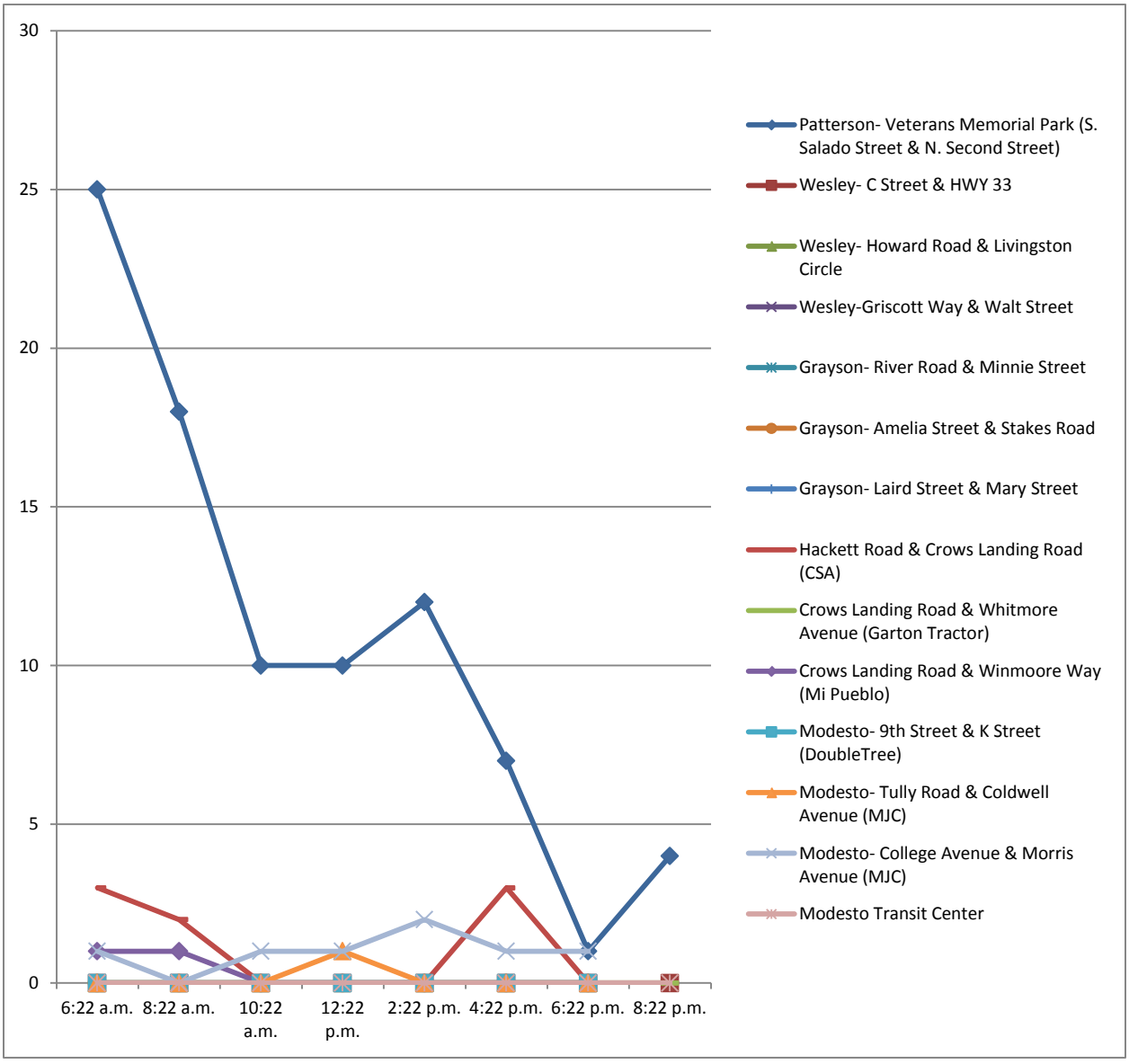
Total Number of Boardings Observed	**99**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**44**
Turlock- Golden State Blvd. & W. Main Street (Central Park)	**10**
Ceres- E. Hatch Rd. & Herndon Rd. (Radio Shack)	**9**
Highest Number of Boardings Observed per Trip	
12:30 p.m.	**22**
6:30 p.m.	**17**
4:30 p.m.	**15**



Route 40 – Eastbound Weekday Service

Route 40 Eastbound Weekday Service
Ridecheck Summary – October 10, 2013

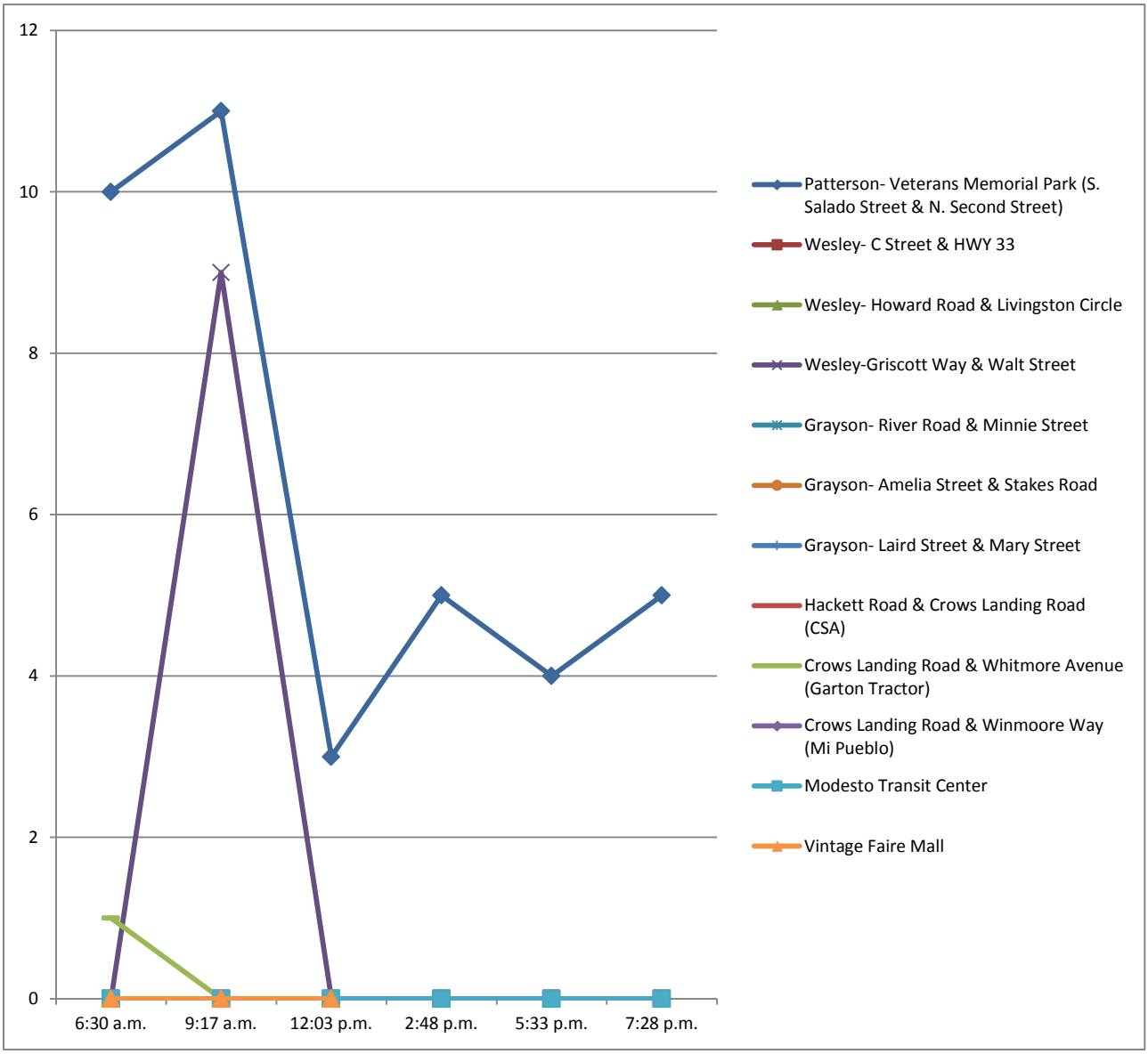
Total Number of Boardings Observed	**105**
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**87**
Hackett Road & Crows Landing Road (CSA)	**8**
Modesto- College Avenue & Morris Avenue (MJC)	**7**
Highest Number of Boardings Observed per Trip	
6:22 a.m.	**30**
8:22 a.m.	**21**
2:22 p.m.	**14**



Route 40 – Eastbound Saturday Service

Route 40 Eastbound Saturday Service
Ridecheck Summary – October 12, 2013

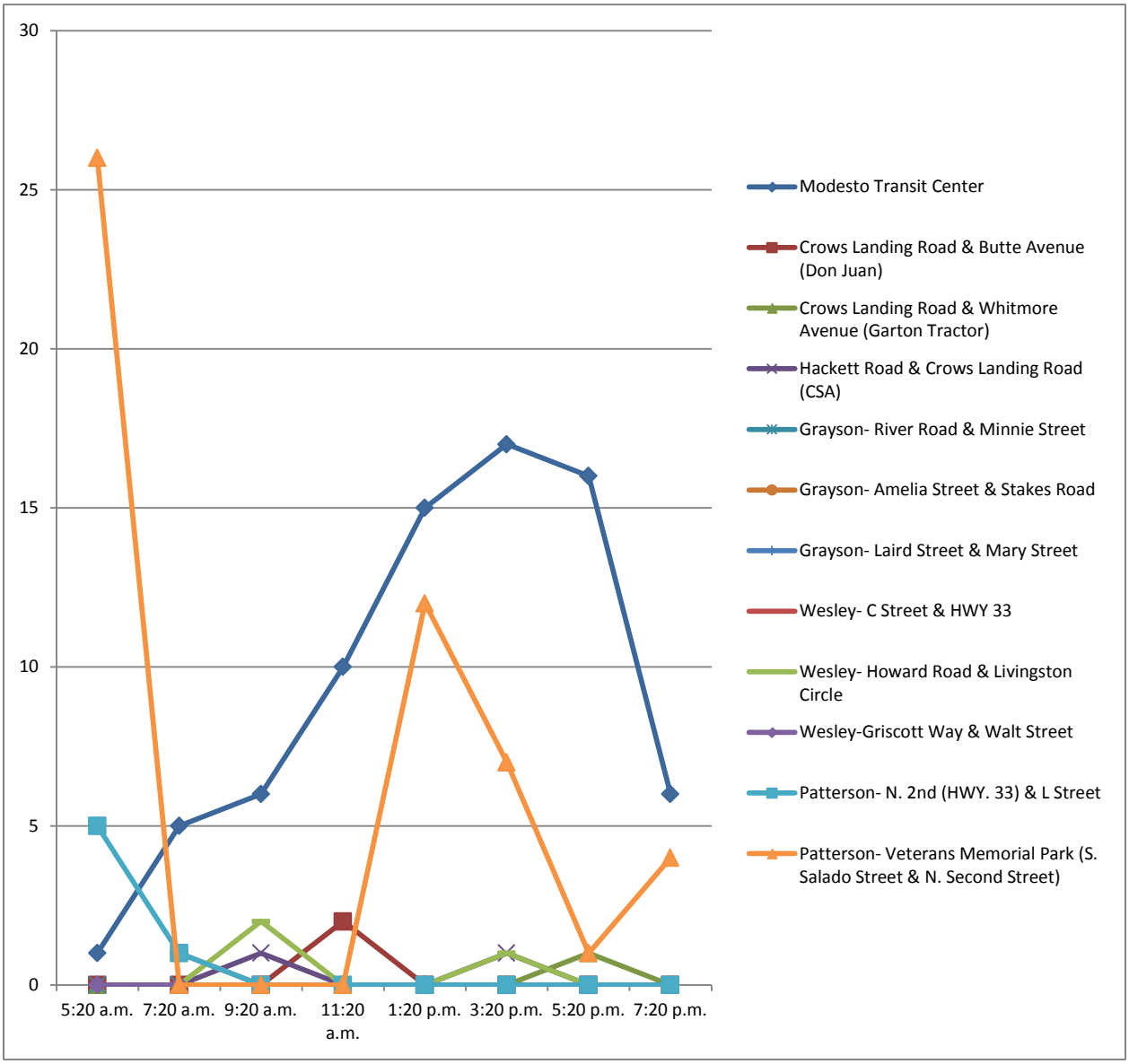
Total Number of Boardings Observed	**48**
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**38**
Wesley-Griscott Way & Walt Street	**9**
Crows Landing Road & Whitmore Avenue (Garton Tractor)	**1**
Highest Number of Boardings Observed per Trip	
9:17 a.m.	**20**
6:30 a.m.	**11**
2:48 p.m. & 7:28 p.m.	**5**



Route 40 – Westbound Weekday Service (From the Modesto Transit Center)

Route 40 Westbound Weekday Service
Ridecheck Summary – October 8-10, 2013

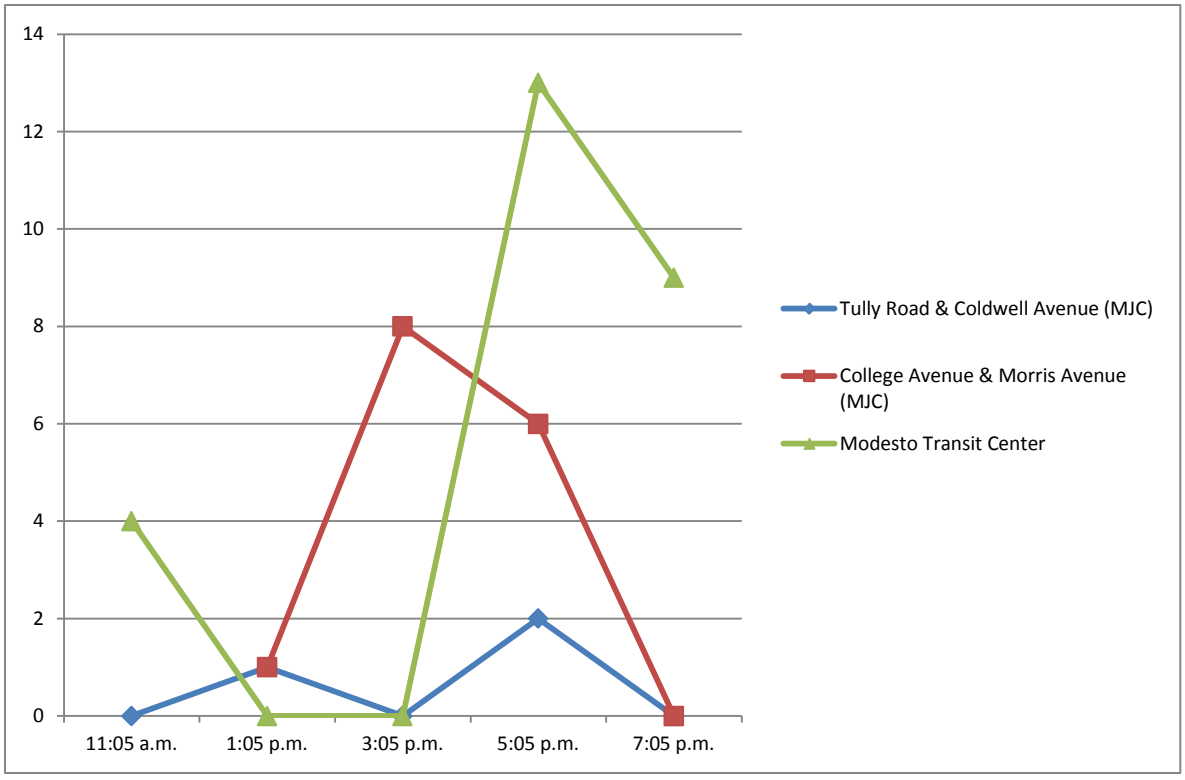
Total Number of Boardings Observed	**141**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**76**
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**50**
Patterson- N. 2nd (HWY. 33) & L Street	**6**
Highest Number of Boardings Observed per Trip	
5:20 a.m.	**32**
1:20 p.m.	**27**
3:20 p.m.	**26**



Route 40 – Westbound Weekday Service (Between Modesto Junior College & the Modesto Transit Center)

Route 40 Westbound Weekday Service
Ridecheck Summary – October 10, 2013

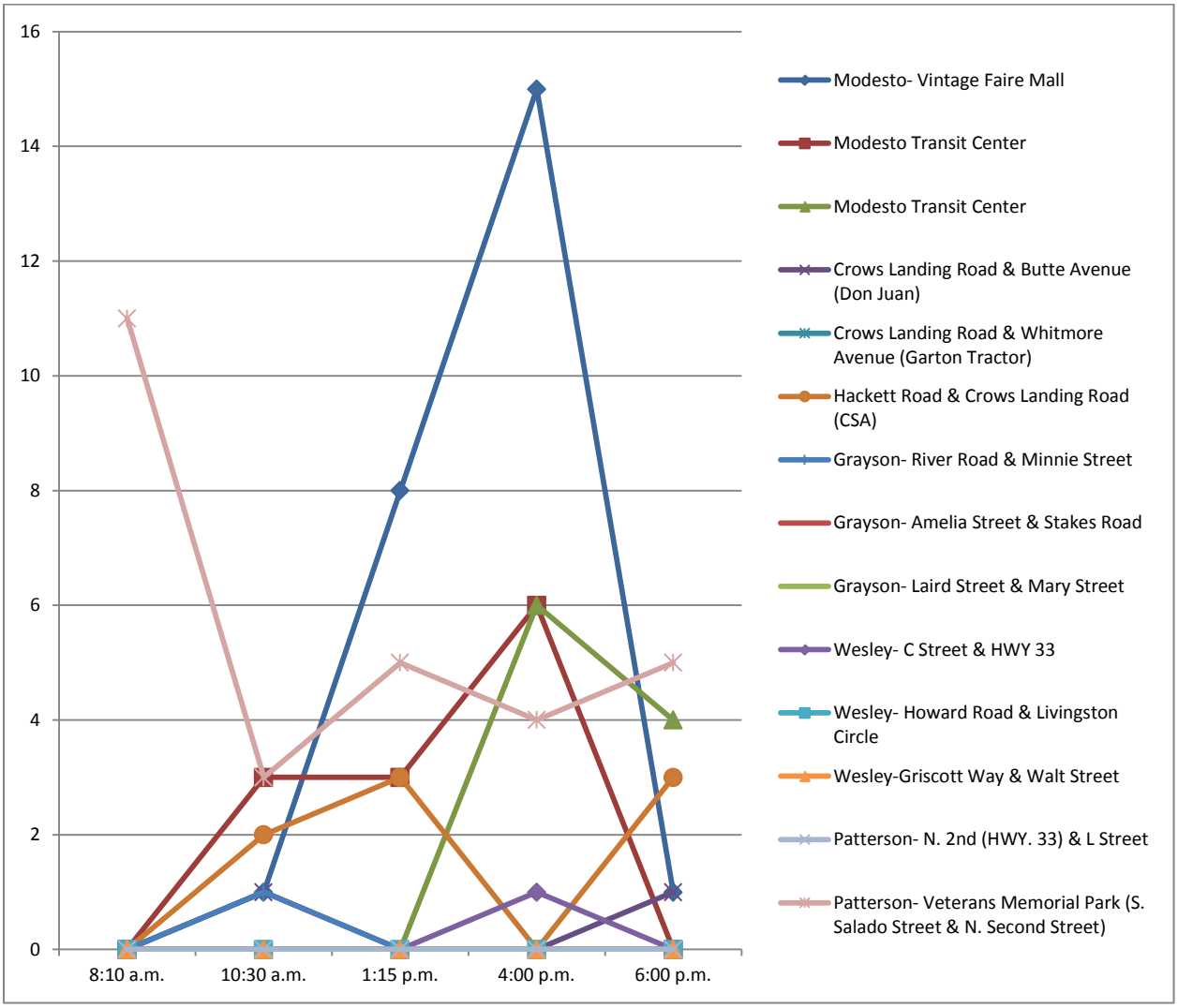
Total Number of Boardings Observed	**44**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**26**
College Avenue & Morris Avenue (MJC)	**15**
Tully Road & Coldwell Avenue (MJC)	**3**
Highest Number of Boardings Observed per Trip	
5:05 p.m.	**21**
7:05 p.m.	**9**
3:05 p.m.	**8**



Route 40 – Westbound Saturday Service

Route 40 Westbound Saturday Service
Ridecheck Summary – October 12, 2013

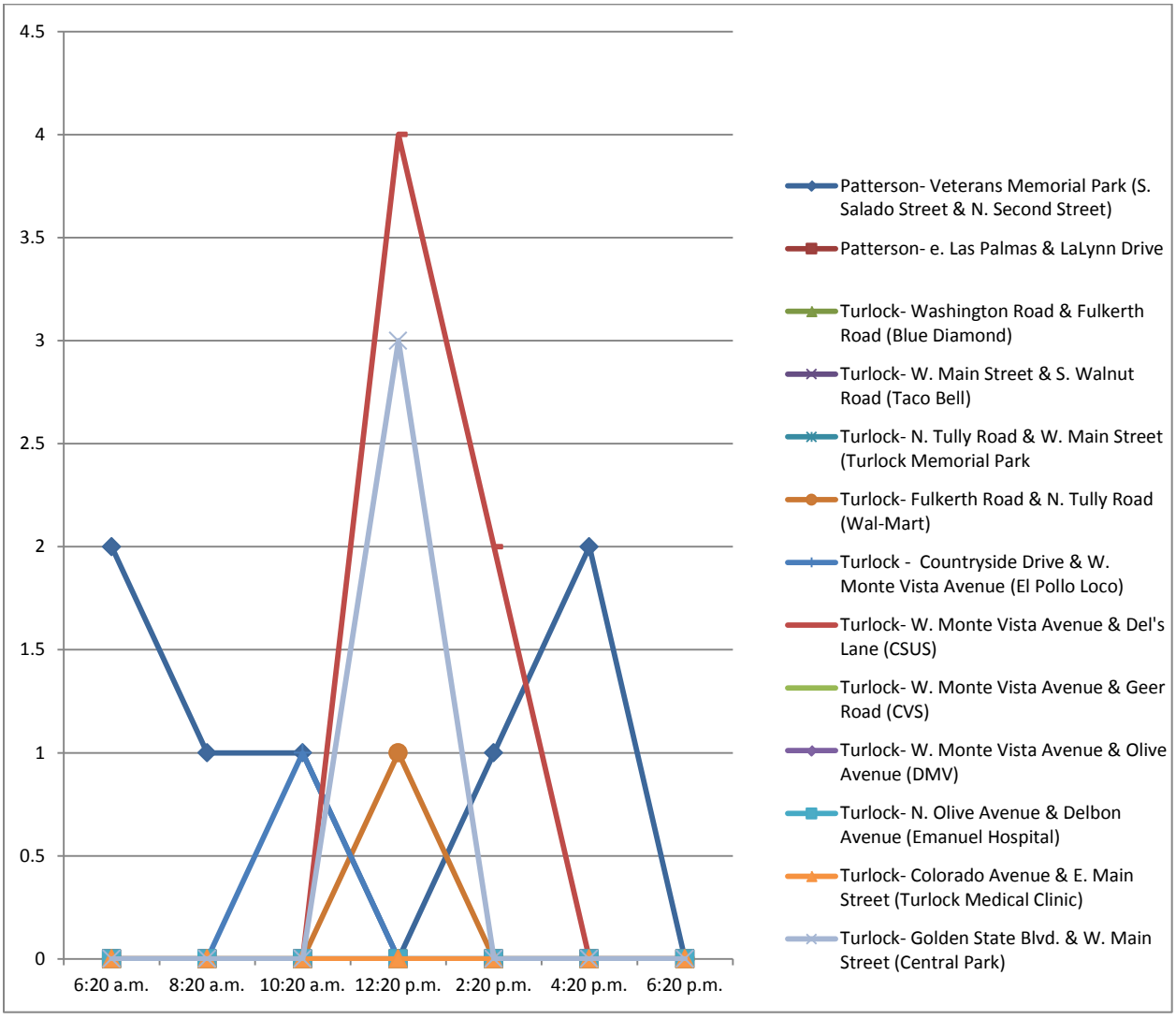
Total Number of Boardings Observed	**87**
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**28**
Modesto- Vintage Faire Mall	**25**
Modesto Transit Center (1st Pickup)	**12**
Modesto Transit Center (2nd Pickup)	**10**
Highest Number of Boardings Observed per Trip	
4:00 p.m.	**32**
1:15 p.m.	**19**
6:00 p.m.	**14**



Route 45E – Eastbound Weekday Service

Route 45E Eastbound Weekday Service
Ridecheck Summary – October 8-10, 2013

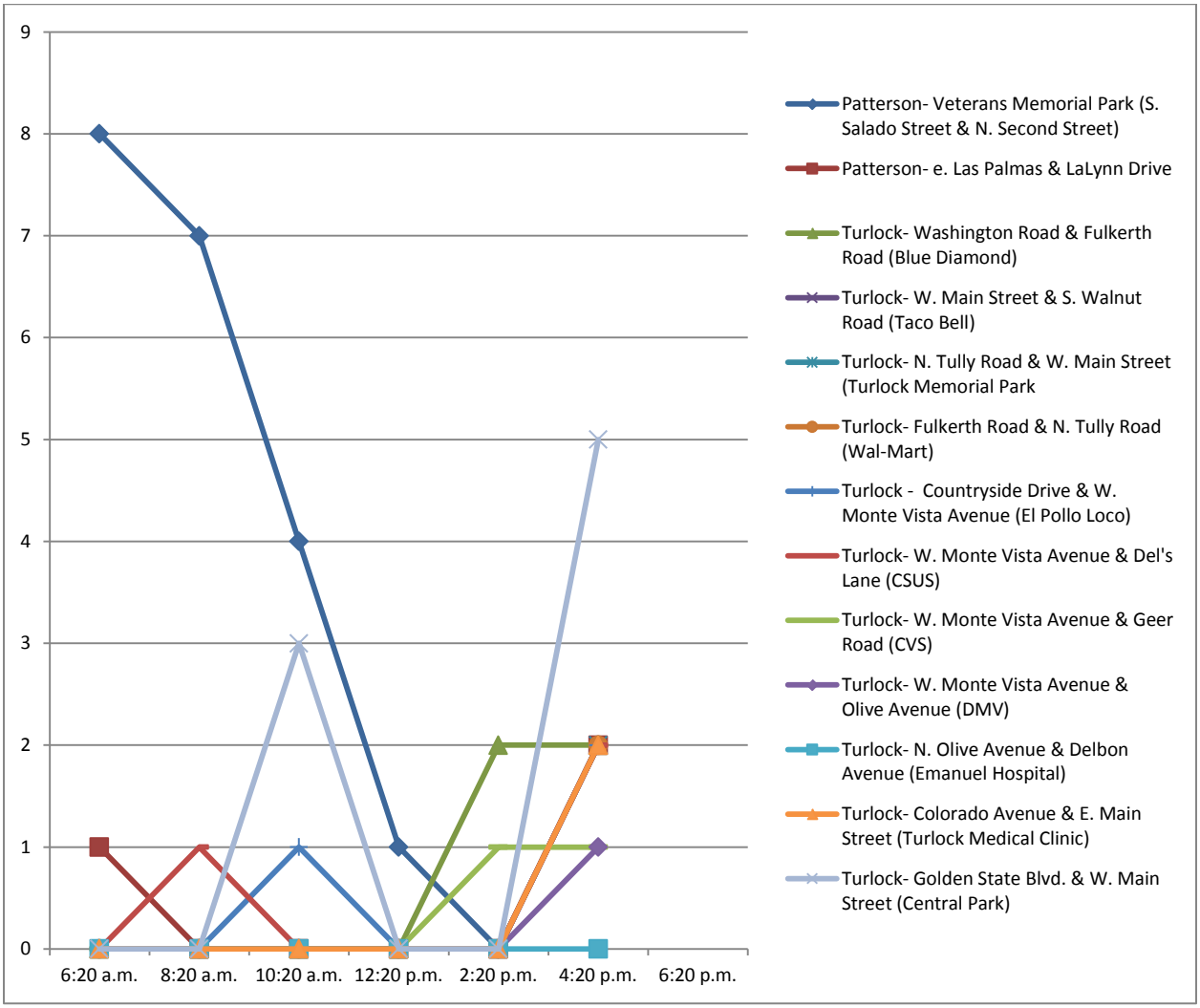
Total Number of Boardings Observed	**18**
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**7**
Turlock- W. Monte Vista Avenue & Del's Lane (CSUS)	**6**
Turlock- Golden State Blvd. & W. Main Street (Central Park)	**3**
Highest Number of Boardings Observed per Trip	
12:20 p.m.	**8**
2:20 p.m.	**3**
6:20 a.m., 10:20 a.m. & 4:20 p.m.	**2**



Route 45E – Eastbound Weekday Service

Route 45E Eastbound Weekday Service
Ridecheck Summary – October 9-11, 2013

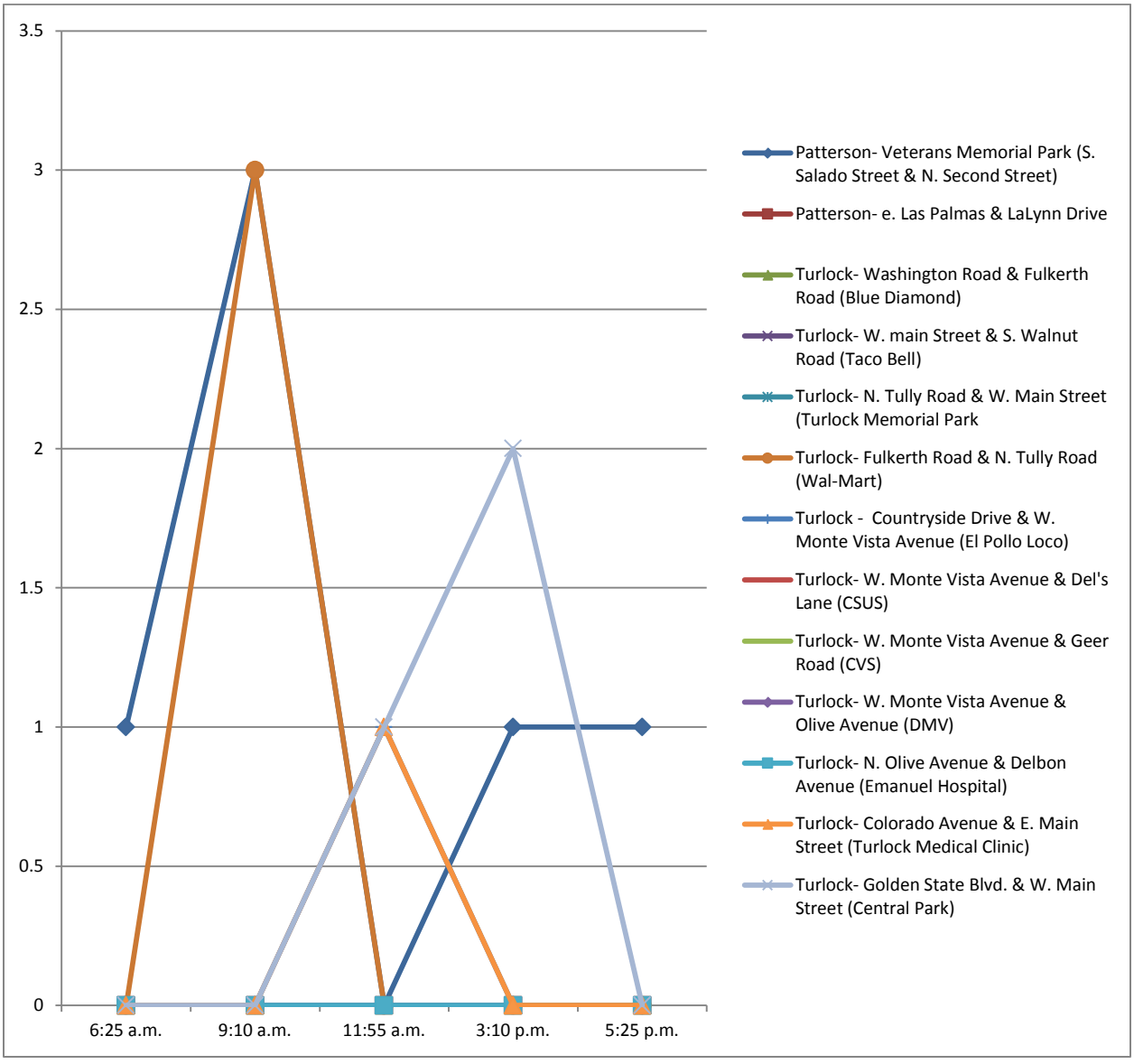
Total Number of Boardings Observed	**54**
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**22**
Turlock- Golden State Blvd. & W. Main Street (Central Park)	**8**
Turlock- Washington Road & Fulkerth Road (Blue Diamond)	**4**
Highest Number of Boardings Observed per Trip	
4:20 p.m.	**25**
6:20 a.m.	**9**
8:20 a.m. & 10:20 a.m.	**8**



Route 45E – Eastbound Saturday Service

Route 45E Eastbound Saturday Service
Ridecheck Summary – October 12, 2013

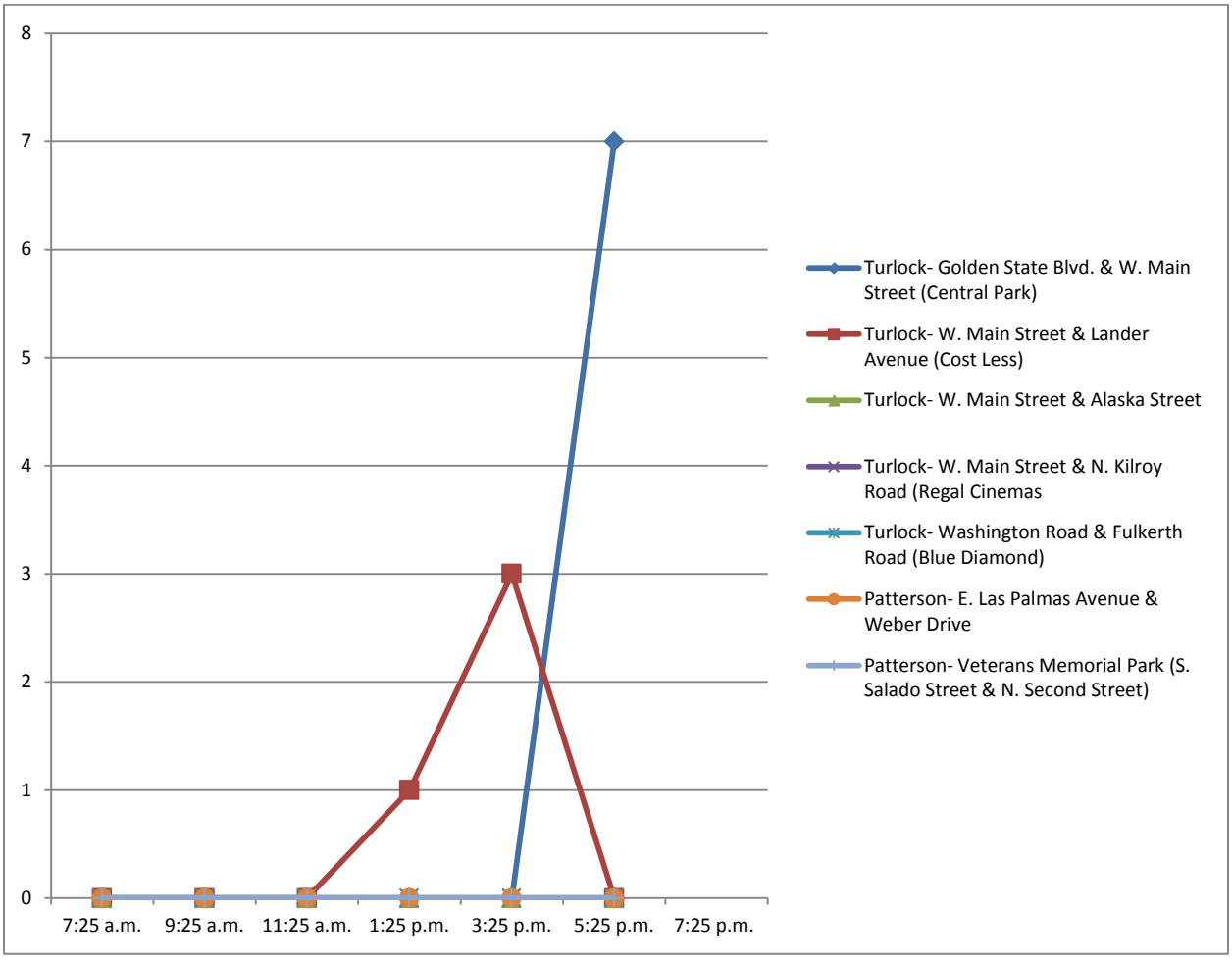
Total Number of Boardings Observed	14
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	6
Turlock- Fulkerth Road & N. Tully Road (Wal-Mart)	3
Turlock- Golden State Blvd. & W. Main Street (Central Park)	3
Highest Number of Boardings Observed per Trip	
9:10 a.m.	6
11:55 a.m. & 3:10 p.m.	3
6:25 a.m. & 5:25 p.m.	1



Route 45E – Westbound Weekday Service

Route 45E Westbound Weekday Service
Ridecheck Summary – October 10, 2013

Total Number of Boardings Observed	**11**
Highest Number of Boardings Observed per Stop	
Turlock- Golden State Blvd. & W. Main Street (Central Park)	**7**
Turlock- W. Main Street & Lander Avenue (Cost Less)	**4**
Highest Number of Boardings Observed per Trip	
5:25 p.m.	**7**
3:25 p.m.	**3**
1:25 p.m.	**1**

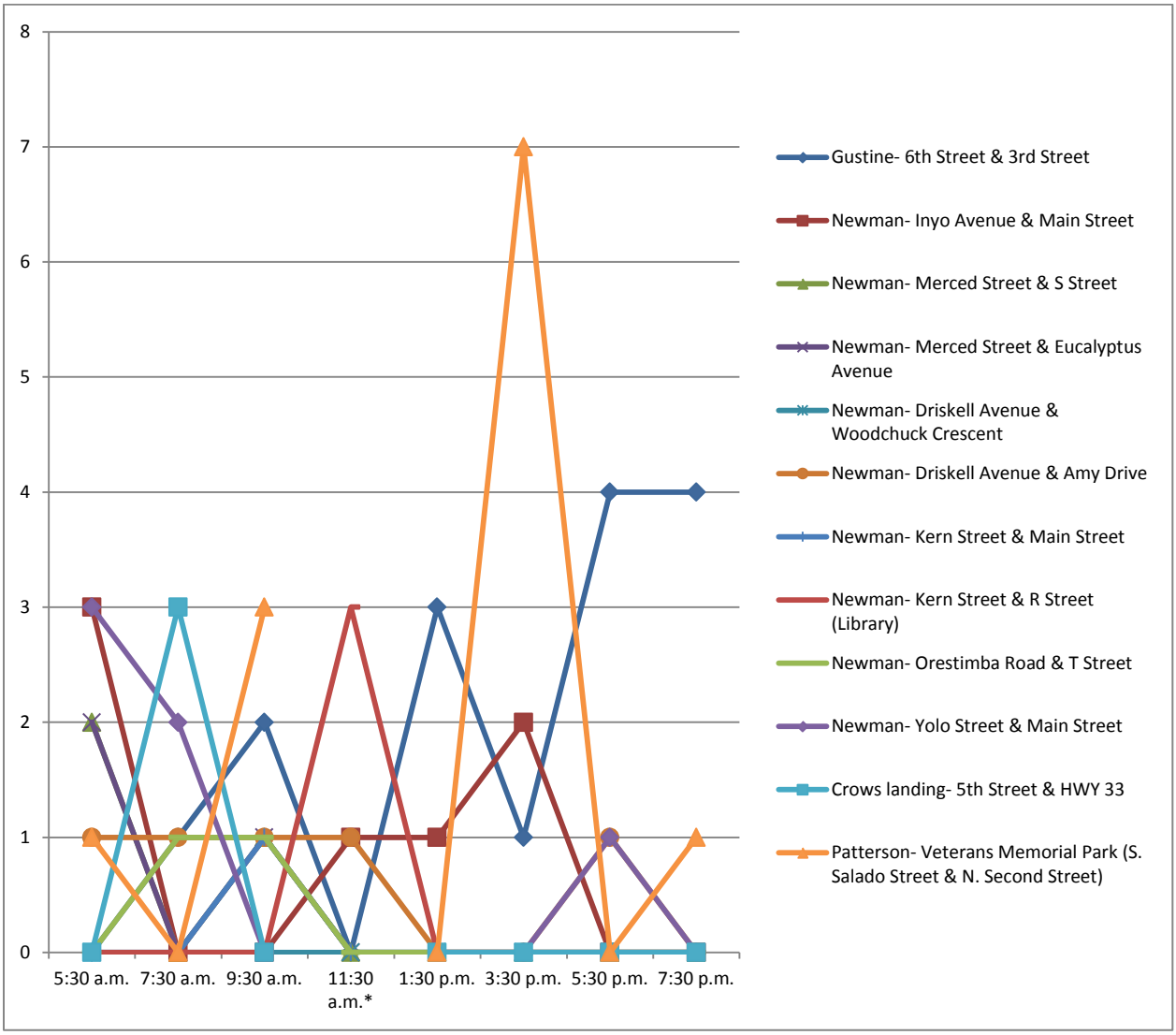


Route 45W – Northbound Weekday Service

Route 45W Northbound Weekday Service
Ridecheck Summary – October 8, 2013

Total Number of Boardings Observed	**60**
Highest Number of Boardings Observed per Stop	
Gustine- 6th Street & 3rd Street	**15**
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**12**
Newman- Inyo Avenue & Main Street	**7**
Highest Number of Boardings Observed per Trip	
5:30 a.m.	**12**
9:30 a.m. & 3:30 p.m.	**10**
7:30 a.m.	**8**

**The 11:30 a.m. trip experienced a roadcall interruption in Newman at Yolo and Main Streets.*

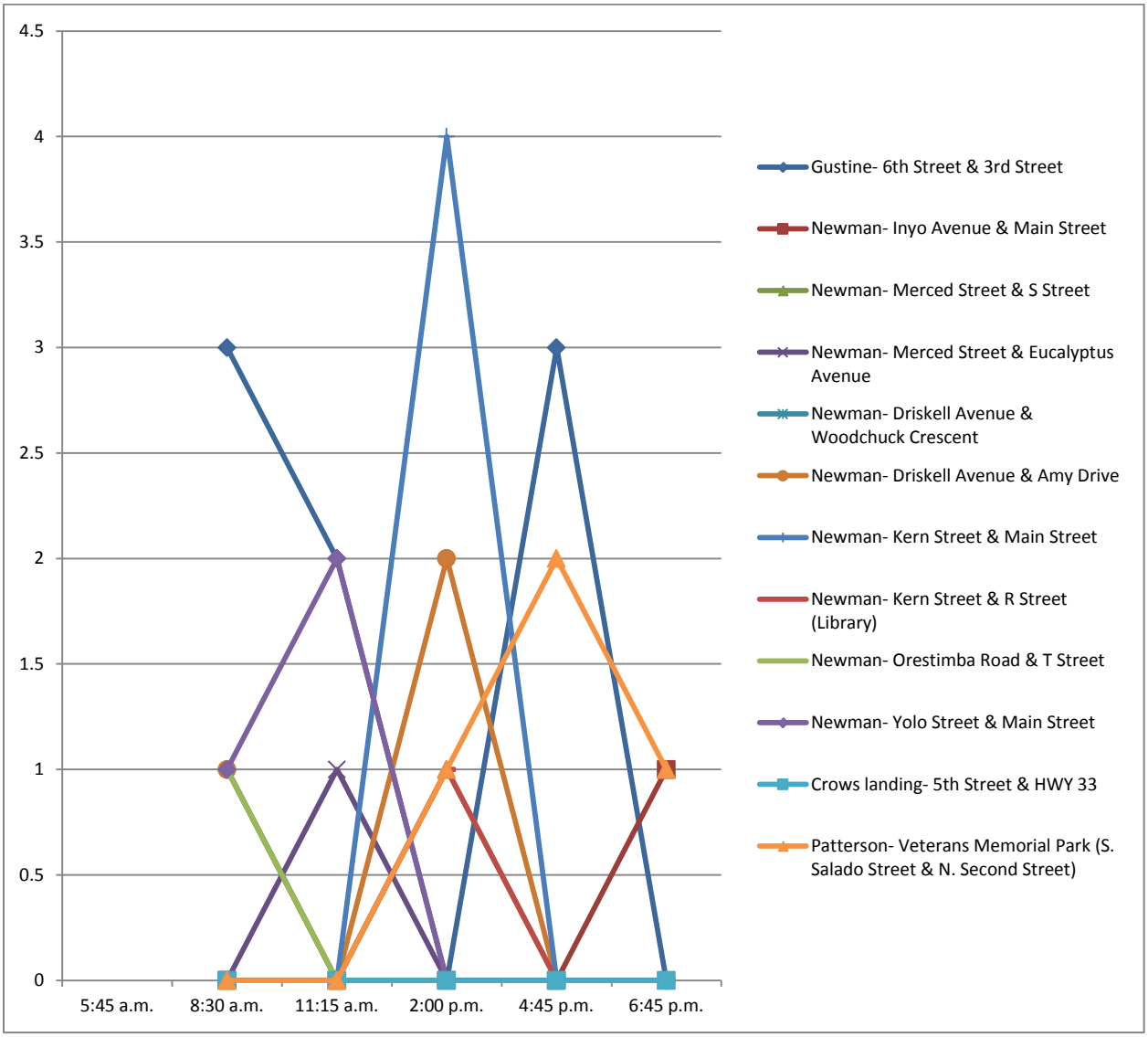


Route 45W – Northbound Saturday Service

Route 45W Northbound Saturday Service
Ridecheck Summary – October 12, 2013

Total Number of Boardings Observed	**28**
Highest Number of Boardings Observed per Stop	
Gustine- 6th Street & 3rd Street	**8**
Newman- Kern Street & Main Street	**5**
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street)	**4**
Highest Number of Boardings Observed per Trip	
2:00 p.m.	**9**
8:30 a.m.	**7**
11:15 a.m. & 4:45 p.m.	**5**

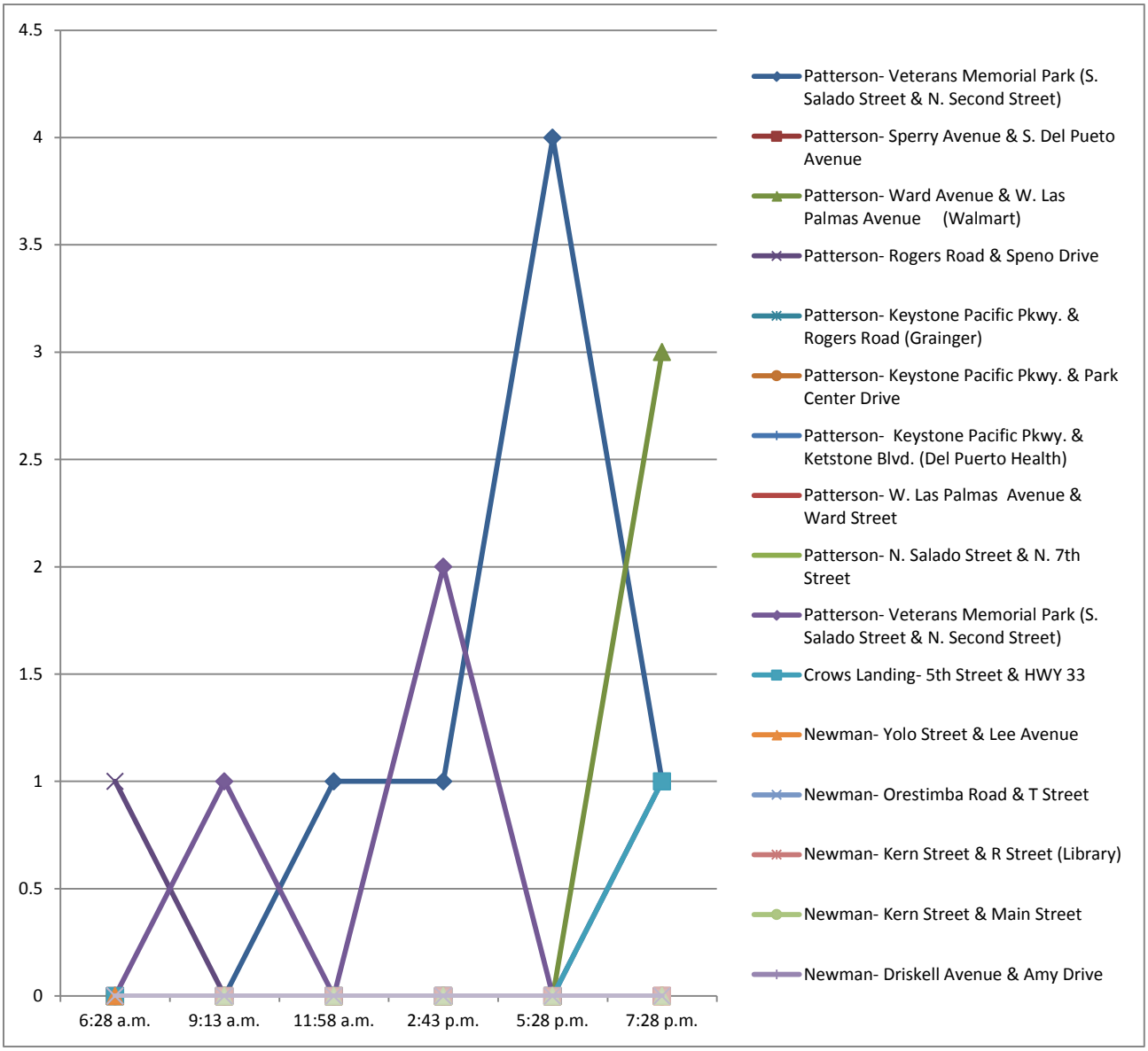
**The 5:45 a.m. ridecheck was not conducted.*



Route 45W – Southbound Saturday Service

Route 45W Southbound Saturday Service
Ridecheck Summary – October 12, 2013

Total Number of Boardings Observed	**16**
Highest Number of Boardings Observed per Stop	
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street) – 1st Stop	**7**
Patterson- Veterans Memorial Park (S. Salado Street & N. Second Street) – 2nd Stop	**4**
Patterson- Ward Avenue & W. Las Palmas Avenue (Wal-Mart)	**3**
Highest Number of Boardings Observed per Trip	
7:28 p.m.	**6**
5:28 p.m.	**4**
2:43 p.m.	**3**

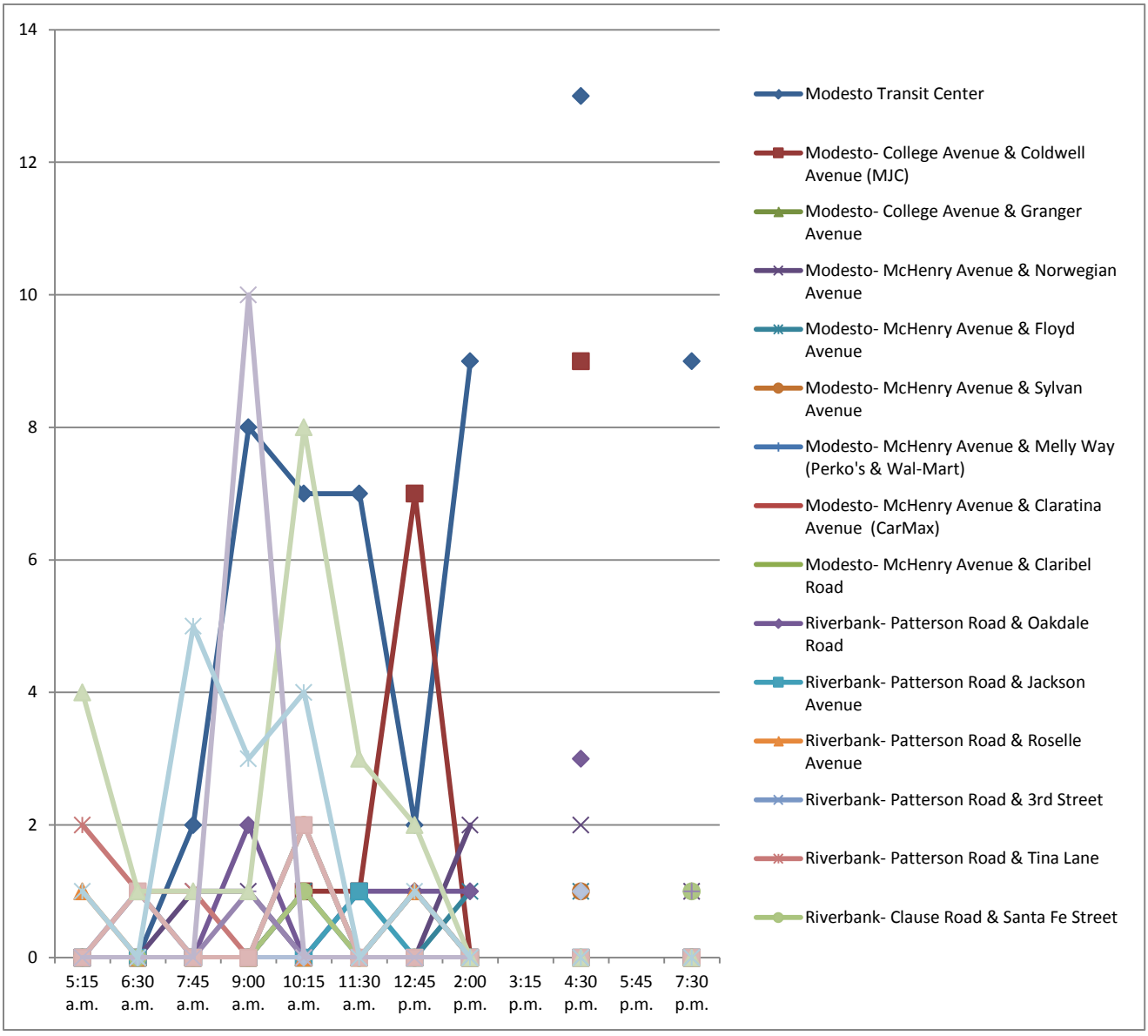


Route 60 – Eastbound Weekday Service

Route 60 Eastbound Weekday Service
Ridecheck Summary – October 8-10 & November 11, 2013

Total Number of Boardings Observed	**161**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**57**
Oakdale- E. G Street & S. Sierra Avenue	**20**
Modesto- College Avenue & Coldwell Avenue (MJC)	**18**
Highest Number of Boardings Observed per Trip	
4:30 p.m.	**31**
10:15 a.m.	**28**
9:00 a.m.	**26**

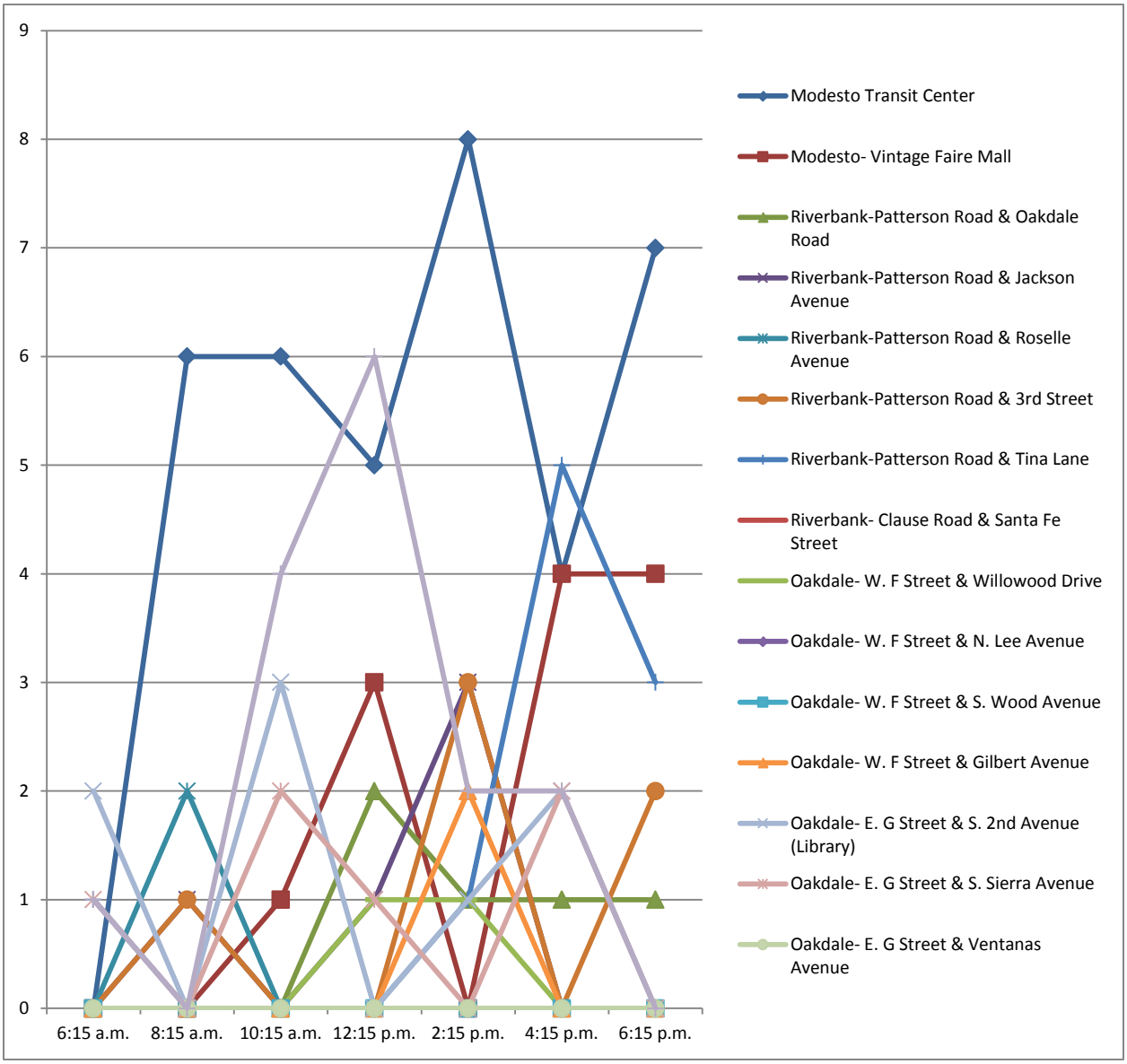
**The 3:15 p.m. & 5:45 p.m. ridechecks were not conducted.*



Route 60 – Eastbound Saturday Service

Route 60 Eastbound Saturday Service
Ridecheck Summary – October 12, 2013

Total Number of Boardings Observed	**109**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**36**
Oakdale- S. Maag Avenue & E. F Street (K-Mart)	**15**
Modesto- Vintage Faire Mall	**12**
Highest Number of Boardings Observed per Trip	
2:15 p.m.	**22**
4:15 p.m.	**20**
12:15 p.m.	**19**

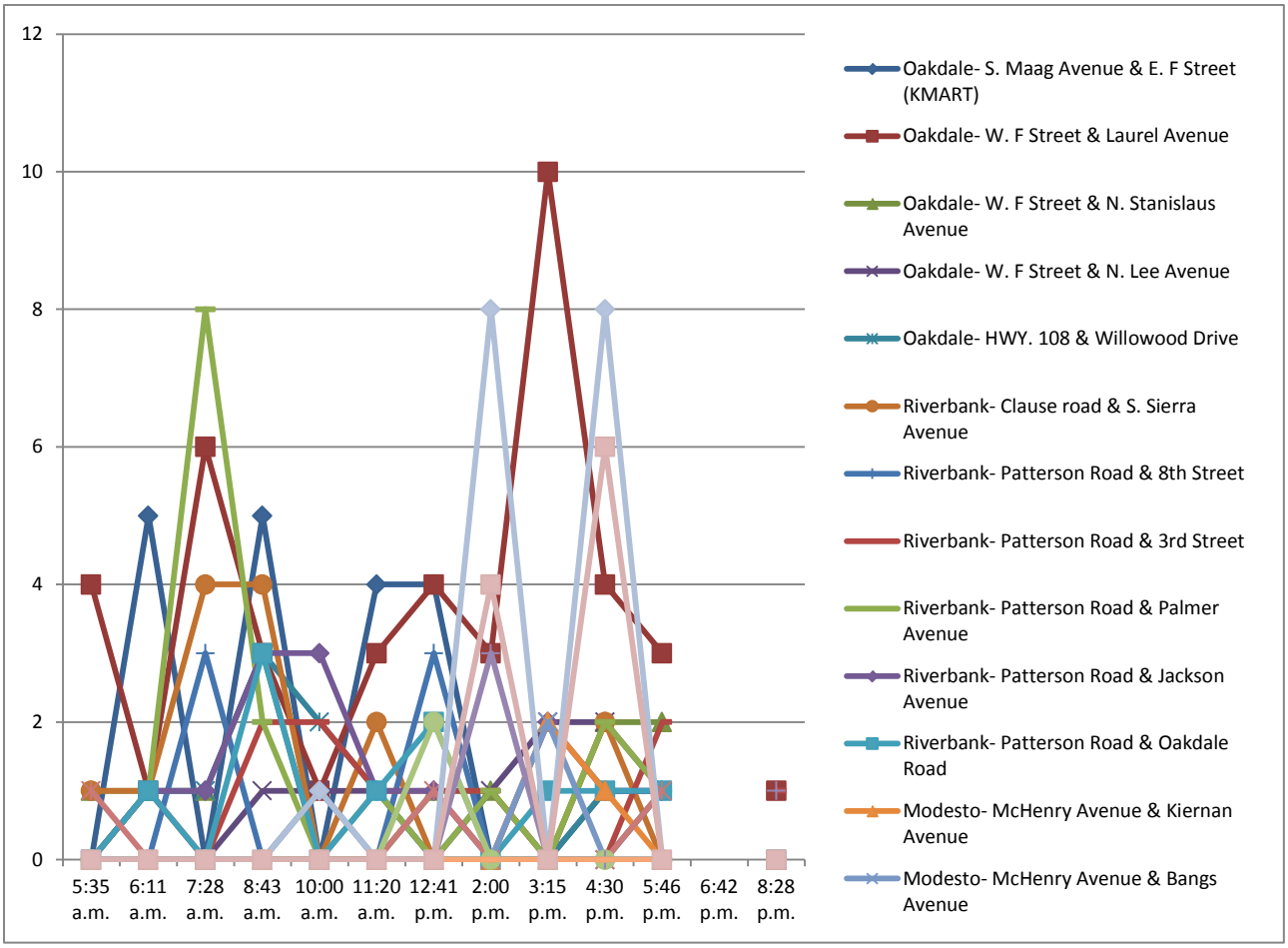


Route 60 – Westbound Weekday Service

Route 60 Westbound Weekday Service
Ridecheck Summary – October 9-10, 2013

Total Number of Boardings Observed	**208**
Highest Number of Boardings Observed per Stop	
Oakdale- W. F Street & Laurel Avenue	**43**
Oakdale- S. Maag Avenue & E. F Street (K-Mart)	**20**
Modesto- College Avenue & Morris Avenue (MJC)	**17**
Highest Number of Boardings Observed per Trip	
4:30 p.m.	**31**
8:43 a.m.	**29**
7:28 a.m.	**24**

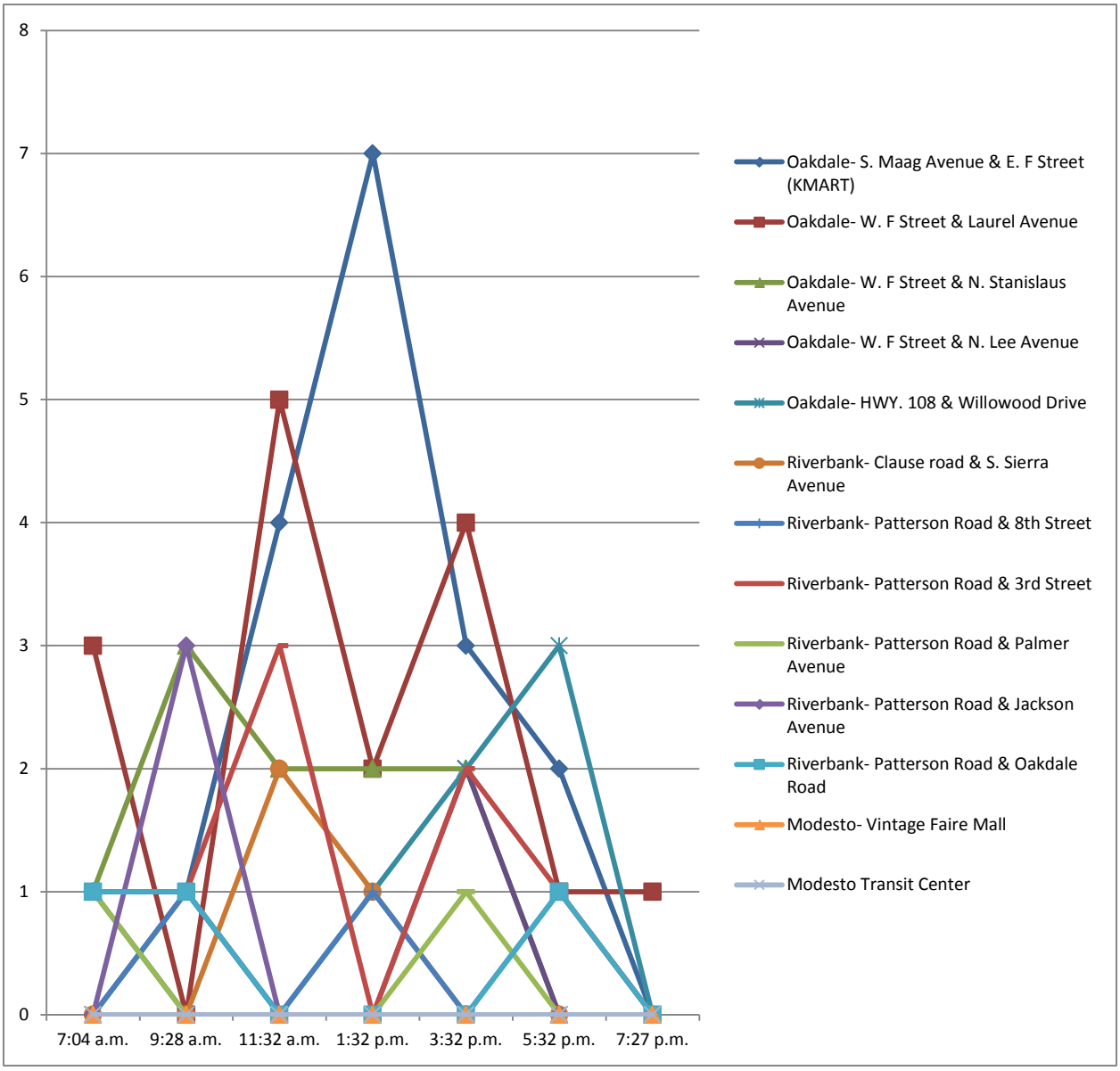
**The 6:42 p.m. ridecheck was not conducted.*



Route 60 – Westbound Saturday Service

Route 60 Westbound Saturday Service
Ridecheck Summary – October 12, 2013

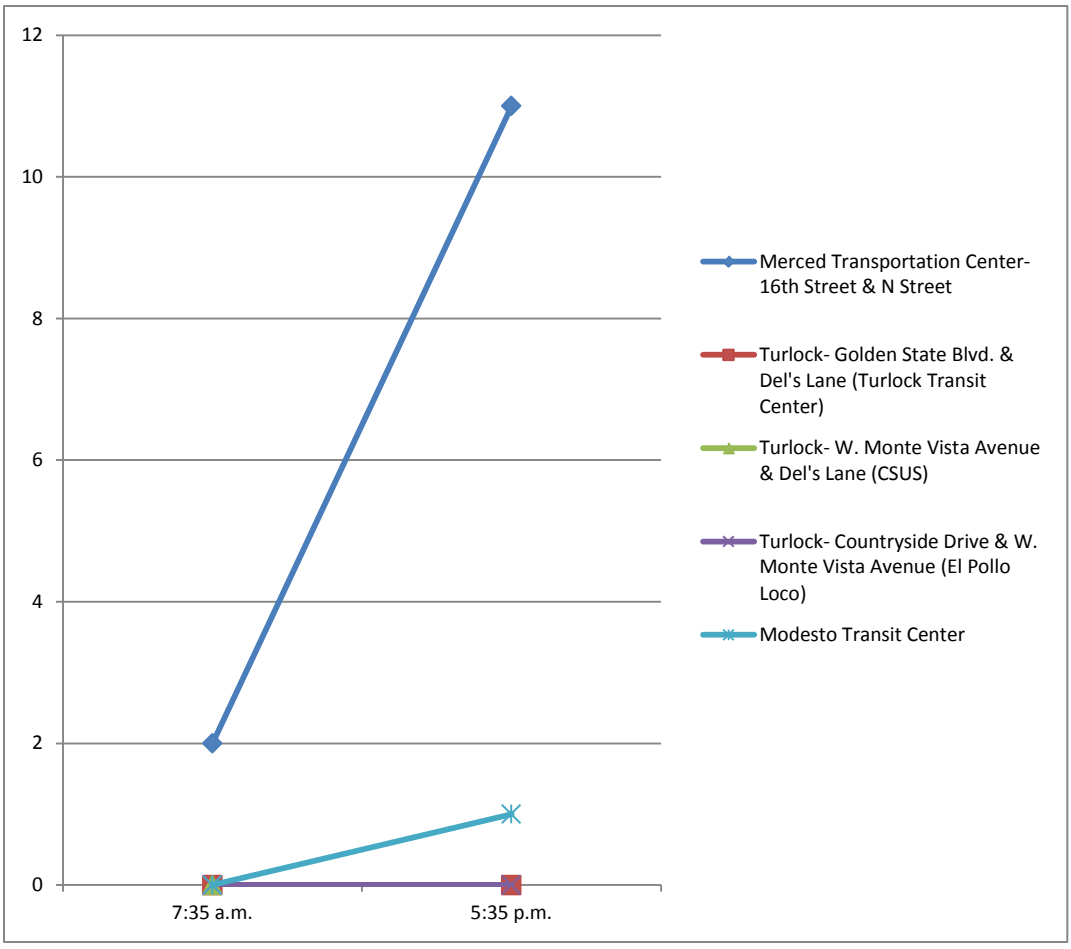
Total Number of Boardings Observed	**76**
Highest Number of Boardings Observed per Stop	
Oakdale- S. Maag Avenue & E. F Street (K-Mart)	**18**
Oakdale- W. F Street & Laurel Avenue	**16**
Oakdale- W. F Street & N. Stanislaus Avenue	**10**
Highest Number of Boardings Observed per Trip	
11:32 a.m. & 3:32 p.m.	**16**
1:32 p.m.	**14**
9:28 a.m.	**11**



Route 70 – Northbound Service

Route 70 Northbound Service
Ridecheck Summary – October 9 & 11, 2013

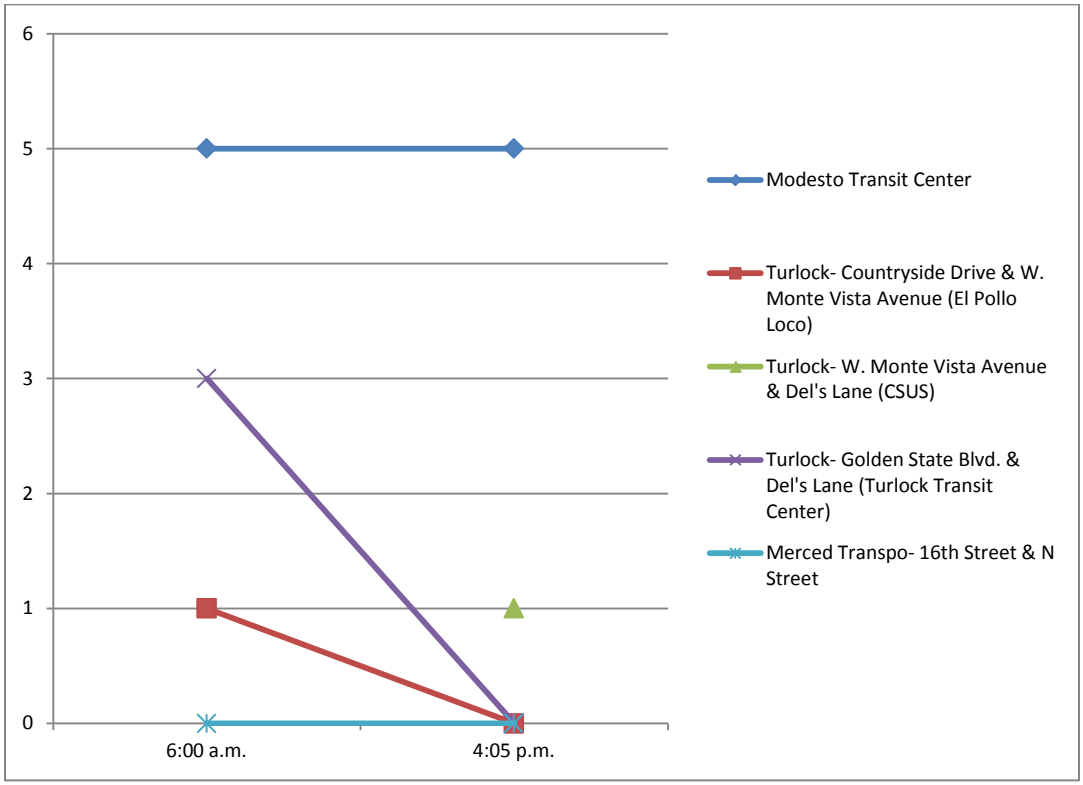
Total Number of Boardings Observed	**14**
Highest Number of Boardings Observed per Stop	
Merced Transportation Center- 16th Street & N Street	**13**
Modesto Transit Center	**1**
Highest Number of Boardings Observed per Trip	
5:35 p.m.	**12**
7:35 p.m.	**2**



Route 70 – Southbound Service

Route 70 Southbound Service
Ridecheck Summary – October 9 & 11, 2013

Total Number of Boardings Observed	**15**
Highest Number of Boardings Observed per Stop	
Modesto Transit Center	**10**
Turlock- Golden State Blvd. & Del's Lane (Turlock Transit Center)	**3**
Turlock- Countryside Drive & W. Monte Vista Avenue (El Pollo Loco)	**1**
Turlock- W. Monte Vista Avenue & Del's Lane (CSUS)	**1**
Highest Number of Boardings Observed per Trip	
6:00 a.m.	**9**
4:05 p.m.	**6**



Ridership Survey

A ridership survey was conducted in conjunction with the ride checks during October and November 2013. Field surveyors handed out and collected paper surveys from riders while on-board the transit vehicles. The survey instrument addresses a variety of rider characteristics including trip origin and destination, purpose of the trip, satisfaction rating, suggestions for improvements to the service, and demographic information. Surveys were distributed on fixed route vehicles as well as on demand response buses. The survey was also available online on StaRT's website to capture additional riders who did not have an opportunity to complete surveys on the bus. A total of 417 completed surveys were collected. The findings are summarized by route and service on the next several pages.

Route 10 Express

Route 10 is an express service that runs between Modesto and Turlock offering limited stops en route along the SR-99 corridor. The route operates on weekdays with hourly headways from 5:00 a.m. to 10:30 p.m. Sixty-four passengers on board Route 10 participated in the curb-to-curb survey. The first part of the survey pertained to trip origination. Fifty-two percent of trips originated in Salida, followed by Modesto at 44 percent. Forty-five percent of trips originated from home, followed by fixed-stop (19 percent) and school (16 percent). Of the 16 percent of trips originating from school, 92 percent of respondents were travelling from Modesto Junior College. Slightly under half of respondents walked to the bus stop followed by being picked up by the bus at home or from another location (24 percent). Eleven percent transferred from a MAX bus and 6 percent transferred from another StaRT bus. Of those who walked, 45 percent walked five or more blocks to catch the bus.

The second part of the survey pertained to destination. Forty-four percent of respondents indicated that their destination was home, followed by 27 percent who were going to school, and 15 percent were going to work. The destinations were evenly split between Modesto and Salida (49 percent). Seventy-one percent indicated that their bus arrived on-time. In rating customer service, 86 percent rated the service from "good" to "excellent," and 64 percent rated the driver's performance as "excellent."

Forty-two percent of passengers surveyed that they would not make the trip if the bus was not available, and 84 percent did not have access to an automobile. Forty-two percent have been riding StaRT for two years and longer followed by 27 percent who have been riding the bus less than one year.

In the rider profile section, 64 percent of riders identified their gender as female, 56 percent were students, and 59 percent did not have a valid driver's license. Respondents commented about the need for weekend service and additional stops.

Route 15

Route 15 is the main truck line between Modesto and Turlock that includes stops in Ceres and Keyes. This route operates weekdays and Saturday with two-hour headways. Hours of operations are from 4:30 a.m. to 10:00 p.m. on weekdays and from 6:30 a.m. to 8:30 p.m. on Saturdays. There were 76 survey participants on Route 15. Sixty-four percent of trips originated from home followed by 18 percent from a fixed-stop. Thirty-six percent of trips originated from Ceres, followed by 17 percent from Modesto and 17 percent from Salida.

The second part of the survey pertained to destinations along the route. Thirty-four percent of respondents indicated that their destination was work, followed by 22 percent who were going home, 19 percent recreational/personal, and 15 percent were going to school. Forty percent were traveling to Modesto, 32 percent were going to Salida, and 23 percent were going to Ceres. Seventy-one percent indicated that their bus arrived on-time. In rating customer service, 86 percent rated the service from "good" to "excellent," and 64 percent rated the driver's performance as "excellent."

When queried about what improvements that they would like to see on StaRT, 34 percent desired more frequent service, 26 percent desired Sunday service, and 10 percent desired later service during evening hours. Of those respondents desiring more frequent service, 86 percent wanted to see increased frequency on Route 15.

In the rider profile section, 28 percent of riders surveyed were between the ages of 25 and 44, followed by 26 percent of riders between the ages of 19 and 24. Fifty-one percent of riders identified their gender as female, 49 percent identified as male, 43 percent were students, and 65 percent did not have a valid driver's license.

Route 40

Route 40 provides inter-city service between Modesto and Patterson including stops in the communities of Grayson and Westley. This route generally has five trips in each direction during the week and four trips on Saturdays. Sixty-three passengers were surveyed on this route. Forty-five percent of trips originated in Patterson, and 36 percent of trips originated in Modesto. Forty-eight percent of trips started from home followed by 17 percent of trips from a fixed stop and 15 percent from work. Fifty-four percent walked to the bus stop, with 48 percent walking four or more blocks.

Seventy percent indicated that their bus arrived on time, and 73 percent were making a round trip on StaRT. In the rider profile section, 36 percent of riders surveyed were between the ages of 19 and 24, followed by 33 percent of riders between the ages of 25 and 44. Sixty-seven percent of riders identified their gender as female, 33 percent identified as male, 48 percent were students, and 55 percent did not have a valid driver's license.

Route 45 East

For Route 45 East, 11 passengers were surveyed. With regard to trip origination, 73 percent started from home; 33 percent started in Newman; 33 percent in Salida; and 22 percent in Gustine. In accessing the bus, 67 percent walked to the stop; 22 percent picked up the bus at home; and 22 percent transferred from another StaRT route. Of those who walked, 67 percent walked two blocks, and 33 percent walked five or more blocks. When asked about their destination, 30 percent were going to work; 30 percent to school; and 20 percent said shopping. Of those headed to school, 50 percent were going to CSUS, and the remaining 50 percent to other campuses. A majority of the riders (63 percent) were traveling to Patterson and 38 percent to Salida. Upon arrival, 64 percent walked from the bus to their destination, and 27 percent were dropped off. Of those who walked, 50 percent walked five or more blocks; 33 percent walked one block; and 17 percent walked two blocks. On-time bus arrival was cited by 91 percent of respondents.

When asked about the main reason for their trip, 36 percent were going to work; 27 percent were shopping; and 27 percent going to school/college. Transit dependency rated highly among the respondents as 91 percent did not have access to a car to complete the trip, and 73 percent did not have a valid driver's license. In rating customer service, 64 percent rated the service "good," and 82 percent rated the driver's performance as "excellent." The four top service improvements cited include Sunday service (33 percent); later evening service (22 percent); more frequent service (17 percent); and more Saturday service (17 percent).

Survey demographics were 55 percent male and 45 percent female. Forty percent were between the ages of 19 and 24 followed by 30 percent who were between the ages of 25 and 44 and 20 percent between the ages of 15 and 18. Students comprise 64 percent and homemakers comprise 18 percent. The household income ranked fairly low, with 80 percent earning less than $15,000 annually. When asked about how they found out about StaRT, 40 percent mentioned other means, 30 percent said the Transit Center, and 23 percent from the StaRT brochure.

Route 45 West

On Route 45 West, 13 surveys were received. When queried about trip origin, 38 percent started their trip from home, 31 percent from a fixed stop, and 15 percent from work. Forty percent of those trips originated from Newman and 23 percent from Gustine. In accessing the bus, 54 percent walked to the stop, 23 percent were dropped off, and 16 percent caught the bus from home or from another location. Of those who walked, 43 percent walked one block, and 43 percent walked two blocks.

The trip destinations/purpose varied with 38 percent for recreational/personal reasons; 23 percent headed home; 15 percent going to work; and 15 percent for shopping. Forty-five percent of trips were headed to Newman, followed by 27 percent to Modesto, and 27 percent to Patterson. In reaching their destination from the bus, 64 percent walked and 15 percent were picked up. Of those who walked, 38 percent walked five or more blocks, and 38 percent

walked two blocks. Regarding on-time performance, 85 percent indicated that the bus arrived on-time.

When asked about the main reason for their trip, 38 percent cited recreation/social reasons, 23 percent mentioned work, and 15 percent school/college. Transit dependency rated highly amongst the respondents as 77 percent did not have access to a car to complete the trip and 54 percent did not have a valid driver's license. In rating customer service, 54 percent rated the service "good" and 54 percent rated the driver's performance as "excellent." The four top service improvements cited include more frequent service (24 percent); later evening service (24 percent); early morning service (18 percent); and Sunday service (18 percent).

Survey demographics were 54 percent female and 46 percent male. Fifty percent were between the ages of 25 and 44, followed by 25 percent who were between the ages of 15 and 28 and 17 percent between the ages of 45 and 64. Students comprise 31 percent, followed by retirees (15 percent), service workers (15 percent), and other occupations (15 percent). The household income ranged from 42 percent earning between $25,000 and $34,999 annually and 33 percent earning less than $15,000 annually. When asked about how they found out about StaRT, 38 percent mentioned other means, 31 percent said the website, and 23 percent from the StaRT brochure.

Route 60

Route 60 provides service between Modesto, Riverbank, and Oakdale. Headways for this route average every two hours during the week between the hours of 5:30 a.m. and 8:13 p.m. There are six trips in each direction on Saturdays. There were 118 respondents to the on-board survey.

When queried about trip origin, 60 percent started their trip from home and 13 percent from a fixed stop. Slightly under 50 percent of those trips originated from Oakdale (47 percent) followed by 24 percent from Modesto and 23 percent from Riverbank. In accessing the bus, 62 percent walked to the stop, and 16 percent caught the bus from home or from another location. Of those who walked, 33 percent walked five or more blocks, 24 percent walked two blocks, and 16 percent walked three blocks.

The trip destinations/purpose varied with 22 percent for recreational/personal reasons; 21 percent for work; 20 percent going to school; and 20 percent headed home. Modesto was the highest rated destination (45 percent) followed by Oakdale (28 percent) and Riverbank (23 percent). Of those traveling to school, 75 percent were going to Modesto Junior College and 25 percent to other school campuses. In reaching their destination from the bus, 52 percent walked and 23 percent were dropped off. Of those who walked, 37 percent walked five or more blocks; 23 percent walked two blocks; and 16 percent walked three blocks. Regarding on-time performance, 77 percent indicated that the bus arrived on-time.

When asked about the main reason for their trip, 29 percent cited recreation/social reasons, 24 percent school/college, and 20 percent work. Transit dependency rated highly amongst the

respondents as 92 percent did not have access to a car and 62 percent did not have a valid driver's license. In rating customer service, 53 percent rated the service "excellent," and 73 percent rated the driver's performance as "excellent." The three top service improvements cited include Sunday service (24 percent); more frequent service (19 percent); and later evening service (18 percent).

Survey demographics were 50 percent female and 50 percent male. Thirty percent were between the ages of 25 and 44, followed by 27 percent who were between the ages of 19 and 24 and 27 percent between the ages of 45 and 64. Students comprise 37 percent, followed by others (28 percent) and retirees (9 percent). The household income of most respondents ranked low with 63 percent earning less than $15,000 annually and 13 percent earning between $25,000 and $34,999 annually. When asked about how they found out about StaRT, 30 percent mentioned other means, 25 percent said the website, 21 percent from the Transit Center and 21 percent from the StaRT brochure.

Route 70

Route 70 is a weekday intercity commuter service between Modesto and Merced. This route connects with the local Merced bus service. Of the 19 respondents, 53 percent started their trip from home; 21 percent indicated recreational/personal and 16 percent from a fixed stop. Forty-one percent of trips originated in Modesto, followed by 35 percent from Merced and 24 percent from Salida. Regarding how riders reached the bus, 42 percent were dropped off and 32 percent walked.

Sixty-three percent of riders were travelling to Merced and 25 percent to Modesto. Of those respondents commuting to school, 50 percent were going to CSU Stanislaus and 50 percent to U.C. Merced.

In the rider profile section, 37 percent of riders surveyed were between the ages of 19 and 24, followed by 26 percent of riders between the ages of 25 and 44. Fifty-three percent of riders identified their gender as female, 47 percent identified as male, 47 percent were students, and 63 percent did not have a valid driver's license.

Demand Response

StaRT's demand responsive services provide localized service to communities in Stanislaus County. The surveys were distributed by StaRT's contract operator and 25 responses were received. The surveys were categorized according to route and origin/destination as summarized in the following table:

Route	Trip Origin	Trip Destination	Number of Surveys
44	Riverbank	Modesto	1
400	Ceres	Modesto	2
402	Hughson	Modesto	1
402	Modesto	Modesto	1
402	Modesto	Waterford	1
402	Waterford	Hughson	1
402	Waterford	Modesto	2
416	Oakdale	Riverbank	1
416	Oakdale	Oakdale	1
Eastside Shuttle	North Modesto	Modesto	1
N/A	Modesto	Riverbank	1
N/A	Oakdale	Modesto	3
N/A	Oakdale	Oakdale	5
N/A	Riverbank	Oakdale	1
N/A	Riverbank	Waterford	1
N/A	Waterford	Oakdale	1
N/A	Waterford	Waterford	1
Total Surveys			**25**

Source: PMC

When queried about trip origin, 67 percent started their trip from home and 21 percent from work. Forty percent of the trips originated from Oakdale, 20 percent from Turlock, followed by 16 percent from Modesto and 12 percent from Riverbank. In accessing the bus, 55 percent were picked up from home, 23 percent walked and 14 percent accessed the bus by carpool. Of those who walked, 75 percent walked five or more blocks, and 25 percent walked one block.

The trip destinations/purpose varied with 30 percent going to work; 20 percent going to school; 17 percent going home; and 17 percent going to medical appointments. Modesto was the highest rated destination (50 percent), followed by Oakdale (27 percent) and Turlock (14 percent). Of those traveling to school, 100 percent were going to Modesto Junior College. In reaching their destination from the bus, 63 were dropped off, and 21 percent walked the remaining distance. Of those who walked, 50 percent walked one block and 50 percent walked five or more blocks. Forty-two percent of rides were subscription based, followed by 17 percent that were reserved five to seven days in advance and 17 percent reserved two to four days in advance. Regarding on-time performance, 96 percent indicated that the bus arrived on-time.

When asked about the main reason for their trip, 36 percent were going to work; 32 percent were going to school/college; 16 percent had a medical/dental appointment; and 12 percent

were going shopping. Transit dependency rated highly among the respondents as 88 percent did not have access to a car and 76 percent did not have a valid driver's license. In rating customer service, 64 percent rated the service "excellent" and 62 percent rated the driver's performance as "excellent."

The four top service improvements cited include more frequent service (33 percent); later evening service (21 percent); more Saturday service (17 percent); and Sunday service (17 percent).

Survey demographics were 76 percent female and 24 percent male. Forty percent were between the ages of 45 and 64, followed by 16 percent who were between the ages of 25 and 44 and 16 percent who age 80 and older. Students comprise 38 percent, followed by retirees at 21 percent. Household income of most respondents ranked low with 52 percent earning less than $15,000 annually and 24 percent earning between $15,000 and $24,999 annually. When asked about how they found out about StaRT, 48 percent mentioned other means, 17 percent mentioned the website, and 13 percent learned about the service from StaRT brochure/schedule.

Online Survey

In addition to the onboard surveys, a web-based survey was administered on StaRT's website to capture additional feedback from riders. The survey was made available in English and Spanish. There were 28 respondents to the English language survey and no respondents to the Spanish language version.

When queried about trip origin, 62 percent started their trip from home; 15 percent from a fixed stop and 12 percent from work. Slightly under 50 percent of those trips originated from either Modesto (24 percent) or Turlock (24 percent), followed by 16 percent from Ceres and 12 percent from Hughson. In accessing the bus, 80 percent walked to the stop and 20 percent transferred from a Modesto Area Express (MAX) route. Of those who walked, 25 percent walked 10 blocks, 25 percent walked five blocks, 25 percent walked three blocks, and 25 percent walked two blocks.

The trip destinations/purpose varied with 25 percent going to work; 20 percent for recreational/personal reasons; 20 percent going to school; and 15 percent involving shopping. Modesto was the highest rated destination (44 percent) followed by Turlock (28 percent) and Merced (11 percent). Of those traveling to school, 50 percent were going to Modesto Junior College; 25 percent to Merced Community College; and 25 percent to U.C. Merced. In reaching their destination from the bus, 56 percent walked; 17 percent transferred to MAX; and 11 percent transferred to another StaRT route. Of those who walked, 22 percent walked 10 blocks. Regarding on-time performance, 64 percent indicated that the bus arrived on-time compared to 36 percent who cited a late arrival.

When asked about the main reason for their trip, 38 percent were going to work; 31 percent cited recreation/social; and 23 percent going to school/college. Transit dependency rated highly

amongst the respondents as 85 percent did not have access to a car; however, 62 percent did have a valid driver's license. In rating customer service, 67 percent rated the service "excellent" and 69 percent rated the driver's performance as "excellent."

The four top service improvements cited include more frequent service (16 percent); later evening service (16 percent); more Saturday service (16 percent); and Sunday service (16 percent).

Survey demographics were 54 percent female and 46 percent male. Forty-six percent were between the ages of 25 and 44, followed by 31 percent who were between the ages of 19 and 24. Students comprised 58 percent, followed by service workers (17 percent). Household income of most respondents ranked at the low end with 69 percent earning less than $15,000 annually. When asked about how they found out about StaRT, 31 percent mentioned the website and 23 percent learned about the service from a friend.

IV. StaRT Goals, Policy and Service Standards Framework

Chapter IV provides a summary of recommended objectives and service policies for StaRT, as well as service standards and new service warrants. The following objectives, policies, and service standards were developed to provide policy guidelines for StaRT and serve as a "toolkit" to direct ongoing operation of existing services and guide the planning of future services.

StaRT Objectives and Policies

An objective is a more clearly defined target, or direction to achieve a goal. Policies define an organization's approved course of action to achieve specific objectives. The following objectives and policy statements support service goals recommended for StaRT.

Objective A: Maximize service availability, reliability, and convenience.

Policies:

1. Priority should be given to serving the intercity and local travel needs of seniors, persons with disabilities, students, and persons with limited access to an automobile and living in or traveling to locations not served by other Stanislaus County transit service providers.
2. After ensuring the availability of reliable and convenient service to primary transit markets, design, and operate services to attract and serve the "choice" transit market for local and commuter travel needs within the County of Stanislaus.
3. Ensure sufficient service capacity to maximize service availability to all primary transit markets throughout the service day. Although service capacity is ultimately determined by funding, ensure that a reasonable level of service is available.
4. Practice a zero tolerance policy for the cancellation of scheduled service due to potential lack of service vehicles or operator availability.
5. Provide adequate number of vehicles to meet all bus pullout requirements for scheduled service. StaRT should continue to evaluate the need for more buses as the agency look at expanding service to other areas of the County.
6. Provide sufficient bus capacity to avoid re-occurring standing loads on intercity routes operating on freeways. This can be accomplished by increasing bus size or service frequencies, or by operating peak overlay trippers.
7. Provide sufficient bus capacity to avoid recurring passenger pass-ups on fixed route service. This can be accomplished by increasing bus size or service frequencies, or by operating peak overlay trippers.
8. Provide adequate bus capacity to accommodate passenger loads within the adopted maximum load standards established for StaRT.

9. Operate sufficient round trip travel times for fixed route services to facilitate on-time performance within an adopted on-time performance standard.
10. Maintain on-time performance by scheduling adequate recovery time into all fixed route and (if applicable) flex-route schedules.
11. Establish timed transfers between local services and key regional services at planned transfer locations.
12. Establish schedules around critical arrival or departure times at key local destinations such as school bells at intermediate and high schools served by StaRT; retail hours at key malls and other major retail concentrations served by StaRT, and program start and finish times at program start times for the disabled. Criteria will vary from route to route and considerations should be given to creating timed transfers at planned transfer locations.
13. Consider operating clock-face schedules where practical.
14. Scheduled fixed routes should not depart from a time-point before the published departure time in the Ride Guide.
15. Design and operate direct express or limited stop services between key trip generators and attractors to reduce on-board travel times and transfers.

Objective B: Maximize operating efficiency without negatively impacting service quality.

Policies:

1. Establish a minimum productivity performance policy for fixed route, runabout and shuttle services, and local dial-a-ride services. A minimum productivity standard as measured by the number of passengers carried/revenue hour should be based on achieving a system-wide passenger revenue recovery ratio of 15%. Minimum productivity threshold and guidelines should be incorporated into StaRT service performance and design standards and should be subject to review as operating costs and revenues change. Services (by route or time of day) that fall below minimum productivity performance standards should be considered for cancellation or reduction when funding is insufficient to meet full service requirements.
2. Evaluate and consider requests for the extension of service hours, expansion of service area coverage, and introduction of additional service based on the potential of the new services to achieve minimum productivity performance benchmarks. StaRT should consider introducing or implementing new services on a pilot project basis for a trial period not to exceed 24 months. During this period, the new service should be evaluated and adjusted to improve performance. Productivity expectations should be established for the evaluation of new services during the pilot project period.
3. Maintain a vehicle replacement program that recognizes the effective life cycle of various StaRT vehicle types.

4. Maximize ride-sharing, linked trips, and productive vehicle utilization by scheduling trip assignments that ensure the achievement of the minimum productivity benchmark for productive demand response services.

Objective C: Operate a productive service that remains affordable to the key transit markets.

Policies:

1. Maintain adopted passenger revenue recovery ratio standards by operating productive and efficient services to minimize fare increases.

Objective D: Ensure ongoing service monitoring, evaluation and planning.

Policies:

1. StaRT should actively monitor service performance through the review of operating and cost performance reports and regular field checks.
2. Establish an in-house StaRT Scheduling Committee to meet, at a minimum, bi-monthly for ongoing review and resolution of operations and service quality issues and to obtain input on ongoing service and budget planning.
3. StaRT staff should regularly ride the service to develop a first-hand and better understanding of who uses the service, operating issues, and key destinations. This requirement should be included as a formal position objective or add a position whose main responsibility will include riding the buses regularly.
4. Based on ongoing service monitoring and evaluation, amend service performance and design standards as appropriate.

Objective E: Establish a formal role for StaRT in the development approval process.

Policies:

1. StaRT should actively participate in the development review process within its service area to ensure that transit operations are considered as part of new developments (location and site design) at the initial planning stages.
2. Develop transit service standards that support Stanislaus County General Plan goals.

Objective F: Adhere to prudent budgeting and financial practices.

Policies:

1. StaRT should annually prepare a five-year financial plan covering operating and capital financial needs and revenue sources preceding the annual budget process.
2. StaRT should monitor service delivery and performance and prepare monthly budget variance reports. Corrective measures should be developed and implemented as required on a monthly and/or quarterly basis to correct and avoid negative budget variances.
3. Report financial performance and anticipated service adjustments as needed to the Public Works Director and to the Board of Supervisors on a quarterly basis.
4. Use realistic and fiscally sound estimates to project service costs and revenues in preparing the five-year financial and service plan.
5. When feasible, plan and fund annual operating and capital reserves to prevent decreases in revenues to facilitate a planned and strategic response and to minimize a "reactive" response.

Objective G: Promote public/private partnerships to increase transit revenue and ridership.

Policies:

1. Explore partnerships and joint promotions with retailers, business organizations such as the Chamber of Commerce etc., and corporate sponsors for the production of StaRT information brochures, and the operation of extended holiday or special events services.
2. Actively pursue joint promotion of transit as a "green" transportation alternative to single occupant vehicle (SOV) use.
3. Where appropriate, explore cost sharing of operating costs with developers and public agencies to extend service to new development or facilities on route network.
4. Actively pursue a universal student/staff/faculty transit pass program for students of the Modesto Junior College and California State University.

Service Standards

Service standards are critical to the administration, operation, and planning of public transit services. Standards should reflect and support the achievement of service goals, objectives, and policies. Standards can be set by federal or state requirements as well as by local community or county goals, objectives, and service priorities adopted by StaRT.

While service standards vary from agency to agency, industry practice generally uses the following three categories for service performance and design:

1. Efficiency standards.
2. Service quality/reliability standards.
3. Service design standards.

Efficiency and service quality/reliability standards set rules and guidelines for the delivery of transit services. Where service operations are contracted out, key performance standards provide contractual expectations and performance benchmarks. Monitoring service performance remains an important task for transit providers.

Efficiency Performance Standards

Efficiency standards set parameters for the productive operations of transit services and guide operations and planning within available operating budgets and funding ceilings.

Efficiency standards use operational performance data to measure performance of a transit system. Monitoring operational efficiency and productivity requires data such as operating cost, passenger revenue recovery, vehicle revenue miles, vehicle revenue hours, and boardings (revenue passenger trips).

The monitoring and evaluation should be kept simple to free up administrative resources for marketing service, problem solving, and planning. Efficiency performance should be monitored and reviewed by StaRT on a monthly basis and reported to the Public Works Director and the Board of Supervisors on a quarterly basis, if feasible. StaRT should consider limiting its range of efficiency performance measurements to a few key indicators. These may include:

- **Operating Cost per Passenger:** Calculated by dividing all operating and administrative costs by total passengers (with passengers defined as revenue trips). The subsidy cost per passenger is a further refinement of this measure and is calculated by subtracting farebox revenue from gross operating and administrative costs and dividing by total passengers.
- **Operating Cost per Service Hour:** Calculated by dividing all operating and administrative costs by the total number of vehicle service hours (with service hours defined as time when the vehicle is actually in passenger service).
- **Passengers per Revenue Hour:** Calculated by dividing the total number of passengers (revenue trips) by the total number of vehicle service hours. The number of passengers per hour is a good measure of service productivity and critical to the establishment of design standards and benchmarks for the expansion of transit service. Passengers per service hour should be calculated for each service type and for different time periods, such as peak, midday, Saturdays, Sundays, and evenings (if introduced). Minimum passengers per hour standards should be established to achieve the minimum passenger revenue recovery ratio benchmark (see below).
- **Passenger Revenue Recovery Ratio:** Calculated by dividing all passenger revenue by total operating and administrative costs. Passenger revenue recovery ratio benchmarks evaluate both system efficiency (through operating cost) and

productivity (through boardings). Passenger revenue recovery ratio benchmarks are critical to the establishment of benchmarks for passengers per revenue hour and service design.

The indicators selected are consistent with operating and cost data already collected by StaRT. Efficiency performance standards should be defined, monitored, and assessed separately for fixed route, shuttle, and dial-a-ride services.

Service performance standards need to be tied to minimum passenger revenue recovery ratio benchmarks. The cost per service hour and the cost per passenger will likely increase annually as operating costs increase. While it is more difficult to control increases in the cost per revenue hour because of increasing labor (wages and benefits) and fuel costs, the cost per passenger can be more effectively controlled and potentially lowered by increasing service productivity. As operating costs increase, a greater number of passengers carried per revenue hour will be necessary to meet the approved passenger revenue recovery benchmark.

Generally, this is accomplished through a shift from less productive service coverage to services with a higher ridership potential. Less productive services can be reduced through the overall elimination of specific services or through a more "surgical" approach that eliminates specific bus trips or shoulder service coverage hours with low ridership. The latter approach avoids the complete elimination of specific services, while maintaining more productive service coverage hours of each StaRT service.

Recommended Passenger Revenue Recovery Ratios for StaRT Services

Based on the proposed 15% system-wide farebox recovery ratio, the following passenger revenue recovery ratios are recommended for the following service groupings:

- Intercity Fixed Route – 15% - 20%[1].
- Shuttle Services[2]– 10%
- Dial-A-Ride Services – 10%.

A high average passenger revenue recovery ratio for intercity fixed route service is recommended to ensure StaRT is able to maintain the proposed system-wide farebox recovery ratio of 15%. Passengers per service hour benchmarks will vary from year to year, depending on the number of passengers required to achieve the passenger revenue recovery benchmarks for each service type.

[1] A 15% to 20% farebox recovery policy would also apply to regional commuter routes such as the current Route 70 and apply to the introduction and assessment of any future StaRT commuter route initiatives.

[2] Although Routes 45 East and 45 West are intercity fixed route services, a 10% farebox recovery minimum should be considered for these routes. Both serve corridors with limited demand densities and given the proposed integration of the Route 45 West with the revised Newman Dial-A-Ride, the Routes 45 East and 45 West could be more appropriately classified in the Shuttle service grouping.

The number of passengers per revenue hour required to meet minimal farebox requirement should be calculated in two steps:

1. Determine the required farebox recovery ratio to meet for each service group (cost of service per revenue hour multiplied by the farebox ratio).
2. Determine the number of passengers required per hour (actual revenue required per hour divided by the average fare per passenger collected on the particular service).

Improving productivity remains a good strategy to maintain minimum revenue recovery ratios while avoiding fare increases. Generally fare increases have a negative effect on ridership.

Service Quality/Reliability Guidelines

StaRT service quality and reliability measurement standards should reflect system goals that support achieving specific objectives and policies. Figure IV-1 summarizes the key service quality and reliability standards and numeric values for StaRT's services.

Service quality and reliability standards should be monitored and reviewed by StaRT staff on a monthly basis and reported to the Public Works Director and Board of Supervisors.

Figure IV-1: Recommended StaRT Service Quality/Reliability Standards

Quality/Reliability Standard	Fixed Route Service	Shuttle and Dial-A-Ride Service
On-Time Performance	90% of all revenue bus trips must depart the route start point and arrive at the route end point no later than four minutes after or one minute before the time published in the schedule.	90% of all pick-ups must be within the policy pick up window, and 95% of all drop offs will not be earlier than 15 minutes before or five minutes after the requested (confirmed) drop off time, unless requested by the passenger. In the case of work, program or school-related trips, the return trip pick up window should not begin before the shift, program or class finish time. In the case of program-related trips, no drop off will begin before the program staff is available to receive the passengers, or before the facility is open.
Passenger Complaints / Passengers Carried	The number of complaints shall not exceed 0.10 % of the total boardings. **Benchmark** = 1 complaint/1,000 boardings.	The number of complaints shall not exceed 0.10 % of the total boardings. **Benchmark** = 3 complaints/1,000 boardings.
Preventable Accidents / Miles Operated *(While there should be no preventable accidents, a benchmark has been established to permit some flexibility in the evaluation of training efforts.)*	The number of preventable accidents shall not exceed 0.0005% of total service miles operated. **Benchmark** = 1 preventable accident/200,000 service miles.	The number of preventable accidents shall not exceed 0.0005% of total service miles operated. **Benchmark** = 1 preventable accident/200,000 service miles.
Roadcalls[a] / Miles Operated	**Benchmark** = 1 roadcall/10,000 service miles.	**Benchmark** = 1 roadcall/10,000 service miles.

Quality/Reliability Standard	Fixed Route Service	Shuttle and Dial-A-Ride Service
Bus Trips Cancelled	No scheduled bus trips shall be cancelled because of vehicle shortages or staff absenteeism. **Benchmark** = zero tolerance.	No confirmed passenger trips[b] shall be cancelled because of insufficient vehicles or staff to meet the scheduled in-service pullout requirement. **Benchmark** = zero tolerance.
ADA Paratransit Trip Refusals	Not Applicable	Where ADA service is provided, ADA regulations mandate a zero trip refusal rate for trips requested at least 24 hours in advance of the requested travel time. However, ADA regulations permit the negotiation of trip pick up or drop off time within a 2 hour scheduling window. StaRT may negotiate a pick up or drop off time up to 60 minutes before or after the time requested by the ADA eligible passenger.

a) The term roadcall commonly used for any difficulty or trouble with a bus that requires transit maintenance staff to switch out a bus, to repair it on the road, or to tow it back to the garage.

b) A confirmed passenger trip is a trip where a pick up time has been confirmed with the passenger.

Service Design Guidelines

Service design standards are critical planning tools to justify and prioritize the expansion of service to new areas and potential markets, and to guide how the service will be delivered. Transit service design incorporates a mix of interrelated social, political, geographical, and economic factors. Generally these can include:

- The community's vision, goals, and objectives for transit.
- The marketability of the service(s) to be provided.
- Environmental and energy issues.
- Available technology.
- Topography, land use design and right-of-way design characteristics and limitations.
- Budget limitations.

Recommended service design standards are provided for StaRT's fixed route services in Figure IV-2.

Figure IV-2: Recommended StaRT Service Design Standards

Standard	Benchmark/Criteria
Maximum Walking Distance	Generally a ¼ mile walking distance is used as a guideline for local fixed route service network design in built up areas where there is sufficient population density to support minimum farebox recovery ratios.
Bus Stop Spacing	Local service bus stops should be spaced ½ mile apart in urbanized service areas to support a maximum walking distance of ¼ or mile. Bus stops outside the urbanized area will be limited to major destinations, points of interest, or residential concentrations. Express or limited stop service bus stops should be spaced at least one mile or more apart.
Bus Stop Location	Bus stops should be placed at the far side corner of intersections to allow clearer traffic view lines for pedestrians, wherever possible. Mid-block bus stops should be limited to major activity centers or high-density residential complexes. Bus stops in rural areas should be located at activity centers or at locations that allow safe pedestrian access and bus operations.

Standard	Benchmark/Criteria
Minimum Bus Stop Design	All bus stops should be clearly marked with proper signage including the designated route numbers. Where feasible, bus stops should have well-drained access, concrete, or hard surface pads, and adequate lighting for passenger security and safety. Benches should be considered for bus stops with higher than average passenger volumes or senior boardings. A general guideline for consideration by StaRT is: - 15 or more boardings per day Shelters should be considered for bus stops with higher passenger volumes and at transfer locations where passengers may have to wait to make their connections. Priority should be given to facilities catering to seniors and persons with disabilities. A general guideline for consideration by StaRT is: - 25 or more boardings per day Annual bench and shelter budgets should be established in conjunction with installation prioritization program based on bus stop passenger volumes.

Standard	Benchmark/Criteria
Passenger Loads	Intercity Fixed Routes/Medivan Maximum passenger loading on intercity fixed route buses and the Medivan service should not exceed 1.0 passenger/seat (no standing loads) on a continual basis. For passenger safety reasons, standing loads are not recommended on routes operating on highways where buses exceed 50 miles per hour. Shuttle Routes Since Shuttles also operate on highways, maximum passenger loading should not exceed 1.0 passenger per seat (no standing loads) on a continual basis. Dial-A-Ride On the light duty buses operated in local Dial-A-Ride services loading should not exceed 1.0 passenger per seat (no standing loads) on a continual basis. In all cases, StaRT passenger loads should not exceed Gross Vehicle Weight Ratings for those vehicles in service.
Service Headways	Intercity Fixed Routes Fixed route service headways should be such that passenger load standards are not exceeded on a continual basis. *Capacity issues on high passenger volume routes can be more effectively addressed by increasing bus size.* Shuttle Routes Shuttle service headways should be such that passenger load standards are not exceeded on a continual basis. Dial-A-Ride Not applicable

Standard	Benchmark/Criteria
Recovery Time	Intercity Fixed Routes For each bus trip, build a minimum of 10% recovery time into the fixed route schedule. Shuttle Routes For each bus trip, build a minimum of 10% recovery time into the shuttle route schedules. Dial-A-Ride Sufficient time must be built into the demand response schedules to support the Dial-A-Ride on time service standards (refer to Figure IV-1).
Interlining	Where feasible, design strategic interlining to minimize inter-route transfers. Route interlining should not negatively impact the built-in 10% recovery time. Additionally, further consideration should be given to the distance between routes when considering interlining two routes.
Timed Transfers	Schedules should, where feasible, be built to ensure timed transfers for priority connections at existing and planned transfer locations. Where feasible, connections should be designed to limit passenger transfer wait times to five (5) minutes or less.
Fleet Management	Adopt a seven-year life cycle for light duty buses and a 10 to 12-year life cycle for heavy and medium duty buses and should adhere to the Federal Transit Administration “Useful Life of Transit Buses and Vans”. Effectively cycle buses in-service to evenly utilize fleet resources. Operate with a 15% spare bus ratio (2 spare buses for every 10 to 12 peak pullout buses).

New Service Warrants

Service Warrants provide a tool for evaluating new services or service extensions when appropriate. A new fixed route or route extension could be introduced when ridership forecasts based on population, school enrollment, or job density are sufficient to achieve minimum passenger revenue recovery ratios by service type. New services should be introduced on a trial basis and given a minimum of twenty-four months to achieve the required minimum passenger revenue recovery ratio.

As new residential areas or business developments build out, there may initially be only sufficient potential ridership to support peak-only service. With eventual build out, there may be sufficient potential ridership to support midday, evening, and weekend service.

New service expansion and/or service frequency increases should always be assessed in terms of potential ridership and the achievement of the minimum passenger revenue recovery benchmark. Prior to the recommendation of new services, an analysis of ridership potential and passenger revenue recovery is required.

The methodology for calculating the minimum number of passengers needed per revenue hour to meet minimum passenger revenue recovery is provided in the Efficiency performance Standards section of this Chapter. The potential ridership in a new or proposed service area can be calculated by:

- Multiplying the population within ¼ mile of the proposed new service by the per capita transit trip rate of the StaRT service area.

Or

- Daily ridership can also be calculated by multiplying the population in the new area (employees in a business park or students in a school) to be served by an accepted daily per capita trip rate. Hourly productivity can be calculated by dividing the projected daily demand by the number of revenue hours needed to operate the service.

The decision to introduce new service should be contingent upon the number of potential passengers per revenue hour being equal to or greater than the number of passengers per hour required achieving the passenger revenue recovery benchmark. A Go/No Go decision can be based on the probability of attracting sufficient ridership to meet the approved minimum passenger revenue recovery benchmark within a formal pilot project timeframe.

In some cases, new services may only be warranted during weekday peaks when hourly productivity is sufficient to support passenger revenue recovery requirements. In other cases, service requests to new business parks or new residential subdivisions could be considered through a joint partnership with major employers or developers to offset passenger revenue recovery shortfalls when initial ridership during the early phases of development is too low to support the approved passenger revenue recovery minimum.

Introduction of New Services on a Trial Basis

New or expanded services should be introduced as a pilot project for a trial period not to exceed 24 months. During this period, the new service will be evaluated and adjusted to improve performance. Productivity expectations should be established for the evaluation of new services during the pilot period.

New service should achieve at least 50% of the system-wide passenger fare revenue recovery ratio within the first 18 months of operation. Any new service not achieving this minimum threshold should be considered for discontinuation at the end of the trial period. The revenue hours could be reallocated to other planned service improvements. Following the trial period, the service could be discontinued or reconfigured if it continues to fall below the minimum passenger revenue recovery benchmark for that service type.

Title IV and Environmental Justice Considerations

In accordance with Federal Transportation Administration requirements, the planning of new StaRT services and the operation of current services must adhere to the objectives of Title VI of the Civil Rights Act of 1964 as well as the policies set forth in the Executive Order on Federal Actions to Address Environmental Justice in Minority and Low-Income Populations (1994).

FTA Title VI Objectives

Title VI objectives for transit service planning includes:

- Ensure FTA-assisted benefits and related services are equitably distributed without regard to race, color, disability, or national origin.
- Ensure that both the level and quality of transit services provide equal access and mobility for any person without regard to race, disability, color, or national origin.
- Prevent the denial, reduction, or delay in benefits related to programs and activities that benefit minority populations or low-income populations.
- Ensure that decisions on the location of transit facilities and services are made without regard to race, disability, color, or national origin.
- Ensure meaningful access to programs and activities by persons with limited English proficiency.

Environmental Justice Principles

FTA requires transit agencies to incorporate environment justice and non-discrimination principles into transportation planning and decision making processes as well as environmental review for specific projects. Meaningful consideration should be given to minorities and low-income populations when planning service to ensure transportation and mobility needs in these communities are addressed. Principles guiding the environmental justice process include:

- To avoid, minimize, or mitigate disproportionately high or adverse human health and environmental effects, including social and economic effects, on minority and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Planning and Operating Considerations for StaRT

COA stakeholder input identified seniors, persons with disabilities, students, and low-income persons as priority markets for StaRT transit services and should be considered when planning, designing, and operating transit services in Stanislaus County.

To continue to comply with Title VI and Environmental Justice requirements, future StaRT services should be concentrated on:

- Areas where households without access to a private vehicle exceed 10% or more of total households.
- Areas where the population aged 65 years and older exceed 10% of the total population.
- Areas where the population under the age of 18 or over exceeds 25% of the total population.
- Areas where the average household income is under 50% of the County's median income.

StaRT services must be evaluated and planned with public input from minority and low-income transportation disadvantaged populations.

V. Technology Systems Plan

Introduction

A Transit Technology Plan is developed that directly addresses StaRT's current and future transit technology needs. StaRT has several objectives driving the development of the Transit Technology component of the COA, including:

- **System Integration**: StaRT's systems are not presently integrated and often the transfer of information between systems is manually done. These manual processes are prone to human error and are labor intensive - diverting staff resources.

- **Improved Customer Service**: StaRT would like to provide its customers with easier access to passenger information, as well as ensure that their service is on-time.

The Transit Technology Plan will act as a roadmap to enable StaRT and their contractor (Storer Transit Systems) to deploy transit technologies in a systematic way that will help achieve the prescribed objectives.

In recent years, there have been significant advances of Intelligent Transportation System (ITS) applications for transit and paratransit, including community-based transit services. ITS can provide a positive benefit-cost ratio through improved productivity, data management and reporting, reduction on staff workload, and specific dial-a-ride/paratransit operations: reduced no-shows; better managed bookings; and cancellations (including the ability to do trip insertions); and route optimization.

This chapter profiles the existing Intelligent Transportation System (ITS) environment, provides a primer (background) on Transit ITS elements, and identifies User Needs – Operations, Service Planning and Customer Service, and Administration. Considering the set of technologies that provide the best overall investment as well as improved transit efficiencies, reduced workload, and increased level of service to passengers, *A Way Forward*, including recommended projects, is also presented.

Prior to developing an implementation or deployment plan/schedule, additional project team, (including officials from StaRT and Storer) discussion is required in order to validate priorities and confirm approved and requested funding as well as specifics for inclusion in future budget cycles.

Existing Conditions

The current Intelligent Transportation System (ITS) environment is very lean with most processes being done manually. StaRT administers the operating contract to Storer Transit Systems. The former has basic management tools in place for contract administration – monitoring performance and service planning. Storer is responsible for operations and service delivery.

Both Storer and StaRT's systems are not presently integrated and often the transfer of information between systems is manually done. These manual processes are prone to human error and are labor intensive - diverting staff resources.

Conventional Transit Services

County transit staff develops the schedule and Storer builds the runs and maintains data/management reporting "manually" within an Excel spreadsheet application. Other functionalities are addressed as follows:

- GFI (GENFARE) fareboxes are used for bus fare collection and are proving reliable in generating monthly reports (boardings by fare type, by route, and stop).
- Stop annunciation – currently operators call-out stops (Only in English. Need for bilingual capability).
- Vehicle maintenance including preventative maintenance schedules are tracked with an in-house software application.
- Each bus is equipped with on-board camera equipment (x 9 cameras) to enhance the overall safety and security of both customers and bus operators including DriveCam.
- Customer service regarding real-time bus information is done verbally and rely on dispatcher's acknowledge of vehicle locations throughout the day. For the most part – customers are given "scheduled" rather than "real time" vehicle information. Currently there is no Web based "where's my bus" application.
- The tracking of vehicles is performed via radio or through spot checks. There is no automated vehicle locating capabilities (AVLs).
- StaRT's *Easy Rider* trip planner, using Google Maps, is designed to help transit riders find their way from points A to B in Stanislaus County. Transit riders can use *Easy Rider* to find their way around Stanislaus County as well as adjoining Counties and Cities who also use Google Maps for their trip planners. The following Stanislaus County transit operators are partners in this process with Google Transit:
    - Stanislaus Regional Transit (StaRT) – www.srt.org
    - Modesto Area Express (MAX) – www.ModestoAreaExpress.com
    - Ceres Area Transit (CAT) – http://www.ci.ceres.ca.us/CeresAreaTransit/CAT.html
    - Bus Line Service of Turlock (BLST) – www.blastbus.com

Demand Response/Dial-a-Ride Services

Storer uses StrataGen scheduling software. Within the StrataGen application, Storer is able to maintain a comprehensive client database; record reservations; generate batch schedules (advanced booked and regular/subscription trip bookings) utilizing the StrataGen scheduling algorithm; undertake trip management/dispatch functions; and generate standard management reports. In the absence of digital data transfer capabilities (MDTs), driver

manifests are generated on paper. Changes (cancellations, no-shows or trip insertions) are communicated by radio and noted manually on the paper manifests.

Opportunities

In discussions with StaRT and Storer officials and the recognition of the limited application of technology in the respective operations, there is an opportunity to automate several key functional elements including:

- Vehicle locating capabilities (Automatic Vehicle Locators [AVL]);
- Digital communication (Mobile Data Terminals[MDT]);
- Announcements and message signs (Automated Vehicle Announcements [AVA]);
- CAD, schedules, run-cutting, etc.;
- Transit passenger and fare management (Automatic Passenger Counters [APC]), providing for more detailed service monitoring at the bus trip and bus stop level;
- Transit maintenance – on-board diagnostics;
- Improved customer service/information including real-time vehicle arrival/departure information; etc.

Background on Transit ITS Technologies

A broad range of transit technologies that are mature and available and could potentially be relevant for StaRT, are discussed briefly in the following paragraphs.

Computerized Fixed Route Scheduling

While Automatic Vehicle Location (AVL) is used to identify where buses are at any given point in time, computerized fixed route scheduling systems are needed to identify where buses are supposed to be. There will need to be an electronic database in place at StaRT (or their contractor) capable of interfacing with a CAD/AVL system. In addition, this information will be needed in the transit technology system to support technologies such as Automatic Vehicle Announcement (AVA) and Automatic Passenger Counters (APC).

Computer-Aided Dispatch/Automatic Vehicle Location (CAD/AVL) System

CAD/AVL technology forms an integral part of ITS, as deployed at many transit agencies. CAD/AVL provides the central functionality and on-board logic/data storage, to support many "smart bus" technologies, while also offering agencies significant operational and

planning/scheduling benefits. Based on these factors, CAD/AVL often rises to the top of the priority list.

Mobile Data Terminals (MDTs) and On-Board Computers (OBCs) are the core of the on-board information and communication systems, serving as the information link between control centers and vehicles. CAD/AVL solutions can be integrated with a whole host of other transit technologies including integrated Automatic Vehicle Monitoring (AVM), APC, and Onboard Video Monitoring (OVM), as well as integration with existing vehicle components such as fareboxes, AVA, and head-signs. The OBC provides the core AVL capability using an integral GPS receiver, and also manages and is integrated with the other on-board technologies. This allows OBCs to automatically send information collected by these systems from the vehicle to the control center such as vehicle location, passenger counts, engine performance and mileage.

MDTs are the driver interface for the OBC, which serves as the "nerve center" for the onboard technology. OBCs relay current status information to dispatch such as location, operator, block, route, trip, and schedule adherence. MDTs also display short text messages from dispatch including typical "canned" messages and free-form text messages, and allow canned text messages to be sent from the bus operator back to dispatch. Mechanisms can be designed into the system, if desired, to limit which features the driver can access while driving. This offers the benefit of replacing much routine voice radio communications, leaving voice for atypical or emergency events. This reduces the load on the voice radio communications network and the associated audio clutter, while also avoiding costs for voice radio capacity.

CAD/AVL functionality is a potentially important part of the solution because it will allow operating personnel to know where buses are at any given time. Dispatchers will be able to monitor bus locations in real-time without the need for voice radio communications to request the location from the operator, and can then intervene as necessary to keep fixed route buses on schedule and evenly spaced. CAD/AVL also accumulates substantial data on operations that can become available for reporting.

It is also important to recognize that there are different tiers of CAD/AVL vendor solutions, with vastly different functions and different levels of associated implementation costs. The major CAD/AVL vendors offer robust and extremely feature rich solutions, while "second tier" CAD/AVL vendors offer significantly more affordable solutions, which still provide the fundamental CAD/AVL functionality that agencies require. These solutions can be procured separately from a variety of vendors, or as an 'integrated' solution from a single vendor. The "right solution" will balance a system that supports future expansion and long-term operational desires with budgetary requirements and will maximize the use of functionality to provide operational value to StaRT throughout its lifetime.

Automatic Vehicle Announcement (AVA) System

AVA systems allow transit agencies to fulfill requirements of the Americans with Disabilities Act (ADA) of 1990, which include notification of the bus route, stops, transfer points, and major intersections to passengers with cognitive, visual, and auditory disabilities, achieving the consistency that comes with relieving the bus operator from this responsibility.

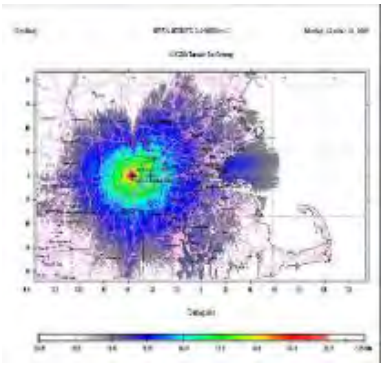
AVA systems typically consist of LED signs and speakers inside and outside of the vehicle (the exterior LED often is already in place in the form of the head-sign). The interior signs and speakers provide announcements of the next stop, transfer point, and major intersections to onboard passengers. The exterior signs and speakers announce the route and destination of the vehicle to boarding passengers. The speaker system may incorporate means to capture ambient noise levels and adjust the announcement volume automatically. This ensures that for exterior announcements, the announcement is audible when the bus is stopped at a busy intersection, but does not disturb the peace of a quiet street late at night.

Many AVA systems also provide the “stop requested” audible and visual notifications and can also be used to provide public service announcements. The AVA system can also be used to present agency messages, such as “See Something, Say Something”, in a manner that does not conflict with core next stop announcements function.

To be robust, an AVA system needs to be highly integrated with the CAD/AVL system. For example, to ensure that the correct stop is being announced, an AVA system needs to detect if a vehicle has gone off route. If this occurs, the AVA system should suspend announcements until the vehicle returns to the scheduled route.

The AVA system also needs to be tightly integrated with the scheduling software so that updates to the schedule are reflected in the announcements as soon as the new schedule comes into effect.

Communication System Enhancements



High quality, reliable voice communication between drivers and dispatch is essential to operating a public transit system. Emergencies, vehicle problems, re-routing, and other information must be communicated in real time. For CAD/AVL applications, a reliable wireless data link is also required, with frequently transmitting GPS coordinates the minimum. Modern CAD/AVL systems typically need to transmit much more data. In short, deploying transit technology depends on the communications system to move voice and data between the buses operating throughout the service area; bus stations, stops and other remote facilities, and the control/dispatch center. The objective will be to establish a communications system that can support the voice and data traffic that will be driven by transit services and the transit technologies that will be deployed.

Evaluation of radio system capacity: Many transit ITS technologies rely on wireless communications for data exchange. These technologies can include CAD/AVL, Traveler Information, APC, and Traffic Signal Priority (TSP). To assess whether a communications system alternative has the ability to support the technologies, both the available network capacity and the total expected demand must be understood.

Real-Time Traveler Information

The ability to provide accurate real-time transit traveler information to transit customers is one of the most powerful and visible benefits of transit technology investments. Transit traveler information directly impacts the quality of the transit customer experience by reducing uncertainty, supporting itinerary planning, and feeding useful information to customers during service delays and emergencies.

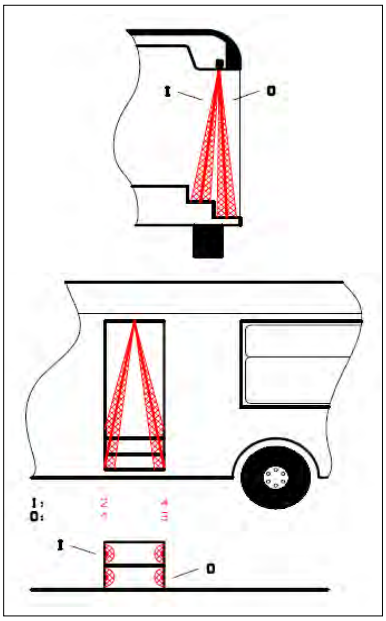
Transit traveler information systems typically are supported by an underlying systems infrastructure that provides schedule information; route and stop location data, vehicle position, and service "awareness" (e.g. service disruptions due to vehicle breakdowns or weather conditions). The level of accuracy and sophistication of the information that can be provided is contingent on these underlying tools. For example, scheduled bus arrival information can be provided from a scheduling software package directly, but real-time position and schedule adherence data requires the added intelligence of a CAD/AVL system.

Commercially available CAD/AVL products offer additional modules to develop arrival predictions and to distribute this data to customers for web/telephone access and via variable LED/LCD text displays at selected stops. Additionally, there is a current proliferation of emerging tools and services offering transit traveler information in new and innovative ways. One example is Google Transit, for which the required data table format can now be automatically created and updated by all of the major fixed route scheduling software products. Stop-level arrival predictions data and other real-time data such as locations can be also published via data feeds that enable the development of additional traveler information distribution methods independently from the original CAD/AVL system vendor (either in-house, through a third party vendor, or by simply publishing the feed for open use by the vibrant community of "app" developers for mobile personal devices). The technological landscape in this area is advancing rapidly and it is essential to maintain close attention to current industry trends.

Transit Signal Priority (TSP)

With collaboration from the County Public Works Engineering Division, StaRT may be able to make arrangements for transit vehicles to receive priority access to green at selected traffic signals. This involves equipping both the vehicles and intersections with devices to allow priority to be provided on a negotiated basis. By integrating the onboard device with an onboard computer that monitors schedule adherence status and location, the vehicle can request priority at the appropriate location on the approach to the intersection and only when needed based on running late. Alternatively, approaches are available that involve implementing TSP using a direct backend linkage between the CAD/AVL system and a traffic signal control system.

Automatic Passenger Counters (APC)



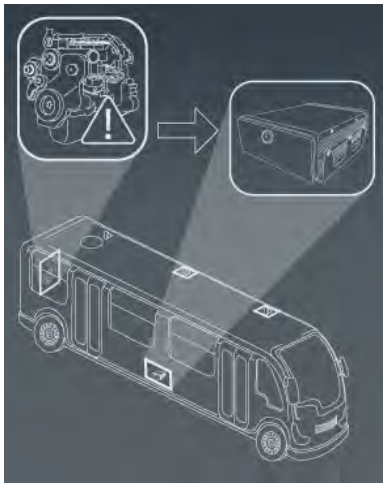
APCs record passenger boarding and alighting activity at each stop along a route. The benefits of APCs are a reduced cost to collect ridership information and an increase in the consistency and comprehensiveness of the information gathered.

An effective APC installation can provide a wealth of highly useful data on passenger activity at the stop, segment and trip level for planning, and scheduling. Stop level passenger activity data can be used to plan route changes and street hardware investments at bus stops. Furthermore, vehicle loading data is useful to monitor passenger volumes and adjust service levels. APCs also do away with the requirement for onboard ride checks.

The most common APC technology currently used by North American transit systems utilizes infrared beams projected in a vertical or horizontal orientation to count passengers. Horizontal beam technology has proven more reliable than treadle mats installed in bus stairwells, and generally is less expensive than vertical beam systems. The horizontal beam units, however, are susceptible to being knocked out of alignment by passengers on occasion and can be more susceptible to error with wider doorways. Vertical orientation units can be both more accurate and protected, although these often need more extensive calibration.

APC systems can be installed either as a stand-alone system or as a component of an integrated CAD/AVL/APC system. A stand-alone system requires more post-processing of the raw data, but also allows greater flexibility in choosing an APC vendor (i.e., in a CAD/AVL procurement, the agency often has limited influence on the APC vendor to be used). An integrated system avoids much of the post-processing and simplifies data transfer from the vehicle to the StaRT data repository.

Automatic Vehicle Monitoring (AVM)

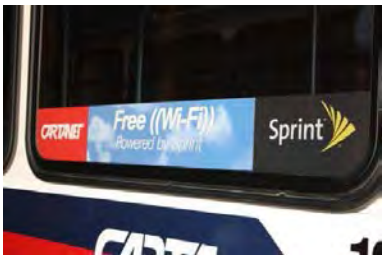


AVM continuously monitors conditions of the transit vehicle components by interfacing with the built-in computers for various vehicle systems and components (e.g., engine, transmission, air conditioning). Data collected includes the amount of time that the engine has been running, fuel, and other fluid levels, engine temperature, pressure, and voltages. The system can also monitor mechanical components such as brakes, electrical, and heating, ventilation, and air conditioning and check for out of tolerance readings.

The collected monitoring data is assessed and filtered by the ITS onboard computer, to be either transmitted in real-time to the control center using the radio data communications network or stored for uploading when the vehicle returns to the garage. The driver, dispatcher, or maintenance can be alerted in real-time for particular out of tolerance readings or component failures.

Key information collected from the engine such as engine running times are critical for ongoing maintenance and repair. The data can also be used to support trend analysis for condition-based maintenance and to establish proactive replacement intervals for parts to minimize road calls. When connected to the CAD/AVL system the AVM system can be used identify and schedule preventive maintenance for vehicles that are in need of repair or are underperforming.

Onboard Public Internet Access



Buses can be equipped with a ruggedized mobile access point router that allows a variety of onboard equipment to share a single cellular data modem. In addition, this device can incorporate a WLAN access point that also uses this cellular data link to provide onboard public wireless internet access. Recently, the popularity of public onboard internet access has been increasing even for shorter routes as a result of the increasing number of mobile personal devices that can quickly access a public WLAN access point.

Farebox and Head-sign Integration

Existing onboard equipment such as fareboxes and head-signs can be linked to the OBC to enhance performance and data and reduce operator workload.

An integrated farebox or head-sign can automatically receive log-in data based on the operator login to the MDT. Similarly, diagnostic alarms generated by any integrated devices can be sent to the central system in real-time by the OBC and updated firmware received by the OBC can be installed for these devices (as well as configuration data such as farebox faresets and

new sets of head-sign messages). Rather than the operator needing to manually press a button on the head-sign or farebox controller at the end of each trip, this can be automatically signaled to each device by the OBC. Farebox transactional database entries can be tagged with the current location from the OBC.

Paratransit Scheduling and Dispatch Management Software

Paratransit software has been used since the mid-1970s and its capabilities have improved dramatically in the past 10 to 15 years. The potential benefits resulting from the combination of CAD/AVL with advanced paratransit scheduling software are considerable. Most commercially available packages[3] such as RouteMatch TS, StrataGen ADEPT, and Trapeze NOVUS, are designed to interface with MDCs sold by multiple vendors. These systems typically are designed as a series of modules briefly described as follows:

- AVL/MDC Communications Module provides ability to pinpoint current and past vehicle locations via GPS coordinates;

- Supports MDC functions enabling paratransit drivers to log on at the beginning of a shift, send/receive trip information for a single trip or the vehicle's complete daily run, ongoing status changes for a trip pickup, drop-off, no-show or cancellation; and

- Transmit static or free form text messages and emergency alarm messages.

Fixed Route Interface Module works with fixed route bus stop location data and verifies customer eligibility for service based on the ¾-mile ADA criterion. It accepts fixed route files in defined formats and supports graphic display of fixed routes and bus stops overlaying the requested trip as well as ADA service boundaries and descriptive text.[4]

Intermodal Trip Planning Module automatically builds optimal trip itineraries based on a client's ability to ride the fixed route system. It considers multiple modes, routes, service schedules, and fare structures by time of day and day of week. Efficiency gains are facilitated by suggesting multiple combinations of fixed route and demand-response service that meet the travel constraints of persons with disabilities.

Web Client and Interactive Voice Response (IVR) Modules enable customers to receive password-protected access to their recent trip history via the Internet or telephone to review

[3] Storer uses StrataGen scheduling software.

[4] StaRT does not offer ADA paratransit service – it is covered where StaRT operates general public DAR, Runabout/shuttle flex services and by Modesto MAX and Turlock's BLAST

or cancel pending reservations. They also allow customers to request a reservation and receive confirmation of such by email or automated call-back.

Dispatcher Alert Module automatically receives location reports from vehicles in revenue service to provide dispatchers with current information on vehicles that are delayed, have slack time, or may be speeding. It also estimates pick-up times for trips remaining in the vehicle itinerary and flags these if they fall outside the promised pick-up and drop-off windows. Dispatcher alert includes built-in mapping to display the current route selected, pick-up points along that route, closest vehicles, and more.

Revenue Systems Enhancements

Modern farebox systems offer features including cash validation, transactional database, smart card reader integration, as well as related systems for secure farebox data collection, secure cash collection, and revenue data reporting/analysis. Smartcard systems include not only the onboard reader (integrated with the farebox or as a stand beside model) but also a smartcard issuance/revaluing infrastructure, and central system account management software.

Security/Surveillance Systems

Transit security and surveillance (video and audio) systems have proliferated in recent years due to a variety of factors, including:

- Perception (and reality) of improved passenger and operator safety;
- Risks of terrorism or other security threats;
- Deterrent effect against criminal activity, including vandalism and assault;
- Investigation of customer/criminal complaints;
- Reduction of frivolous tort claims and therefore agency liability insurance premiums; and
- Operator training purposes.

The declining cost and increased quality of surveillance systems has also spurred increased implementation in the transit industry. In most existing installations, facility and onboard security and surveillance systems function independently of one another and of many other transit technology systems. However in recent years there has been an increased convergence of systems technology as well as increased functionality to identify ("flag") and retrieve video information.

Several key features of surveillance systems on the marketplace today include: metadata-encoded video and audio files (incorporating into the video frames, based on integrating the Digital Video Recorder DVR with other onboard equipment, the GPS coordinates, brake status and other J1939 vehicle inputs, etc.), map-based user interfaces, accelerometer (G-

Force) sensor automated event flagging, remote event flagging, remote video retrieval, automated system failure notifications, and other ease of use features.

One of the most significant developments is new methods to access video beyond the more established approach to 'pull' the video hard drives from the onboard DVR. When a vehicle pulls in to the garage, flagged video segments can be set to automatically upload via an 802.11 WLAN. The DVR can also be set to serve as a WLAN access point so that an authorized adjacent vehicle can access stored or live streaming video (e.g., emergency response vehicle in a hostage situation). With a suitable wide area broadband mobile data network (e.g., cellular data, WiMax[5], LTE[6]), central software can access on demand streaming vehicle from vehicles in operation.

Business Intelligence

Data from the numerous disparate databases of the various central software applications (in addition to the reporting capabilities provided by each individual software application) can be combined for various types of powerful combined analysis and presentation. One such Business Intelligence approach is the conceptual of a data warehouse, where selected data from multiple systems is imported frequently into a central repository to enable reporting on cross-cutting data. Another such approach is the use of "dashboards," which provides charts to users such as management that present real-time combined data in a manner that helps enable the proactive identification and response to issues as they emerge. Business Intelligence applications can be quite powerful ways to access, analyze, and report on data – in particular for making connections between data from multiple sources.

Electronic Pre-Trip and Post-Trip Vehicle Inspection System

A range of potential solutions are available in this area of functionality. A basic system would simply use the MDT to present a form to the driver before pullout and/or after pull-in. The form would present a series of questions for which the driver would be required to select pass, fail or skip. The data from these forms would be collected from the vehicles and passed to maintenance. Such systems have been quite commonly deployed as an integral element of the onboard CAD/AVL, OBC and MDT systems.

[5] Worldwide Interoperability for Microwave Access is a wireless communications standard designed to provide 30 to 40 megabit-per-second data rates

[6] LTE, (Long Term Evolution), commonly marketed as 4G LTE, is a standard for wireless communication of high-speed data for mobile phones and data terminals.

User Needs

This section builds on the issues identified by StaRT and Storer officials for the existing technologies. The issues are broken down according to three functional areas: (1) Operations; (2) Service planning and customer service; and (3) Administration. For each, a set of current user needs are established. In addition, an associated priority level has been allocated. It is important to note that the priority status needs to be confirmed in discussions with StaRT officials. Below are definitions of the different priority levels:

- Low Priority – The issue somewhat impacts StaRT or their contractor's operational, fleet maintenance, service planning and administrative performance;

- Medium Priority – The issue moderately impacts Transit's operational, fleet maintenance, service planning and administrative performances; and

- High Priority – The issue significantly impacts Transit's operational, fleet maintenance, service planning and administrative performances.

Operations

Dispatch

Current Need	Priority
A system to monitor vehicle location and system performance remotely.	High
The system should allow for the storage and playback of Automatic Vehicle Location (AVL) data.	High
The system should also store and provide reports for historical operation performance (early, late, on-time) data.	High

Conventional, Dial-A-Ride & Paratransit Service

Current Need	Priority
A system with electronic login.	High
A login system that interfaces with the HR/finance system.	High
There should be a single point of logon.	High
A system that provides StaRT with real-time service adjustment tools, such as: • Short-turns	High

Current Need	Priority
• Add or remove trips	
A system that allows StaRT (or their contract operator) to replay information in real-time (i.e. bread crumb vehicle tracking)	High
A system that allows the driver to covertly notify dispatch about an incident.	High
The system should allow for dynamic scheduling[7], which provides operators with automatic updates to their manifests while they are on-route. • Operators will be able to see cancellations • Dispatch can add in new trip requests and Operators will see the new trip pickup time/location and drop off location The system should also allow the operators to log certain information, such as (non exhaustive list): • successfully picked-ups (passenger info, time) • passenger drop-offs (passenger info, time) • No-show passenger	High
A system that supports scheduling Dial-a-Ride service based on the routing and business rules.	High
A system that allows transit vehicles to be given priority at traffic lights.	Medium

Service Planning

Current Need	Priority
A system that can assign both fixed route and paratransit operators and vehicles to the next day's rosters based on StaRT's business rules.	High
A system that logs operational performance statistics (e.g. schedule adherence) and allows StaRT to assess schedule performance. This will provide StaRT with objective metrics in-order to refine future schedules.	High
Automatic Passenger Counters (APCs) A system that keeps	High

[7] Complementing Storer's current use of the StrataGen ADEPT scheduling software.

Current Need	Priority
track of passenger boarding and alightings at stops to more effectively plan service.	

Customer Service

Current Need	Priority
All systems must be ADA compliant.	High
A system that can disseminate real-time passenger information (e.g. predicted arrival times) to customers, whether via: • wayside signs; • web; • telephone service; and • mobile devices.	High
A system that can automatically provide customers with schedule information or if need be to redirect to a person (e.g. in case of a complaint).	High

Administration

Current Need	Priority
A system that should allow StaRT to create maps (e.g. route maps).	Medium
A system to track the various types of customer interactions and allow for reporting to management.	Medium
A system to allow for the automatic tracking of complaints (e.g. issue type, who is resolving the issue, when it was resolved and how).	Medium
An automatic interface between systems to streamline the report creation process.	High
A system to automatically track sales and distribution of tickets and passes.	Medium
Central systems should be both established and low maintenance products, and provided as hosted services.	High

A Way Forward

A future conceptual system may include the following key system interfaces:

- Between the CAD/AVL system StaRT (and their contractor's) administrative functions (e.g. payroll, attendance, transit revenue calculator);
- Between the CAD/AVL system, Vehicle Health Monitoring (VHM) system, and the current or future Maintenance Management system for tracking of fuel, parts, and work orders;
- Between on-board devices (AVL, Mobile Data Terminals [MDT], Farebox, Destination Signs, Automatic Passenger Counters [APC] Automatic Stop Announcements [ASA], etc.) and the On-Board Computer (OBC) to improve transit operation and simplify the bus operators' login procedure. With this interface, bus operators will have fewer distractions while driving; and
- For StaRT vehicles to interact with signal controllers to receive soft priority (i.e. extended green or pre-empted red) at selected intersections.

Overall, the deployment of this complete system will help to improve customer satisfaction, promote efficiency in the organization, and address organizational needs that may be lacking. The new system will integrate existing reporting systems and streamline reporting and management tasks.

Recommended Projects

A series of projects have been defined and presented for discussion. These projects represent distinct packages that may be pursued in order to fully achieve the proposed conceptual system. Within these projects, there are certain technologies requiring significant integration that are best implemented as a bundle through a single contractor to reduce both the cost and the risk to StaRT and their project (and funding) partners. While the Smart Bus Deployment is a pre-requisite to most other technologies, the other modules could be pursued as options on an original contract with a single vendor, rather than undertaking several procurements[8].

Recommended Project	Description
1. Conventional Services Smart Bus System Deployment	Deployment of new CAD/AVL system to the entire StaRT conventional and mobility vehicle fleet. • Central System deployment that allows the tracking of vehicle location and schedule adherence in real time (AVL)[9].

[8] Additional discussions shall address the prospect of procuring the services (or functionality) rather than procuring the hardware and software, from a third-party, possibly as an interim measure.

[9] Preliminary funding approval by CalOES (based on initial documents submitted). StaRT intends using available funds to install AVL on bus fleet. Additional funding for full implementation will be needed.

	• Full compatibility with various existing and future ITS technologies. • Installation of new MDTs on all StaRT owned and contractor vehicles. • Provision of interfaces for communication between driver and dispatcher/in-vehicle ITS systems. • Interface the CAD/AVL to the engine control to monitor engine diagnostic messages. • Integrate CAD/AVL with other onboard security systems such as camera, alert button, and video recorders. • Provide and configure Supervisor's laptops to enable full in-vehicle access to the CAD system. • Full integration with city resources, including Maintenance Management Software • Installation of onboard annunciators (internal and external) as well as internal variable message signs in order to meet ADA requirements.
2. Conventional Services Rostering and Dispatch Software	• Implementation of a rostering/dispatch system for fixed route and paratransit that automatically assigns drivers to vehicles and work assignments. • Implementation of scheduling software for fixed route. • Integration with existing payroll and attendance systems.
3. Advanced Traveler Information Systems	Configure central system to provide a real-time data feed to other applications and potentially third parties to enable the provision of ATIS via Interactive Voice Response(IVR), web, mobile devices, and VMS at stations • Procure, install, and configure IVR system. • Procure, install, and configure VMSs at major terminals; • Develop website to provide transit information via internet and mobile phone.

4. Automatic Passenger Counters (APCs)[10]	Procure and install APCs. • Interface APCs with the in-vehicle systems for full integration with CAD/AVL.
5. Transit Signal Priority	Implementation of a TSP module at key intersections (TBD), allowing all buses equipped with a TSP emitter to receive soft priority; • Install TSP emitters on board all buses.

These program packages could be undertaken as part of a complete year-over-year initiative, or as individual separate projects. However, one key consideration is that since the CAD/AVL plays such a central role in the operation of the other systems, it will be necessary to deploy it first.

Prior to developing an implementation or deployment plan/schedule and financial assessment, additional project team (including officials from StaRT and Storer) discussion is required in order to validate priorities and confirm approved and requested funding as well as specifics for inclusion in future budget cycles.

[10] Funding allocated and approved in FY2012/13 budget – for installation on select buses in fleet.

VI. Consolidation Assessment

In September 2011, StanCOG, along with the transit operators, conducted an assessment of transit services to examine the feasibility of consolidating transit services. Several options were identified at the end of the study period including different forms of consolidation. Discussions continue to be held on consolidating transit services in Stanislaus County. Most recently in July 2012, the Stanislaus County Board of Supervisors approved the consolidation of the former Riverbank-Oakdale Transit Authority and StaRT into one transit system. The consolidation resulted in the blending ROTA's farebox recovery ratio with StaRT's and thereby; gained economies of scale in the administration of the local Riverbank/Oakdale Dial-a-Ride services.

In light of these actions, this section assesses the potential for integrating transit services provided by StaRT and Bus Line Service of Turlock (BLAST). A high-level assessment was conducted in this section using information obtained from a meeting with the consultant team and StaRT and City of Turlock transit staff, as well as from review of the StanCOG TDA Cost Sharing Procedure. The assessment in this chapter identifies additional considerations as talks continue between the two agencies.

City of Turlock Transit

To bring the assessment into context, the City of Turlock administers fixed-route and demand-response transit services within the city limits and surrounding areas. Transit service was first established in 1975 with the implementation of a general public Dial-a-Ride service. As the city's population and area grew, a fixed-route service was introduced in 1998 in concert with the Dial-a-Ride service. The fixed route service is branded under the name of BLAST, which stands for Bus Line Service of Turlock. The demand-response service is branded under the name of DART, which stands for Dial-a-Ride Turlock. Both BLAST and DART are operated under contract by First Transit and overseen by the City's Transit Planner.

The BLAST fixed route service is operated along four routes within the city of Turlock. All four routes originate and terminate at BLAST's transfer hub located at the intersection of Dels Lane and Hawkeye Avenue near Donnelly Park. The routes are structured in a one-directional orientation providing coverage throughout most areas of the city including school campuses and major shopping centers. Service hours for BLAST are Monday through Friday from 6:40 a.m. to 5:30 p.m. and Saturday from 9:25 a.m. to 4:00 p.m. BLAST and DART do not operate on the following holidays: New Year's Day, Martin Luther King Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.

In addition to the fixed route services, DART provides Americans with Disabilities Act (ADA) complementary paratransit (demand response) service within the BLAST service area as well as to unincorporated areas adjacent to Turlock such as Denair. Within the BLAST service area, DART service is available only to persons with disabilities, seniors 65 years of age and older, Medicare card holders, and elementary school students. For trips outside of BLAST's service area, DART service is available to the general public. DART has the same service hours as BLAST

within that service area. In the Denair area, DART operates Monday through Friday from 9:00 a.m. to 4:00 p.m. and Saturday from 9:00 a.m. to 3:00 p.m. Reservations on DART can be accepted at least two hours in advance. After using DART regularly for two weeks, riders can take advantage of the subscription service. This service allows for riders to be picked up from the same place at the same time every day.

Fares

Turlock's transit services accept a variety of fare media such as cash, passes, tickets, and transfers. Transfers and All Day Passes are only available for purchase from the driver. Monthly passes and ticket booklets are available for purchase at Turlock City Hall, Finance Division. Drivers do not make change and exact change is expected. The City implemented a fare increase on BLAST in March 2011 for regular cash fares and certain pass categories.

Fleet

There are 14 vehicles in the total fleet including two CNG vehicles. All vehicles are wheelchair accessible with tie-downs in compliance with the *Americans with Disabilities Act of 1990* (ADA).

Performance Metrics

The figures on the next pages provide historic performance trends for Turlock Transit Services.

Figure VI-1
TDA Performance Indicators
City of Turlock Transit - Fixed Route

		Audit Period			
Performance Data and Indicators	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	***% Change FY 2009-2012***
Operating Cost	$770,789	$837,447	$715,906	$709,873	***-7.9%***
Total Passengers	109,528	99,879	104,332	100,890	***-7.9%***
Vehicle Service Hours	14,193	12,816	12,873	11,491	***-19.0%***
Vehicle Service Miles	177,759	175,593	163,818	163,793	***-7.9%***
Employee FTE's	10	10	10	9	***-10.0%***
Passenger Fares	$101,841	$93,554	$103,806	$107,490	***5.5%***
Operating Cost per Passenger	$7.04	$8.38	$6.86	$7.04	***0.0%***
Operating Cost per Vehicle Service Hour	$54.31	$65.34	$55.61	$61.78	***13.8%***
Operating Cost per Vehicle Service Mile	$4.34	$4.77	$4.37	$4.33	***-0.1%***
Passengers per Vehicle Service Hour	7.7	7.8	8.1	8.8	***13.8%***
Passengers per Vehicle Service Mile	0.62	0.57	0.64	0.62	***0.0%***
Vehicle Service Hours per Employee	1,419.3	1,281.6	1,287.3	1,276.8	***-10.0%***
Average Fare per Passenger	$0.93	$0.94	$0.99	$1.07	***14.6%***
Fare Recovery Ratio	13.21%	11.17%	14.50%	15.14%	***14.6%***

Source: FY 2010-2012 TDA Triennial Performance Audit

Figure VI-2
TDA Performance Indicators
City of Turlock Transit - Dial-a-Ride

		Audit Period			
Performance Data and Indicators	**FY 2009**	**FY 2010**	**FY 2011**	**FY 2012**	***% Change FY 2009-2012***
Operating Cost	$455,497	$359,071	$329,163	$357,237	***-21.6%***
Total Passengers	13,653	10,026	9,949	11,896	***-12.9%***
Vehicle Service Hours	3,427	2,639	2,483	2,712	***-20.9%***
Vehicle Service Miles	44,629	34,887	31,559	35,175	***-21.2%***
Employee FTE's	10	7	7	6	***-40.0%***
Passenger Fares	$46,798	$35,802	$31,272	$38,337	***-18.1%***
Operating Cost per Passenger	$33.36	$35.81	$33.09	$30.03	***-10.0%***
Operating Cost per Vehicle Service Hour	$132.91	$136.06	$132.57	$131.72	***-0.9%***
Operating Cost per Vehicle Service Mile	$10.21	$10.29	$10.43	$10.16	***-0.5%***
Passengers per Vehicle Service Hour	4.0	3.8	4.0	4.4	***10.1%***
Passengers per Vehicle Service Mile	0.31	0.29	0.32	0.34	***10.5%***
Vehicle Service Hours per Employee	342.7	377.0	354.7	452.0	***31.9%***
Average Fare per Passenger	$3.43	$3.57	$3.14	$3.22	***-6.0%***
Fare Recovery Ratio	10.27%	9.97%	9.50%	10.73%	***4.5%***

Source: FY 2010-2012 TDA Triennial Performance Audit

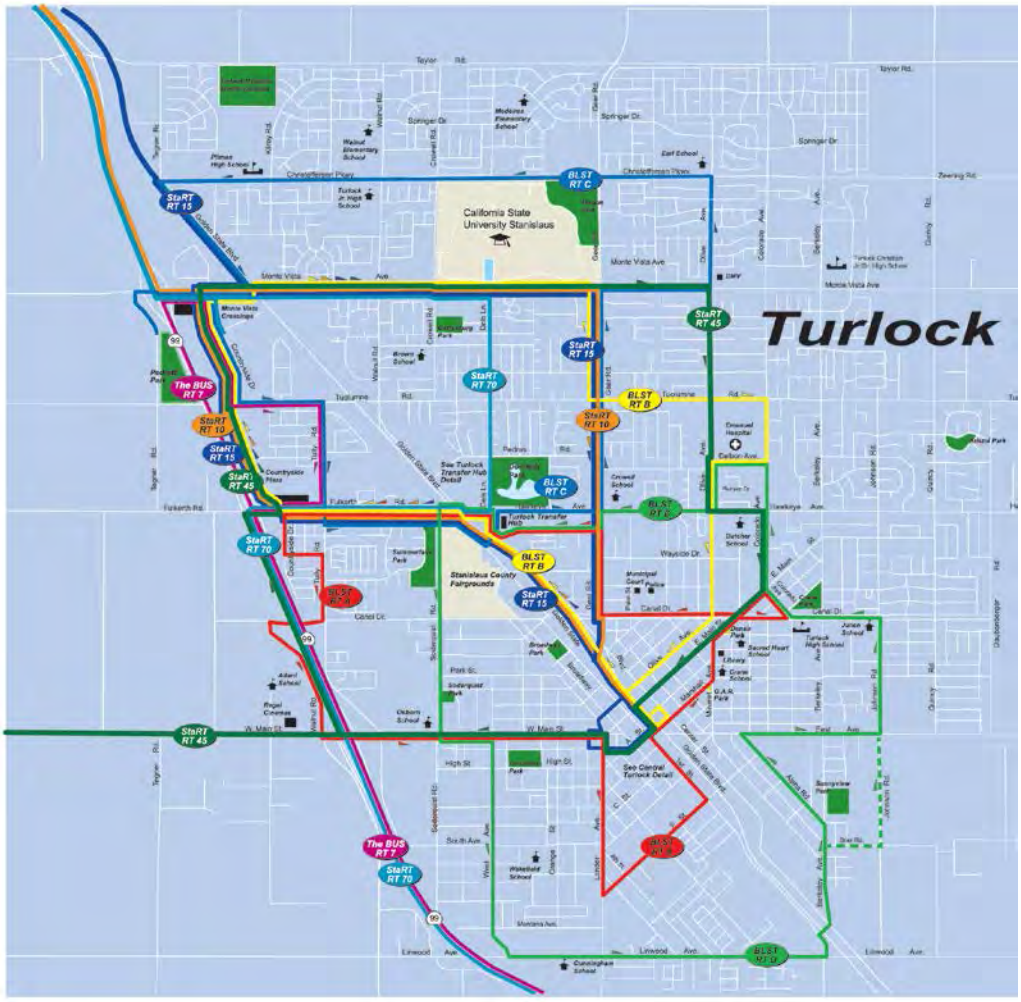
As shown in the figures, both BLAST and DART services experienced service contraction in terms of operational trends (decreased hours and miles) and service performance (decreased ridership). However, operating costs also decreased for both services while fare revenues increased for BLAST which is a positive trend. Farebox recovery for both services was stable in meeting their respective TDA requirements. The financial and operational metrics from the last several years resulted from actions taken by the City to weather the economic hardships from the recession.

Service Conceptual and General Operational Benefits from Consolidation

The figures on the next page show the bus routes for both StaRT and BLAST services. A preliminary analysis showed service duplication between the two systems along major corridors in Turlock including Monte Vista Avenue, Geer Road, Golden State, Countryside Drive, and Fulkerth Road. StaRT Routes 10, 15, 45 East and 70, and the Turlock/Modesto Shuttle currently operate service in Turlock and run along similar major corridors as BLAST. If both systems are consolidated, the service overlap will provide an opportunity for designing efficiencies that offer appropriately sized bus service and convenient travel routes while realizing possible resource savings from redistributing service hours among the routes to match the ridership market. For example, StaRT regional routes could provide the major transit connections along major corridors while local routes will focus on providing specific trips and times such as serving

schools. Enhanced service could also occur in high ridership areas such as in the southern and western portions of Turlock, measured by recent ridership figures on BLAST Route D.

Figure VI-3
StaRT and BLAST Fixed Route Transit Services in City of Turlock



Source: StaRT

A series of conceptual service integration options are developed to offer a springboard for the County and Turlock to hold further discussions for consolidation. These options are offered to help reconfigure service currently that exist among the two systems while continuing to serve primary transit markets in the City and allow for the opportunity for short and long distance travel.

1. **Status Quo**

   - Turlock local routes are pulsed throughout the day from the current Turlock Regional Transit Center at the intersection of Dels Lane, Hawkeye Ave, and Golden State Boulevard.
   - All StaRT services – Routes 10, 15, 45 East, and 70 would follow existing alignments and limit BLAST starting/end points at the Transit Center (to reduce overlaps).

- Continue with transfers between StaRT services and BLAST local service as currently offered at the transit center.
- Local DART service remains the same for local trips.
- Turlock/Modesto Shuttle service remains the same for intercity service.

2. Turlock BLAST Fixed Route during Weekday Peaks

- Turlock fixed routes would operate only during the AM and PM peaks to provide service primarily to the schools and CSUS.
- StaRT services would continue to operate along current routes in Turlock during peak and off-peak periods.
- StaRT routes 10, 15 and 45 East would provide an off-peak fixed route structure for local travel within Turlock.
- Local off peak service in Turlock would be provided by a general public DAR service. The DAR would also meet ADA requirements.
- Local DAR would be restricted to ADA only during peak period and to the general public during off-peak period for local trips.
- Turlock/Modesto Shuttle service remains the same for intercity service.

3. Local Flex-route Services

- Two to three zonal flex-routes would be established to provide peak and off-peak local service. Subscription service would be offered during the peaks for work related trips and school trips.
- Flex-routes would pulse from the Turlock Regional Transit Center to facilitate good connections between flex-routes and with Merced and StaRT regional routes.
- StaRT services – Routes 10, 15 45 East and 70 through the City would limit local service starting/end points to the Transit Center (assumes good connections with local flex-routes).
- Flex-routes would replace local DAR and meet ADA requirements.
- Turlock/Modesto Shuttle service remains the same for intercity service.

There are potential net administrative cost savings to be realized from transferring transit operations and management from the City to StaRT staff which could benefit from economies of scale in staff utilization managing a larger transit system. There are potential staffing responsibilities that may result from consolidation, including planning for services for a larger system and managing federal urbanized grants, reporting, and auditing requirements which are currently conducted by the Turlock Transit Planner. The same functions are currently performed by the County, except for federal funding drawdowns; although, this function can be performed by the County.

Although StaRT does not currently receive federal urban grants under the TDA Cost Sharing Agreement, the County has been designated a Small Urbanized System by the Federal Transit Administration due to the 2010 Census population and is working with City of Modesto Transit to become a subrecipient for FTA Section 5307 urban program funds with the goal of working with StanCOG to become a direct FTA recipient. Current County staff, especially the Transit Manager, is experienced with managing and administering Section 5307 funds and is very experienced with using Federal TEAM and ECHO web-based financial application programs to administer and draw down grant funds. Other reporting requirements including TDA claims, Federal Title VI Program, and FTA National Transit Database would be conducted by the County, for which the County already performs for FTA and Caltrans.

Challenges from Consolidation

The merger of the two transit systems may offer possible challenges that will need to be addressed, whether they are operational, administrative, financial and/or institutional in nature. A number of possible challenges include the restructuring of fares, increased staff responsibilities, coordination, and training.

Consideration of the fare structure consists of fare strategy, payment options, and pricing levels. Both StaRT and BLAST offer a one-way general fare and discounted fare for seniors aged 65 and above as well as for persons with disabilities. The general one-way fare for both systems is currently $1.50 while the discounted fare is $1 for StaRT and $0.75 for BLAST. Under the FTA Half Fare requirement for fixed route service supported with Section 5307 assistance, fares charged elderly persons, persons with disabilities, or an individual presenting a Medicare card during off peak hours may not be more than half the peak hour fare. This means that the discounted fare for seniors and disabled cannot be more than half of the general one-way fare, or $0.75. The Half Fare requirement is not applicable to:

- Demand responsive services, including route deviation services
- Services that operate only during peak hours, such as express and commuter routes
- Services that operate only in the off peak hours (e.g., lunchtime circulators and weekend routes to sporting events)
- Services funded with other FTA assistance that do not use Section 5307 funded equipment or are not operated out of Section 5307 funded facilities

Both fares also have similarities and differences as StaRT offers a fast fare card for specific denominations, a monthly pass and a 20-ride card while BLAST offers a daily ride pass, a full and discounted monthly pass, student monthly pass, and a book of 20 tickets. In addition, transfers are currently free from StaRT to BLAST and other local bus systems, but there is a charge of $0.25 to transfer from BLAST to StaRT. StaRT will need to discuss these differences with the City of Turlock to simplify the fares and reach parity between current StaRT and BLAST riders' fare to include the transfer policy and pass program offerings. For example, with a local feeder system developed to link to the regional service, transfers between systems should be free of a transfer charge. Also, StaRT could offer a day pass should both systems be consolidated. A

zonal fare for local service is also suggested in one of the conceptual service integration plans. The method of fare collection is also a consideration with farebox technology. These discussions may be held in context of regional consolidation.

Based on discussions with the County and City of Turlock transit staff, a potential issue relates to the use of Federal funds for the construction of the transit maintenance facility located in the City corporation yard. With the consolidation of BLAST and StaRT, there could be a requirement to reimburse the federal government if this facility is no longer used as a public transit facility. However, the County has indicated that it is willing to work with the City to continue using the facility for public transit use, for example, to store vehicles and achieve additional operational efficiencies from using this facility. As a suggestion, the County, in negotiation with the City, may determine whether StaRT could store and maintain a portion of the local StaRT bus fleet at this particular facility through a separate maintenance contract with the City (outside of the operations contract with Storer). This additional staging location could create potential additional efficiencies through reduced deadhead mileage and expansion of maintenance services for transit vehicles serving Turlock and other southern transit service areas. The requirement to reimburse the FTA would be addressed through both entities working together along with the Stanislaus Council of Governments (StanCOG).

The transit vehicles acquired by City of Turlock are funded with federal urban capital grants. Transfer of vehicles would occur similar to the acquisition of ROTA vehicles in which the County takes ownership of the vehicles. The transfer of vehicles requires the transfer be supported with documentation that identifies the vehicles specifications. For a direct recipient of FTA Section 5307 funds, the agency must have written FTA authorization prior to transferring federal equipment. The transferring agency (city of Turlock) is responsible for determining under which program the vehicle(s) were purchased; submitting vehicle maintenance history and records; odometer statement signed by the authorized agent from the transfer agency; and removing the equipment from the maintenance inventory and accounting fixed asset systems. The receiving agency (County) is responsible for stating its willingness to accept the vehicle and all obligations; preparing a scope regarding the usage; submitting all required certifications and assurances; and adding the equipment to maintenance inventory and fixed asset listing using the market in accordance with generally accepted accounting principles.

With the recent StanCOG TDA performance audit finding regarding farebox recovery compliance for Stanislaus County transit operators due to population growth recorded in the latest U.S. Census, the minimum farebox ratio for each operator could increase, including StaRT. A merger with Turlock, similar to the ROTA consolidation, would blend the farebox ratios into one system-wide figure which would be between the urbanized requirement of 20 percent and 10 percent for the rural service requirement. To support the overall system in achieving the blended farebox ratio, the Turlock portion of service may need to continue maintaining a high farebox recovery as an urbanized area relative to rural areas of the service. This could be achieved through potentially increasing fare revenues relative to operating costs, or decreasing costs relative to stabilize fare revenues. Planning of service would need to consider these objectives for route consolidation and service coverage options.

General Funding Implications

Continued TDA funding is a specific concern that Turlock has expressed should transit service consolidation occur. According to the TDA Cost Sharing Agreement amended April 18, 2012, under Step 3 of the TDA Process Under Transit Cost Sharing, no agency can receive less TDA funds than its base year floor for FY 1994-95 for non-transit uses. As shown in the Cost Sharing Agreement, the base year funding for Turlock is $455,289. After projected transit costs are funded, the remaining TDA is used for "other" purposes including streets and roads. Any higher TDA funding amounts than the base year in future years is distributed based on the most recent State Department of Finance population data for the County jurisidictions. Each jurisdiction is guaranteed their base allocation dependent on the calculations conducted for the most recent year and could receive additional TDA for streets and roads from the increased funding level.

For transit consolidation to be considered, the City requires that its share of TDA funds for "other" uses does not diminish because of the consolidation. With a base year floor in place for each local jurisdiction, there would be a minimum TDA allocation to Turlock for street purposes. Future TDA amounts for streets and roads would be dependent on several factors including countywide transit allocations, increased or decreased actual funding, and economic trends. Given that the County has worked with a number of cities to consolidate their services with StaRT, these discussions of TDA funding would be held between the City, County, and StanCOG, similar to how the merger of ROTA was accomplished through discussions among the County, ROTA, and StanCOG staff and their agreement on how to proceed.

Regarding transit allocations and contingent on the agreement between the County and the City, TDA claims would be submitted by the County. If cost savings results from consolidation and less TDA is required for transit in Turlock compared to budgeted, then according to the TDA Cost Sharing Agreement, TDA funds for transit cannot be transferred to Turlock for street uses. The additional funds must be revealed at the next cost sharing meeting and that amount is deducted from next year's TDA transit needs. Detailed discussions would need to be held between the County of Stanislaus, City of Turlock, StanCOG, and Caltrans for the implications on TDA funding for both jurisdictions from potential consolidation and the applicability of the Transit Cost Sharing Procedures. This process would be similar to discussions held between StanCOG, the County, and ROTA when StaRT and ROTA merged their transit services and with final approval from Caltrans. Furthermore, additional discussions will need to be held between the County, City of Turlock, Caltrans, and the FTA given that both the County and City receive funds from federal transit funding programs. Final approval of the merger, should both entities agree to the consolidation, will also need to be sought from the FTA.

VII. Service Recommendations

This chapter summarizes StaRT's COA service recommendations. The proposed service recommendations are intended as suggestions or a possible "menu" of service changes for consideration by StaRT management based on Stanislaus County priorities and transit vision.

The recommendations are based on the findings of the COA and address the key farebox recovery, core market, demand growth potential, service overlap, and service reliability issues identified in the COA. The proposed service recommendations support the service policies, performance standards and Title VI, and Environmental Justice requirements and objectives identified in Chapter IV.

Service recommendations are identified and discussed as proposed service changes and grouped into the following thematic options:

- Option 1: Status Quo (no change)
- Option 2: Address Farebox Recovery Challenges
- Option 3: Improve On Time Performance
- Option 4: Increase Capacity on Selected Routes
- Option 5: Establish Clock-face Headways on Routes 10 and 60
- Option 6: Formalizing ADA Requirements
- Option 7: Improve Productivity
- Option 8: Minimize Service Overlaps
- Option 9: Address Public Service Expansion Requests

Key Issues Addressed in StaRT COA Service Plan

System-wide Farebox Recovery

Approximately 68% of StaRT transit services are operated within urbanized areas. This includes the redefined Modesto Urbanized Area as well as the cities of Turlock, Patterson, Newman Hughson, and Merced. The higher proportion of urban transit coverage impacts the minimum farebox revenue recovery required by StaRT. The proposed blended urban/rural system minimum farebox recovery ratio for StaRT to be established by StanCOG is 15% which is anticipated to take effect beginning in FY 2015-16. This compares to the current 10% farebox requirement for StaRT as a rural service. However, StaRT is no longer considered as a rural service given the recent reclassification of StaRT to a Small Urban System within a Large Urbanized Area. Based on an analysis of FY 2013-14 operating and cost data, StaRT's system-

wide farebox recovery is currently estimated to be 11.70% and will be potentially higher at the end of the fiscal year ending June 30, 2014. Table VII-1 summarizes farebox recovery by route and service type.

Table VII-1:
StaRT Farebox Recovery Summary (FY 2013-14)

Route/Service	Cost	Revenues	Farebox Ratio
10	$436,055	$117,761	27.01%
15	$393,925	$75,464	19.16%
40	$258,818	$48,061	18.57%
45 West*	$370,922	$13,518	3.64%
45 East*	$299,974	$10,157	3.39%
60	$462,359	$115,864	25.06%
70	$91,295	$15,059	16.49%
Medivan	$197,965	$19,494	9.85%
Turlock/Modesto Shuttle	$256,528	$10,283	4.01%
Eastside Shuttle	$191,605	$6,979	3.64%
Waterford/Modesto Runabout	$321,874	$19,367	6.02%
Newman Dial-a-Ride	$193,658	$5,272	2.72%
Patterson Dial-a-Ride	$197,954	$13,699	6.92%
Oakdale Dial-a-Ride*	$210,412	$15,240	7.24%
Riverbank Dial-a-Ride*	$208,788	$5,762	2.76%
Waterford Dial-a-Ride	$149,685	$4,522	3.02%
TOTALS/AVERAGE FARE RECOVERY	**$4,241,817**	**$496,503**	**11.70%**

FY 2013-14 Start Operting and Cost Data by Route (StaRT)

* New services introduced during FY 2013-14 were annualized for 254 days

Although there were significant increases in StaRT ridership[11] between 2009 and 2014, StaRT serves an area of low transit demand density. The StaRT COA Financial Analysis projects a five percent annual increase in revenues and a two percent annual increase in operating costs (as reflected in purchased transportation services) for the period FY 2014-15 to FY 2022-23.

On Time Performance/Schedule Adherence Issues

Based on the COA ride-check findings and operational staff feedback, StaRT Routes 10, 15, 40, and 60 experiences schedule adherence problems. Buses run late because of highway and street traffic congestion, delays at railway crossings, weather, mechanical issues, and replacement buses departing late. Adding additional cycle time will improve on time performance related to traffic congestion, weather, and train delays. Schedule adherence is a critical service reliability factor and can impact service attractiveness to the public**.** It is therefore very important that StaRT continues to evaluate and address on-going on-time performance and schedule adherence issues and challenges.

Core StaRT Services within Stanislaus County

StaRT provides regional and local transit service for residents living in the smaller communities with access to education facilities, medical providers, social service offices, employment opportunities, entertainment, and higher retail concentrations in Modesto and Turlock. It also provides local Dial-a-Ride services to connect local residents with goods, services, and activities located in the smaller communities of Riverbank, Oakdale, Waterford, Patterson, and Newman. StaRT provides commuter and lifeline transit services to students, low income households, seniors, persons with disabilities, and to a lesser extent, choice transit riders.

Need to Provide Ongoing Service Monitoring, Evaluation and Planning

StaRT has successfully evolved to meet the needs of its primary markets – students, seniors, persons with disabilities, and low income person. A formal monitoring and evaluation program is critical to effectively meeting the current and changing mobility needs of these markets. Monitoring and evaluation is also critical to service efficiency and long-term sustainability.

Operate and Plan Services within Approved Policy Framework

Chapter IV provides a set of StaRT service objectives and supportive policy statements as well as service performance and design guidelines. The service policies and guidelines provide the framework and context for ongoing service operations and planning. Chapter IV sets the framework for the development of the StaRT COA service recommendations and suggestions.

StaRT COA Service Plan

[11] Between 2009 and 2013, StaRT has experienced an approximate 24% (six percent per year) increase in ridership. Fixed route services have accounted for the majority of the ridership increase (approximately 23%) while Shuttle and Dial-A-Ride services have had more moderate ridership increases (approximately 14%). StaRT Internal Management Reports.

The StaRT COA service plan is organized into a series of Options for consideration by Stanislaus County. Achieving a sustainable minimum farebox recovery ratio of 15% is identified as a critical objective of the COA service plan. Option 2 addresses the issue of farebox recovery through the elimination of unproductive fixed route trips and service coverage during the less productive early AM and later PM service hour shoulders. Under the proposed COA service plan, potential reduction of unproductive service hours frees up revenue hours to be applied to service enhancements outlined in Options 3, 4, and 5.

Option 1: Status Quo

The Status Quo option is a no change option and suggested as a near term alternative to assess the effectiveness of service changes made August 2013 and to collect additional trip by trip or hourly productivity data. The assessment of additional productivity data collected for a longer time frame will allow an assessment of performance more current performance trends and provide a stronger base for the assessment of the service reductions proposed in Option 2.

The status quo may require 65,616 annual revenue hours. The Status Quo is expected to have little or no positive impact on reaching the proposed 15% minimum farebox recovery ratio and do not offer additional revenue hours for the service enhancements identified in Options 3, 4, and 5.

Option 2: Address Farebox Recovery Challenges

The proposed requirement for StaRT to achieve a minimum 15% farebox recovery may go into effect in FY 2015-16. Data reviewed and analyzed indicates that the projected annual fare revenue increases may not be sufficient to reach this requirement. The most effective way to increase the farebox revenue recovery ratio is to consider reducing the least productive revenue hours. This approach will reduce individual fixed route bus trips as well as shuttle and Dial-a-Ride revenue hours that have low ridership and low fare revenues, while ensuring the integrity of individual routes and services.

Under this approach, StaRT would not need to eliminate individual fixed routes, shuttle services, or Dial-a-Ride but would be able to reassign unproductive hours to enhance services during the more productive time of the day, when the majority of riders use StaRT services. Subsequently, the productivity and farebox recovery of each route and service would increase. By discontinuing poorly performing fixed route trips or shuttle and Dial-a-Ride hours, StaRT would be better able to achieve and sustain the proposed system-wide 15% farebox recovery ratio.

In Option 2, it is recommended that unproductive services be potentially reduced and reallocate the revenue hours to other routes. It is suggested that the proposed revenue service trips discontinuation be based on sample sizes drawn from:

- the COA 100% weekday and Saturday fixed route services ridecheck findings supplemented by single weekday summary of Genfare GFI farebox trip by trip data for a Route 45 East and Route 45 West.

- four days of Statistical Summation Reports prepared by Storer Transit Systems for the Riverbank, Oakdale, Waterford, Newman, and Patterson Dial-A-Ride services, the Eastside and Turlock/Modesto Shuttles, and the Waterford/Modesto Runabout.

Tables in the Technical Report provides a summary of proposed individual bus trips, or in the case of Dial-a-Ride services, the revenue hours with low ridership for StaRT fixed route, Shuttle/Runabout, and Dial-A-Ride services respectively. The potential annual revenue hours available for reallocation to service enhancements outlined in Options 3, 4, and 5 are summarized by individual route or service.

Given the limited sampling size of the operating data used to prepare the proposed Option 2 listing of potential candidate service trip reduction, a more thorough sampling of trip by trip or hour by hour productivity trends using GFI data is suggested prior to the finalizing potential trip reductions. Further discussions with the current StaRT service contractor are also recommended to determine potential impacts on recent bid prices, especially where potential service reallocations may impact revenue to non-revenue hour ratios.

Option 3: Improve On Time Performance

StaRT Routes 10, 15, 40, and 60 were identified as having consistent schedule adherence challenges. On time performance issues were identified from the COA ridecheck findings and operations staff feedback.

On-time performance is a critical transit service reliability factor. Poor on-time performance can discourage ridership, while reliable schedule adherence can attract riders. Additional running time have been added to the Route 10, 15, and 60 schedule samples to facilitate more relaxed running times and extra recovery time at route beginning and end points. In the case of Routes 10 and 40, the route lengths were shortened to facilitate more relaxed schedules. Generally, an additional time was added at the route start and end points to reduce onboard travel time for passengers resulting from unnecessary layovers on route. The additional revenue hours required for Option 3 enhancements are identified by route. The conceptual schedules and revenue hours in Option 3 incorporate potential recommendations to trim unproductive trips suggested in Option 2.

Route 10

Route 10 is essentially an express commuter service connecting Modesto and Turlock, with direct regional service to MJC and CSUS. Route 10 has the highest farebox recovery (over 27%) of the StaRT services. Improved on-time performance and reliability have a strong potential to further increase ridership and farebox recovery. Improved on-time performance will also improve connectivity with local MAX service and other regional StaRT services at MTC, as well as local BLST and regional StaRT services in Turlock. A focus on the Turlock Transit Hub (as shown in the Route 10, Alternative 2 option) will reinforce the express and regional commute role of this route.

Route 10 - Alternative 1:

Depending on the time of day, Route 10 currently operates with a 63 to 87 minutes round trip cycle time. This includes five minutes layover time at Central Park in Turlock. The highest round trip cycle times are scheduled for trips departing MTC between 7:40 AM and 6:10 PM. From the COA ridecheck findings, Route 10 tends to run behind schedule on outbound trips south of CSUS.

In Alternative 1, the Route 10 schedule has been modified by adding eight minutes to the Route 10 outbound trips departing Modesto and five additional minutes to inbound trips departing from Central Park in Turlock. Table VII-2 provides a conceptual schedule that summarizes departure and arrival times from the Modesto Transit Center (MTC) and Central Park in Turlock.

Table VII-2: Route 10 Alternative 1
Conceptual Schedule

MTC (Depart)	Central Park (Arrive)	Central Park (Depart)	MTC (Arrive)
		5:39	6:27
6:00	6:38	6:43	7:32
6:50	7:28	7:33	8:22
7:40	8:18	8:23	9:13
8:25	9:03	9:08	9:59
9:25	10:03	10:08	11:00
10:25	11:03	11:08	12:00
11:25	12:04	12:09	13:02
12:25	13:05	13:10	14:03
13:25	14:05	14:10	15:04
14:25	15:05	15:10	16:05
15:25	16:05	16:10	17:04
16:25	17:05	17:10	18:03
17:25	18:05	18:10	19:01
18:10	18:48	18:53	19:44
19:40	20:16	20:21	20:56

In Route 10 Alternative 1, service would begin at 5:39 AM departing Central Park and finishing at MTC at 8:56 PM. The proposed Route 10 Alternative 1 schedule is based on the current scheduled departure times from MTC. No routing changes are proposed. A five minute layover is maintained at Central Park. As in the current situation, two buses are required to support the proposed schedule. The additional outbound running time should be assigned to the Central Park time point to avoid layovers at inbound time points in Turlock. The additional inbound running time should be assigned to the MTC time point.

Route 10_ Alternative 1 will require an additional 3.33 revenue hours per service day and an additional 846 revenue hours per year. *Revenue hours do not include layover time between trips at MTC*.

Route 10 - Alternative 2:

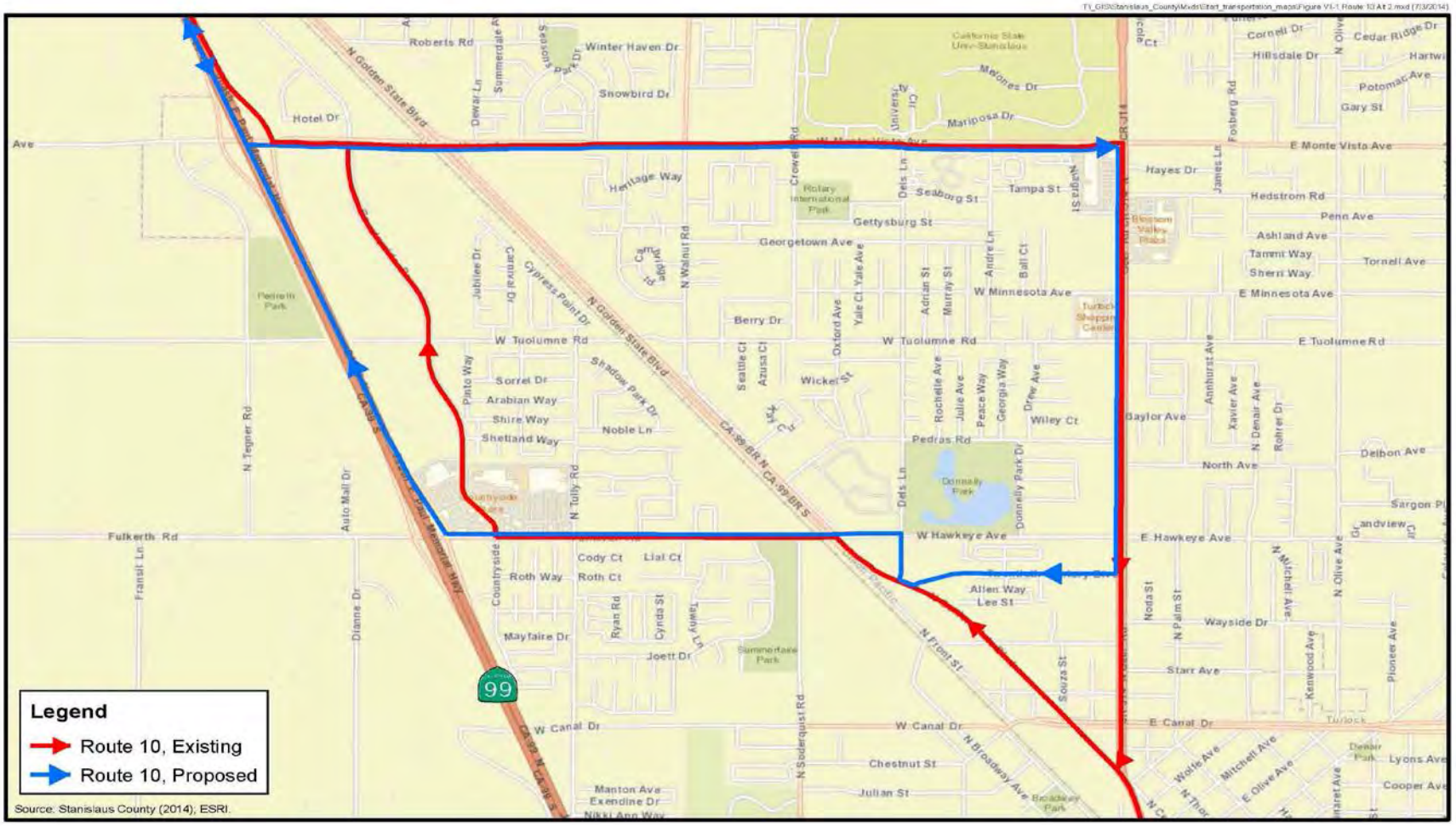
In Alternative 2, Route 10 will provide express service between MTC and the Turlock Transit Hub with an inbound stop at CSUS. This will alter serving CSUS at the current W. Monte Vista/Dels Lane stop and Route 10 would continue west on W. Monte Vista; right on Geer Road; right on Twentieth Century Blvd.; right on Dels Lane to the Turlock Transit Hub. The outbound trip on Route 10 would proceed north on Dels Lane; left on W. Hawkeye Ave., proceed westbound on Fulkerth; and northbound on Highway 99.

Local Turlock stops along Geer north of Twentieth Century Blvd. could still be served. However, Route 10 would no longer serve local Turlock stops south of Twentieth Century Blvd., including the existing Central Park terminus. Passengers may be required to transfer to local service for local destinations south of Twentieth Century Blvd. Figure VII-1 provides a Route 10 Alternative 2 route conceptual map and Table VII-3 provides a conceptual schedule.

Table VII-3: Route 10
Alternative 2 Conceptual Schedule

MTC (Depart)	Turlock Transit Hub (Arrive)	Turlock Transit Hub (Depart)	MTC (Arrive)
		5:35	6:27
6:00	6:38	6:43	7:32
6:50	7:28	7:33	8:22
7:40	8:18	8:23	9:13
8:25	9:03	9:08	9:59
9:25	10:03	10:08	11:00
10:25	11:03	11:08	12:00
11:25	12:04	12:09	13:02
12:25	13:05	13:10	14:03
13:25	14:05	14:10	15:04
14:25	15:05	15:10	16:05
15:25	16:05	16:10	17:04
16:25	17:05	17:10	18:03
17:25	18:05	18:10	19:01
18:10	18:48	18:53	19:44
19:40	20:16	20:21	20:56

Figure VII-1
Route 10 Alternative 2 Route Conceptual Map



In Alternative 2, service would begin at 5:35 AM departing the Turlock Transit Center and finishing at MTC at 8:56 PM. The Alternative 2 schedule is built on the Alternative 1 schedule with eight minutes added to outbound trips departing MTC and five additional minutes to inbound trips departing from the Turlock Transit Center. The additional eight minutes is added to the arrival time at the Turlock Transit Center. If buses are running "hot", this will facilitate a longer layover in Turlock and will provide greater transfer flexibility with local routes, StaRT Route 45 East, and the Merced Transit Authority's Turlock Commuter. Two buses will be required to operate this schedule. No running time savings are estimated for the short turning of the Route 10 at Twentieth Century Blvd.

> **Route 10 - Alternative 2** may require an additional 3.33 revenue hours per service day and an additional 846 revenue hours per year. *Revenue hours do not include layover time between trips at MTC*.

Route 15

Route 15 is a critical community connector operating along the HWY 99 corridor. The Route 15 also has relatively good farebox recovery (approximately 19%). Improved on-time performance will likely bring this route above the 20% farebox recovery benchmark.

Route 15 - Alternative 1:

Weekday round trip cycle times for the Route 15 range from 111 to 143 minutes. Saturday round trip cycle times range from 99 to 119 minutes.

Route 15 runs late in both outbound and inbound directions on weekdays and Saturdays. The route runs into traffic congestion in Ceres. In Alternative 1, five minutes is added to the running time in each direction on all weekday and Saturday trips. In the outbound directions, the additional time is assigned to the last southbound Ceres time point (Whitmore Plaza). On the weekday and Saturday inbound trips, additional time is assigned to the last northbound Ceres time point (El Pollo Loco). A five minutes recovery time is assigned to the Central Park time point in Turlock. In Alternative 1, no routing changes is suggested for Route 15. One bus is required to operate the schedule.

Table VII-5 provides a conceptual schedule for weekday service summarizing departure and arrival times at MTC and Central Park. Table VII-6 provides a conceptual schedule for Saturday service summarizing departure and arrival times at MTC and Central Park.

Table VII-5: Route 15, Alternative 1
Conceptual Schedule for Weekday Service

Route 15 - Weekdays			
MTC (Depart)	Central Park (Arrive)	Central Park (Depart)	MTC (Arrive)
		5:20	6:26
6:45	7:44	7:49	9:02
8:45	9:44	9:49	11:06
10:45	11:44	11:49	13:12
12:45	13:48	13:53	15:17
14:45	15:48	15:53	17:18
16:45	17:48	17:53	19:11
18:30	19:21		

Table VII-6: Route 15, Alternative 1
Conceptual Schedule for Saturday Service

Route 15 Saturdays			
MTC	Central Park	Central Park	MTC
6:30	7:16	7:21	8:19
8:30	9:28	9:33	10:36
10:30	11:29	11:34	12:38
12:30	13:29	13:34	14:39
14:30	15:29	15:34	16:39
16:30	17:29	17:34	18:39
18:30	19:27		

On weekdays, the Route 15 Alternative 1 service would begin at 5:20 AM at Central Park and finish at Central Park at 7:21 PM. Saturday service would begin at 6:30 AM departing MTC and finish at Central Park at 7:27 PM.

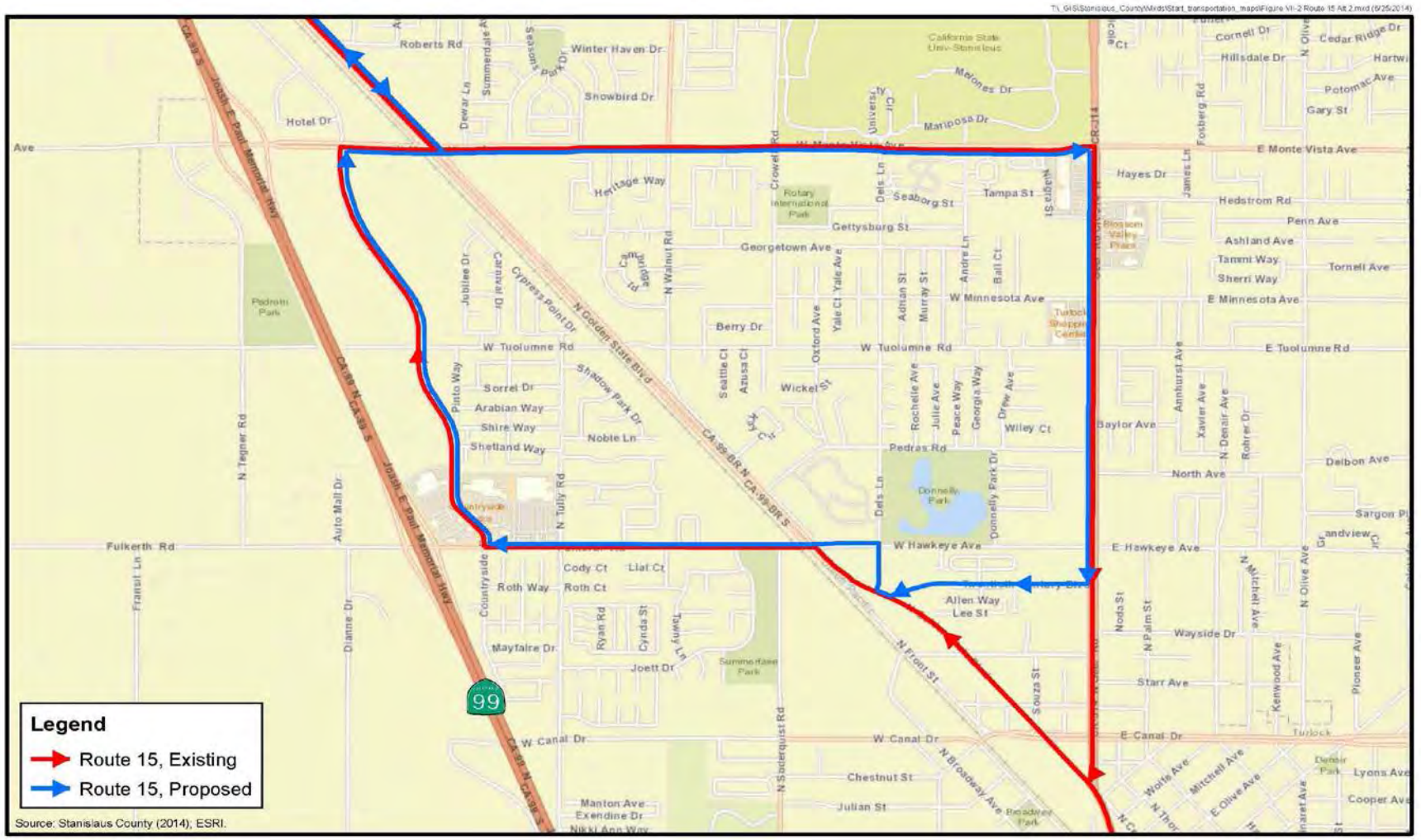
Route 15 - Alternative 1 will require two additional revenue hours per weekday service day and 1.1 additional revenue hours on Saturday service days. Five hundred and eight additional revenue hours are required per year. *Revenue hours do not include layover time between trips at MTC*.

Route 15 - Alternative 2:

In Alternative 2, Route 15 will not serve downtown Turlock. Outbound from MTC Route 15 will continue to operate along its current route until it arrives at Geer Road and Twentieth Century Blvd. At this point, Route 15 will turn right on Twentieth Century Blvd. and right on Dels Lane

to the Turlock Transit Center. Route 15 would follow its current inbound routing north of the Turlock Transit Hub. Figure VII-2 provides a Route 15 Alternative 2 conceptual map.

Figure VII-2
Route 15 Alternative 2 Route Conceptual Map



Route 15 Alternative 2 would operate with the same round trip cycle times as the proposed Route 15 Alternative 1. Table VII-7 offers a weekday conceptual schedule for Route 15 Alternative 2. Table VII-8 provides a Saturday conceptual schedule.

Table VII-7: **Route 15, Alternative 2**
Conceptual Schedule for Weekday Service

Route 15 - Weekdays			
MTC (Depart)	Turlock Transit Hub (Arrive)	Turlock Transit Hub (Depart)	MTC (Arrive)
		5:20	6:26
6:45	7:44	7:49	9:02
8:45	9:44	9:49	11:06
10:45	11:44	11:49	13:12
12:45	13:48	13:53	15:17
14:45	15:48	15:53	17:18
16:45	17:48	17:53	19:11
18:30	19:21		

Table VII-8: **Route 15, Alternative 2**
Conceptual Schedule for Saturday Service

Route 15 Saturdays			
MTC (Depart)	Turlock Transit Hub (Arrive)	Turlock Transit Hub (Depart)	MTC (Arrive)
6:30	7:16	7:21	8:19
8:30	9:28	9:33	10:36
10:30	11:29	11:34	12:38
12:30	13:29	13:34	14:39
14:30	15:29	15:34	16:39
16:30	17:29	17:34	18:39
18:30	19:27		

On weekdays, the Route 15 Alternative 2 service would begin at 5:20 AM departing the Turlock Transit Center and finish at the Turlock Transit Center at 7:21 PM. Saturday service would begin at MTC at 6:30 AM and finish at the Turlock Transit Center at 7:27 PM.

Route 15 - Alternative 2 will require two additional revenue hours per weekday service day and 1.1 additional revenue hours on Saturday service days. Five hundred and eight additional revenue hours are required per year. *Revenue hours do not include layover time between trips at MTC.*

Route 40

Route 40 is an important west side community connector. It functions both as a lifeline route connecting west side residents with goods, services, and activities in Modesto and as a commuter services with single seat service to MJC. Improved on-time performance would enhance the Route 40's regional commuter role by improving connections with the Patterson Dial-A-Ride serving as a feeder to and from jobs in the expanding West Patterson Business Park.

Route 40 - Alternative 1:
Weekday round trip cycle times for the Route 40 range from 111 to 121 minutes. Saturday round trip cycle times range from 107 to 126 minutes on trips serving Vintage Faire Mall. Traffic congestion within the Modesto urban area causes delays in Route 40 service. In Alternative 1, Route 40 schedules are relaxed by shortening the route. This is accomplished by shortening the Grayson loop[12] and discontinuing the first Westley loop in both directions[13]. Figure VII-3 provides a map illustrating the proposed route changes.

Approximately five minutes running time is reduced in both outbound and inbound trips with the straightening of Route 40 in Grayson and Westley. Outbound running time savings are assigned to Veterans Park in Patterson to improve connectivity with the Patterson Dial-A-Ride and the Route 45 West. This change will increase the Route 40 layover at Veterans Park to 15 minutes. Inbound running time savings will be assigned to MTC. Table VII-9 provides a weekday conceptual schedule and Table VII-10 provides a Saturday conceptual schedule for Route 40 Alternative 1.

[12] Proposed routing through Grayson is – right off Grayson Road on Laird, left on Mary, left on River and left on Grayson Road.

[13] Boardings at the affected stops in Grayson and Westley are limited. Residential areas in these communities remain within walking distance of the remaining Route 40 bus stops.

Figure VII-3
Proposed Conceptual Route 40 Map Changes

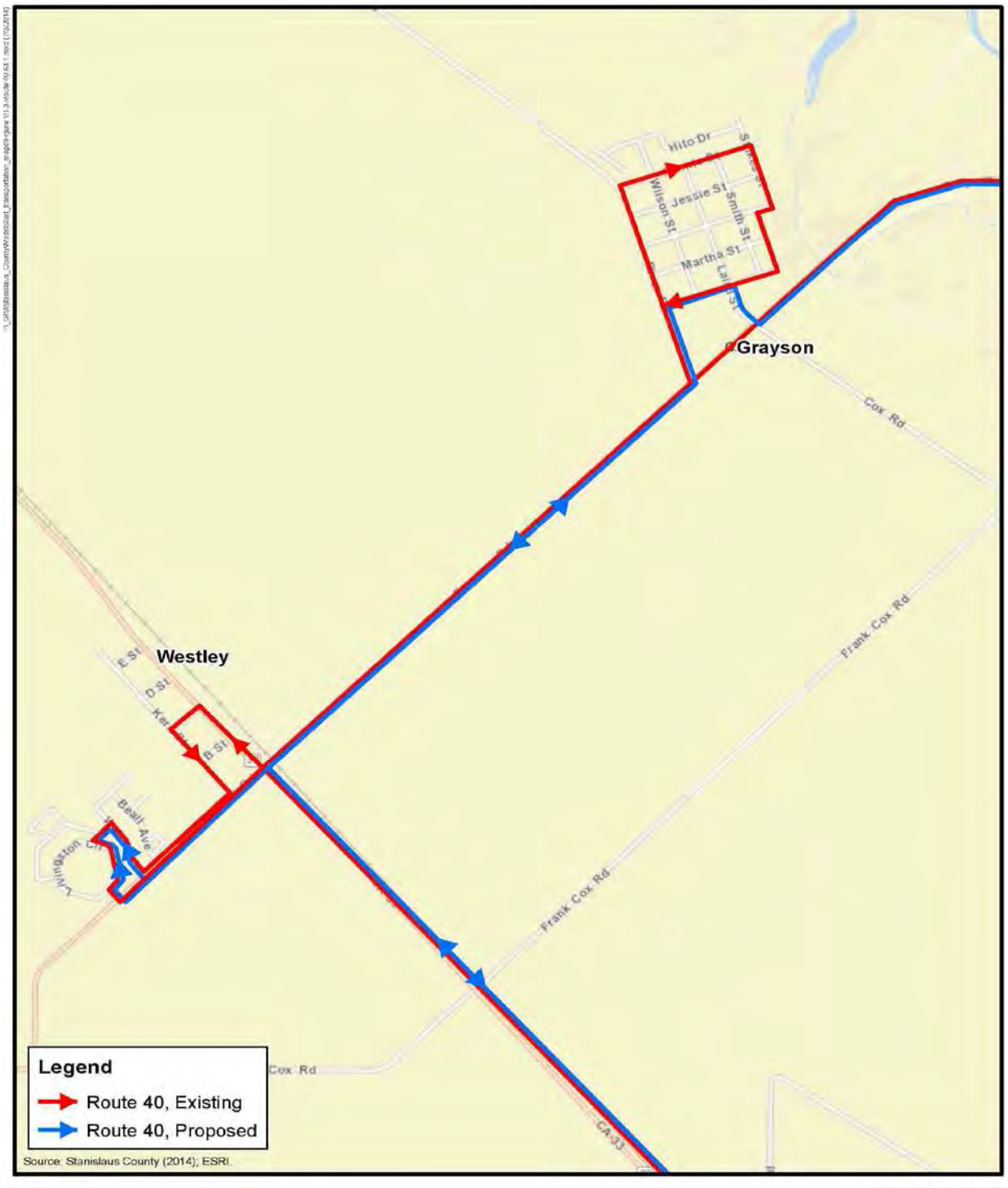


Figure VII-3
Route 40 Alternative 1

PMC

Table VII-9: Route 40 Alternative 1
Weekday Conceptual Schedule

Route 40 - Weekday			
MTC (Depart)	Veterans Park (Arrive)	Veterans Park (Depart)	MTC (Arrive)
		6:22	7:21
7:20	8:07	8:22	9:11
			11:15
9:20	10:07	10:22	11:21
			13:15
11:20	12:07	12:22	13:21
			15:15
13:20	14:07	14:22	15:21
			17:15
15:20	16:07	16:22	17:21
			19:15
17:20	18:07	18:22	19:21
19:20	20:05		

Table VII-10: Route 40 Alternative 1
Saturday Conceptual Schedule

Route 40 - Saturday					
Vintage (Depart)	MTC (Depart)	Veterans Park (Arrive)	Veterans Park (Depart)	MTC (Arrive)	Vintage (Arrive)
			6:30	7:15	
	8:10	9:02	9:17		10:32
10:30		11:48	12:03		13:18
13:15		2:33	14:48		16:03
16:00		17:18	17:33		18:48
18:00		19:13			

For the Route 40 Alternative 1 option, weekday service would begin at Veterans Park at 6:22 AM and finish at Veterans Park at 8:05 PM. Saturday service would begin at 6:30 AM departing Veterans Park and finish at Veterans Park at 7:13 PM. One bus is required to operate the proposed Route 40 Alternative 1 schedules. No additional revenue hours are required for Alternative 1. The Alternative 1 schedule could be adjusted further to allow additional layover time at Veterans Park.

Route 40 - Alternative 1 No additional revenue hours are required. *Revenue hours do not include layover time between trips at MTC.*

Route 40 - Alternative 2:

In the Alternative 2 service option, there are no route changes proposed for Route 40. The outbound and inbound weekday and Saturday schedules are relaxed by adding additional running time. In Alternative 2, eight minutes is added to outbound trips from MTC and Vintage Faire Mall with the additional time adjusted at the Veterans Park stop for additional layover time. Five minutes running time is added to all inbound trips. The additional time is added at the MTC stop on weekdays and the Vintage Faire mall on Saturdays. Table VII-11 provides a conceptual schedule of Route 40 Alternative 2 weekday service and Table VII-12 offers a conceptual schedule for Saturday service.

Table VII-11: Route 40 Alternative 2
Weekday Conceptual Schedule

Route 40 - Weekday			
MTC (Depart)	Veterans Park (Arrive)	Veterans Park (Depart)	MTC (Arrive)
		6:17	7:31
7:20	8:20	8:17	9:29
			11:15
9:20	10:20	10:17	11:39
			13:15
11:20	12:20	12:17	13:39
			15:15
13:20	14:20	14:17	15:39
			17:15
15:20	16:20	16:17	17:39
			19:15
17:20	18:20	18:17	19:39
19:20	20:18		

Table VII-12: Route 40 Alternative 2
Saturday Conceptual Schedule

Route 40 - Saturday					
Vintage (Depart)	MTC (Depart)	Veterans Park (Arrive)	Veterans Park (Depart)	MTC (Arrive)	Vintage (Arrive)
			6:30	7:07	
	8:10	9:15	9:17		10:50
10:30		12:01	12:03		13:36
13:15		2:46	14:48		16:21
16:00		17:46	17:33		19:06
18:00		19:26			

In the Route 40 Alternative 2 option, weekday service would start at 6:17 AM departing Veterans Park and finish at Veterans Park at 8:18 PM. Saturday service would start at 6:30 AM departing Veterans Park and finish at Veterans Park at 7:29 PM

One bus may be required to operate the proposed Route 40 Alternative 2 schedules.

> **Route 40 Alternative 2** will require 1.4 revenue hours per weekday service day and 1.2 additional revenue hours on Saturday service days. Four hundred and eighteen additional revenue hours are required per year. *Revenue hours do not include layover time between trips at MTC*.

Route 60

Route 60 is a critical east side core route providing both commuter service for Oakdale and Riverbank residents into Modesto and inter-community service between Oakdale and Riverbank. Route 60 has a very good farebox recovery ratio at approximately 25%. Heavy ridership and traffic congestion result in on-time performance issues. Additional running time would enhance the reliability of this route and have a positive impact on service attractiveness as both a commuter and inter-community connector.

Route 60 - Alternative 1:

Existing weekday round trip cycle time ranges from 96 to 127 minutes on the Route 60. The Saturday round trip cycle time ranges from 107 to 150 minutes. Ten minute recovery time is scheduled at the outbound terminus at Kmart in Oakdale. The additional Saturday running time is to accommodate service to Vintage Faire Mall in Modesto.

In Alternative 1, no routing changes are recommended. An additional 10 minutes running time is recommended for all weekday and Saturday outbound and inbound trips. The additional outbound travel time will be added to the Kmart time point, and the additional inbound time will be added to the MTC time point to avoid potentially long layovers along the route. Table VII-13 provides a conceptual schedule of Route 60 Alternative 1 weekday service, and Table VII-14 provides a conceptual schedule for Saturday service.

Table VII-13: Route 60 Alternative 1
Weekday Conceptual Schedule

Route 60 Weekdays			
MTC (Depart)	Kmart (Arrive)	Kmart (Depart)	MTC (Arrive)
		5:35	6:29
5:15	6:11	6:21	7:21
6:30	7:28	7:38	8:40
7:45	8:43	8:53	9:55
9:00	10:00	10:10	11:19
10:15	11:20	11:30	12:42
11:30	12:41	12:51	14:03
12:45	14:00	14:10	15:22
14:00	15:15	15:25	16:37
15:15	16:30	16:40	17:52
16:30	17:46	17:56	18:58
17:45	18:52	19:02	20:02
19:20	20:28		

Table VII-14: Route 60 Alternative 1
Saturday Conceptual Schedule

Route 60 - Saturdays			
MTC (Depart)	Kmart	Kmart (Depart)	MTC (Arrive)
6:15	7:04	7:14	8:32
8:15	9:28	9:38	10:56
10:15	11:32	11:42	13:05
12:15	13:32	13:42	15:15
14:15	15:32	15:42	17:05
16:15	17:32	17:42	19:05
18:15	19:27	19:37	20:56

Route 60 Alternative 1 assumes that a 10 minute layover will remain in effect at Kmart. With the additional 10 minute outbound running time, the scheduled Kmart layover could be reduced to five minutes with a resulting savings of 284 annual revenue hours. Weekday service will start at 5:35 AM departing Kmart and finish at Kmart at 8:28 PM. Saturday service will start at 6:15 AM departing MTC and finish at MTC at 8:56 PM.

Route 60 - Alternative 1 will require 4.0 revenue hours per weekday service day and 2.3 additional revenue hours on Saturday service days. One thousand, one hundred and thirty-seven additional revenue hours are required per year. *Revenue hours do not include layover time between trips at MTC*.

Route 60 - Alternative 2:

In Alternative 2, Route 60 is rerouted to provide more direct service to Riverbank's downtown area, including the Park-N-Ride lot located downtown on Stanislaus Street and 3rd Street. This routing would also provide better pedestrian access to the Route 60 than along the current section of Patterson Road between 3rd Street and Claus Road.

Figure VII-4 provides a map of the alternative routing through Downtown Riverbank. On the outbound trip the Route 60 would turn left of Patterson Road onto 3rd Street, right on Stanislaus Street, right on 8th Street, left on Patterson Road, and left on Claus Road. For outbound trips operating along Patterson south of 8th, it is recommended to avoid left turns at the un-signalized intersection at Sierra and Claus. On the inbound service, the Route 60 could turn right off Claus onto Sierra Street, right on 8th Street, left on Stanislaus Street, left on 3rd Street, and right on Patterson. New bus stops would be required at the corner of 3rd and Stanislaus and 6th and Stanislaus in both directions, on 8th Street between Sierra Street and Patterson Road outbound, and at Sierra Street and Claus Road inbound. Bus stops along the unused sections of Patterson Road and Claus Road would need to be removed.

Figure VII-4
Alternative Conceptual Route 60 Routing Through Downtown Riverbank

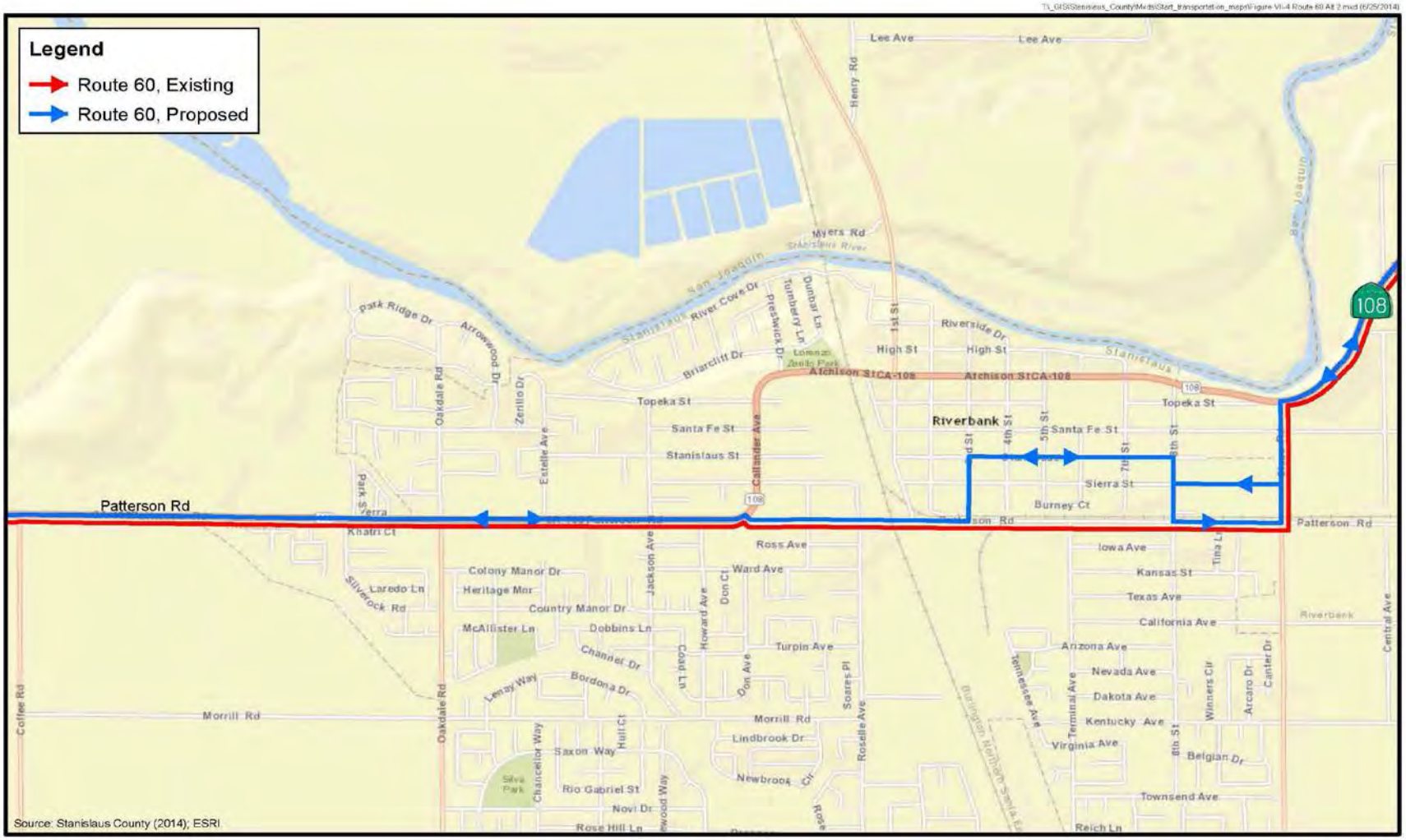


Figure VII-4
Route 60 Alternative 2

PMC

The Route 60 Alternative 2 would require an additional five minutes running time for outbound trips. Building on the Route 60 Alternative 1 schedule, the additional running time could be accommodated without increasing annual revenue hours by reducing the layover time to five minutes (from 10 minutes) at the Kmart time point. No additional time will be required for inbound trips.

Option 4: Increase Capacity on the Route 60 and the Patterson Dial-A-Ride

In Option 4, additional capacity is proposed for the Route 60 and the Patterson Dial-A-Ride. Capacity on the Route 60 will be increased on weekdays by increasing service frequency to 60 minutes as outlined in Option 5. An increase in frequency will make the Route 60 more attractive to potential riders. Patterson Dial-A-Ride weekday service capacity will be increased by adding a second bus on weekdays through a proposed interlining with Route 45 West. The Patterson Dial-A-Ride/Route 45 West interlining is discussed in Option 7.

Option 5: Establish Clock-face Headways on Routes 10 and 60

Routes 15, 40, 45 East, and 45 West already have clock-face headways. Option 5 proposes the addition of clock-face headways to Routes 10 and 60. Clock-face schedules have consistent departure and arrival times at time-points for each trip. Clock-face headways simplify schedules for passengers and can enhance service marketability.

Route 10 Clock-face Headways

Route 10 currently runs close to clock-face headways. Small schedule adjustments are suggested to operate a consistent schedule for each trip. The proposed Route 10 clock-face alternative is built on the conceptual schedule for Option 3: Route 10 - Alternative 2 operating as a limited stop express between MTC and the Turlock Transit Center with an additional eight minutes added to outbound trips and five minutes added to inbound trips. Forty minutes running time is scheduled for all outbound trips and 54 minutes are scheduled for all inbound trips. A five minutes recovery time is scheduled at the Turlock Transit Center. Table VII-15 provides a conceptual schedule for a Route 10 clock-face schedule.

Table VII-15: Route 10 Clock-face Conceptual Schedule

MTC (Depart)	Central Park (Arrive)	Central Park (Depart)	MTC (Arrive)
		5:45	6:39
6:00	6:40	6:45	7:39
7:00	7:40	7:45	8:39
8:00	8:40	8:45	9:39
9:00	9:40	9:45	10:39
10:00	10:40	10:45	11:39
11:00	11:40	11:45	12:39
12:00	12:40	12:45	13:39
13:00	13:40	13:45	14:39
14:00	14:40	14:45	15:39
15:00	15:40	15:45	16:39
16:00	16:40	16:45	17:39
17:00	17:40	17:45	18:39
18:00	18:40	18:45	19:39
19:00	19:40	19:45	20:39
20:00	20:40	20:45	21:39

Operating on a clock-face schedule, the Route 10 will start service at 5:45 AM departing Central Park and finish at MTC at 9:39 PM. Two buses will be required to operate the proposed schedule.

Route 10: Clock-face Schedule will require an additional 3.33 revenue hours per service day and an additional 846 revenue hours per year. *Revenue hours do not include layover time between trips at MTC*.

Route 60 Clock-face Headways

On weekdays, Route 60 operates on a 75 minute frequency. This results in inconsistent arrival times at the various time points along the route. A proposed clock-face schedule would be easier for riders to understand and remember. The implementation of a 60 minute frequency will facilitate a clock-face schedule, assuming a consistent cycle time for each trip.

The proposed schedule assumes a 75 minute outbound running time for all trips and a 72 minute running time for all inbound trips. A 10 minute layover is assumed at Kmart. Weekday service would begin at 5:35 AM departing Kmart and finish at Kmart at 8:45 PM. Capacity is increased by adding three additional trips during the routes daily service span. A three bus pull out will be required to operate the proposed 60 minute schedule. Table VII-16 provides a conceptual schedule for a Route 60 clock-face schedule.

Table VII-16: Route 60 Clock-face Conceptual Schedule

Route 60 Weekdays			
MTC (Depart)	Kmart (Arrive)	Kmart (Depart)	MTC (Arrive)
		5:35	6:47
5:30	6:45	6:55	8:07
6:30	7:45	7:55	9:07
7:30	8:45	8:55	10:07
8:30	9:45	9:55	11:07
9:30	10:45	10:55	12:07
10:30	11:45	11:55	13:07
11:30	12:45	12:55	14:07
12:30	13:45	13:55	15:07
13:30	14:45	14:55	16:07
14:30	15:45	15:55	17:07
15:30	16:45	16:55	18:07
16:30	17:45	17:55	19:07
17:30	18:45	18:55	20:07
18:30	19:45	19:55	21:07
19:30	20:45		

Route 60: Clock-face Schedule will require an additional 15 revenue hours per service day and an additional 3,810 revenue hours per year. *Revenue hours do not include layover time between trips at MTC.*

Option 6: Formalizing ADA Requirements

StaRT will have to meet ADA service requirements in accordance with the provision of Routes 10, 15, 40, 45 East and 45 West, and 60. Under ADA regulations, paratransit service must be available to ADA eligible persons for trips within ¾ miles of a fixed route service during the hours that fixed route service is scheduled.

Although StaRT's fixed routes are intercity and commuter-oriented, they do not fit the Department of Transportation's (DOT) regulations (49 CFR 37.3) definition of "commuter buses":

> "Commuter bus service means fixed route bus service, characterized by service predominantly in one direction during peak periods, limited stops, use of multi-ride tickets, and routes of extended length, usually between the central business district and outlying suburbs. Commuter bus service may also include other service, characterized by a limited route structure, limited stops, and a coordinated relationship to another mode of transportation."

Route 70 is the only StaRT fixed route that fits this definition at this time. Routes 10, 15, 40, 45 East, 45 West, and 60 also fit this description where they operate as express services along highway corridors between urbanized areas. As such, StaRT may have limited requirements to provide complementary ADA service along the rural portions of individual route corridors, except around individual bus stops[14] within communities of Grayson, Westley, Patterson, and Newman in conjunction with the Route 40 and Route 45 East or Route 45 East service. StaRT may also have very limited requirement to provide additional ADA complementary paratransit service in conjunction with the Dial-a-Ride and shuttle/runabout services that it operates. Demand response services such as the Dial-a-Rides and shuttles/runabout could accommodate requests by ADA eligible persons while accommodating the demand response requests of the general public. However, it is recommended that StaRT examines any potential and/or additional requirements to provide ADA paratransit service to ensure adherence to federal regulations.

Where StaRT fixed route service area and service hours overlap with MAX, CAT, and BLST, the local demand response services may potentially assume StaRT ADA complementary paratransit obligations, which will require further discussions between StaRT and the other transit operators. In the cities of Riverbank and Oakdale where the Riverbank Dial-A-Ride and Oakdale Dial-A-Ride service are provided respectively, the local StaRT Dial-a-Rides will assume ADA obligations. The local dial-a-ride service coverage hours are:

Riverbank Dial-A-Ride	Monday to Saturday: 8:00 AM – 4:30 PM
Oakdale Dial-A-Ride	Monday to Saturday: 6:30 AM – 4:30 PM

StaRT ADA Requirements

StaRT may have limited requirements to provide ADA complementary paratransit service given that StaRT's services overlaps with the MAX, CAT, and BLST in their service areas, as well as overlapping of StaRT's fixed routes with StaRT Dial-a-Ride and shuttle/runabout services. The following provides a summary of where and when StaRT may be required to provide ADA complementary paratransit service, if a request is made by a registered ADA certified person at least the day before service is required. This assessment of ADA requirements is based on the hours of operation suggested for StaRT services in the COA service changes.

- **Route 10 Corridor (Weekday)**: Route 10 does not have stops along the Highway 99 corridor and as such does not have a Route 10 ADA obligation between the Modesto and Turlock urban areas. Route 10 operates locally within Modesto and Turlock. StaRT's Route 10 ADA requirement is limited to weekday service hours while operating

[14] Under ADA regulations StaRT is required to provide ADA complimentary service up to ¾ mile around the proposed local bus stops within these communities.

locally within Turlock between the hours of 5:39 AM and 6:40 AM and 5:30 PM and 8:30 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 10 routing within Turlock.

- **Route 15 Corridor (Weekday)**: StaRT's Route 15 ADA requirement on weekdays is limited to service hours while operating locally within Turlock between the hours of 5:20 AM and 6:40 AM and 5:30 PM and 7:21 PM, as well as Keyes during the full operating hours within Keyes of 7:12 AM and 6:59 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 15 routing within Turlock and Keyes. Keyes ADA trip request could be accommodated on the Turlock/Modesto Shuttle if they fit on the shuttle schedules.

- **Route 15 Corridor (Saturdays)**: StaRT's Route 15 ADA coverage responsibility on Saturdays would be limited to 6:03 to 8:00 AM in Modesto, 6:30 AM to 10:00 AM and from 6:05 PM to 6:21 PM in Ceres, 6:48 AM to 6:68 PM in Keyes, and 6:57 AM to 8:00 AM and 7:00 PM to 7:27 PM in Turlock. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 15 routing within Turlock and Keyes.

- **Route 40 Corridor (Weekday)**: StaRT's Route 40 ADA coverage responsibilities on weekdays in Grayson is limited from 6:40 AM to 7:50 PM, in Westley from 6:33 to 7:56 PM, and Patterson from 6:08 AM to 7:00 AM and from 5:00 PM to 8:08 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 40 routing within Grayson, Westley and Patterson.

- **Route 40 Corridor (Saturdays)**: StaRT's Route 40 ADA coverage responsibilities on Saturdays in Grayson is limited from 6:48 AM to 6:57 PM, in Westley from 6:41 AM to 7:03 PM, in Patterson 6:30 AM to 9:00 AM and from 4:00 PM to 8:18 PM, and in Modesto from 7:00 AM to 8:00 AM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 40 routing within Grayson, Westley and Patterson.

- **Route 45 East (Weekday)**: StaRT may have additional ADA paratransit requirements in conjunction with the Route 45 East weekday service and will need to research this prior to implementing ADA service for the Route 45 East.

- **Route 45 East (Saturday)**: StaRT's Route 45 East ADA coverage responsibilities on Saturdays are limited to Turlock between approximately 4:00 PM and 4:32 PM. This requirement could be accommodated by negotiating any trip request after 4:00 PM to a pick up time starting before DART service ends at 4:00 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 45 East routing within Turlock.

- **Route 45 West (Weekday)**: StaRT's Route 45 West ADA coverage responsibilities on weekdays may be limited to Patterson between 6:20 AM and 7:00 AM. This requirement could be accommodated by negotiating any trip request before 7:00 AM to a pick up time starting after the beginning of Patterson Dial-A-Ride coverage at 7:00 AM. This ADA requirement would be limited to trips originating and ending within ¾ miles of

the Route 45 West routing within Patterson. This may require further research since Patterson is not included in either urbanized areas.

- **Route 45 West (Saturday)**: StaRT's Route 45 West ADA coverage responsibilities on Saturdays are limited to Patterson between 7:00 AM and 9:00 AM and from 4:00 PM to 5:38 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 45 West routing within Patterson. This may require further research since Patterson is not included in either urbanized areas.

- **Route 60 (Weekday):** StaRT's Route 60 ADA coverage responsibilities on weekdays are limited to Riverbank between 5:48 AM and 8:00 AM and 4:30 PM and 8:05 PM, and in Oakdale from 5:35 AM and 6:30 AM and 4:30 PM and 8:28 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 60 routing within Riverbank and Oakdale.

- **Route 60 (Saturday):** StaRT's Route 60 ADA coverage responsibilities on Saturdays are limited to Riverbank between 6:34 AM and 8:00 AM and 4:30 PM and 8:28 PM, in Oakdale between 4:30 PM and 7:37 PM and in Modesto between 6:15 AM and 9:25 AM and 4:00 PM and 8:56 PM. This ADA requirement would be limited to trips originating and ending within ¾ miles of the Route 60 routing within Riverbank, Oakdale and Modesto.

The above route specific ADA complementary paratransit coverage requirements are based on the conceptual schedules presented in the COA. Final requirements will be dependent on the actual schedules implemented by StaRT.

Developing an ADA Complementary Paratransit Plan

StaRT's ADA complementary paratransit service requirements may be limited to specific times when there is no dial-a-ride coverage in the different communities served and to a small service area within ¾ mile of a StaRT fixed route. In order to manage potential ADA paratransit demand, StaRT should provide service within the ADA regulations. Key elements of an ADA Complementary Paratransit Plan include:

- **Establishing a formal ADA registry within its service area**: This would include a functional assessment of all applicants to ensure each is ADA certifiable.

- **Limit the service area**: Restrict service to local origins and destinations within ¾ miles of a StaRT fixed route within the specific communities where service is required. Intercommunity trips should be accommodated by transferring ADA paratransit riders to a fixed route.

- **Limit ADA service hours**: Restrict StaRT's ADA paratransit obligation to those specific, local StaRT fixed route hours (as defined by the published schedules) when an alternative local dial-a-ride is not available.

- **Apply ADA trip negotiation criteria to all trip requests**: Under ADA regulations, a transit agency can negotiate trip pick up times up to 60 minutes before or after (two

hour window) the registrant's requested pick up time or up to 60 minutes before the registrant's requested drop off time. In some situations this allowable trip negotiation could move pick up or drop off times into the local dial-a-ride coverage hours.

- **Advance booking requirement**: Limit trip requests to a minimum of one day in advance.

By applying the above limitations, StaRT could effectively manage potential ADA paratransit demand within its service area and comply with ADA regulations. Requests for service would be rare. By limiting requests to a one day advance booking, StaRT could serve legitimate ADA trip requests through a contractor extra board. Other alternatives would be to start or finish local Dial-a-Ride service shifts early or late to accommodate specific requests. With regard to Modesto, Ceres, and Turlock coverage, StaRT could investigate a contractual arrangement with MAX, CAT, or BLST to provide extended service hours on an as required basis.

Option 7: Improve Productivity

Increasing productivity is critical to increasing farebox revenue recovery. Option 2 suggests the trimming of individual bus trips or service hours with low productivity; thereby, improving overall service productivity. In addition to the Option 2 suggestions, the Option 7 outline strategies to integrate shuttle and dial-a-ride services and to interline the Route 45 West with the Newman Dial-A-Ride and Patterson Dial-A-Ride.

Eastside Shuttle/Riverbank Dial-A-Ride

The combination of the Eastside Shuttle and the Riverbank Dial-A-Ride is suggested because of low ridership and productivity on both services. This strategy will make more efficient use of the revenue hours assigned to both services. Although the combined service is intended as a lifeline service for Riverbank and Oakdale residents who have difficulty walking to and from a Route 60 bus stop, the proposed service will accommodate general public trip requests as well. Riders may be required to book the service in advance.

This service should be able to accommodate same day service requests. The flexibility of same day reservations will make the service more attractive to potential riders and enhance productivity, offsetting the negative impact of service cancellations by passengers. The Riverbank Dial-a-Ride will serve as a feeder to the Eastside Shuttle providing a single seat ride to and from destinations in Modesto. The Riverbank Dial-a-Ride could also serve as a feeder for the Route 60. If re-routed through Downtown Riverbank, a new time point at the corner of 3rd Street and Stanislaus Street would be an appropriate central transfer location.

Table VII-17 provides a conceptual schedule for the combined Eastside Shuttle/Riverbank Dial-A-Ride service Monday through Saturday. The following conceptual schedule incorporates the reduced Eastside Shuttle and Riverbank Dial-a-Ride hours suggested in the tables contained in the Appendix. Table VII-17 summarizes start and finish times for the Eastside Shuttle trips and the time periods that the Riverbank DAR would be providing local Riverbank demand response service. Two buses would be required to provide continued Dial-a-Ride service between 8:00 AM and 4:30 PM as well as single AM and PM round trips on the Eastside Shuttle. The Eastside Shuttle would complement the Route 60, providing a limited service between Oakdale and

Riverbank for those who have difficulty walking to and from a bus stop. The current Dial-a-Ride and shuttle fare structure would apply.

Within this framework, the Riverbank Dial-a-Ride could provide a subscription service around the AM and PM bell times to Riverbank students attending James C. Enochs High School located at Sylvan Avenue and Millbrook Avenue. The Riverbank Dial-A-Ride start times may need to be adjusted.

Table VII-17: Conceptual Schedule
Eastside Shuttle/Riverbank Dial-A-Ride Combined Service

Eastside Shuttle (ESS) - Riverbank DAR Combination - Monday Through Saturday							
Local Riverbank DAR*		ESS Inbound		ESS Outbound		Local Riverbank DAR*	
8:00	9:00	9:00	10:30	12:00	13:30	13:30	16:30
9:00	13:30	14:00	15:30	16:00	17:30		
* breaks assigned by dispatch						* breaks assigned by dispatch	

Oakdale Dial-A-Ride/Waterford Connector

Based on the review of hourly passenger data, minor changes are suggested for the Oakdale Dial-A-Ride. It is proposed that weekday service end at 4:30 PM (see Table VII-5). A connector between Waterford and Oakdale is integrated with the proposed Oakdale Dial-A-Ride service, resulting in 2 round trips between Kmart and the Waterford Police Station on weekdays and Saturdays. The service between Waterford and Oakdale is currently incorporated into the Waterford Dial-A-Ride service.

Table VII-18 offers a conceptual schedule for a combined Oakdale Dial-A-Ride/Waterford connector service operating Monday through Saturday. The following conceptual schedule summarizes daily local demand response coverage in Oakdale as well as the departure and arrival times at the Kmart and Waterford Police Station for the proposed Waterford Connector. This conceptual schedule summarizes service coverage by two buses, one operating in the AM and one operating in the PM.

The Oakdale Dial-A-Ride would serve as a feeder to both the Waterford Connector and Route 60 at the Kmart time point. Connections between the Waterford Connector and Route 60 would also be possible at the Kmart time point. Waterford riders can board the shuttle service as walk-ons at the Police Station and Kmart time points without advance booking.

Table VII-18: Conceptual Schedule
Combined Oakdale Dial-a-Ride/Waterford Connector

Oakdale DAR - Waterford Connector Combination									
Oakdale DAR*		Waterford Connector	Oakdale DAR			Waterford Connector	Oakdale DAR*		
	KMART	Police Station	KMART		KMART	Police Station	KMART		
6:30	9:40	10:00	10:20	11:00					
				11:00	13:00	13:20	13:40	16:30	
* breaks assigned by dispatch							* breaks assigned by dispatch		

Waterford/Modesto Shuttle (Runabout)[15]/Waterford Dial-A-Ride Combination

The combination of the Waterford/Modesto Shuttle and the Waterford Dial-A-Ride is suggested because of low ridership and productivity on both services. This strategy will make more efficient use of the revenue hours assigned to both services. Riders will be required to book the service in advance. The service should be able to accommodate same day service requests. The flexibility of same day bookings will make the service attractive to potential riders and enhance productivity, offsetting the negative impact of service cancellations. The Waterford Dial-a-Ride will serve as a feeder to the Waterford/Modesto Shuttle providing a single seat ride to and from Modesto. Waterford riders can board the shuttle service as walk-ons at the Police Station time point without an advance booking.

Table VII-19 provides a conceptual schedule for the combined Waterford/Modesto Shuttle/Waterford Dial-A-Ride. The following conceptual schedule incorporates the reduced Waterford/Modesto Shuttle and Waterford Dial-a-Ride hours suggested in the tables in the Appendix. Table VII-19 summarizes local demand response coverage in Waterford and the four round trips between Waterford and Modesto on weekdays and Saturdays. Local dial-a-ride service would be available in the morning from 9:30 AM to 12:00 PM and in the afternoon from 1:50 PM to 4:00 PM. Two buses will be required to operate the proposed service.

[15] The consultant is suggesting that the Waterford/Modesto Runabout be rebranded as the Waterford/Modesto Shuttle. This will facilitate a common "shuttle" brand for the three rural flex routes operated by StaRT.

Table VII-19: Conceptual Schedule
Combined Waterford/Modesto Shuttle/WaterfordDial-A-Ride Service

Waterford/Modesto Shuttle -Waterford Dial-A-Ride Combination (Weekday & Saturday)						
Waterford Police Station	Modesto Transit Center	Modesto Transit Center	Waterford Police Station	Waterford DAR	Waterford DAR	Waterford Police Station
7:00	8:40	8:50	10:15	**45 minute lunch**		
				9:30	11:00	11:00
11:00	12:10	**30 minute lunch**				
				11:00	12:00	12:00
20 minute break in Waterford		12:40	13:50	13:50	14:50	14:50
12:00	13:10	13:20	14:30	**20 minute break**		
15:10	16:20	16:30	17:55	**Out of Service**		
				14:50	16:00	

Route 45 West/Newman Dial-A-Ride/Patterson Dial-A-Ride Combination

Restructuring the Route 45 West to include the Newman Dial-A-Ride is suggested to improve productivity on these services. In the proposed restructuring, the service between Newman and Gustine should be discontinued to allow time for local service within Newman. The suggested formalization of a local feeder role for the Patterson Dial-A-Ride service in this alternative may facilitate potential discontinuation of the local Route 45 West in west Patterson.

The combination of the Route 45 West and the Newman Dial-A-Ride creates an interline opportunity to increase the capacity on the Patterson Dial-A-Ride. This interlining opportunity will add a second bus to the Patterson Dial-A-Ride. Having additional capacity will support the proposed local feeder role for the Patterson Dial-A-Ride.

Table VII-20 provides a conceptual schedule for the combined Route 45 West/Newman Dial-A-Ride/Patterson Dial-A-Ride on weekdays. Table VII-21 provides a conceptual map for Saturday service. On Saturdays, interlining in Patterson is eliminated. The following conceptual schedules incorporate the reduced Route 45 West, Newman Dial-a-Ride, and Patterson Dial-A-Ride hours suggested in the tables in the Appendix. The following conceptual schedule summarizes the weekday departure and arrival times at Veterans Park and Newman City Hall. It also summarizes the times that the service will be providing local Newman DAR service and backup Patterson DAR service. A two bus pullout will be required to operate weekday service, and a one bus pullout will support the Saturday service.

Table VII-20: Weekday Conceptual Schedule
Combined Route 45 West/Newman Dial-A-Ride/Patterson Dial-A-Ride Service

Route 45/Newman Dial-A-Ride Combination - Weekday							Patterson DAR Back up	
Veterans Park	Newman City Hall	Newman DAR	Newman DAR	Newman City Hall	Veterans Park		Patterson DAR	Patterson DAR
		5:35	5:55	5:55	6:13			
6:20	6:40	6:40	8:20	8:20	8:38	30 min lunch		
							9:08	10:20
8:20	8:40	8:40	10:20	10:20	10:38	30 min lunch		
							11:08	12:20
10:20	10:40	10:40	12:20	12:20	12:38	22 min break		
							13:00	14:00
12:20	12:40	12:40	14:20	14:20	14:38	22 min break		
							15:00	16:20
16:20	16:40	16:40	17:00					

Table VII-21: Saturday Conceptual Schedule
Combined Route 45 West/Newman Dial-A-Ride Service

Route 45/Newman Dial-A-Ride Combination - Saturday					
Veterans Park	Newman City Hall	Newman DAR	Newman DAR	Newman City Hall	Veterans Park
7:00	7:20			7:20	7:38
8:00	8:20	8:20	10:00	10:00	10:18
10:30	10:50				
		11:30	13:10	13:10	13:28
13:30	13:50	13:50	15:30	15:30	15:48
16:00	16:20	16:20	17:20	17:20	17:38

The Newman and Patterson Dial-A-Rides would serve as local feeders to the Route 45 West providing a single seat ride between local origins/destinations in both Newman and Patterson. The single seat ride between local Newman and Patterson locations would be limited to the times when the services are fully interlined.

As a local feeder, the Patterson Dial-A-Ride would be pulsed from the Veterans Park transfer hub. The Dial-a-Ride pulse would be timed with Route 40 and Route 45 East arrivals and departures.

Establishing Good Connections at Veterans Park

Establishing a Route 40, Route 45 East, Route 45 West, and Patterson Dial-A-Ride pulse at Veterans Park will improve connectivity with local destinations in Patterson. Maintaining good connectivity will improve the commuter roll of Routes 40, 45 East, and 45 West to employment opportunities in the expanding West Patterson Business Park. Additional capacity on the Patterson Dial-A-Ride will support shorter on-board travel times from Veterans Park to local

destinations in Patterson. Establishing a scheduled pulse for the Patterson Dial-A-Ride assumes that riders will be able to board the local Dial-a-Ride as walk-ons without booking in advance. A subscription reservation arrangement would be appropriate for regular commuters using Patterson Dial-a-Ride to access employment in West Patterson.

Consolidation of Newman Bus Stops

The proposed combined Route 45 West/Newman Dial-A-Ride/Patterson Dial-A-Ride services addresses the consolidation of Route 45 West bus stops in Newman by replacing Route 45 West fixed route service within Newman with general public dial-a-ride service. In combination with the proposed revisions to the Route 45 West, service within Newman would be on a demand responsive basis, pulsed from the Newman City Hall. Walk-on passengers could be accommodated at the Newman City Hall bus stop. The Route 45 West portion of the proposed service would operate to and from Newman City Hall directly along Highway 33. The Newman City Hall is proposed as the only formal bus stop in Newman.

Option 8: Minimize Service Overlaps

As a regional service provider, StaRT carries passengers to and from the cities of Modesto, Turlock, and Merced. Within Modesto and Turlock, StaRT provides regional service with a single seat ride to key destinations such as Vintage Faire Mall, Modesto Junior College, California State University Stanislaus (CSUS), and Emanuel Hospital. Prior to making any decisions addressing service overlaps, further considerations will need to be given to how this may impact passengers. Forced transfers would reduce the attractiveness of StaRT services to key regional destinations such as Vintage Faire Mall, Modesto Junior College, California State University Stanislaus (CSUS), and Emanuel Hospital. This would also have a negative impact on ridership, route productivity, and farebox recovery ratio.

The review of interagency service overlaps in Stanislaus County should be deferred to any future consideration of county-wide transit service consolidation, or more specifically, to any potential ongoing discussions of StaRT and BLST service consolidation.

Option 9: Address Public Service Expansion Requests

Respondents (292 total respondents) to the onboard passenger surveys identified the provision of Sunday service, overall increases in service frequencies, the operation of later evening service, and the operation of earlier morning services as the most important service enhancements. Increases in frequency or service extensions into the early mornings, evenings, or Sundays should be assessed with caution. Early mornings, evenings, and Sundays are periods of low ridership and may negatively impact farebox recovery ratio. Chapter IV provides a policy framework and minimum farebox recovery ratio and performance standards that should guide service expansion. Funding ceilings also set limits on increases in annual revenue hours. Service enhancements suggested in the COA are supported with reductions in unproductive service hours identified in Option 2.

Increases in Frequencies

Increases in frequency at this point may increase overall route ridership, but may potentially have a negative impact on route productivity and farebox recovery ratio. Careful consideration should be given to how this is implemented without impacting the system negatively.

A frequency increase from 75 to 60 minutes is suggested in the COA for Route 60 weekday service (Option 5). The Route 60 currently has a farebox recovery ratio of approximately 25%. Increasing the weekday frequency can be justified on this high ridership route. The increase in Route 60 frequency should be in conjunction with establishing clock-face headways (Option 5).

In the longer term, candidate routes should be identified and prioritized for longer term consideration based on farebox recovery ratio exceeding the minimum. Over the long term, frequency increases can also be considered at time periods when routes regularly exceed maximum passenger load standards. A "go or no go" decision should be based on analytical findings that show the increase in revenue hours will not reduce the service's farebox recovery ratio below the minimum performance standard.

Early Morning Services

Currently, some early morning service trips have low productivity and farebox recovery ratio in in the pre-AM peak timeframe. Much of the proposed service trip trimming suggested in Option 2 focuses on selected pre-AM peak period.

Early morning service expansions should be limited to situations where higher volume trip generators such as work shifts or school class times start before regular services begin. In such cases, shift or class times could be handled by a limited time-specific tripper.

Future early morning service expansion should be carefully considered prior to adding early morning service over the long run. Ongoing service monitoring and outreach marketing will identify reasonable unmet needs. Go or no go decisions should be based on analytical findings that show the increase in revenue hours will not reduce the service's farebox recovery ratio below the minimum performance standard.

Evening Service Expansion

Post-PM peak service hours are, like early morning hours, periods of low productivity and low farebox recovery. Much of the proposed service trimming suggested in Option 2 also focuses on the post-PM peak evening hours.

As with possible early morning expansion, evening service expansion should be limited to situations where higher volume trip generators such as work shifts or school class times start/or end after regular services end. Time-specific trippers may efficiently handle these requirements.

Future evening service expansion should be carefully considered prior to adding any additional evening service over the near term horizon. On-going service monitoring and outreach

marketing will identify reasonable unmet needs. Go or no go decisions should be based on analytical findings that show the increase in revenue hours will not reduce the service's farebox recovery below the minimum performance standard.

Sunday Service Expansion

Although Sundays are traditionally low transit ridership days, provision of Sunday service may be considered after further evaluation of ridership data and farebox recovery ratio for all routes.

Modesto Transit Center Capacity Requirements

The Modesto Transit Center serves as a regional hub for connections amongst MAX local routes and amongst StaRT regional services, as well as between StaRT and MAX routes. StaRT and MAX services also connect with Greyhound's highway coach service. The Modesto Transit Center is also a trip destination within a short walk of County offices.

Currently, StaRT has three bus bays assigned for its four fixed routes (Routes 10, 15, 40, and 60), Medivan and Waterford/Modesto Runabout that are scheduled to arrive and depart from the Modesto Transit Center. The County continues to work with the City to evaluate and determine the feasibility of leasing an additional bus bay. In recent discussions with City of Modesto, StaRT was informed that the City will make an additional bus bay available to StaRT if needed, which would increase the number of bus bays to four.

If made available, the four bus bays would meet any potential service expansion within the COA timeframe[16]. During this timeframe, capacity requirements may change and need to be reviewed in light of any regional consolidation discussions.

Conclusion

This chapter summarizes the COA service plan for StaRT. It provides a range of potential service changes and enhancements for consideration by Stanislaus County. Chapter 7 offers a menu of possibilities to choose from based on the County's vision of transit's role within its community. The consulting team has provided a practical set of service adjustments that address the critical issue of farebox recovery while reinforcing StaRT's role as a regional commute service and rural and small community lifeline transit service. The COA service plan was developed from the findings of the COA process.

The service plan menu is grouped into a series of options. Option 2 provides a plan to reduce StaRT's least productive service trips. The emphasis in the Option 2 grouping is to ensure on-going viability of StaRT routes and services and to focus its resources where the majority of current and potential transit riders need and/or will use the service. The suggested service discontinuation in Option 2 are critical to StaRT's achieving and maintaining the proposed 15%

[16] The emphasis of the COA Service Plan is to improve the farebox recovery ratio, improve on time performance and increase headways on core routes.

farebox recovery ratio by FY 2015/16. The proposed discontinuation of unproductive revenue service trip in Option 2 will also free up revenue hours that can be reassigned to address on-time performance issues, enhance service reliability and make StaRT services more attractive to its current and potential rider base. StaRT's priority markets will remain regional commuters, students, the elderly and members of low income households.

The Option 3, 4, and 5 groupings offer service enhancements strategies to improve on-time performance, increase service capacity where most needed, and formalize simplified clock-face headways on two of StaRT's busiest routes, Routes 10 and 60.

Option 6 summarizes StaRT's ADA complementary paratransit requirements along with strategies to effectively manage potential demand while meeting mandated requirements. Option 7 suggests strategies to improve the productivity of local Dial-a-Rides and shuttles while in some cases offering a single seat ride for local Dial-a-Ride users traveling to other centers. It is important to emphasize that the conceptual schedules provided in Options 3, 4, 5, and 7 incorporate the suggested unproductive service trip discontinuation in Option 2. Final scheduling will be determined through route testing and StaRT's decision on Option 2 reductions.

Option 8 identified StaRT service overlaps with MAX, CAT, BLST, and the Merced Transit Authority. Given StaRT's role as a regional service to key regional destinations, there are no recommendations on reducing interagency service overlaps at this time. This issue can be more effectively reviewed in future regional service consolidation assessments.

Option 9 outlined the key service improvements identified by the public through the COA outreach process. These included frequency increases, expansion of early morning and evening services, and Sunday service. While the COA plan offers frequency increase on the Route 60, it is recognized that early morning, evening, and Sunday service may potentially generate low ridership and may negatively impact overall service productivity and farebox recovery ratio. Even though there are suggestions to evaluate and consider discontinuing early morning and evening trips, the County may consider early morning, evening, and Sunday service in conjunction with other options if needed to improve productivity on the routes.

It is recommended that existing revenue hours be reassigned based upon the results of reducing unproductive trips to help improve the farebox recovery ratio. StaRT may work with the Stanislaus County Consolidated Transportation Services Agency (CTSA) to coordinate commute and lifeline mobility solutions in areas that StaRT may not be able to serve efficiently with fixed route or demand response services.

A critical path implementation strategy for the StaRT COA service plan is provided in Chapter IX.

VIII. Financial and Capital Plan

A Ten Year Operating Budget and Capital Plan are developed to support the recommended service restructuring.

Operating Costs

StaRT's operational costs have historically been relatively stable for both fixed route and Dial-a-Ride services. Fixed route operating cost per passenger averaged $6.95 over the last five years, while average operating cost per vehicle revenue hour was $78.57, and $3.51 for operating cost per vehicle revenue mile. For Dial-a-Ride service, operating cost per passenger averaged $33.17 over the last five years, while average operating cost per vehicle revenue hour was $80.54, and $4.88 for operating cost per vehicle revenue mile. The tables below provide the historic cost trends for StaRT for both modes.

Fixed Route Service

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Operating Cost per Passenger	$6.97	$7.10	$6.90	$6.87	$6.91
Operating Cost per Vehicle Revenue Hour	$77.20	$75.02	$78.37	$82.91	$79.34
Operating Cost per Vehicle Revenue Mile	$3.35	$3.28	$3.41	$3.77	$3.74

Dial-A-Ride Service

Performance Data and Indicators	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013
Operating Cost per Passenger	$31.83	$32.91	$34.27	$35.12	$31.69
Operating Cost per Vehicle Revenue Hour	$76.99	$76.19	$78.96	$82.76	$87.82
Operating Cost per Vehicle Revenue Mile	$4.92	$4.66	$4.69	$4.88	$5.25

Source: StaRT TDA Performance Audit 2013

In support of the above tables, the starting contract rate with the operations contractor, Storer Transit Systems Inc., was $60.68 per vehicle revenue hour for the large bus and $70.18 per vehicle revenue hour for the paratransit vehicle in July 2008. The rate is inclusive of both operations and maintenance, which makes the contract very cost effective. The basis for computing the annual adjustment to each rate is the most current available Consumer Price Index for Pacific Cities and United States Average for All Urban Consumers (CPI-U) for All Items for 12 months prior to the adjustment date, less the most current relative importance (weight) of Motor Fuel to All Items for the West Region for Size Class B/C. The annual difference between the cost per revenue hour in the above tables and the contract rate accounts for other operational costs including County transit management, vehicle fuel, insurance, and other expenditures.

The new operations contract with Storer effective FY 2014-15 provides new rates by vehicle type. A comparison between current rates and new rates by vehicle type is shown below.

Vehicle Type	Current Rate (RVH)	New Rate (RVH)
Vehicle Revenue Hour - Large County CNG Bus/County Fuel	$64.865	$64.99
Vehicle Revenue Hour – County CNG Paratransit Bus/County Fuel	$68.996	$62.65
Vehicle Revenue Hour – County Diesel Bus/Contractor Fuel	$73.094	$67.68
Vehicle Revenue Hour – Contractor Owned Paratransit Bus/Contractor Fuel	$75.014	$73.98

The new starting contract rate which includes operations and maintenance is expected to decline from the current rate for the County-owned paratransit CNG buses, County-owned diesel bus, and Contractor-owned paratransit vehicles while increasing slightly for the County-owned large CNG buses. The decline in the rate is attributed in part to the economies of scale reached under the option for Storer to operate StaRT, Modesto Area Dial-A-Ride, and City of Ceres Transit. Each agency governing Board have approved their respective contracts with Storer. The annualized cost rate is subject to change each contract year based on the Consumer Price Index and the actual level of service approved by the Board of Supervisors. With these contract assumptions, it is expected that contract operations costs on a per vehicle revenue hour basis will continue to be relatively stable.

Identification of Revenue Sources

Federal Transit Funding Sources

The Moving Ahead for Progress in the 21st Century Act [MAP-21] (P.L. 112-141) funding program was signed into law by President Obama on July 6, 2012. Funding surface transportation programs at over $105 billion for fiscal years (FY) 2013 and 2014, MAP-21 is the first long-term transportation funding authorization enacted since 2005. Congress establishes the legal authority to commence and continue Federal Transit Administration (FTA) programs through authorizing legislation covering several years. Each reauthorization amends the Federal Transit Laws codified in 49 USC Chapter 53. MAP-21 took effect on October 1, 2012 which created a streamlined and performance-based surface transportation program and builds on many of the highway, transit, bike, and pedestrian programs and policies established in 1991.

Buses can be purchased under a number of FTA's funding programs under MAP-21, including Section 5307 (Urbanized Area Formula Grants), Section 5311(f) (Formula Grants for Rural Areas), as well as Section 5339 (Alternatives Analysis Program), and Section 5337 (State of Good Repair). Recipients of Section 5307 (Urbanized Area Formula Grants) are still required to spend at least 1 percent of the allocated amounts received for security projects unless the recipient

determines such expenditures are unnecessary. Job access and reverse commute projects are now eligible under Sections 5307 and Section 5311 programs.

Urbanized Area Formula Program - FTA Section 5307

The Urbanized Area Formula Funding program (49 U.S.C. 5307) makes Federal resources available to urbanized areas for transit capital and operating assistance in urbanized areas and for transportation related planning. StaRT was recently designated as a small urban operator by the FTA as a result of the 2010 Census and is eligible for urbanized funds. Eligible activities include planning, engineering, design, and evaluation of transit projects and other technical transportation-related studies; capital investments in bus and bus-related activities such as replacement of buses, overhaul of buses, rebuilding of buses, crime prevention and security equipment, and construction of maintenance and passenger facilities; and capital investments in new and existing fixed guide-way systems including rolling stock, overhaul and rebuilding of vehicles, track, signals, communications, and computer hardware and software. Preventive maintenance and some Americans with Disabilities Act Complementary paratransit service costs are considered capital costs.

For urbanized areas with populations less than 200,000, operating assistance is an eligible expense. In these areas, at least one percent of the funding apportioned to each area must be used for transit enhancement activities such as historic preservation, landscaping, public art, pedestrian access, bicycle access, and enhanced access for persons with disabilities. The latest Section 5307 formula for operating assistance includes formerly rural transit agencies, one of which is StaRT, that were absorbed by large urbanized areas in the 2010 Census and that are eligible for these funds. As a small urban operator, StaRT may potentially receive approximately 18.21% of the total share to the Modesto Urbanized Area. The remainder is received by City of Modesto.

The Federal share of funds is not to exceed 80 percent of the net project cost. The Federal share may be 90 percent for the cost of vehicle-related equipment attributable to compliance with the Americans With Disabilities Act and the Clean Air Act. The Federal share may also be 90 percent for projects or portions of projects related to bicycles and may not exceed 50 percent of the net project cost of operating assistance.

Alternatives Analysis Program - FTA Section 5339

Under MAP-21, this fund source provides capital funding to replace, rehabilitate, and purchase buses and related equipment and to construct bus-related facilities. This program replaces the FTA Section 5309 Bus and Bus Facilities Formula Program. Funds are eligible to be transferred by the State to supplement urban and rural formula grant programs (5307 and 5311 respectively). Recipients include public agencies or private nonprofit organizations engaged in public transportation, including those providing services open to a segment of the general public as defined by age, disability, or low income. The Federal share is 80% with a required 20% local match.

State of Good Repair - FTA Section 5337

A new formula-based State of Good Repair program is FTA's first stand-alone initiative written into law that is dedicated to repairing and upgrading rail transit systems along with high-intensity motor bus systems that use high-occupancy vehicle lanes, including bus rapid transit (BRT). This program replaces the Fixed Guideway Rail Modernization Formula Program. These funds reflect a commitment to ensuring that public transit operates safely, efficiently, reliably, and sustainably so that communities can offer balanced transportation choices that help to improve mobility, reduce congestion, and encourage economic development.

Projects are limited to replacement and rehabilitation or capital projects required to maintain public transportation systems in a state of good repair. Projects must be included in a Transit Asset Management plan under FTA Section 5326. High Intensity Motorbus funding comprises 2.85% of annual apportionments, in which 60% is based on revenue vehicle miles and 40% based on route miles of buses operating on lanes not fully reserved only for public transportation vehicles.

Elderly and Persons with Disabilities Transportation - FTA Section 5310

Federal transit funding is currently provided through the FTA Section 5310 Transportation for Elderly Persons and Persons with Disabilities Program. Section 5310 provides formula funding to States for the purpose of meeting transportation capital needs of the elderly and persons with disabilities. Eligible subrecipients are private non-profit organizations, governmental authorities where no non-profit organizations are available to provide service, and governmental authorities approved to coordinate services. In California, an 11.47 percent local match is required for capital programs. FTA Section 5310 funds cannot be used for operating assistance. Projects are awarded through a competitive application process.

Nonurbanized Area Formula Program - FTA Section 5311

Federal transit funding for rural areas is currently provided through the FTA Section 5311 Nonurbanized Area Formula Program. Section 5311 is a non-urbanized area formula funding program authorized by 49 United States Code (U.S.C) Section 5311. This federal grant program provides funding for public transit in non-urbanized areas with a population fewer than 50,000 as designated by the Bureau of the Census. Under MAP-21, low-income populations in rural areas are now incorporated as a formula factor, similar to the repealed Job Access and Reverse Commute (JARC) program. FTA apportions funds to governors of each State annually. The California State Department of Transportation (Caltrans) Division of Mass Transportation (DMT) is the delegated grantee. Federal share is 88.53% for capital projects, 55.33% for operating assistance, and 90% for bicycle facilities.

Within this funding source, 15% of the State's annual apportionment is directed toward the Section 5311(f) Intercity Bus Program. Section 5311(f) provides funds on a competitive basis for transit projects that develop and support intercity bus transportation in rural areas of the state. Using specific evaluation criteria, project applications are ranked by a committee comprised of Department and outside agency staff. Eligible projects include operating assistance and capital

projects such as bus purchases, transit infrastructure, and planning and marketing studies. StaRT has historically received Section 5311 funds apportioned to Stanislaus County for transit services provided in non-urbanized areas of the County.

Bicycle Facilities - FTA Section 5319

The FTA Section 5319 program provides funds for improved bicycle access to mass transportation facilities or for bicycle shelters and parking facilities in or around mass transportation facilities. The FTA Section 5319 program provides funding for 90 percent of the project cost, with some exceptions. The installation of equipment for transporting bicycles on mass transportation vehicles is a capital project that is eligible for assistance under the FTA Sections 5307, 5309, and 5311 programs.

State Transit Funding Sources

Proposition 1B Public Transportation Modernization, Improvement, and Service Enhancement Account (PTMISEA)

Proposition 1B, the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006, authorized the issuance of $19.925 billion in general obligation bonds to invest in high-priority improvements to the State's surface transportation system and to finance strategies to improve air quality. Among the programs contained in Proposition 1B is the $3.6 billion Public Transportation Modernization, Improvement, and Service Enhancement Account (PTMISEA). PTMISEA funds are to be used to fund various mass transportation projects, including rehabilitation, safety or modernization improvements, capital enhancements or expansion, rail transit improvement, bus rapid transit improvements, the acquisition of rolling stock, and other similar investments. The funds in the PTMISEA are to be dispersed according to the same formula used in distributing State Transit Assistance funds. The Proposition 1B program will terminate in FY 2016-17 per the language of the measure.

Proposition 1B Transit System Safety, Security & Disaster Response Account (TSSSDRA)

The Transit System Safety, Security & Disaster Response Account (TSSSDRA) provides $1 billion over a ten-year period. Safety funds may be used for eligible capital expenditures to improve transit safety and security, such as on-board cameras, bus stop lighting, or electronic fareboxes. The California Governor’s Office of Emergency Services (Cal OES) administers the TSSSDRA as the California Transit Security Grant Program – California Transit Assistance Fund (CTSGP-CTAF). Funds are allocated in accordance with the State Transit Assistance fund formula. The Proposition 1B program will terminate in FY 2016-17 per the language of the measure.

Transportation Development Act - Local Transportation Funding (LTF)

TDA funds are the largest single source of operating revenue for most public transportation systems in the state. The spirit of the TDA statute guiding use of Local Transportation Funds (LTF) intends for the revenue to be prioritized for transit. This means that the funds are intended to be spent on transit projects to the extent that such projects are needed to fill “unmet transit needs that are reasonable to meet” before any LTF is spent on local streets and

roads. TDA funds can be used for capital or operations expenditures or a combination thereof and can provide an important source of local match for federal funding.

The LTF revenues are derived from a one-quarter cent sales tax, which is collected by the Board of Equalization, but administered locally through StanCOG which allocates the revenue to local jurisdictions through the Transit Cost Sharing Agreement.

Transportation Development Act - State Transit Assistance (STA) Funds

The State Transit Assistance program is a second funding component of TDA. The fuel tax swap in March 2010 eliminated the sales tax on gasoline and imposed an additional 17.3 cents excise tax on gasoline. The swap also increases sales tax on diesel fuel by 1.75 percent and decreases the excise tax on diesel fuel to 13.6 cents. The rate is adjusted annually to maintain revenue neutrality with the increase to sales tax on diesel. This measure increases the share of Public Transportation Account (PTA) funding to the State Transit Assistance Program (STA) to 75 percent of revenues, thereby providing a more stable revenue source. Fifty percent of statewide revenue is allocated by the State based on county population within the jurisdiction of the regional transportation planning agencies, and the remaining fifty percent is allocated based on farebox revenue returns by the transit systems.

Local Transit Funding Sources

Farebox Revenues

Passenger fare revenues support operations and meet State required performance measures. StaRT accepts a variety of fare media such as cash, passes, tickets, and transfers. Monthly passes, fast fares, and ticket booklets are available for purchase at the Modesto Transportation Center, Storer Transit Systems, Modesto Junior College, California State University, Stanislaus, and the city halls located in Newman, Oakdale, Patterson, Riverbank, Turlock, and Waterford. The County implemented a fare increase on StaRT in August 2011 for certain cash fare and certain pass categories.

The fare structure during the audit period is shown by Figure VIII-1.

Figure VIII-1

StaRT Fare Structure

Fare Type/Media	Fare Prior to 8/1/2011	Fare Effective 8/1/2011
General Fare ***Routes 10, 15, 40, 45 & 60***	$1.25	$1.50
Senior/Disabled ***Routes 10, 15, 40, 45 & 60***	$1.00	$1.00
General Fare - ***Route 70***	$2.50	$2.75
Senior/Disabled - ***Route 70***	$2.00	$2.25
General Fare ***Turlock/Modesto & Eastside Shuttles***	$2.50 (Out of Area $1.50 Additional)	$2.75 (Out of Area $1.50 Additional)
Senior/Disabled ***Turlock/Modesto & Eastside Shuttles***	$2.00 (Out of Area $1.50 Additional)	$2.25 (Out of Area $1.50 Additional)
General Fare ***Waterford/Modesto Runabout***	$1.25 (Fixed Stop) $2.50 (curb-to-curb) (Out of Area $1.50 Additional)	$1.50 (Fixed Stop) $2.75 (curb-to-curb) (Out of Area $1.50 Additional)
Senior/Disabled ***Waterford/Modesto Runabout***	$1.00 (Fixed Stop) $2.00 (curb-to-curb) (Out of Area $1.50 Additional)	$1.00 (Fixed Stop) $2.25 (curb-to-curb) (Out of Area $1.50 Additional)
General Fare *Dial-a-Ride-* ***Newman/Patterson/Waterford***	$1.25 (Out of Area $1.50 Additional)	$1.50 (Out of Area $1.50 Additional)
Senior/Disabled ***Dial-a-Ride-***	$1.00 (Out of Area $1.50 Additional)	$1.25 (Out of Area $1.50

Fare Type/Media	Fare Prior to 8/1/2011	Fare Effective 8/1/2011
Newman/Patterson/Waterford		Additional)
Medivan – ***Bay Area***	$9.00	$10.00
Medivan - Attendant	$2.00	$3.00
Transfers between Routes 40/45 & Newman Dial-a-Ride	Free	Free
Transfers to MAX, StaRT, BLAST, CAT, Ceres DAR, ROTA DAR & eTrans	$0.25	Free
Fast Fare Cards	$5.00-$10.00	$5.00-$10.00
31-Day Pass	$45.00	$45.00
20-Ride Card – General Fare	$22.50	$27.00
20-Ride Card – Senior/Disabled	N/A	$18.00
20-Ride Card – Student	$21.25	$25.50
20-Ride Ticket Books – General Fare	$22.50	$27.00
20-Ride Ticket Books –Senior/Disabled	$18.00	$18.00

Source: StaRT

A StaRT Senior and Persons with Disabilities Discount Card is an acceptable proof of eligibility for the Senior/Disabled fares, passes, and ticket books. *Americans with Disabilities Act of 1990* (ADA) identification from other transit systems and agencies is acceptable.

Proposed Fare Structure

Given the student, disabled, elderly, and low income markets served by StaRT, no increases in the current fare structure are recommended. Increases in fares will have a negative impact on the ridership market. The need to meet farebox requirements have been addressed in Chapter VII: Service Recommendations. In particular, Option 3: Address Farebox Recovery Challenges and Option 7: Improve Service Productivity provides a better impact for the farebox recovery ratio more effectively than increasing fares. The issue of fare increases could be explored in the future as part of the efforts to increase productivity and reduce poorly performing service.

A revised transfer policy is recommended in support of establishing local Dial-A-Rides as feeders to fixed route and shuttle services. This will have a positive impact on ridership and potentially generate more revenue.

Given the variety of services and fare mediums, StaRT has a complex fare structure. Consideration should be given to simplifying the current fare structure in the future. An appropriate timeframe for the simplification of the fare structure would be during consideration of a potential college university pass initiative or regional smart card application.

Non-transportation Revenue

This may include other revenue sources generated locally including interest revenue on select fund accounts.

Potential Transit Funding Sources

Countywide Transportation Sales Tax

In January 2014, the Stanislaus Council of Governments (StanCOG) Policy Board voted in favor of a framework for an expenditure plan for the proposed countywide transportation tax with StanCOG staff attending city council meetings to garner support for the tax. Although the countywide transportation tax failed by a narrow margin in the 2006 and 2008 general elections, the regional transportation planning agency made effort to get the tax back on the November 2014 ballot. The measure would increase the sales tax by a half-cent over a 25-year period and generate nearly $970 million.

The approved expenditure framework included 47 percent of the funds allocated to highways and corridors of regional significance, another 47 percent to local road maintenance, and the remaining 6 percent to alternative modes. Of that six percent dedicated to alternative modes of transportation, 80 percent is allocated for rail, 15 percent for mobility management for seniors and the disabled, and five percent to bicycle and pedestrian projects. There is no allocation to public transit. Following meetings with the city councils of each local jurisdiction, it was decided by the StanCOG Policy Board to table the ballot measure for future consideration. This may provide opportunity to assess the inclusion of sales tax funds for general public transportation which is not a part of the proposed expenditure plan.

State Cap and Trade Revenue

To help reach the greenhouse gas emission reduction goals of AB 32, the California Air Resources Board is implementing a Cap and Trade program. State Senate President Pro Tem Darrell Steinberg is proposing a new plan for cap-and-trade proceeds so that the majority of those revenues go toward providing a permanent source of funding for sustainable affordable housing and mass transit. The state is expected to collect billions of dollars in cap-and-trade auctions. Steinberg's plan would allocate 40% to affordable housing and for planning and development in “sustainable communities” near transit**;** 30% on transit**;** 20% on high speed rail (HSR); and 10% on state highway and road rehabilitation as well as complete streets projects.

Capital Plan

The proposed capital program is made for the next ten years. The Capital Plan has been prepared to provide for adequate development, maintenance, and replacement of capital assets. Retaining this project plan in the 10-year program is essential in order to garner funding from local, state, and federal sources. The Capital Plan includes the procurement of bus vehicles, improvements to bus stop shelters and amenities, technology infrastructure, and communications equipment.

A listing of capital improvements including capitalized maintenance is provided below:

- Intelligent Transportation Systems (ITS)
  - Automatic Passenger Counters (APC)
  - Automatic Vehicle Locators (AVL)
- Transit and paratransit buses
- Park & Ride and Transit Center
- Bus Stop Facilities Improvement
- Capital Cost of Contracting
- Farebox upgrades
- Route planning and reporting software
- CNG engine rehabilitation
- Surveillance cameras

ITS projects are for installation on buses in the fleet. APCs will help StaRT monitor and track ridership at bus stops throughout the service area. AVL will help in monitoring the safety and security of passengers and operators on the StaRT bus fleet.

Bus Replacement Schedule

StaRT is undertaking an aggressive bus replacement program due to the age and/or mileage of current vehicles in the fleet. Capital funds are programmed over the next several years for replacement of aging vehicles that have exceeded their useful lives, both from age and mileage according to the FTA bus service life schedule. Replacement of vehicles will increase the reliability of the service and reduce delays and missed connections caused by vehicle roadcalls. The replacement program follows the service life categories for buses and vans as shown below. StaRT's revenue fleet comprises a variety of vehicles including light duty small and mid-size buses, medium duty bus, heavy duty small and large buses, and cutaway vehicles.

Minimum Service-Life Categories for Buses and Vans

Category	Minimum Life (Whichever comes first)	
	Years	Miles
Heavy-Duty Large Bus	12	500,000
Heavy-Duty Small Bus	10	350,000
Medium-Duty and Purpose-Built Bus	7	200,000
Light-Duty Mid-Sized Bus	5	150,000
Light-Duty Small Bus, Cutaways, and Modified Van	4	100,000

Source: Useful Life of Transit Buses and Vans, FTA. April 2007

Figure VIII-1 shows the vehicle replacement schedule.

Figure VIII-1
Bus Replacement Schedule

VEH#	Year Manufactured	Minimum Life - Years	Minimum Life - Miles	Current Mileage	Replacement Year 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
16	2006	4	100,000	154,100			X				X			
17	2006	4	100,000	141,220			X				X			
19	2008	7	200,000	26,002							X			
20	2008	4	100,000	96,567			X				X			
21	2008	4	100,000	103,586			X				X			
300	2008	5	150,000	235,148	X					X				
305	2008	5	150,000	241,884	X					X				
310	2008	5	150,000	241,583	X					X				
315	2008	5	150,000	234,258	X					X				
320	2008	5	150,000	226,938	X					X				
321	2013	7	200,000	49,144										
325	2008	5	150,000	236,298	X					X				
330	2008	5	150,000	220,685	X					X				
335	2008	5	150,000	232,909	X					X				

VEH#	Year Manufactured	Minimum Life - Years	Minimum Life - Miles	Current Mileage	Replacement Year 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
340	2008	5	150,000	223,891	X					X				
345	2008	5	150,000	233,101	X					X				
350	2008	5	150,000	238,200	X					X				
355	2008	5	150,000	232,369	X					X				
410	2003	12	500,000	473,642	X									
420	2003	12	500,000	472,228	X									
430	2003	12	500,000	486,810	X									
440	2003	12	500,000	476,144	X									
450	2003	12	500,000	471,411	X									
460	2003	12	500,000	466,225	X									
470	2003	12	500,000	501,786	X									
475	2008	12	500,000	288,901			X							
480	2008	12	500,000	283,206			X							
485	2008	12	500,000	276,730			X							
601	2013	12	500,000	22,791										

VEH#	Year Manufactured	Minimum Life - Years	Minimum Life - Miles	Current Mileage	Replacement Year 2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
602	2013	12	500,000	20,835										
603	2013	12	500,000	23,811										
604	2013	12	500,000	20,938										
605	2013	12	500,000	18,597										
606	2014	12	500,000											
607	2014	10	350,000	2,019										

Ten Year Financial Plan

General Assumptions

No new significant funding source for transit is assumed for the financial plan, although changes are based on local growth assumptions and current legislation such as MAP-21 that changes formula allocation programs. The financial plan is based on reasonably conservative assumptions regarding funding availability. However it should be recognized that any forecasts of future subsidy funding are quite uncertain under present economic challenges.

- LTF growth is based on projected sales tax growth over the next five years. An economic forecast provided by Caltrans shows expected retail sales growth of 19.1% in Stanislaus County for the next five years. On an average basis over the five year period, the annual growth rate is projected to be 3.82%. It is assumed that growth in LTF revenues reflects the annual growth rate.

- Fare revenues are projected to increase at a rate of 5.0% per year during the ten year period. Using limited data since the last fare increase in FY 2012, fare revenues system-wide have increased slightly above 5%.

- State Transit Assistance funds are assumed to increase at the projected rate of inflation (CPI) forecasted by Caltrans as a conservative measure.

- Federal funds may increase due to the small urban status classification of StaRT by the FTA. As a result, in addition to Section 5311 rural transit funds of about $540,000 that StaRT has historically received, projections are that the County may also receive between $500,000 and $700,000 in Section 5307 urban transit revenue. The total FTA amount is shown in the operating revenues. After operations costs are accounted for, remaining federal funds are assumed to be available for capital expenditures. The amount for FY 2013-14 is carried forward until FY 2021-22 when funding levels increase by CPI.

- Proposition 1B PTMISEA funds are assumed to continue to be allocated at current estimates for the duration of the program's ten year life which extends through June 30, 2016. Although the delay of bond sales has impacted the availability of PTMISEA funding, annual allocations based on State Controller estimates are assumed through the end term of the program.

- Operating costs are separated between purchased transportation and all other expenditure. Both costs are assumed to grow by the projected rate of inflation based on contracted rate increases for the private operator and tight controls implemented by the County over administrative expenditures. With urbanized status granted for the

transit system, the County transit staff will need to increase to address additional federal transit monitoring and reporting requirements.

- Capital projects include those described earlier in this chapter, including procurement of replacement bus vehicles, park and ride lease, bus stop facilities improvement, and technology infrastructure. Capital cost of contracting is assumed to continue at current allowable rates of contracted costs. Bus procurement is the largest capital expense that improves service reliability and enhances customer ride experience. Intelligent transportation system procurement via AVL and APCs will provide the County with improved data monitoring, tracking and reporting tools to better manage efficiencies of the system.

Figure VIII-2
Ten Year Operations Plan

	Fiscal Year												
	Actual 2010-11	**Actual 2011-12**	**Estimated 2012-13 ***	**Estimated 2013-14**	**Projected 2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
Operations													
Operating Revenues													
Fares	$397,413	$464,998	$488,322	$538,018	$564,919	$593,165	$622,823	$653,964	$686,662	$720,996	$757,045	$794,898	$834,643
% Change		17%	5%	10%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Local Transportation Fund	$2,363,974	$2,515,895	$3,356,000	$4,511,445	$4,682,880	$4,860,829	$5,045,541	$5,237,271	$5,436,288	$5,642,867	$5,857,296	$6,079,873	$6,310,908
% Change		6%	33%	34%	4%	4%	4%	4%	4%	4%	4%	4%	4%
State Transit Assistance	$20,685	$17,032	$20,690	$22,473	$22,945	$23,496	$23,989	$24,493	$25,007	$25,532	$26,094	$26,694	$27,308
% Change		-18%	21%	9%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Federal -FTA **	$346,778	$346,778	$1,217,120	$1,035,569	$1,035,569	$1,035,569	$1,035,569	$1,035,569	$1,035,569	$1,035,569	$1,035,569	$1,059,387	$1,059,387
% Change		0%	251%	-15%	0%	0%	0%	0%	0%	0%	0%	2%	0%
Total Operating Revenues	**$3,128,850**	**$3,344,703**	**$5,082,135**	**$6,107,505**	**$6,306,313**	**$6,513,059**	**$6,727,922**	**$6,951,298**	**$7,183,526**	**$7,424,964**	**$7,676,004**	**$7,960,852**	**$8,232,246**
% Change		7%	52%	20%	3%	3%	3%	3%	3%	3%	3%	4%	3%
Operating Expenses													
Purchased Transportation	$2,510,552	$2,660,884	$3,497,215	$4,747,634	$4,847,334	$4,963,670	$5,067,907	$5,174,333	$5,282,994	$5,393,937	$5,512,604	$5,639,394	$5,769,100
% Change		6%	31%	36%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Other expenses	$618,298	$683,819	$1,080,000	$1,109,160	$1,132,452	$1,159,631	$1,183,983	$1,208,847	$1,234,233	$1,260,152	$1,287,875	$1,317,496	$1,347,799
% Change		11%	58%	3%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Total Operating Expenses	**$3,128,850**	**$3,344,703**	**$4,577,215**	**$5,856,794**	**$5,979,787**	**$6,123,302**	**$6,251,891**	**$6,383,181**	**$6,517,227**	**$6,654,089**	**$6,800,479**	**$6,956,890**	**$7,116,899**
% Change		7%	37%	28%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Net Operating Income Available to Capital	$0	$0	$504,920	$250,711	$326,526	$389,757	$476,031	$568,117	$666,299	$770,874	$875,525	$1,003,962	$1,115,347
Consumer Price Index (Urban Consumers) %	2.6%	2.2%	1.6%	2.7%	2.1%	2.4%	2.1%	2.1%	2.1%	2.1%	2.2%	2.3%	2.3%

Figure VIII-3, Ten Year Capital Plan

	Fiscal Year												
	Actual 2010-11	Actual 2011-12	Estimated 2012-13 *	Estimated 2013-14	Projected 2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Capital													
Revenues													
State - Prop 1B	$68,508	$333,778	$2,300,000	$345,968	$300,000	$300,000							
State - State Transit Assistance													
Local Transportation Fund	$416,617	$360,417	$2,506,000	$2,017,351	$2,759,000	$3,010,000	$956,000	$262,000	$262,000	$262,000	$262,000	$262,000	$262,000
Federal - FTA													
Federal - Other, ARRA	$495,346	$11,562											
Net Operating Income Applied to Capital			$504,920	$250,711	$326,526	$389,757	$476,031	$568,117	$666,299	$770,874	$875,525	$1,003,962	$1,115,347
Total Capital Revenues	**$980,471**	**$705,757**	**$5,310,920**	**$2,614,030**	**$3,385,526**	**$3,699,757**	**$1,432,031**	**$830,117**	**$928,299**	**$1,032,874**	**$1,137,525**	**$1,265,962**	**$1,377,347**
Expenses													
Intelligent Transportation Systems (ITS)			$164,990	$807,981	$500,000	$500,000							
Transit buses		$10,006	$1,880,000	$1,925,000	$2,000,000	$2,250,000				$1,880,000	$1,925,000		
Paratransit buses	$8,000	$15,530	$695,000				$695,000			$695,000			
Park & Ride	$4,200	$4,200	$8,000	$8,000	$9,000	$10,000	$11,000	$11,200	$11,400	$11,600	$11,900	$12,200	$12,500
Bus Stop Facilities		$64,864		$89,076		$89,076		$89,076		$89,076		$89,076	
Capital Cost of Contracting	$250,787	$254,258	$254,259		$373,065	$382,019	$390,041	$398,232	$406,595	$415,133	$424,266	$434,024	$444,007
Patterson Intermodal Transfer Facility site improvements	$55,267	$110,000											
Farebox upgrades	$592,703	$21,795		$20,000		$20,000		$20,000		$20,000		$20,000	
Computer Equipment		$1,469		$1,469		$1,469		$1,469		$1,469			$1,469
Route Planning and Reporting	$56,045												
CNG engine rebuild	$100,000				$150,000				$200,000				$250,000
Surveillance cameras	$13,600	$192,090											
Total Capital Expenses	**$1,080,602**	**$674,212**	**$3,002,249**	**$2,851,526**	**$3,032,065**	**$3,252,564**	**$1,096,041**	**$519,977**	**$617,995**	**$3,112,278**	**$2,361,166**	**$555,300**	**$707,976**
Net Capital Expenditure	**($100,131)**	**$31,545**	**$2,308,671**	**($237,496)**	**$353,461**	**$447,194**	**$335,990**	**$310,140**	**$310,304**	**($2,079,404)**	**($1,223,641)**	**$710,661**	**$669,371**
Consumer Price Index (Urban Consumers) %	2.6%	2.2%	1.6%	2.7%	2.1%	2.4%	2.1%	2.1%	2.1%	2.1%	2.2%	2.3%	2.3%

* FY 2012-13 operations revenue and expenses increased from the merger of StaRT and ROTA.

** FTA operating revenues include both Section 5307 and 5311 funds beginning in FY 2012-13.

IX. Implementation Plan

The implementation plan chapter provides a critical path timeline for the implementation of the StaRT COA service plan. Critical steps include:

1. Establish a StaRT Operations and Planning Committee – made up of StaRT planning and Storer management and operations representation (including dispatch, road supervisor, and driver representation)[17].

2. Approve and adopt the policy framework – Chapter 4 objectives, policies, performance standards, and design standards.

3. Finalize and adopt COA financial and service plans.

4. Confirm and identify service reduction candidate list – additional sampling of GFI trip by trip data, shuttle and dial-a-ride summary reports, and review with StaRT Operations and Planning Committee. This activity will include a review with Storer Transit to determine and mitigate any unforeseen impacts on the current contract bid prices, including any increases in deadhead, non-revenue hours, and miles.

5. Reduce unproductive services to improve farebox recovery – achieving a minimum 15% farebox recovery ratio remains a critical element of the proposed COA service plan. Unproductive hours are needed to implement proposed service enhancements.

6. Increase cycle times on Routes 10, 15, 40, and 60 to improve on time performance and service reliability. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

7. Implement ADA Complementary Paratransit Service Plan – including the demand management strategies identified in Chapter 7. This activity will include establishment of a StaRT ADA registration and certification program, the development of trip assignment protocols, and the establishment of coordination protocols with MAX, CAT, and BLST.

8. Establish Route 10 and 60 Clock-face Headways – simplify schedules to improve service attractiveness, and in the case of Route 60, increase frequency and capacity. If there are sufficient surplus revenue hours available, this activity can be implemented in conjunction with Activity 6. If not, it may have to be postponed to a later year when revenue hours and/or funding are available.

[17] Operations and planning committees with planning and operations staff representation can be effective forums for real time issue identification and problem solving, as well as meaningful service changes. Maximum membership should be limited to six and meetings held on a monthly basis with a formalized agenda of items to be addressed.

9. Combine East Side Shuttle/Riverbank Dial-A-Ride – productivity improvement. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

10. Combine Oakdale Dial-A-Ride/Waterford Connector – productivity improvement. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

11. Implement Route 45 West/Newman Dial-A-Ride /Patterson Dial-A-Ride – productivity improvement. This activity will include route testing, schedule finalization, blocking (if necessary), and amendments to StaRT Ride Guide prior to implementation.

12. Ongoing service monitoring, evaluation schedule and service adjustments – service needs, funding realities, and operating conditions change through time and corrections are required to sustain a relevant transit system. This may include further service adjustments to maintain the proposed 15% farebox recovery ratio. Ongoing monitoring, evaluation, and service planning provide the analytical framework for annual service prioritization and budget planning.

Figure IX-1 provides a critical path implementation plan for the proposed StaRT COA service plan. The service changes and enhancements proposed in the COA can be implemented within a three fiscal year timeframe. Activity 12 will be on-going to ensure regular monitoring and evaluation of service.

Figure IX-1: StaRT COA Service Plan Implementation Timeline