TULARE COUNTY LONG RANGE TRANSIT PLAN

Final Report

September
2017

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1 EXECUTIVE SUMMARY

Destination 2040, the Tulare County Long Range Transit Plan (LRTP), is the first countywide long-range transit planning effort. The LRTP provides a roadmap for implementing local and regional transit improvements and innovations across Tulare County. The overarching purpose of the LRTP is to improve regional mobility, connectivity, and coordination.

The LRTP will also serve as a reference for the transit component for the Tulare County Regional Transportation Plan (RTP) and Sustainable Communities Strategy (SCS). The RTP is organized into policy, action, and financial elements that detail future transit investments through 2040. The LRTP was developed with the RTP's primary goal for transit in mind: *to provide a safe, secure, coordinated, efficient, and equitable public transit system that can reasonably meet the needs of residents.*

DESTINATION 2040 VISION

A vision consisting of four elements was developed based on the direction provided in the LRTP. The Destination 2040 vision also places an emphasis on innovation and advancement, which was a goal expressed by the bus riders, stakeholders, Tulare County Association of Governments (TCAG) staff, and transit operators. Each action item recommended in the LRTP moves Tulare County one step closer to achieving its vision.

The Destination 2040 vision is both aspirational and achievable, envisioning a comprehensive transit system in Tulare County that is:

- **Countywide Convenient Service** – provides frequent, fast, and reliable connections within and between cities within Tulare County and to important regional destinations.
- **An Easy Choice** – agency coordination will ensure access to schedule, fares, and service wherever passengers live and travel.
- **An Option for Everyone** – transit will serve passengers of all ages and abilities and service will be the right size for each community.
- **Moving Forward** – investments in technology, infrastructure and coordinated planning will further improve transit.

PLAN INPUTS

A comprehensive evaluation of countywide transit services, capital facilities, practices, policies, and population characteristics led to the development of a State of the System report in early 2015. The State of the System report covers eight service providers based in Tulare County and provides a foundation for recommendations included in the LRTP.

Figure 1-1   Transit Providers Covered in the Long Range Transit Plan

A series of public outreach activities, stakeholder interviews, and an online survey were held from October 2014 to August 2015 to obtain community input on existing services, long-range intercity route network scenarios, and overall transit needs and desires. Community feedback along with industry best practices and extensive field review supplement findings from the State of the System report to form action items included throughout this document.

REPORT ORGANIZATION

The LRTP final report is organized into the following chapters:

- **Chapter 1 Executive Summary** provides an overview of the LRTP purpose, vision, inputs, organization, and top priorities.
- **Chapter 2 Existing Conditions** details the current state of transit in Tulare County in terms of services, ridership, transit markets, capital assets, and fare policies.
- **Chapter 3 Technical Analysis** provides a summary of community input, service gaps, network scenarios, best practices for fare policy, and Intelligent Transportation Systems (ITS).
- **Chapter 4 Action Plan** details short-, medium-, and long-term action areas for improving transit services in Tulare County.

TRANSIT PRIORITIES FOR TULARE COUNTY

In an effort to highlight the most important recommendations, a list of the top ten transit priorities for Tulare County is summarized in Figure 1-2. Refer to Chapter 4 (Action Plan) for a detailed description of all transit recommendations. The priorities were determined by a combination of citizen participation and needs of the member transit agencies.

Figure 1-2   Top Ten Transit Priorities for Tulare County

	Priority	Implementation Timeframe
1	Implement a simplified countywide fare structure.	2 years
2	Develop a countywide transit system map and interactive transit guide, and implement Google transit for all services.	2 years
3	Develop a joint 20-year vehicle acquisition plan with an emphasis on low/no emissions buses.	3 years
4	Simplify and expand intercity fixed-routes.	2-8 years
5	Improve headways of TCaT and Porterville Transit routes.	2-5 years
6	Implement regional fare collection technology and mobile ticketing.	5-8 years
7	Implement Bus Rapid Transit (BRT) along Mooney Boulevard	5-8 years
8	Offer real-time information for all fixed-route services using one app.	3-5 years
9	Establish and/or expand transit centers, including Exeter and Lindsay.	10-15 years
10	Work toward a Joint Powers Authority (JPA) between Tulare County transit providers and eventual consolidation of providers.	1-15 years

SUMMARY OF ACTION PLAN

LRTP action areas were developed through an extensive evaluation of existing transit in Tulare County, stakeholder feedback, national best practices, and projected population/employment growth. Each action item moves Tulare County one step closer to achieving its vision.

Action strategies are divided into three categories based on ease of implementation:

- Short-term (2016-2020) actions that can be implemented with minimal planning, but may require additional capital investment
- Medium-term (2021-2030) actions that require additional planning and/or capital investments
- Long-term (2031-2040) actions that require additional planning and/or capital investments

The following table summarizes the short-, medium-, and long-term action items developed for the Tulare County Long Range Transit Plan. Estimated capital costs are a one-time implementation cost, whereas estimated operating costs are on an annual basis. Costs are expressed in 2016 dollars and are categorized as under $100,000 ($), between $100,000-500,000 ($$) and over $500,000 ($$$).

Figure 1-3   Summary of LRTP Action Plan

Action Area	Short-Term	Medium-Term	Long-Term	Estimated Capital Cost	Estimated Operating Cost
Customer Information					
Implement countywide transit website	✓			$	$
Develop countywide transit system map and schedules	✓			$	$
Develop interactive transit guide	✓			$	$
Implement and maintain Google transit	✓			$	$
Implement real-time passenger information	✓			$$	$
Implement Wi-Fi on intercity routes	✓			$$	$
Fares					
Implement simplified countywide fare structure	✓			$	$
Increase availability of transit fare media and sales locations	✓			$	$
Establish regional revenue sharing agreements	✓			$	$
Enhance and establish new pass programs	✓			$	$
Establish farebox recovery ratio goal	✓			-	-
Implement guidelines for fare increases	✓			-	-
Implement regional smart card and mobile ticketing		✓		$$	$

Action Area	Short-Term	Medium-Term	Long-Term	Estimated Capital Cost	Estimated Operating Cost
Routes and Schedules					
Simplify intercity fixed-routes	✓			$	$
Expand service span	✓			$	$$
Improve route headways	✓	✓		$$$	$$$
Land Use					
Improve street connectivity	✓	✓	✓	$$$	$
Enhance pedestrian crossings	✓	✓	✓	$	$
Plan for safety	✓	✓	✓	$$	$
Improve bicycle access	✓	✓	✓	$$	$
Adopt complete streets plans and/or policies	✓	✓		-	-
Encourage transit-oriented development		✓	✓	-	-
Improve sidewalk infrastructure		✓	✓	$$$	$
Improve bicycle infrastructure	✓	✓	✓	$$	$
Premium Transit					
Conduct a feasibility Study of Bus Rapid Transit (BRT) along Mooney Boulevard with branches to Exeter and Tulare	✓			$	
Coordinate- land use along corridors	✓			-	-
Reserve right-of-way	✓			$$	-
Implement BRT on Mooney Boulevard Consider operating branch services to connect to Exeter and Tulare. These would be "Rapid Bus"		✓	✓	$$$	$$$
Customer Amenities					
Develop a bus stop improvement program	✓	✓		$$	-
Establish and/or expand transit centers		✓		$$$	$
Intelligent Transportation Systems					
Equip buses with CAD/AVL technology	✓			$$	$
Implement transit signal priority		✓		$$	$
Operations					
Create a 20-year vehicle acquisition plan	✓			$	-
Establish joint procurement practices	✓			-	-
Conduct a maintenance/operations facility study	✓			$$	-
Implement electric bus service	✓			$$$	-

Action Area	Short-Term	Medium-Term	Long-Term	Estimated Capital Cost	Estimated Operating Cost
Establish a State of Good Repair management system		✓		-	-
Implement autonomous bus service			✓	$$$	$
Flexible Transit					
Consider partnerships with transportation network companies	✓			$	$
Study the feasibility of bike sharing	✓			$$	-
Study the feasibility of volunteer driver programs	✓			$	-
Study the feasibility of community shuttles	✓			$	-
Expand vanpool programs	✓			$$	$$
Implement demand-response zones		✓		$$	$$
Performance Metrics					
Implement countywide performance metrics	✓			-	-
Governance and Organization					
Create a Cooperative Governance Covenant with all the transit operators	✓			-	-
Consider creation of a Joint Powers Authority between Tulare County transit providers	✓			-	-
Further consolidation of operation and governance		✓	✓	-	-

2 EXISTING CONDITIONS

The Existing Conditions chapter serves as foundation for planning and policy recommendations. In addition to summarizing transit design, policies, and performance, the report also communicates population characteristics and travel patterns within Tulare County.

This chapter is organized into the following sections:

- **Plan Review** provides a summary of recently completed transit and transportation plans.
- **Market Analysis** analyzes demographic, socio-economic, and commute data.
- **Fixed-Route Transit Service** provides an overview of countywide service levels, ridership, intercity travel time, and capital assets.
- **Fare Structure** summarizes fares for all transit providers in the county
- **Other Regional Transit Providers** provides a summary of services provided by other transit providers also operating in or near Tulare County.

PLAN REVIEW

This section summarizes relevant planning documents in Tulare County, including the most recent Regional Transportation Plan (RTP), Short Range Transit Plans (SRTPs), Transit Development Plans (TDPs), and other planning documents for jurisdictions within the County.

Transit planning in Tulare County is done at the county and local level. The Tulare County Association of Governments (TCAG) is the County's designated Metropolitan Planning Organization (MPO) and also serves as the Tulare County Council of Governments, Transportation Authority, and Regional Transportation Planning Agency. TCAG's nine member agencies include eight incorporated cities (Dinuba, Exeter, Farmersville, Lindsay, Porterville, Tulare, Visalia, and Woodlake) and Tulare County.

Plan Overview

Tulare County Regional Transportation Plan and Sustainable Communities Strategy, 2014

The Tulare County Regional Transportation Plan, updated in 2014, outlines a 26-year plan for maintenance, operation, and expansion of transportation in the county. As required by California SB 375, the Sustainable Communities Strategy (SCS) includes a plan for reducing greenhouse gas emissions (GHG) from automobiles and light trucks. The goal is to meet emissions reductions targets of a 5% reduction in GHG per capita below 2005 levels by 2020 and a 10% reduction by 2035. Since improved transit service is an important part of meeting emissions reductions targets, the SCS includes strategies related to transit:

- Encourage development of a transit system that interconnects and coordinates with other modes of transportation (e.g., passenger rail, intercity bus, multi-jurisdictional transit, bicycle facilities, pedestrian walkways, etc.).

- Encourage the cities of Visalia and Tulare to plan for and implement transit-oriented land use along planned light rail and/or bus rapid transit corridor(s).

- Require all transit plans to include evaluation and policies on transit safety and security.

- Encourage transit agencies to annually review transit safety procedures.

- Encourage transit agencies to make use of all available federal, state, and local funding to sustain, expand, and improve local transit services, and ensure the timely and best use of those funds.

- Encourage the consolidation of duplicate services within the region to make best use of funding and other resources.

- Develop cohesion and cooperation among transit operators that will result in efficient and accessible transit service between and within communities, such as coordinating schedules to minimize wait times between systems.

- Develop a minimum acceptable response time for transit Dial-a-Ride service and maximum delay times for fixed-route service.

- Develop a network of fast, convenient, high quality transit services that are competitive with the cost and time to drive alone during peak periods.

- Utilize Cap and Trade funds available for transit, if available.

- In addition to the SCS, the Action Element of the Regional Transportation Plan outlines current conditions for each transit agency within Tulare County and identifies additional goals and opportunities for countywide coordination and connectivity. TCAG priorities include improving coordination between transit services by increasing transfer points between systems and reducing unnecessary duplication of services to maximize resources. Examples of countywide coordinated initiatives include TCAG-led efforts to phase in natural gas and zero-emission vehicles and the establishment of a countywide transit pass (T-Pass). Regional transit priorities identified in the Regional Transportation Plan include:

- **Inter-county transit services.** Improve connections to other counties and other major transportation systems.

- **Long-range regional transit plan.** Evaluate existing services, coordination opportunities, intelligent transportation system (ITS) plans, and a centralized dispatch center.

- **Regular regional coordination of transit services.** Social services, passes, farebox, dispatch, schedule/transfer coordination, and maintenance and fueling facility sharing opportunities.

- **Plan integration.** Guide engineering and planning standards to accommodate transit components for residential and commercial developments.

- **Bus rapid transit (BRT) feasibility studies.** Evaluate potential corridors and preservation of right-of-way. The plan references corridors between Exeter and Lindsay, Lindsay and Porterville, Visalia and Exeter, and Visalia and Tulare.

- **Community college transit program.** Develop standard measures of fare recovery to provide students discounted countywide passes, and improve marketing to student population.

County of Tulare 2015-2020 Transit Development Plan

The County of Tulare operates the Tulare County Area Transit (TCaT) system, which includes four intercity fixed routes, five local circulator routes, and four dial-a-ride service areas. TCaT is the primary provider of intercity service in Tulare County. This TDP is focused on TCaT service rather than all transit service throughout Tulare County.

Tulare County's TDP shows good performance for the TCaT fixed-route transit system with consistent ridership and fare revenue growth between 2009 and 2014. Key issues identified for TCaT's fixed-route service include a need to increase fares. This fare increase would account for the relatively high cost of operating long-distance intercity service, a key component of the TCaT system. The TDP also identifies the need to develop a blended farebox recovery ratio standard for TCaT to reflect its mix of urban and rural service areas. The following recommendations for fixed-route service are included in the TDP:

- Increase general fares from $1.50 to $1.75 in January 2016
- Add service to several routes to increase service span or frequency
- Increase general fares from $1.75 to $2.00 in FY 2018/19
- Purchase and install electronic fare card readers to allow the use of regional electronic fare media
- Purchase buses annually to maintain the fleet

TCaT dial-a-ride service has very low farebox recovery compared to fixed-route service. The TDP includes several recommendations for dial-a-ride service:

- Review and adjust the fare structure as needed to reflect the cost of providing dial-a-ride service
- Review and adjust service areas and trip scheduling to reflect available funding and demand for service
- Purchase buses annually to maintain the fleet

Tulare County's TDP also includes general recommendations not tied to specific service types:

- Implement a blended farebox recovery ratio standard once approved by Caltrans
- Amend monthly service summary reports to include all transit expenditures to enable accurate assessment of transit service performance
- Require service contractors to report information on canceled bus trips, ADA service denials, and dial-a-ride no-shows
- Update the TCaT color scheme
- Use marketing efforts to increase ridership and improve service efficiency

Visalia Short Range Transit Plan, 2013

In 2010, the Visalia Urbanized Area (UZA) boundary was expanded to include Tulare and unincorporated communities adjacent to Tulare. The Urbanized Area boundaries are updated by the US Census Bureau every ten years and are designed to represent densely developed territory. This expanded boundary impacts both funding and service delivery for transit. Although these locations are served by other transit providers, the SRTP suggested that the Visalia UZA expansion may affect funding and service delivery.

Visalia's SRTP highlights the following four goals: operate a high-quality public transportation system, meet the growing transportation needs of the community with innovative and cost effective solutions, provide leadership in public transportation for the City and neighboring communities, and educate the public about transit services and its benefits. Proposed operational improvements to the fixed-route system include optimization of existing service and expanded service scenarios. Proposed capital improvements include a potential satellite transit center, improved fareboxes, bike racks, mobile data terminals, and automated passenger counters.

One of the principle concerns outlined in the SRTP is low farebox recovery ratios for Visalia's fixed-route and dial-a-ride services. In order to meet the 20% ratio mandated by California's Transportation Development Act (TDA), the plan identifies several strategies, including requesting a waiver from TCAG to reduce the farebox recovery requirement to 15%, a fare restructure, and/or using funds from a local sales tax initiative to supplement fares.

In order to address larger funding concerns, the SRTP financial plan suggests a reduction in dial-a-ride and Visalia Towne Trolley services in order to free up resources for connectivity and frequency improvements to existing service and the possible introduction of new services. The plan expects that these actions will generate an increase in ridership and fare revenue over the status quo.

The financial plan includes four scenarios: 1) status quo, 2) proposed operational plan with no fare change, 3) proposed operational plan with fare restructure, and 4) expanded operational plan with fare restructure. The analysis found that scenarios 3 and 4, which include the fare

restructure, were much more likely to raise farebox recovery to meet or exceed the 20% required standard.

Porterville Short Range Transit Plan, 2012

The Porterville Short Range Transit Plan was updated in 2012. At the time of the plan, Porterville transit service included eight fixed routes and Dial-A-COLT service, which is ADA-compliant but also open to the general public. Key issues addressed in Porterville's SRTP include: service expansion to meet increased demand from emerging areas in the city and demand for increased evening and Sunday service, maintenance of farebox ratios to comply with California's TDA 20% requirement, enhanced passenger amenities (e.g., bus shelters, passenger information systems, and computerized dispatching), and growth limits at the transit center and bus maintenance facility.

Porterville's SRTP outlines six recommended objectives:

- Maximize service reliability and convenience
- Maximize operating efficiency without negatively impacting service quality
- Operate a productive service that remains affordable to the recognized primary transit markets
- Promote the coordination of service with other regional transit services
- Promote public/private partnerships to market or operate transit services in support of city of Porterville economic and land use development goals
- Ensure ongoing service monitoring, evaluation, and planning

The SRTP includes an overview of other transit services operating within the Porterville area, including Porterville Sheltered Workshop services, Porterville Developmental Center service, and Family HealthCare Network vanpool program. Fixed-route transit in the area includes TCaT Routes 40 (Southeast County), 70 (Springville-Porterville), 80 (Porterville-Terra Bella), and 90 (Woodville-Poplar-Porterville). Regional service is provided by Orange Belt Stages and Turamerica. The SRTP includes an assessment of shared stop locations between TCaT and Porterville Transit and found that both provide enough service to allow passengers to transfer between systems without excessive wait.

The plan proposes a schedule of action items for the next five years including: the addition of new routes and buses, the creation of a day pass costing $3, enhanced peak service hours, Sunday route service, extended weeknight services, and real-time web and app-based information systems.

City of Tulare Short Range Transit Plan, 2014

Tulare's SRTP assesses the current performance and future needs of transit services in the city of Tulare, including Tulare Inter-Modal Express (TIME) and Dial-A-Ride Tulare service. Tulare also operates ADA paratransit. The plan includes a ridecheck and on-board survey component.

Key findings from the plan based on feedback from outreach with Tulare riders emphasized high demand for increased weekend service and the introduction of a Sunday demand-response service.

Operation recommendations from the SRTP include service delivery to Matheny Tract through a MOU with Tulare County (allowing passengers to transfer for free between agency services),

service delivery to East Tulare Villa, changes to improve on-time performance on Routes 4 and 7, extended Saturday service to 7:00 p.m., and a revised fare policy to ensure FTA compliance. The previous fare policy was not consistent with FTA Section 5307 funding requirements that seniors and people with disabilities pay a maximum of 50% of the full fare during non-peak hours.

Administrative recommendations include improved data management, a bus stop improvement program, an expanded customer feedback mechanism, and the establishment of a formal Transit Advisory Committee.

Marketing recommendations include an increased marketing budget to grow ridership and improve farebox recovery, promotion of TIME non-cash fare media, and the provision of all promotional materials in Spanish.

Dinuba Transit Development Plan, 2014

TCAG prepared a TDP for the City of Dinuba to guide transit planning for the Dinuba Area Regional Transit (DART) system from 2014 to 2019. DART service includes a flexroute, (combined fixed-route and dial-a-ride service), a trolley circulator, and regional fixed-route service.

The TDP identified some key issues:

- **Low farebox recovery:** Because DART provides service within a non-urbanized area, the state Transportation Development Act requires a 10% farebox recovery ratio. For FY 2012-13, the DART farebox recovery ratio was at 7.9%. A failure to maintain the required ratio over a two-year period would result in a reduction of TDA funding, which currently accounts for 37% of DART's annual budget.

- **Dial-a-ride passenger loads:** DART's demand-response and fixed-route services were combined to prevent duplication of services. However, an increase in demand-response passengers has compromised the on-time performance of the fixed-route component of DART service.

In order to address these issues, the plan makes several key recommendations including increasing fares, eliminating duplicate services, adding new stops at specific locations, increasing public education particularly regarding the benefits of fixed-route transit (as opposed to demand-response service), and purchasing additional buses. The plan also recommends improving data management and electronic fareboxes.

Dinuba's TDP outlines action items oriented around five recommended objectives:

- Maximize service reliability and convenience
- Maximize operating efficiency without negatively impacting service quality
- Operate a productive service that remains affordable to priority transit markets
- Promote the coordination of services with other regional transit operators
- Promote public/private partnerships to market or operate transit services in support of City of Dinuba economic and land use development goals

Of particular relevance to this study is the service coordination component of the Dinuba TDP. Tulare County Area Transit (TCaT) operates two fixed routes that serve Dinuba: the North County route (Route 10) and Route 50. The TDP included an assessment of scheduled stop times for DART and TCaT shared bus stops, indicating wait times between services vary from 1 to 22 minutes, because DART operates on fixed headways while TCaT schedules change throughout the

day. TCaT Routes 10 and 50 each have two or more variants throughout the day, which means that running time varies between trips. Additional service in the Dinuba area includes Orange Cove Transit service through Orange Cove, Reedley, Parlier, Sanger, and Fresno. Transfers between Orange Cove Transit service and the DART Dinuba Connection are available at Reedley College. However, since Orange Cove Transit is operated by Fresno County Rural Transit Agency (FCRTA), separate fares are required for transfers. FCRTA funds a portion of the Dinuba Connection service in Fresno County. Continued coordination with FCRTA and Reedley College was recommended.

The TDP also included a preferred fare scenario which would increase the fare on flexroute service in two phases, with additional subsidy from the City of Dinuba to maintain the required 10% fare recovery ratio.

Exeter Transit Development Plan, 2014

Currently, the Cities of Exeter and Visalia collaborate to provide transit services within Exeter, including local fixed route and dial-a-ride. Findings from public outreach conducted for the report indicate a demand for increased service hours and a need for increased marketing and outreach efforts to improve ridership.

To address these needs, the TDP offers three operating plan scenarios. The Preferred Scenario recommends improved data collection and performance tracking, bus stop enhancement, reduction of city staff oversight of safety-related responsibilities, promotion of Visalia fixed-route service at Exeter schools, increased community outreach, and increased transit fare media sales locations. The Transition Scenario recommends shifting responsibility of day-to-day Exeter operations to Visalia in order to reduce staffing redundancies and maintain the farebox recovery ratio. The Community Circulator Recommendation calls for a peak-hour community circulator and a transit center for the trolley and existing fixed-route and dial-a-ride services.

Woodlake Transit Development Plan, 2015

The City of Woodlake operates the Woodlake Dial-A-Ride Transit system, which is a public demand-response service. Woodlake is also served by regional fixed-route service operated by TCaT. The TDP focuses on the demand-response system and TCaT Route 30.One key issue identified in Woodlake's TDP is operating cost increases keeping farebox recovery ratios low despite ridership growth. Rural transit operators are required by California state law to maintain a farebox recovery ratio of at least 10%. Woodlake's ratio of 10.5% in FY 2013/2014 represents an improvement over the previous three years, but leaves little margin to accommodate additional operating cost increases. Continued ridership growth and a continued decline in fuel prices could help offset this challenge.

Another issue addressed in the Woodlake TDP is mobility provided to Woodlake transit riders. Many of the system's riders are heavily dependent on the service to get around, and the limited span of service for Woodlake Dial-A-Ride presents a mobility barrier. Community feedback indicates a strong desire for weekend service and extended weekday service span, though current funding is insufficient to provide these service increases.

The Woodlake TDP includes the following system recommendations:

- Maintain the current fare structure in the near term, while monitoring fare revenues and operating costs to determine if future fare increases may be required

- Improve the monitoring and analysis of transit reliability and performance metrics with the goal of improving service delivery
- Identify and apply for funds to enable fleet replacement and upgrades to the maintenance facility and the Whitney Transit Center
- Begin discussion with TCaT regarding earlier Saturday service on Route 30
- Continue to assess the feasibility of implementing weekend service or extended weekday hours while still meeting the 10% farebox recovery ratio requirement

College of the Sequoias Accessibility Study, 2013

This study was commissioned and funded by the City of Visalia to develop a strategy for enhancing access to the College of the Sequoias campuses in the cities of Visalia and Tulare. Key objectives of the study were to evaluate the feasibility of an intercampus shuttle and the cost of the College of the Sequoias student transit pass program.

Recommendations of the study include increasing marketing efforts of the student pass, improving timed bus route connections at Tulare Transit Center and Visalia Government Center, extending route 11X to the Tulare campus, and starting a vanpool from Farmersville/Exeter to Tulare.

Tulare County Regional Light Rail Study, 2007

This study assessed the feasibility of a light rail line between Visalia and Tulare, which are approximately 11 miles apart and are linked by SR-63 (Mooney Boulevard). The study was conducted before Tulare was incorporated into the Visalia Urbanized Area (UZA) and before the jointly operated Route 11X was introduced. At the time of the study, Tulare County Area Transit (TCaT) was operating Route 40, which continues to connect the two cities. The planning year for analysis is 2030, with a projected population of 386,000 for the combined area of Visalia and Tulare.

The study identified three potential light rail corridors, shown in Figure 2-1:

- Santa Fe Option: This option would utilize existing BNSF and Union Pacific (UP) right-of-way as well as the former ATSF rail right-of-way, which has since been converted to non-motorized trail use.
- UP-99-198 Option: This option would operate primarily on Mineral King Avenue and a combination of BNSF right-of-way, former ATSF right-of-way, and UP right-of-way. This is the only alternative that would serve the Visalia Airport.
- UP/Mooney Boulevard Option: This option would operate major segments on Mineral King Avenue, Mooney Boulevard, Cartmill Avenue, and the UP right-of-way.

Each corridor has advantages and disadvantages in terms of current and potential land uses. Costs and right-of-way issues are also factors in each proposed corridor.

In consideration of anticipated costs and revenues, the plan also outlines potential funding sources to build and operate the project, such as the federal New Starts program, state funds, and local funds.

Figure 2-1   Light Rail Corridors Included in 2007 Study
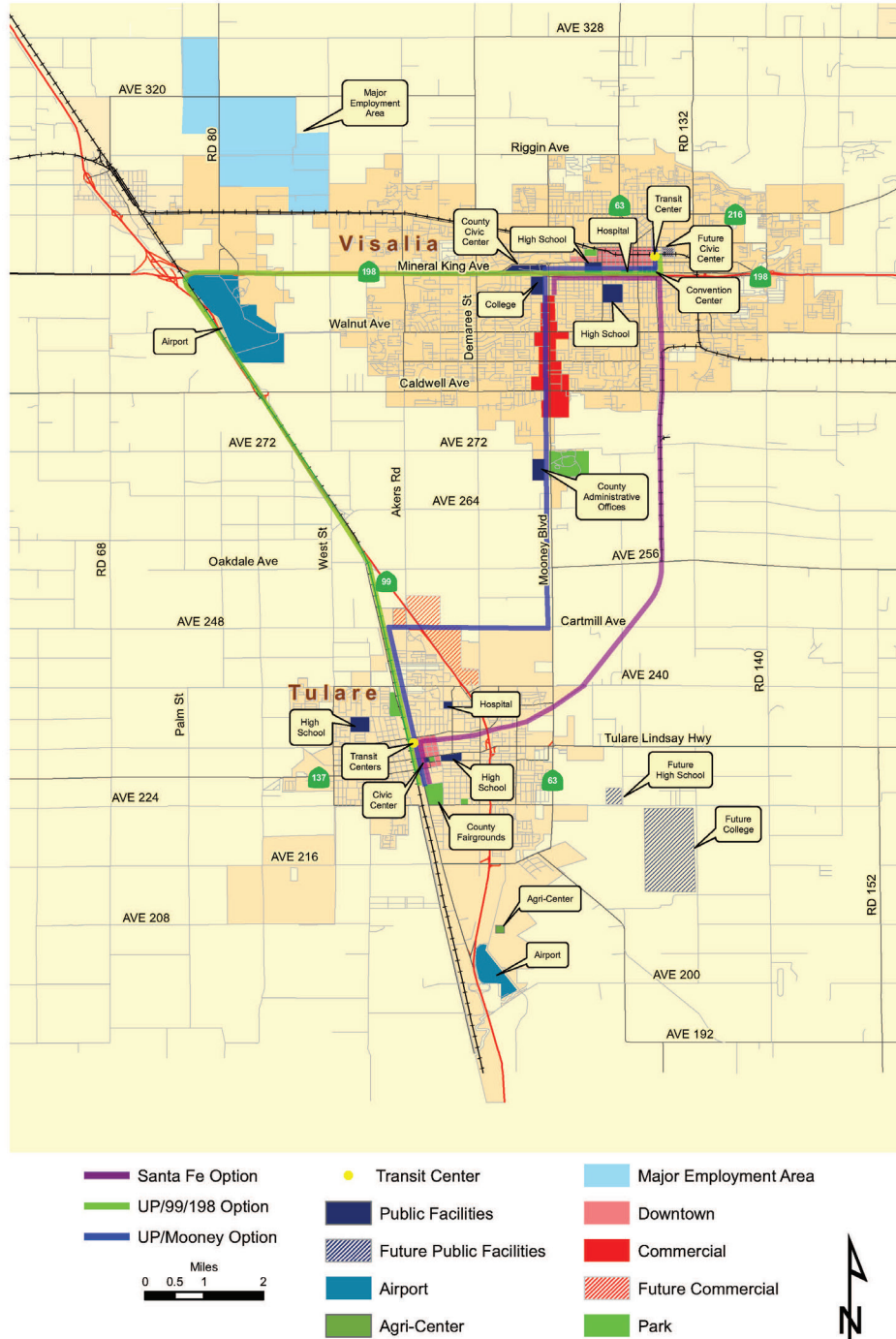
Plan Review Key Findings

Evaluation Measures

Existing transit performance measures are summarized in this section. This inventory will provide an understanding of how agencies currently measure success in order to inform future decision-making regarding countywide evaluation measures. The Long Range Transit Plan may also identify project-specific evaluation measures to assist with project prioritization in the future. Improving performance measurement may require increased investment in data collection and reporting. Several types of evaluation measures are described in this section including transit performance standards, service design standards and project evaluation measures.

Figure 2-2 shows the performance measures currently reported in existing transit planning documents for Tulare County jurisdictions. Nearly all of the planning documents reviewed for this report recommend improving data collection and performance monitoring. While some metrics required for state or national reporting are widely reported (such as farebox recovery ratios), other measures that are very useful for monitoring transit service quality and reliability (such as on-time performance) are reported by few agencies. Additionally, standards for service performance are typically only reported systemwide, whereas in some cases it may make sense to measure different types of service (demand-response, rural, intercity) by different metrics.

Figure 2-2   Transit Performance Measures in Tulare County

Measure	TCaT	Visalia SRTP	Tulare SRTP	Dinuba TDP	Porterville SRTP	Exeter TDP	Woodlake TDP
Cost efficiency (cost per vehicle revenue mile, cost per vehicle revenue hour)	X	X	X	Recommended	X		X
Service effectiveness (passengers per vehicle revenue mile, passengers per vehicle revenue hour)	X	X	X	Recommended	X		X
Cost effectiveness (farebox recovery ratio, cost per passenger)	X	X	X	Recommended	X	X	X
On-time performance	Recommended		X	X	X	Recommended for DAR	Recommended
Passenger complaints per passengers carried	Recommended		X	X	X		Recommended
Preventable accidents per revenue mile	Recommended		X	X	X		Recommended
Road calls per revenue mile operated	Recommended		Recommended	X	X		Recommended
Bus trips cancelled	Recommended			X	X		X

Only two of the existing transit planning documents reviewed include service design standards, which guide new investments in service and can also be used to assess whether existing service

design is adequate to meet the general needs of a given operating environment. Many of these measures are applicable systemwide as well as to specific routes. The Dinuba TDP includes service design standards in the following areas:

- Maximum walking distance
- Bus stop spacing
- Bus stop location
- Minimum bus stop design
- Passenger loads
- Service headways
- Timed transfers

The Woodlake TDP includes service design and performance measures for several aspects of demand response service:

- Service eligibility
- Service capacity
- Pick-up windows
- Drop-off windows
- Maximum on-board time
- Trip booking options
- Minimum vehicle specifications

Because few of the existing transit plans included evaluations of specific long-range infrastructure projects, there are few examples of project-specific evaluation criteria outside of the Tulare County Regional Light Rail Study. Project alternatives in this study were compared based on measures including:

- Forecasted ridership
- Transit-oriented development impact
- Forecasted revenue
- Capital and operating costs
- Farebox recovery
- Cost per new rider
- Cost per miles

While many of the existing plans identify targets for transit performance, there are few standard metrics for evaluating transit performance and progress towards long-term initiatives.

Summary of Existing Transit Plans

One theme that emerges in the Tulare County transit plans is the need to improve connectivity between agencies. Many agencies have addressed inter-agency connectivity through the establishment of transit centers, some with plans for expansion. As the Regional Transportation Plan states, the primary strategy to improve countywide connectivity should be through the coordination of transfer points while eliminating service overlap. Several plans also identify specific corridors within the county that merit consideration for fixed-route service in coordination with intensified development. The Tulare County Regional Light Rail Study identified the UP/Mooney Boulevard Corridor as a viable candidate for commuter service between Visalia and Tulare. The RTP also identified several areas to consider for BRT, including corridors between Exeter and Lindsay, Lindsay and Porterville, Visalia and Exeter, and Visalia and Tulare.

Among the various plans, the most common concern from agencies relates to farebox recovery ratios. Five out of seven agencies identified this as a key issue or concern. Funding from California's Transportation Development Act is contingent upon agencies meeting a farebox recovery ratio of 20% for urban areas and 10% for non-urban areas. Although agencies have the option to supplement this funding with local funding, or for urban providers reduce the ratio through a TCAG waiver, funding will continue to be a concern as agencies attempt to meet growing transportation demands within their communities. Other frequently occurring goals and objectives among the various plans include improved performance measurements, increased geographic coverage, increased service span to nights and weekends, and improved data collection.

The various plans among transit agencies in Tulare County also reflect a need to expand and improve services to meet the transportation needs within and between cities. Plans to address these needs include increased evening and weekend service, fleet expansion, new and improved bus stops and transfer centers, passenger information systems, improved data collection and analysis, and – as it pertains to the Long Range Transit Plan – coordination of services between agencies. A very high proportion of riders in Tulare County are transit reliant, which creates a high demand for transit yet presents challenges in terms of raising revenue through fare increases without negatively impacting ridership. In part, countywide coordination can help address funding issues. For example, Exeter's TDP recommends a transition scenario in which Visalia Transit would take over operations to reduce staffing redundancies and maintain a farebox recovery ratio. On the larger scale, improved connectivity – both between cities and major connectors in neighboring counties – should boost ridership across the county and therefore improve farebox recovery ratios for individual agencies.

While TCaT provides most inter-city services within the county, there are instances of jointly operated intercity routes (e.g., Route 11x between Tulare and Visalia) and transfer points between non-regional transit agencies. A comprehensive evaluation of these connections, along with considerations of potential future intercity corridors, is vital to address coordination of services within and across county borders.

MARKET ANALYSIS

This section describes the demographic and socio-economic characteristics of Tulare County, as well as travel patterns between urban subareas.

Population

While the eastern half of Tulare County is mountainous and sparsely populated, the western half boasts a combined population of nearly 500,000 persons dispersed across several small to medium-sized cities separated by vast agricultural lands. US 99 bisects the western half of the county and provides regional connections to Fresno to the north and Bakersfield to the south. The majority of the county's population is situated east of US 99 and west of the Sierra Nevada foothills. The primary central cities of Visalia, Porterville, Tulare, Lindsay, Farmersville, and Exeter are connected by State Roads 63, 65, 137, 198 and CR J20. The northern communities of Dinuba and Cutler-Orosi are connected by CR J40 and SR 63. Communities with a population of over 5,000 are listed in Figure 2-3.

Figure 2-3   Population of Cities and Census-Designated Places (CDP) in Tulare County

City	Population
Visalia	130,104
Tulare	62,315
Porterville	56,058
Dinuba	23,702
Cutler-Orosi (CDP)	13,770
Lindsay	13,217
Farmersville	10,774
Exeter	10,548
Earlimart (CDP)	8,537
Woodlake	7,654

Source: US Census, 2015 Estimate

Tulare County's population is projected to increase steadily at an annual rate of approximately 2% over the next 26 years, as depicted in Figure 2-4.

Figure 2-4   Tulare County Population Projections, 2014-2040
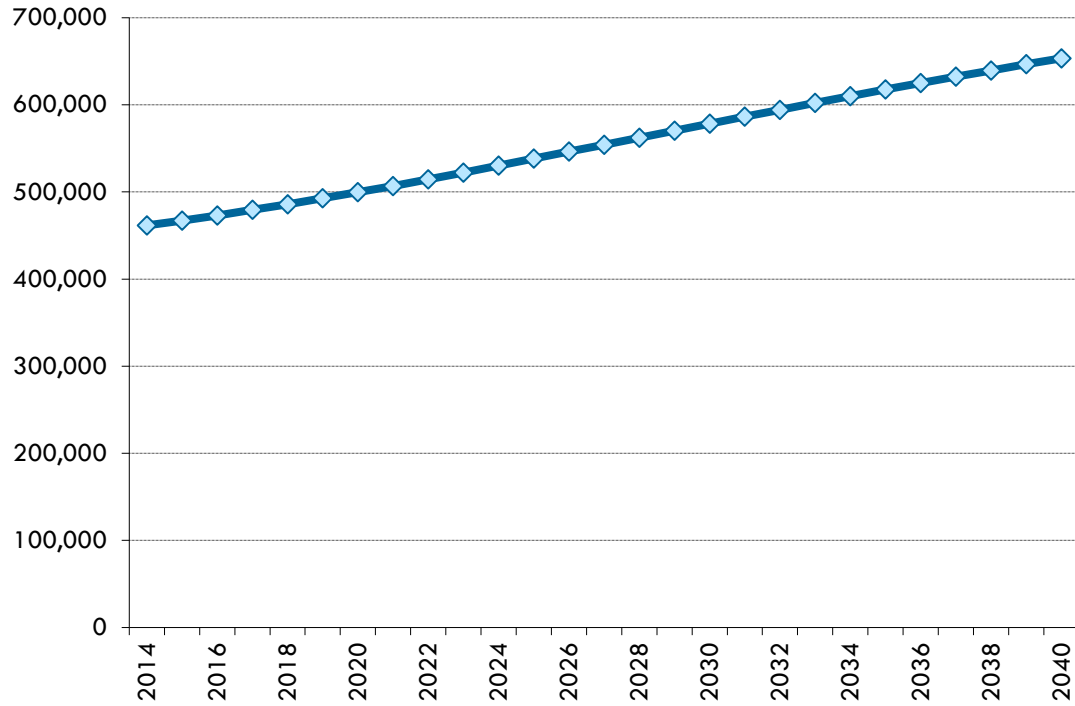
Source: California Department of Transportation, The California Economic Forecast, 2014-2040

Population Density

Population in Tulare County is depicted in Figure 2-5. The highest population densities are concentrated in Visalia, Tulare, and Porterville. Moderate population densities are present in Dinuba, Cutler-Orosi, Farmersville, Exeter, Lindsay, and Strathmore. Situated just beyond the county line along SR-99, Kingsburg (Fresno County) and Delano (Kern County) also exhibit moderate population densities.

Figure 2-5   Population Density, 2010
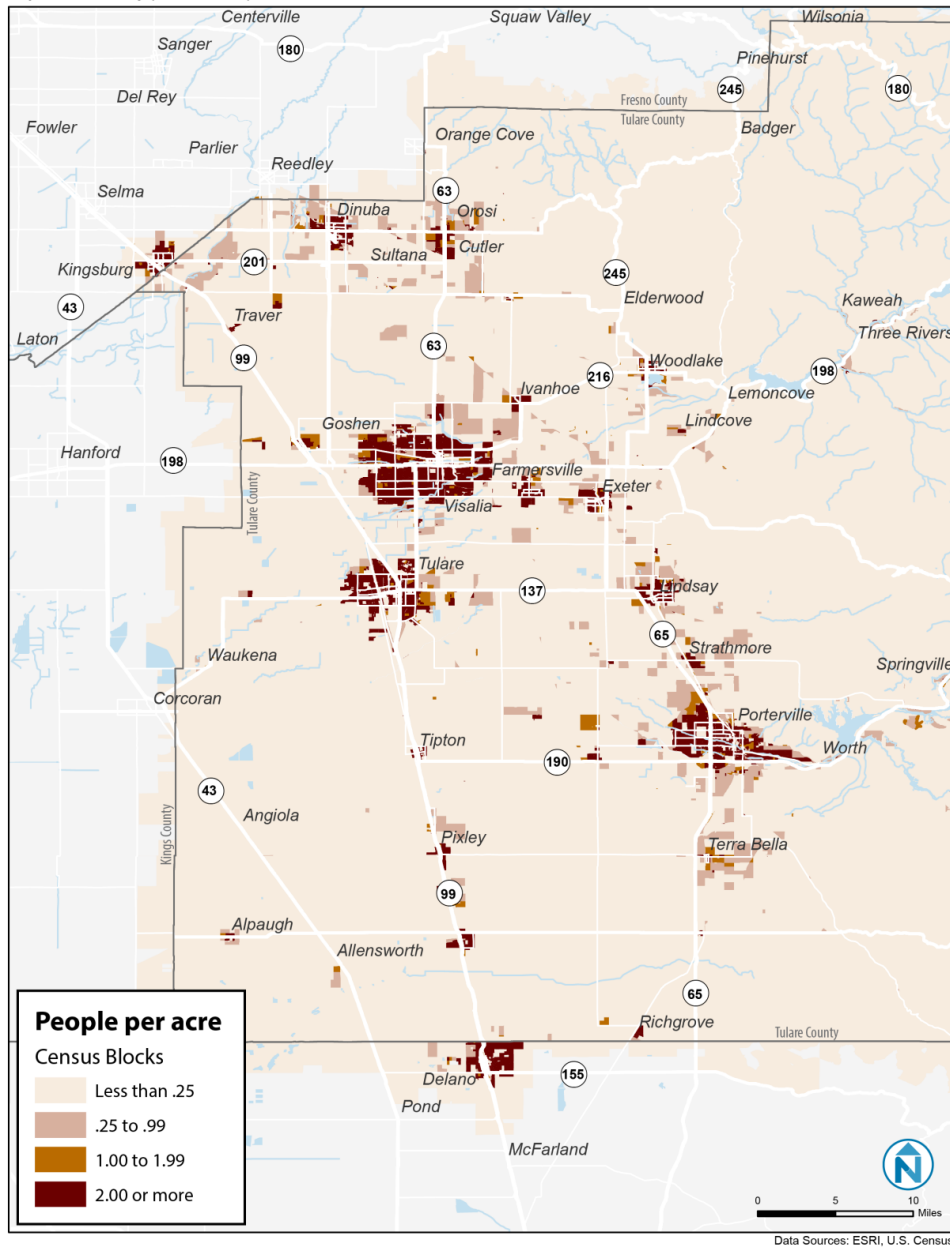
Employment Density

Employment in Tulare County is scattered along three main corridors – Highways 99, 65, and 63 – and its three primary urban areas (Visalia, Porterville, and Tulare). Visalia's high job density is largely due to employment from the County of Tulare, the Kaweah Delta Health Care District, and the College of the Sequoias. Southwest Tulare has a high presence of food manufacturers, such as Nestlé, Land O'Lakes, Saputo, and United States Cold Storage. Porterville sees a strong presence of jobs to the south and east due to employment from the Porterville Development Center and the Walmart Distribution Center.

Figure 2-6   Employment Density, 2011
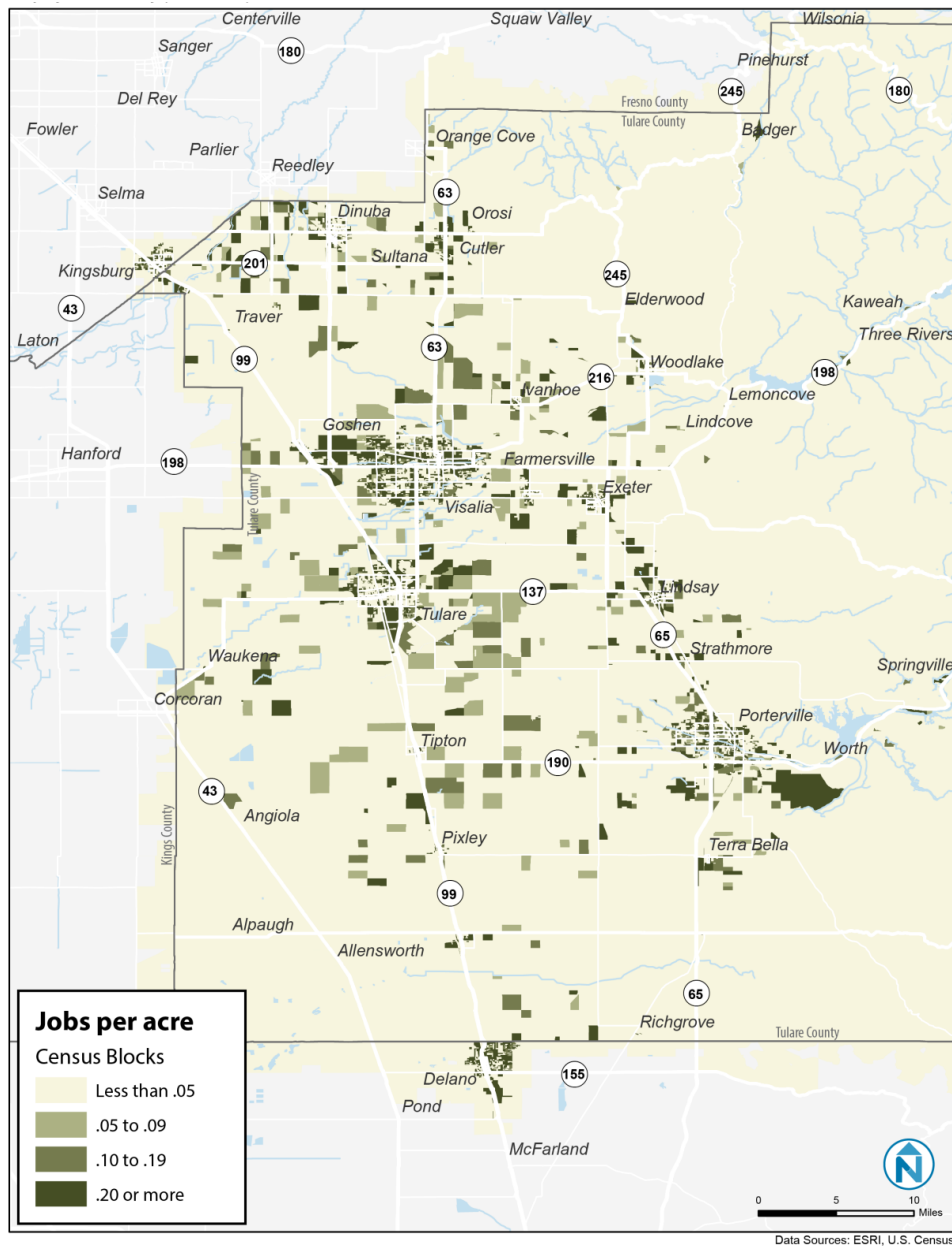
Senior Population Density

Senior population density mirrors the pattern of Tulare County's general population. The largest concentrations occur in Visalia, Porterville, and Tulare. The main noticeable difference is that the senior population tends to locate closer towards the urban core of each city. Other urban areas with notable concentrations of senior populations include Dinuba, Cutler-Orosi, Exeter, and Lindsay.

Figure 2-7   Senior Population Density, 2012
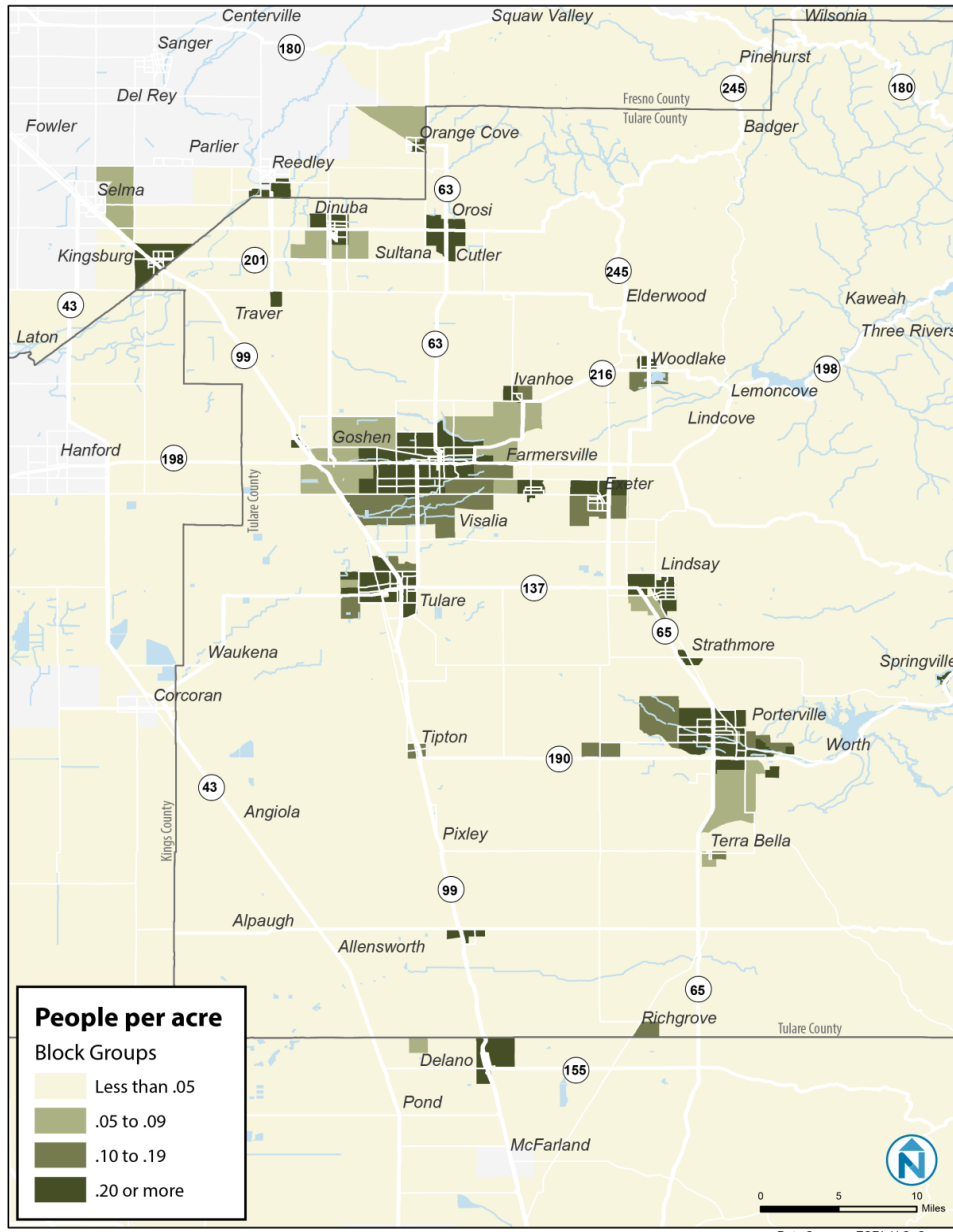
Persons with Disabilities

The population patterns of persons with disabilities within Tulare County are visibly similar to that of the senior population, with even more concentration within the core of urban areas.

Figure 2-8   Density of Persons with Disabilities, 2012
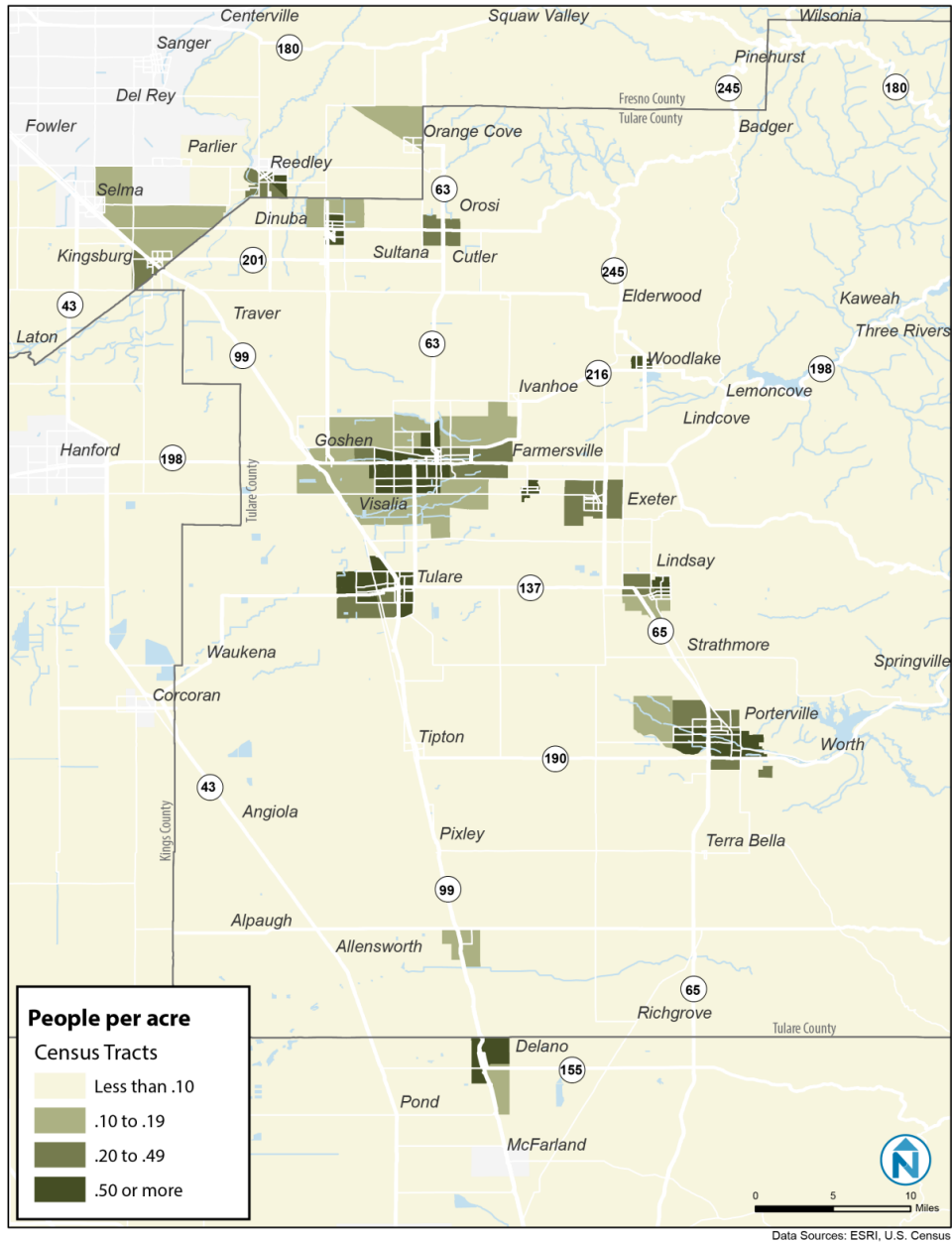
College-Age Population Density

The geographic distribution of Tulare County's college-age population is concentrated within the three main urban centers of Visalia, Porterville, and Tulare. There are also small concentrations of this group within Lindsay, Exeter, Dinuba, and a notable portion in the Cutler-Orosi area. Finally, the college-aged population has visible densities in some parts of the county – e.g., Tipton, Pixley, Terra Bella, and Richgrove – where the senior and disabled populations are less prominent.

Figure 2-9   Density of College-Age Adults, 18 to 21, 2012
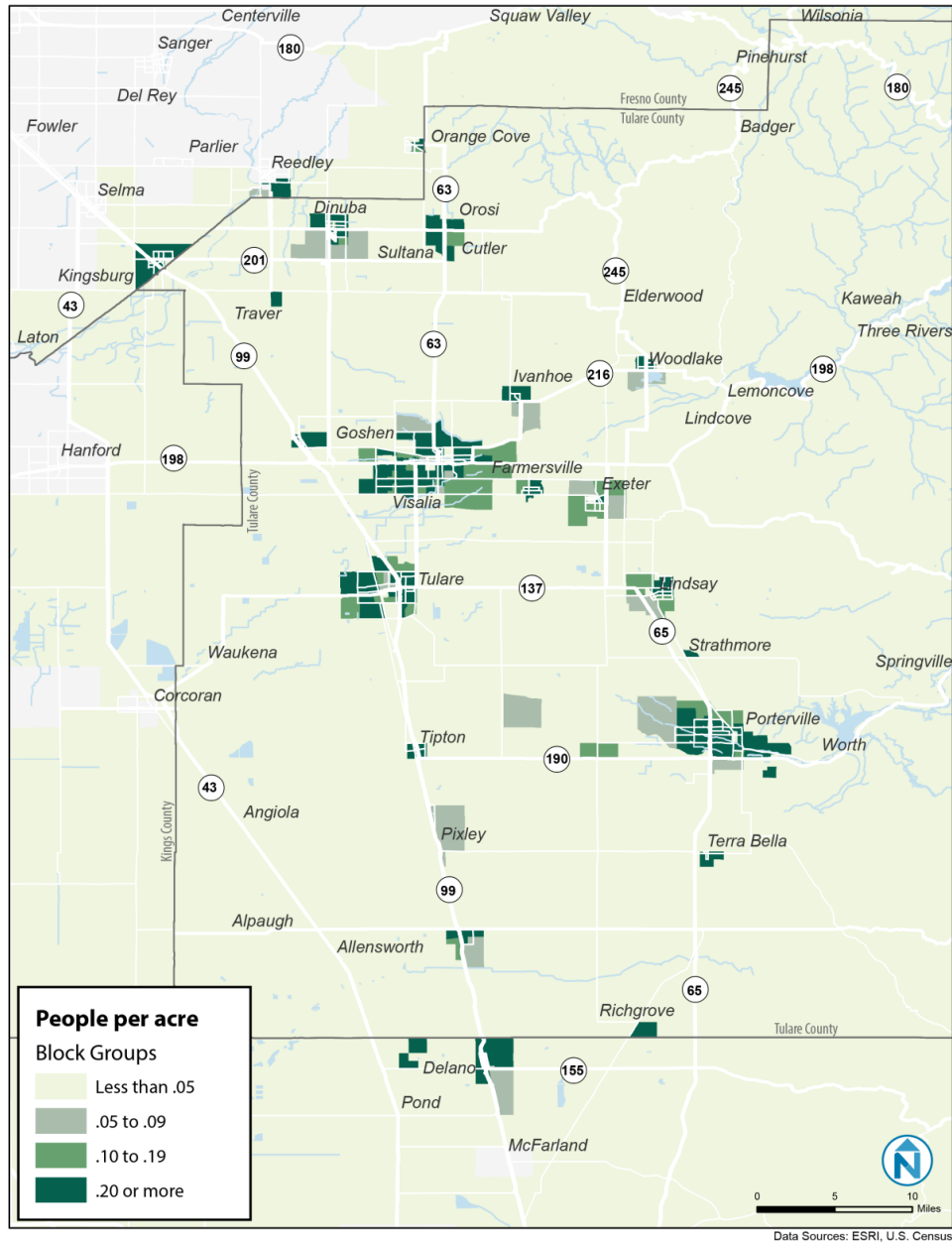
Zero-Vehicle Household Density

Zero-vehicle households within Tulare County are largely concentrated within the urban cores of Visalia, Porterville, Tulare and Dinuba. These are also the only four cities in the county offering fixed-route transit service. While areas such as Lindsay, Exeter, and Cutler-Orosi also have a presence of carless households, they exhibit much smaller concentrations than that of the four largest cities.

Figure 2-10   Density of Households with No Vehicle Available, 2012
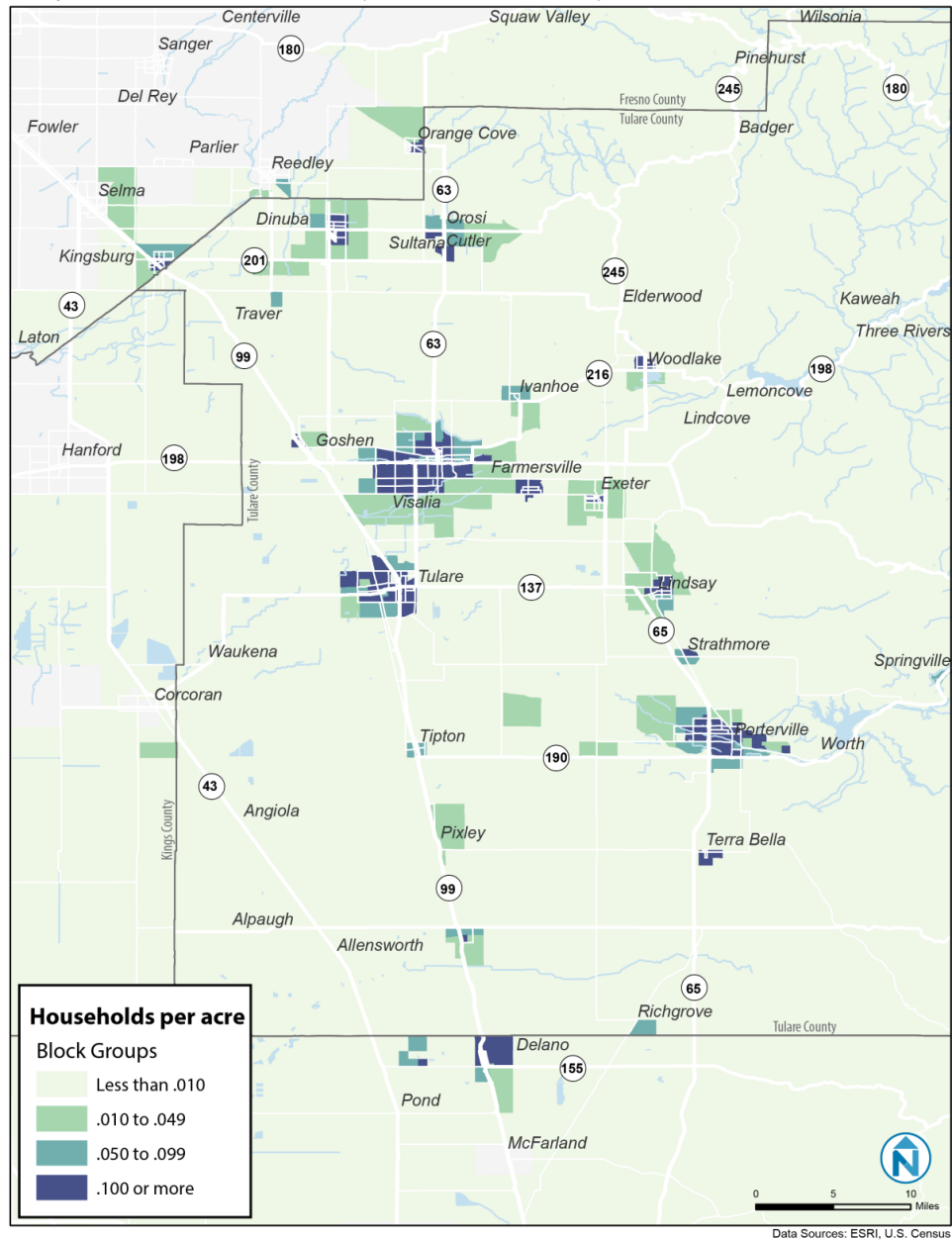
Low-Income Population Density

The highest densities of households below poverty are found in Tulare, Lindsay, Porterville, central Visalia, in the north part of the County near Dinuba, Orange Cove, and Cutler-Orosi, and to the South in Allensworth. In these areas over half of all households are below the poverty line. The areas with lower densities of households below poverty include Cutler, east Porterville, and Goshen.

Figure 2-11   Density of Households Below the Poverty Line
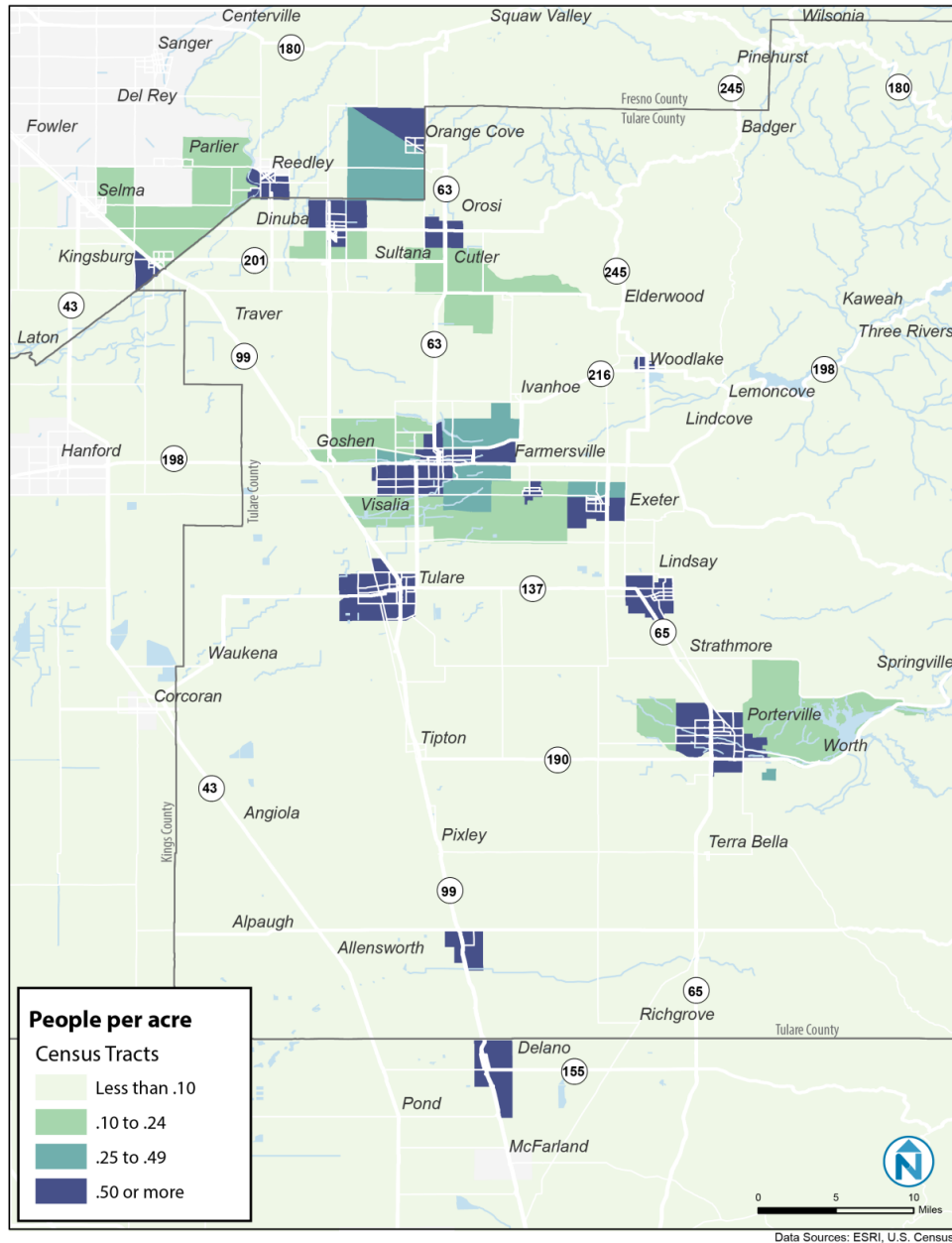
Rental Household Density

Rental properties within Tulare County are most prominent in Visalia, Porterville, Tulare, and Cutler-Orosi.

Figure 2-12   Density of Rental Households
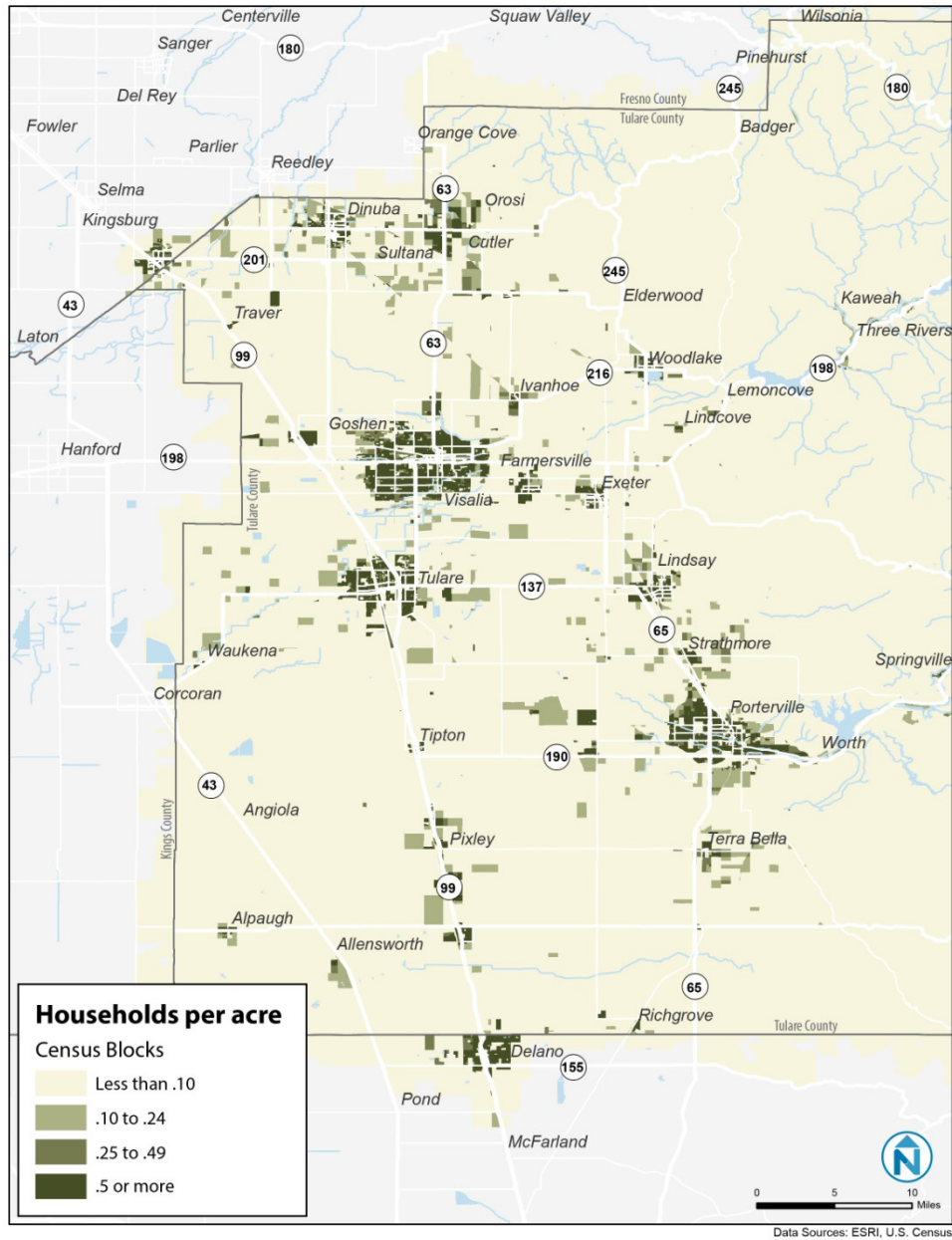
Employee Travel Patterns

The commuting patterns of Tulare County residents are characterized by substantial intercity and intercounty travel. Although the majority of workers within each urban area reside within that same area, there are notable intercity corridors that see considerable commuter activity. Due to its high share of jobs in the county (especially within the government sector), and due to its comparatively large population, Visalia is both an important origin and destination for county-wide and intercounty commuters. Travel times between these locations, by transit and car, are provided later in this section.

Notable intercity commute patterns include corridors from: Visalia to Tulare, Visalia to Dinuba-Cutler-Orosi, Porterville to Visalia, Porterville to East Porterville, and Dinuba to Cutler-Orosi. Notable intercounty commute patterns include: Visalia and Tulare to Delano, Visalia and Tulare to Corcoran, Visalia to Hanford, Dinuba to Reedley, Porterville to Delano, and Porterville to Corcoran. Employment locations for residents of urbanized areas are depicted in Figures 2-13 through 2-18.

Figure 2-13   Employment Locations of Visalia Residents

Figure 2-14   Employment Locations of Tulare Residents
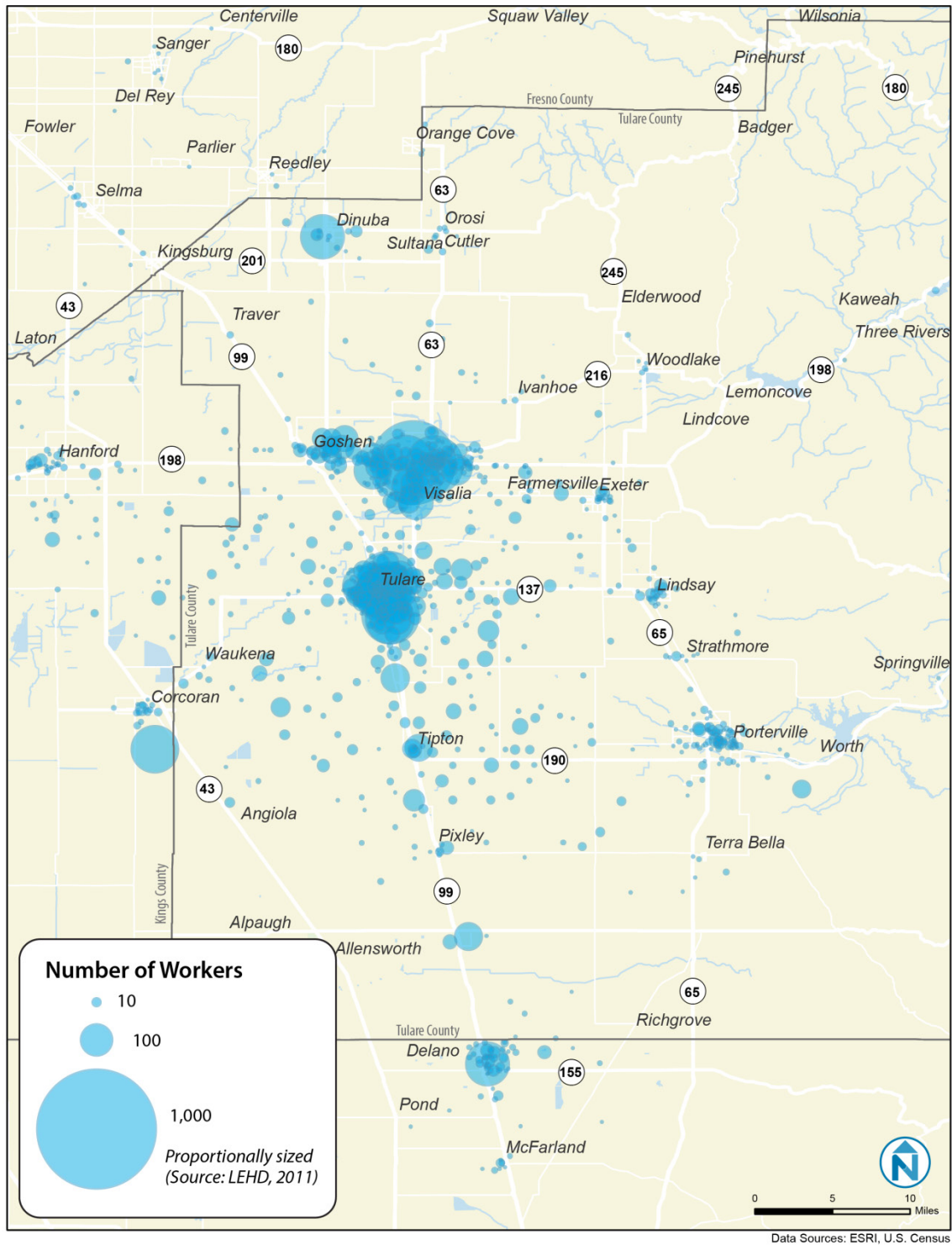
Figure 2-15   Employment Locations of Porterville Residents
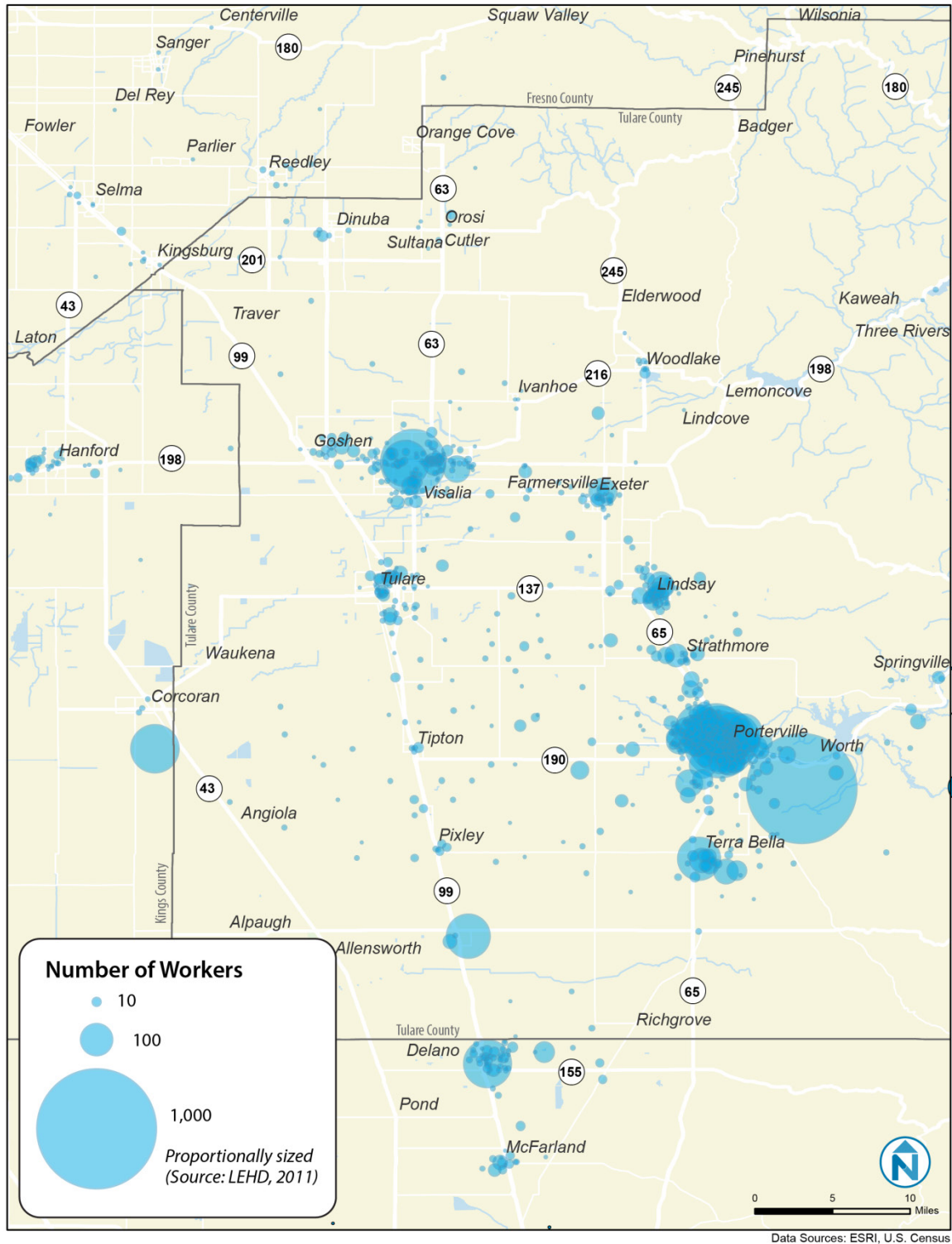
Figure 2-16   Employment Locations of Dinuba and Cutler-Orosi Residents
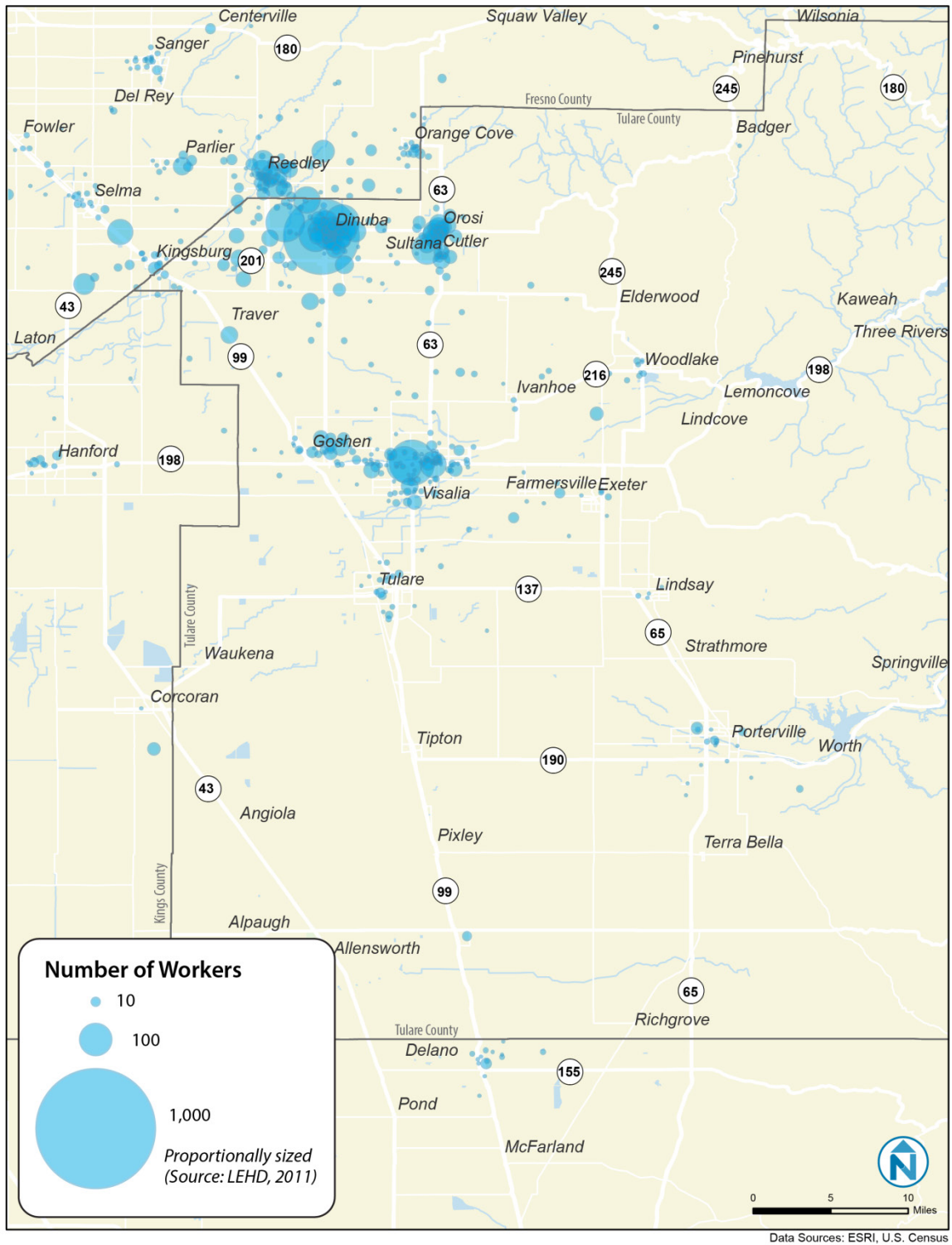
Figure 2-17   Employment Locations of Exeter-Lindsay Residents
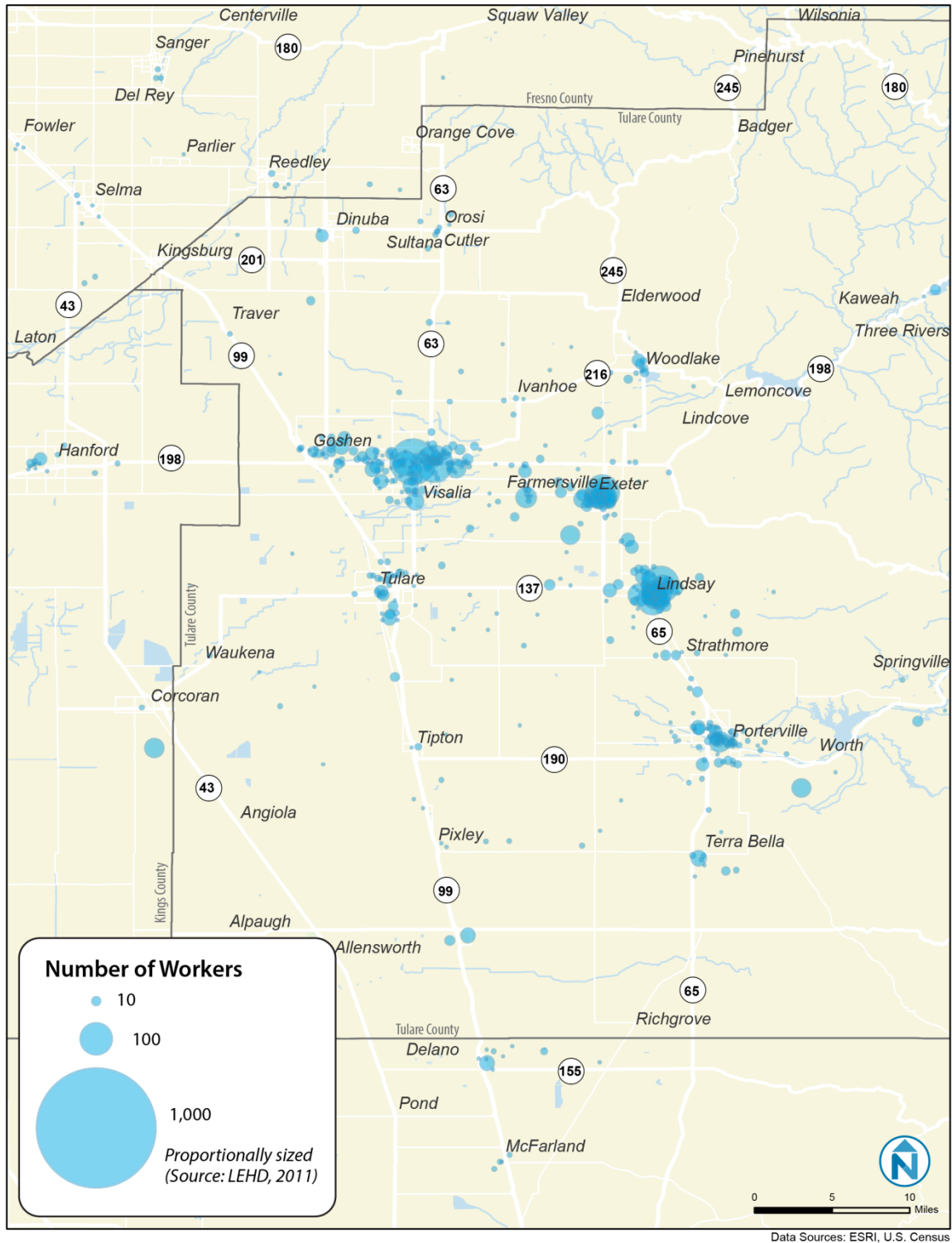
Figure 2-18   Employment Locations of Woodlake Residents
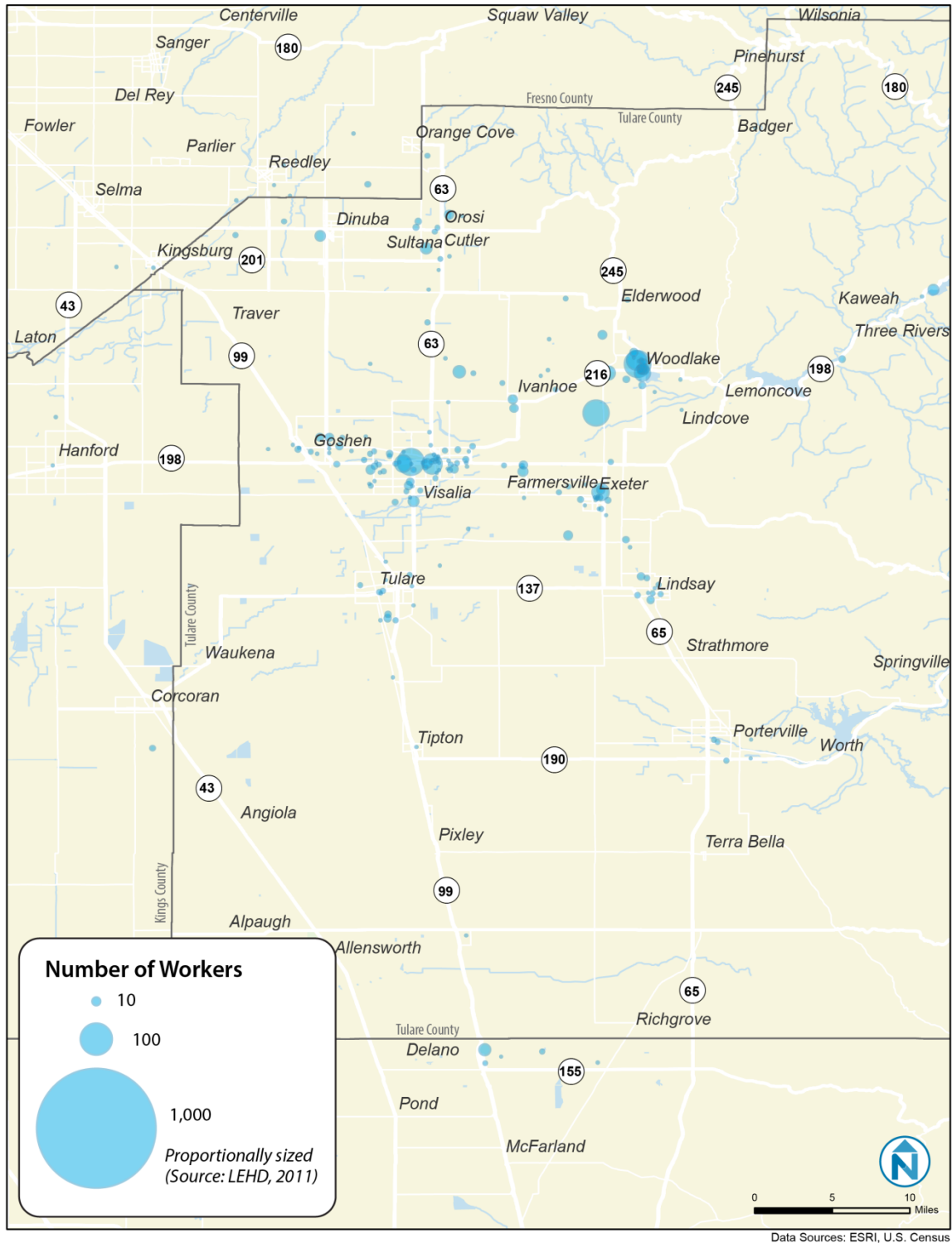
FIXED-ROUTE TRANSIT SERVICE

A summary of fixed-route services operating in Tulare County is provided in Figure 2-19.

Figure 2-19   Summary of Fixed-Route Services

Service Provider	Services Offered	Areas Served
Visalia Transit	Local, circulator, intercity	Visalia, Tulare, Farmersville, Exeter
Porterville Transit	Local. feeder	Porterville, East Porterville
Tulare Intermodal Express (TIME)	Local, intercity	Tulare, Visalia
Tulare County Area Transit (TCaT)	Intercity	Tulare County communities, Delano
Dinuba Area Regional Transit (DART)	Flex, circulator, intercity	Dinuba, Reedley
V-Line	Regional intercity	Visalia, Fresno

Visalia Transit

Visalia Transit operates 13 fixed routes consisting of regular local routes, one downtown circulator, and one intercity route jointly operated with Tulare Intermodal Express (TIME).

The fixed-route system operates seven days a week, with weekday service running between 6 a.m. and 10:30 p.m., and weekend service between 8 a.m. and 8 p.m. Dial-a-ride service within the city limits of Visalia operates Monday through Friday from 6 a.m. to 9:30 p.m. and on weekends from 8 a.m. to 6:30 p.m. All routes (aside from Route 12) begin and end at the Visalia Transit Center on the corner of East Oak Street and North Bridge Street. Here riders can connect to two TCaT routes (10 and 30) with service to other cities in Tulare County.

January 2014 service changes included a change in service frequency for Routes 3 and 8A/8B (from 30 to 45 minutes), increased weekend service on Route 6, and added new weekly passes. August 2014 service changes included the elimination of express service from Route 1A/1B, schedule adjustments to Routes 6, 7, and 12, and fare increases for fixed-route and demand-response service. References to systemwide data in this section refer to the Visalia system.

Porterville Transit

Porterville Transit operates nine fixed routes along with dial-a-ride service within the city limits of Porterville. The fixed-route system operates seven days a week, with weekday service running between 7 a.m. and 10 p.m., and weekend service between 9 a.m. and 5 p.m. Six of the routes operate at 40-minute frequencies seven days a week, with the remaining three operating at 60- to 80-minute frequencies. All routes begin and end at the

Porterville Transit Center on the corner of West Oak Avenue and North D Street. Here riders can connect to five TCaT routes (40, 60, 70, 80, and 90) with service to other cities in Tulare County.

In July 2012, weekday service span was extended to 10 p.m.. The December 2012 service change included the addition of Route 9 with service to the Tulare Indian Reservation. Several fare-related changes were made in July 2013, including an increase in fixed-route and demand-response fares, and the introduction of daily, monthly, reduced, and student passes. Sunday service was also added in July 2013.

Tulare Intermodal Express

Tulare Intermodal Express (TIME) operates six fixed routes within Tulare and East Tulare, and one jointly operated fixed route with Visalia Transit. Weekday service occurs between 6:30 a.m. and 10 p.m. Saturday service operates between 9 a.m. and 7:00 p.m. Dial-a-ride service is offered Monday to Friday 6 a.m. to 10 p.m. and Saturday from 9 a.m. to 7:00 p.m.

Tulare County Area Transit

Tulare County Area Transit (TCaT) operates nine fixed routes that connect areas within the county. The four intercity routes connect communities throughout the county. These routes operate seven days a week with service running from morning to evening with frequencies ranging from 35 to 90 minutes. Weekend service for these routes runs from late morning to early evening, with each route operating three to six bi-directional trips. TCaT also operates five local circulator routes and offers dial-a-ride service to members of the general public within four service areas in the county.

In addition to intercity routes, TCaT also operates five feeder routes that connect to regional transit centers. Route 50 operates Monday-Saturday and connects to Dinuba. Routes 60, 70, 80, and 90 operate Monday–Friday and connect to Porterville.

Dinuba Area Regional Transit

Dinuba Area Regional Transit (DART) operates two flex-route services with dial-a-ride components, one downtown circulator (Jolly Trolley), and one fixed-route regional service (Dinuba Connection). All routes begin and end at the Dinuba Transit Center on the corner of East Merced Street and North M Street.

V-Line

V-Line is a limited-stop regional intercity service that connects Visalia with destinations in Fresno, including Fresno Yosemite Airport, California State University Fresno, and Courthouse Park (transit center). V-Line also maintains stops at Visalia Transit Center and Visalia Airport.

V-Line began service in November 2015 after years of requests by Central Valley commuters and students. The service consists of six northbound and six southbound trips. V-Line operates seven days a week.

Figure 2-20   Countywide System Map
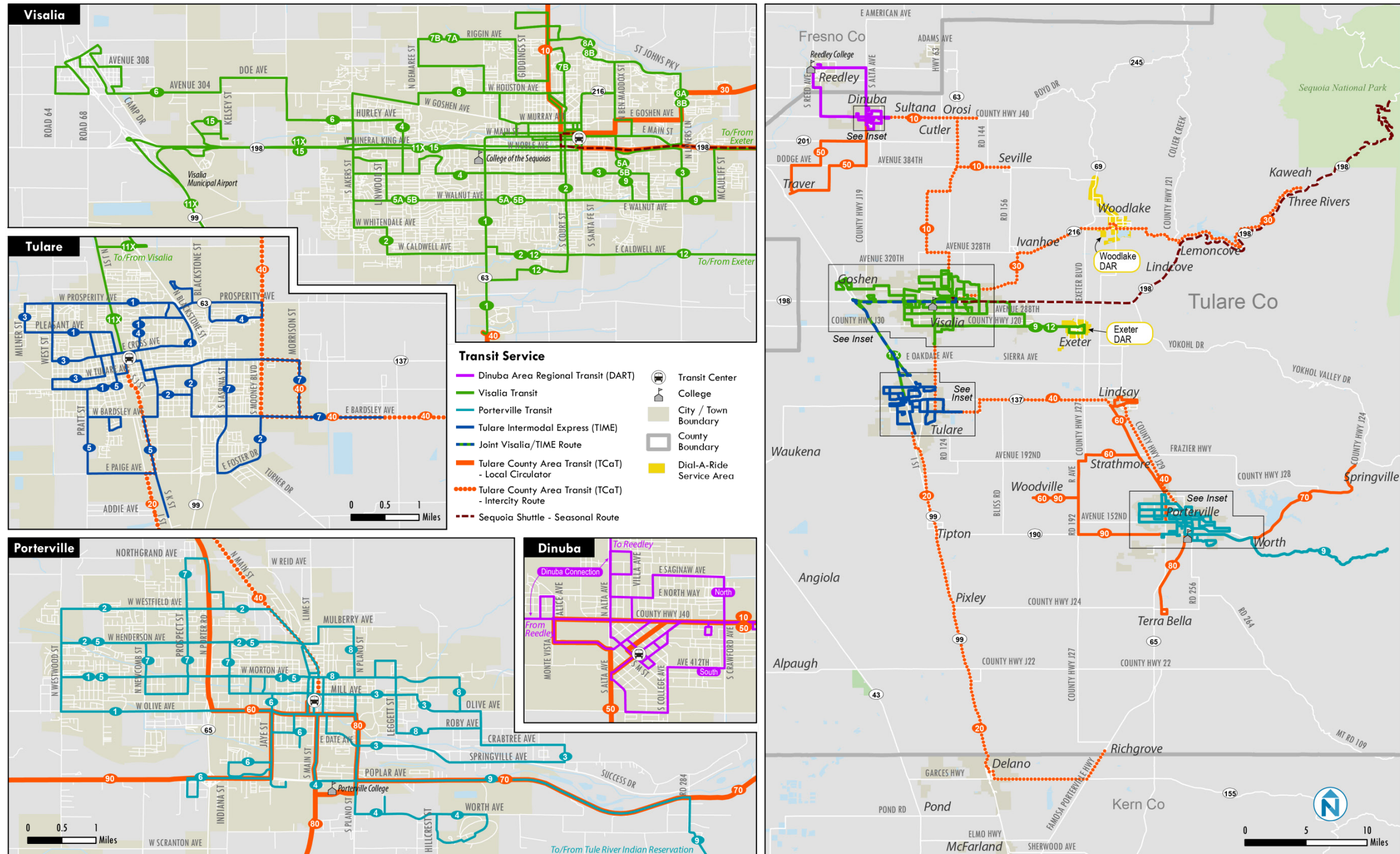
Countywide Service Comparison

This section provides a comparative overview of service characteristics, ridership performance, and fare policies for all public transit providers operating in Tulare County. A summary of fare coordination and the usage of countywide transit passes are also included in this section.

Service Headways

A summary of service headways for all fixed routes operating in Tulare County is provided in Figure 2-21.

Figure 2-21   Service Headway Comparison

Agency	Route	Monday-Friday				Saturday	Sunday
		AM	Midday	PM	Evening		
Visalia	1	15	15	15	30	20	20
	2	30	30	30	30	30	30
	3	45	45	45	45	45	45
	4	30	30	30	60	30	30
	5	30	30	30	30	30	30
	6	45-60	45-60	45-60	45-60	45-60	45
	7	30	30	30	30	30	30
	8	45	45	45	45	45	45
	9	90	90	90	90	90	90
	11	30	30	30	30	30	---
	12	60	60	60	60	60	60
	15	60	60	60	60	45	45
	Trolley	15	15	15	15*	15	---
Porterville	1	40	40	40	---	40	40
	2	40	40	40	---	40	40
	3	40	40	40	---	40	40
	4	40	40	40	---	40	40
	5	40	40	40	---	40	40
	6	40	40	40	---	40	40
	7	80	80	80	---	80	80
	8	80	80	80	---	80	80
	9	80	80	80	---	80	80
TIME	1	30	30	30	30	30	---
	2	30	30	30	30	30	---
	3	30	30	30	30	30	---
	4	30	30	30	30	30	---
	5	30	30	30	30	30	---

Agency	Route	Monday-Friday				Saturday	Sunday
		AM	Midday	PM	Evening		
	7	30	30	30	30	30	---
	11	30	30	30	30	30	---
TCaT	**10**	60	60	60	---	120-150	120-150
	20	60-90	60-90	60-90	---	180+	180+
	30	35	35-70	30-40	---	180+	180+
	40	65	60-65	65	---	120-180	120-180
	50	2 Trips	1 Trip	1 Trip	---	4 Trips	---
	60	3 Trips	4 Trips	2 Trips	---	---	---
	70	2 Trips	---	2 Trips	---	---	---
	80	2 Trips	---	2 Trips	---	---	---
	90	3 Trips	4 Trips	2 Trips	---	---	---
Dinuba	**North** **	30	30	30	60*	60	---
	South **	30	30	30	60*	60	---
	Trolley	30	30	30	30	30	---
	D.C.	60	60	60	60	60	---
V-Line		120	190-240	150-180	-	120-240	120-240

* Evening service on Friday and Saturdays only (Visalia Trolley, Dinuba flexroutes)
**Friday service has 60-minute headways after 6 p.m. (Dinuba flexroutes)

Service Span

A summary of service spans by service level (Weekday/Saturday/Sunday) for all fixed routes operating in Tulare County is provided the following figures.

Figure 2-22   Weekday Service Span Comparison
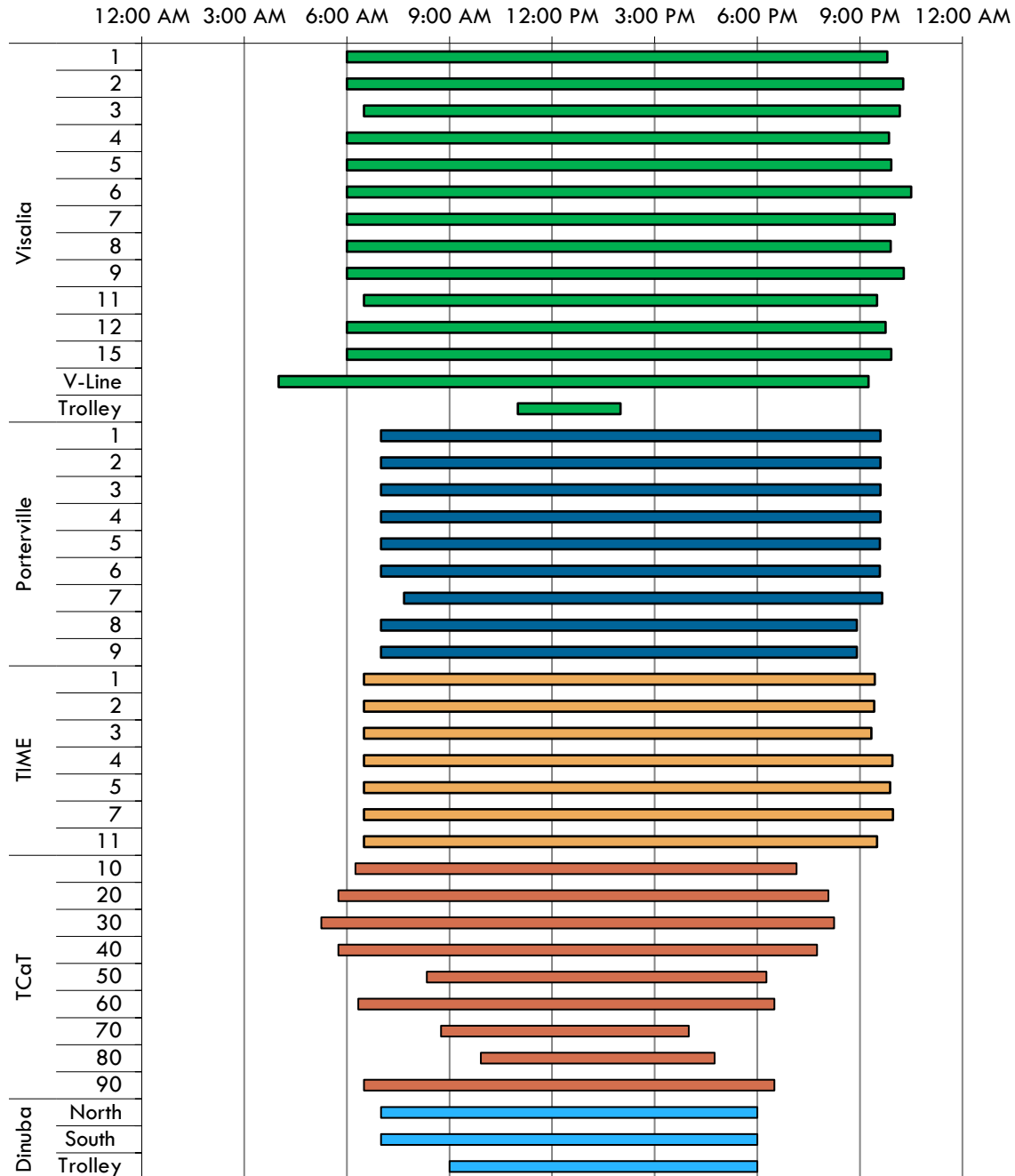
Visalia Trolley also operates from 5 p.m. - 9:30 p.m. on Friday
Dinuba North and South, and Jolly Trolley hours are extended until 9 p.m. on Friday
Dinuba Connection (D.C.) hours are shortened to 3 p.m. during summer

Figure 2-23   Saturday Service Span Comparison
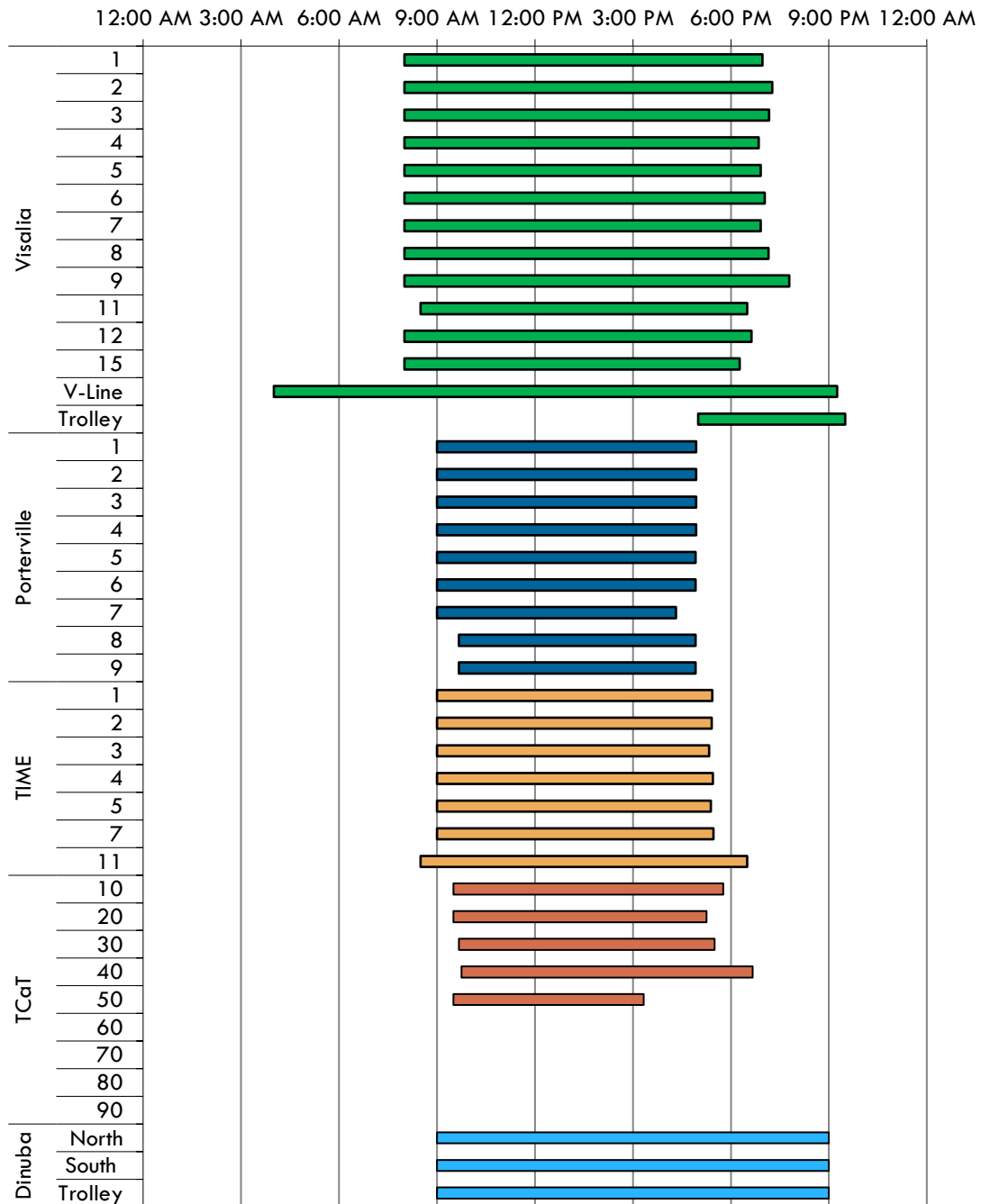
Figure 2-24   Sunday Service Span Comparison
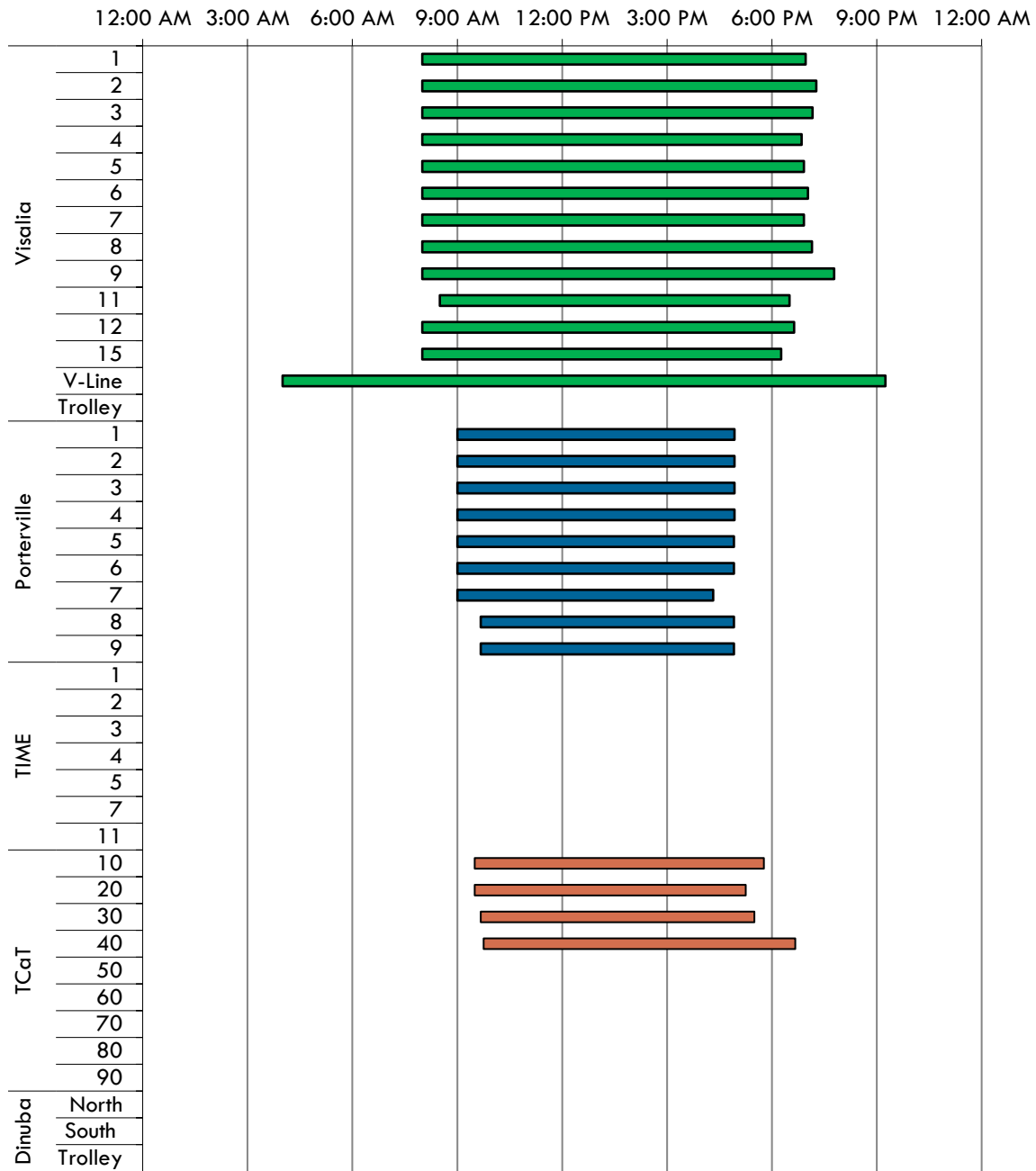
Holiday Service

Holiday service varies across fixed-route service providers. Figure 2-25 identifies which holidays are not served by the six fixed-route transit providers operating in Tulare County. None of the providers operate on New Year's Day, Independence Day, Thanksgiving Day, and Christmas Day. Some providers operate on Easter, Memorial Day, and Labor Day, while others do not. Some providers operate on Saturday schedules on minor holidays.

Figure 2-25   Holidays not Served by Fixed-Route Providers

Provider	New Year's Day	Easter	Memorial Day	Indepen. Day	Labor Day	Thanks-giving Day	Christmas Day
Visalia Transit	X	X	X	X		X	X
Porterville Transit	X			X		X	X
Tulare Intermodal Express (TIME)	X	X	X	X	X	X	X
Tulare County Area Transit (TCaT)	X	X	X	X	X	X	X
Dinuba Area Regional Transit (DART)	X	X	X	X	X	X	X
V-Line	X	X	X	X		X	X

Operational Trends

Figure 2-26 and Figure 2-27 show several 5-year operating trends for fixed-route transit services in Tulare County. The overall operating costs were just over $15 million in 2013.[1] In the five years since 2009, operating costs have increased a total of 3% while revenue hours have increased 24%. However, because the National Transit Database (NTD) data for TIME, TCaT, and DART includes dial-a-ride services in the operating costs, it is possible that fixed-route costs have increased more than shown in this dataset.

Figure 2-26   Countywide Fixed-Route Operating Costs, 2009-2013

Provider	2009	2010	2011	2012	2013
Visalia Transit	$7,721,380	$7,643,520	$8,054,662	$8,733,373	$7,433,701
Porterville Transit	$1,167,013	$1,176,851	$1,772,827	$1,294,208	$1,812,113
Tulare Intermodal Express (TIME)*	$3,851,821	$2,356,979	$2,517,219	$2,458,349	$2,275,118
Tulare County Area Transit (TCaT)*	$1,462,099	$1,598,943	$1,988,331	$2,289,897	$3,010,168
Dinuba Area Regional Transit (DART)*	$430,022	$625,418	$498,488	$521,013	$557,638
Total	$14,632,335	$13,401,711	$14,831,527	$15,296,840	$15,088,738

Source: National Transit Database

* Operating costs for TIME, TCaT, and DART include dial-a-ride services.

Figure 2-27   Countywide Fixed-Route Revenue Hours, 2009-2013

Provider	2009	2010	2011	2012	2013
Visalia Transit	100,028	108,834	115,257	112,729	113,779
Porterville Transit	23,983	24,337	24,430	24,582	29,500
Tulare Intermodal Express (TIME)	24,750	25,685	31,250	24,784	24,407
Tulare County Area Transit (TCaT)	20,781	22,514	26,169	28,517	30,953
Dinuba Area Regional Transit (DART)	4,566	10,508	11,958	12,036	16,636
Total	174,108	191,878	209,064	202,648	215,275

Source: National Transit Database

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[1] Operating costs for TIME, TCaT, and DART include paratransit services.

Ridership Performance

Each agency that provides transit service in Tulare County operates in different environments with different levels of service. Systemwide performance and performance by route therefore varies by agency. Figure 2-28 shows the upward trend in combined countywide fixed-route ridership. Figure 2-29 shows total annual ridership by agency. Visalia, which operates in the densest environment with longer service spans and more frequent service, has the highest annual ridership. Figure 2-30 shows boardings per revenue hour by agency, which shows that all agencies have relatively similar total productivity. Boardings per revenue hour range from 8.5 boardings per hour for TCaT to 15.4 boardings per hour for TIME.

Figure 2-28   Historical Combined Countywide Fixed-Route Ridership
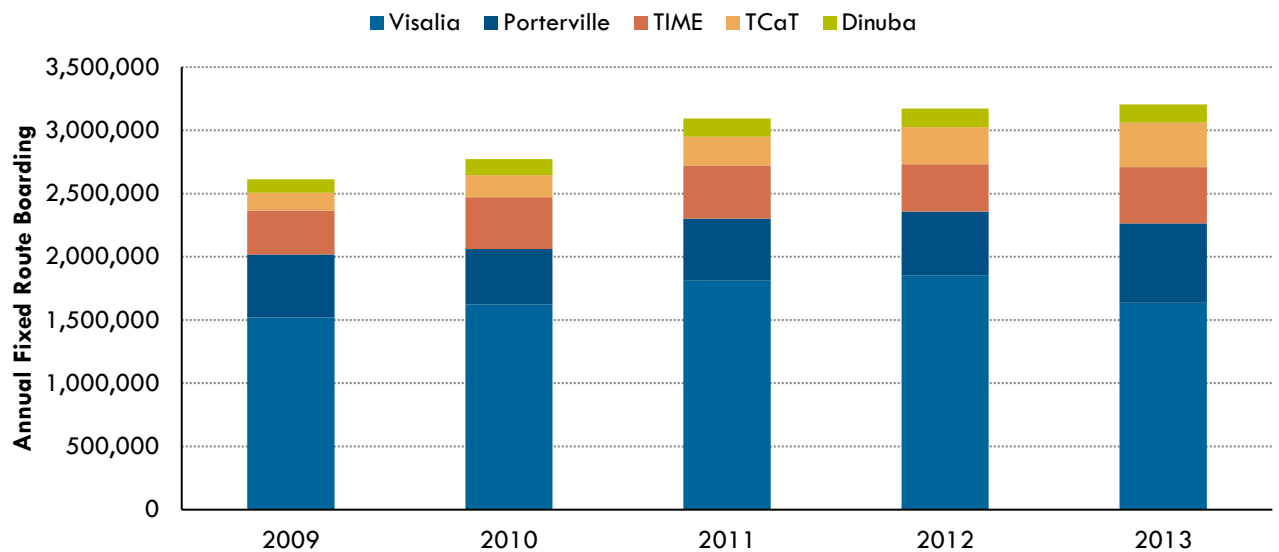
Figure 2-29   Historical Fixed-Route Ridership by Agency
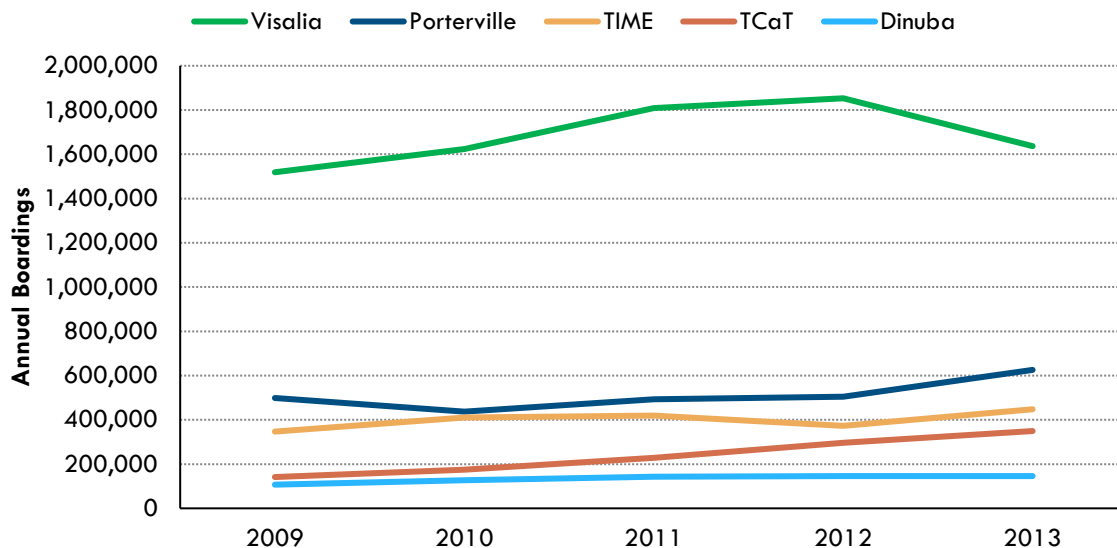
Figure 2-30   Fixed-Route Productivity by Agency, FY 2013-2014
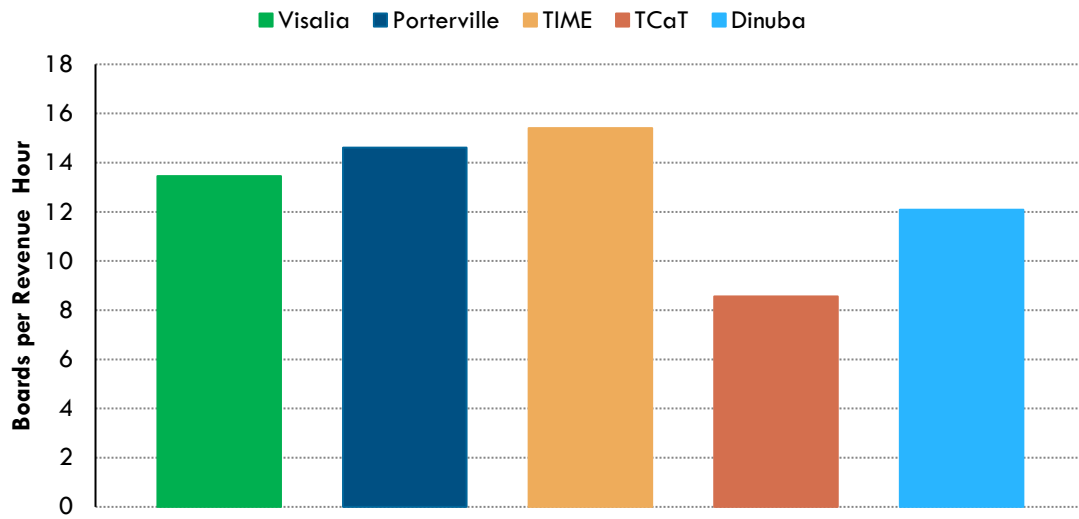
Ridership

A summary of total ridership for all fixed routes operating in Tulare County is provided in Figure 2-31.

Figure 2-31   Annual Ridership by Agency and Route, FY 2013-2014
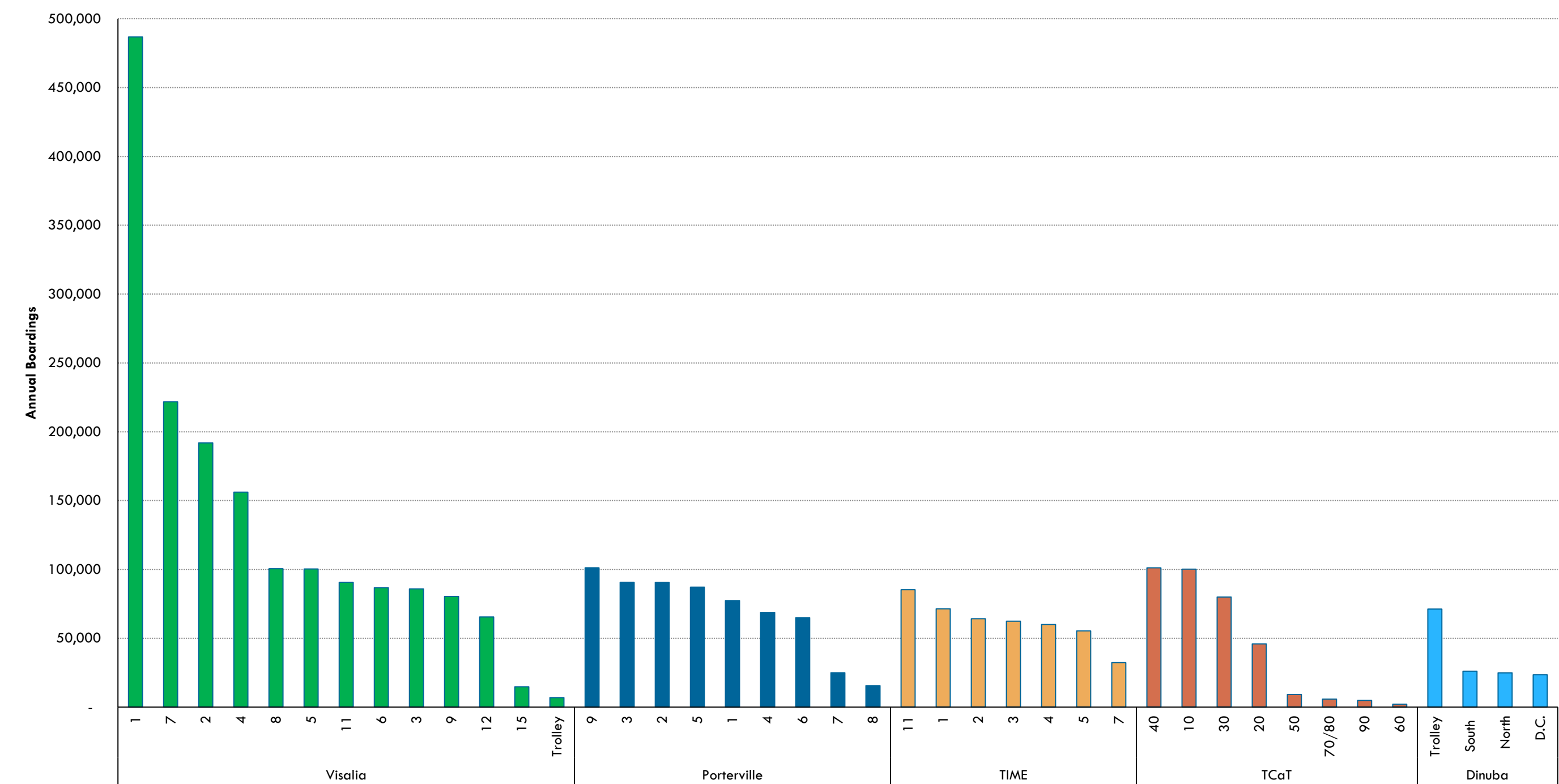
Ridership Productivity

A summary of ridership productivity (average daily boardings per revenue hour) by provider and route is provided below in Figure 2-32.

Figure 2-32   Ridership Productivity – Boardings per Revenue Hour, FY 2013-2014
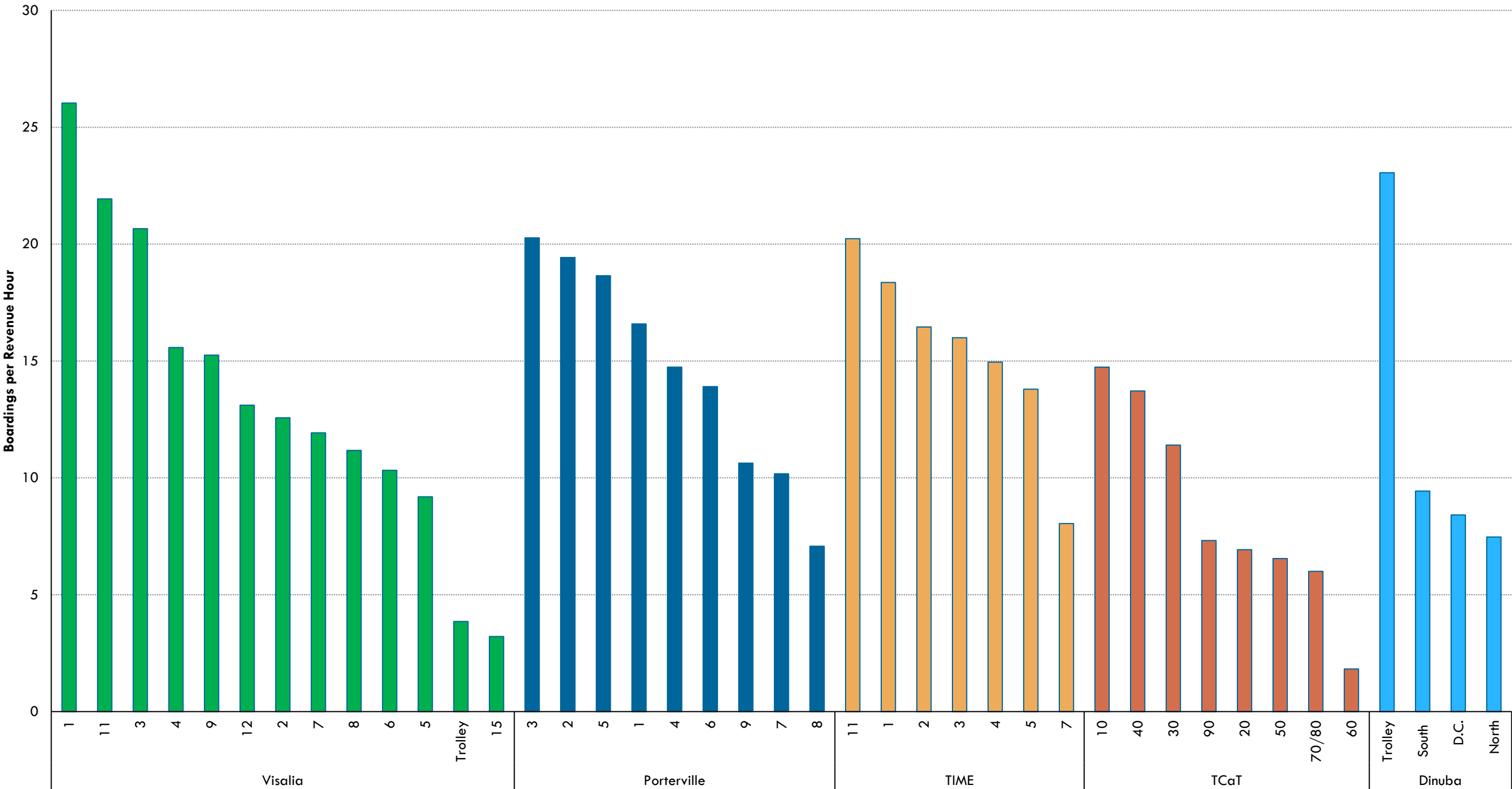
TCaT Ridership

Stop-level ridership for TCaT's regional routes is depicted in Figure 2-33. This data was collected by operators in October 2014. The most recent service changes include an additional weekend run for South County Route 20 and a realignment of North County Route 20.

Figure 2-33   Average Daily Ridership by Stop: Tulare County Area Transit (TCaT)
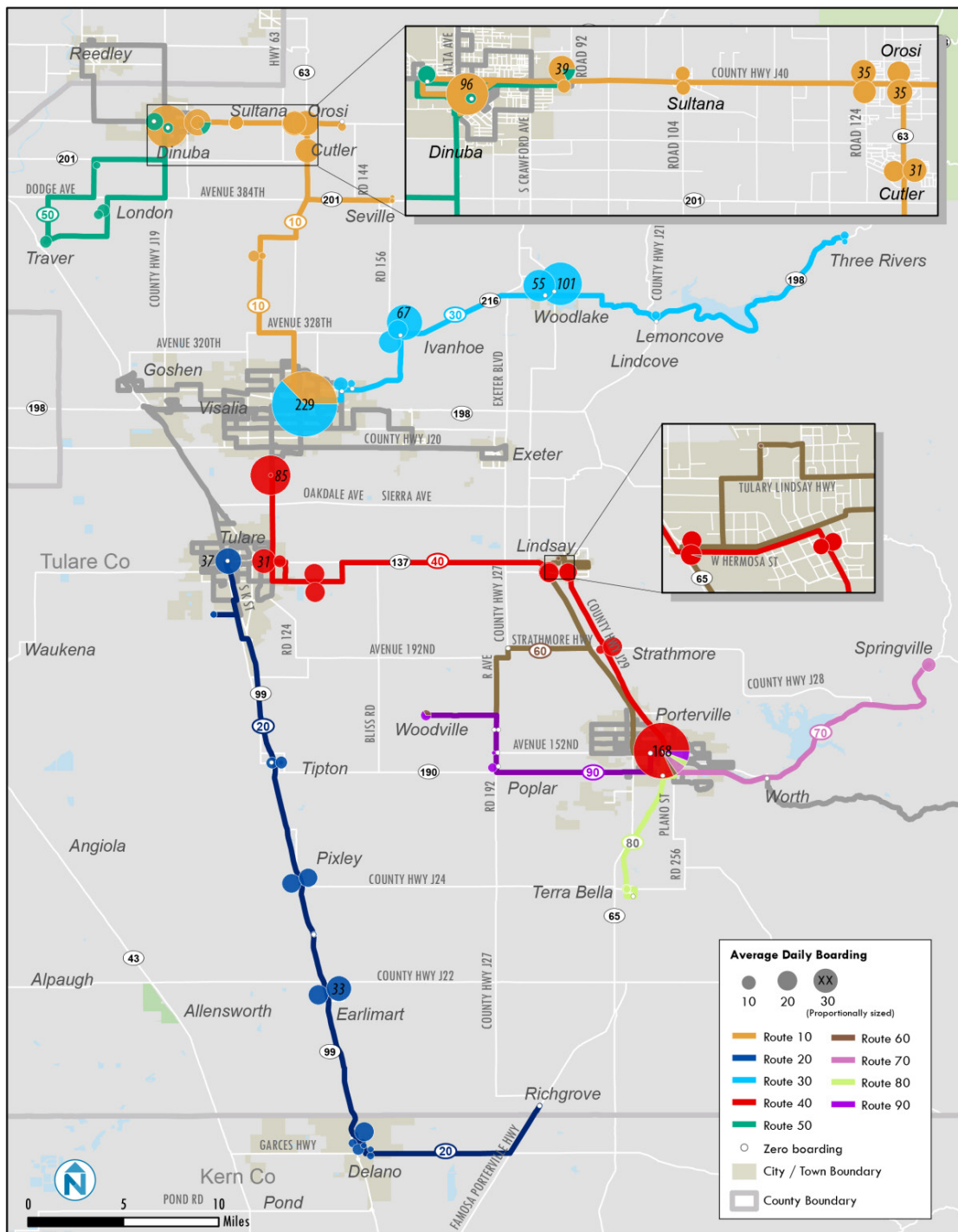
Capital Assets

This section summarizes transit centers and vehicle inventories for each transit provider in Tulare County.

Visalia Transit Center

The Visalia Transit Center is located northeast of downtown Visalia and is bounded by East Oak Avenue, North Santa Fe Street, East Center Street, and North Bridge Street. The San Joaquin Valley Railway is an active rail line operating just north of the transit center along Oak Avenue.

The transit center serves as a regional hub and accommodates multiple public transit and private transportation service providers. The facility was expanded from 12 to 28 bus bays in 2011. Visalia Transit routes operate at 15-, 30-, 45-, or 60-minute headways, resulting in a combination of timed and unaligned connections.

Visalia Transit Center	
Year Built	2004 – expanded in 2011
Systems Served	Visalia Transit
	V-Line
	Tulare County Area Transit (TCaT)
	Kings Area Rural Transit (KART)
	Sequoia Shuttle
	Greyhound
	Amtrak
	Orange Belt Stages
Bus Bays	28
Customer Amenities	Indoor waiting area
	Customer service center
	Real-time arrival information
	Bike racks
	Adjacent public parking
	Restrooms
	Wi-Fi
	Concessions vendor

Porterville Transit Center

The Porterville Transit Center is located one block from Main Street in downtown Porterville and is situated between Hockett Street and D Street.

The facility serves as the primary transit hub in the eastern portion of the urbanized area, with connections to four TCaT routes. Most Porterville Transit routes operate at 40-minute headways, resulting in many timed connections.

Porterville Transit Center	
Year Built	2003
Systems Served	Porterville Transit
	Tulare County Area Transit (TCaT)
	Orange Belt Stages
Bus Bays	11
Customer Amenities	Indoor waiting area
	Customer service center (weekdays 7 a.m. – 9 p.m., weekends 9 a.m. – 5 p.m.)
	Real-time arrival information
	Bike lockers
	Adjacent public parking
	Restrooms

Tulare Transit Center

The Tulare Transit Center is located at the northern edge of downtown Tulare between K and L Streets. The facility is directly adjacent to the Tulare Santa Fe Trail, which connects east and west residential areas of the city with downtown.

TIME bus routes operate at 30-minute headways and depart on the top and bottom of the hour, resulting in timed connections throughout the day.

Tulare Transit Center	
Year Built	1999
Systems Served	Tulare Intermodal Express (TIME)
	Tulare County Area Transit (TCaT)
	Greyhound
	Crucero
Bus Capacity	8
Customer Amenities	Indoor waiting area
	Customer service center (weekdays 8 a.m. – 8p.m.)
	Bike racks
	Adjacent parking area
	Restrooms

Dinuba Transit Center

The Dinuba Transit Center is located northwest of downtown Dinuba along M Street between Mariposa Street and Merced Street. The facility is directly adjacent to the Emperor Estate Senior Apartments.

DART routes operate 30-minute loops, resulting in timed connections at the transit center.

Dinuba Transit Center	
Year Built	2014
Systems Served	Dinuba Area Regional Transit (DART) Tulare County Transit (TCaT)
Bus Capacity	6
Customer Amenities	Indoor waiting area Customer service center (weekdays 8 a.m. – 5 p.m.) Bike racks Parking area Restrooms Wi-Fi

Whitney Transit Center (Woodlake)

Photo credit: The Foothills Sun-Gazette

The Whitney Transit Center is located on the southwest corner of Magnolia Street and Lakeview Avenue in Woodlake. The facility is directly adjacent to the Kaweah Delta's Woodlake Health Clinic.

Dinuba Transit Center	
Year Built	2014
Systems Served	Woodlake Dial-A-Ride Tulare County Transit (TCaT)
Bus Capacity	4
Customer Amenities	Outdoor shelter Benches Bike racks Parking

Vehicle Inventory

The following tables summarize the existing fleet of each service provider. Buses, vans, and cutaways may vary in size and capacity. Each table also categorizes each fleet by fuel type. Over the past five years, most transit providers have added Compressed Natural Gas (CNG) or Liquefied Natural Gas (LNG) vehicles to its fleet as new or replacement vehicles.

Figure 2-34   Tulare County Combined Vehicle Inventory

Vehicle Type	Gasoline	Diesel	LNG	CNG	Total	Average Age
Tulare County Area Transit (TCaT)						
Bus	-	-	-	13	13	2009
Cutaway	-	-	-	6	6	2011
Visalia Transit						
Bus	-	24	-	24	48	2008
Cutaway	-	25	-	-	25	2008
Trolley	-	3	-	-	3	2009
Porterville Transit						
Bus	-	4	-	11	15	2008
Cutaway	-	5	-	-	5	2011
Van	5	-	-	-	5	2007
Tulare Intermodal Express (TIME)						
Bus	-	-	6	4	10	2006
Cutaway	-	-	-	4	4	2008
Van	-	2	-	-	2	2009
Dinuba Area Regional Transit (DART)						
Bus	-	-	-	0	0	2013
Cutaway	-	-	-	7	7	2008
Trolley	-	-	-	2	2	2009
Exeter Dial-A-Ride						
Cutaway	-	1	-	2	3	2006
Woodlake Dial-A-Ride						
Cutaway	-	3	-	-	3	2007
Countywide Total	**5**	**67**	**6**	**73**	**151**	**-**

FARE STRUCTURE

Transit fares and passes for fixed-route and dial-a-ride service vary in terms of pricing, eligibility, and period.

Each provider offers discounted senior and disabled fares, however, the price and age eligibility are not consistent. Tulare County Area Transit (TCaT), Porterville Transit, Visalia Transit, and Tulare Intermodal Express (TIME) offer a 50% discounted senior/disabled fare, while Dinuba Area Regional Transit (DART) offers a 67% discount. Only Dinuba Area Regional Transit (DART) offers a discounted student fare. Each provider allows children to ride for free; however, age eligibility and number of children per adult varies.

Figure 2-35 summarizes the fixed-route one-way fare structure in Tulare County.

Figure 2-35   Fixed-Route One-Way Fare Structure

Provider		Regular	Senior	Disabled	Student	Child
Tulare County Area Transit (TCaT)		$2.00	$1.00 (Ages 60+)	$1.00	$2.00	Free (Ages 0-6)
Visalia Transit	Fixed-Route	$1.50	$1.25 (Ages 60+)	$1.25	$1.50	Free (Ages 0-6)
	Trolley	$0.25	$0.25	$0.25	$0.25	$0.25
Porterville Transit		$1.50	$0.75 (Ages 65+)	$0.75	$1.50	Free (Ages 0-5)
Tulare Intermodal Express (TIME)		$1.50	$0.75 (Ages 65+)	$0.75	$1.50	Free (Ages 0-5)
Dinuba Area Regional Transit (DART)	Flexroute	$1.00	$1.00 (Ages 62+)	$1.00	$1.00	Free (Ages 0-5)
	Jolly Trolley	Free				
	Dinuba Connection	$1.50	$1.25 (Ages 62+)	$0.50	$1.25 (Ages 6-17)	Free (Ages 0-5)
V-Line		$10.00	$9.00	$9.00	$9.00	$9.00

Figure 2-36 summarizes fixed-route and dial-a-ride pass options in Tulare County. The T-Pass provides unlimited rides on five fixed-route services for a full calendar month for $50. The College of Sequoias (COS) transit sticker enables enrolled students to ride TCaT, Visalia Transit, Porterville Transit, TIME, DART and Kings Area Regional Transit (KART) for an unlimited number of rides. The price for the COS transit sticker ranges from $9-10 per semester based on student course load.

Figure 2-36   Fixed-Route Pass Options

Provider	Pass Type	Amount
Tulare County Area Transit (TCaT)	T-Pass	$50.00
	TCaT Only Monthly Pass	$40.00
	Punch Pass (10 rides, 20 dial-a-ride)	$17.00
Visalia Transit	T-Pass	$50.00
	General 1-Day	$3.25
	Reduced 1-Day	$2.50
	General 7-Day	$10.00
	Reduced 7-Day	$7.00
	General Monthly	$40.00
	Reduced Monthly	$30.00
	Trolley Monthly	$5.00
	GoCard (Reloadable Smart Card)	$1.00
Porterville Transit	T-Pass	$50.00
	General 1-Day	$3.00
	Reduced 1-Day	$1.50
	General 31-Day	$40.00
	Student 31-Day	$25.00
	Reduced 31-Day	$20.00
	GoCard (Reloadable Smart Card)	$1.00
Tulare Intermodal Express (TIME)	T-Pass	$50.00
	General Monthly	$40.00
	Student Monthly	$33.00
	Senior Monthly	$20.00
Dinuba Area Regional Transit (DART)	T-Pass	$50.00
	Student/Senior 20-Ride (Valid on dial-a-ride and Dinuba Connection)	$25.00
V-Line	10-Ride Punch Pass	$80.00
	20-Ride Punch Pass	$140.00
	40-Ride Punch Pass	$240.00

Figure 2-37 summarizes the dial-a-ride fare structure in Tulare County.

Figure 2-37   Dial-A-Ride One-Way Fare Structure

Provider	Regular	Senior	Disabled	Student	Child
Tulare County Area Transit (TCaT) Dial-A-Ride	$2.25	$1.50 (Ages 60+)	$1.50	$2.25	Free (Ages 0-6)
Visalia Transit	$4.00	$2.25 (Ages 60+)	$2.25	$4.00	Free (Ages 0-6)
Porterville Dial-A-Colt	$5.00	$2.50 (Ages 65+)	$2.50	$5.00	$2.50
Tulare Intermodal Express (TIME)	$3.25	$3.25 (Ages 65+)	$2.00	$3.25	$1.25-2.50 (Ages 0-7)
Dinuba Area Regional Transit (DART)	$1.50	$1.25 (Ages 62+)	$0.50	$1.25 (Ages 6-17)	Free (Ages 0-5)
Exeter Dial-A-Ride	$2.00	$1.00 (Ages 65+)	$1.00	$2.00	$2.00
Woodlake Dial-A-Ride	$1.00	$0.25	$1.00	$1.00	$1.00

Figure 2-38 details dial-a-ride fare multipliers for each provider, which is a function of the dial-a-ride base fare divided by fixed-route base fare. According to industry standard, a dial-a-ride fare is typically twice the regular fixed-route fare.

Figure 2-38   Dial-A-Ride Fare Multiplier

Provider	Fixed-Route Base Fare	Dial-a-Ride Base Fare	Multiplier
Tulare County Area Transit (TCaT)	$1.50	$2.25	1.5
Visalia Transit	$1.50	$4.00	2.7
Porterville Dial-A-Colt	$1.50	$5.00	3.3
Tulare Intermodal Express (TIME)	$1.50	$3.25	2.2
Dinuba Area Regional Transit (DART)	$1.00	$1.50	1.5

Monthly Transit Pass (T-Pass)

The T-Pass is a monthly pass which provides unlimited fixed-route rides throughout Tulare County and is sold at the following locations:

- Visalia Transit Center
- Tulare County Government Plaza (Visalia)
- Porterville Transit Center
- Tulare Transit Center
- Dinuba Transit Center

T-Pass usage varies by service provider, as shown in Figure 2-39. TIME and TCaT have the highest percentage of T-Pass boardings in relation to their overall ridership.

Figure 2-39   T-Pass Ridership (FY 2013-2014)

Month	Visalia	TIME	TCaT	Porterville	Dinuba
July 2013	4,380	3,050	3,173	2,403	37
August 2013	6,066	4,341	3,541	3,003	208
September 2013	5,952	4,236	3,809	2,934	332
October 2013	6,844	4,912	4,695	2,725	406
November 2013	6,515	4,283	3,671	2,634	249
December 2013	6,116	4,061	2,774	2,728	76
January 2014	7,175	4,835	3,124	3,245	201
February 2014	7,375	4,617	3,306	2,938	43
March 2014	9,351	5,235	3,580	3,098	349
April 2014	9,211	5,150	3,825	3,391	305
May 2014	9,322	5,231	3,787	3,000	120
June 2014	8,702	4,438	3,095	2,244	109
Annual T-Pass Ridership	87,009	54,389	42,380	34,343	2,435
Total Ridership	1,601,136	447,718	349,313	625,641	157,853
Percentage	5%	12%	12%	5%	2%

College of the Sequoias Student Transit Pass Program

A new transit pass for College of the Sequoias (COS) students was introduced in fall of 2010. Students pay a small fee each semester for an unlimited pass, with a small funding match provided by the College. All students pay the fee whether they ride transit or not, which is consistent with student pass best practices. Participating transit providers include Dinuba Area Regional Transit, Kings Area Rural Transit, Porterville Transit, Tulare Intermodal Express, Tulare County Area Transit, and Visalia Transit.

According to data included in the 2014 Regional Transportation Plan, ridership through the COS student pass program has increased steadily since its introduction.

Figure 2-40 shows COS pass ridership semester totals from 2011 through 2013.

Figure 2-40   College of the Sequoias Student Transit Pass Program Ridership
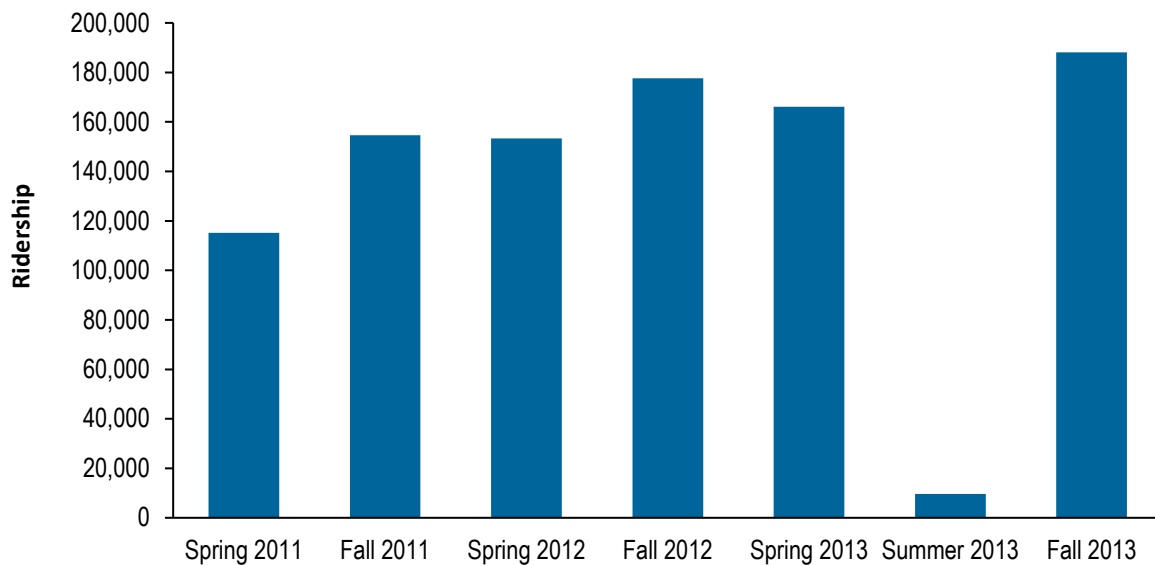
Source: 2014 RTP

Intercity Travel

A primary goal of the LRTP is to improve the overall connectivity and coordination of transit service within Tulare County. The relative success of regional service is influenced by a number of factors, including:

- Simplicity/ease of understanding
- Service levels (hours of operation and frequency)
- Operational efficiency (travel time)
- Fare and transfer policy

A significant operational challenge of connecting origins and destinations within Tulare County is the distance between cities created by the road network and vast agricultural areas. Despite these conditions, Tulare County boasts an extensive network of intercity transit service.

Tulare County Area Transit (TCaT) provides intercity connections that link low-density areas with urban centers such as Visalia, Porterville, and Tulare. Visalia Transit and Tulare Intermodal Express (TIME) also partner to provide intercity service between their respective transit centers, with intermediate stops at College of the Sequoias and along Mooney Boulevard (Visalia Transit only).

This section provides a summary of intercity travel times within Tulare County by both transit and automobile. All origins and destinations used for the analysis (other than Exeter) are transit centers. Therefore, it is likely that customers experience greater door-to-door travel times due to travel time between their origin/destination and a specific transit center. A combination of intercity and local routes was utilized in this analysis.

Combined travel times are based on the scheduled trip time between timepoints and the average wait time (half of the route headway). Weekday trip times and headways between 8 a.m. and 2 p.m. were utilized. The travel time analysis focused on the three primary cities (Visalia, Porterville, and Tulare) as well as other geographically distant cities. Delano (Kern County) was also included as it is an urbanized area just south of the county line with its own transit system (Kern Transit).

A comparison of transit and auto travel times between cities is depicted in Figure 2-41. The average auto travel time between evaluated cities is 36 minutes, while the average transit travel time is 107 minutes.

Figure 2-41   Transit Center to Transit Center Travel Time
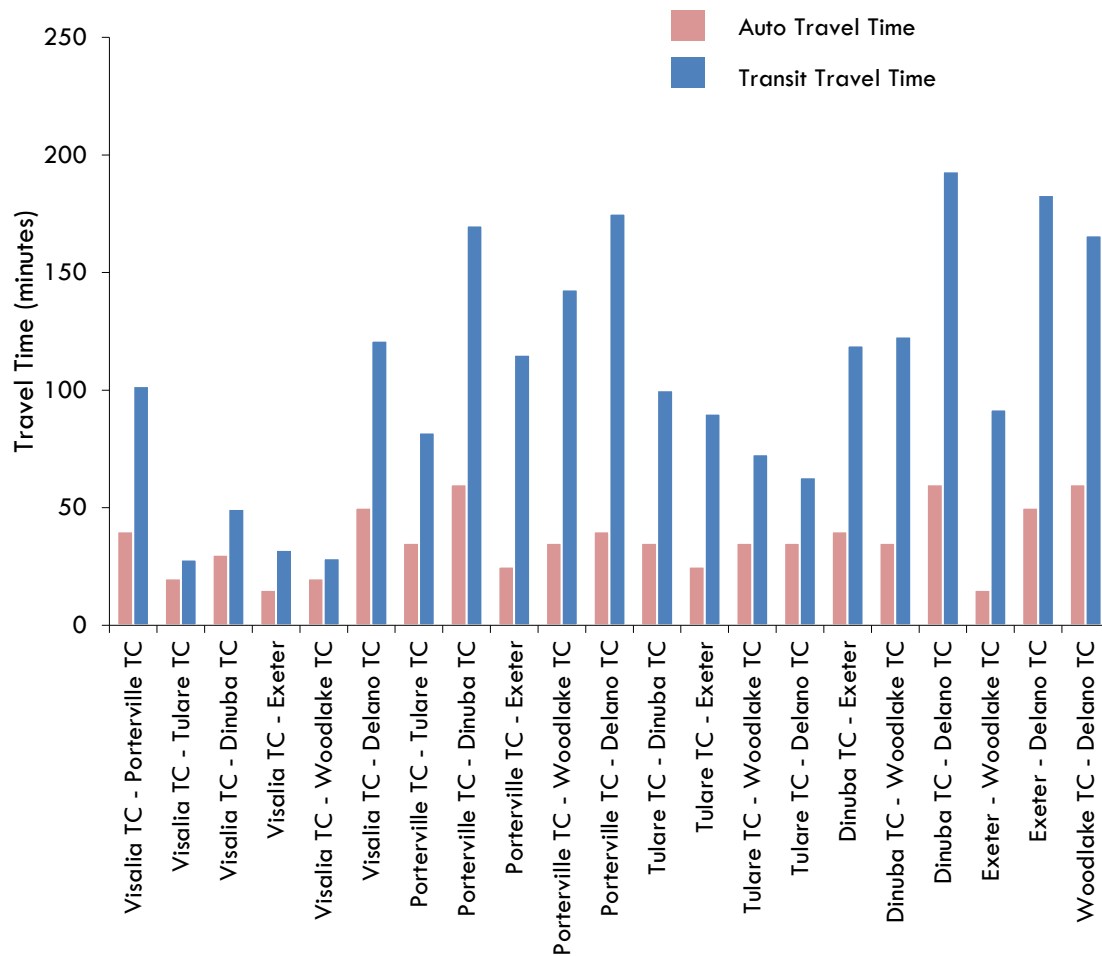
Average weekday travel times for auto and transit are depicted in Figure 2-42 and Figure 2-43.

Figure 2-42   Auto Travel Time Matrix

	Visalia	Porterville	Tulare	Dinuba	Exeter	Woodlake	Delano
Visalia	-	40	20	30	15	20	50
Porterville	40	-	35	60	25	35	40
Tulare	20	35	-	35	25	35	35
Dinuba	30	60	35	-	40	35	60
Exeter	15	25	25	40	-	15	50
Woodlake	20	35	35	35	15	-	60
Delano	50	40	35	60	50	60	-
Average	29	39	31	43	28	33	49

Figure 2-43   Transit Travel Time Matrix

	Visalia	Porterville	Tulare	Dinuba	Exeter	Woodlake	Delano
Visalia	-	102	28	50	32	29	121
Porterville	102	-	82	170	115	143	175
Tulare	28	82	-	100	90	73	63
Dinuba	50	170	100	-	119	123	193
Exeter	32	115	90	119	-	92	183
Woodlake	29	143	73	123	92	-	166
Delano	121	175	63	193	183	166	-
Average	**60**	**131**	**73**	**126**	**105**	**104**	**150**

In addition to extending travel time for customers, multiple connections typically reduce schedule reliability and customer satisfaction. The number of connections required to travel on transit between the cities analyzed are listed in Figure 2-44.

Figure 2-44   Number of Connections Required

	Visalia	Porterville	Tulare	Dinuba	Exeter	Woodlake	Delano
Visalia	-	1	0	0	0	0	1
Porterville	1	-	1	2	2	2	2
Tulare	0	1	-	1	1	1	0
Dinuba	0	2	1	-	1	1	2
Exeter	0	2	1	1	-	1	2
Woodlake	0	2	1	1	1	-	2
Delano	1	2	0	2	2	2	-

OTHER REGIONAL TRANSIT PROVIDERS

Kings Area Rural Transit

Kings Area Rural Transit (KART) provides transit service in neighboring Kings County, including local routes within downtown Hanford as well as county circulation routes. The Hanford-Visalia route operates three daily trips Monday through Friday, designed primarily to serve the College of the Sequoias. Visalia-bound trips depart Hanford at 7 a.m., 11:15 a.m., and 4:15 p.m. Major stops include the Hanford Transfer Center, College of the Sequoias, Mooney and Caldwell, the Visalia Transit Center, and the Hanford Transit Center. Although the current demand for trips between Hanford and Visalia appears relatively low based on current service levels, the planned high-speed rail station in Hanford could dramatically increase demand for this travel market.

Orange Belt Stages

Orange Belt Stages is one of the largest and oldest coach companies on the West Coast, having been in operation since 1934. Orange Belt Stages operates two intercity fixed routes using 54-foot coach buses that make several stops in Tulare County.

Route 6292 connects Las Vegas, Barstow, Boron, Mojave, Tehachapi, Bakersfield, Ducor, Terra Bella, Porterville, Strathmore, Lindsay, Exeter, Farmersville, Visalia, Goshen, and Hanford. The route operates one daily round trip between Las Vegas and Visalia and two daily round trips between Visalia and Hanford.

Route 6296 connects Las Vegas, Bakersfield, Porterville, Visalia, Goshen, Hanford, Lemoore, Kettleman City, Paso Robles, Atascadero, San Luis Obispo, Grover Beach, and Santa Maria. The route operates one daily round trip between Las Vegas and Visalia and two daily round trips between Visalia and Santa Maria.

Greyhound

Greyhound bus serves stations in Tulare, Goshen, Visalia, and Delano. Service includes daily trips to Fresno, Bakersfield, and Hanford. Stop locations in Tulare County include Visalia, Ducor, Farmersville, Exeter, Lindsay, Strathmore, Porterville, Terra Bella, and Goshen via the Bakersfield-Hanford Route and Delano, Tulare, Goshen (select trips) and Visalia via the Bakersfield-Fresno route.

Amtrak

Amtrak coordinates with Visalia Transit to provide a feeder bus linking the Visalia Transit Center with Hanford Station in Kings County with two trips a day on weekdays. Scheduled travel time ranges from 25-35 minutes.

CalVans

The California Vanpool Authority (CalVans) is a ridesharing service that is tailored to the needs of commuters who cannot travel between home and work with local fixed-route or demand-response service. The program in its current form grew out of a pilot project known as the Agricultural Industries Transportation Services in Kings County, targeted at providing safer transportation options for farm workers. The CalVans program operates across multiple counties serving commuters and farm workers.

Currently, there are 95 vehicles that provide service to workers who live or work in Tulare County, with a total capacity of 625 passengers. The majority of vans in Tulare County run out of Visalia (Figure 2-45). The primary employment destinations are correctional facilities in Corcoran and Delano, including California State Prison and Kern Valley State Prison (Figure 2-46). In total nearly 70% of vanpools starting or ending in Tulare County serve correctional institutions. Other destinations include several state, medical, and agricultural employers.

Figure 2-47 shows the origin and destination pairs for existing CalVans. The majority of vanpool trips starting or ending in Tulare County cross the county line. Common origins or destinations outside of the county include Fresno, western Kings County, Corcoran, and Delano. There are also numerous shorter trips in northwest Tulare County/south Fresno County.

Figure 2-45   CalVans Tulare County Origins by City

Origin	Capacity	Vans	Percent Total Capacity
Visalia	731	52	55%
Porterville	191	14	15%
Tulare	105	9	9%
Dinuba	60	4	4%
Orosi	60	4	4%
Orange Cove	45	3	3%
Cutler	30	2	2%
Lindsay	30	2	2%
Springville	30	2	2%
Exeter	15	1	1%
Reedley	15	1	1%
Selma	15	1	1%

Figure 2-46   CalVans Employment Destinations

Employer	City	Vans	Capacity	Percent Total Capacity
California State Prison	Corcoran	17	223	18%
Kern Valley State Prison	Delano	13	192	14%
California State Abuse and Treatment Facility	Corcoran	12	173	13%
North Kern State Prison	Delano	10	144	11%
Pleasant Valley State Prison	Coalinga	7	105	7%
Coalinga State Hospital	Wasco	3	45	3%
Avenal State Prison	Avenal	3	45	3%
IRS	Fresno	4	32	4%
Wawona Packing	Cutler	2	30	2%
Mission Ventures	Dinuba	2	30	2%
Armona School	Armona	2	30	2%
YNT Harvesting	Dinuba	1	15	1%
Wasco State Prison	Wasco	1	15	1%
WMJ Farms	Dinuba	1	15	1%
Valley Farm Service	Dinuba	1	15	1%
Sierra Labor	Reedley	1	15	1%
Rivas	Dinuba	1	15	1%
Pixley Elementary	Pixley	1	15	1%
Monarch Del Valle	Dinuba	1	15	1%
McClurry Farms	Selma	1	15	1%
Margret Gonzales	Orosi	1	15	1%
Naval Air Station Lemoore	Lemoore	1	15	1%
Latino Farm Labor	Visalia	1	15	1%
JA Farm Labor	Orosi	1	15	1%
Family Ranch	Avenal	1	15	1%
Cream of the Crop	Bakersfield	1	15	1%
AGR Contracting	Porterville	1	15	1%
Fresno	Fresno	1	15	1%
Theater Aviation Sustainment Maintenance Group	Fresno	1	8	1%
CalVet (Veteran Affairs)	Fresno	1	8	1%
DMV-Fresno	Fresno	1	7	1%

Figure 2-47   CalVans Origins with Tulare County Destinations
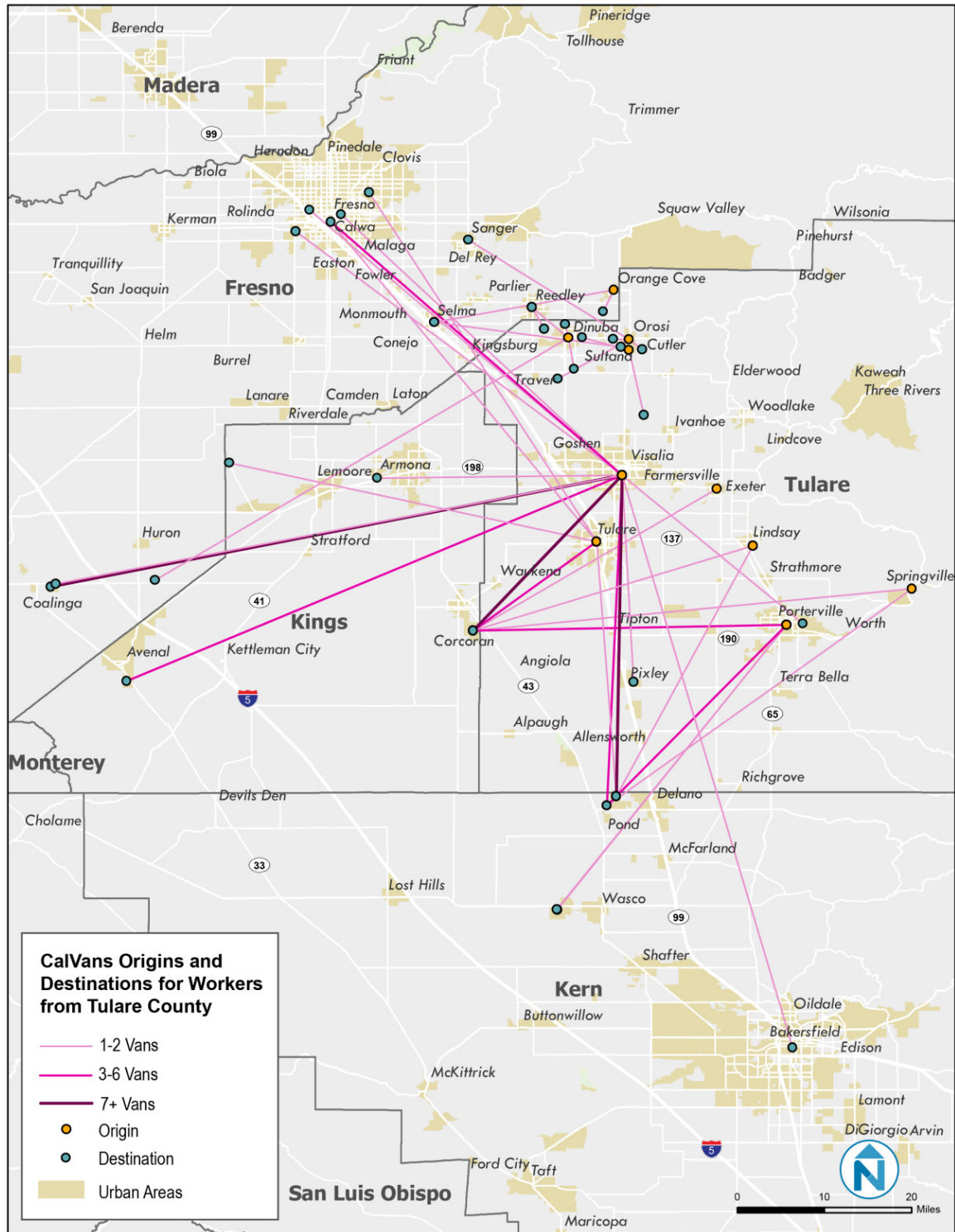
3 TECHNICAL ANALYSIS

The Technical Analysis chapter provides in-depth analysis to inform recommendations in the Long Range Transit Plan (LRTP). This chapter is organized into the following sections:

- **Initial Community Input** summarizes feedback from stakeholder interviews and a transit survey taken by riders and non-riders.
- **Existing Service Gaps** provides a description of existing service gaps in countywide and local transit networks.
- **Network Scenarios** describes the development of three transit scenarios for the county and public feedback.
- **Fare Collection Best Practices** provides an overview of best practices related to fare technology, regional fare coordination, and universal pass programs.
- **Fare Ridership and Revenue Implications** outlines impacts of fare recommendations for transit providers in Tulare County.
- **Intelligent Transportation System (ITS) Best Practices** outlines best practices and analysis related to ITS from the Concept of Operations Plan.

INITIAL COMMUNITY INPUT

Community participation is a key component of the Tulare County Long Range Transit Plan. This section summarizes initial feedback from current riders, stakeholders, and the general public.

Stakeholder Feedback

In an effort to develop an understanding of the perceptions, needs, and priorities related to public transit in Tulare County, a series of in-person and phone interviews with stakeholders were conducted in October 2014. Stakeholders consisted of representatives of community service providers, transit providers, educational institutions, as well as Tulare County Board of Supervisors. This section provides a summary of stakeholder feedback without attributing comments to specific interviewees.

A total of 25 individuals and groups representing a wide variety of organizations in Tulare County participated in the stakeholder interviews. The following is a complete list of participants:

Community Service Providers
Ron Allan, Social Services Transportation Advisory Council
Nalor See, Resources for Independence
Carla Calhoun, Community Services & Employment Training
Steve Ramsey, Director of Transportation, Porterville Sheltered Workshop
Hector Uriarte, Proteus Inc.
Kings-Tulare Area Agency on Aging Advisory Council's Transportation Committee
Rob DiBernardo, Director of Facilities/Construction/Security, Kaweah Delta Health Care District
Vienna Barnes, TulareWORKs
Child Welfare Services-Independent Living Program, Tulare County Health and Human Services Agency

Transit Providers
Monty Cox, Christine Chavez, Visalia Transit
Dan Fox, Tulare County Area Transit
Richard Tree, Porterville Transit
Mike Camarena, City Services Director, City of Lindsay
Blanca Beltran, Public Works Director, City of Dinuba

Educational Institutions
Brent Calvin, VP Student Services, College of the Sequoias
Arlitha Williams-Harmon, VP of Financial and Administrative Services, Porterville College

Tulare County Board of Supervisors
Supervisor Allen Ishida, District 1
Supervisor Pete Vander Poel, District 2
Supervisor Phil Cox, District 3

TCAG Jurisdiction Representatives
Mike Smith, Councilmember, City of Dinuba
Ramon Lara, City Manager, City of Woodlake
Craig Vejvoda, Councilmember, City of Tulare
Cameron Hamilton, Mayor, City of Porterville
Randy Groom, City Manager, City of Exeter
Amy Shuklian, Councilmember, City of Visalia

Key Priorities

Stakeholders were asked to identify what they believe are the most imperative actions or goals for public transit moving forward. Five key priorities emerged from this discussion:

- Improving system connectivity
- Increasing service levels
- Enhancing technology
- Attracting young riders
- Improving mobility for seniors and and people with disabilities

Improving system connectivity between transit providers was regarded as an essential action by several stakeholders. Within Tulare County, direct service between cities and scheduled connections were identified as improvements that would significantly enhance the transit experience of existing riders by reducing travel time and, potentially, the number of transfers required to reach destinations outside of a single city or transit system. Stakeholders also stressed the need to provide better connectivity to adjacent (Fresno, Kern, King) counties as a means of improving access to employment, medical services, and educational opportunities. Interagency coordination and a refined regional fare transfer policy were mentioned as preconditions for achieving improved connectivity.

In addition to improving regional connectivity, the expansion of service levels and service coverage was viewed as an opportunity to better meet the needs of county residents and keep up with increased transit demand. Stakeholders mentioned increased hours of operation (service span) and improved frequency as strategies to increase ridership and improve mobility for existing and potential customers, particularly those working early morning and night shifts, as well as weekends.

Enhanced technology, such as real-time information and on-board Wi-Fi, was mentioned by several interviewees as important customer service-driven attributes moving forward. Mobile apps and seamless fare technologies were also mentioned as ways to attract new tech-savvy riders, particularly college students and young adults.

Stakeholders also discussed the need to improve mobility to senior citizens and people with disabilities, many of whom are transit dependent. Stakeholders stressed the need to focus on improving mobility and accessibility for the growing senior population within Tulare County.

Detailed Stakeholder Feedback

The following is a complete set of stakeholder comments organized by topic:

Connectivity/Schedule Coordination

- Schedule coordination is key to reducing customer trip times
- Direct service between transit centers in primary cities (Visalia, Porterville and Tulare)
- Avoid territorial issues when planning regional services
- Consolidation of transit providers would reduce overhead

Intercounty connectivity

- Improved connections to Kern and Fresno counties are needed
- Park-and-ride (P&R) lots should be built along Hwy 99 and link to Fresno
  - P&R lots may not be the highest priority for funding in some areas compared to service investments
- Fresno/Fresno State are major destinations – this is an opportunity to reduce congestion on Hwy 99
- Bakersfield students are cut off
- Kings County is not well connected but demand may be limited
- Travel time to Fresno State is up to 6 hours for some parts of the county
- Difficult to travel from Porterville to Delano
- Dinuba/Reedley connection is good but there is no Dinuba/College of the Sequoias (COS) connection
- Visalia/COS connection has been very successful

Service Levels/Coverage

- Need for more routes and improved frequency countywide
- Need for extended hours/improved span to accommodate employee schedules
- Sunday service needed on many systems
- TCaT service expansion needs
- Longer hours
- Weekend service
- Job-oriented routes (shift times)
- Porterville is considering P&R at Springville
- Lindsay - high percentage of residents do not have access to a car
- East Visalia is a major growth area that could potentially use more bus service
- The Mooney corridor in Visalia is difficult to keep up with in terms of capacity
- Route to Fresno airport should be considered

- Major challenge is how to increase service levels and increase farebox recovery ratio

Technology and Information

- Real-time information should be available for all systems in the county
- Need to make certain that agencies are on the same page in terms of technology
- Portersville and Visalia offer real-time information; other providers are interested
- Automated ticket systems would improve speed and customer satisfaction
- Google Transit is useful but difficult to maintain, especially in-house
- Illiteracy is an issue throughout the county
- Porterville Transit Center has audio for visually impaired; other agencies should consider
- Transit guide has a lot of information but is difficult to read due to text size/complexity
- The Green Line (countywide transit information line) is very helpful
- Visalia is working towards signal prioritization to increase speed and reliability
- Technological improvements improve attractiveness of transit, particularly for students
- A transit app with schedules, ticketing, and real-time arrival information would be useful

Mobility/Accessibility

- Accommodate riders w/disabilities by expanding accommodations
- Dial-a-ride (DAR) timing and seat capacity are both issues
- DAR service does not exist in many unincorporated communities
- Improve accessibility for seniors
- Bus stops are not near senior centers
- Americans with Disabilities Act (ADA) certification should be the same
- Need to coordinate ADA pass
- In some cases DAR is used by students for convenience

Fare and Transfer Policy

- Transfers can be confusing
- T-Pass works well
- Student pass program saves students $500-600 in out-of-pocket bus fares; some students would not attend college otherwise; the program has changed the culture and mindset towards transit among young adults
- Farebox ratios need to be increased to support future growth/cost increases
- TCaT accepts ADA cards from all agencies
- Improved fare coordination; make T-Pass available countywide
- Unified fare system is a good end goal but a challenge due to different fares and systems
- Incremental fare increase needed countywide to keep up with demand
- Revenue sharing has become an issue for agencies involved in student pass program
- Need for improved agency cooperation and less competition
- Transfer fees are costly for many riders; consider no transfer fee

- Need to maintain affordability

Passenger Facilities

- Need to upgrade bus stops throughout the county, particularly small cities
- Consider solar lighting at stops
- Porterville Transit Center expansion planned (more bus bays and seating)
- More stops need shelters, benches, and lighting
- Dinuba and Woodlake Transit Centers have been very successful, Dinuba is near senior housing

Vehicles/Maintenance Facilities

- Consider alternative fuels moving forward
- Need to continue/increase consolidating bus purchases and maintenance facilities to reduce costs
- Need for newer, more reliable, and low-floor buses
- Identify size/scale of transit facilities based on vehicle and ridership projections

High-Capacity Transit

- Visalia continues to grow at a rapid rate; incorporate long-range population and employment projections
- Bus rapid transit between Visalia to Tulare could provide many advantages
  - Dedicated transit lanes
  - Low-floor, high-capacity buses
  - Direct service with multiple destinations
  - Off-board fare collection
  - Provide lower-cost alternative to light rail until density and funding allows upgrade
- High speed rail has unknown implications for Tulare County

Existing/Potential Markets

- High percentage of transit-dependent riders (93% for TCaT)
- Need to make service work better for more young people who are willing to ride
- Consider countywide discount for teen/youth riders
- As culture changes, demand for transit will grow significantly
- High school students: transit has become cool and more students are willing to take transit
- College, airport, and medical are primary markets
- Reedley College access is valued

Transit Survey Feedback

A survey was conducted to capture input on existing travel patterns and transit perspectives from current riders and the general public. The survey was available in Spanish and English and open from April to August 2015. The survey was promoted at the following community events using tablet devices:

- College of the Sequoias new student orientation
- Visalia Downtown Farmers' Market
- Lindsay Friday Night Market
- Mooney Boulevard Farmers' Market
- Orosi Swap Meet
- Tulare County Senior Day, Mooney Grove
- Cinco de Mayo, Dinuba

The survey was also conducted on several bus routes (Visalia Transit routes 1A, 1B, and 11 and TCaT route 30) and at the following transit centers/bus stops:

- Visalia Transit Center
- Porterville Transit Center
- Tulare Transit Center
- Woodlake Transit Center
- Dinuba Transit Center
- Government Plaza bus stop

In addition, the online survey was promoted via email to larger employers in Tulare County, school districts, hospital districts, chambers of commerce, senior service agencies, agencies that provide services to people with disabilities, and agencies that provide services to low-income residents. This section summarizes the responses of the 377 surveys that were collected.

Rider/Non-Rider Characteristics

About 53% of survey respondents were non-riders and 47% have ridden public transportation with the last month, see Figure 3-1.

Figure 3-1   Rider and Non-Rider Breakdown
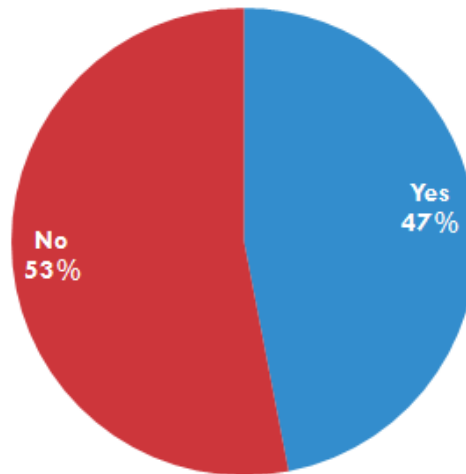
Of those that have not ridden transit in the last month, prefer to drive is the most commonly cited reason with 23% of respondents. The second most popular reason with 15% of respondents is that transit takes too long. Figure 3-2 shows the reasons non-riders do not take transit.

Figure 3-2   Reasons Non-Riders do not Take Transit

Q4. a. What are the main reasons you don't take transit? (n=430)

Reason	Percentage
I prefer to drive	23%
Takes too long	15%
Need a car for work	12%
Doesn't run at the right times	12%
Hard to understand/Don't know enough about it	8%
Makes me feel uncomfortable or unsafe	7%
Doesn't run often enough	7%
No service where I live	6%
No service to where I want to go	5%
Not reliable	4%
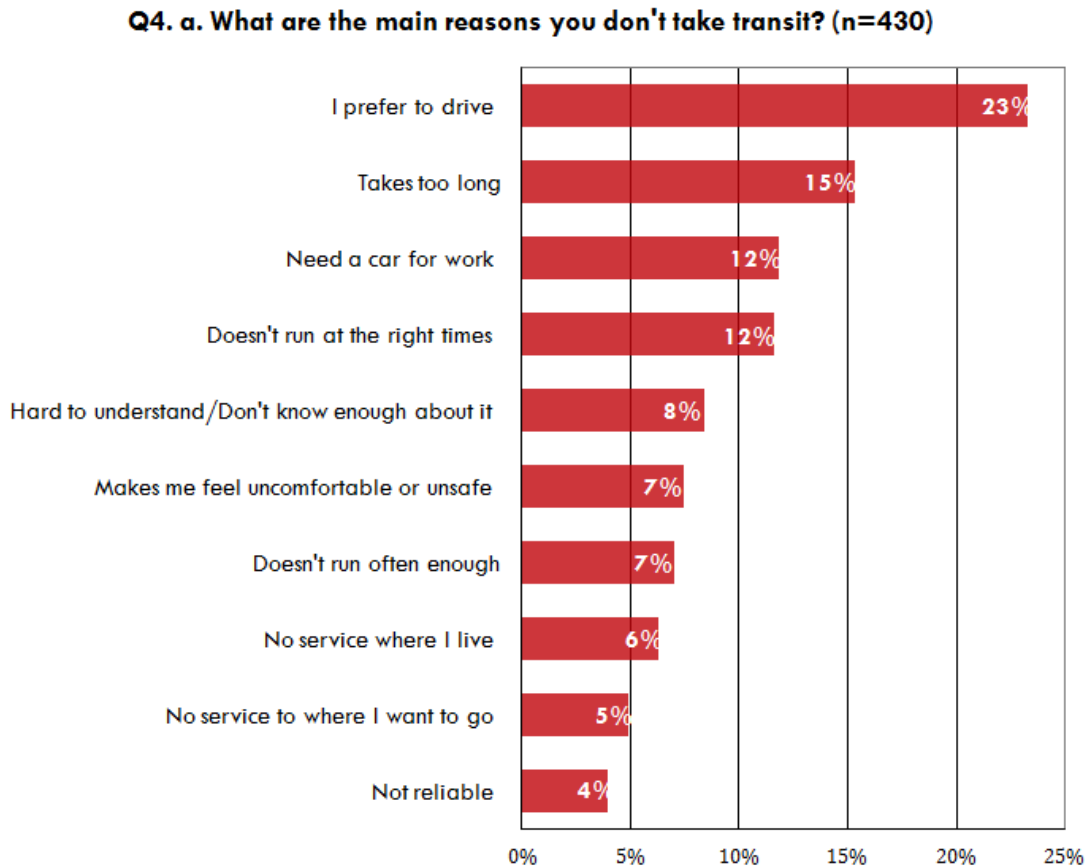
Of those respondents that have taken transit in the past month, most riders used TCaT (38%) and/or Visalia Transit (32%). Riders also used Porterville Transit (15%), TIME (10%), and Dinuba Area Regional Transit (4%). Very few riders reported using Woodlake Dial-a-Ride (1%), Exeter Dial-a-Ride (1%) or CalVans (0%). Figure 3-3 shows the transit services riders used in the past month.

Figure 3-3   **Services Used by Transit Riders**

Q4. b. Which transit services have you ridden in the past month? (Select all that apply) (n=302)
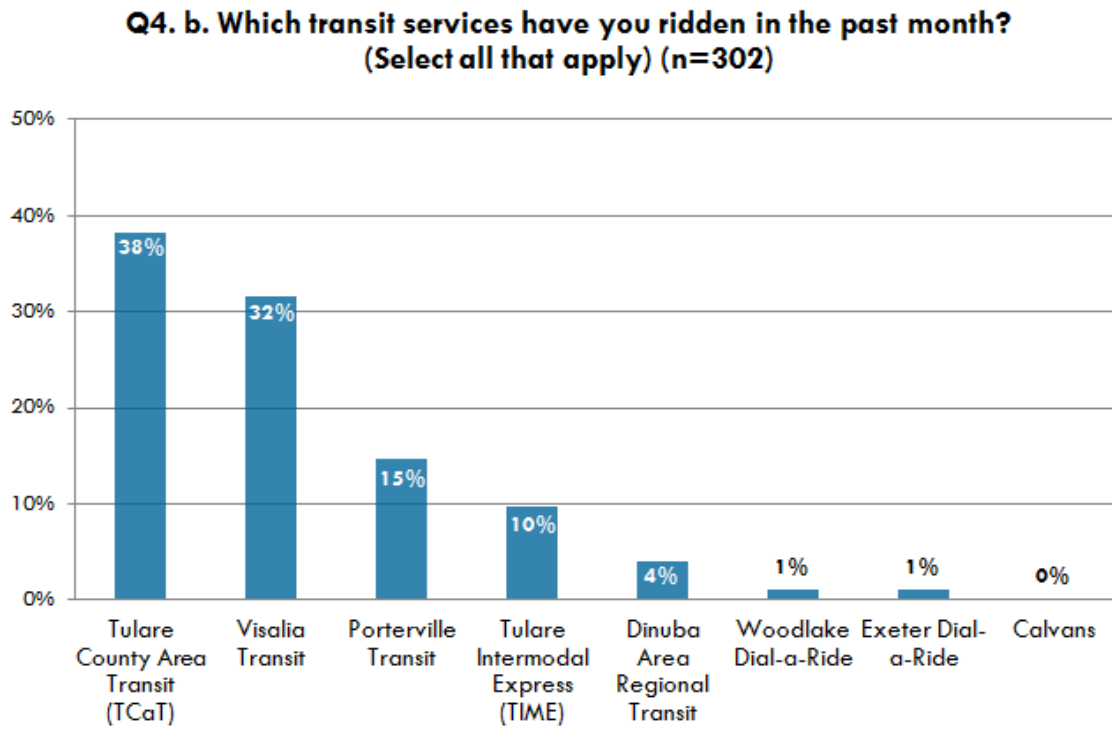
Long-Term Investment and Future Service Improvements

Questions 5 and 6 asked respondents to rate how local and county governments should invest in transit over the next 25 years. More non-riders (37%) stated that the level of investment should significantly increase than riders (28%). More than half of non-riders (60%) and riders (51%) stated that the level of investment should either slightly increase or significantly increase over the next 25 years. Figure 3-4 shows the opinions of non-riders and riders.

Figure 3-4   Long-Term Level of Investment Opinions

Q5. In your opinion, how should local and county governments invest in transit over the next twenty-five years? (Non-Rider n=163, Rider n=155)

	Reduce	Maintain	Slightly increase	Significantly increase	Don't know
Non-Rider Preferences	6%	13%	23%	37%	21%
Rider Preferences	9%	27%	23%	28%	14%

Legend:
- Reduce current level of investment
- Maintain current level of investment
- Slightly increase current level of investment
- Significantly increase current level of investment
- Don't know/No opinion

Non-riders and riders were also asked to rank transit service improvements from 1 (most important) to 5 (least important). Adding transit service between cities in Tulare County was most important with non-riders (31%). Improving bus stops and transit centers was least important with non-riders (31%). Figure 3-5 shows how non-riders ranked service improvements. For riders, adding local service within cities was most important (26%). Improving regional connections to Fresno and Bakersfield was also most important (24%). Improving vehicles and technology (new buses, signs showing when the next bus is coming) was least important with riders (37%). Figure 3-6 shows how riders ranked service improvements.

Figure 3-5   **Ranked Service Improvements by Non-Riders**

Q6. a. Non-Riders, Please rank the following transit service improvements from 1 (most important) to 5 (least important)
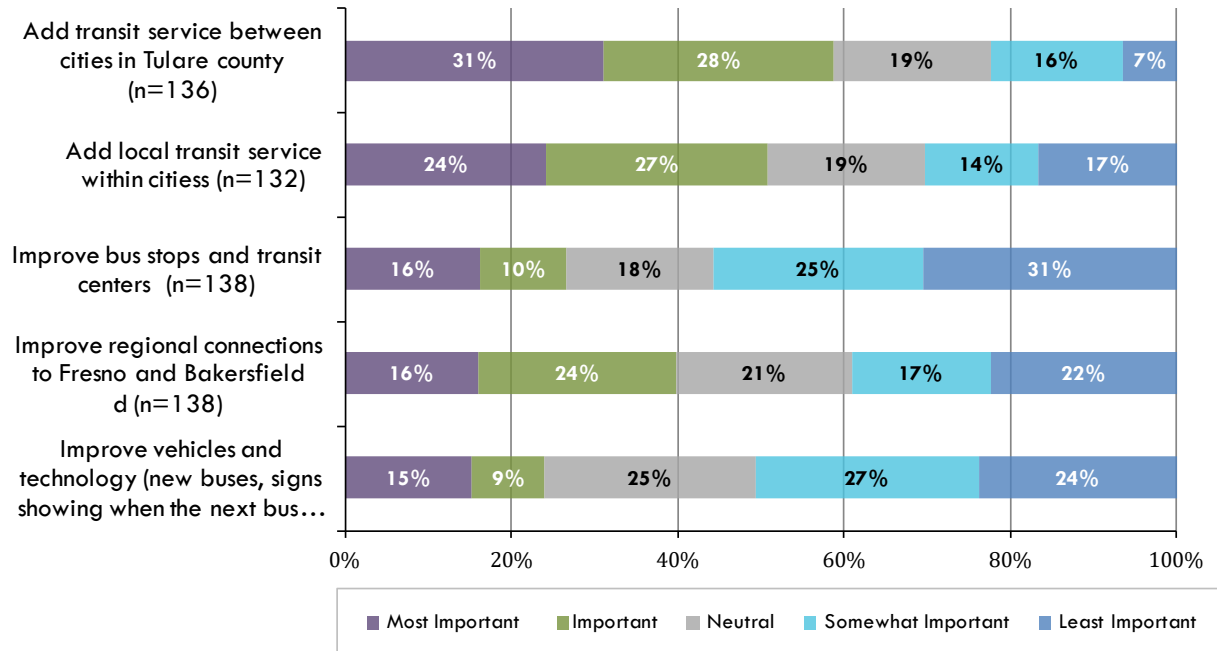
Figure 3-6   Ranked Service Improvements by Riders

Q6. b. Riders, Please rank the following transit service improvements from 1 (most important) to 5 (least important)
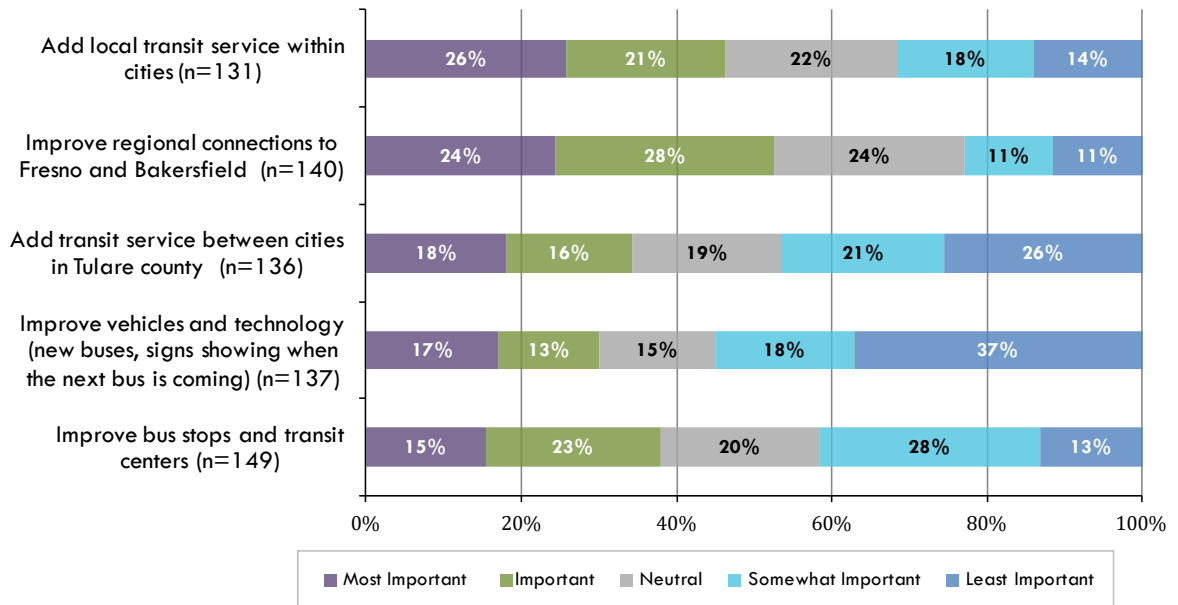
Service Improvement Trade-Offs

Questions 7 – 9 asked respondents to choose one option over another option. Question 7 asked respondents to rate more stops (provide more stops even if it means service is slower) over faster service (reduce the number of stops in order to make service faster). Faster service was more important with both non-riders (68%) and riders (58%). Figure 3-7 shows how both groups rated more stops v. faster service. Question 8 asked respondents to rate fewer transfers over more frequent service. Fewer transfers was more important to non-riders (55%) and more frequent service was more important to riders (52%). Figure 3-8 shows how both groups rated fewer transfers v. more frequent service. Question 9 asked respondents to rate regional over local destinations. More service destinations within Tulare County was more important to both non-riders (60%) and riders (59%). Figure 3-9 shows how both groups rated regional destinations v. local destinations.

Figure 3-7   Trade-Off More Stops v. Faster Service
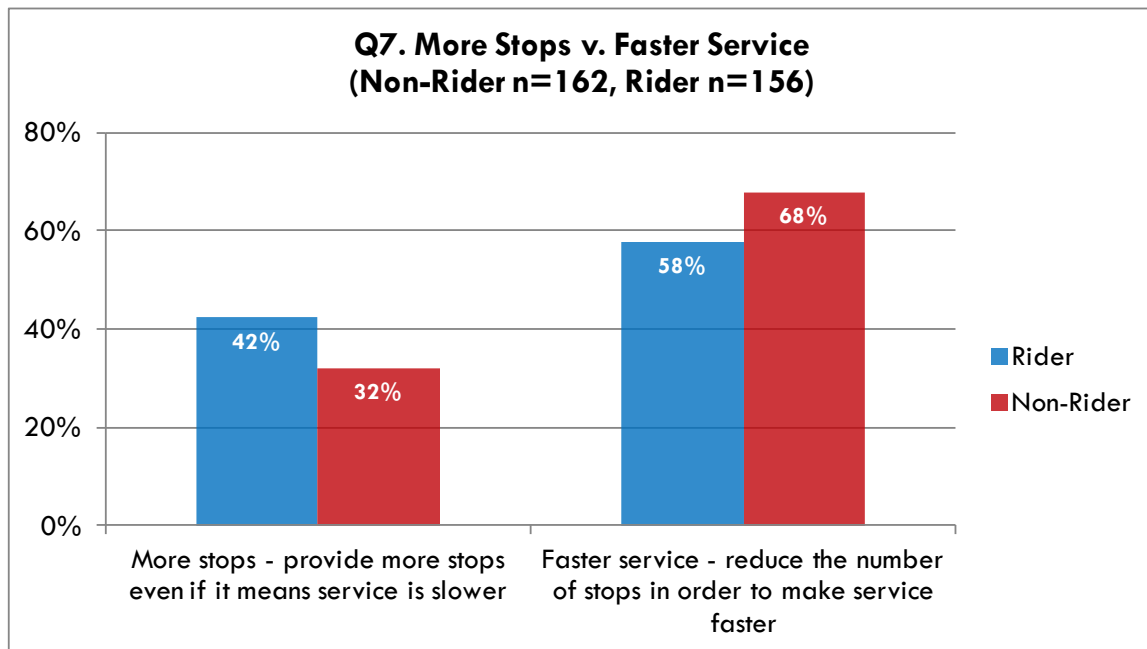
Figure 3-8   Trade-Off Fewer Transfers v. More Frequent Service

**Q8. Fewer Transfers v. More Frequent Service
(Non-Rider n=156, Rider n=155)**
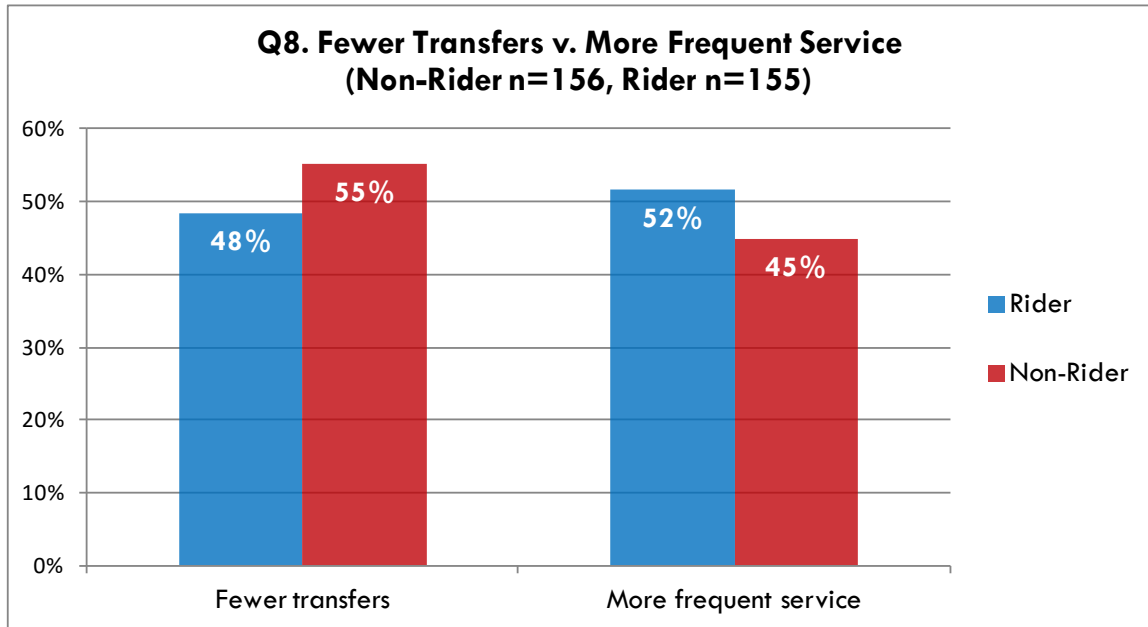
Figure 3-9   Trade-Off Regional Destinations v. Local Destinations

**Q9. Regional Desintations v. Local Destinations
(Non-Rider n=163, Rider n=156)**
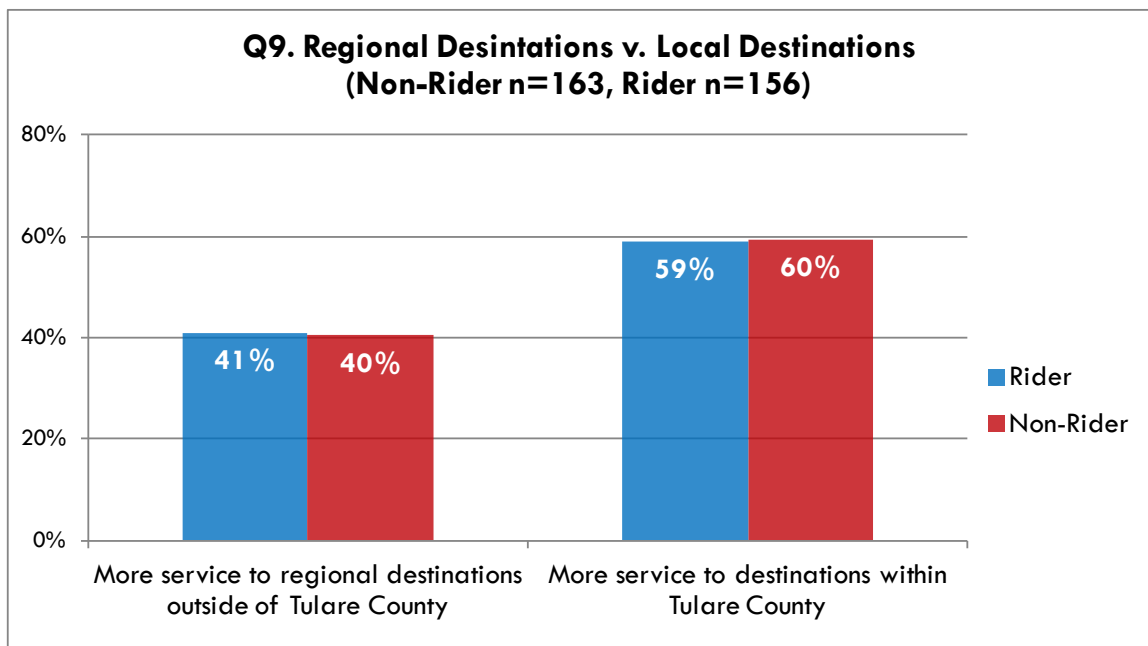
Rider/Non-Rider Demographics

Questions 10 and 11 asked respondents to report household income and age. Riders reported a lower household income with 60% making less than $15,000. Thirty-one percent of riders reported a household income between $15,000 and $30,000. Non-riders reported a higher household income with 35% making $60,000 or more and 30% making between $30,000 and $60,000. Figure 3-10 shows household income by transit usage. Non-riders were generally older than riders. Forty-five percent of non-riders were between 40 and 64 years old and 34% of non-riders were between 25 and 39 years old. Riders were more evenly distributed across age ranges, with 28% of riders between 25 and 39 years old. Figure 3-11 shows age by transit usage.

Figure 3-10   Household Income
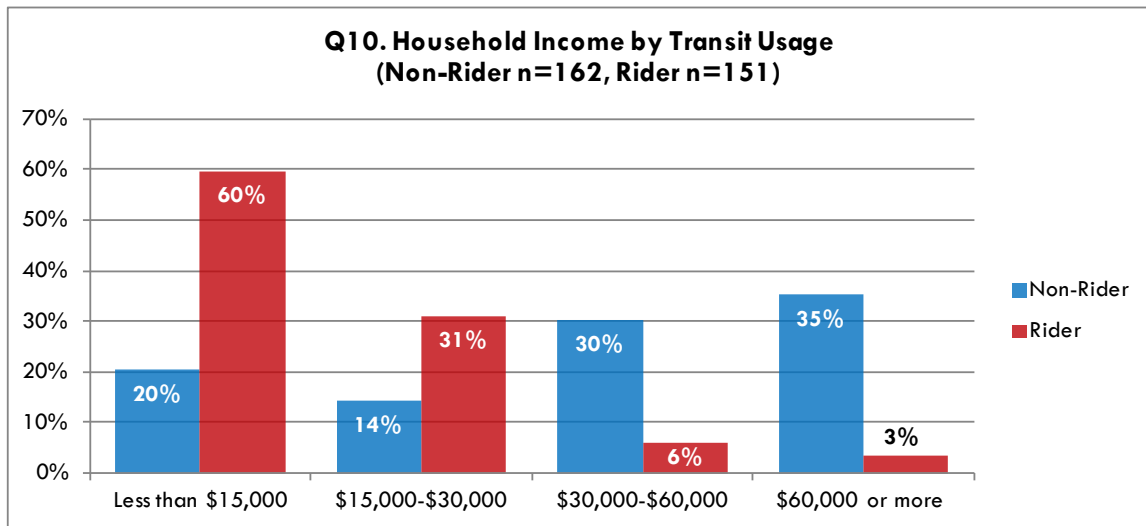
Figure 3-11   Age
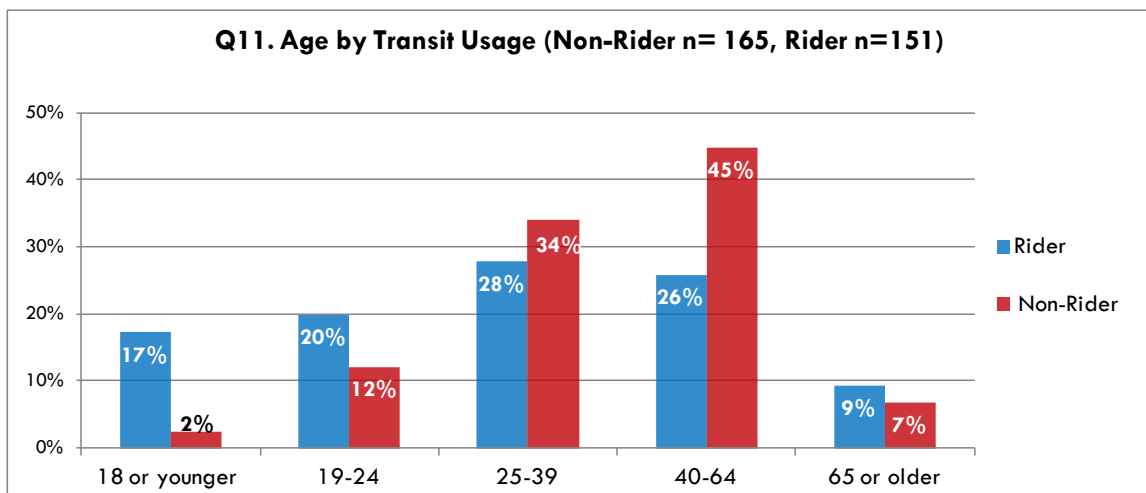
EXISTING SERVICE GAPS

Intercity Travel Time

This section provides a summary of intercity travel times within Tulare County by both transit and automobile. All origins and destinations used for the analysis (other than Exeter) are transit centers. Therefore, it is likely that customers would, in reality, experience longer door-to-door travel times due to travel time between their origin/destination and a specific transit center. A combination of intercity and local routes was utilized in this analysis.

Combined travel times are based on the scheduled trip time between timepoints and the average wait time (half of the route headway). Weekday trip times and headways between 8 a.m. and 2 p.m. were utilized. The travel time analysis focused on the three primary cities (Visalia, Porterville, and Tulare) as well as other geographically distant cities. Delano (Kern County) was also included as it is an urbanized area just south of the county line with its own transit system (Kern Transit).

A comparison of transit and auto travel times between cities is depicted in Figure 3-12. While bus trips are typically twice as long as auto trips for an average transit system, intercity bus trips in Tulare County take significantly longer. The average auto travel time between evaluated cities is 36 minutes, while the average transit travel time is 107 minutes.

Figure 3-12   Transit Center to Transit Center Travel Time
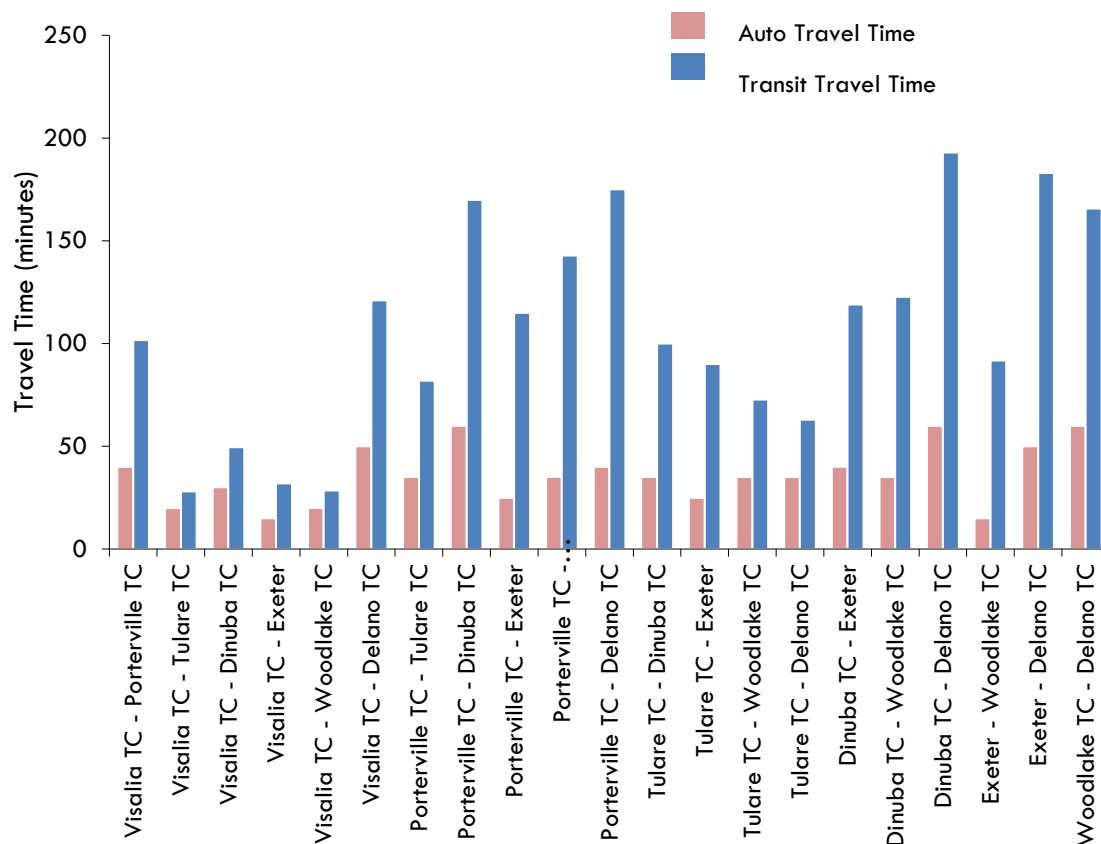
Average weekday travel times for auto and transit are depicted in Figure 3-13 and Figure 3-14.

Figure 3-13   Auto Travel Time Matrix for Trips between Transit Centers

	Visalia	Porterville	Tulare	Dinuba	Exeter	Woodlake	Delano
Visalia	-	40	20	30	15	20	50
Porterville	40	-	35	60	25	35	40
Tulare	20	35	-	35	25	35	35
Dinuba	30	60	35	-	40	35	60
Exeter	15	25	25	40	-	15	50
Woodlake	20	35	35	35	15	-	60
Delano	50	40	35	60	50	60	-
Average	**29**	**39**	**31**	**43**	**28**	**33**	**49**

Figure 3-14   Transit Travel Time Matrix for Trips between Transit Centers

	Visalia	Porterville	Tulare	Dinuba	Exeter	Woodlake	Delano
Visalia	-	102	28	50	32	29	121
Porterville	102	-	82	170	115	143	175
Tulare	28	82	-	100	90	73	63
Dinuba	50	170	100	-	119	123	193
Exeter	32	115	90	119	-	92	183
Woodlake	29	143	73	123	92	-	166
Delano	121	175	63	193	183	166	-
Average	**60**	**131**	**73**	**126**	**105**	**104**	**150**

In addition to extending travel time for customers, multiple connections typically reduce schedule reliability and customer satisfaction. The number of connections required to travel on transit between the cities analyzed are listed in Figure 3-15.

Figure 3-15   Number of Connections Required for Trips between Transit Centers

	Visalia	Porterville	Tulare	Dinuba	Exeter	Woodlake	Delano
Visalia	-	1	0	0	0	0	1
Porterville	1	-	1	2	2	2	2
Tulare	0	1	-	1	1	1	0
Dinuba	0	2	1	-	1	1	2
Exeter	0	2	1	1	-	1	2
Woodlake	0	2	1	1	1	-	2
Delano	1	2	0	2	2	2	-

TCaT Intercity Network

TCaT's mission is to provide "reliable and convenient public transit service between cities and within many small communities throughout Tulare County." Although the existing TCaT route network (Figure 3-16 TCaT System Map) provides excellent coverage to communities across the county, several service gaps are present.

Route 40 connects Porterville, Strathmore, and Lindsay with Government Plaza in South Visalia, which is a transfer point for Visalia Transit Route 1. However, Route 40 does not extend to the Visalia Transit Center, which would provide direct connections with TCaT Routes 10 and 30. Furthermore, Route 40 skirts the edge of Tulare and connects with TIME Route 7, yet does not serve the Tulare Transit Center.

The auto travel time between Porterville and Delano is 40 minutes and the transit travel time is approximately 3 hours. An extension of Route 80 to Delano would greatly enhance intercity and intercounty travel by providing a connection to Kern Transit Route 110.

In addition to spatial service gaps, scheduling service gaps are also present throughout the TCaT system. Routes 50, 60, 70, 80, and 90 each have long periods during the middle of the weekday in which the service does not operate. While closing service gaps on rural services by adding trips does not always yield productive ridership results, the continued utilization of smaller vehicles can reduce operational and capital costs.

Figure 3-16   TCaT System Map
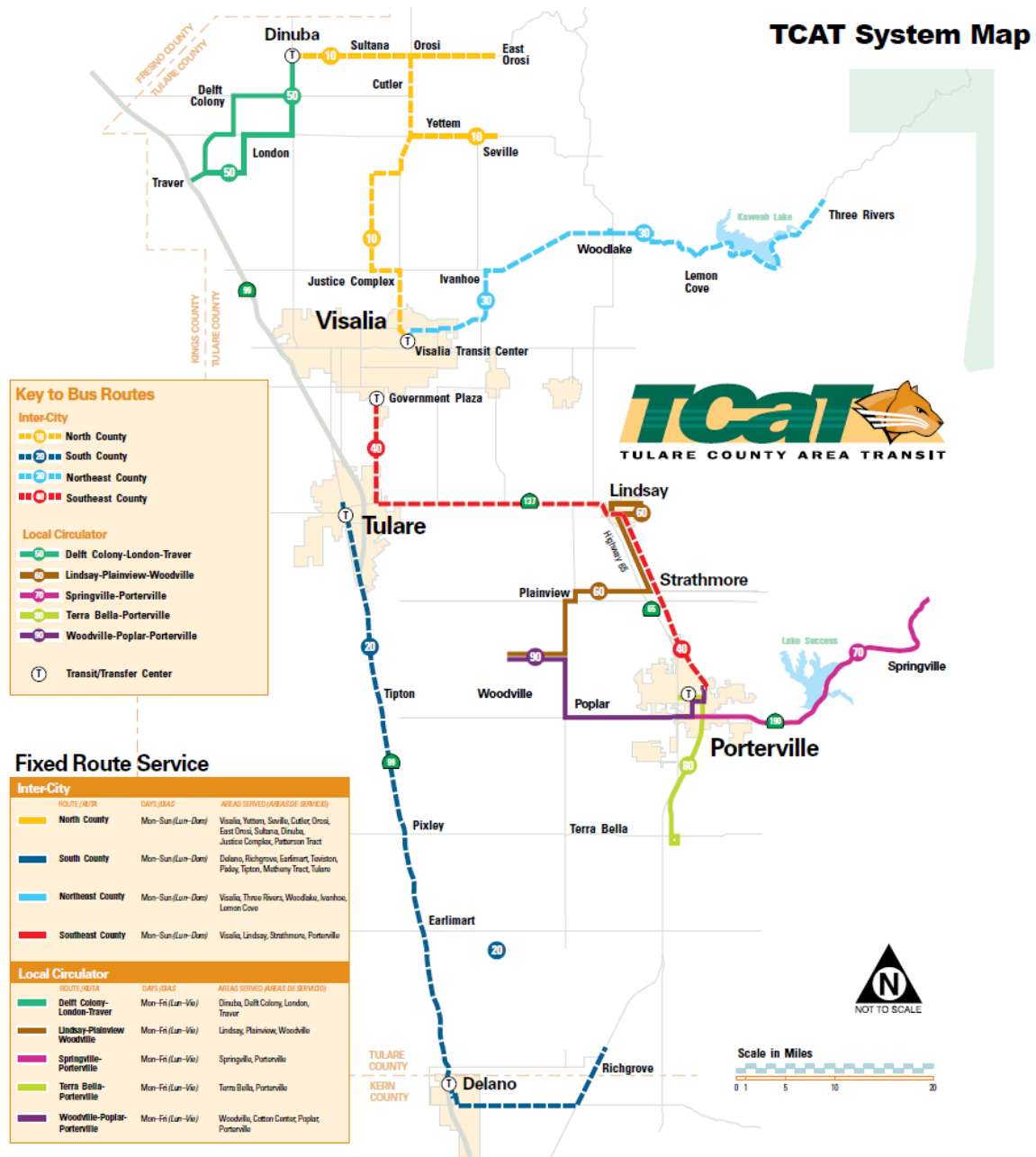
NETWORK SCENARIOS

Three network scenarios were developed for input into the Tulare Travel Demand Model. The three scenarios provided varying levels of increased transit investment (service hours and peak vehicles), network restructuring, and flexible service. The purpose of creating three varying scenarios was not to identify the best single approach to increasing transit service over the next 25 years but rather to understand which elements of each scenario stood out in terms of ridership benefits and community preference. A summary of each network scenario is provided below.

- **Maintain scenario**
  - Infrequent TCaT, Visalia Transit, and Porterville Transit routes upgraded to clockface headways (30, 60, and 120 minutes)
  - Unproductive TCaT routes replaced with demand-response service
  - New regional express route from Visalia to Fresno added
- **Grow scenario**
  - Significant headway upgrades on most countywide routes
  - Visalia Transit Route 1 upgraded to 12-minute (rapid bus) service
  - TCaT Routes 40, 60, 80, and 90 extended to improve connectivity between Visalia, Tulare, Porterville, and Delano
  - New regional express route from Visalia to Fresno added
  - New regional express route from Tulare to Bakersfield added
- **Integrate scenario**
  - Visalia Route 1 extended to Tulare Transit Center
  - TCaT Routes 40, 80, and 90 extended to improve connectivity between Visalia, Tulare, Porterville, and Delano
  - New intercity route from Visalia, Cutler, Orosi, Dinuba, Reedley, and Fresno added

The model inputs consisted of route alignments, fare pricing, headways, revenue hours, peak vehicles, and service types. The initial network scenarios are depicted in Figure 3-17 to Figure 3-19.

The consultant team worked with TCAG staff to run the scenarios, however, several issues were discovered with the TCAG model and Quick Response Tool (QRT) base data and sensitivities. While this effort assisted TCAG in improving the model and its readiness for other evaluations, it proved to be of limited value in evaluating significant differences in the scenarios. TCAG staff and the consultant team responded by simplifying the network scenarios for public consumption and sharing them with the community (riders and non-riders) at a series of public events and transit centers.

Figure 3-17   Network Scenario: Maintain
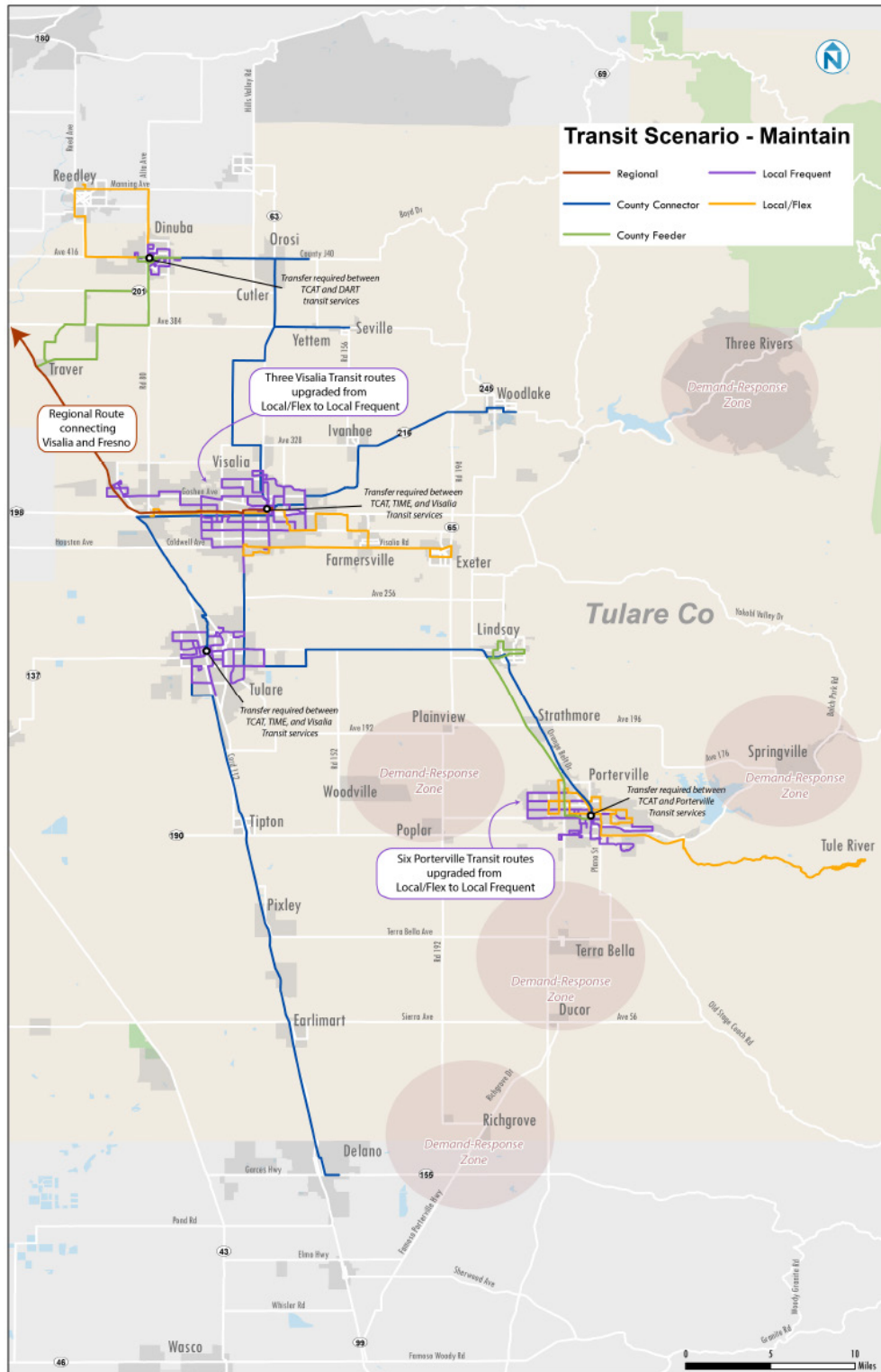
Figure 3-18   Network Scenario: Grow
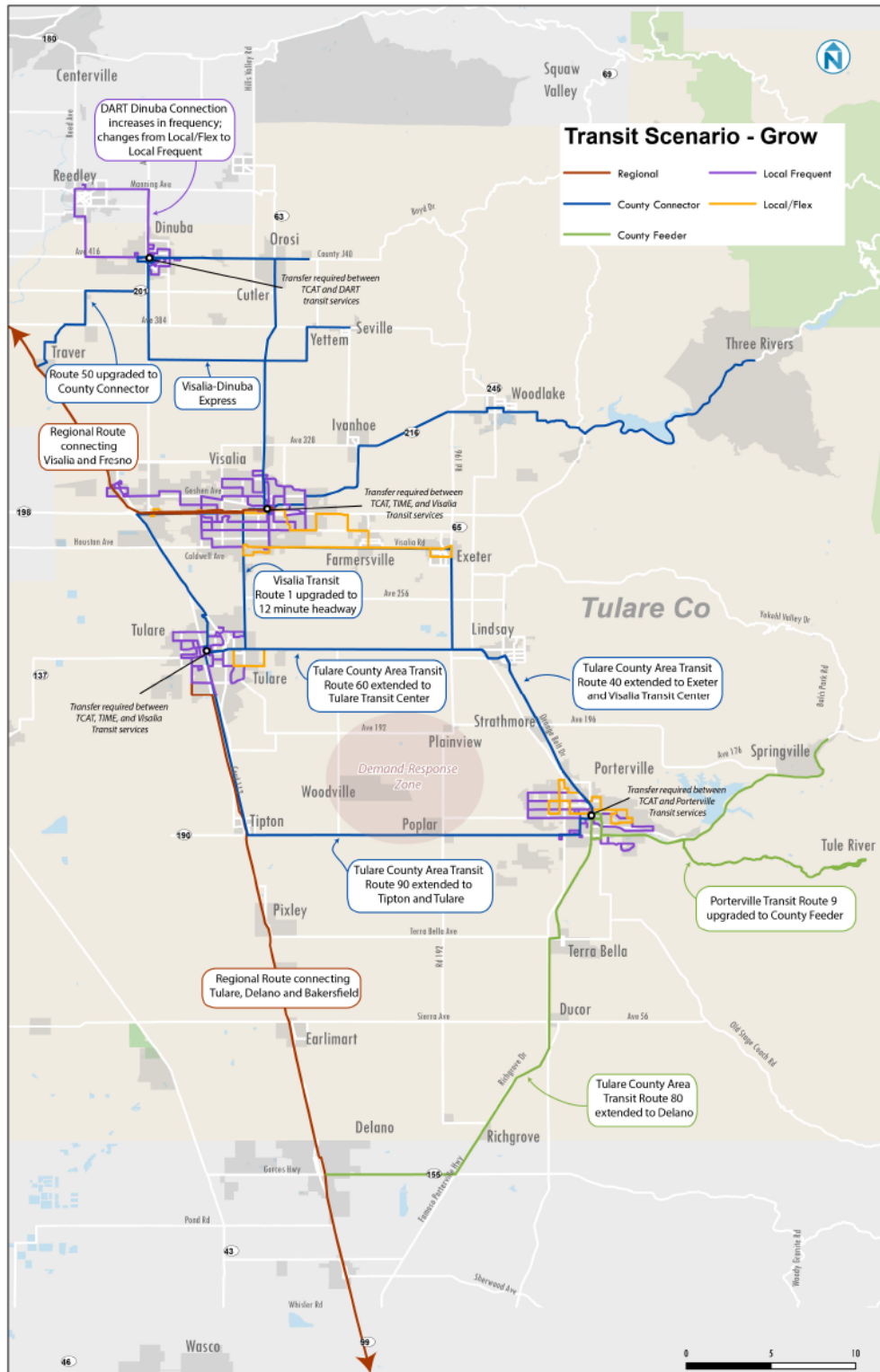
Figure 3-19   Network Scenario: Integrate
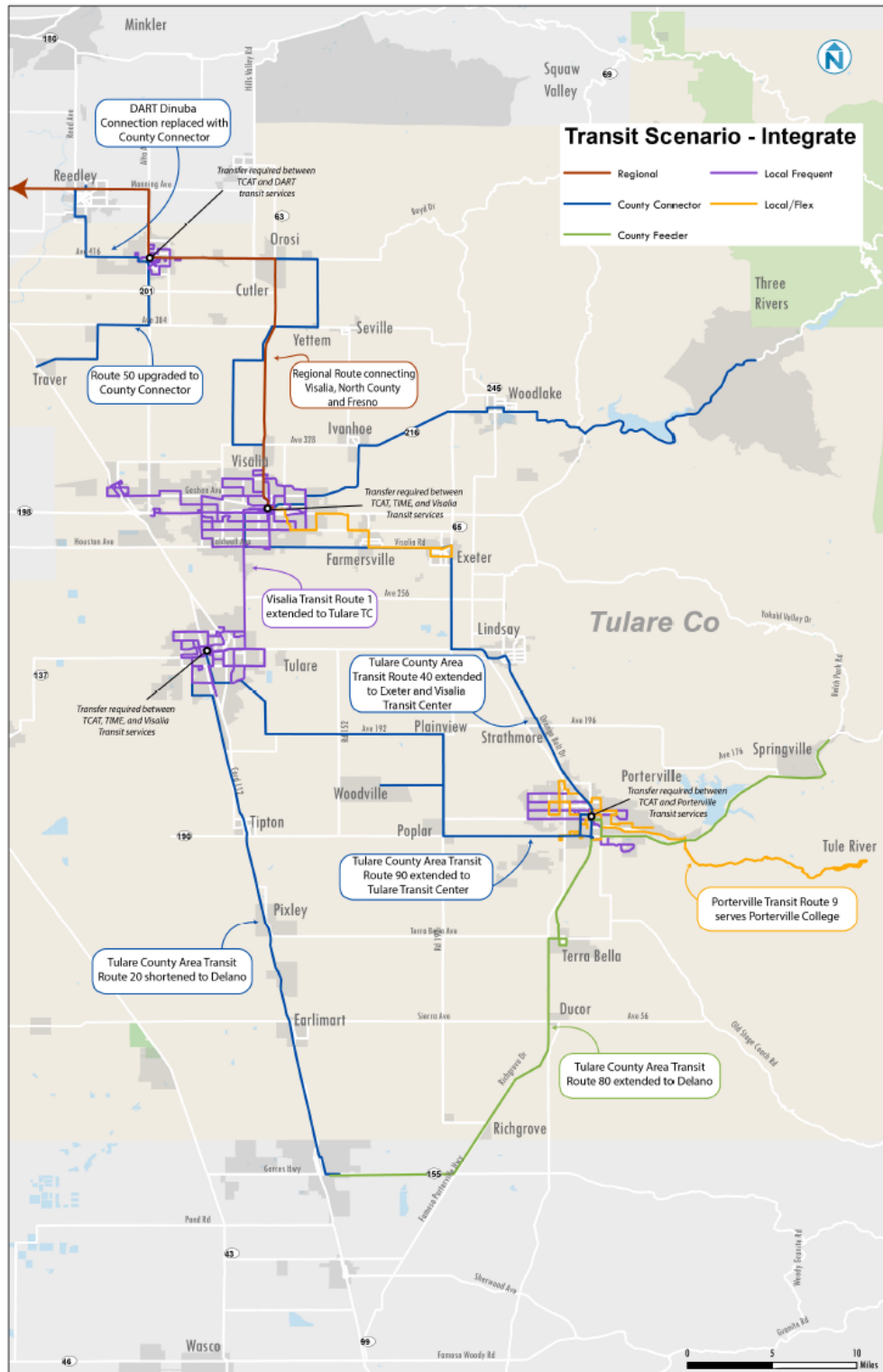
Simplified Network Scenarios and Public Outreach

The consultant team presented information describing existing transit conditions, simplified network scenarios, and goals of the Long Range Transit Plan at the following outreach events:

- Downtown Visalia Farmers' Market
- Mooney Boulevard Farmers' Market
- Orosi Swap Meet
- Lindsay Friday Night Market
- Porterville Transit Center
- Visalia Transit Center

Public outreach information was summarized in English and Spanish on three large poster boards as can be seen in Figures 3-20 to 3-22.

Figure 3-20   Public Outreach Board: Destinations 2040 Overview

Figure 3-21   Public Outreach Board: Existing Transit Conditions
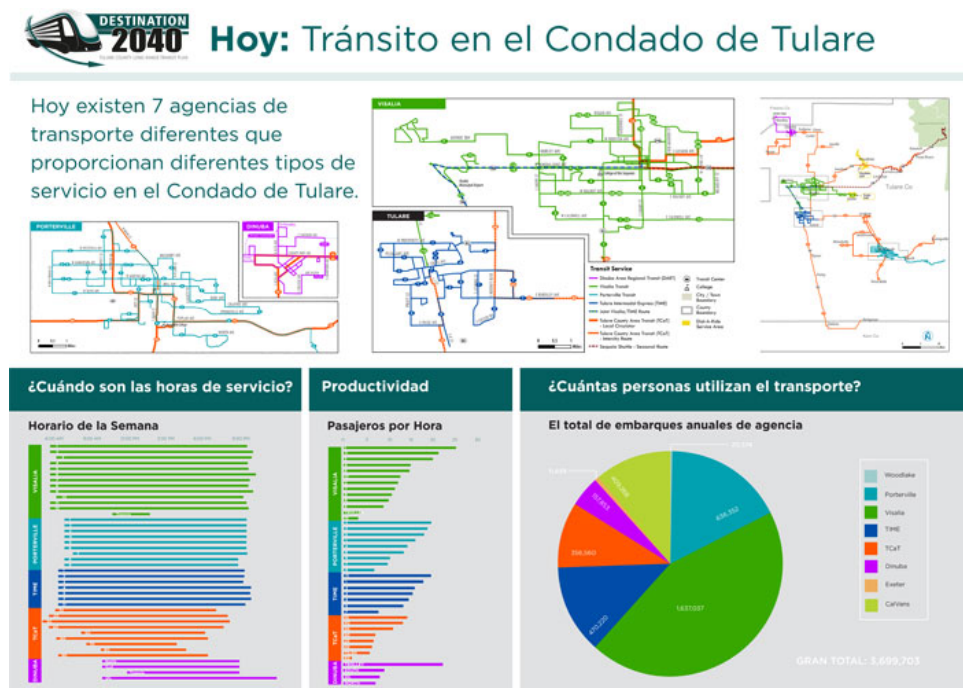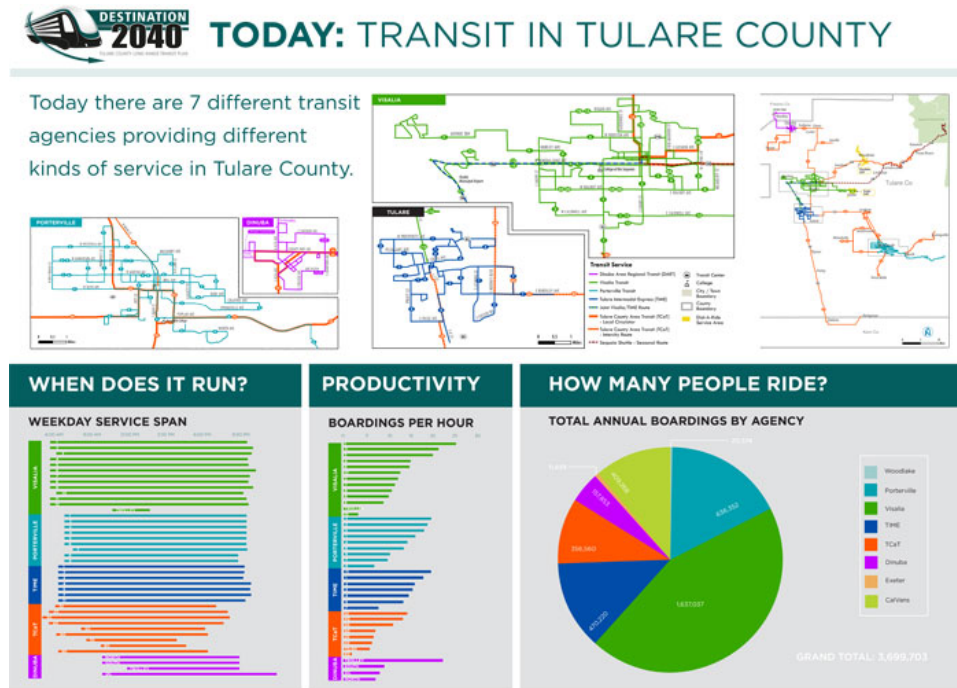
Figure 3-22   Public Outreach Board: Transit Network Scenarios
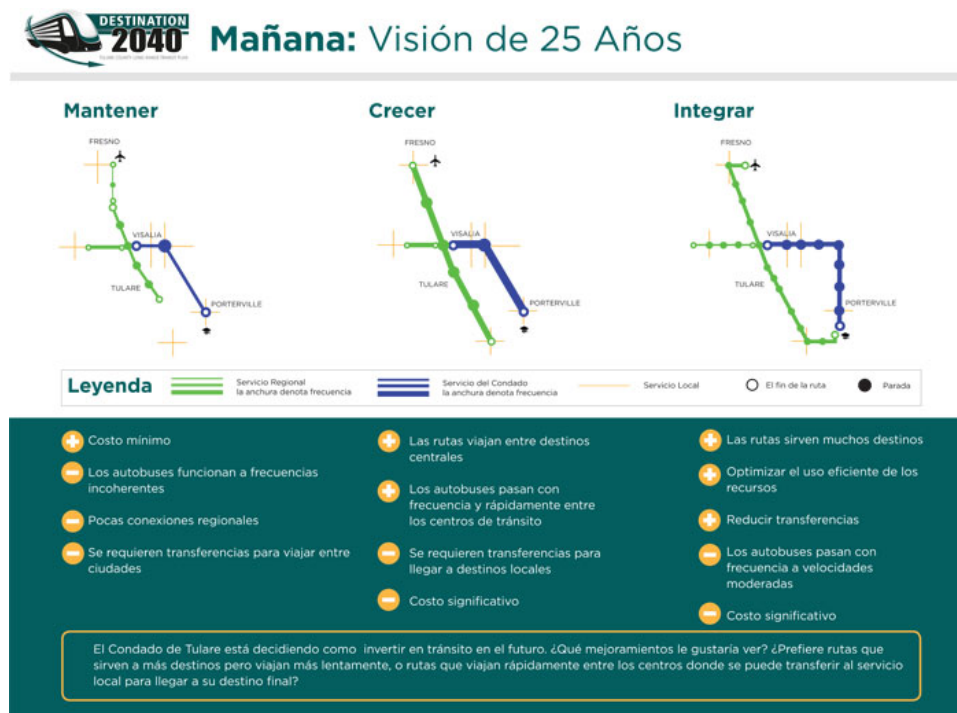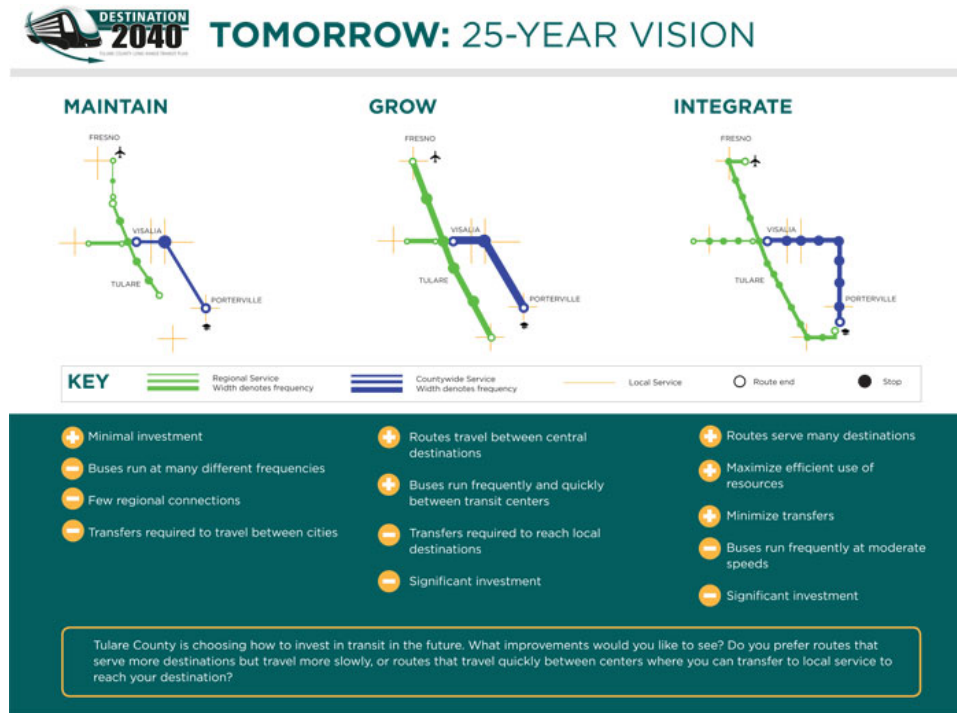
Feedback at the public outreach events varied by location, however, several key themes emerged:

- Increasing service span is key to improving connections between local and intercity routes.
- Even though Tulare County is a rural county, "big city" transit offerings should be considered (frequent service, rapid bus, real-time information, etc.).
- The Integrate Scenario was preferred by most transit users, especially those making regional trips.
- TCaT buses and rural stops are inferior to those found in Visalia and Porterville.
- Transit information needs improvements; several people stated that they cannot figure out the transit guide.
- Fare coordination needs to be addressed; the current fare structures are both complicated and costly.
- Non-riders like the Grow and Integrate scenarios in theory but had questions on where additional investment would come from.
- Fresno State University and the Fresno/Yosemite airport were mentioned as important destinations (outreach occurred prior to the implementation of V-Line).

Findings from the community outreach process were instrumental in guiding recommendations, particularly route/schedule improvements, capital and ITS upgrades, fare strategies and premium transit investments.

Figure 3-23 Community Outreach Event Photos

FARE COLLECTION BEST PRACTICES

Several of the key opportunities for improved transit coordination across Tulare County relate to fare policies and fare collection strategies. This section includes an overview of best practices related to fare technology, regional fare coordination, and universal pass programs to provide transit operators in Tulare County with a summary of opportunities.

Fare Technology

There is a growing number of options for transit fare collection that have been emerging over the past decade. Advancements in mobile phone technology, banking, and payment systems have made methods for paying one's fare more numerous than they have ever been before.

Allowing more choices for purchasing fares and paying fares can attract riders (especially younger people who are more accustomed to innovative payment options for other goods and services) and reduce dwell times—therefore, speeding up service. Adding new options can be appropriate when fare equipment needs to be replaced, but also as an add-on when forming new partnerships with retail establishments, institutions, and other transit agencies.

While technology has changed rapidly, it should not necessarily dictate fare policy or potential fare alternatives. On the contrary, new technology options should follow and support the desired fare policies and products agreed upon for the transit agency. No single technological option should be implemented simply for being the latest technology.

Implementation of new (and existing) technologies should have the following considerations:

- **Operations** (dwell time, driver enforcement, fare evasion)
- **Planning** (additional ridership and revenue data)
- **Distribution** (fare outlets, ticket vending machines, online portals, etc.)
- **Maintenance** (cost to maintain fareboxes and supportive networks)
- **Costs/Revenues** (cost of fare collection, opportunities to increase revenue)
- **Customer experience** (ease of payment, convenience, customer information, marketing, and feedback.)

The following section is intended to be a survey of various fare collection technologies that are established or beginning to show up at select transit agencies. Naturally, each of these fare collection technologies carries an entire body of knowledge, research and additional detail. This section describes each at a basic level to help present trade-offs in the technology for a future fare collection system. In choosing fare technology, Tulare County transit agencies will need to consider coordination of farebox type, features, and future options—potentially a time-consuming process depending on the level of interest in using newer technologies, partnering with numerous local agencies, or deviating from existing hardware capabilities.

Magnetic Stripe Media

Magnetics in fare collection is common around the transit industry and is known to be reliable, but does have some deficiencies. Magnetic stripe technology fare products can include unlimited (time-period) passes, multi-ride products, and change cards. Some of these products require the farebox only to read the media, while others require the farebox to both read and encode media.

Experience from LA Metro indicates that magnetic stripes have a much higher failure rate than "contactless" smart cards—200 times per day compared to 6.7 for smart cards.[1] The publicly known failure rate of magnetic stripe cards has opened the door for fare evasion for passengers who claim that a card is malfunctioning when it is actually out of value. In addition, magnetic stripes on farecards are susceptible to demagnetization or damage if exposed to the elements. However, the use of high-coercivity cards has reduced these instances.

Despite these drawbacks, magnetic media also carry many advantages. A prominent feature is their ease of manufacture since they are printed on paper, and can be pre-printed and distributed to vendors or partner agencies without requiring special card-encoding equipment at the vendor sites. Magnetic stripe media also can be dispensed easily at the farebox.

Figure 3-24 provides a summary of some benefits and drawbacks of magnetic stripe technology.

Figure 3-24   Benefits and Drawbacks of Magnetic Stripe Technology

Benefits	Drawbacks
- Collection of basic fare data - Reduces operator interactions/fare enforcement - Reduces cash in system - Accommodates cash (stored value), passes, and transfers (cannot necessarily do all at once on the same card) - Can be purchased pre-loaded (encoded)	- Fare media can be damaged/deactivated - Limited uses of fare media (cannot combine passes and stored value on same card) - Reloading can only occur at designated locations (cannot be done automatically)

Smart Cards

Electronic contactless smart cards have become common at many transit agencies which use a more durable hard plastic card. For customers, smart cards carry advantages over magnetic cards, but also require numerous prerequisites to be implemented successfully. The most significant customer advantage of smart cards compared to magnetic cards is their durability. This attribute allows smart cards to be reloaded on numerous occasions and last for several years without replacement. Smart cards can be reloaded with stored cash value or passes, and can provide balance protection[2], increasing security. In addition, the use of smart cards allows more flexible pricing options since transfer costs can be automatically calculated. From an operational perspective, payment with smart cards is faster than both magnetic stripe payment and cash

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[1] Source: http://www.transitwiki.org/TransitWiki/images/7/78/Evaluating_Smart_Cards.pdf. From this research, the extent of magnetic card failures due to aging equipment is not clear.

[2] Balance protection refers to a feature that ensures if a smart card is lost, a customer's cash balance or pass is not lost. That value or pass can be migrated to a new replacement smart card.

payment. In addition, since the validation and/or encoding of a smart card do not require any mechanical action at the farebox, smart card systems are frequently more reliable (fewer breakdowns) compared with magnetic stripe fare collection systems.

Despite these benefits, smart cards also present numerous challenges. One significant challenge is the need for elaborate back-end systems to manage accounts and balances associated with smart cards to ensure a distribution network for loading/reloading. For example, smart cards typically do not come pre-loaded and must have value added to them. As a result, a network of methods to load smart cards should include a combination of in-person, online, and telephone reload options. In-person reloading could occur at a fixed-location (such as a transit center), an automatic fare reloading station (ticket vending machine[3]), or even at the farebox. Each location requires special hardware to read the smart card and real-time communications to ensure that the customer's account can be updated with new balance information. The use of smart cards also necessitates on-site encoding capabilities for potential retail vendors to be able to add value or new fare products to customer cards.

Although there are challenges, there may be opportunities for limited rollout of smart cards for specific markets such as universities or major employers. In these scenarios, university students, staff, or faculty may be able to use their existing university identification cards as a fare payment device. Similarly, if an employer pass program is initiated, special cards could be developed that can be administered by on-site employer staff.

Figure 3-25   Benefits and Drawbacks of Smart Cards

Benefits	Drawbacks
- Enhanced data collection capabilities - User features like "autoload" and "balance protection" - Loading value online or over the telephone - Lower on-board transaction times (reduced dwell times) - Permanence of cards (single card can be used for months)	- Higher cost of implementation (back-end systems, value-loading terminals, new equipment, need for on-board vehicle communications equipment) - Greater range of fare options may lead to greater levels of confusion for customers and complexity for agency staff

Smartphone Payment

Smartphone payment offers an increase in customer convenience over paper or smart card payment as well as potential operational savings. Smartphone payments eliminate the need for customers to procure and carry a physical fare payment media, may reduce delay in fare payment (by reducing cash in the system), and reduce the volume of passes that must be processed by the

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[3] Ticket Vending Machine (TVM) is a general term for a self-service distribution device that sells fare media and can reload fare value. TVMs can be procured that issue both plastic extended-use card media (passes) as well as smart cards and magnetic tickets. TVMs can be placed at transit centers and transit stops. TVMs can also be used to add value to existing smart cards through a credit card or cash payment, although many have a minimum value per transaction and not all are equipped to accept cash.

farebox (potentially lowering maintenance costs). Unlike other fare technology options, smartphone payments typically require users to have a linked credit card or banking account.

While payment via smartphone offers several advantages, there are a few meaningful disadvantages since smartphones are only owned by a portion of the transit-riding public. In addition, the use of a smartphone fare payment option relies on customers to enter their bank account information, credit card, or debit card information, which is not an option for customers who rely on cash. While this market share is growing, smartphone payment options can only serve as a supplement to an existing fare collection system until smartphone ownership is standard. Currently, several vendors exist that provide this technology including Masabi, GlobeSherpas, and Unwire. In bus environments, smartphone payments can be accepted in one of three ways, as described below.

Flash Pass

The simplest implementation of smartphone payment is to allow riders to use their phone as a "flash pass" that would be validated by the bus operator when they board the bus. This strategy does not require any additional hardware to be installed and can be implemented with few other hurdles. The primary drawback is that this method requires additional attention of the operator to visually validate fare media. The example at right is from the TriMet system in Portland which has launched a mobile payment app that uses this visual validation system (similar to the flashing of paper passes/tickets). As part of their fare products, transfer media have been eliminated and all cash one-way payments ($2.50) provide a "2.5 hour" ticket upon fare payment, which can be used for transfers during that time window.
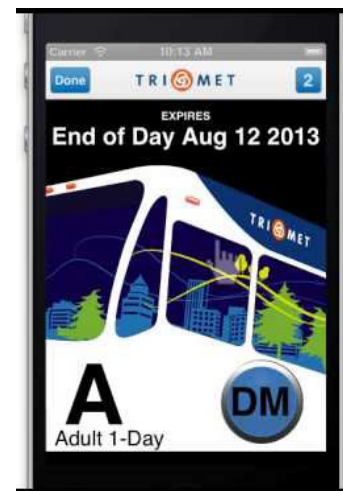
Barcode/Optical Scanners

A smartphone's large screen provides an opportunity to use barcodes or QR codes to validate fare payment. This approach requires the farebox to use a barcode scanning device (similar to a grocery store checkout counter) to read a smartphone's screen. An additional advantage of this approach is that barcode readers can read other barcodes including those issued by ticket reader/issuer machine units, or barcodes printed at home. A potential fare system using 2-D barcodes with fareboxes equipped with an optical scanner can allow both print and mobile payment validation. Optical barcodes can also be scanned by mobile devices for enforcement.

To avoid fraudulent use, systems can be put in place to regularly update valid barcodes. Currently, Nassau Inter-County Express (NICE) in Nassau County, NY is using in-vehicle optical scanners to validate payments via smartphone. At this time, only single-ride fares are accepted via the optical reader (however, per-trip discounts are provided if purchased in bulk).

Proximity Validation

Using one's smartphone as a farecard in the United States transit environment is very rare[4] due to a combination of factors. Different technologies have been created by smartphone manufacturers and none of them have produced a clear solution that could be included as part of universal fare collection equipment. Indeed, even with its large share of the smartphone market, Apple had not committed to a payments technology for its mobile devices until recently. As a result, many agencies have opted to use simpler ways of validating smartphone-based fare payment in the interim. Future technologies that support proximity validation include near-field communication and Bluetooth low energy.

Figure 3-26   Benefits and Drawbacks of Smartphone Enabled Fare Payment

Benefits	Drawbacks
▪ Fare products can be accessed through one's smartphone – no need for separate fare distribution outlets ▪ Various means to validate media (visual, scan, proximity) ▪ Customers can purchase fare products at any time, and at any location	▪ Visual validation of fare products could add dwell time. However, some studies suggest that flash passes may in fact be faster than processing individual magnetic cards or smart cards. ▪ Access issue for those who do not have a smartphone with data plan or a linked credit card/bank account. ▪ Need to supplement existing fare payment options (smart card or magnetic stripe).

Multi-Agency Regional Pass Programs

Metropolitan regions across the globe are increasingly shifting to the use of multi-agency, multimodal "smart" fare cards as a way to integrate services, share costs and revenues, and expand access to transit services across regions served by multiple public sector transit service providers. In addition to enabling cost and revenue sharing between agencies, a shift to widespread use of multi-agency, pre-paid electronic smart cards present an opportunity to:

- Incentivize use of transit by offering bulk discounts and other multi-ride/multi-day passes
- Reduce cash handling costs
- Increase the "float" investment of revenue earned from holding prepaid revenue

The ORCA regional fare payment system in the Seattle Puget Sound region and the GoTransit regional pass in the North Carolina Research Triangle region provide examples of this type of multi-agency collaboration.

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[4] UTA (Salt Lake City) is considered one of the country's leaders in fare technology and just began to accept Apple Pay and Google Wallet in late 2014. Chicago (CTA) also accepts Apple Pay as of 2015.

ORCA (Puget Sound, WA)

The ORCA card is a successful example of fare integration among multiple transit service providers of varying sizes in Seattle and the larger Puget Sound region of Washington. The ORCA card, which stands for "One Regional Card for All," is a contactless smart card that can be utilized for fare payment on seven public transportation providers in a four-county area.

ORCA is a closed system, meaning that value added to the card can only be used to pay public transportation fares. Federal banking restrictions limit the use of pre-paid fares solely for the use of public transportation. This is so that the card does not become a depository for funds and fall under federal banking regulations. Open purse functionality, or the ability to use stored value for non-transit purchases, has not been implemented by ORCA, but this technology is available in the industry. The ORCA card utilizes contactless chip technology that can load multiple fare types. Two primary types of fare value can be loaded:

- **E-Purse** – This is stored value that allows a user to pay a single-ride fare on any service. A free transfer is provided when a rider transfers between buses regardless of operator (valid for 2 hours from initial card tag). Washington State Ferries do not participate in this transfer benefit.

- **Puget Pass** – This is a fixed price monthly pass that allows for unlimited travel on any of six services and their passenger ferries in the region. Puget Passes are available in a range of denominations in $0.25 increments; a rider selects a base pass value representing the most common trip they take (e.g., $3.25) that allows the rider to take unlimited trips that are equal to or lower in value. An individual who takes a trip that costs more pays the difference, using either value in their e-purse or cash.

There is a small number of agency-specific specialty passes that can be loaded on an ORCA card (valid only for rides on the issuing agency's services), most notably Washington State Ferry monthly passes. However, agency passes represent a small portion of ORCA usage.

Proportional Revenue Accounting Based on ORCA Ridership Data

With the implementation of ORCA, the revenue reconciliation between agencies has become reliably timely and accurate. Revenue distribution is calculated by the system. E-purse funds are distributed to agencies in three business days, Puget Pass funds take one month, and bulk purchase accounts known as Business Passport takes two months. Formerly, these processes routinely took three months under the paper-based Puget Pass. To allocate revenue for intersystem trips, there is a formula that calculates the proportional share of a trip based on what the cash fare would be for each trip leg if taken independently.

For example, if someone begins a trip with Sound Transit on a service that costs $3.00 and transfers to King County Metro to complete their trip on a service that costs $2.00, that rider pays no additional fare because transfers are free for trips of equal or lesser value when using the ORCA card. Per the ORCA Revenue Reconciliation Agreement, the $3.00 in fare revenue collected for this two-legged trip would be allocated to the two service providers, with each receiving an amount proportional to its share of the total cost of the trip in cash if no transfer were to be accepted ($5.00). In this case, Sound Transit's $3.00 fare would be equal to 60% of the total potential fare ($5.00), so Sound Transit would receive 60% of the total collected fare ($3.00), which is $1.80. King County Metro's fare of $2.00 would be equal to 40% of the total potential fare ($5.00), so King County Metro would receive 40% of the total collected fare ($3.00), which is $1.20.

GoTransit Regional Pass (Research Triangle, NC)

The GoTransit regional pass provides another example of fare integration among multiple transit service providers, collectively branded under the GoTransit label:

- C-Tran, which provides fixed-route and door-to-door service for seniors and people with disabilities in the Town of Cary
- Chapel Hill Transit, which provides fare free fixed-route bus services, EZ rider service for people with disabilities, and event shuttle services for the communities of Chapel Hill, Carrboro, and the University of North Carolina-Chapel Hill (UNC) campus
- GoDurham, previously known as the Durham Area Transit Authority, which operates fixed bus routes and paratransit services
- GoRaleigh, previously known as Capital Area Transit, transit authority for the City of Raleigh
- GoTriangle, previously known as Triangle Transit, which provides regional bus service to the Triangle region

The fare media is a magnetic card which can be swiped through farebox readers upon boarding GoTriangle, GoDurham, GoRaleigh, and C-Tran buses. As Chapel Hill Transit is a fare free system, no transactions are necessary to board buses in Chapel Hill.

In 2004, along with GoTriangle, transit providers in Raleigh, Durham, and Cary adopted a standard farebox technology, made possible through a joint procurement of new technology and magnetic fare media. This allowed for the creation of day passes and elimination of transfers. At the time, agencies agreed upon a set fare structure where a day pass would be twice the price ($2) of a one-way cash fare ($1). The passes are accepted on all routes, local and regional. Transfers can be made for free, and there is no upcharge to go from a local to a regional route.

Regional pass holders are granted unlimited rides on GoTriangle regional routes, C-Tran, GoDurham, and Chapel Hill Transit buses. Regional passes are available for one day, seven days, or 31 days. Passes can be purchased online or at transit centers. A stored value card is also available, and can be purchased in $13.50, $25, and $50 increments. Discount passes are available for youth (ages 6-18), seniors (ages 65+), and people with disabilities. Transfers are not issued for passengers using a regular cash fare and transferring between operators; therefore, a regional day pass, seven-day, or 31-day pass is required for transfers between agencies.

Cost and Revenue Agreements

GoTriangle is the coordinating agency in the region between local and regional transit providers. As the regional agency, GoTriangle is charged with managing all of the pass sales including purchasing fare media, distributing the fare media, and managing back-end administration. They are motivated by a desire to put what's best for the customer first—in this case, maintaining the simplicity of the fare structure to the customer's perspective is more valuable than any potential difference in revenues accrued.

The current agreement between agencies is that whoever sells the regional day, week, or monthly pass keeps the revenue from that sale. Due to the relatively small revenues being generated by regional pass sales, transit providers decided that conducting exhaustive fare reconciliation between agencies was not worth the administrative costs on the back end. For example, the proportion of local trips in Durham and Raleigh that are made using a regional pass is relatively small—around 10%.

Interagency Transfer (Los Angeles Area, CA)

The Interagency Transfer (IAT) in the Los Angeles Area provides an example for facilitating transfers between multiple agencies without requiring the use of electronic fare cards. Dozens of transit service providers cover the Los Angeles Area, and passengers must often transfer between agencies to complete their trips. The IAT is a paper ticket stamped with the date and time of expiration that is good for one transfer. IATs cost $0.50 and must be purchased at the time that riders pay their base fare to start their journey. The IAT must be surrendered to the bus operator upon boarding the second bus in the journey in lieu of paying a second full fare. IATs are valid for two hours after printing. Twelve transit agencies in the Los Angeles Area provide and accept IATs.

While the IAT provides an alternative to electronic fare cards for cash-paying riders needing to transfer between agencies, it should be noted that, like most metro areas, the Los Angeles Area uses a smart card called the TAP card to better facilitate transfers between transit providers. The TAP card allows the use of regional monthly passes and is accepted by more service providers than the IAT.

University Pass Programs

Many transit agencies around the country negotiate with a university for a universal pass agreement, often funded through student fees that come bundled with tuition—a guaranteed source of revenue for a university. While it is understood that this decision would need to occur at the college/university level, it is an important factor in setting an appropriate financial contribution level. A mechanism should also be put into place to reevaluate financial contribution levels at certain time intervals to determine the appropriate investment.

These types of arrangements give all students and/or affiliates unlimited access to the transit system. The transit agency and the institution negotiate a fare (usually discounted), and the institution pays annually based on the actual number of transit trips taken. Funding agreements between universities and transit authorities make both organizations more efficient by boosting ridership and revenue for the transit agency as well as easing congestion on campus.

Bulk Discount Employer Pass Programs

Employer discount programs are intended to be geared towards bulk pass or fare product sales to help encourage ridership and provide employers options for expanding employee transportation benefits.

In Tulare County, a bulk discount multi-agency pass would enable equal access to all transit operators within the region for a flat cost. Such a product also enables employers and other entities to purchase a single product for any employee who is interested in using transit. In most transit agencies, a multi-agency pass is primarily geared towards enabling local transit access after a longer regional trip.

A pass product should come with several incentives and stipulations geared towards employers and large institutions. These include:

- Pricing within range of current federal pre-tax commuter benefit limit for transit—the limit renewed by Congress in 2016 of up to $255 a month will be in place for five years
- Establishing a minimum purchase quantity (presuming that there will be a high discount for a universal pass)

The university student fee model described previously is less common at major institutions, but could similarly be applied to all employees at a participating organization. The easiest way to implement and effectively manage discounted employee and/or student pass programs is to establish a countywide fare collection system. The technology to do so is readily available and could be implemented within a one-year timeframe.

FARE RIDERSHIP AND REVENUE IMPLICATIONS

Fare Modeling

A simple fare model was developed to evaluate potential impacts to ridership and revenue in Tulare County as a result of fare recommendations. Consumption of transit, like other goods and services, reacts to cost. Significant research over time has examined the sensitivity of transit ridership to fare increases. In transit, the standard measurement of sensitivity to fare changes means that for every 10% increase in fares, ridership will decrease by 3% (and vice-versa).

As such, elasticity factors are common in fare modeling, as they define the price sensitivity of riders to fare changes. An elastic factor suggests a larger change in ridership relative to a fare change. An inelastic factor suggests a relatively small change in ridership relative to a fare change. The model has been structured to use a relatively inelastic factor (-0.33) which is consistent with industry standards for regular fares. Using this elasticity factor, ridership changes (on a fare product basis) are determined from the proposed fare increase or decrease. A new average fare for each fare product is also calculated from the percentage change in the fare product price. Finally, multiplying the new ridership estimate by the new average fare produces a revenue estimate for that fare product.

It should be cautioned that any estimation model is an approximation based on a set of assumptions and is highly dependent on accurate data inputs to ensure quality outputs. The fare model bases ridership and revenue changes strictly on price variation. Qualitative factors such as customer simplicity or other factors are not considered here, but are certainly factors in reality that influence ridership and revenue levels. Based on the perceived simplicity gains, it is likely that ridership benefits in each alternative are understated. As a result, the findings in this analysis are simply estimates but offer a valuable means to compare different alternatives against one another.

Two fare alternative fare structures were developed for this project based on existing ridership and revenue data (FY 2014) for each fixed-route transit operator in the county. This information was used as a baseline to understand order of magnitude changes to fare revenues as a result of pricing changes.

Fare Structure Alternative 1 – Consistent TCaT Fare

Ridership and revenue impacts were evaluated based on a simplified Tulare County fare structure in which TCaT fares are equal to other fixed-route providers, as detailed in Figure 3-27.

Figure 3-27   Conceptual Tulare County Fare Structure – Alternative 1

Fare Product	Price
Cash Fare Products	
Adult	$1.50
Youth (age 6-18)	$1.00
Senior (age 65 and older)	$0.75
Disabled/Medicare card holder	$0.75
Children (age 5 and younger) – up to 4 children per paying adult	Free
Regional Pass Products	
Adult Day T-Pass	$3.00
Reduced Day T-Pass (Senior/Disabled/Medicare card holder)	$1.50
31-Day T-Pass	$50.00
Reduced 31-Day T-Pass	$25.00
Future Fare Products	
Reloadable Smart Card E-Purse	Purchase Price: $2.00 Stored Value: $5 to $100
College Student Semester Pass	To Be Determined

According to fare modeling of Alternative 1, the overall impacts to ridership and revenue are minimal. Countywide, in the short-term the Alternative 1 fare structure results in a ridership loss of 2% and revenue increase of 1%, based on fare pricing and ridership levels in FY 2014. In terms of individual providers, ridership loss ranges from 0.3% for TCaT to 3.0% at Porterville Transit, and revenue change ranges from a loss of 2% for Visalia Transit to an increase of 9% for Dinuba Area Regional Transit (DART). Countywide and individual provider ridership and revenue impacts are shown in Figure 3-28 and Figure 3-29.

Figure 3-28   Countywide Fare Structure Annual Ridership and Revenue Impacts – Alternative 1

	Estimated Annual Ridership	Estimated Annual Ridership Change	Ridership Percent Change	Estimated Annual Revenue	Estimated Annual Revenue Change	Revenue Percent Change
Existing Ridership and Revenue (FY 14)	3,068,947	-	-	$2,286,442	-	-
TCaT	348,000	-1,000	-0.3%	$412,000	$4,000	1%
Visalia Transit	1,555,000	-17,000	-1%	$1,088,000	-$26,000	-2%
Porterville Transit	607,000	-19,000	-3%	$654,000	$35,000	6%
TIME	435,000	-13,000	-3%	$109,000	$5,000	5%
DART	73,000	-2,000	-2%	$45,000	$4,000	9%
Countywide	**3,018,000**	**-51,000**	**-2%**	**$2,308,000**	**$21,000**	**1%**

Figure 3-29   Fare Structure Individual Provider Annual Ridership and Revenue Impacts – Alternative 1
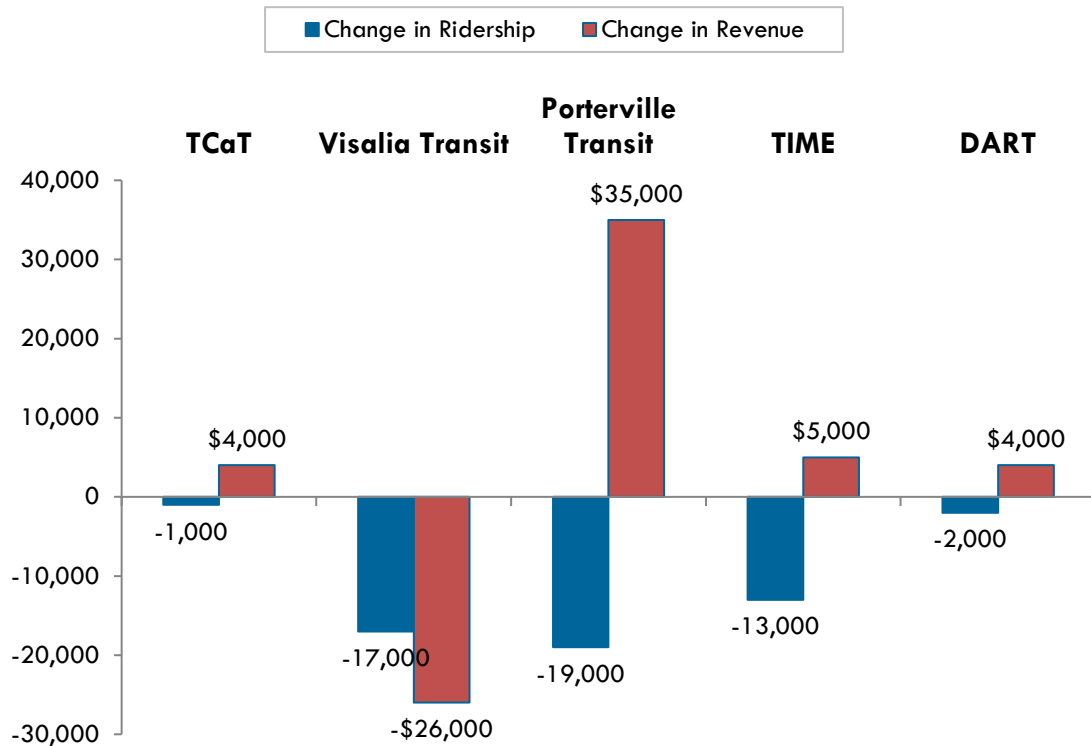
Fare Structure Alternative 2 – Premium TCaT Fare

Ridership and revenue impacts were evaluated based on a simplified Tulare County fare structure in which TCaT fares are higher than other fixed-route providers, as detailed in Figure 3-30.

Figure 3-30   Conceptual Tulare County Fare Structure – Alternative 2

Fare Product	Price	
Cash Fare Products	**Non-TCaT**	**TCaT**
Adult	$1.50	$2.00
Youth (age 6-18)	$1.00	$2.00
Senior (age 65 and older)	$0.75	$0.75
Disabled/Medicare card holder	$0.75	$0.75
Children (age 5 and younger) – up to 4 children per paying adult	Free	Free
Regional Pass Products		
Adult Day T-Pass	$3.00	
Reduced Day T-Pass (Senior/Disabled/Medicare card holder)	$1.50	
31-Day T-Pass	$50.00	
Reduced 31-Day T-Pass	$25.00	
Future Fare Products		
Reloadable Smart Card E-Purse	Purchase Price: $2.00 Stored Value: $5 to $100	
College Student Semester Pass	To Be Determined	

According to fare modeling of Alternative 2, the overall impacts to ridership and revenue are greater than Alternative 1. Countywide, in the short-term the Alternative 2 fare structure results in a ridership loss of 3.0% and revenue increase of 5%, based on fare pricing and ridership levels in FY 2014. In terms of individual providers, ridership loss ranges from 1% for Visalia Transit to 12.1% for TCaT, and revenue change ranges from a loss of 2% for Visalia Transit to an increase of 26.4% for TCaT. Countywide and individual provider ridership and revenue impacts are shown in Figure 3-31 and Figure 3-32.

Figure 3-31   Countywide Fare Structure Annual Ridership and Revenue Impacts – Alternative 2

	Estimated Annual Ridership	Estimated Annual Ridership Change	Ridership Percent Change	Estimated Annual Revenue	Estimated Annual Revenue Change	Revenue Percent Change
Existing Ridership and Revenue (FY 14)	3,068,947	-	-	$2,286,442	-	-
TCaT	307,000	-42,000	-12.1%	$516,000	$108,000	26.4%
Visalia Transit	1,555,000	-17,000	-1%	$1,088,000	-$26,000	-2%
Porterville Transit	607,000	-19,000	-3%	$654,000	$35,000	6%
TIME	435,000	-13,000	-3%	$109,000	$5,000	5%
DART	73,000	-2,000	-2%	$45,000	$4,000	9%
Countywide	**2,977,000**	**-92,000**	**-3%**	**$2,412,000**	**$126,000**	**5%**

Figure 3-32   Fare Structure Individual Provider Annual Ridership and Revenue Impacts – Alternative 2
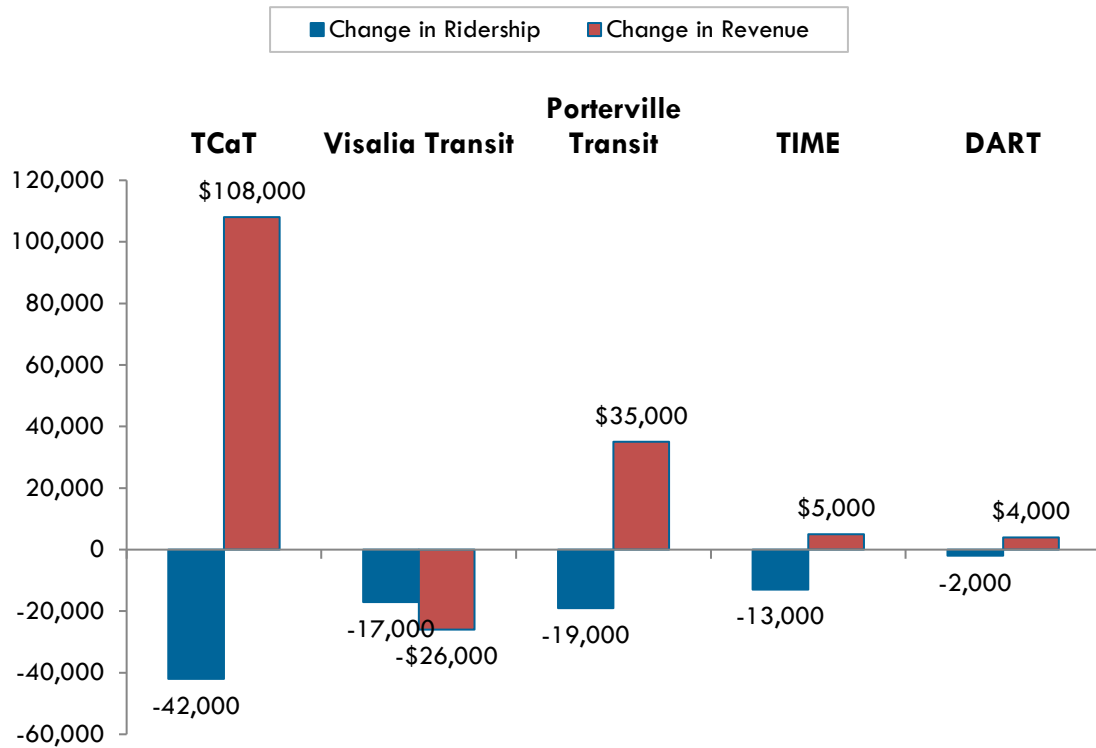
INTELLIGENT TRANSPORTATION SYSTEM (ITS) BEST PRACTICES

Technology investments in transit often provide an enhanced customer experience, which can attract new riders and benefit existing riders. A comprehensive survey of ITS infrastructure maintained by each transit operator (detailed in Appendix B) provides an understanding of technology needs within Tulare County. ITS best practices covered in this section focus on:

- Real-Time Bus Arrival Information
- Automatic Passenger Counters
- Annunciators
- Headsign Integration
- Mobile Data Terminals
- Onboard Video and Audio Recording
- Fare Collection Systems
- Transit Signal Priority

Real-Time Bus Arrival Information

Real-time Bus Arrival Information is another technological enhancement that should be universally available throughout the county due to provide customers with real-time bus schedule information. With the widespread availability and use of cell phones and smartphones, real-time bus arrival information can be very accessible to the customer. In addition, real-time bus arrival information can be provided to customers at fixed locations such as transit centers and major stops through electronic signage. Providing real-time arrival information to all customers with cell phones or smart phones would increase the customers' confidence in the reliability of the transit system. To accommodate the riders who may not have smart phones, the agencies should explore other means of providing real-time bus arrival information including audio messages.

A full discussion of the operational needs and real-time bus arrival information strategy is contained in Appendix B.

Automatic Passenger Counters

Many transit systems include automatic passenger counters (APCs) as part of the automatic vehicle locator (AVL) procurement. APCs can be installed on all buses to provide a 100% count of boardings, although to reduce costs some systems only equip some of their buses and make sure that they cycle through the entire system over a specified period of time. If APCs are intended to be the primary data source for daily ridership counts, they need to be installed on all buses. If another method is used to obtain daily boardings, equipping a subset of buses is sufficient to obtain stop by stop data needed for service planning purposes.

A big advantage of APCs is the ability to routinely obtain accurate data of on and off activity at each transit stop. Whether all, or only some, buses are equipped, far more data can be collected than by manual count methods. While this significantly reduces the need to do manual ridership counts and will increase the amount of data available, occasional manual audits should take place to make sure there aren't problems with the counters. Ridership trends should also match fare revenue trends. At least once a month trends in fare revenue should be compared with ridership trends. If there is a significant divergence an effort needs to take place to determine the reason for the discrepancy.

Annunciators

The Americans with Disabilities Act (ADA) requires that all major bus stops be announced. Historically, bus drivers were expected to call out stops prior to arriving at a stop and in the absence of annunciators on board this still is the method to announce bus stops. In the absence of annunciators it is expected that the driver will call out major stops. In reality this often does not occur. Additionally, each driver has a different voice resulting in no consistency in tone or clarity for the customer. Annunciators integrated with an AVL system and GPS can be programmed automatically to announce stops without the need for action by the driver. Transit systems can choose from a wide variety of digital voices or can choose to have human recordings.

The benefit of the annunciators is to provide consistent announcements without driver intervention Announcements can also be multilingual, which for Tulare County would be a significant improvement in customer communications.

In the absence of automatic vehicle location systems, annunciators can be triggered by drivers. However, this results in inconsistency as to when the announcements are made and sometimes they can be made too late, i.e., as the bus passes the stop.

Another benefit of annunciators is that they can be used to make other announcements. These may include general announcements such as suggesting appropriate behaviors, and special announcements such as special services, promotions, or changes in service.

Usually the procurement of annunciators includes electronic visual signage. Electronic visual signage is typically placed at the front of the bus, visible to the entire bus. With electronic visual signage, as announcements are being made the same text appears on the electronic sign. Electronic signs provide the same information to hearing impaired customers and customers who may have missed the announcement due to noise or other distractions can refer to the electronic signs.

Headsign Integration

Headsign integration with the AVL system automatically changes headsigns to reflect the correct destination. As with annunciators, removing the need for the driver to manually change headsigns provides consistency and increases accuracy in the information displayed on the headsign.

Mobile Data Terminals

Mobile data terminals (MDT) are a portable computer added to a vehicle to assist with information and data management at service delivery. The computer may be a laptop, tablet computer, or customized hardware. There are many applications for MDTs such as managing paratransit trip manifests, collecting passenger and fare data, communicating with dispatch, and trip routing. MDTs are an effective tool for analyzing operations data in greater detail than with traditional pen-and-paper data collection.

The field of MDTs is rapidly developing, although their use in public transit dates back at least 25 years. Software is often customized based on an agency's procurement, but standard packages are available through software businesses specializing in the transportation industry. MDTs may operate entirely standalone while in the field or may use various wireless communication technologies to communicate with dispatch or a centralized server for information exchange.

MDTs may serve one or many functions, with the possible applications continuing to grow as the field develops and new ideas are introduced. MDTs are commonly used in fixed-route and paratransit services for specialized applications and can be helpful in managing flexible transit service.

Potential uses of MDTs include:

- **AVL**: MDTs can incorporate AVL by processing location data to transmit to a central server or dispatch. Some are also capable of serving as a GPS-based navigation assistant for vehicle operators.

- **Communication**: MDTs can be used to facilitate efficient communication between vehicles and dispatch. This is often in the form of pre-programmed text messaging, which uses significantly less bandwidth than voice calls over a two-way radio system.

- **Data entry and information management**: A common use for MDTs is to collect a greater level of operating detail than might otherwise be possible. This may include the ability for the driver to categorize passenger counts by fare type (half-fare, adult, passes, etc.), by boarding or disembarking location, etc. Some systems can incorporate some level of automation, such as pairing a location from the AVL component with the passenger fare type.

- **Paratransit trip management**: Manifests or trip itineraries can be managed through a MDT as opposed to a traditional paper list. By incorporating wireless communication MDTs have the ability to update an individual driver's manifest to reflect changing trip requests.

Many of these applications can be combined to maximize efficiency. For example, a paratransit management software application can allow two-way text messaging to dispatch, allowing for real-time response for changing circumstances. The software package can also serve as a data management tool, providing accurate and detailed statistics for service delivery.

MDTs were traditionally customized and highly specialized hardware, even as recently as 2007. As consumer technology in touch-screen and tablets developed, agencies have begun to procure off-the-shelf hardware with customized software applications. The industry has adapted by developing software which can run on various consumer platforms.

In the most basic application, a mobile data terminal is fully self-contained with no communication to other systems or the internet. Agencies are more commonly using MDTs that communicate with a central server.

One form of information sharing is to download information from the MDT on a limited basis. This could be done traditionally by physically connecting the MDT with a desktop computer or to a central server and downloading information, commonly as part of end-of-day procedures. Agencies can also utilize a local wireless network to download data from MDTs as they are returned to a central point, such as the service garage.

An option that is growing in popularity and cost-effectiveness is the ability to transmit data in real-time using the cellular data network. Agencies can purchase a MDT or consumer tablet computer with the capability of connecting to a cellular data network. Depending on configuration and data plans, the MDT may transmit data essentially continuously or on a programmed frequency such as once an hour. Cellular phone providers may offer government agency data plans that are unavailable to the consumer market.

Onboard Video and Audio Recording

Onboard video and audio recording can provide an extra level of security on buses and can be effective in addressing a number of issues that can occur during bus operations:

- **Resolve customer complaints**: All customer complaints must be taken seriously and investigated thoroughly. Onboard video and audio provide a robust tool for addressing customer concerns and can provide the objective information needed to take appropriate action.

- **Accident investigations**: Exterior facing cameras can provide an objective view of what occurred leading up to an accident involving a bus. Onboard video systems are usually equipped to provide additional data, including indicating when the driver applied brakes and whether turn signals were deployed. Depending on camera placement the actions of the driver are visible, e.g., where the driver was looking prior to the incident.

- **Insurance claims**: When a customer files a complaint about being injured on a bus the video and audio can depict exactly what happened assuring that only legitimate claims are processed.

- **Assist law enforcement**: If an accident occurs in front of a bus but doesn't involve the bus, a forward facing camera can assist a police investigation if the incident was captured by the camera. Additionally, if a suspect of a crime that occurred off the bus is known or thought to have boarded a bus, video can assist police in identifying and possibly apprehending the individual.

- **Identify inappropriate behavior**: Videos can be used to identify individuals who are vandalizing a bus or engaging in other inappropriate behavior. Many systems have been able to apprehend and seek restitution from individuals.

Fare Collection Systems

Within Tulare County, options for fare media are limited due to the traditional fare collection system. Transit agencies within Tulare County need to move toward newer technologies in fare collection systems, such as smart cards. Smart cards are gradually becoming an industry standard for transit agencies across the country. They allow customers unprecedented flexibility and ease of use for riding transit. Smart cards also provide the ability to significantly improve boarding times and dramatically reduce maintenance efforts. At the same time even newer technologies are emerging such as using systems like "Apple Pay" for transit fares. The appropriate technology for Tulare County must be chosen carefully to ensure maximum accessibility to the technology and to provide the best application given the characteristics of the riders.

Fare collection systems are continuously evolving to incorporate new technologies and methods to improve efficiency, reliability, and convenience for the customer while ensuring fares are collected and appropriate information is available for transit provider decision-making.

Fare collection systems should support equal accessibility for customers of all ages, abilities, and financial means whether frequent or occasional riders, by providing fare products at a variety of prices that are easy to use. Methods for payment should be well communicated, consistent, predictable, and provide a seamless experience for customers using multiple transit modes in the region. While meeting the other fare collection system guidelines, the fare collection system should do the following:

- Provide options to customers at the level of their preferred investment in fare payment products (i.e., single ride, multiple ride, or period/duration pass).
- Provide consistent and predictable systems that enable customers to pay their fare quickly and easily.
- Use images as well as words to convey key fare collection information such as cost to ride, fare media accepted, fare collection location and mechanism, and the fare-validation or enforcement process.
- Be modern, be consistent with best practices from comparable transit agencies in the region, and use proven technologies.
- Support service requirements by supporting changes in fare policy, and supporting efficient boarding time.
- Support the recording and processing of accurate data on ridership and revenue commensurate with transit provider expectations and with data provided by other comparable transit services.
- Fit well into the existing regional transit environment by supporting passenger access to the transit system, maintaining or enhancing transit operations performance, maintaining or improving transit travel times, and allowing the transit system the flexibility to adapt to changing needs.

A regional unified fare payment system requires extensive coordination and collaboration among participating transit agencies and their governing bodies. Replacing multiple fare payment systems with a countywide system brings numerous challenges related to technology, communication protocols, system integration, redundancy and disaster recovery, retail network, cost sharing, future upgrades, rights and obligations, risk assessment and liability, customer services, security, auditing, and funding. Bigger metro areas such as San Francisco, Los Angeles, Seattle, Boston, Chicago, Atlanta, and Washington DC have developed a unified fare payment system that took years of collaborative efforts and major capital investment. TCAG may investigate further and conduct a cost/benefit analysis and consider appropriate timing for introduction of a unified fare payment system for the County's transit operators.

Transit Signal Priority

Transit Signal Priority (TSP) is a technology advancement that provides priority treatment of transit vehicles at intersections. It is designed to reduce wait times of transit vehicles while minimizing the impacts to surrounding traffic. Cities within Tulare County along with transit agencies should pursue TSP implementations along corridors within the service area. The priority for placement of TSP needs to be focused on areas where bus running time reliability is most challenging as it will provide the most significant benefit.

Figure 3-33   Transit Signal Priority Operation
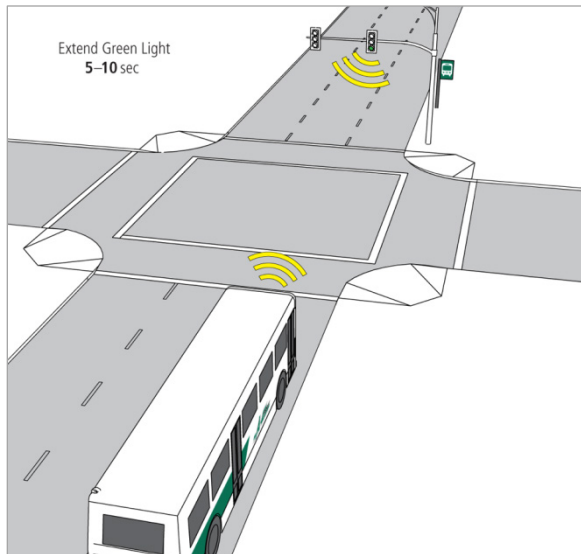
Demand for fast and reliable transit travel times along major transit corridors is continuing throughout the United States. Implementation of TSP helps to address the operational issues associated with operating bus routes along congested arterials. Operational challenges to maintaining schedule adherence generally include recurring traffic congestion along the corridors and traffic signals that may not be optimally timed to allow for buses and general traffic to proceed along the corridor. Reducing transit travel times along the length of a corridor helps to improve the perception of public transit as a desirable mode of travel. The TSP system will include five primary components:

1. Tulare County Transit Management Center (a central facility for countywide coordination)
2. Transit Fleet
3. Opticom Communication Devices
4. County and City Traffic Operation Centers
5. Traffic Signal Controllers

A full discussion of the operational needs and signal control strategy is contained in Appendix B.

TSP should be considered in corridors or high congestion locations where the coefficient of variation (mean travel time divided by the standard deviation of travel time) exceeds 50[5] and service frequency is, or is planned to be, 15 minutes, or better, in each direction.

High variability in operating speed makes transit less reliable, and low variability makes transit more reliable. This is a significant factor in scheduling transit services. When it always takes a bus

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[5] When the coefficient of variation is greater than 50 it means that the variation in time, in 68% of observations can be as much as ½ of the mean time in segment. For example, with a coefficient of variation of 50, if the mean time in the segment is one minute and the standard deviation is 30 seconds, it means the time in segment could be as little as 30 seconds or as much as 1 ½ minutes and that the values lie in this range 68% of the time.

an exact amount of time to pass between two points, it is a simple matter to predict, and therefore to schedule, exactly when the bus will arrive at a point. When variation is high, forecasting the amount of time is more challenging. At times the bus will seem to run ahead of schedule while at other times it will run behind schedule.

Another important variability consideration, from a customer perspective, is providing service that is operated at a certain interval, or headway. When the amount of time variation is small from one bus to the next, maintaining an even interval is straightforward. When there is significant variation, the intervals will become uneven and customers will have little notion of when the next bus will arrive.

Therefore, locations and corridors selected for further evaluation of TSP should have high frequency transit service (or planned to have high frequency service in the future) and high variability in running time as defined above.

4 ACTION PLAN

This chapter contains the transit action plan for Tulare County developed for the Destination 2040 Long Range Transit Plan (LRTP). Action plan elements are designed to help Tulare County meet the goals and objectives of the plan. Elements are based on analysis of existing conditions, public input, and technical analysis of transit characteristics in Tulare County. This chapter is organized into the following action areas:

- **Customer Information** provides action plan items related to the delivery of customer information.
- **Fares** provides action plan items regarding fare structure and policies in Tulare County.
- **Routes and Schedules** provides action plan items related to route design and scheduling transit services.
- **Land Use** discusses strategies and action plan items for integrating land use and transportation and improving bicycle and pedestrian access to transit.
- **Premium Transit** provides action plan items for Tulare County regarding bus rapid transit, rapid bus, and high-speed rail.
- **Customer Amenities** provides action plan items regarding passenger facilities at bus stops, transit centers, and onboard.
- **Intelligent Transportation Systems** provides action plan items regarding AVL, APC, TSP and other technologies.
- **Operations** provides action plan items regarding transit system operations.
- **Flexible Transit** provides action plan items related to flexible transit in Tulare County.
- **Performance Metrics** provides active plan items related to performance metrics used to evaluate transit systems.
- **Governance** provides action plan items related to governance and organization.

Each section contains one or more action strategies for improving transit elements in Tulare County. Where applicable, implementation strategies are also noted. Action plan elements are divided into three categories based on ease of implementation:

- Short-term (2016-2020) action strategies that can be implemented with minimal costs
- Medium-term (2021-2030) action strategies that require additional planning and/or capital investments
- Long-term (2031-2040) action strategies that require additional planning and/or capital investments

Estimated costs for each action item are provided. Estimated capital costs are a one-time implementation cost, whereas estimated operating costs are on an annual basis. Costs are not

broken down by service provider. Both costs are expressed in 2016 dollars. Costs are categorized as under $100,000 ($), between $100,000-500,000 ($$) and over $500,000 ($$$).

ACTION AREA: CUSTOMER INFORMATION

For people to be able to use transit, they must first know that it is there and be able to understand how to use it. This means that it is extremely important for transit systems to provide clear and concise information about their available services. While many transit riders in Tulare County rely on the Transit Guide and Green Line for information, a growing percentage of customers have internet access, increasing the importance of improved online information.

Transit typically serves a broad cross-section of an area's residents, workers, and visitors. Because different people access, use, and process information in different ways, transit systems must deliver information in a variety of ways. For example, many older adults are not web-literate, so providing information via the web will not reach those individuals; therefore, telephone and printed information must be provided. However, telephone and printed information will not reach many younger riders who rely primarily on the internet. For transit systems to reach the people they serve, it is essential that they provide effective information in ways that will reach all potential riders. Transit information provided by third parties, such as Google Transit, and other open-sourced web platforms, is also expanding rapidly, creating many new ways for riders to access information.

Enhanced technology, such as real-time information and onboard Wi-Fi for intercity routes, was mentioned by project stakeholders as an important customer service-driven attribute to emphasize in the future. Mobile apps and seamless fare technologies were also mentioned as ways to attract new tech-savvy riders, particularly college students and young adults.

This section provides an overview of best practices that are applicable to Tulare County related to customer information. Action strategies are outlined for Tulare County in the short- and medium-term.

What Is It?

Basic Information and Delivery Methods

Most transit agencies provide a wide array of public information, telephone support, printed materials, full-featured websites, and real-time information. The predominant types of information that are widely utilized include:

- **Websites** are the initial point of access for most people and provide complete information on available services
- **System maps** provide an overview of available services
- **Route schedules and maps** provide detailed information on a route-by-route basis
- **Web and app-based route, stop, and schedule information** is often provided by third parties
- **Web and app-based real-time information** provides predicted arrival times at stations and stops and, often, maps that display the actual location of transit vehicles

This information is delivered in four basic ways:

- **Internet:** As with other types of information, the majority of distribution has moved to the internet. Nearly all transit systems now provide service information on their websites and mobile apps where users can either view information electronically or print it themselves.

- **Signs at Transit Centers and Stops:** Many bus stations have real-time information signs that display the arrival of the next bus. Real-time information signage is also being added to many smaller stops.

- **Third-Party Distribution:** Third-party distribution has become increasingly common and has greatly expanded the ways that people can access transit information. This approach began when Google developed a standard format known as the General Transit Feed Specification (GTFS) for publishing transit schedule information and presenting transit information on Google Maps. That approach has since expanded to smartphone apps and to real-time travel information.

- **Physical Distribution:** Printed maps, schedule cards, and rider guides are typically distributed onboard buses and at key transit locations.

Public Information Examples
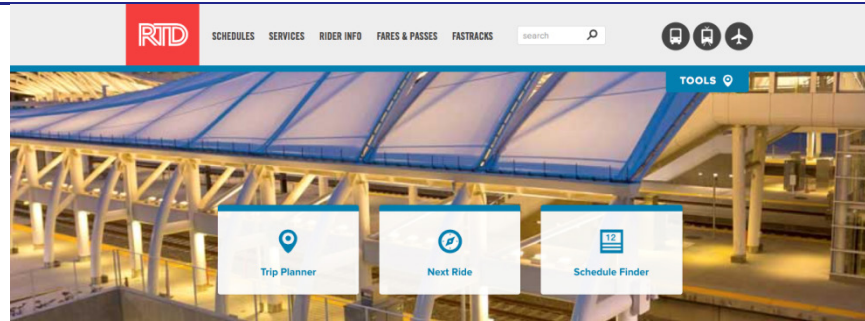
Website	
System Map	
Route Schedules and Maps	

Google Transit	
Real-Time Information	
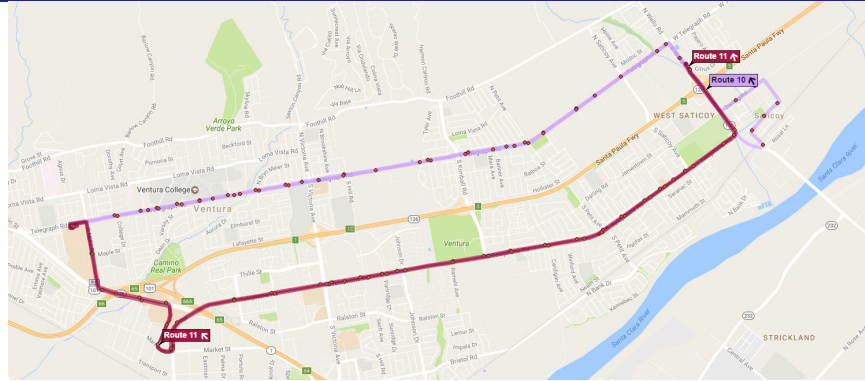
Schedules

Schedules are a second basic type of information that transit systems provide. Some transit systems, especially larger ones, produce individual schedule cards for each route; other smaller transit systems include this information on their system maps. Schedule information may be delivered to riders:

- Via transit agency websites
- Via trip planners such as Google Maps
- Via third-party websites
- Via third-party smartphone apps
- Via text messages
- At stations and stops, both in posted and electronic form
- Onboard transit vehicles and at key transit locations

Trip Planners

Trip planners provide riders the ability to enter their origin, destination, and desired departure time to find the best transit options. Many transit systems embed a trip planner within their website or provide links to third-party trip planners—the best known of which is Google's integration of transit routes, stops, and schedule information within Google Maps. Google Transit is often the best source of information for trips that use services provided by different transit agencies, since it is not tied to any individual system.

While participation in the Google Transit program is free, agencies must provide Google with service data in GTFS format on an ongoing basis. Therefore, it does require staff time to participate in the program and offer this service. It is now generally expected that transit systems will publish transit schedule information on Google Maps. One other item of note with respect to this free service—as it has become more popular, the Google Transit update process has become slower and more cumbersome. The initial inclusion of a transit system on Google Transit can presently take up to six months, while lead time for updates may be one to two months. Particularly for smaller transit systems, this lengthens the route/schedule change process and may seem to make the system less adaptable to changes.

Text Messaging

For those who do not have smartphones, schedule information can be provided by text messaging. With these systems, the transit rider texts the stop number to the transit system and receives a text in response that provides the scheduled arrival times of the next bus or series of buses.

Real-Time Information

Real-time information uses GPS-based Automatic Vehicle Location (AVL) technology to track and predict the locations of transit vehicles in real-time. This provides information on estimated arrival/departure times, vehicle locations, and service disruption or delay alerts. Once the back-end system has been installed to track vehicles and deliver the data, the information is presented to riders in basically the same ways as schedule information:

- Via transit agency websites
- Via Google Maps
- Via third-party websites developed by AVL vendors (for example, NextBus)
- Via third-party smartphone apps
- Via text messages
- At stations and stops

Real Time Trip Planners

When available, real-time transit information is usually provided within trip planners. In most cases, this information is presented visually, often with a map that shows buses moving along their routes.

Websites and Smartphone Apps

Similar to schedule information, many apps provide both schedule and real-time information. Many riders, and especially younger, tech-savvy riders, desire smartphone-based schedule and real-time schedule information more than any other type of information.

Transit Center Displays

Real-time information signage and displays are most common at transit centers and Bus Rapid Transit (BRT) stations. These displays are often provided at higher volume bus stops as well. The most commonly used signs provide information on the next few arriving buses, while more elaborate displays provide information on all or many services, along with maps of bus locations.

Real-Time Passenger Information Displays at Transit Centers

Bus Stops

Bus stop signage should be consistent for all service providers in terms of information provided. Each sign should include the specific service provider logo, route number, route name, directional terminal point, customer service line, website URL, and an Americans with Disabilities Act (ADA)-accessible symbol. Bus stop signage should also include the unique stop identification number, which can be used to access schedule information by calling a customer service line or accessing real-time arrival information.

Information signage provided at bus stops includes route information (route number and terminal destination) and the customer service phone number of the respective service provider. Additional features that improve customer service include a printed schedule with arrival times and a unique bus stop identification number for future online trip planning.

Consistent signage across the entire county would provide essential information to all existing and prospective transit riders while potentially reducing capital costs for service providers. A conceptual design for a countywide bus stop is provided in the illustration below.

Conceptual Countywide Bus Stop Signage

Wi-Fi on Buses

In a world where customers expect wireless connections everywhere from the coffee shop to mid-flight on an airplane, many transit providers are adding "on the bus" to the list of places people can stay connected. New technology is helping to make onboard wireless possible for bus services ranging from commuter express service, employer-provided bus shuttles, and private long-distance bus companies. For example, the increasing availability of 4G/LTE cellular networks means faster speeds and wider bandwidth at lower costs. Transit agencies are also experimenting with funding models that allow advertisers to deliver sponsored messages along with free Wi-Fi, lowering agency costs.

Wi-Fi on Transit Service

Source: Sound Transit

Wi-Fi can help to attract new riders, whether they turn to transit for the opportunity to relax and browse the internet while they travel, or to get a jump start on the workday by logging on. While these tasks may be easy to do using a smartphone on shorter routes, Wi-Fi might be particularly attractive on longer-haul routes where people are riding for 15 minutes or more and will have time to watch a short video, connect to their corporate server, or browse an online newspaper.

Most of the research in this field so far has focused on the use of mobile devices on intercity buses, commuter trains, and other long-distance trips. Studies[1] suggest that Wi-Fi can give bus transit a competitive edge over other modes. Their research found that over 90% of transit riders planned to use a mobile device while onboard, and more than a third said that access to Wi-Fi is important when choosing a travel mode.

Why Do It?

Ensuring easy access to schedule, fares, and system maps will improve user experience and attract more riders. Enhanced technology, such as real-time information, was mentioned by several interviewees as a way to improve customer service. Studies have shown that using real-time information improves safety and security, increases customer satisfaction, and improves perceptions of the transit agency. Distributing and maintaining current information about the transit system (not just real-time information) is a customer-focused way to communicate with riders and potential riders.

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[1] Schwieterman, Joseph P., Justin Kohls, Ryan Forst, and Anya Nair, "The Digitally Connected Commuter," Chaddick Institute Policy Study, DePaul University, July 2014.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Implement Countywide Transit Website.** To enhance coordinated countywide services that are easy to understand for passengers, TCAG should create a website for customers to gain information about countywide transit service.

  The website should have a simple and memorable name similar to the Greenline transit information resource. Information should be compatible for desktop and mobile devices. Fare products for all countywide services should also be made available on the website. While TCAG would assume the responsibility of maintaining the website, municipal service providers should be actively involved in ensuring that information is accurate and current. TCAG should hire an external website design company to develop the website.

  > Estimated Capital Cost: $
  > Estimated Operating Cost: $

- **Develop Countywide Transit System Map and Schedules.** In Tulare County, development of a comprehensive and coordinated countywide transit map and schedules will be an important component of improving passenger information. The map should identify and label all routes in the county, and insets of population centers should indicate locations for transfer opportunities.

  Transit providers should also work together to develop a route naming and numbering convention that is consistent for all services and eliminates duplicate route numbers (e.g. Visalia Transit Route 1, Porterville Transit Route 1, TIME Route 1). Furthermore, a Joint Powers Authority (JPA) can set universal service change dates for all service providers to promote awareness of route and schedule revisions while also minimizing the impact on riders.

  > Estimated Capital Cost: $
  > Estimated Operating Cost: $

- **Develop Interactive Transit Guide.** Development of an interactive, web-based, countywide guide is recommended to provide existing and potential customers with a visual representation of the complete transit network in Tulare County.

  An interactive transit guide can deliver detailed route and bus stop-specific information to passengers, such as arrival times, photos, amenities, and detours. The interactive transit guide should also include fare information and a feedback form.

  The interactive map should be hosted on the Tulare County Association of Governments (TCAG) website, as well as websites of all transit providers operating in Tulare County. A mobile version of the countywide transit guide should also be available from the countywide website so that users are able to plan trips and find information from any device.

  > Estimated Capital Cost: $
  > Estimated Operating Cost: $

▪ **Implement and Maintain Google Transit.** All service providers should also strive to publish route and schedule information with Google Transit to enable trip planning across the multiple transit systems and to reach more riders. Google Maps supports multiple languages with a user interface that works the same way all over the world, and users can plan trips in their native language without having to learn a new system.

Accomplishing this goal requires the development of a General Transit Feed Specification (GTFS), which includes detailed route, trip, stop, schedule, calendar, and fare information. TCAG should take the lead in working with all transit providers to develop and maintain GTFS data. At the time of this plan being finalized this action strategy has already been implemented.

> Estimated Capital Cost: $
> Estimated Operating Cost: $
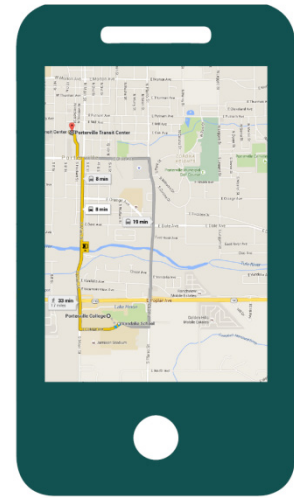
▪ **Implement Real-Time Arrival Information.** Many, if not most, passengers now desire and expect real-time information, and the lack of real-time passenger information for transit service is a significant gap. The provision of real-time information for all services via smartphone apps could be a significant improvement for transit passengers in Tulare County. Real-time information signage should also be provided at transit centers, major transfer points, and high ridership bus stops.

The first step in implementing real-time arrival information is ensuring that all vehicles and transit providers are equipped with GPS and AVL software that are interoperable. This means TCAG must create and adopt an ITS standard for all transit systems in the county to ensure that, despite the vendor, the systems produce information in exactly the same manner. This would be a requirement to receive any funds controlled by TCAG to facilitate the procurement and installation of smart bus features. Some agencies already have smart bus technology installed, so it would also be important to identify how to incorporate those agencies into the countywide system. Next, transit providers would agree on a third-party provider to manage the system. It is possible, as long as all the information is provided through open source data, the third-party provider would provide the service at no, or minimal costs, to the agencies.

> Estimated Capital Cost: $$
> Estimated Operating Cost: $

▪ **Implement Wi-Fi on Intercity Routes**. Access to reliable Wi-Fi services is becoming increasingly important for passengers, particularly on longer-distance routes. In the mid-term, it is recommended that Tulare County invest in Wi-Fi for transit service on long-distance intercity routes.

> Estimated Capital Cost: $$
> Estimated Operating Cost: $

Implementation – The first three strategies can be implemented by TCAG taking the lead and issuing a Request for Proposals for graphic design and web design services. The design firm would first focus on arriving at a countywide brand that will tie all services together. An example of this is the unifying regional brand adopted by GoTriangle Transit in the Raleigh Durham, N.C. area. An example of what may be possible is displayed on page 4-8 on the bus stop sign. Once a unifying brand is identified, the design firm would address each of the informational action items in the short-term plan—a countywide transit website, countywide transit system map and schedules, and a countywide interactive transit guide. Once completed, each of the transit agencies in the county would adopt and utilize the new design templates to populate customer information materials, either print or web, that meet the new brand look and feel.

A similar approach has already been utilized to bring all Tulare County systems information onto Google Transit. This short-term action item has already been implemented with TCAG as the lead coordinator. It would be beneficial to maintaining this action plan item process if all agencies were to adopt a uniform schedule for making service changes. In this way information and press releases and Google Transit updates can be issued universally to cover all transit operators at one time.

ACTION AREA: FARES

Agencies across the nation are moving toward simplified fare policies and collection processes to increase customer satisfaction and operational efficiency.

What Is It?

For seasoned riders, understanding the correct fare may not be complicated. However, for potential new riders, the County's disjointed fare structure and policies—including transfers—are confusing. For transit service in Tulare County to be truly regional in scope, fare unification and coordination is necessary. Confusion and complication amongst riders and operators is a primary drawback of the current fare structure. Uniform fares throughout the region are one of the best ways to create a unified customer experience. As such, the primary goals for the fare structure in Tulare County include:

- **Simplify fare structure**. Simplifying fares, including transfers, is a primary goal for transit service in Tulare County. Fare products should be provided that make choices simple and clear for customers.

- **Establish consistent countywide fare structure, products, and policies.** A coordinated and unified fare structure and policies will help to ensure equitable fares across the system and simplify service for customers, in step with the Destination 2040 goal to Provide An Easy Choice – agency coordination will ensure access to schedule, fares, and service wherever passengers live and travel. This would include a simplified policy for interagency transfers.

- **Incentivize higher usage of pass products.** Higher use of pass products can be incentivized through discounts. Pass products have operational and fiscal benefits and improve travel times for customers by speeding up the boarding process. In early 2017, TCaT implemented a new rider incentive for people to acquire a countywide T-Pass at a reduced rate, an 80% discount for six months. That is one example of an incentive program.

Any changes to the existing fare structure must balance the tradeoff between ridership and revenue. Changes to fare structure is an opportunity to make fares uniform across the county, and improve customer experience. For example, although an increase in fares would result in higher revenues, it would also result in a decrease in ridership. Likewise, prices for different fare media should be set with the impacts to revenues and ridership in mind. Price points for different fare media (such as one-way fare, day passes, and monthly passes) create different incentives for users and pass buyers. Ultimately, any changes in fare policy should be practical for transit service in Tulare County.

Why Do It?

During community outreach in October 2014, stakeholders noted that T-Pass is working well and requested that the T-Pass be made available countywide. Community members also stated that transfer fees are costly for many riders, and suggested getting rid of the transfer fee.

Action Area Strategies

Short-Term Action Plan (2016-2020)

▪ **Implement Simplified Countywide Fare Structure.** Currently, transit fares and passes in Tulare County for fixed-route and dial-a-ride services vary in terms of pricing, eligibility, and period. Passengers must navigate a complex system of prices to pay their transit fare. Each provider offers discounted senior and disabled fares; however, the price and age eligibility are not consistent. Only Dinuba Area Regional Transit (DART) offers a discounted student fare. Each provider allows children to ride for free; however, age eligibility and number of children per adult varies.

Fare structures should be uniform and simplified across transit modes and providers in Tulare County. A consistent countywide fare structure should be a high priority for the transit operator group and may best be accomplished by establishing a Joint Powers Authority (see recommendations for Governance) to ensure uniform and representative decision making. However, a Joint Powers Authority is not a pre-requisite, what is most important is to address the uniformity of the fare system. Two potential countywide fare structures for Tulare County are summarized in Figure 4-1 and Figure 4-2. The first fare structure includes a consistent base fare across all fixed-route services. The second fare structure includes a higher "premium" fare for TCaT services. Ridership and revenue impacts of the two fare structure alternatives are detailed in Chapter 3.

Estimated Capital Cost: $

Estimated Operating Cost: $

Figure 4-1   Conceptual Tulare County Fare Structure – Alternative 1

Fare Product	Price
Cash Fare Products	
Adult	$1.50
Youth (age 6-18)	$1.00
Senior (age 65 and older)	$0.75
Disabled/Medicare card holder	$0.75
Children (age 5 and younger) – up to 4 children per paying adult	Free
Regional Pass Products	
Adult Day T-Pass	$3.00
Reduced Day T-Pass (Senior/Disabled/Medicare card holder)	$1.50
31-Day T-Pass	$50.00
Reduced 31-Day T-Pass	$25.00
Future Fare Products	
Reloadable Smart Card E-Purse	Purchase Price: $2.00 Stored Value: $5 to $100
College Student Semester Pass	To Be Determined

Figure 4-2   Conceptual Tulare County Fare Structure – Alternative 2

Fare Product	Price	
Cash Fare Products	**Non-TCaT**	**TCaT**
Adult	$1.50	$2.00
Youth (age 6-18)	$1.00	$2.00
Senior (age 65 and older)	$0.75	$0.75
Disabled/Medicare card holder	$0.75	$0.75
Children (age 5 and younger) – up to 4 children per paying adult	Free	Free
Regional Pass Products		
Adult Day T-Pass	$3.00	
Reduced Day T-Pass (Senior/Disabled/Medicare card holder)	$1.50	
31-Day T-Pass	$50.00	
Reduced 31-Day T-Pass	$25.00	
Future Fare Products		
Reloadable Smart Card E-Purse	Purchase Price: $2.00 Stored Value: $5 to $100	
College Student Semester Pass	To Be Determined	

- **Increase Availability of Transit Fare Media and Sales Locations.** Ultimately, Tulare County should strive to make the purchase of fare products as easy as possible for customers. Fare products should be available at all regional transit centers, including Visalia Transit Center, Porterville Transit Center, Tulare Transit Center, Dinuba Transit Center, and Whitney Transit Center. Tulare County should partner with local retailers for additional distribution of pass products. Common partnerships in other communities include grocery stores, convenience stores, senior centers, and local government facilities. Additionally, all fare products should be available online via the proposed countywide transit website.

  Estimated Capital Cost: $

  Estimated Operating Cost: $

- **Establish Regional Revenue Sharing Agreements.** As described in this chapter, several models exist for regional revenue sharing agreements. Tulare County must develop agreements to formally establish how revenue will be shared among regional entities. A revenue sharing agreement will be essential for the successful implementation of a regional fare structure and medium-term recommendations, including a regional smart card and mobile ticketing.

  Estimated Capital Cost: $

  Estimated Operating Cost: $

- **Enhance and Establish New Pass Programs.** This recommendation involves creating new partnerships by developing pass programs with regional colleges and major employers. A new transit pass for College of the Sequoias students was introduced in the fall of 2010. Students pay a small fee each semester for an unlimited pass, with a small funding match provided by the College. All students pay the fee whether they ride transit or not, which is consistent with student pass best practices. Similar pass programs could be developed with Porterville College, Reedley College, and major employers in an effort to improve access to education and reduce single-occupancy driving.

  Tulare County will need to determine the preferred approach for pass contributions and fare distribution strategies. The most common financial contribution approaches include the following:

  – Contribution determined by current student, faculty or employees as reported by the participating organization (fee may be different for students, faculty or staff)

  – Contribution determined by ridership

  – Annual fixed fee (same price, regardless of institution size or usage)

  Figure 4-3 outlines the three methods and identifies the major advantages and disadvantages for each. No method is necessarily optimal, but selecting one method versus another does include tradeoffs that should be weighed by Tulare County, the participating institutions, and other key stakeholders.

  Implementation of a program also requires several additional steps, including distribution of fare products and determining how those fares will be validated onboard transit vehicles. Figure 4-4 provides a description of various fare distribution strategies, and potential advantages and disadvantages.

  Estimated Capital Cost: $

  Estimated Operating Cost: $

Figure 4-3   Potential Advantages and Disadvantages for Contribution Approaches

	Advantages	Disadvantages
Contribution Determined by Number of Full Time Equivalent (FTE) Students/Faculty/Staff at Start of Term of Agreement	• Distributes cost equally among all potential users • Allows for costs to be determined up-front (presuming number of participants is a known quantity—see disadvantages)	• Contribution may not be commensurate with actual usage • Challenging to implement at universities with large percentage of part-time students (community colleges) or organizations with frequent staff turnover
Contribution Determined by Projected Ridership	• Contribution amount is proportional to actual boardings from participating institution • Ridership data is available by fare product type, making this method somewhat simple to calculate	• Requires post-analysis on ridership and invoicing • Revenues may vary from month to month based on ridership
Fixed Fee	• Simple and consistent to implement • Stable revenue level	• Regressive pricing for smaller institutions

Figure 4-4   Pass Program Fare Distribution Strategies

	Advantages	Disadvantages
Separate Fare Product		
Magnetic Farecard	• Automatic tallying of usage at farebox • Reduces need for operators to validate fare media	• Requires on-site (campus) encoders to issue/re-issue fare media • Susceptible to damage • At high-volume boarding locations, may create operational delays (as compared to flash pass)
Integrated with Student or Employer ID		
Encoded Magnetic or Smart Card Student/Employer ID	• Automatic tallying of usage at farebox • Reduces need for operators to validate fare media • More durable than standard magnetic farecard • Reduces the need to create/distribute fare media	• Requires on-site (campus) encoders to issue/re-issue fare media • Requires coordination of fare media and fare technology across various participants
Flash Pass	• Ease of distribution • Potential for stickers to provide smart card capabilities • Reduces the need to create/distribute fare media	• Flash pass must incorporate an expiration (stickers are commonly used at universities and must be updated or replaced each semester) • Usage must be tallied by driver

▪ **Establish Farebox Recovery Ratio Goal.** The farebox recovery ratio is an important metric that can be used to help better understand both costs and fare revenues. In California, transit operators are required to meet a farebox recovery ratio of at least 20% in urban areas and 10% in rural areas to be eligible for state funding.

In addition to this goal, establishing a more fine-tuned internal goal for farebox recovery ratio can provide an important framework for other fare-related decisions. For example, in evaluating new fare products and pricing, a farebox recovery ratio goal provides guidance on the need to raise additional revenues versus other potential needs. In addition, a farebox recovery ratio goal provides justification for a fare change. The farebox recovery ratio goal can change over time and can be a specific number or range. Institutional or university partnerships can bring in additional fare revenue that can be applied to the farebox recovery ratio calculation and may warrant an increase in the farebox recovery ratio goal.

> Estimated Capital Cost: -
> Estimated Operating Cost: -

▪ **Implement Guidelines for Fare Increases.** Several factors need to be considered when raising fares, ranging from how fares are perceived by the transit-riding public, whether they are in line with peer agencies, to what is the appropriate ratio between passenger fares and operating costs. In the future, Tulare County should consider a transparent fare increase policy that enables more regular fare increases to stay in line with inflation and other revenue related trends. It is also necessary to accomplish this uniformly across the county. This means there needs to be some form of joint decision making in place to accomplish that goal (see section on governance). The following guidelines are provided for consideration:

– On a semi-annual basis, the average fare, subsidy per passenger, and farebox recovery ratio should be reviewed when developing the annual operating budget. If all three ratios are declining and costs to operate the service are increasing, consider a fare adjustment.

– The local consumer price index should be monitored; if increases are greater than 5% in any given year, consider increasing fares to keep pace with inflation.

– Monitor and track use of all passes and if there is a significant drop in sales with any fare product, consider a fare adjustment for that product. Similar to underperforming routes, underperforming fare products should be evaluated for adjustments or elimination.

– For all future fare increases, pass products prices should be rounded to the nearest dollar. Single-ride prices and/or day pass products should be rounded to the nearest quarter.

– Fuel prices should be considered as part of a fare adjustment policy. However, given the volatility in fuel prices, it may be difficult to use average cost of fuel as a consistent barometer for a fare increase policy.

– Across the board fare increases are simple and transparent, but will often create disproportionate impacts. These types of fare increases should be avoided unless supported by evidence that the strategy meets specific goals at the time of evaluation.

– These guidelines assume that service levels would remain constant. Fare increases paired with service level increases may be warranted assuming support exists for both. Fare increases paired with service cuts should be avoided when possible.

– Premium services, or services that offer a competitive time or comfort advantage over vehicle or transit alternatives should be priced at a higher level to differentiate the product.

> Estimated Capital Cost: -
>
> Estimated Operating Cost: -

Medium-Term Action Plan (2021-2030)

▪ **Implement Regional Smart Card and Mobile Ticketing.** Porterville Transit implemented the County's first smart card program in 2013. Smart cards are becoming industry standard for transit agencies across the country due to their convenience among passengers and operational benefits. Customers load custom amounts of money onto their smart card either online or at ticket vending machines at transit centers. Fares are deducted when customers tap their card on the farebox upon boarding the bus. Regional smart cards allow customers to access multiple transit providers using a single fare media. To pursue implementation of a regional smart card, transit agencies in Tulare County should coordinate farebox technology as well as revenue sharing agreements. Mobile phone ticketing is another cashless fare technology that should be pursued by transit operators.

In the medium-term, Tulare County should evaluate the costs and potential interest in smart card technology to simplify ease of fare payment among current and potential customers. Tulare County should also investigate implementation of mobile phone ticketing as smartphone ownership increases.

> Estimated Capital Cost: $$
>
> Estimated Operating Cost: $

Implementation

1. TCaT recently, August 2016, adopted a fare change that implies Alternative 2 as the alternative of choice. The results of that fare change should be evaluated to ascertain if the change met the desired goals of the County and a decision reached on a countywide approach to fares for the long-term. Clearly there is a tradeoff between revenue and ridership that can best be evaluated based on ridership and revenue response as a result of this most recent change.

2. In the past year the transit forum and TCAG began working on adopting a uniform age threshold for eligibility for reduced fare. The process stalled when one jurisdiction was unwilling to sign on. TCAG should revive the effort and implement with jurisdictions willing to adopt the uniform threshold and allow time to take its course with those unwilling to adopt the countywide standard.

3. TCAG and the transit forum should next take up the topic of student fares. Presently, only Dinuba and V-Line have a student fare. Further, in Dinuba the student fare is only available on the Dinuba Connection. It should be determined if, from a countywide policy perspective, a

student fare is desirable. If not, a move should be made to bring the two student fares that exist in line with regular adult fare.

4. Intersystem transfers are confusing for riders—particularly infrequent riders who may not be familiar with all the fare rule differences between the agencies. A TCAG-led task force with membership from the transit forum should take on this topic to determine if some of the solutions discussed earlier in Chapter 3, like an extra cost interagency transfer that riders can buy when they pay their originating fare, would be a workable solution to facilitate transfers between systems and simplify communications with customers. Another possible solution would be to offer the T-Pass as a daily pass (in the recommended fare structure).

5. The recommended fare structures are stated in 2016 dollars. As time moves ahead it will become necessary to begin considering a general fare increase. By this time there may be a JPA in place and the task will fall under the authority of a JPA. If not, the lessons learned from the TCaT fare changes need to be considered and a resolution reached at the county level if a single adult fare is advantageous versus a higher cost fare for longer distance travel.

6. If the JPA has been formed, then the effort should begin focusing on a fare structure and fare collection system that is intended to reduce barriers to transit system access. This should be a countywide effort focused on selection of a technology (several are listed above) and a fare structure, either Alternative 1 or 2 translated to current dollars, and a program set up to bring all agencies up to the same standard and equipment for fare collection.

ACTION AREA: ROUTES AND SCHEDULES

What Is It?

Local fixed-route service providers in Tulare County provide effective coverage within their jurisdiction. However, several spatial gaps exist across the county. For example, cities in Southeast Tulare County (Lindsay, Strathmore, and Porterville) have limited direct access to other communities in the county in terms of TCaT intercity service.

Expanding the footprint of transit across Tulare County will increase rider flexibility and significantly reduce travel times. Strategic increases in coverage, whether through the extension/realignment of existing routes or the addition of new routes, will improve route connectivity and allow increased access to trip generators.

Reducing the need for transfers makes regional transit trips more attractive (and easier to understand) for both current and potential riders. Strategies to reduce transfers include interlining, branching, and extending routes. Realigning routes to serve major corridors and activity centers can also eliminate the need for transit center transfers for some travelers.

Visalia

Tulare

Porterville

Dinuba

Transit Service

- Dinuba Area Regional Transit (DART)
- Visalia Transit
- Porterville Transit
- Tulare Intermodal Express (TIME)
- Tulare County Area Transit (TCaT) – Local Circulator
- Tulare County Area Transit (TCaT) – Intercity Route
- Sequoia Shuttle - Seasonal Route
- Dial-a-Ride Service Area

- Transit Center
- College
- City / Town Boundary
- County Boundary

Fresno Co
Reedley College
Reedley
Dinuba
Sultana
Orosi
Cutler
Seville
Traver
Woodlake
Ivanhoe
Woodlake DAR
Lindcove
Lemoncove
Kaweah
Three Rivers
Sequoia National Park
Tulare Co
Goshen
Visalia
Exeter
Exeter DAR
Tulare
Lindsay
Strathmore
Springville
Woodville
Worth
Terra Bella
Waukena
Angiola
Alpaugh
Tipton
Pixley
Richgrove
Delano
Pond
McFarland
Kern Co

College of the Sequoias
Visalia Municipal Airport
Porterville College

To/From Visalia
To/From Exeter
To/From Tule River Indian Reservation
To Reedley
From Reedley
Dinuba Connection
North
South

Route Headways

Service frequency has a major influence on transit ridership; high frequency service is considered more attractive because riders won't have to wait as long in between buses. At the same time, frequency has a significant impact on operating costs, and service requirements increase exponentially with improvements in frequency.

Of the five transit agencies operating in Tulare County, four operate trips on clockface headways. The remaining agency operates trips on forty-minute headways, making transfers to and from this operator extremely time consuming for riders.

Note that when a corridor is served by multiple routes, the overall service frequency in the corridor is effectively more frequent than for individual routes. For certain routes serving outlying areas, service frequencies may be reduced to maintain satisfactory farebox recovery ratios.

People can remember repeating patterns much better than irregular patterns. For example, they can remember that service operates every 15 minutes better than they can remember that service operates four times an hour with trips spaced at irregular intervals. In addition, people can also remember schedules that repeat at the same time every hour (clockface headways) rather than those that fall at different times every hour.

Clockface service can help facilitate better transfer connections between routes, particularly at transit centers.

Figure 4-5   Clockface Headways

Departure time		
BAD (Non-Repeating Pattern)	BETTER (Repeating Pattern)	BEST (Repeating Pattern + clockface times)
7:00	7:00	7:00
7:12	7:14	7:15
7:35	7:28	7:30
7:50	7:42	7:45
8:05	7:56	8:00
8:15	8:10	8:15
8:30	8:24	8:30
8:40	8:38	8:45

Service Span

The number of hours per day when transit service is provided along a route, or between two locations, plays a role in determining the effectiveness of transit service for potential users. Transit service must be available near the time a trip needs to be made in order for transit to be a travel option. Ideally, transit service should operate according to the standard time periods specified (peak rush hours, midday, night, etc.) to minimize customer uncertainty.

Passenger needs and transit resources (vehicles, personnel, funding) are key considerations in setting weekday service spans, and in deciding which routes are operated on Saturdays and Sundays. Weekday routes should permit workers and students to make their morning start times, and should end late enough to provide return trips home for second shift workers. Service oriented to non-work travel can start later and end sooner. Sunday service may not be necessary on many routes.

Late night trip times should coordinate with shifts at major retail employment centers and the last classes of the day at higher education institutions in Tulare County, including College of the Sequoias and Porterville College.

Figure 4-6   Weekday Service Span Comparison

Why Do It?

Simple and consistent schedules improve the viability of attractiveness of transit service. Schedule improvements are a strategy to make service better for existing riders and encourage new riders to try transit. In particular, improvements include scheduling service with clockface headways, better coordination between service providers, and adjustments to spans of service to better match demand.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Simplify intercity fixed-routes to attract new riders and allow customers to plan trips with ease.** Several short-term action strategies will help Tulare County simplify intercity routes:
  - Construction of a Transit Center in Exeter is a suggested strategy to provide an off-street transfer facility that will enhance customer experience and serve as an effective terminal point for a recommended longer term Mooney/Exeter branch line and the re-aligned TCaT Route 40 Southeast County.
  - Extend/re-align TCaT Route 40 to Exeter.
  - Extension of Route 10 North County to Reedley is recommended to improve access to higher education.
  - Shortening of Route 20 South County and extension of Route 80 Terra Bella/Porterville to Delano is recommended to improve intercity connectivity within Tulare and surrounding counties.
  - Create a direct connection between Porterville and Tulare with a revised Route 90.

These recommendations are illustrated in Figure 4-7.

> Estimated Capital Cost: $
>
> Estimated Operating Cost: $

Figure 4-7   Short-Term Strategies to Simplify Intercity Routes

▪ **Expand service span.** Span of service should be designed to be consistent and predictable across routes and providers. Late night trip times should coordinate with shifts at major retail employment centers and the last classes of the day at higher education institutions in Tulare County, including College of the Sequoias and Porterville College.

DART and TCaT service should be extended later in the evening to be in line with other service providers in Tulare County. Doing so will improve intercity connectivity and increase the availability of transit for college students attending evening classes and employees working evening shifts. TCaT does not provide evening service on any weekday routes. Dinuba provides evening service on Friday and Saturday only at 60-minute headways. The majority of Visalia, Porterville, and TIME service extends to 9:00 p.m. or later. As of 2016, most Dinuba routes (North, South, and Trolley) end at 6:00 p.m. and several of TCaT's routes end before 7 p.m. (10, 50, and 60), including two that end before 5:00 p.m. (70 and 80). Expanding the span of service on these routes by adding later evening service is therefore recommended as a short-term action.

> Estimated Capital Cost: $
>
> Estimated Operating Cost: $$

▪ **Improve route headways.** Whenever possible, frequencies should be set at regular clockface intervals. Tulare County transit providers should design frequency of service to be consistent and predictable across routes and providers. Creating clockface headways based on 15-, 30-, or 60-minute headways allows riders to know the schedule without having to memorize specific departure times.

Porterville Transit should make service restructure a primary focus of its next Short Range Transit Plan. Specifically, in conjunction with planning for the needs of electric buses, Porterville Transit should consider realigning, extending, and/or consolidating its routes to create a network of 30- and 60-minute cycle times. In addition to simplifying schedules for intracity travel, this would allow timed connections with TCaT intercity routes and would also allow consideration of integrated design of electric buses with the route system in a way that promotes the greatest efficiency.

TCaT should focus its next Short Range Transit Plan on streamlining infrequent service so that all routes operate at no more than a headway of 60 minutes, with more frequent service offered in 30- or 15-minute intervals as demand demonstrates the need.

> Estimated Capital Cost: $$$
>
> Estimated Operating Cost: $$$

Medium-Term Action Plan (2021-2030)

▪ The countywide network should continue to expand particularly in terms of frequency of service, this includes the of BRT as described below.

▪ Transit networks that operate within Visalia, Tulare, and Porterville should be expanded to incorporate higher frequency services, 15 minutes or less. This should be accomplished in corridors where the needs for that level of service is demonstrated or there is high potential based on new development along the corridors.

> Estimated Capital Cost: $$$

Estimated Operating Cost: $$$

ACTION AREA: LAND USE

Transit and land use work hand-in-hand to support strong, sustainable communities. Transit demand is strongly related to development patterns and, in particular, development density. In areas with denser development and more people and employees, transit can be provided in close proximity to many people. Combined with a good pedestrian environment, transit can become more convenient and well used.

What Is It?

Integrating Land Use and Transit

Extensive research shows that the built environment–including neighborhood form, land use patterns, transportation networks, and urban design–significantly affects travel behavior. To understand the connection between land use and transportation in Tulare County and how land use decisions impact the future of transit in the county, a framework consisting of "the 6D principles" can be applied.

Community destinations, distance between those destinations, density, land use diversity, design, and demand management, (often called the six "Ds" or "6Ds") are key factors commonly cited as influencing travel behavior, including the likelihood that people will choose to ride transit.[2,3] Figure 4-8 summarizes the principles of the 6D factors.

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[2] Cervero, Robert and Kara Kockelman (1997), "Travel Demand and the 3Ds: Density, Diversity, and Design," Transportation Research Part D, Vol. 2, pp 199-219.

[3] Ewing, Reid and Robert Cervero (2001), "Travel and the Built Environment: A Synthesis," Transportation Research Record 1780, Washington DC: Transportation Research Board, pp 87-114.

Figure 4-8   Summary of the "6D" Principles

6D Factor	Principles
1. Destinations	Align major destinations along a reasonably direct corridor so that they can be efficiently served by frequent transit.
2. Distance	Provide an interconnected system of pedestrian routes so that people of all ages and abilities can walk to transit service quickly and conveniently from the places they live, work, shop, and play.
3. Density	Concentrate higher densities as close to frequent transit stops and stations and multimodal nodes as possible to minimize walking distances to more destinations for more people.
4. Diversity	Provide a rich mix of pedestrian-friendly uses to facilitate street-level activity throughout the day and night, increase affordability, and enliven the public realm.
5. Design	Design high-quality, pedestrian-friendly spaces that invite walking and bicycling and connect people to transit.
6. Demand Management	Provide attractive transportation options to driving.

Source: Nelson\Nygaard

Destinations

People are more likely to choose transit if it, like private automobile travel, brings them quickly and directly to their destinations. The key to maximizing transit access to major destinations is to ensure that most development occurs along the community's busiest corridors and effective transit service serves these corridors. In Tulare County, major destinations include College of the Sequoias, Porterville College, downtown Visalia, and the main corridors connecting these destinations such as Mooney Boulevard and Highway 280.

Distance

A key to making transit more attractive is minimizing the distance between destinations by providing direct connections at the neighborhood scale. Distance does not just refer to the actual distance from point A to B, but also the perceived distance based on quality of environment. In downtown Visalia, the blocks are designed in a short grid-like pattern, providing multiple options for people to travel between destinations. Conversely, areas south of downtown Visalia such as Mooney Boulevard have street patterns with very large blocks. This pattern makes it much more difficult to walk, bike, and access transit. A key for Tulare County will be to limit the walking distances from key destinations to transit stops and centers.

Density

A key question in the future will be how to accommodate projected population and employment changes in an efficient manner that protects community character and valuable agricultural lands, while at the same time supports efficient transit service. Tulare County's population is projected to increase steadily at an annual rate of approximately 2% through 2040. Employment in Tulare County is scattered along three main corridors – Highways 99, 65, and 63 – and its three primary urban areas (Visalia, Porterville, and Tulare). Concentrating higher densities of population and employment centers as close to frequent transit stops and stations and multimodal nodes as possible will be key for integrating land use decisions and transit investments in the county.

Figure 4-9   Building Types and Transit

Three and four story mixed use buildings inserted in existing urban fabric can increase density to rates supportive of high quality bus service.

Even low rise multifamily homes or encouragement of single family homes on narrow lots can lead to modest density increases.

Much denser suburban apartments built in greenfield areas can be very difficult to serve with transit and can strain local transit systems by spreading resources more thinly.

Diversity

The liveliest and most attractive communities are those with a rich mix of pedestrian-friendly uses that facilitate street-level activity around the clock. Pedestrian-scale buildings with lively facades adjoining the street engage pedestrians as they walk by. These characteristics are a key part of what supports pedestrian access to the nearby transit services. Encouraging a mix of uses and diverse building facades reachable by transit routes is critical to support easy access to both a rich urban environment and effective transit service.

Design

High-quality, pedestrian-friendly spaces that invite walking and biking, and well-designed transit waiting areas are critical to a complete transportation system. Pedestrian and bicycle friendly designs are discussed in detail later in this chapter. Well-designed transit waiting areas enhance the transit riding experience by providing customer amenities such as indoor waiting areas, customer service center, real-time arrival information, bike racks, restrooms, and Wi-Fi. Tulare County has several well-designed transit centers including Dinuba, Porterville, Tulare, Visalia, and Whitney Transit Centers. Maintaining pedestrian and bicyclist access to these transit centers is key.

Demand Management

Another critical part of developing both successful transit services and a truly multimodal transportation system is developing effective demand management strategies. Travel demand management strategies are largely aimed to encourage use of the multimodal services (transit, carpooling, bike, walk, etc.) and discourage the use of single-occupancy vehicles. Parking management, including limiting supply and applying pricing strategies for use of the spaces, is one of the most effective ways communities and institutions can support transit services.

Transit-Oriented Development

Transit-oriented development (TOD) is land development located near transit stations or stops that includes a mixture of housing, office, retail, and/or other amenities integrated into a walkable neighborhood. TOD leverages the access transit provides to regional destinations and focuses development in close proximity to those places.

At its most basic, TOD is a mixed-use community that encourages people to live near transit services and reduces their dependence on driving. The most effective TODs are located less than a half-mile (or 10 minute) walk from a transit stop or station. Beyond just development near transit, TOD is development that strives to give people choices in how they travel, minimizing the impacts of traffic and creating a sense of community and place.

Putting these principles into practice can help to create transit-supportive communities that integrate transportation and development. TOD features vibrant streetscapes, pedestrian-oriented buildings, and land use characteristics that make it convenient and safe to walk, bike, and use public transit.

The primary goal of TOD in most communities is to build upon transit investments by creating development that supports transit ridership. However, TOD also provides a number of secondary benefits to transit agencies, communities located close to transit, and the larger metropolitan region. Some of the benefits of TOD include:

- More sustainable and efficient use of land, energy, and resources
- Increased transit ridership and fare revenue
- Potential for added real estate value created through increased or sustained property values where transit investments have occurred
- Reduced household driving and, thus, lower regional congestion and transportation expenditures
- Improvements to air quality and reduced greenhouse gas emissions due to fewer miles driven

- Walkable communities that accommodate healthier and active lifestyles
- Improved access to jobs and economic opportunity for low-income people and working families
- Concentrated development and activity that allows for community reinvestment

To achieve these benefits, development must be truly transit-oriented rather than just transit-adjacent. The differences between these two types of development are described below.

Figure 4-10   Transit-Oriented versus Transit-Adjacent Development

Transit-Oriented Development	Transit-Adjacent Development
- Grid street pattern - Higher densities - Limited surface parking and efficient parking management - Pedestrian- and bicycle-oriented design - Mixed housing types, including multifamily - Horizontal (side-by-side) and vertical (within the same building) mixed use - Office and retail, particularly on main streets	- Suburban street pattern - Lower densities - Dominance of surface parking - Limited pedestrian and cycling access - Mainly single-family homes - Segregated land uses - Gas stations, car dealerships, drive-through stores and other automobile-focused land uses

Source: John Renne (2009), "Measuring the Success of Transit Oriented Development," in Transit Oriented Development: Making It Happen, Carey Curtis, John Renne and Luca Bertolini (Eds.) Ashgate (www.ashgate.com), pp. 241-255.

Complete Streets

Complete Streets are designed for safe use by everyone, including pedestrians, bicyclists, motorists, and transit riders, regardless of age or ability. On complete streets it is easy to cross the street, walk to shops, push a stroller, bike to work, and access reliable transit. At the local level, complete streets policies and designs can help to support local and regional transit investments. Complete streets policies formally direct transportation planners and engineers to design and construct balanced streets which safely accommodate all anticipated users. In Tulare County, the communities of Goshen, Pixley, and Traver have adopted complete streets plans. Additionally, complete streets plans are in progress for the communities of Cutler, Ducor, Earlimart, Orosi, Strathmore, and Tipton.

Figure 4-11   Example of a Complete Street

Image from Nelson\Nygaard

Bicycle Access

Improving bicycle access to transit increases catchment areas around transit stops, and provides improved mobility. Improving bicycle facilities in and around transit corridors can bring new riders to the system and help solve first- and last-mile connections. This is especially useful in lower-density urban environments where feeder bus service is not feasible. Bicycle-friendly safety enhancements include bike protected intersections near transit stops, bike stations and transit centers, bike parking at major destinations, and racks for bikes on buses.

Access to transit centers and stops is improved by providing bike lanes, paths, and improvements to the roadway to make it safer to ride to transit. Improvements to bicycle infrastructure can include the following:

Bike Access and Integration

All fixed-route transit vehicles in Tulare County, are able to carry bicycles using platform racks on the front of the coach, which can help transit riders get to their destination. Riders whose destinations are greater than one-half mile from the nearest transit stop benefit from bringing their bike with them on the bus.

Easily accessible and secure bicycle storage is essential for transit customers who access bus stops by bike. The most basic form of bicycle storage is a bike rack. Bike racks can be as simple as a U-shaped metal pole, but can also be designed to function as public art. Bike lockers are a costlier, but more secure, bicycle storage option. Bike lockers are completely enclosed and are only accessible using a key, reducing the risk of theft. Bicycle storage should ideally be located in a lighted area close to a bus stop or other area with high pedestrian activity.

Bicycle shelters located at transit centers can provide added storage capacity, shelter from the elements, and a greater sense of security. Bicycle shelters typically include amenities such as air pumps, tools for basic repairs, snack/drink machines, and route/schedule information.

Bikeshare

Bikeshare systems allow users to rent bicycles for short time periods. Users rent bicycles directly from a docking station and then return the bike to another station near their final destination. Most bikeshare systems have membership plans, as well as daily and weekly pass options, that allow users to use the service as frequently as they would like.

By locating bikeshare docks near bus stops, transit agencies can extend the area that riders can easily access by bus. Some transit riders may choose bikeshare over riding their personal bicycles in order to reduce the uncertainty related to bike rack availability on the bus.

Figure 4-12   Examples of Bikeshare Docking Stations near Bus Stops

Figure 4-13   Visalia and Porterville Vehicles with Bike Racks

Figure 4-14   Examples of Bike Storage at Bus Stop

Figure 4-15   Bicycle Shelters

Pedestrian Friendly Streets

Pedestrian friendly streets near transit stops provide a safer and more pleasant experience for existing riders and encourage choice riders to take transit. Traffic calming improves the actual and perceived safety of pedestrians by increasing transit awareness among motorists.

As a general rule, the average transit rider is willing to walk a quarter mile to access fixed-route bus service and up to a half mile for high capacity services (such as bus rapid transit) that operate with higher frequencies and over longer distances. For potential riders who do not live or work within close walking distance to transit services, the prospect of a long walk before or after their bus ride may be enough to deter transit use entirely.

It is neither practical nor cost-effective for transit service to be within walking distance of everyone, especially in lower density areas. However, recognizing that walking is the primary mode for accessing transit, cities and transit agencies have effectively improved accessibility for riders by making improvements to pedestrian infrastructure within the typical walking distances around transit stations. Strategies for creating more pedestrian friendly streets may include:

- **Wide Sidewalks:** Continuous sidewalks should be at least four feet wide and seamlessly connected to the sidewalk network in the area. A wide and accessible sidewalk network should be complete within a half mile of every transit stop and station.

- **Curb Extensions:** Streets that have on-street parking typically have a required set-back from an intersection to increase visibility. This dead space at the intersection can be rededicated to expand the pedestrian realm and reduce crossing distance. Curb extensions also improve pedestrian and motorist sightlines at intersections and help manage vehicle turn speeds.

- **Pedestrian Refuges:** Where there is higher volume automobile traffic or higher speeds present, pedestrian refuge islands, center medians, bollard or planter protection, on-demand push button pedestrian crossing lights, and curb extensions and bulb-outs should serve as traffic calming devices.

- **Well-Marked Crossings:** Transitions and street crossings should be well marked and preferably include raised crossings that prioritize pedestrians. Raised crossings are better for people walking and rolling and also serve as a traffic calming measure.

- **Signals:** All signals should have a pedestrian countdown and, if necessary, a push-button to allow a pedestrian to request a crossing. Pedestrian-only crossing phases at very busy locations—such as downtown—allow pedestrians to cross an intersection in any direction. Leading pedestrian intervals give pedestrians a few seconds of head start to claim the crosswalk ahead of turning traffic.

- **Traffic Calming:** Vertical and horizontal traffic calming can greatly improve the quality of the pedestrian environment. These features include road diets, speed bumps, speed tables, raised intersections, diagonal diverters, chicanes, traffic circles, and shared streets.

- **Universal Design and Accessibility:** Intersections should provide facilities that can safely move people of all ages and abilities across the street. Design elements like curb ramps, level landings and gutter seams, visible and audile signals, smooth surfaces, accessible push-buttons (or default WALK phases), and signage that may help pedestrians navigate intersections should be integrated into intersection design.

- **Lighting:** Well-lit crosswalks and sidewalks provide increased safety and security. In areas with many pedestrians, lighting at the pedestrian scale should be considered to better light sidewalks and walkways.
- **Wayfinding:** Street signs, maps, and unique area treatments—such as historical displays and public art—help pedestrians orient themselves and create interest and comfort. Streetscapes that are inherently easy to navigate invite travel by foot and make driver and pedestrian behavior more predictable and safer.
- **Land Use, Landscaping, and Amenities:** The environment beyond the street is also important to provide a comfortable and inviting pedestrian environment. Street trees and landscaping are another element of a walkable environment. Especially in warmer climates, such as California's Central Valley, adding trees reduces the urban heat island effect and makes walking to transit stops and waiting for transit far more pleasant. Amenities include benches and drinking fountains, street-fronting doorways and windows, and buildings designed with pedestrians in mind, including spaces for street-level retail, varied façades, and interesting architectural features.

Not every transit stop or station needs all of these improvements to be accessible; however, a sidewalk or walking path and a safe crossing are critical for all types of stops and stations.

Why Do It?

Integrating land use decisions with transit investments helps to ensure the success of local and regional transit investments. As population and employment grow in cities throughout Tulare County cities, concentrating population and employment around transit will be key. At the local level, complete streets policies and designs that provide safe and pleasant pedestrian and bicycle access to transit also help to support transit investments. Pedestrian friendly streets provide a safer and more pleasant experience for existing and potential riders. Improving bicycle access to transit increases catchment areas around transit stops, and provides improved mobility. Improving pedestrian and bicycle facilities in and around transit corridors in Tulare County can bring new riders to the system and help solve first- and last-mile connections.

Coordinating land use and transit will help achieve LRTP goals of providing convenient countywide service by ensuring that transit efficiently connects people and places in Tulare County. Complete streets policies and planning for pedestrian and bicycle access to transit moves the county towards the LRTP goal of providing a transit system that is *an Option for Everyone* by creating access to transit that works for people of all ages and abilities in the community.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Improve Street Connectivity.** Corridors with heavy traffic, highways, and circuitous street networks can all be barriers to walking, presenting connectivity challenges. Potential pedestrian access improvements include new pathways and/or pedestrian crosswalks. Ensure sidewalks and safe pedestrian crossings are present on and adjacent to transit corridors.

    > Estimated Capital Cost: $$$
    >
    > Estimated Operating Cost: $

- **Enhance Pedestrian Crossings.** Adding new (or redesigning old) pedestrian crossings around transit stops and stations can improve access as well as rider safety and comfort. Many of Tulare County's primary transit corridors are major arterials, which are wide, high-speed roads that carry high volumes of traffic and are difficult for pedestrians to cross. Enhancing crossings is a critical part of making access to transit both safer and more comfortable. Shorten crossing distances at major intersections with curb extensions or pedestrian refuges.

    > Estimated Capital Cost: $
    >
    > Estimated Operating Cost: $

- **Plan for Safety.** Require all transit plans to include evaluation and policies on transit safety and security, as stated in the Tulare County Regional Transportation Plan and Sustainable Communities Strategy, 2014. Encourage opportunities to involve jurisdictions in planning for safety at the local level.

    > Estimated Capital Cost: $$
    >
    > Estimated Operating Cost: $

- **Improve Bicycle Access.** Tulare County should continue efforts to accommodate bicyclists by improving bicycle access to bus stops and transit centers. Finally, the County should ensure that transit is integrated into the Tulare County Regional Active Transportation Plan.

    > Estimated Capital Cost: $$
    >
    > Estimated Operating Cost: $

- **Improve Bicycle Infrastructure.** Providing bicycle parking at transit facilities is a critical element in achieving high levels of bicycle access to transit. Installing bicycle shelters at transit stops or stations requires investment, and provides even more security and comfort to those who want to travel by bike and transit, and is recommended as a medium-term improvement to bicycle infrastructure in Tulare County. The second medium-term recommendation for improving bicycle infrastructure in Tulare County is to implement a bikeshare program, with stations located near transit centers and high ridership stops.

> Estimated Capital Cost: $$
>
> Estimated Operating Cost: $

- **Adopt Complete Streets Plans and/or Policies.** In Tulare County, the communities of Goshen, Pixley, and Traver have adopted complete streets plans. Complete streets plans are in progress for the communities of Cutler, Ducor, Earlimart, Orosi, Strathmore, and Tipton. Other communities should adopt complete streets policies that will encourage planners and engineers to design and construct streets that accommodate all anticipated users, including transit riders.

  > Estimated Capital Cost: -
  >
  > Estimated Operating Cost: -

Medium-Term Action Plan (2021-2030)

- **Encourage Transit-Oriented Development.** Development along high frequency transit routes can help to create transit-supportive communities that integrate transportation and development. The most effective TODs are located less than a half-mile (or 10 minute) walk from a transit stop or station. In Tulare County, development in conjunction with future plans for Rapid Bus along corridors such as Mooney Boulevard, Highway 280, or others should be encouraged.

  > Estimated Capital Cost: -
  >
  > Estimated Operating Cost: -

- **Improve Sidewalk Infrastructure.** Improving sidewalk infrastructure increases the attractiveness of walking, while allowing the opportunity to design for safety (e.g., traffic buffers), accessibility (e.g., wheelchair ramps), and security (e.g., lighting).

  > Estimated Capital Cost: $$$
  >
  > Estimated Operating Cost: $

ACTION AREA: PREMIUM TRANSIT

As Tulare County continues to grow, the implementation of premium transit services such as bus rapid transit and connections to high-speed rail will be crucial to the viability and economic vitality of the region.

What Is It?

Bus Rapid Transit and Rapid Bus

Service Characteristics

Bus rapid transit (BRT) is a high-quality service that operates much like light rail, providing a convenient and reliable alternative to traditional bus service. BRT can have a range of features, including limited stops, faster travel times, prepayment, dedicated running ways, specialized

vehicles, and improved boarding access. Nearly 200 cities throughout the world have developed BRT services that have made bus service much more attractive and have greatly increased ridership.

Figure 4-16   BRT Characteristics

BRT Implementation Steps

Planning for Rapid Bus or Bus Rapid Transit requires a thorough implementation plan:

- **Conduct feasibility study:** A study of the feasibility of implementing BRT on Mooney Boulevard in Visalia should be undertaken. The opportunity for Federal Transit Administration assistance in the form of grant funding increases when a potential corridor has established ridership (typically a minimum of 5,000 daily boardings), multiple transit-supportive land uses, and economic development potential. Studying corridors that have a high probability of funding, community support, and increased ridership is an essential first stop for the implementation of BRT service.

- **Identify desired outcomes:** The primary goal should be to increase transit ridership overall and improve transit's market share in the designated corridors to provide greater access and reduce production of greenhouse gases. Other goals and objectives can include reduced end to end trip time, improved reliability both throughout the day and over time as traffic and demand increases, encourage economic development, and an improved image for the transit agency and overall corridor enhancements. In the case of the latter, implementation of BRT or Rapid Bus can be part of a corridor enhancement program that improves pedestrian and bicycle access, removes auto bottlenecks, and enhances landscaping and other aesthetics of the corridor. It is not essential to include all of these goals and objectives or to employ them over the entire corridor; however, it is critical that the importance of each goal and objective be clarified at the very beginning.

- **Identify transit-supportive land use:** Land use regulation has the potential to help the county take advantage of transit-supportive development policy and implementation. Dramatic future population growth and a renewed focus on infill development will provide new opportunities to build upon this legacy. Furthermore, rising construction costs demand that governments at all levels focus on moving people efficiently within existing corridors and rights-of-way. Economic growth in the region will depend on continued investment in a transit system that can provide people efficient access to jobs, schools, shopping, medical services, recreation, and the other life activities that make up a vibrant community. Achievement of other land use, financial, and equity goals also rely heavily on a well-formed public transit system. For more details, see Land Use Action Area.

- **Identify partners:** BRT projects require a consensus among the partners needed to implement the project. The route could conceivably operate over a right-of-way under the control of the County, and multiple cities. Institutions that will be served by the project and formal associations that represent property owners, businesses, and residents along the corridor should also be engaged. Before discussing what could be implemented it is important to agree on why something should be implemented – a consensus of the desired outcomes. Equally important is to identify partnership barriers. The changes necessary to make a corridor successful as a high transit investment corridor can be very difficult and time consuming, therefore costly, when the corridor is controlled by a state Department of Transportation. A worthwhile exploration at the beginning is to determine if CalTrans is open to the idea of repurposing a right-of-way for transit service. If the pathway seems reasonable perhaps Caltrans would be one of the partners. If, on the other hand, it appears that departmental policy and regulation create insurmountable barriers to progress a conversation about the state turning over

jurisdiction of the right-of-way to a local entity may be the healthier and more successful pathway.

- **Engage the public:** Concurrent with identifying and developing consensus with partners is early public engagement. Most effective are exercises that allow members of the public to be part of the design process. This can be done in a variety of ways from a full blown design charrette to simple exercises where participants identify priorities and outcomes. While it is important to have a clear vison why the agency wants to pursue the project before developing partnerships and engaging the public, there also needs to be openness to making changes based on partner and public feedback.

- **Identify funding:** Consider all potential funding sources, the requirements needed to receive funding from each source, and the possible percentage or amount of funding that could be received from each source. Identifying which sources of funding that will be pursued will determine the next steps needed for implementation. Some funding sources such as Federal Small Starts funding is very competitive and requires additional steps in the planning process. Although simplified over the years the project must rank medium to high on seven project justification criteria – project justification warrants, mobility improvement, cost effectiveness, congestion relief, land use, economic development, and environmental benefits. While it is possible to be competitive if the project ranks below medium on one or two criteria, it should equally rank high on one or two criteria.

- **Conceptual design:** A conceptual design of the project is necessary to estimate costs and prepare grant applications or initiate environmental work on the project. In addition to the requirements of the selected funding sources it is important to identify any other requirements such California Environmental Quality Act. This must be driven by clearly articulated goals and objectives, consensus among partners, and informed by public engagement.

- **Environmental and grant applications:** As described above, follow all steps required to meet all applicable regulations and to meet the requirements of any funding source sought.

- **Final design and procurement:** Once funding is secured, proceed with final design and procurement of vehicles and other capital expenditures such as fare machines. Prior to this, decide on the process for designing and the construction involved in completing the project. For example, will a design–build process be employed or will the contractor be procured separately from the design.

- **Continue public engagement:** The public must remain engaged throughout the project. Property owners and businesses along the corridor will be particularly sensitive to the impact the project will have on their property or business both during construction and after operation. Working with them to assure they have the correct information, understanding their concerns raised about the project are critical to eventual success.

Preservation of Right-of-Way

Providing a dedicated right-of-way for a BRT route provides the transit customer (or potential customers) with the sense that the bus is providing faster service than conventional bus service in mixed traffic along the corridor. Indeed, in Eugene after BRT was implemented the perceived travel time was much faster than the actual travel time. While perception may attract new riders and increase satisfaction among existing customers it can be very costly compared to other techniques that can improve speed and reliability. For example, off board fare collection enabling customers to board through any door can have a greater impact on end to end travel time.

However, wherever there are bottlenecks—where a bus will get tied up in traffic at certain times of the day—either dedicated lanes for transit, transit queue jumps, or business access and transit lanes (BAT lanes) are warranted. BAT lanes are restricted to transit vehicles; however autos making turns are allowed to use the lanes to safely complete their turn. Dedicated lanes which are physically separated from traffic should be designated as such at all times. However, dedicated lanes or BAT lanes not physically separated from traffic can be either designated as such at all times or only at times traffic bottlenecks usually occur. Early consideration must be given to preserving right-of-way where designated transit lanes or BAT lanes are even a remote possibility.

Dedicated and BAT lanes can be provided in a number of different ways. These range from widening the right-of-way to provide an additional lane, converting an existing parking or mixed traffic lane, or utilizing or narrowing a center median.

For Mooney Boulevard the specific locations and application of each of these treatments would be determined in the course of the feasibility study and right-of-way reserved according to those findings. For this reason, conduct of a feasibility study is the first step toward the possibility of implementing BRT along that corridor and indicating where right-of-way actions are necessary to ensure future development of BRT in the corridor.

High-Speed Rail

The California High-Speed Rail Authority released its 2016 Business Plan, which includes recent progress, a revised phasing plan, and updated cost estimates. The Silicon Valley to Central Valley line, which will include a station in nearby Hanford, is anticipated to be constructed by 2024 and operational by 2025. High-speed rail (HSR) is expected to have a tremendous impact on Central Valley economy.

TCAG and partner agencies in Tulare County will have a major role in determining the best approach for expanding regional transit options to ensure successful integration with high-speed rail. This may present another opportunity to consider Rapid Bus or BRT-type services to connect communities in Tulare County with the HSR station in Hanford.

Figure 4-17   Draft Kings/Tulare High-Speed Rail Station Location and Service Area

Source: California High-Speed Rail Authority, 2015.

Why Do It?

Rapid Bus service includes the elements of BRT that can be implemented on existing roadways at a lower cost and in a much shorter timeframe. Rapid Bus can also be a first step toward full BRT—whereas BRT represents a middle ground between light rail service and regular bus service, Rapid Bus represents a middle ground between BRT and regular bus. The service benefits of Rapid Bus are not as significant as with BRT but are still very meaningful compared to regular bus service:

- **Service Quality:** Rapid Bus is faster, more convenient, more comfortable, and more attractive than regular bus service.
- **Higher Ridership:** Because it is more attractive, Rapid Bus can significantly increase ridership. LA Metro's first two Metro Rapid lines increased ridership by 49%; AC Transit's Rapid service on San Pablo Avenue increased ridership by 66%; and Kansas City's first MAX line increased ridership by over 50%.
- **Very Affordable:** The cost to implement Rapid Bus service is relatively low and consists of moderately higher costs for vehicles and premium stations/stops. Increased operating costs can be limited to the additional service required to serve the new riders.
- **Image:** Well-branded Rapid Bus services, like BRT, attract favorable attention to themselves and also to other available transit services.

BRT works best on high ridership corridors with a mix of dense land uses. BRT also has the potential to spur development and attract choice riders. Designing a BRT line gives cities the opportunity to rethink the entire transportation network, including safer intersections and improved access for pedestrians and cyclists.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Conduct a feasibility study.** Conduct a feasibility study that evaluates trunk service on Mooney Boulevard and identifies project partners. In addition to the focus on the Mooney Boulevard corridor, TCAG should include in the feasibility study branch service to Tulare and Exeter. This concept would provide a faster, more frequent one-seat ride between Visalia and Tulare, as well as Visalia and Farmersville and Exeter. This design could include 10-minute BRT trunk service along the Visalia portion of Mooney Boulevard with 20-minute branch service to transit centers in Tulare and Exeter. BRT stations should be evaluated at major destinations and route connections. The branches would not be required to make BRT functional on Mooney Boulevard. However, adding the branches as part of the overall BRT plan would offer enhanced community connectivity where it is needed the most. Reallocating service from Visalia Transit Routes 1 and 9, TIME and Visalia Transit jointly-operated 11X, and TCaT Route 40 could fund a significant portion of the operation of the recommended BRT service. The character, in terms of BRT infrastructure, of the branches could be less capital intensive than on Mooney Boulevard.

    Estimated Capital Cost: $

    Estimated Operating Cost: -

- **Coordinate with land use.** Work with jurisdictions to establish compatible land use policies along the BRT corridors and branches

> Estimated Capital Cost: -
>
> Estimated Operating Cost: -

- **Reserve right-of-way.** Where necessary or appropriate, begin the process to reserve right-of-way

  > Estimated Capital Cost: $$
  >
  > Estimated Operating Cost: -

Medium-Term Action Plan (2021-2030)

- **Implement Bus Rapid Transit (BRT) along Mooney Blvd.** In the medium-term, it is recommended that Tulare County implement BRT focusing on the Mooney Boulevard corridor in Visalia, which has numerous (commercial and educational) destinations and has demonstrated high transit ridership. The segment of Mooney Boulevard between Visalia Parkway and Tulare Avenue also has limitless opportunities for higher density, mixed-use development to further support transit service.

  Land use, zoning, and design decisions occur at the local level and are the building blocks to a transit-supportive built environment. Supporting transit requires looking at how streets and road are built and what mix of land uses surround them, making it easy for people to access transit, and making sure people have reasons to ride transit. The benefits are many, and a multimodal transportation system with many travel options makes communities livable and vibrant. Transit-supportive decisions address coordination between land use and transportation, support multimodal mobility, and connect people to transit. A further in-depth look at transit and land use is found in the Land Use Action Area.

  > Estimated Capital Cost: $$$
  > Estimated Operating Cost: $$$

Figure 4-18   Potential BRT Corridor in the Medium-Term (2021-2030)/Branches in the Long Term (2031 - 2040)
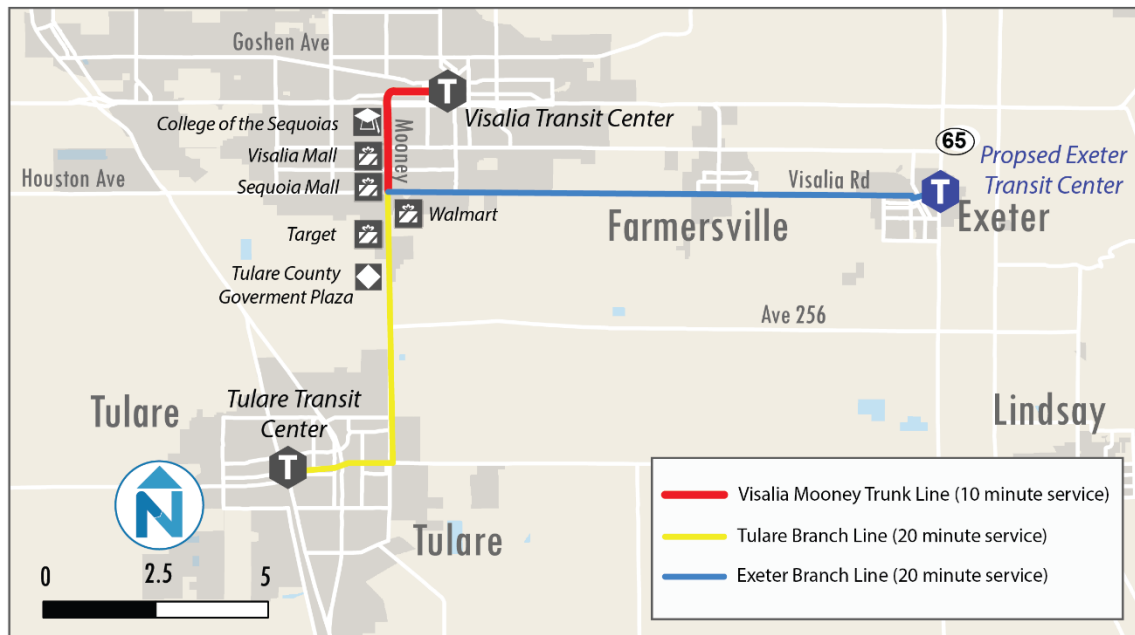
ACTION AREA: CUSTOMER AMENITIES

Waiting for the bus is a significant part of nearly every transit trip. Well-designed bus stops and stations enhance the transit experience, decrease perceived wait times for transit services, and can contribute to increased ridership. Conversely, poorly designed bus stops and stations can decrease customer satisfaction, make transit less attractive to potential new customers, and make waiting unsafe for riders. Investing in high quality customer amenities at bus stops and stations is often a low-cost, high-reward strategy for transit agencies.

What Is It?

Bus Stops

Bus stops are an important component of the transit experience. Bus stops also serve as a marketing tool for the general public. Bus stop attributes (spacing, placement, and accessibility) and amenities vary significantly across Tulare County. In general, passenger friendly bus stops include seating, shelter from inclement weather, lighting, waste bins, accessible sidewalks, and clear route and schedule information. Stakeholder interviews identified upgrades to bus stops throughout the county as important.

Bus Stop Spacing

The distance between stops requires a balance of convenience, safety, and operational efficiency. More closely spaced stops provide customers with more convenient access as they are likely to

experience a shorter walk to the nearest bus stop. However, transit stops are also the major reason that transit service is slower than automobile trips, since each additional stop with activity requires the bus to decelerate, come to a complete stop, load and unload riders, and then accelerate and re-merge into traffic. Since most riders want service that balances convenience and speed, the number and location of stops is a key component of determining that balance.

Stop spacing should also match the service level of the route. Local transit service uses stop spacing that is closer together, providing coverage in neighborhoods through four to five stops per mile. More distantly-spaced stops are recommended for limited-stop or BRT-type service, which serve high-ridership corridors with two to three stops per mile.[4]

Bus Stop Placement

Bus stop placement involves a balance of customer safety, accessibility, and operations. All stops should be fully accessible with a concrete landing and access to sidewalk or pathway. Bus stops should be compatible with adjacent land use and minimize adverse impacts on the built and natural environment.

Bus stops are generally located at street intersections to maximize pedestrian accessibility from both sides of the street and provide connectivity to intersecting bus routes. Bus turning movements, driveways, and dedicated turn lanes sometimes restrict the placement of stops at or near an intersection and necessitate a mid-block stop. Additionally, infrastructure consideration for bus stop placement includes lighting, topography, and roadside constraints such as driveways, trees, poles, fire hydrants, etc.

The initial step of determining placement of a new or relocated bus stop involves its proximity to the intersection. The placement of each bus stop can be classified as one of the following:

- Near-side—immediately prior to an intersection
- Mid-block—between two intersections
- Far-side—immediately after an intersection

Key advantages and disadvantages of each bus stop placement option are described in Figure 4-19.

Figure 4-19   Bus Stop Placement Considerations

	Advantages		Disadvantages	
Near-side stops	🚶	Shortest distance from bus door to a crosswalk, which encourages riders to use crosswalks	🚌	Most exposure to traffic delays. May require more than one traffic cycle
			🚌	Increases conflict with right-turning vehicles
			🚗	May obscure motorists' view of traffic control devices and crossing pedestrians

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[4] https://www.wmata.com/pdfs/planning/Bus_Stop_Guidelines_Brochure.pdf

Mid-block stops		Typically improves access to destinations on large tracts		May require bus pullout on high-speed streets	
				Encourages riders to cross street mid-block	
				Motorists typically do not expect mid-block crossing pedestrians should only be implemented where there are cross walks	
Far-side stops		Encourages riders to use nearby crosswalks		May restrict travel lanes on far-side of intersection	
		Reduces delay as operators have better chance of avoiding red light			
		Allows additional right-turning capacity before intersection			

Bus Stop Accessibility

All transit stops in Tulare County should be functional, safe, accessible, and comfortable for all users, including passengers with disabilities. Any project that involves new construction, movement, or alteration of a bus stop should comply with the U.S. Department of Transportation regulations under the Americans with Disabilities Act (ADA) to ensure that bus service is accessible to individuals with disabilities.

The first link in accessibility standards occurs between the bus and the landing pad. The bus operator's goal is to position the vehicle within a safe and accessible distance for a user to step between the bus stop and the bus. If the bus stop is at a curb, the height of this step is minimized. At a minimum, the bus stop should have a landing pad that consists of a continuous, unobstructed zone contiguous to the curb and to the street. A landing pad that allows a passenger using a wheelchair to board the bus must consist of a zone that is five feet wide by eight feet long. The landing pad should be four inches above the roadway surface to ensure that a ramp deployed from a bus is not to exceed a 5% slope. Slopes greater than 5% are considered too steep for access. The cross slope of the landing pad should not be steeper than 2%, and nothing should obstruct the landing pad zone (e.g., sign posts or benches).

The second link in accessibility standards occurs between the bus stop landing pad and the sidewalk. For an accessible path of travel, a four-foot wide, stable, firm and slip-resistant pathway should be clear of obstructions with a cross slope not greater than 2%, and a slope not exceeding 5%. In many cases a bus stop is part of the sidewalk, and may already have an accessible path of travel. But for bus stops that are separated from the sidewalk by grass or landscaping, providing an accessible path of travel is vital for passengers with disabilities.

The third link in accessibility standards occurs on municipally-owned sidewalks and connections to destinations. As a sidewalk approaches a crosswalk, the crossing should be designed with detectable warnings and ramps for accessibility. Connections from sidewalks to crosswalks and other paths should comply with state and federal accessibility standards. Because this connection is the responsibility of the local jurisdiction, coordination between transit agencies and the local jurisdictions is crucial to providing an accessible transit system.

Figure 4-20   Accessible Bus Stop at Dinuba Transit Center

Bus Stop Amenities

Bus stop amenities improve customer comfort and convenience. They also have the potential to increase ridership. Establishing a hierarchy of bus stop amenities based on (demonstrated or projected) ridership and nearby trip generators would provide a transparent process for prioritizing bus stop improvement projects.

Three bus stop types are proposed for Tulare County:

- Basic bus stop
- Bus stop with shelter
- Bus stop with large shelter

Basic Bus Stop

All bus stops should include at least a pole and sign. Outbound bus stops with a high number of alighting but only a few boardings may be considered basic bus stops. Seating may be installed at basic bus stops with sufficient ridership.

Figure 4-21   Basic Bus Stop

Bus Stop with Shelter

Bus stops generating 20 or more daily boardings warrant a shelter, seating, illumination, transit information, and trash receptacle. Shelters may be considered for stops with the following attributes:

- Adjacent to major activity/employment centers
- Adjacent to hospitals or social service agencies
- Adjacent to multi-family housing
- Adjacent to schools
- Where service frequency is greater than 30 minutes

Figure 4-22   Bus Stop with Shelter and Seating
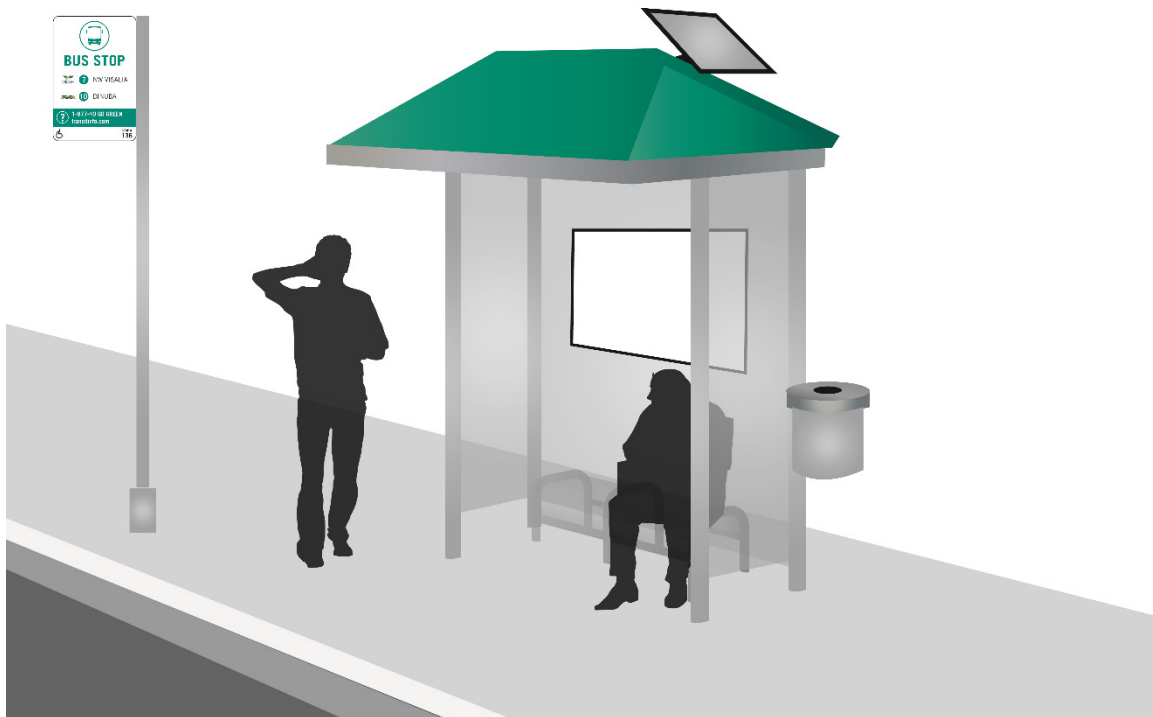
Bus Stop with Large Shelter

Bus stops generating 40 or more daily boardings warrant a shelter, seating, illumination, transit information (real-time as it becomes available), and trash receptacle.

Circumstances that might preclude installation of amenities at a stop meeting the above-mentioned threshold warrants are as follows:

- Amenities would threaten pedestrian or operational safety
- Adequate right-of-way is not available
- Regulations enforced by city, county, state, or federal government
- Service to the location is subject to potential changes
- Installation and maintenance costs are excessive
- Other circumstances that would negatively impact operations or service

Figure 4-23   Bus Stop with Large Shelter and Seating

Transit Centers

Transit centers in cities across Tulare County serve as major connection points and customer service centers. While transit centers range in size and activity, passenger comfort and accessibility should be universally equitable. Currently, Tulare County is served by five transit centers, described in Figure 4-24.

Figure 4-24   Existing Transit Centers and Amenities

Name	Year Built	Systems Served	Bus Bays	Customer Amenities
Visalia Transit Center	2004 (expanded in 2011)	Visalia Transit, V-Line, Visalia Towne Trolley, Tulare County Transit (TCaT), Kings Area Rural Transit (KART), Sequoia Shuttle, Greyhound, Amtrak, Orange Belt Stages	28	Indoor waiting area, customer service center, real-time arrival information, bike racks, adjacent public parking, restrooms, Wi-Fi
Porterville Transit Center	2003	Porterville Transit, Tulare County Transit (TCaT), Orange Belt Stages	11	Indoor waiting area, customer service center (weekdays 7 a.m.-9 p.m., weekends 9 a.m.-5 p.m.), real-time arrival information, bike lockers, adjacent public parking, restrooms
Tulare Transit Center	1999	Tulare Intermodal Express (TIME), Tulare County Transit (TCaT), Greyhound, Crucero	8	Indoor waiting area, customer service center (weekdays 8 a.m.- 8 p.m.), bike racks, adjacent parking area, restrooms
Dinuba Transit Center	2014	Dinuba Area Regional Transit (DART), Tulare County Transit (TCaT)	6	Indoor waiting area, customer service center (weekdays 8 a.m.-5 p.m.), bike racks, parking area, restrooms, Wi-Fi
Whitney Transit Center (Woodlake)	2014	Woodlake Dial-A-Ride, Tulare County Transit (TCaT)	4	Outdoor shelter, benches, bike racks, parking

Figure 4-25   Existing Transit Centers in Tulare County (2016)
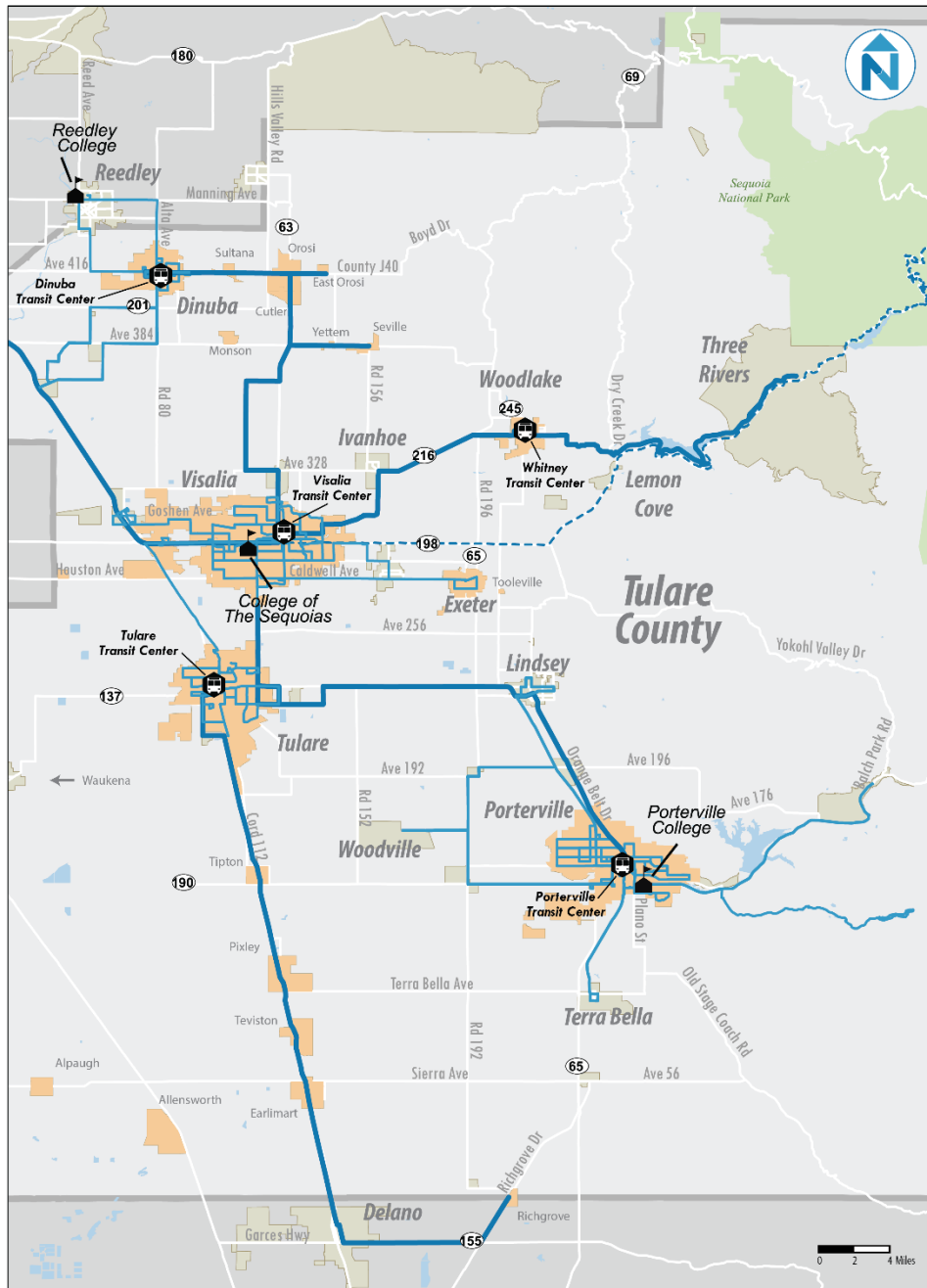
Why Do It?

Regional Connections and Placemaking

Strategically located transit centers improve connectivity in a regional transit system. Transit centers can be more than a site to make a transit connection, and can be a community asset by accommodating non-transit purposes. Integrating non-transit purposes, such as public meeting space, can help gain community acceptance in the surrounding area. Additionally, transit centers can be built with grants that help pay for improvements and spur new development. Community involvement in the planning of a new transit center is vital to its success.

Figure 4-26   Dinuba Transit Center

Social and Geographical Equity

Bus stop accessibility and amenities currently vary significantly across Tulare County. Adoption of countywide bus stop accessibility and amenities guidelines is an important first step for transit providers. The subsequent development of a bus stop improvement program would provide a transparent process for prioritizing capital improvement projects.

Action Area Strategies

Short-Term Action Plan (2016-2020)

▪ **Develop a Bus Stop Improvement Program.** TCAG should take the lead in strategically distributing capital funding for bus stop improvements across the entire county. Initial steps would involve working with transit providers to adopt bus stop guidelines and conducting a countywide inventory of bus stop accessibility and amenities to identify where there are gaps between the adopted guidelines and what actually exists.

In addition the countywide branding effort should have already identified a graphic design and color scheme for new bus stops. The new signs should be installed as part of this effort.

Bus stop guidelines should cover bus stop placement, spacing, signage, footprint, amenities criteria, amenities design, policies, etc.

Estimated Capital Cost: $$

Estimated Operating Cost: -

Medium-Term Action Plan (2021-2030)

▪ **Establish and/or Expand Transit Centers.** TCAG and municipalities have exhibited a strong commitment to transit by investing in high-quality, convenient facilities. As population and transit ridership grows in Tulare County, new and expanded customer facilities will be needed at strategic locations. Establishing and/or expanding transit centers in Tulare County in the medium-term is recommended at the following:

– Plan and construct a transit center in downtown Exeter to facilitate timed connections and service as an endpoint in the near term for the re-aligned TCaT route 40, as well as Visalia Routes 9 and 12 and the Exeter Dial-a-Ride in the medium terms and for the Mooney Rapid branch line in the longer term.

– Establish a transit center in Lindsay to serve as the primary bus stop within the city. Include ample waiting area to comfortably accommodate customers.

– Expand and improve the Tulare Transit Center by increasing the amount of covered space.

Estimated Capital Cost: $$$

Estimated Operating Cost: $

ACTION AREA: INTELLIGENT TRANSPORTATION SYSTEMS

Advances in Intelligent Transportation Systems (ITS) in recent years have enabled transit systems to improve the customer experience while also increasing the rapidity and accuracy of data needed to make decisions that can improve the efficiency and effectiveness of transit service. ITS elements such as Computer Aided Dispatch and Automatic Vehicle Location (CAD/AVL) and other real-time information systems such as transit signal priority are part of the action strategies for Tulare County.

What Is It?

CAD/AVL

Automatic Vehicle Location (AVL) describes the use of computers and Global Positioning Systems (GPS) in dispatching and tracking transit vehicles. AVL enables transit agencies to improve customer service through the provision of real-time schedule information. Real-time information on arrival/departure times allows customers to better plan their trip and has been shown to increase customer confidence in the reliability of the transit system and can decrease perceived and actual time spent waiting. Research has shown that transit customers perceive shorter wait times when they have access to real-time information, while transit customers who don't have access to real-time information tend to perceive their wait times to be longer than reality. With the widespread availability and use of cell phones and smart phones, real-time information is more accessible to the customer than ever.

AVL, through the Computer Aided Dispatch (CAD), enables dispatchers and road supervisors to have a visual picture of the actual location of each bus, allowing them to take proactive action when necessary to maintain reliability and improve decision making when reacting to disruptions in service. CAD/AVL also provides better data for developing more accurate schedules, can reduce emergency incident response time, and allows for the creation of dashboards with real-time displays of key indicators for transit performance.

CAD/AVL systems can vary widely in cost—from $1,000 to $20,000 per bus, depending on the type of technology being used. The capital costs of CAD/AVL systems are highly dependent on the level of software customization of off the shelf packages, the types of AVL equipment installed on the transit vehicles, and the monthly fees for the wireless communications technology between the fleet and the central software (CAD) at the transit operations center.

Annual operations and maintenance cost for onboard equipment average two to ten percent of the original cost. Recurring costs can include wireless communications monthly service fees.

Training is important in installing a CAD/AVL system. Agency contracts with vendors should include a training component prior to acceptance and turnover of the CAD/AVL system. Regular site visits and sharing information with peer agencies that use similar CAD/AVL systems is essential. There should be standard operating procedures to facilitate training and enable consistency.

Just because CAD/AVL is a valuable tool that can improve daily operations doesn't mean that will actually happen. It is important to train and empower dispatchers and supervisors on how to effectively use this tool. Staff resources also need to be dedicated to interpreting the data that CAD/AVL systems produce. Without properly trained staff to interpret the data, it will not result in improved decision making regarding designing schedules or adjusting services.

Currently, Porterville Transit is the only transit system in Tulare County with a CAD/AVL system in place. Tulare County, the City of Tulare, and Visalia have indicated plans to install a system.

The Customer Information recommendations section provides additional detail on the provision of real-time information to benefit the customer.

Online Trip Planner

Web-based trip planners continue to improve providing more accuracy and more detail in a user friendly manner. They can provide step-by-step directions from the point of origin to the ultimate destination of an individual's trip including walking directions. Advancements in trip planners include integration with real-time information to indicate the actual schedule time at each transit system and mode involved in a particular trip—updating information as the person travels.

More information on trip planners and recommendations is in the Customer Information section.

Fare Technology

There are a growing number of options for transit fare collection that have been emerging over the past decade. Advancements in mobile phone technology, banking, and payment systems have made methods for paying one's fare more numerous than they have ever been before. Smart cards and mobile payment are two options that are gaining increased use among transit providers both for the customer convenience and also the ability to provide more fare options that can grow ridership and revenues.

It is possible to implement smart cards and mobile payment without replacing existing fare boxes by acquiring readers at a fraction of the cost of new fareboxes. Refer to the Fares recommendations section for further descriptions and recommendations for use of technology to enhance fare collection.

Transit Signal Priority

Transit Signal Priority (TSP) is a technological advancement that provides priority treatment of transit vehicles at intersections by holding green lights longer or shortening red lights. It is designed to reduce wait time of transit vehicles while minimizing the impacts to surrounding traffic. Successfully reducing wait times improves reliability of transit services which improves the attractiveness of transit and can reduce operating costs. TSP may be implemented at individual intersections or across corridors or entire street systems. As the Federal Transit Administration's TSP Planning and Implementation Handbook points out, the distinction between Transit Signal Priority and signal pre-emption is an important one because: "signal priority modifies the normal signal operation process to better accommodate transit vehicles, while pre-emption interrupts the normal process for special events such as an approaching train or responding fire engine". This technology significantly reduces signal delays, and can reduce bus travel times by 5% to more than 20%, depending upon the level of system investment.

TSP systems require four components: a detection system aboard transit vehicles; a priority request generator which can be aboard the vehicle or at a centralized management location; a strategy for prioritizing requests; and an overall TSP management system. There are a variety of software and hardware systems that may be used for TSP management.

Signal priority is typically implemented in conjunction with exclusive bus lanes. Signal priority systems vary in complexity. Some systems rely on transit operator intervention or activation, while others have automated systems that use transponders to connect with signal equipment.

Why Do It?

The following are some of the potential benefits of adopting various ITS systems.

For the Customer:

- Real-time information on bus arrival times at each stop is available on the web, mobile devices and through signage at stations and major stops.
- Real-time information of transit vehicle locations enables transit systems to address service disruptions quicker improving reliability for the customer.
- Transit signal priority improves reliability for transit services; often more important to transit customers than vehicle speed.
- Trip planners can provide detailed directions on how to complete a trip via transit including walking directions to and from transit stops. Individuals can access this information on home or work computers or mobile devices, from a live person at a transit center, or by phone; trip planners can aid in providing accurate information quickly as well as offer multiple options (quickest, cheapest, fewest transfers, etc.) when multiple alternatives are available.
- Trip planners consolidate information from multiple providers, eliminating the need to consult multiple sources for trips that involve more than one provider.
- The use of smart cards or mobile devices to pay fares eliminates the need to fumble for change, buy passes at prescribed times of the month, or take the time to figure out if a monthly pass is viable during months that a person is planning a vacation.
- Smart cards and mobile payment enable seamless transfers from the payment perspective for customers between multiple systems.
- Smart cards and mobile payment enable transit providers to provide new pricing options that could benefit transit customers.
- Annunciators on vehicles provide consistent and understandable announcements of major stops—a benefit to customers who are unfamiliar with the route and stops as well and visually impaired persons.

For the Transit Agency:

- Real-time data and visuals of vehicle positioning enables transit providers to make better decisions quicker to address deviations from published schedules.
- Real-time data also provides accurate data on schedule reliability on a daily basis enabling transit systems to create more accurate timetables.
- Transit signal priority improves reliability for transit services which could reduce operating costs over time.
- Trip planners can reduce staff resources needed to provide service information for customers.
- Smart cards and mobile device payment make fare enforcement easier for the bus operator and reduces opportunities for fare evasion.

- Smart cards and mobile device payment will reduce the cost and security issues relating to paper medium and will reduce the amount of cash that needs to be handled and counted.
- Smart cards and mobile device payment will enable more creative fare policies that can increase revenues as well as ridership.
- Smart cards and mobile device payment will enable accurate disbursement of revenues for customer trips involving multiple providers.

It is important to remember that each component of ITS is a tool. To reap the most benefit for each element of ITS the transit agency must first articulate the goals or objectives that it is attempting to achieve. In other words, determine the desired outcome, and then determine the appropriate tools needed to achieve that outcome. The goal isn't to have the latest or greatest technology but to have the appropriate tools for the desired outcomes and the size of the transit system.

A second major consideration that needs to be addressed when evaluating potential technologies and weighing which is appropriate for the agency is the cost of sustaining it. The cost of sustaining it is more that any annual service fee for maintenance and updates; it includes the training of staff and staffing needed to make full use of the technology.

Consistency with Goals

ITS offers benefits for both customers and transit agencies in Tulare County. ITS can help the county achieve its *Moving Forward* goal of improving transit through investments in technology, infrastructure, and coordinated planning. Agency cooperation on ITS investments will also help make transit *an Easy Choice* for customers by streamlining access to schedules, fares, and service throughout the county.

Additionally, enhancing technology was one of the key priorities identified by stakeholders during development of this plan. Enhanced technology was mentioned as an important customer service-driven attribute moving forward. Mobile apps and seamless fare technologies were also mentioned as ways to attract new tech-savvy riders, particularly college students and young adults.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Equip buses with CAD/AVL technology .** Provide CAD technology for dispatch, maintenance and planning and offer real-time information on arrival and departure times through mobile apps, transit screens, and audio messages at transit centers.

    Estimated Capital Cost: $$
    Estimated Operating Cost: $

Medium-Term Action Plan (2021-2030)

- ▪ **Implement Transit Signal Priority.** Implement a transit signal priority (TSP) system on high volume transit corridors in Tulare County. Candidate corridors for TSP include Mooney Boulevard, (Visalia), Henderson Avenue (Porterville), and Prosperity Avenue (Tulare).

    Estimated Capital Cost: $$

    Estimated Operating Cost: $

ACTION AREA: OPERATIONS

This section describes action strategies pertaining to several areas of transit service operations: vehicles, long-term planning, electric buses, autonomous buses, facilities, and ADA eligibility.

What Is It?

Vehicles

The transit vehicle plays a significant role in retaining customers and projecting the image of the transit system in the community. Assuming the product (routes and schedules) meet the needs of the customer and marketing has successfully enticed the customer to use transit, the condition, reliability, and comfort of the bus is a major factor in whether that customer will continue using the system. For many, the outward appearance of the bus is the primary if not only exposure that they have to the transit system.

Buses frequently project a negative image due to loud engine noise and vehicle exhaust. At many transit agencies these negative aspects have often resulted in opposition to new services such as new routes, extended routes, or increased frequency even by individuals concerned about the environment who would otherwise welcome increased transit service.

Lack of planning, diverting capital funds to cover day-to-day operations, and poor maintenance are other factors that some transit agencies have engaged in that contribute to poor vehicle performance and appearance. However, none of these challenges are inevitable and all are avoidable.

Long-Term Planning

Heavy duty buses acquired with federal funds are required to operate for 12 years or 500,000 miles. Some transit systems in areas where the weather is benign and operating conditions are not overly challenging, such as in Tulare County, intentionally plan to operate vehicles for up to 15 years. Lighter weight vehicles have shorter time requirements and generally don't lend themselves to life extension as well as heavy duty buses. Cutaways typically used in paratransit service generally have a five-year life span.

Maintaining buses in top-notch condition during the projected life span, whether the federally mandated time frame or an extended time frame, requires vigilant maintenance practices. This includes completing all preventive maintenance tasks on the manufacturer's schedule, addressing vehicle problems immediately, analyzing recurring problems and working with the manufacturer if necessary to proactively address these issues, keeping buses clean inside and out, and planning

for mid-age overhauls. This requires budgeting adequate resources, and maintaining high standards for maintenance personnel, investing in ongoing education for existing staff, and working with a community college on a training program so that there are qualified applicants when vacancies arise.

While each transit provider in Tulare County needs to incorporate appropriate budgeting for maintenance in its annual operating budget, a countywide approach to capital planning can provide numerous benefits. These include: consistent replacement practices based on FTA Useful Life Policy, additional transparency and communication with members of the public through future expansion plans, improved budgeting through anticipated future facility needs, cost-saving opportunities that may come with multi-agency purchases, and smoother shift toward specific vehicle or fuel-type.

Long-term planning does not apply exclusively to buses, but to all capital assets. In 2012, the Moving Ahead for Progress in the 21st Century Act (MAP-21) mandated, and in 2015 the Fixing America's Surface Transportation (FAST) Act reauthorized the Federal Transit Administration to develop a rule to establish a strategic and systematic process of operating, maintaining, and improving public transportation capital assets. The process is intended to effectively manage transit assets throughout their life cycle. It is critical that a capital plan account for the useful life of all capital assets as well as any mid-life overhauls that should occur.

Whether transit in Tulare County is provided as it currently is by individual cities and the county or service is unified under a Joint Powers Authority (JPA) or the formation of a transit district, there are benefits to taking a unified approach to the procurement and specifications of vehicles and fuel. While it is impossible to specify the exact cost benefit of a joint procurement of vehicles as there are many variables (vehicle specifications, fuel type, number of agencies involved in the joint procurement, and timing), cost savings are generally achieved over individual procurements. To achieve the best savings, joint procurements should not be limited to just Tulare County systems but include other systems for a better volume discount. The same can apply to the procurement of fuel.

Another factor to consider is unified vehicle standards. By minimizing vehicles types—generally a 12-year heavy duty bus for fixed-route service and a lighter 5-7-year vehicle for paratransit service—inventory costs can be reduced and fewer parts need to be stocked. Reliability can be improved because maintenance procedures are simplified. If transit systems continue to be operated individually there is still a benefit as one system can assist another jointly troubleshooting problems or lending parts or staff if one agency is temporarily short.

Figure 4-27   Modern and Dated Buses Operating in Tulare County

Electric Buses

Tulare County has several characteristics that are ideal for implementation of electric bus service, including topography, climate, and potential grant funding made available by several California state agencies. Porterville will be the first city in Tulare County to test an electric bus fleet. The city received a $9.5 million grant from the California Air Resources Board in 2016 to replace its entire fleet with electric buses. Ten buses will operate on Porterville's nine routes, with the buses expected to enter service by 2018.

Two major benefits of electric buses are that there are no tailpipe emissions and that they are very quiet. As noted above, noise and emissions create negative perceptions of buses and have been used in many areas as reasons to oppose bus service. Electric buses have fewer moving parts and therefore are easier to maintain.

The quality of electric buses is improving exponentially while the cost of procurement is coming down. Most 30- and 40-foot heavy duty models have been Altoona tested and certified as a 12-year bus comparable to heavy duty diesel or CNG powered vehicles. The range of electric buses has increased to 130 to 150 miles on a charge, sufficient for most vehicle duty cycles. It is conceivable that the range for electric buses will increase to up to 300 miles in the near future. Unlike the earlier electric buses, they can now be equipped with air conditioning—important for an area like Tulare County with very hot summers. The Porterville project will provide a valuable real-world test of the performance of electric buses in the Tulare County operating environment.

There are two types of charging options for electric transit buses: fast charge and slow charge.

Fast charge

Fast charge systems require charging infrastructure at transit centers since the maximum range per charge has typically been lower, about 40 miles per charge. On the other hand, charging can usually take place in 5 minutes. The selling point of this system is that the charge can occur during scheduled layovers at a transit center. However, since one of the reasons for scheduling layover or recovery time in a transit schedule is to enable buses running behind schedule to get back on schedule, the need to charge could perpetuate a longer delay in service.

One type of fast charge system is an overhead unit which the bus parks under to receive its charge. Another system is imbedded in the ground. Both require precision docking. Electronic visual aids in the bus can be used to assist in properly positioning the bus.

Slow charge

Slow charge systems require about three hours to fully charge but once fully charged have a 130- to 150-mile range. As stated above the range is likely to increase on newer models. Charging stations can be located at maintenance facilities so buses can charge overnight.

Figure 4-28   Fully Electric Bus

Autonomous Buses

Rapid advances are occurring in the technology that will allow for autonomous vehicles of all types—autos, trucks, and buses. While it is unknown how vehicle autonomy will change mobility there will still be a need for higher capacity vehicles in urban areas. There may also be a need for larger vehicles to accommodate longer trips.

Autonomous buses have the potential to provide higher frequency service at lower costs. Indeed, the concept of "always a bus in sight" along busy corridors could become a practical reality.

It is impossible to predict how quickly fully autonomous vehicles will become widespread. Policy decisions will play as much of a role as technology in the ultimate outcomes. It is very likely that the impact of autonomous vehicles on the shape of communities will be profound over the next 10 to 15 years. Transportation network companies (TNCs), such as Uber and Lyft, are the most likely to deployed autonomous vehicles within the next five years. The influence of that early implementation will greatly influence how autonomous vehicles will shape communities in the longer term. The transition from human driven vehicles to autonomy will present challenges and opportunities. These are bigger issues beyond the scope of the LRTP. However, at the regional level it is not too soon to engage in scenario planning and identify the policies that could lead to each scenario.

Future planning is especially important when making decisions about major capital investments. Transit centers, in particular, have a very long life. Thinking through how the design of a particular facility might be different if a substantial segment of riders were accessing a smaller number of frequent bus routes through use of autonomous vehicles will be vital to ensuring today's transit capital investments are not at risk for becoming tomorrow's white elephants. Today, it is virtually impossible to predict how or when autonomous vehicles may become a mainstay of personal mobility. However, it is very clear that the future implications of autonomous vehicles must be considered as investment decisions are reached.

The creation of a JPA will better enable Tulare County to monitor developments in autonomous technology, consider the appropriate role for autonomous buses, understand the influence of TNCs' deployment of autonomous vehicles, and plan for their deployment if and when they become a mainstay of the public transit and personal mobility environment.

Facilities

Currently vehicles are maintained at several facilities throughout the county. Because of distances involved having a single maintenance facility may not be cost effective. For example, any savings by consolidating a maintenance facility in Visalia could be canceled out by longer deadheads particularly to some of the more distant locations served by TCaT or Porterville. This is not to say that maintenance facility consolidation couldn't be beneficial; particularly if service is unified. A more detailed analysis needs to be undertaken to consider different management scenarios. Facility locations will determine the trade-offs in terms of the savings from consolidating facilities versus additional deadhead costs. Different maintenance facility location scenarios need to be evaluated to develop an optimal operations plan. Even if transit operations are not unified under a JPA or a transit district; there could be agreements where one transit agency provides maintenance and storage for another agency.

ADA Eligibility

Eligibility for Americans with Disabilities Act (ADA) paratransit service is governed by federal ADA regulations and is currently carried out by each fixed-route transit system. Providing a single countywide ADA eligibility process can provide cost savings and improved customer convenience. More details on this can be found in the Governance Section.

Why Do It

One of the top ten transit priorities for Tulare County is the development of a joint 20-year vehicle acquisition plan with an emphasis on low/no emissions buses. Transit vehicles play a significant role in retaining customers and projecting the image of the transit system in each community in Tulare County. Electric buses in particular project a positive image and will help the county meet environmental and technology goals. Tulare County has several characteristics that are ideal for implementation of electric bus service.

A countywide approach to capital planning in Tulare County can provide numerous benefits to the agencies. Providing a single countywide ADA eligibility process can provide cost savings and improved customer convenience, while a unified approach to the procurement and specifications of vehicles and fuel can provide many benefits to the agencies.

Investments in technology, infrastructure, and coordinated planning were identified as key elements in the LRTP vision. The strategies provided in the Operations Action Area will help agencies achieve the goal of keeping Tulare County *Moving Forward*.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Create a 20-Year Vehicle Acquisition Plan.** In the short term, it is recommended that Tulare County create a countywide vehicle inventory and a 20-year vehicle acquisition plan. Many benefits come from asset planning: consistent replacement

practices based on the Federal Transit Administration's Useful Life Policy, additional transparency and communication with members of the public through future expansion plans, improved budgeting through anticipated future facility needs, cost-saving opportunities that may come with multi-agency purchases, and a smoother shift toward specific vehicle or fuel-type.

> Estimated Capital Cost: $
>
> Estimated Operating Cost: -

- **Establish Joint Procurement Practices.** This would be an effort spearheaded by TCAG, and would create a central vehicle procurement pool for all operators in Tulare County. It is also possible that the effort may turn up other commodities such as fuel and tires where joint procurement would be beneficial to all the transit operators.

  > Estimated Capital Cost: --
  >
  > Estimated Operating Cost: --

- **Conduct a Maintenance/Operations Facility Study.** Conduct a detailed analysis considering different management scenarios and facility location scenarios to determine the trade-offs (e.g. the savings from consolidating facilities compared with additional deadhead costs) to develop the optimal operations plan.

  > Estimated Capital Cost: $$
  >
  > Estimated Operating Cost: -

- **Implement Electric Bus Service.** It is recommended that Tulare County explore the potential for wider deployment of electric buses prior to the next major bus procurement. Tulare County has several characteristics that are ideal for implementation of electric bus service including topography, climate, and potential grant funding made available by the California Air Resources Board and California State Transportation Agency and potentially other state agencies. The results of Porterville's electric bus testing will provide useful insight into the suitability of electric buses for broader use in Tulare County.

  > Estimated Capital Cost: $$$
  >
  > Estimated Operating Cost:

Medium-Term Action Plan (2021-2030)

- **Establish a State of Good Repair (SOGR) management system.** A SOGR management system should be established for all transit assets in the county.

  > Estimated Capital Cost: -
  >
  > Estimated Operating Cost: -

Long-Term Action Plan (2031-2040)

- **Implement Autonomous Bus Service.** While still in its infancy in terms of development and testing as of 2016, it is highly possible that transit providers will consider shifting to autonomous buses for specific services in the decades ahead. The

creation of a Joint Powers Authority (described below) ensures the careful consideration of autonomous buses as a service delivery option.

> Estimated Capital Cost: $$$
>
> Estimated Operating Cost: $$$

ACTION AREA: FLEXIBLE TRANSIT

Fixed-route transit service has been the backbone of public transit systems since the dawn of horse-drawn local transit services. However, where there are low densities or greatly dispersed trip patterns, fixed-route transit cannot cost effectively provide a level of service that meets customer needs. Flexible services can provide cost effective alternatives to single occupant vehicles and provide mobility for individuals without access to an auto when fixed-route transit is not a practical solution.

What Is It?

Flexible services can encompass many different concepts including, but not limited to: carpools, vanpools, deviated bus routes (scheduled fixed-routes that deviate off route on demand to pick up or drop off customers at their point of origin or destination), and many forms of dial-a-ride (also referred to as paratransit service). Many paratransit programs are restricted to certain populations such as people with disabilities, senior citizens, or individuals eligible for trips under special programs. For the purpose of this discussion the focus is on flexible services available to the general public.

Lack of applied technology has historically been a hindrance to providing customer friendly flexible services. Paratransit rides or deviations on deviated fixed-route services often require 24-hour advance notice, whereas regularly fixed-route service does not need any advance notice. While infrequent fixed-route service still requires advance planning on the part of the customer, the customer still would have more flexibility with fixed-route service and could make last minute changes without penalty. Advances in technology can remove most of the scheduling challenges for flexible services, bringing them to an on-demand basis. Today, many transit agencies are working with transportation network companies (TNCs) to improve flexible travel options while other agencies are working to bring "Uber-like" dynamic flex service to their transit customers in lower density areas.

Vanpools

A vanpool is a group of people, usually 7 to 15 passengers, who commute together on a regular basis in a van, which can be leased from CalVans. Currently, there are 95 vehicles that provide service to workers who live or work in Tulare County, with a total capacity of 625 passengers. The majority of vans in Tulare County run out of Visalia. The primary employment destinations are correctional facilities in Corcoran and Delano, including California State Prison and Kern Valley State Prison (see Figure 4-29). In total nearly 70% of vanpools starting or ending in Tulare County serve correctional institutions. Other destinations include state, medical, and agricultural employers.

Vanpools are well-suited for major employment locations that are isolated and can't be well served by transit, connecting residential areas with little or no transit service to concentrated employment locations (either a single employer or multiple employers with close proximity). They are also well-suited for long commutes where direct transit service may not be feasible. The large number of vanpools between Visalia and Fresno is illustrative of the latter example.

In order to reduce single-occupant vehicle (SOV) use, particularly during peak travel times when traffic bottlenecks occur, expanding vanpool programs is desirable where transit options are not feasible. Among the strategies that can be employed to increase vanpool use (some of which can also increase transit and bicycle commuting as well) include:

- **Mobile applications**. Develop an app that enables existing vanpools to voluntarily offer seats when regular riders are not traveling and can be used by existing vanpoolers to find rides when they need to travel at other times.

- **Guaranteed Ride Home programs**. Vanpooling can be flexible at one level—a group of individuals schedule a trip at the times they need to travel. However, it can be inflexible at another level when a member of the group needs to be at work earlier or later than the vanpool arrival/departure times or they change the times they need to travel on a regular basis. Guaranteed ride home programs that provide a limited number of subsidized taxi trips when an individual needs to travel at a time outside their normal vanpool schedule can help to maintain flexibility for commuters.

- **Sponsor an annual Business Commute Challenge**. Employers would sign up to compete over a two-week period to determine which employer can have the most non-SOV commute trips. Employees can walk, bike, carpool, vanpool, use transit, or telecommute. Employers would compete against comparable size businesses and prizes (donated) would be awarded to the teams in each category with the biggest non-SOV participation. Similar competitions such as one in Lane County, Oregon have demonstrated that these competitions do increase alternative commute modes once they conclude. Porterville and Visalia are in the process of creating an incentive program to increase vanpool usage.

There is a challenge to growing vanpool usage. Vanpools work best where a group of individuals have the same start and end times and don't deviate except during vacations or in emergencies. Where employees have irregular or unpredictable hours (such as retail), have flexible hours or need to stay at work until finished serving a customer (such as call center jobs), a vanpool is not a practical option. Micro Transit – the use of cell phone data or apps to design routes and schedules in real time with vehicle occupancy similar to vanpools – has met with some success in dense urban environments. The applicability in a lower density rural area is uncertain. However, a dynamic vanpool pilot similar to existing TNC concepts such as Uber Pool only encompassing vanpools instead of autos could be tested in Tulare County to determine if this could work in a non-urban environment.

Figure 4-29   CalVans Origins and Destinations for Workers from Tulare County
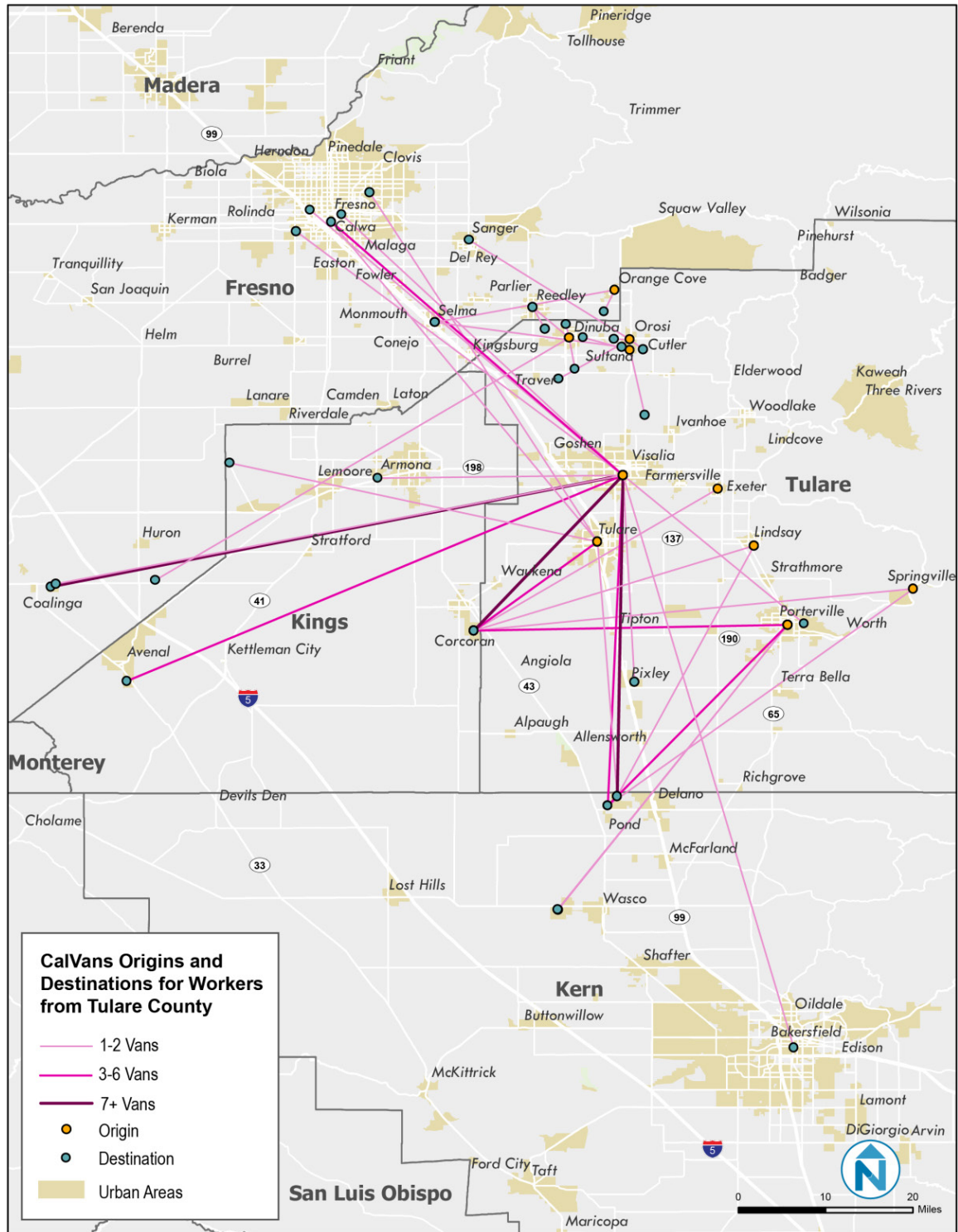
Demand-Response Zones

Many smaller communities in Tulare County do not warrant fixed-route service. However, even when population size or density doesn't support regular transit service, the need for a transit option still exists for those residents. Alternative approaches to serving low density areas include:

- Deviated fixed-route service where a bus route follows a fixed-route and schedule but is allowed to deviate off route on demand to provide direct service to the customer's starting or ending point within a reasonable distance from the regular route. (The distance is quite often comparable to the three-quarter mile buffer mandated by the ADA for complementary paratransit service.) Customers wishing to board at stops on the base route do not have to make any arrangements to board or be dropped off. However, customers wishing to be picked up or dropped off in the deviate zone need to make prior arrangements.

- Dial-a-ride is the typical model for ADA complementary paratransit service. With dial-a-ride, a person can travel between any two points within the service area of the paratransit service. For longer trips customers transfer to a fixed-route bus or transfer to a paratransit vehicle serving an adjacent zone. Many smaller or rural regions provide general public dial-a-ride service.

- One-to-many dial-a-ride is designed to transport customers between any point in a zone to one destination or a very limited number of specific destinations where transferring to other transit service is possible or for specific activities such as medical appointments or shopping.

In Tulare County implementing new demand-response zones in low-density areas that may not warrant fixed-route bus service, such as Yettem, Seville, Plainview, and Strathmore is a promising strategy. Demand-response service to these areas could operate on a bi-weekly basis and alternate from one area to another in an effort to match service levels with demand and maximize efficiency. Demand-response service should connect to transit centers and/or major commercial centers. It should be noted that this type of service is far more suited to meeting a safety-net need as opposed to a daily need of commuting to work or school.

Transportation Network Companies

The need for advance notice has discouraged many potential customers from using flexible service. As transportation network companies (TNCs), such as Uber and Lyft, have demonstrated it is possible to design apps that enable short-term summoning of transit vehicles engaged in a form of flexible service, making these services more attractive. The customer has more control of the scheduling of their trip and does not need to plan 24 or more hours in advance. While some of the algorithms used by TNCs are proprietary that does not preclude the eventual use by transit systems of similar applications or from partnering with private providers. In some areas, transit agencies are partnering with TNCs to provide first and last mile connectivity.

For the past 15 years or so carsharing has grown significantly in larger urban areas. More recently bikesharing has sprung up in most major cities. These concepts have become popular and are poised to grow further. The advent of TNCs such as Uber and Lyft and micro transit such as Bridj have upended taxi operators and filled gaps in local transit networks. The combination of sharing, TNCs, and transit have freed many individuals from car ownership.

The question is how applicable are these business models in Tulare County. TNCs appear to be viable wherever taxis currently operate and therefore can work well in the cities of Tulare County.

Transit systems are developing partnerships with TNCs in lower density environments both as replacement for conventional fixed-route service and to extend the reach of transit services by using TNCs to provide access beyond the quarter-mile walking distance from a bus stop. The technology used to schedule trips in a matter of minutes could be applicable to dial-a-ride and flex-route services improving both efficiency and customer convenience.

Carsharing and Bikesharing

Carsharing allows members to reserve cars on a short-term (hourly or daily) as-needed basis, paying only for the time they use the car and the mileage they drive. The operators of the carsharing program provide vehicle maintenance, repair, gas, and insurance. Carsharing provides members with access to a fleet of shared vehicles, making it easier for households to live without a car or a second vehicle. Developers can promote carsharing by providing spaces in their parking facilities, by providing free memberships to tenants, and by promoting the service to their staff and residents.

Carsharing and bikesharing are predominantly in larger dense urban areas although smaller communities have begun to embrace these models. However, the smallest communities providing one or both types of sharing services are larger than Visalia or Porterville. That's not to say that either couldn't work in the larger communities of Tulare County; however it does appear that density plays role.

Volunteer Driver Programs

Volunteer driver programs typically provide mileage reimbursement to individuals that operate their own vehicles when they take individuals to medical appointments or other services, thereby negating the need for additional labor and capital costs. This kind of program can provide service to riders who may otherwise be unreachable and/or are too costly to serve.

Leveraging volunteer labor can make community transit services more affordable. Having volunteer drivers can increase schedule flexibility and reduce costs. Volunteers can develop into transit advocates in the community, and can provide physical and emotional support to riders.

As might be expected, recruiting and retaining volunteers can be challenging and requires on-going effort/attention; in addition, most volunteer drivers are limited to ambulatory passengers due to the low incidence of vehicles equipped to accommodate people in wheelchairs. Most volunteers are reimbursed for mileage; the higher the reimbursement, the greater the number of people willing to become volunteers. The IRS mileage reimbursement guideline (updated annually) is the amount volunteers can be reimbursed without it counting as income they would have to declare. Any program should consider paying the maximum; if this is beyond current funding, then getting the funding to bring reimbursement up to the maximum should be considered a need in the program's plan.

Additionally, time needs to be devoted to continuing volunteer recruitment, recognition, and training. Volunteer programs may take years to establish, and volunteers can be in short supply. Some shifts are hard to cover with volunteers who may prefer not to drive at night. Fuel costs and vehicle insurance can be prohibitive, and insurance coverage requirements may limit participation. However, in some communities, a local transit agency is willing to cover some of the insurance under their policy.

Another model is to allow riders to recruit their own volunteer drivers. Ride Connection, a non-profit community services agency in the Portland, Oregon region has a program called Ride

Together that allows this. Drivers must first complete a driver approval process and training before they are eligible for mileage reimbursement. Ride Together allows riders access to longer distance, evening, weekend, intercounty, cross-country and other trips which are challenging to provide due to capacity restrictions or because they are outside the regular door-to-door service window.

Community Shuttles

Community shuttle programs are a way for transit agencies to provide transportation options in rural or low-density settings where fixed-route transit services are limited or unavailable. Shuttle vehicles are typically owned by the transit agency and leased out to qualifying non-profits or government agencies or to the public. Drivers can either be provided by the qualifying agency or by the transit agency. Upkeep of vehicles is often the responsibility of the agency.

Finding reliable community partners to operate the shuttles is helpful, whether they are municipalities or community organizations. Partners are responsible for operating the service, and thus the success of programs depends on them to a significant extent. By providing vehicles, support, and monitoring, transit agencies can improve mobility in rural areas and ensure that the program is supporting the agency's goals.

Why Do It?

Many smaller communities in Tulare County do not warrant fixed-route service. However, even when population size or density doesn't support regular transit service, the need for a transit option still exists for many residents. Flexible services, such as vanpools, carshare and bikeshare, TNC services, demand-response zones, volunteer driver programs, or community shuttles can provide cost-effective alternatives to single-occupant vehicles and provide mobility for individuals without access to an auto when fixed-route transit is not a practical solution. Flexible-transit service options are consistent with LRTP goals of providing connections within and between cities within Tulare County and providing the right size transit service for each community.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Consider Partnerships with TNCs.** Explore partnerships with TNCs to provide access to transit from areas not within walking distance. Start as a pilot in a designated area (e.g., a single community) then expand if deemed feasible. Two concurrent pilots could occur—one based on a user-side subsidy, the other based on a supply-side subsidy to determine which would be the preferred approach to apply countywide or at least in all county cities. The user-side subsidy would provide a fixed fee directly to designated users (e.g., transit pass holders only, designated groups such as seniors, or open to anybody who is transferring from a bus) while a supply-side subsidy would pay the TNC directly in exchange for free or fixed-fee services and guaranteed service availability.

  Estimated Capital Cost: $
  Estimated Operating Cost: $

- **Expand Vanpool Programs.** A vanpool is a group of people, usually 7 to 15 passengers, who commute together on a regular basis in a van, which can be leased from CalVans. Currently, 95 vanpool vehicles carrying 625 passengers who reside or are employed in Tulare County. The most popular connections are between Visalia and Fresno. Expand the current vanpool program to offer commute alternatives to people who live or work in Tulare County, but for whom transit may not be an option.

  Estimated Capital Cost: $$
  Estimated Operating Cost: $$

- **Study the Feasibility of Bikesharing.** Consider conducting a bikeshare study to determine if bikeshare could be feasible in Visalia, Porterville and Tulare.

  Estimated Capital Cost: $$
  Estimated Operating Cost: -

- **Study Volunteer Driver Programs.** Consider conducting a study to determine if volunteer driver programs could be feasible in Tulare County cities.

  Estimated Capital Cost: $
  Estimated Operating Cost: -

- **Study the Feasibility of Community Shuttles.** Consider conducting a study to determine if community shuttles could be feasible for rural and low-density communities in Tulare County and research potential community partners for operating the services.

  Estimated Capital Cost: $$
  Estimated Operating Cost: $$

Medium-Term Action Plan (2021-2030)

- **Implement Demand-Response Zones.** Consider implementing new demand-response zones in low-density areas that may not warrant fixed-route bus service, such as Yettem, Seville, Plainview, and Strathmore. Demand-response service to these areas could operate on a bi-weekly basis and alternate from one area to another in an effort to match service levels with demand and maximize efficiency. Demand-response service should connect to transit centers and/or major commercial centers.

  Estimated Capital Cost: $$
  Estimated Operating Cost: $$

ACTION AREA: PERFORMANCE METRICS

Performance metrics help transit providers evaluate services to ensure that resources are allocated equitably and efficiently. This section describes the principles and methodology by which transit services are evaluated and modified. Service design principles are guidelines that can improve service for nearly all riders, and help to set the stage for specific performance metrics. Routes and schedules should be evaluated bi-annually according to these standards. Evaluation criteria include ridership productivity, schedule reliability, load factors, and cost effectiveness.

What Is It?

Service Design Principles

Transit providers in Tulare County strive to serve as many residents, students, workers, and visitors as it can with its available resources. Service features that attract one type of rider to transit can deter other riders, and transit providers must balance these types of competing demands. However, there are certain service design principles that will improve service for nearly all riders. The following section describes the guidelines transit providers should aim to follow in order to attract the most riders and balance competing demands.

Service should be simple

For people to use transit, service should be designed so that it is easy to understand. In this way, current and potential riders can grasp and use the transportation options available to take them where and when they want to go with ease. Most of the guidelines in this section are aimed at making service intuitive, logical, and easy to understand.

Service should be fast and direct

Passengers and potential passengers alike prefer faster, more direct transit services. In order to remain competitive with the automobile, special attention should be placed on designing routes to operate as directly as possible to maximize average speed for the bus and minimize travel time for passengers while maintaining access to service. Travel times and directness of service are affected by a series of factors, some under the transit provider's control, and others related more to the environment in which service operates.

Figure 4-30 compares the travel time of auto and transit between communities in Tulare County. In many cases, transit travel times are over three times longer than auto travel times. The average auto travel time between evaluated cities is 36 minutes whereas the average transit travel time is 107 minutes.

Figure 4-30   Travel Time Comparison: Auto vs. Transit
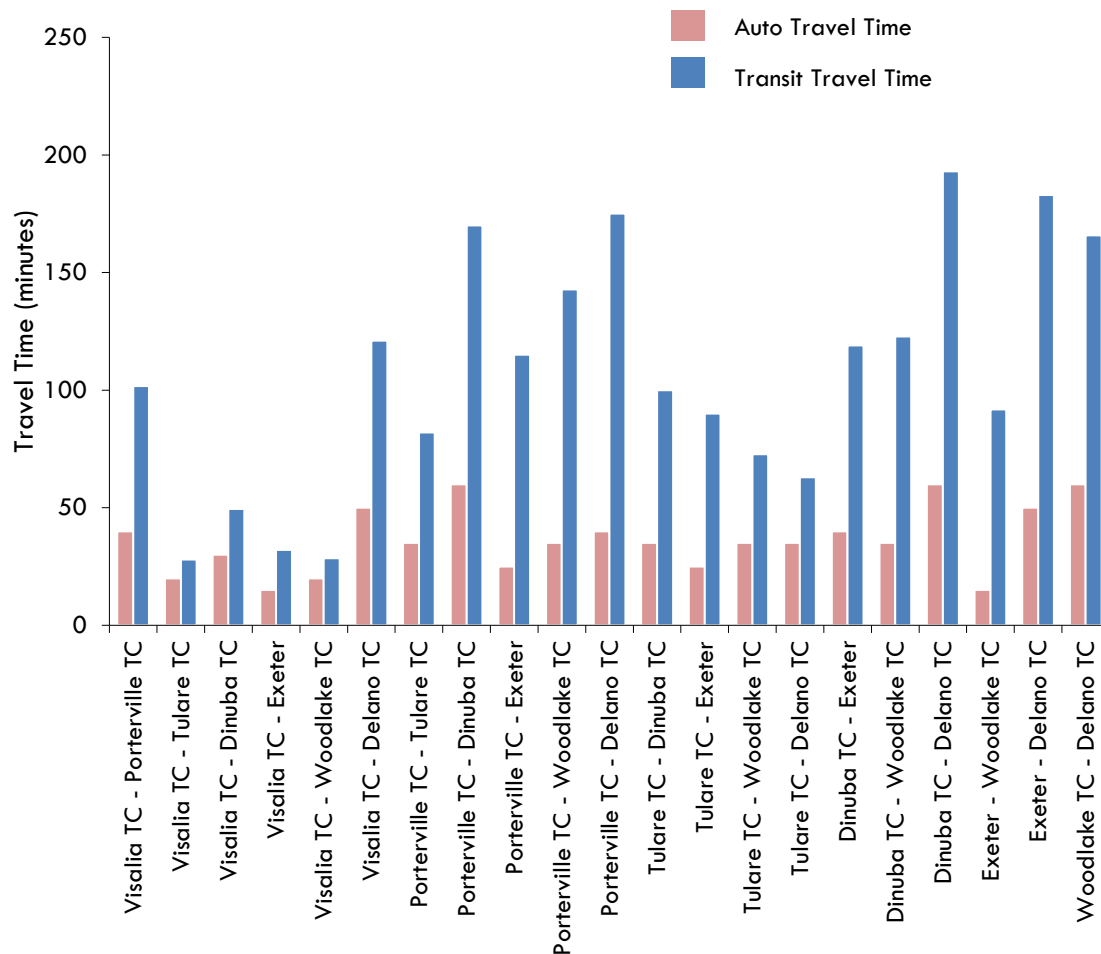
Route deviations should be minimized

Routes should not deviate from the most direct alignment unless there is a compelling reason. Potential exceptions include service to major shopping destinations, employment centers, medical services, and schools. In these cases, the benefits of operating the route off of the main route must be weighed against the inconvenience caused to passengers already onboard. Route deviations should be implemented only if two or more of the following conditions are met:

- The deviation will result in an increase in overall route productivity
- The additional time necessary for the deviation would not exceed five minutes
- The deviation would not have a negative impact on timed transfers

Routes should be bi-directional

Routes should operate along the same alignment in both directions to make it easy for riders to know how to return to their trip origin location. Exceptions can be made in cases where such operation is not possible due to one-way streets or turn restrictions. In those cases, routes should be designed so that the opposite directions parallel each other as closely as possible.

A good example of conditions where a route serves a street in both directions and only in one direction can be found in Porterville. Routes 1, 2 and 5 serve four east-west arterials. Route 1 serves West Olive Avenue westbound only, but routes 1 and 5 combine to serve West Morton Avenue in both directions. In like manner route 2 serves West Westfield Avenue in the eastbound direction only while routes 2 and 5 combine to serve West Henderson Avenue in both directions. There are many other examples of loop-type routes among the transit systems in Tulare County. While loop routes are often used as a way to increase coverage, they are confusing and often inconvenient for transit riders. The deployment of a loop type route should be carefully considered in terms of the trade-off between coverage and rider needs.

Major routes should operate along arterials

Core arterial routes should operate on major roadways and should avoid deviations to provide local circulation. The operation of bus service along arterials makes transit service faster and easier for riders to understand and use. Current and potential riders typically have a general knowledge of an area's arterial road system and use that knowledge for geographic points of reference. Arterials also tend to be more pedestrian friendly than collector and neighborhood streets. Sidewalks, crosswalks, and adequate right-of-way for customer amenities are all important features that are typically present on arterial streets.

In most cases, transit network design among the systems in Tulare County have avoided the situation where major routes make deviations to serve locations away from the arterials. To ensure this practice continues, a deviation standard could be developed that compares the potential rider demand on the deviation to the rider delay experienced on the main portion of the route.

Service should be consistent

Routes should operate along consistent alignments and at regular frequencies. People can more easily remember repeating patterns than irregular sequences.

For example, most routes within the cities operate on regular schedules, with the already noted exception of Porterville. However, TCat routes 20 and 40 operate on a more irregular headway which adds to the rider challenge of making connections between local services and the intercity services provided by TCat.

Routes should be appropriately spaced

Parallel routes operating closely together have the potential to split service demand. Appropriate route spacing requires a tradeoff between walking distance and service frequency. The guideline for route spacing in areas outside downtown is half a mile. Special conditions may exist that require routes to operate within closer proximity.

Transit routes in Tulare county tend to be well spaced, but there are examples of locations where route spacing should be considered further. In Tulare, for example it is 0.5 miles between West Inyo Avenue and West Cross Avenue, yet service is also provided on West Tulare Avenue where it is about 0.2 miles from West Inyo Avenue and about 0.3 miles from West Cross Avenue.

Route length should be of appropriate length

Routes should be the appropriate length to maximize ridership potential, minimize operational issues, and maintain clockface headways. Two routes serving different parts of the service area

with a shared terminus, such as transit centers, may be linked together as one route in order to operate more cost-effectively.

For example, in Visalia, routes 6 and 9 extend into the neighboring areas of Goshen and Exeter, respectively. But both operate on a different headway , every 90 minutes, than the base of the Visalia system, every 60 minutes, due to the length of the respective routes. Other examples, include nearly the entire route network in Porterville, where the routes are too long to be completed in 30 minutes. In that case the network operates on a 40 minute, non-clockface, headway as a result if the route lengths.

Performance Metrics

Ridership Productivity

Productivity standards are used to evaluate ridership and cost-effectiveness of each route. Most service types are evaluated based on the average number of passengers per revenue hour. Routes performing far below average may require corrective action. At the opposite end of the scale, ratings well above average may indicate the demand for additional service or capacity.

Routes in rural areas, even when buses are operating with good passenger loads, often struggle to meet the same productivity standards as routes in more urban environments. In these cases it is preferable to also offer a productivity metric that is more attuned to longer distance trips where buses are well utilized but rides per revenue hour are low. There are two such metrics in common use in the U.S., passenger-miles per revenue hour and passenger-miles per seat-mile. These two measures offer a way to assess how well utilized a route may be in terms of carrying larger numbers of passengers over many miles.

Figure 4-31   Average Weekday Boardings per Revenue Hour for Tulare County
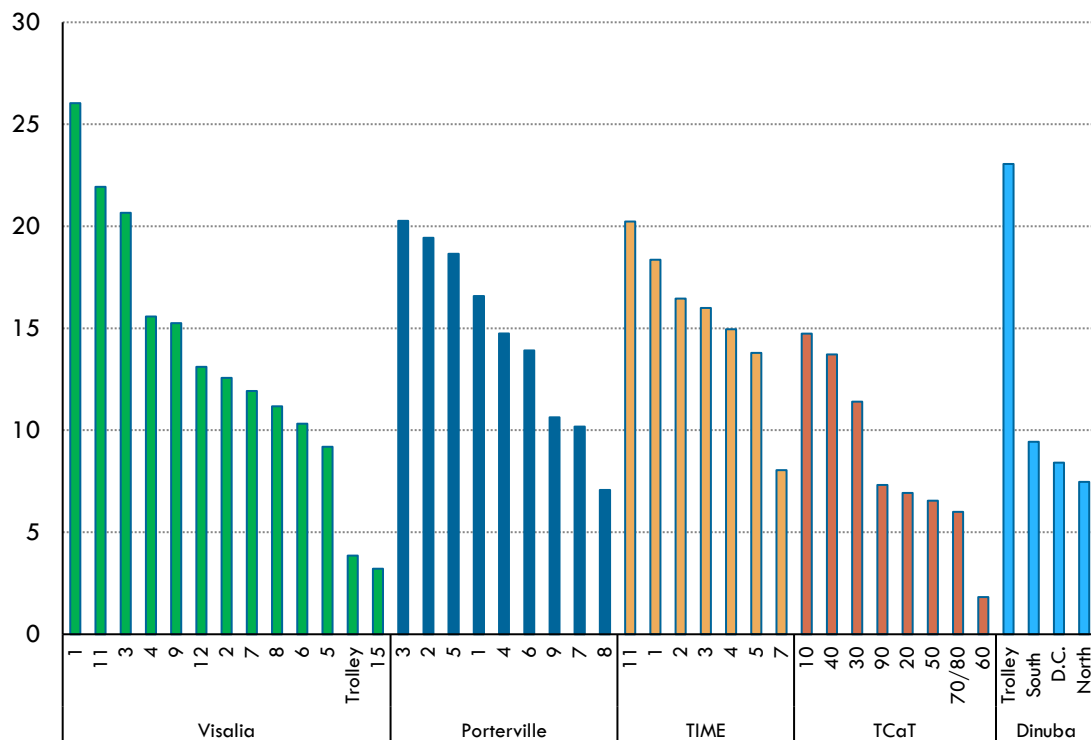
Schedule Reliability

On-time performance is a critical measure of the quality and reliability of services. Buses are considered on-time if they depart a designated time zero minutes early up to five minutes later than scheduled.

Transit providers typically set on-time performance standards at 80-90% for all time-points along the route. Services that fall below the specific guideline are examined to determine the factors

behind schedule adherence problems, which may include running time problems, traffic conditions, construction, or other issues.

Load Factors

Load factors reflect the ratio of passengers to total seated capacity. Load factors vary by route type and time of day. Overcrowding on buses often indicates the need for improved frequency or increased capacity. Appropriate load factors vary by time of day. During peak periods it is generally acceptable for some passengers to be expected to stand for part of the trip. In off-peak periods and for service that operates for long distances, service should be designed to try to provide a seat to all customers. Thus, during peak periods, routes operating primarily on local arterials may operate with loads of up to 120% of seating capacity.

Cost-Effectiveness

Cost-effectiveness is typically expressed in terms of farebox recovery or subsidy per passenger. Farebox recovery is the percentage of operating expenses recouped by farebox revenues. Subsidy per passenger is the amount of public investment needed to cover the difference between the operating cost of a route and the revenue generated by fares, on a per-passenger basis.

Specific minimum farebox recovery ratios are set by the Transportation Development Act and are based on urbanized area population.

Potential Corrective Actions

In cases where routes do not meet minimum performance guidelines, changes should be made to improve route performance. These changes can include a variety of measures, including reconfiguring the route alignment to attract more passengers, targeted marketing, eliminating particularly unproductive segments, and reducing service levels. If no changes can be identified that improve performance, steps may be taken to discontinue the route unless it serves a demonstrable critical need that is not served by other routes or services (including paratransit service).

In cases where service expansion is considered, ridership and productivity estimates should be developed that indicate there is a reasonable certainty the new service will meet the performance guidelines within 12 to 36 months of implementation.

New and Altered Services

The evaluation of new service proposals will take place as proposals are received or needs identified. Ridership and cost projections for new and altered services should be prepared whenever service changes are proposed. New services should meet minimum standards within one year. Staff may make fine-tuning adjustments during this period. New services are implemented on a trial basis, with the length of the trial period determined at the time of implementation.

Why Do It?

Caltrans requires transit providers in Tulare County to submit a triennial performance audit using at least five specific performance indicators. In general, performance metrics used by agencies focus on ridership productivity and cost effectiveness:

- Operating cost per vehicle service hour
- Operating cost per passenger
- Passengers per vehicle service hour
- Passengers per vehicle service mile
- Vehicle service hours per employee
- Farebox recovery

On-time performance and load factors are not addressed in the specific performance indicators currently used to assess transit service in Tulare County. Countywide performance indicators are consistent with LRTP goals of achieving an equitable and coordinated public transit system that meets the needs of residents in Tulare County.

Action Area Strategies

Short-Term Action Plan (2016-2020)

- **Implement Countywide Performance Metrics.** Countywide service guidelines and standards create a consistent service evaluation process that can help to improve the effectiveness and attractiveness of fixed-route bus service across Tulare County. Tracking industry standard performance metrics is therefore recommended for Tulare County in the short term. Routes and schedules should be evaluated based on the following evaluation criteria: ridership productivity, schedule reliability, load factors, and cost effectiveness. Currently, agencies submit triennial performance audits to TCAG with the following performance metrics:
    – Operating cost per vehicle service hour
    – Operating cost per passenger
    – Passengers per vehicle service hour
    – Passengers per vehicle service mile
    – Vehicle service hours per employee
    – Farebox recovery

On-time performance and load factors should be added to the list of specific performance indicators use to assess transit service in triennial performance audits.

> Estimated Capital Cost: -
>
> Estimated Operating Cost: -

ACTION AREA: GOVERNANCE

Transit customers want to move between communities in Tulare County and adjoining counties, not just within one community. However, there are currently seven different transit operations in the region, all governed by different jurisdictions and seamless transit travel between communities and other counties remains an unfulfilled need. From a management perspective, the current system is uncoordinated and inefficient, which is also reflected in transit user comments. There are several ways this issue can be addressed; perhaps the most important principle is to prioritize the needs of countywide customers over the form of governance. If governance becomes THE issue, rather than improving transit access and services to Tulare County citizens, the effort has moved in the wrong direction.

What Is It?

Cooperative Covenant

This is, perhaps, the simplest form of cooperation. Usually expressed in a memorandum of understanding (MOU), signatory jurisdictions covenant to work together to solve common issues. Typically, the MOU has no legal authority attached. Jurisdictions are usually free to pull out of the MOU without penalty and based on the particular interests of that jurisdiction. An MOU could form the basis for solving a broad range of inter-jurisdictional issues, or may be specific to one inter-jurisdictional issue. For example, the transit operating authorities in Tulare County could agree through an MOU to standardize the age eligibility for reduced fares. An example of a more broad-based MOU would be where the operating authorities agree to a countywide uniform fare structure. Even broader would be an MOU where the operating agencies agree to address a number of countywide issues such as fares, transit information, ITS architecture, and joint procurement. The result could even be a series of MOUs each covering a different topic.

The advantage of such a system is that agencies could pick and choose where to cooperate and where to remain independent. The disadvantage is that such an approach seldom results in an improvement in efficiency.

Joint Powers Authority

A Joint Powers Authority (JPA) is a means to promote intergovernmental cooperation and use local resources efficiently. In terms of transit, JPAs effectively allow two or more existing local governments to create a new agency by jointly exercising the powers they each have to build or operate transit. The establishment of a JPA would result in improved coordination and innovation of transit services in Tulare County. This section describes the process for establishing and implementing a JPA.

Joint Powers Authority

Legal Authority: Joint Exercise of Powers Act

Formation: Joint exercise of powers agreements

Governance: Determined by JPA member agencies

Services: Any common powers

Benefits: Cut costs, improve efficiency, reduce or eliminate overlapping service, share resources

Joint powers are established when two or more governmental agencies agree to create a separate entity or develop a joint approach to work on a common problem or deliver services. JPAs are

legally independent governmental organizations created by the member agencies. Reasons for forming JPAs generally fall into five broad categories:

- Public services
- Financial services
- Insurance pooling and purchasing discounts
- Planning services
- Regulatory enforcement

Transit service provision would be considered a public services function. JPAs generally strive to deliver cost-effective services and provide efficient use of taxpayer investment by sharing resources and eliminating overlapping functions.

Formation of a Joint Powers Authority

A variety of public entities can participate in a JPA, including federal agencies, state departments, counties, cities, special districts, school districts, redevelopment agencies, other joint powers organizations, or even an agency in another state. JPAs are flexible and easy to form. Formation requires the signing of a joint powers agreement by the member agencies and includes the following characteristics:

- Member agency intentions
- Shared powers
- Mutually acceptable conditions that define the intergovernmental arrangement

If a new joint powers agency is created through the agreement, the JPA must file a Notice of a Joint Powers Agreement with the California Secretary of State. After agreement negotiations are complete, each member agency's governing body then approves the joint powers agreement. Agreements contain provisions for the composition of the governing board, length of term of the agreement (if desired), oversight, and funding, as well as the JPA's powers and functions.

Functions

As mentioned previously, a JPA is a legally separate public agency from partner entities. As such, the JPA can sue or be sued, hire staff, obtain financing to build public facilities, and manage property.

Governing Board

California state law does not require a specific number of board members, though many JPA governing boards have five or seven members. In many JPAs, elected officials appoint members to represent jurisdictions within the transit system service area. Ultimately, each joint powers agreement is unique. Rules related to how the board is set up are determined through mutual agreement among member entities as part of the joint powers agreement.

Term

JPAs do not have a fixed timeframe or expiration period unless specifically determined by agreement. Member entities are ultimately responsible for the existence of the JPA, and the agreement can be dissolved when it no longer serves needs or interests.

Oversight

It is the responsibility of partner agencies to monitor the JPA and provide general oversight. Additionally, several state agencies collect data and report on JPAs, including the Secretary of State's office, the State Controller's office, and the California Debt and Investment Commission.

Since it is a separate agency not directly controlled by the state, a JPA must also appoint a treasurer and auditor. Each function can be filled by someone from a member agency, the county treasurer or auditor, or a contracted professional who performs the job. The auditor must arrange for an annual audit; in many cases, public agencies audit their own JPAs. The completed audit must be filed with the county auditor and made available to the public.

Funding

Partner agencies in the JPA are responsible for funding its operation. Funding agreements and contribution levels are generally negotiated as part of the joint powers agreement and can be based on factors such as projected use of services or another mutually agreeable method. There is often a provision in the joint powers agreement to protect member agencies from debts or other liabilities incurred by the JPA.

A summary of advantages and disadvantages of JPAs is provided in Figure 4-32.

Figure 4-32   Advantages and Disadvantages of a Joint Powers Authority

Advantages	Disadvantages
Flexible and easy to form. The Joint Exercise of Powers Act allows any government agency to form a JPA in collaboration with another government agency. Members can negotiate their levels of commitment and structure of governing boards.	**Require mutual trust to form.** Governmental entities must build trust and consensus for implementation of a JPA agreement.
Can be more efficient than separate governments. JPAs promote cost savings and efficiency.	**Can be hard to keep together.** A JPA is a voluntary agreement that can be dissolved based on changes in local public support, new political leaders, or financial pressure.
Cooperate on regional solutions. JPAs provide a regional solution for providing services and can offer a wider view than local entities.	**Can be hard to dissolve.** Some JPAs contain protocols to maintain a long-term agreement.
Expands grant opportunities. JPAs show that local entities are willing to collaborate on regional problems, which can have a positive impact on grant awards.	**Can be hard to understand.** Local opinion could contend that JPAs comprise an unnecessary layer of government, even when the ultimate goal is cost savings and efficiency.

Source: California State Legislature Senate Local Government Committee: *Governments Working Together—A Citizen's Guide to Joint Powers Agreements.*

Examples of Joint Powers Authorities

Merced County

Merced County's regional transit system was formed from the consolidation of four former local public transit service providers in July 1996. Today "The Bus" is the single public transportation service provider for all of Merced County. The Bus is administered and governed by the Transit Joint Powers Authority for Merced County. The 11-member Transit Joint Powers Authority Board includes a supervisor from each of the five county districts and an elected official from each of the six incorporated cities located within the political boundary of Merced County—Atwater, Dos Palos, Gustine, Livingston, Los Banos, and Merced.

Victor Valley Transit Authority

Victor Valley Transit Authority (VVTA) is the transit agency serving the Victor Valley region of San Bernardino County in southern California. The system is governed by a Board of Directors consisting of members from Apple Valley, Victorville, Adelanto, Hesperia, and San Bernardino County. The overall policy direction for the transit agency is provided by the VVTA Board (the governing board resulting from a JPA of four cities and the county), the Technical Advisory Committee (essentially a staff level committee with representatives of each of the jurisdictions plus the regional MPO), and the regional MPO, which plays a role in funding allocation and determination of unmet needs.

Other Alternatives to Joint Powers Authorities

One alternative to a JPA would be to form a transit district. While it is sometimes hard to discern the difference between a transit system operated as a JPA compared to a transit district, organizationally there are distinct differences. Transit districts are governed by state law and require voter approval to form. Given the added complexity of forming a transit district there is virtually no benefit over organizing a JPA. Conversely, if it is not possible to achieve agreement to form a JPA, some functions could still be consolidated. For example, instead of each transit agency providing ADA certification, a single countywide ADA certification process can be instituted. However, limiting the functions that are consolidated provide more limited benefits.

Another opportunity with a specific purpose is formation of a Consolidated Transportation Service Agency (CTSA). CTSAs were created under a California state law approved in 1979, when the state legislature passed Assembly Bill 120 named the Social Services Transportation Improvement Act. The purpose of the state law was to improve the quality of transportation services to low mobility groups while achieving cost savings, lowered insurance premiums, and more efficient use of vehicles and funding resources. The legislation took the middle course between absolutely mandating and simply facilitating the coordination of transportation services. Designation of CTSAs and implementation of other aspects of the act were seen as a flexible mechanism to deal with the problem of inefficient or duplicative transportation services.

Why Do It?

Implications for Tulare County

Transit provision in the region occurs in a manner that is disjointed and duplicative. Initiating a JPA to provide transit service in Tulare County and throughout the region provides significant opportunity to consolidate functions, improve rider information, Rider reduce overhead, and operate more efficiently. For example, vehicle purchases can be coordinated and grants can be strategically sought from a regional perspective to improve chances of award success. Another example would be that transit information would be gathered by a single entity rather than coordinated among seven providers.

Consistency with Goals

Unification of effort by the County's transit agencies will support the achievement of each goal established for the Long Range Transit Plan. Note that many of the goals support an increase in regional connectivity, cooperation, and coordination. While this occurs to some degree today and there are notable examples of cooperation and coordination, such as the T-Pass and the effort to place all the agencies on Google Transit, the agencies need to take the next step forward in cooperation and coordination to achieve the goals of the plan. The end result will be notable benefits for transit riders—transit schedules can be coordinated to ensure easy transfers, fares can be simplified and made consistent throughout the service area, information can be made easily available about countywide travel, investment decisions can be focused in the areas of greatest need, and future service changes and technology deployment can be implemented with a holistic regional picture in mind. Those rider benefits are completely congruent with the goals established very early in the process.

Action Area Strategies

Short-Term Strategies (2016-2020)

- **Create a Cooperative Governance Covenant with all the transit operators.** The purpose is to address some of the most pressing and simplest to fix issues facing transit users such as fare simplification and uniformity, consolidated customer information, joint vehicle and fuel procurement, ADA paratransit eligibility, uniform ITS architecture, and improved service performance and design guidelines. The effort is to focus on the customers, not the governance. Out of this effort the agencies may find it beneficial to further formalize the relationship by creating a JPA or a Transit District, or a CTSA. The operators may also find there are natural points of convergence where it makes sense to merge two, or more, operators into a single umbrella.

  Estimated Capital Cost: -

  Estimated Operating Cost: -

- **Consider Creation of a JPA between Tulare County Transit Providers.** An agreement between all transit providers in Tulare County to form a JPA to manage several umbrella activities would ensure a seamless transit system. The JPA would

assume responsibility for setting and adjusting fares, unifying fare media and collection technology, and establishing criteria for fare programs. The JPA would also make recommendations to the TCAG board on distribution of grant and formula funds and would take on projects such as countywide implementation of transit priority programs and new demand-response services.

The JPA would be responsible for establishing routes and schedules and providing uniform public information. The JPA can also undertake an evaluation of service contracts and maintenance facilities to determine if consolidation would be more cost effective and/or improve service delivery.

There are several possible alternatives as it applies to service delivery and maintenance of equipment. These include: outsource a single service contract for the entire county, outsource separate service contracts for different areas of the county (e.g., Porterville and Visalia), create a mixture of directly operated and outsourced service (e.g., fixed routes directly operated, paratransit outsourced), or have all service directly operated. Similarly, there could be a single maintenance facility or two or more facilities closer to where service is actually performed. Merging operating administrations may also be a cost-effective move to allow more resources to be dedicated to providing service and less overhead expenditure. There may also be benefit in exploring formation of a CTSA, such as the one in San Bernardino County to assume responsibility for countywide ADA paratransit and human services transportation. All of these could be undertaken as part of a work plan for a JPA.

> Estimated Capital Cost: -

> Estimated Operating Cost: -

Medium-Term Action Strategies (2021-2030)

▪ **Further consolidation of operation and governance.** With the first five years of cooperative administration as a guide, the agencies may wish to consider further consolidation of operation and governance of the transit function in the county. A pivotal consideration would be ensuring an even distribution of local revenue production (sales tax, tax measures, etc.) and an appropriate distribution of services. Looking back on the benefits of a more unified approach to transit administration may lead to a decision to form a countywide transit authority. Consolidation could also present issues in terms of merging collective bargaining units and agreements. A solution might be to form a JPA that contracts with some number of operating entities which retain current collective bargaining arrangements and consolidating operations where conditions are more favorable to consolidation.

> Estimated Capital Cost: -
> Estimated Operating Cost: -

Implementation

Joint powers authorities (JPAs) are created through the execution of an agreement by member agencies. The agreement must meet state requirements identified in the Joint Exercise of Powers Act. Prior to seeking execution of a JPA formation agreement and submitting documentation of regulatory compliance, member agencies and stakeholders should work together to identify the

JPA's purpose, powers, financing plan, governance structure and regulatory compliance measures. The creation of a JPA should be pursued with a clear understanding of the purpose and benefits that may be realized from its formation.

JPA Formation Implementation Steps

No.	Task Description
**JPA Formation Implementation Steps**

No.	Task Description
1	**Opportunity Area Identification:** Identify potential functional oversight areas and possible benefits of a JPA. As a starting point it is recommended these initial oversight areas include fare simplification and uniformity, consolidated customer information, joint vehicle and fuel procurement, ADA paratransit eligibility, uniform ITS architecture, and improved service performance and design guidelines. This would be started by a staff level document identifying the opportunity areas and potential benefits that would be presented to each jurisdiction in the county that would have a stake in the JPA.
2	**Partner & Stakeholder Engagement:** Seek input from potential member agencies and stakeholders about JPA purpose, powers, governance structure, funding and resources. This would start with the document identified in Task 1 and would continue to develop throughout the process.
3	**Draft Purpose & Powers:** Identify draft purpose and powers of the JPA. This would be a document drafted by attorneys working for the various jurisdictions.
4	**Draft Resource & Financing Plan:** Identify costs, resources and funding for implementation and operation of the JPA.
5	**Draft Oversight and Regulatory Compliance Plan:** Identify accountability measures including requirements for a treasurer, an auditing plan and compliance with the Brown Act. This would be a document drafted by attorneys working for the various jurisdictions.
6	**Draft Governance Structure:** Identify member agencies, terms, voting structure, and administrative and operational responsibilities for implementation of JPA functions. This would be a document drafted by attorneys working for the various jurisdictions.
7	**Draft Agreement Terms:** Prepare a draft agreement based on work completed in earlier tasks and circulate for feedback. This would be a document drafted by attorneys working for the various jurisdictions.
8	**Agreement Execution and JPA Initiation:** Finalize, execute and implement agreement establishing the JPA and ensuring compliance with state law.

Opportunity Area Identification

Prior to the pursuit of the formation of a JPA, the initiating agency or agencies should identify benefits that may be realized through its formation. Identification of these opportunity areas will inform the JPA creation process. JPA powers are limited to those that are common to their public agency members. Opportunity areas should, therefore, be identified with consideration of current authority and powers of potential member agencies. At minimum, it is recommended to Tulare County the following areas be considered:

- Fare simplification and uniformity

- Consolidated customer information and regional branding

- Joint vehicle and fuel procurement

- ADA paratransit eligibility

- Uniform ITS architecture

- Improved service performance and design guidelines

Partner & Stakeholder Engagement

Member agency consensus is essential to the formation of a JPA. An educational effort about JPAs is recommended as the initial step for potential member and stakeholder engagement. This effort may cover general topics such as potential purposes, functions, benefits, powers, governance structures, commitment, financing, and rules and regulations for JPAs well as information about the formation process.

Following the educational effort, preliminary input should be sought from potential member agencies about the JPA's potential purpose, powers, governance and financing, and specific opportunities and challenges that may be encountered during formation and operation. Engagement and input opportunities are needed throughout the development of the JPA to ensure supported structures, plans and terms are created.

Draft Purpose and Powers

A well-defined purpose will guide the development of the JPA's powers and methods to achieve desired goals. Previously identified opportunity areas may serve as a starting point for drafting the JPA's purpose and powers. Establishing a common purpose is key to justifying the agency's existence and is a required element.

Draft Resource and Financing Plan

JPAs must provide resources and funding for operation and exercise of powers. Existing and eligible funding sources and fitting resources should be considered for support of JPA administration and operation. Pursuit of new funding sources may also be considered. Funding commitments should be identified and levels estimated. Cost estimates for the JPA's operation should be developed and compared to anticipated funding levels. A cost-sharing model and methodology may need to be developed to calculate contributions and document commitments.

Draft Oversight and Regulatory Compliance Plan

Section 6500 et seq. of the California Government Code contains the enabling legislation for JPAs which includes formation agreement requirements that impact the creation and ongoing operations of JPAs. These requirements include, but are not limited to, providing auditing practices, the selection of a treasurer, identification of liability responsibilities, and establishment of a Conflict of Interest Code. Selection of additional performance monitoring metrics and other managerial accounting measures that gauge the JPA's pursuit of goals, realization of vision, and fulfillment of vision should also be considered despite a lack of a formal requirement.

Draft Governance Structure

The board member selection process, term lengths, and voting structure are all elements that must be established prior to the establishment of a JPA. The governance structure may be informed by the draft purpose and powers and resource and financing plan. As such, related tasks may be performed simultaneously or require modification to drafts created from the other tasks.

Draft Agreement Terms

The input received during the development of drafting of the JPA's purpose, powers, financial and administration plan, regulatory compliance plan, and governance structure shall be used to develop draft agreement terms. These terms should then be shared for input and potential modification.

Agreement Execution and JPA Initiation

Finalized agreement terms will be presented to the governing boards of member agencies for execution. Additional steps are required for entity creation such as providing formal notice to the Secretary of State and filing for the Roster of Public Agencies in cases where a separate entity is created.

Post JPA Formation

There is ample evidence and encouragement from outside organizations (CalTrans, Federal Transit Agency (FTA)) for Tulare County to consider a complete re-organization of the transit function within the county. This is a major undertaking with many considerations and should be a focus of the JPA following formation and a few early implementations of projects mentioned above. The consolidation study should begin by considering the possibility of the JPA becoming the single transit agency/entity in the county. Conditions in the county and the size of the operations are not significantly different than several other JPAs already in existence in California. There are economies of scale to be had by consolidating the transit authorities into a single entity. However, consolidation is a complex topic where there are issues affecting employees' longevity, wages, and benefits as well as issues surrounding assets and transfer of ownership; all of which take time and careful deliberation to bring to resolution.

JPA Formation Process Outline

The JPA formation process may be eased with assistance from personnel specializing in areas such as legal and regulatory compliance, strategic planning, and outreach and engagement firms.

Example of Draft Scope of Work Outline for JPA Formation:

1. Opportunity Area Identification
2. Partner & Stakeholder Engagement

    2.1 Educational effort: overview of JPAs and examples/case studies

2.2 Initial engagement and input activities

2.3 Ongoing engagement and communication efforts such as interviews, focus groups, committee meetings, etc.

3.   Draft Purpose & Powers

3.1 Identify JPA purpose and oversight areas

3.2 Identify powers and methods to achieve goals

4.   Draft Resource & Financing Plan

4.1 Identify member agencies

4.2 Estimate JPA costs

4.3 Identify potential funding sources and resources

4.4 Select sustainable and ample resources to match costs

4.5 Create cost-sharing methodology for calculating member agency commitments, if necessary

5.   Draft Oversight and Regulatory Compliance Plan

5.1 Identify and address all regulatory requirements

5.2 Identify internal measures and metrics for performance monitoring

6.   Draft Governance Structure

6.1 Board composition

6.2 Board member term limits and timing

6.3 Board voting structure

7.   Agreement Execution and JPA Initiation

7.1 Execute agreements with each member agency

7.2 Fulfill all initiation formation requirements

ALTERNATIVE: EXECUTION OF A MEMORANDUM OF UNDERSTANDING (MOU) OR MEMORANDUM OF AGREEMENT (MOA)

Agencies may also engage in cooperative efforts with specified terms through a memorandum of understanding (MOU) or memorandum of agreement (MOA). These types of agreements may be used to indicate intentions to work together on specified efforts, but aren't considered as formal as the creation of a JPA, and often have more limited authority and oversight than a separate JPA Board. The steps to implement a MOU or MOA are similar to those required for the creation of a JPA and include identification of purpose, powers or methods, funding and resources which may include a cost sharing model, and execution of an agreement.

JPA Resources:

California State Legislature Senate Local Government Committee: Governments Working Together-A Citizen's Guide to Joint Powers Agreements. http://sgf.senate.ca.gov/sites/sgf.senate.ca.gov/files/GWTFinalversion2.pdf

California Legislative Information: Government Code. Joint Powers Agreements (6500-6539). http://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=GOV&sectionNum=6500

Hanson, Bridgett, Marcu, Vlahos & Rudy, LLP. Joint Powers Authorities: Opportunities and Challenges. http://www.cacities.org/getattachment/5768b027-71a7-4bc5-8d82-d2009f304297/LR-Cassman,-Savaree.aspx

TCRP Project J-11 Task 10: Regional Organizational Models for Public Transportation. http://www.apta.com/resources/reportsandpublications/Documents/Organizational_Models_TCRP_J11_Task10.pdf

TCRP Report 85: Public Transit Board Governance Guidebook. http://onlinepubs.trb.org/onlinepubs/tcrp/tcrp_rpt_85.pdf

University of Kansas Transportation Center: Governance Models for Regional Transit Coordination. http://www2.ku.edu/~kutc/pdffiles/KDOT_Regional_Transit_Pilot_Study/11-05-10-KUTCGovernanceModelsWhitePaper.pdf

MOU Transit Examples:

Connect Card: http://iportal.sacrt.com/WebApps/SRTDBM/MeetingDocs/Archives/RT%20Board%20of%20Directors%20-%20November%208,%202010%20-%20Item%2010.pdf

FTA 5307 funds, data collection, planning and distribution:

http://www.placer.ca.gov/upload/bos/cob/documents/sumarchv/2015/150804A/18e.pdf

5 FINANCIAL PLAN

This chapter discusses the current and future financial plan and situation for Tulare County developed for the Destination 2040 Long Range Transit Plan (LRTP). The financial plan is intended to support the action plan described in Chapter 4. Generally, to move the long range plan forward requires an increase of about 25% in transit funding throughout the county over the next 25 years. Before describing the expenses the section immediately following presents a summary of currently available funding sources. The next section then discusses the base case, what happens financially if nothing changes. The following section discusses the financial impacts of implementing the action plan. The final section offers some suggestions for how to fund the 25 year improvement plan.

CURRENLTY AVAILABLE REVENUES

Fare Box Revenues

All transit agencies in Tulare County collect fares for the services provided. In 2015, the combined fare revenues for all the agencies were just over $3.1 million. This is an average of just over $1.00 per boarding average across all agencies. The average farebox recovery (fare revenues divided by operating costs) is just over 16% per year. Over the life of the plan fare revenues are assumed to continue on their current trend. However, it would not be an unreachable or unreasonable goal for the combination of all the County's transit agencies to reach a farebox recovery of 25%. Projecting forward the five year financial plans of the combined agencies, this goal is achievable, but will require on-going stewardship to attain that level of fare recovery.

Local Funding Sources

Measure R (sales tax)

In November of 2006, Tulare County voters approved Measure R, allowing TCAG to impose a ½ cent retail transaction and use tax between 2007 and 2037 (30 years). This tax will provide an estimated $652 million in new revenues for transportation improvements within Tulare County over its 30-year lifespan. The Measure R Expenditure Plan sets aside 50% of generated revenues for regional projects, 35% for city and county local transportation systems, 14% for transit, bicycle, and environmental projects, and 1% for administration and planning purposes.

According to the Final 2006 ½ Cent Transportation Sales Tax Measure Expenditure Plan, the goal of Measure R's Multi-Modal Transportation Program (Transit/Bicycle/Environmental Program) is to expand or enhance public transit programs that address the transit dependent population, improve mobility through the construction of bike lanes and have a demonstrated

ability to get people out of their cars and improve air quality and the environment. Funds can be used for all needed phases of project development and implementation. This funding program requires matching funds from the Congestion Mitigation and Air Quality Improvement Program (CMAQ) and the Active Transportation Program (ATP), which are both administered locally through TCAG.

For purposes of the Long Range Plan Measure R, even though it expires in 2036, is assumed to be available throughout the 25 year life of the plan. Growth projections have been maintained at a modest 1.5% per year. Presently, the combined total of the transit agencies are assuming only slightly larger allocations from Measure R, but well within reasonable bounds for a long range plan. For the last four years of the plan, it is assumed Measure R will either be re-authorized or replaced with an equal revenue source.

As discussed later in this chapter the long term financial requirements for transit if the Long Range Plan is fully implemented requires an increase in transit funding of about 25%, of about $6 million per year, on average, through the life of the plan. It appears reconsidering the proportional allocation of Measure R finds could be one possible source to meet the added funding requirement perhaps as a way to meet some of the transit capital needs identified in the plan.

Other Local Funds

Among the transit operators there is currently a mix of other local funds including some smaller allocations of general funds from the sponsoring jurisdiction. It should be noted this is not the normal situation and is far from universal practice. In addition there are local cooperative agreements where an agency will provide services to another in exchange for additional funding. Two examples of such arrangements are between the Tule Tribe and Porterville and another is between the Fresno County Rural Transit agency and the City of Dinuba.

State Funding Sources

Transportation Development Act (TDA)

The Transportation Development Act (TDA) provides two major sources of funding for public transportation: the Local Transportation Fund (LTF) and the State Transit Assistance fund (STA). These funds are for the development and support of public transportation needs that exist in California and are allocated to areas of each county based on population, taxable sales and transit performance.

The availability of TDA funds is of critical importance to the County. Historically, a significant share of these funds has been used for street projects; the County currently claims about 40% of its annual TDA funds for streets and roads. State law requires that each year TDA funds first be made available for transit purposes. If no transit needs exist that can reasonably be met, the funds can then be used for street projects. Most of the local transit short range transit plans assume that TDA funds at least for the next five years will continue to be available and allocated for both transit and street/road projects. County wide for the year ending June 30, 2016, a total of $14.4 million in Local Transit Funds (LTF) was expended. Of that total $8.1 million was distributed to transit systems and $5.2 million, 36%, was allocated for streets and highways. Note also that

actual sales tax revenues of $16.2 million exceeded the expenditures by nearly $2 million. The over and above revenue was added to a fund balance that was $4.6 million at the end of FY 2016.

As discussed later in this chapter the long term financial requirements for transit if the Long Range Plan is fully implemented requires an increase in transit funding of about 25%, or about $9 million per year, on average, through the life of the plan. It appears that the LTF proportion of the TDA funds may be one source for this funding understanding this would require that transit funding receive priority over funding for street and highway projects and that fund balances be used as a way to meet some of the transit capital needs identified in the plan.

In April 2017, the state legislature passed a revenue enhancement package for transportation in California and it was signed into law by the governor. The revenue plan features an increase in the gas tax of $0.12 per gallon and a motor vehicle license fee increase, along with several other revenue enhancements. The legislation calls for an increase in allocations for transit purposes with a combined ten year (FY-18 through FY-27) impact for Tulare County of about $29 million over the ten year period. This increase has been assumed to continue throughout the life of the plan even though the revenue package requires renewal every ten years.

Proposition 1B (PTMISEA & CTSGP-CTAF)

The Public Transportation Modernization, Improvement, and Service Enhancement Account Program (PTMISEA) was created through the passage of Proposition 1B, the Highway Safety, Traffic Reduction, Air Quality, and Port Security Bond Act of 2006. Statewide Proposition 1B authorized $19.925 billion in general obligation bonds for specific transportation purposes, of which $3.6 billion dollars was allocated to PTMISEA to be available to transit operators over a ten-year period. PTMISEA funds may be used for transit rehabilitation, safety or modernization improvements, capital service enhancements or expansions, new capital projects, bus rapid transit improvements, or rolling stock (buses and rail cars) procurement, rehabilitation or replacement. Funds in this account are appropriated annually by the Legislature to the State Controller's Office (SCO) for allocation in accordance with Public Utilities Code formula distributions: 50% allocated to Local Operators based on fare-box revenue and 50% to Regional Entities based on population.

The Transit System Safety, Security & Disaster Response Account (TSSSDRA) provides $1 billion over a ten-year period. TSSDRA funds may be used for eligible capital expenditures to improve transit safety and security. The TSSDRA is administered by the State Office of Homeland Security, and funds are allocated in accordance with Public Utilities Code formula distributions: 50% allocated to Local Operators based on fare-box revenue and 50% to Regional Entities based on population. Transit operators receive funding through the California Transit Security Grant Program, California Transit Assistance Fund (CTSGP-CTAF).

Due to the ten year limitation imposed for Proposition 1B, these funds are expected to be unavailable after FY-17 and are, therefore, not considered to be a substantial source of revenue through the life of the SRTP.

Cap-and-Trade: Low Carbon Transit Operations Program (LCTOP)

Assembly Bill 32 (AB 32), the California Global Warming Solutions Act of 2006, took a long-term, comprehensive approach to addressing climate change and its effects on the environment and natural resources. AB 32 required California to reduce greenhouse gases to 1990 levels by 2020, and to maintain and continue reductions beyond 2020. The Air Resources Board (ARB) was

directed to be the lead agency to implement the law. ARB has adopted a Scoping Plan and, together with other State and local agencies, has developed and implemented numerous regulations and programs to reduce emissions to meet these goals. The Cap-and-Trade program is a key element of the Scoping Plan. In the Cap-and-Trade program, ARB places a limit, or cap, on GHG emissions by issuing a limited number of tradable permits (called allowances) equal to the cap. A portion of these allowances can be purchased from the State at a quarterly auction, thereby generating auction proceeds. The State portion of these proceeds is deposited in the Greenhouse Gas Reduction Fund where it is available for appropriation by the Legislature to further the purposes of AB 32.

As one of the programs established in the Transit, Affordable Housing, and Sustainable Communities Program by SB 862 in 2014, the Low Carbon Transit Operations Program (LCTOP) will draw funds from the Greenhouse Gas Reduction Fund to support transit agencies in their efforts to increase transit ridership and further the greenhouse gas reduction goals of AB 32 and the associated regional greenhouse gas reduction goals of SB 375. The LCTOP was created to provide operating and capital assistance for transit agencies to reduce greenhouse gas emissions and improve mobility, with a priority on serving disadvantaged communities.

Approved projects in LCTOP will support new or expanded bus or rail services, expand intermodal transit facilities, and may include equipment acquisition, fueling, maintenance and other costs to operate those services or facilities, with each project required to reduce greenhouse gas emissions. For agencies whose service area includes disadvantaged communities, at least 50 percent of the total moneys received shall be expended on projects that will benefit disadvantaged communities. Senate Bill 852 (Statutes of 2014) appropriated $25 million for LCTOP for 2014-15 and Senate Bill 862 continuously appropriates five percent of the annual auction proceeds in the Greenhouse Gas Reduction Fund (Fund) for LCTOP beginning in 2015-16. The Tulare County region (all providers combined) received $167,017 in FY 2014/15.

While no specific increase in allocations of the LCTOP funds were assumed for the revenue projections in the long range plan presented below, the potential for greater allocations to support many parts of the LRTP is very high. For example projects such as improving transit information to expand the reach to disadvantaged communities, or implementing zero emission transit vehicles would be excellent candidates for use of these funds. It is anticipated that the annual allocations will grow well beyond the first year allocation used in the long range projection.

Federal Funding Sources

General

On December 4, 2015, President Obama signed the Fixing America's Surface Transportation (FAST) Act (Pub. L. No. 114-94) into law—the first federal law in over a decade to provide long-term funding certainty for surface transportation infrastructure planning and investment. The FAST Act authorizes $305 billion over fiscal years 2016 through 2020 for highway, highway and motor vehicle safety, public transportation, motor carrier safety, hazardous materials safety, rail, and research, technology, and statistics programs. However, the current administration is sending signals that significant changes may be coming to the FAST Act. Indeed, Congress has yet to fund the Act to extent authorized by the law, due to continued disagreement about how to fund the authorization and how to rescue the Highway Trust Fund from its present under-funded

status. In early May 2017 Congress passed a continuing resolution that provided partial funding for the FAST Act, but only through September 2017. The administration has proposed reductions to the transportation program for FY-18. It is unknown what influence these actions may have on long term availability of federal transit and flex funding sources such as CMAQ.

For the long-term it is nearly impossible to predict the status of Federal Funding as it may apply to local transit operations. The financial plan presented below assumes that formula funds for transit (Sections 5307, 5311, 5339) will be flat throughout the life of the plan. Given the uncertainty of the status of Federal transit funding, this seems to be an appropriate assumption. With regard to Congestion Management and Air Quality Funds (CMAQ), most Tulare County agencies have assumed an increasing reliance on CMAQ funds for development of no/low emissions fleet expansions. It seems that most agencies see this federal funding source as a replacement for state Proposition 1B funds that expire in FY-2017. The assumption of continued availability and growth of CMAQ funds is maintained throughout the life of the plan. However, the future of CMAQ funding is also very unclear. So the revenue projections that continue to assume CMAQ fund availability must be taken with caution.

Section 5307 – Urbanized Area Formula Grants

Presently, only the Visalia Urbanized Area (Visalia, Tulare, Exeter, Farmersville) is eligible to receive Section 5307 funds as an urbanized area with population in excess of 200,000. As a result of the 2010 census population of 219,454, the eligibility to find specific types of transit expense changed. With the new population 5307 funds are allowed for capital projects, including preventative maintenance, at an 80/20 federal/local share. The 5307 apportionment is based on vehicle revenue miles traveled and operating costs as well as population and population density. In addition, the City of Porterville is recognized in 5307 allocation tables, but technically, the funds are derived from Section 5340 the Small Transit Intensive Cities funds. While Section 5307 remained largely unchanged in the FAST Act, the future of this formula grant remains to be seen.

Section 5311 – Rural Area Formula Grants

The Section 5311 program provides capital, operating, and planning assistance for operators of public transportation in non-urbanized areas with populations less than 50,000. Activities previously eligible under the Job Access and Reverse Commute (JARC) program, which provided services to low-income individual to access jobs, are now available under this program. In California, the 5311 program is administered by Caltrans on behalf of the FTA. Section 5311 funds must be matched by state and local funds. Capital projects require a 20% local match. Operating projects require a 50% local match. Local match funds can be cash or cash equivalent, depending upon the expenditure. Non-Department of Transportation (DOT) federal funds may be used as a match. As with 5307 funds, the future of 5311 is uncertain.

Section 5339 – Bus and Bus Facilities Program

The Section 5339 program provides funding to replace, rehabilitate, and purchase buses and related equipment, and to construct bus-related facilities. In California, the 5339 program is administered by Caltrans on behalf of the FTA. Funds are eligible to be transferred by the state to supplement urban and rural formula grant programs (5307 and 5311, respectively). Funding under this program requires a 20% local match. Again, as with all federal funds, the future is uncertain.

Congestion Mitigation and Air Quality Program (CMAQ)

CMAQ program funds are directed to projects and programs which improve or maintain National Ambient Air Quality Standards in non-attainment areas for ozone and particulate matter (PM), such as the San Joaquin Valley, under the 1990 Clean Air Act. All CMAQ projects are coordinated and administered through TCAG. A diverse variety of projects and programs are eligible for CMAQ funds, including transit vehicles and CNG/LNG stations. All CMAQ projects must be included in the State Transportation Improvement Program (STIP). One proviso that is important for a long range plan, only programs that "improve" air quality are eligible for funding. So, for example, CMAQ funds could be applied to a project that would replace all diesel powered buses with electric buses. However, only the original purchase of the electric buses would be eligible for application of CMAQ funds. Replacement of those buses once their useful life has been reached would no longer be an eligible expense. As with all other FAST Act funds, the future of CMAQ funding is uncertain and the financial plan assumes a moderate reliance on this funding source to make in-roads to a no/low emission bus fleet for Tulare County.

Other Federal Funds

Two other federal funding sources contribute to transit in Tulare County and have been assumed to continue at current levels though the life of the LRTP. The Visalia Transit Sequoia Shuttle is operated on a cooperative basis with the National Park Service. NPS contracts with Visalia and defrays part of the cost of operating the shuttle. The other source of federal funds comes through the Bureau of Indian Affairs and represents partnerships between local agencies such as Porterville Transit and the Tule tribe to provide mobility services to tribal members in an around reservations. This funding source has also been assumed to continue through the life of the LRTP.

FINANCIAL PLAN – BASE CASE

The "base case" assumes a status quo course for transit in Tulare County of the next 25 years. Figure 5-1 below provides a summary of the projections and outcomes. The most significant highlight is to point out that future funding for transit in Tulare County will be a challenge with expenses projected to continue to equal available revenues. While this is not an uncommon condition for long range financial plans there are revenue assumptions, particularly regarding continued availability of Measure R funds and CMAQ funds that indicate there is more substance to this prediction than simply a conservative revenue forecast.

The "base case" calls into question the long-term financial sustainability of the transit model presently deployed in Tulare County and emphasizes the importance of moving to a model that can deliver services more efficiently. The move to consolidate all seven operations under one administrative and operational umbrella, perhaps as a Joint Powers Authority (see Chapter 4), gains additional importance when viewed in the light of this long term financial projection. This is a model that has already been successfully implemented in Tuolumne County, Modoc County, and Lassen County as county-wide transit authorities. Also areas such as tri-valley area of Livermore/Amador Transit Authority or the high desert region of the Victor Valley Transit Authority have successfully used the joint powers authority framework to establish less than county-wide transit agencies.

One of the conclusions of the financial plan is that streamlining coordination, administration, and capital programming and acquisition are absolute imperatives for Tulare County if there is a desire to improve transit mobility with in the county.

Figure 5-1   Base Case Financial Forecast

Tulare County - BASE CASE - all transit agencies

	2015	2016	2017	2018	2019	2020	2025	2030	2035	2040	Total 25 years
Revenues											
Fares	$ 3,106,689	$ 3,315,477	$ 3,467,847	$ 3,599,987	$ 3,837,371	$ 3,988,578	$ 5,120,806	$ 6,574,437	$ 8,440,707	$ 10,836,751	$ 159,059,020
Local Contracts	$ 1,169,000	$ 1,170,800	$ 1,172,700	$ 1,174,600	$ 1,175,600	$ 1,177,429	$ 1,185,918	$ 1,194,469	$ 1,203,082	$ 1,211,756	$ 30,930,438
LTF/STA	$ 7,531,819	$ 7,794,385	$ 7,835,945	$ 8,311,144	$ 8,042,019	$ 8,539,104	$ 9,681,101	$ 10,975,825	$ 12,443,701	$ 14,107,888	$ 270,175,030
New STA Starts in 2018	$ -	$ -	$ -	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 66,003,615
Measure R	$ 1,760,240	$ 2,086,291	$ 1,807,492	$ 1,833,140	$ 2,010,690	$ 1,879,606	$ 2,007,067	$ 2,143,171	$ 2,288,505	$ 2,443,695	$ 54,379,431
Other Local Funds	$ 799,060	$ 851,002	$ 652,435	$ 398,931	$ (777,262)	$ 1,849,557	$ 628,954	$ 628,954	$ 628,954	$ 628,954	$ 19,404,311
Tribal Funds	$ -	$ -	$ -	$ -	$ -	$ -					$ -
Other state funds	$ 1,943,343	$ 1,957,904	$ 575,492	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,476,739
Cap and Trade (LCTOP)	$ 167,017	$ 286,466	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	130,289	$ 3,580,419
Federal Funds (FTA 5307, 5311, 5339)	$ 6,683,308	$ 5,472,617	$ 6,690,665	$ 6,898,957	$ 7,174,941	$ 6,602,532	$ 6,522,732	$ 6,443,897	$ 6,366,015	$ 6,289,074	$ 168,415,254
Federal Funds (FHWA - CMAQ and other)	$ 2,854,956	$ 2,752,606	$ 5,801,261	$ 3,225,715	$ 4,030,717	$ 3,704,205	$ 4,806,076	$ 6,235,714	$ 8,090,620	$ 10,497,295	$ 153,535,258
Total Revenues	$ 26,015,432	$ 25,687,548	$ 28,134,126	$ 28,309,037	$ 28,360,640	$ 30,607,574	$ 32,952,665	$ 37,196,479	$ 42,461,595	$ 49,015,423	$ 929,225,548
Expenditures											
O&M (fixed route and demand response)	$ 19,028,797	$ 19,842,966	$ 20,582,410	$ 21,114,481	$ 21,663,681	$ 22,231,810	$ 25,973,967	$ 30,346,021	$ 35,453,999	$ 45,518,242	$ 752,709,211
Capital Expense Rolling Stock	$ 3,113,400	$ 5,338,118	$ 4,820,538	$ 5,808,415	$ 2,722,500	$ 5,001,122	$ 4,914,084	$ 5,405,492	$ 5,946,041	$ 6,540,645	$ 136,986,597
Capital Expense Passenger Facilities and Amenities	$ 124,260	$ 180,135	$ 1,077,722	$ 156,660	$ 214,452	$ 228,264	$ 363,274	$ 399,601	$ 439,561	$ 483,517	$ 9,773,126
Capital Expense Operating Facilities	$ 1,097,000	$ 35,000	$ 35,000	$ 35,000	$ 335,000	$ 35,000	$ 288,200	$ 317,020	$ 348,722	$ 383,594	$ 7,388,196
Capital Expense Corridor Development	$ -	$ -	$ 550,000	$ -	$ -	$ -	$ 100,833	$ 110,917	$ 122,008	$ 134,209	$ 2,554,315
Capital Expense Information Technology	$ 86,300	$ 630,120	$ 88,000	$ 205,120	$ 480,000	$ 130,000	$ 296,916	$ 326,607	$ 359,268	$ 395,195	$ 7,846,481
Total Expenses	$ 23,449,757	$ 26,026,339	$ 27,153,670	$ 27,319,676	$ 25,415,633	$ 27,626,196	$ 31,937,274	$ 36,905,658	$ 42,669,600	$ 53,455,403	$ 917,257,926
Balance- Revenues minus expenses	$ 2,565,675	$ (338,791)	$ 980,456	$ 989,362	$ 2,945,006	$ 2,981,378	$ 1,015,392	$ 290,821	$ (208,005)	$ (4,439,980)	$ 11,967,622

FINANCIAL PLAN – 25 YEAR FORECAST

Figure 5-2 presents a forecast that incorporates the entirety of the action plan outlined in Chapter 4. It must be noted that the assumptions about capital and operating costs are current year estimates that are inflated over time based on the current rate of inflation. To the degree indicated the same is true for revenues. The action plan items are added to the "base case" to access the necessary financial resource required to implement the action plan. The action plan calls for a spending increase of approximately 27%, or an accumulated total of $243 million in transit spending over the 25 year life of the plan. As with all long range forecasts this must be considered an estimate of the magnitude of the cost of the action plan as opposed to an absolute value.

The questions for Tulare County are interrelated and twofold:

- Are the improvements outlined in the Action Plan of the Long Range Plan a value for this level of investment?

- If the answer to the first question is in the affirmative then how should Tulare County and TCAG move ahead to fund the improvements?

As mentioned in the revenue section of the plan, the estimates of the level of local funding allocated to transit are conservative. If Local Transit Fund (LTF) and Measure R funding allocations are revisited, coupled with new STA revenues, there are sufficient funds to forward, most, if not all, the action plan. In addition LCTOP funds may also be more available as the state level Cap and Trade fund accumulates. On the downside, there is an over-dependence on federal CMAQ funds and the long term availability of federal transit funds is uncertain.

What is presented in the figure below is a summary of action plan categories. A project by project expenditure plan is available in a model that is in the care of TCAG staff.

Figure 5-2   Long Range Plan Financial Plan

Long Range Plan Financial Plan - all agencies	2015	2016	2017	2018	2019	2020	2025	2030	2035	2040	Total 25 years		Change from Base	% Increase
Revenues														
Fares	$ 3,106,689	$ 3,315,477	$ 3,467,847	$ 3,599,987	$ 3,837,371	$ 3,988,578	$ 5,120,806	$ 6,574,437	$ 8,440,707	$ 10,836,751	$ 159,059,020			
Local Contracts	$ 1,169,000	$ 1,170,800	$ 1,172,700	$ 1,174,600	$ 1,175,600	$ 1,177,429	$ 1,185,918	$ 1,194,469	$ 1,203,082	$ 1,211,756	$ 30,930,438			
LTF/STA	$ 7,531,819	$ 7,794,385	$ 7,835,945	$ 8,311,144	$ 8,042,019	$ 8,539,104	$ 9,681,101	$ 10,975,825	$ 12,443,701	$ 14,107,888	$ 270,175,030			
New STA Funding Starting in 2018	$ -	$ -	$ -	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 2,869,722	$ 66,003,615			
Measure R	$ 1,760,240	$ 2,086,291	$ 1,807,492	$ 1,833,140	$ 2,010,690	$ 1,879,606	$ 2,007,067	$ 2,143,171	$ 2,288,505	$ 2,443,695	$ 54,379,431			
Other Local Funds	$ 799,060	$ 851,002	$ 652,435	$ 398,931	$ (777,262)	$ 1,849,557	$ 628,954	$ 628,954	$ 628,954	$ 628,954	$ 19,404,311			
Tribal Funds	$ -	$ -	$ -	$ -	$ -	$ -					$ -			
Other state funds	$ 1,943,343	$ 1,957,904	$ 575,492	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,476,739			
Cap and Trade (LCTOP)	$ 167,017	$ 286,466	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 130,289	$ 3,580,419			
Federal Funds (FTA 5307, 5311, 5339)	$ 6,683,308	$ 5,472,617	$ 6,690,665	$ 6,898,957	$ 7,174,941	$ 6,602,532	$ 6,522,732	$ 6,443,897	$ 6,366,015	$ 6,289,074	$ 168,415,254			
Federal Funds (FHWA - CMAQ and other)	$ 2,854,956	$ 2,752,606	$ 5,801,261	$ 3,225,715	$ 4,030,717	$ 3,704,205	$ 4,806,076	$ 6,235,714	$ 8,090,620	$ 10,497,295	$ 153,535,258			
Total Revenues	$ 26,015,432	$ 25,687,548	$ 28,134,126	$ 28,309,037	$ 28,360,640	$ 30,607,574	$ 32,952,665	$ 37,196,479	$ 42,461,595	$ 49,015,423	$ 929,959,514			
													Change from Base	% Increase
Expenditures														
O&M (fixed route and demand response)	$ 19,028,797	$ 19,862,966	$ 20,602,410	$ 21,644,481	$ 22,323,681	$ 23,821,810	$ 31,342,095	$ 39,336,606	$ 49,244,790	$ 63,223,793	$ 944,515,611	$	191,806,400	25%
Capital Expense Rolling Stock	$ 3,113,400	$ 5,338,118	$ 4,820,538	$ 5,888,415	$ 3,222,500	$ 15,071,122	$ 6,214,084	$ 5,405,492	$ 5,946,041	$ 7,540,645	$ 181,811,597	$	44,825,000	33%
Capital Expense Passenger Facilities and Amenities	$ 124,260	$ 180,135	$ 1,152,722	$ 606,660	$ 724,452	$ 303,264	$ 363,274	$ 399,601	$ 439,561	$ 483,517	$ 11,070,626	$	1,297,500	13%
Capital Expense Operating Facilities	$ 1,097,000	$ 35,000	$ 135,000	$ 735,000	$ 335,000	$ 35,000	$ 288,200	$ 317,020	$ 348,722	$ 383,594	$ 8,188,196	$	800,000	11%
Capital Expense Corridor Development	$ -	$ -	$ 550,000	$ 50,000	$ 400,000	$ 400,000	$ 280,833	$ 110,917	$ 122,008	$ 134,209	$ 5,304,315	$	2,750,000	108%
Capital Expense Information Technology	$ 86,300	$ 630,120	$ 88,000	$ 255,120	$ 1,730,000	$ 130,000	$ 396,916	$ 326,607	$ 359,268	$ 395,195	$ 9,646,481	$	1,800,000	23%
Total Expenses	$ 23,449,757	$ 26,026,339	$ 27,153,670	$ 27,319,676	$ 25,415,633	$ 27,626,196	$ 38,885,402	$ 45,896,243	$ 56,460,391	$ 72,160,954	$ 1,160,536,826	$	243,278,900	27%
Balance- Revenues minus expenses	$ 2,565,675	$ (338,791)	$ 980,456	$ 989,362	$ 2,945,006	$ 2,981,378	$ (5,932,736)	$ (8,699,764)	$ (13,998,796)	$ (23,145,531)	$ (230,577,312)	$	9,223,092.48	needed per year
ACTION PLAN Summary and Additions														
Non-agency Specific Service Expansion (included in O&M)		$ 20,000	$ 20,000	$ 530,000	$ 660,000	$ 1,590,000	$ 3,110,000	$ 3,210,000	$ 3,210,000	$ 3,210,000				
Non-agency Specific Rolling Stock (included in Rolling Stock)		$ -	$ -	$ 80,000	$ 500,000	$ 10,070,000	$ 6,500,000	$ -	$ -	$ 5,000,000				
Non-agency Specific Passenger Facilites (included in Pasenger Facilites)		$ -	$ 75,000	$ 450,000	$ 510,000	$ 75,000	$ -	$ -	$ -	$ -				
Non-agency Specific Corridor Development (Included in Operating Facilities)		$ -	$ 100,000	$ 700,000	$ -	$ -	$ -	$ -	$ -	$ -				
Non-agency Specific Operating Facilities (included in Corridor Development)		$ -	$ -	$ 50,000	$ 400,000	$ 400,000	$ 900,000	$ -	$ -	$ -				
Non-agency Specific Information Technology (Included in Information Technology)		$ -	$ -	$ 50,000	$ 1,250,000	$ -	$ 500,000	$ -	$ -	$ -				

APPENDIX A
Route Profiles

ROUTE PROFILES

Tulare County Area Transit

Tulare County Area Transit (TCaT) operates nine fixed routes that connect areas within the county. The four intercity routes connect communities throughout the county. These routes operate seven days a week with service running from morning to evening with frequencies ranging from 35 to 90 minutes. Weekend service for these routes runs from late morning to early evening, with each route operating three to six bi-directional trips. TCaT also operates five local circulator routes and offers dial-a-ride service to members of the general public within four service areas in the county.

Systemwide ridership has seen a steady increase over the past five fiscal years, with nearly 350,000 annual boardings in 2013, as depicted in Figure 2-37. Ridership has increased an average of 25% each year since 2009. Boardings per hour are highest on the North County and Southeast County routes, as depicted in Figure 2-38.

Figure 2-1   TCaT Five-Year Fixed-Route Ridership
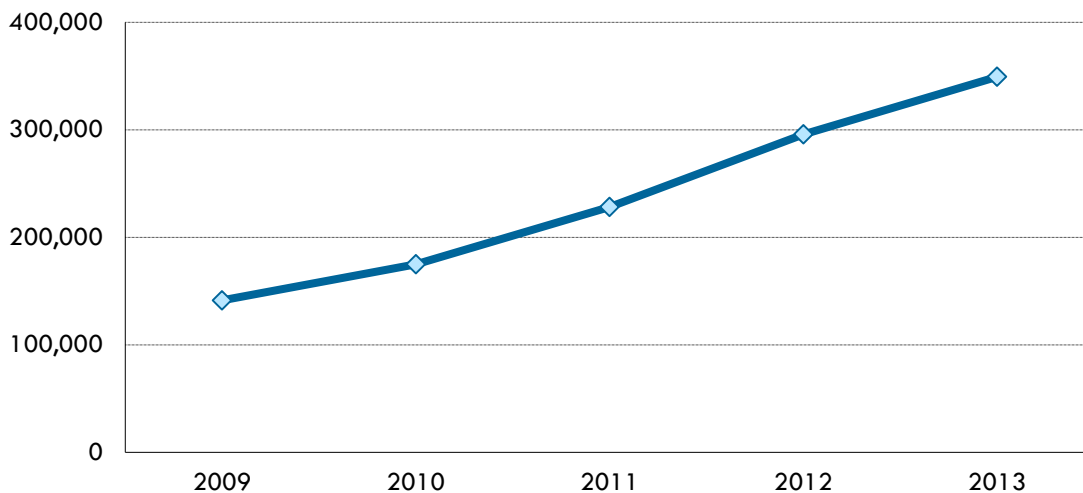
Figure 2-2   TCaT Boardings per Revenue Hour, Regional Routes, FY 13/14
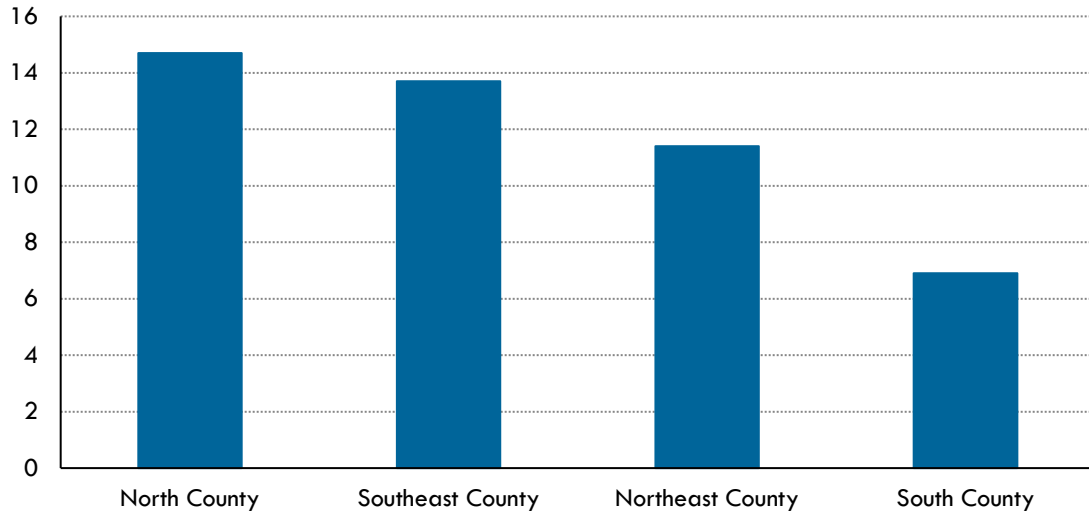
In addition to intercity routes, TCaT also operates five feeder routes that connect to regional transit centers. Route 50 operates Monday-Saturday and connects to Dinuba. Routes 60, 70, 80, and 90 operate Monday–Friday and connect to Porterville.

Figure 2-46 shows the boardings per hour for each of these routes.

Figure 2-3   TCaT Boardings per Revenue Hour, Local Circulators, FY 13/14
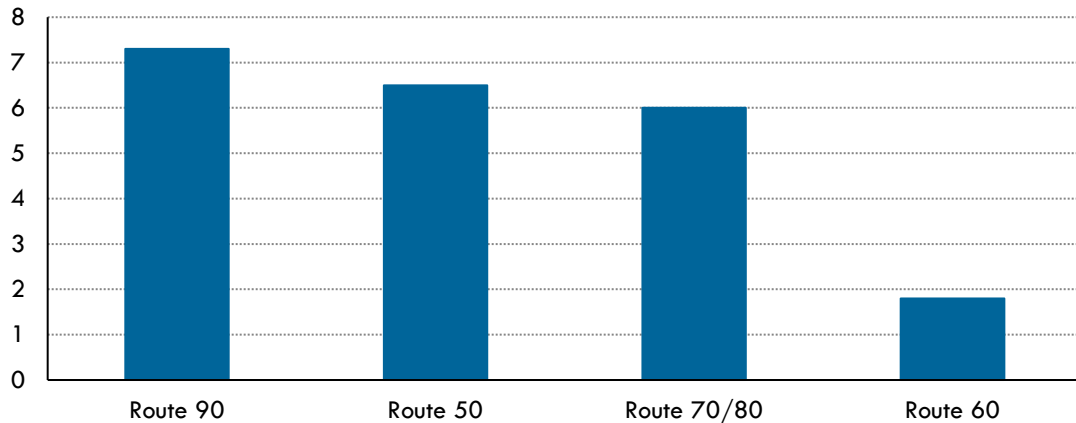
Stop-level ridership for TCaT's regional routes is depicted in Figure 2-39. This data was collected by operators in October 2014. The most recent service changes include an additional weekend run for South County Route 20 and a realignment of North County Route 20.

Figure 2-4   TCaT Average Daily Ridership by Stop
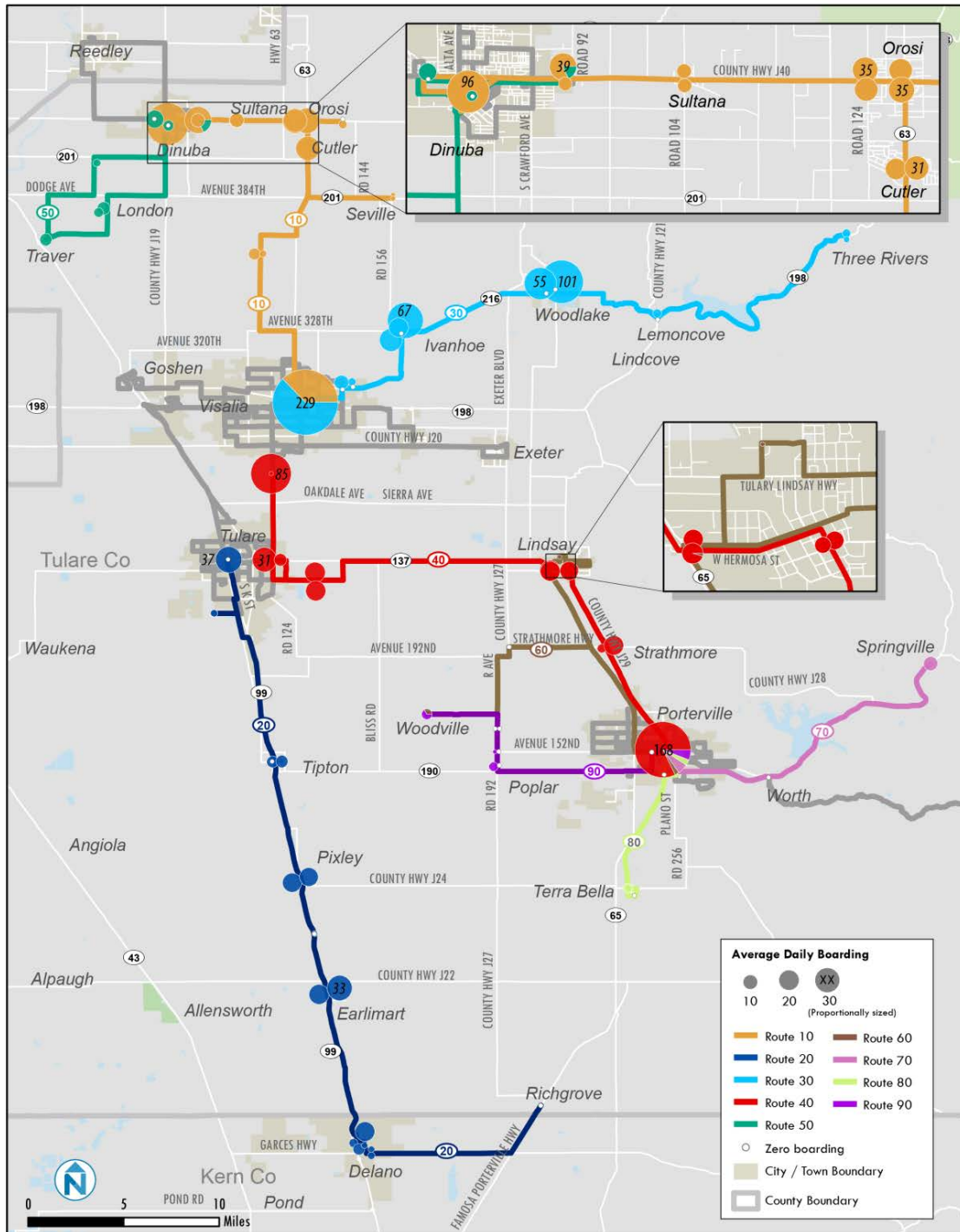
TCaT Route 10 North County

The North County route operates in the northwest quadrant of Tulare County, connecting Visalia, Seville, Cutler-Orosi, Sultana, and Dinuba. Weekday service is comprised of 12 round trips with 60 minute headways. Weekend service consists of four round trips throughout the day.

After departing the Visalia Transit Center, the route travels north along Road 124, deviating west via Road 112, returning north on Road 124/Dinuba Boulevard to serve Cutler, turning west in Orosi along Avenue 416, completing a terminal loop in Dinuba, and arriving at the Dinuba Transit Center. During weekday service the north and southbound routes periodically deviate east to serve Seville via Avenue 384 and East Orosi via Avenue 416. Weekend route configuration is identical to the weekday route minus deviations to Seville and East Orosi. Destinations served include the Visalia and Dinuba Transit Centers, the Visalia Justice Complex, the Dinuba K-Mart, and the Dinuba Walmart.

Among TCaT's regional routes, North County saw the second highest annual ridership at 100,220 and the highest productivity with 14.7 boardings per revenue hour (FY 13/14). The Visalia and Dinuba Transit Centers see the most boarding activity, with daily averages of 96 and 85, respectively.

TCaT 10/North County		
Annual Boardings		100,220
Annual Revenue Hours		6,800
Annual Boardings per Hour		14.7
Frequency (minutes)	AM	60
	Midday	60
	PM	60
	Sat/Sun	120-150
Span	Mon-Fri	6:15 a.m. -7:09 p.m.
	Sat/Sun	9:30 a.m. - 5:46 p.m.
Trips	Mon-Fri	24
	Sat/Sun	8

TCaT Route 20 South County

The South County Route connects communities along the Highway 99 corridor, operating in the southwest quadrant of the county between Tulare and Delano, just across the border in Kern County. Weekday service consists of 10 round trips operating at frequencies between 60 and 90 minutes. Weekend service consists of three round trips every few hours.

After departing the Tulare Transit Center, the route travels south via J Street, deviating west to serve Matheny Tract, then merging onto Highway 99 to serve Tipton, Pixley, Teviston, and Earlimart. After crossing into Kern County, the route deviates via Glenwood Street, 11th Avenue, and Jefferson Street to serve the Delano Transit Center and the Ranch Market. Two of the weekday round trips extend past the Ranch Market to serve the Regional Medical Center in Delano and the Richgrove Food Center in Richgrove.

Among the four regional routes, South County saw the least annual ridership at 45,954 and the lowest productivity at 6.9 boardings per revenue hour (FY 13/14). The Earlimart United Health Center sees the most boarding activity, with a daily average of 54 passengers. Tulare and Delano Transit Centers have daily averages of 37 and 25 boardings, respectively.

TCaT 20/South County		
Annual Boardings		45,954
Annual Revenue Hours		6,633
Annual Boardings per Hour		6.9
Frequency (minutes)	AM	60-90
	Midday	60-90
	PM	60-90
	Sat/Sun	180+
Span	Mon-Fri	5:45 a.m. - 8:05 p.m.
	Sat/Sun	9:30 a.m. - 5:15 p.m.
Trips	Mon-Fri	20
	Sat/Sun	6

TCaT Route 30 Northeast County

The Northeast County route operates in the northern half of Tulare County and connects Visalia, Ivanhoe, Woodlake, and Three Rivers primarily along the Highway 216 Corridor. Weekday service consists of 18 round trips with headways between 30 and 70 minutes. Weekend service includes six round trips with roughly three hours between each trip.

Beginning at the Visalia Transit center, the route travels northeast on Highway 216 to Ivanhoe, deviating through the town of Woodlake via North Cypress Street, West Whitney Avenue, and Valencia Boulevard. Four of the weekday trips continue east on Highway 216, turning northeast onto Highway 198 in Lemon Cove and terminating in Three Rivers. The weekend configuration is equal to that weekday route, minus the extension to Lemon Cove and Three Rivers.

Among TCaT's four regional routes, Northeast County saw the second-lowest ridership levels and route productivity at 79,985 annual boardings and 11.4 boardings per revenue hour (FY 13/14). Three stops on the Northeast County route comprise the bulk of its ridership. The Visalia Transit Center sees a daily average of 144 passenger boardings. The Woodlake Valencia house has an average daily boarding of 101 riders, and the Ivanhoe Post Office has an average of 87.

TCaT 30/Northeast County		
Annual Boardings		79,985
Annual Revenue Hours		7,014
Annual Boardings per Hour		11.4
Frequency (minutes)	AM	35
	Midday	35-70
	PM	30-40
	Sat/Sun	180+
Span	Mon-Fri	5:15 a.m. - 8:15 p.m.
	Sat/Sun	9:40 a.m. - 5:30 p.m.
Trips	Mon-Fri	36
	Sat/Sun	12

TCaT Route 40 Southeast County

The Southeast County route connects south Visalia, Tulare, Lindsay, Strathmore, and Porterville primarily via Mooney Boulevard, Highway 137, and Orange Belt Drive. Weekday service consists of 12 round trips with headways of 60 to 65 minutes. Weekend service includes four round trips with roughly two to three hours between each trip.

Beginning at the Tulare County Government Plaza in south Visalia, the route turns south via Mooney Boulevard, passing through the eastern edge of Tulare, turning east via Bardsley Avenue to serve the College of the Sequoias (COS) Tulare Campus, north via Road 140, and east via Highway 137. The route then serves downtown Lindsay via Old Tulare Highway and South Mirage Avenue, continuing south onto Orange Belt Drive, stopping in Strathmore and terminating at the Porterville Transit Center.

TCaT 40/Southeast County		
Annual Boardings		101,182
Annual Revenue Hours		7,376
Annual Boardings per Hour		13.7
Frequency (minutes)	AM	65
	Midday	60-65
	PM	65
	Sat/Sun	120-180
Span	Mon-Fri	5:45 a.m. - 7:45 p.m.
	Sat/Sun	9:45 a.m. - 6:40 p.m.
Trips	Mon-Fri	24
	Sat/Sun	8

Among TCaT's four regional routes, Southeast County had the highest ridership and the second-highest route productivity at 101,182 annual boardings and 13.7 passengers per revenue hour. Most boardings occur at the Porterville Transit Center and the Tulare County Government Plaza, with daily averages of 138 and 85 respectively. Stops at the Lindsay McDonalds, COS Tulare, and Mooney Boulevard at Highway 137 have average daily boardings of approximately 40 passengers.

TCaT Route 50 Dinuba-London-Traver-Delft Colony

Route 50 operates in northwest Tulare County, and connects to the Dinuba Transit Center. It provides four round trips Monday through Saturday.

Southbound service begins at the Dinuba Transit Station, then travels to London via Road 80, Avenue 384, and Road 60. It continues to Traver via Elkhorn Avenue before returning via north Road 40, Road 56. After stopping in Delft Colony, it returns to Dinuba via Avenue 400 and Road 80. Destinations served include the London Market, the Dinuba K-Mart, and the Dinuba Walmart.

TCaT Route 50		
Annual Boardings		9,208
Annual Revenue Hours		1,406
Annual Boardings per Hour		6.5
Frequency	AM	2 Trips
	Midday	1 Trip
	PM	1 Trip
	Sat	4 Trips
Span	Mon-Fri	8:20 a.m. - 6:16 p.m.
	Sat	9:30 a.m. - 3:20 p.m.
Trips	Mon-Fri	4
	Sat	4

During the previous fiscal year, Route 50 carried 9,208 passengers with an average of 6.5 boardings per revenue hour, making it the second most productive route among TCaT's four circulators.

TCaT Route 60 Lindsay-Plainview-Woodville

Route 60 provides service between Lindsay and Porterville. It operates Monday through Friday with five southbound and four northbound trips.

Southbound service begins in Lindsay and travels to Plainview via Highway 65 and Avenue 196, continuing southwest to Woodville before terminating at the Porterville Transit Center. One southbound trip and two of the northbound trips between Porterville and Lindsay operate as express routes via Highway 65. Northbound service bypasses Woodville and ends in Lindsay, serving the Lindsay Wellness Center and Lindsay High School.

TCaT Route 60		
Annual Boardings		2,107
Annual Revenue Hours		1,155
Annual Boardings per Hour		1.8
Frequency	AM	3 Trips
	Midday	4 Trips
	PM	2 Trips
Span	Mon-Fri	6:20 a.m. - 6:30 p.m.
Trips	Mon-Fri	9

During the previous fiscal year, Route 60 carried 2,107 passengers with an average of 1.8 boardings per hour, making it the least productive route systemwide. Most boardings occur at the Porterville Transit Center, with a daily average of four passengers.

TCaT Route 70 Springville-Porterville

Route 70 provides weekday service between Porterville and Springville with two daily round trips.

Beginning at the Porterville Transit Center, the route travels east via D Street, Olive Avenue, Plano Street, and Highway 190. The route ends at Sequoia Dawn Apartments in Springville.

TCaT Route 70		
Annual Boardings		5,799[1]
Annual Revenue Hours		966[2]
Annual Boardings per Hour		6[3]
Frequency	AM	2 Trips
	Midday	---
	PM	2 Trips
Span	Mon-Fri	8:45 a.m. - 4:00 p.m.
Trips	Mon-Fri	4

Ridership data for Routes 70 and 80 is reported together by TCaT. During the previous fiscal year, both routes together carried 5,799 passengers with an average of six boardings per revenue hour. Combined, these routes were the second-least productive among all TCaT Routes. The highest boardings for Route 70 occur at the Porterville Transit Center and Sequoia Dawn.

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[1] Combined Route 70 and 80 Annual Boardings

[2] Combined Route 70 and 80 Annual Revenue Hours

[3] Combined Route 70 and 80 Boardings per Hour

TCaT Route 80 Terra Bella-Porterville

Route 80 provides weekday service between Porterville and Terra Bella with two daily round trips.

Beginning at the Porterville Transit Center, the route travels south via Olive Avenue, Plano Street, College Avenue, and South Main Street; then performs a counterclockwise terminal loop in Terra Bella. The northern alignment is the same as the southern route, minus the deviation via Olive Avenue and Plano Street.

TCaT Route 80		
Annual Boardings		5,799[4]
Annual Revenue Hours		966[5]
Annual Boardings per Hour		6[6]
Frequency	AM	2 Trips
	Midday	---
	PM	2 Trips
Span	Mon-Fri	9:55 a.m. - 4:45 p.m.
Trips	Mon-Fri	4

Being that Routes 70 and 80 are interlined, their ridership data is combined. During the previous fiscal year, both routes together carried 5,799 passengers with an average of six boardings per revenue hour. Combined, these routes were the second-least productive among all TCaT Routes. The highest boardings for Route 80 occur at the Porterville Transit Center and the Terra Bella Fire Station.

TCaT Route 90 Woodville-Poplar-Porterville

Route 90 provides weekday service between Woodville, Poplar, and Porterville with four eastbound and five westbound trips per day.

The route travels east from Woodville via Avenue 168, south on Road 192, then east into Porterville via Highway 190.

During the previous fiscal year, Route 90 carried a total of 4,858 passengers with an average of 7.3 boardings per revenue hour, making it the most productive among TCaT's local circulators.

TCaT Route 90		
Annual Boardings		4,858
Annual Revenue Hours		664
Annual Boardings per Hour		7.3
Frequency	AM	3 Trips
	Midday	4 Trips
	PM	2 Trips
Span	Mon-Fri	6:30 a.m. - 6:30 p.m.
Trips	Mon-Fri	9

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[4] Combined Route 70 and 80 Annual Boardings

[5] Combined Route 70 and 80 Annual Revenue Hours

[6] Combined Route 70 and 80 Boardings per Hour

Visalia Transit

Visalia Transit operates thirteen fixed routes, consisting of regular local routes, one downtown circulator, and one intercity route jointly operated with Tulare Intermodal Express (TIME).

The fixed-route system operates seven days a week, with weekday service running between 6 a.m. and 10:30 p.m., and weekend service between 8 a.m. and 8 p.m. Dial-A-Ride service within the city limits of Visalia operates Monday through Friday from 6 a.m. to 9:30 p.m. and on weekends from 8 a.m. to 6:30 p.m. All routes (aside from Route 12) begin and end at the Visalia Transit Center on the corner of East Oak Street and North Bridge Street. Here riders can connect to two TCaT routes (10 and 30) with service to other cities in Tulare County.

Systemwide ridership in Visalia increased from 2009 to 2012, reaching 1,853,165 boardings in the 2012 fiscal year, then dropping to 1,637,037 for the 2013 fiscal year.

January 2014 service changes included a change in service frequency for Routes 3 and 8A/8B (from 30 to 45 minutes), increased weekend service on Route 6, and new weekly passes. August 2014 service changes included the elimination of express service from Route 1A/1B, schedule adjustments to Routes 6, 7, and 12, and fare increases for fixed-route (from $1.25 to $1.50) and demand-response service. References to systemwide data in this section refer to the Visalia system.

Figure 2-5   Visalia Transit Five-Year System Ridership
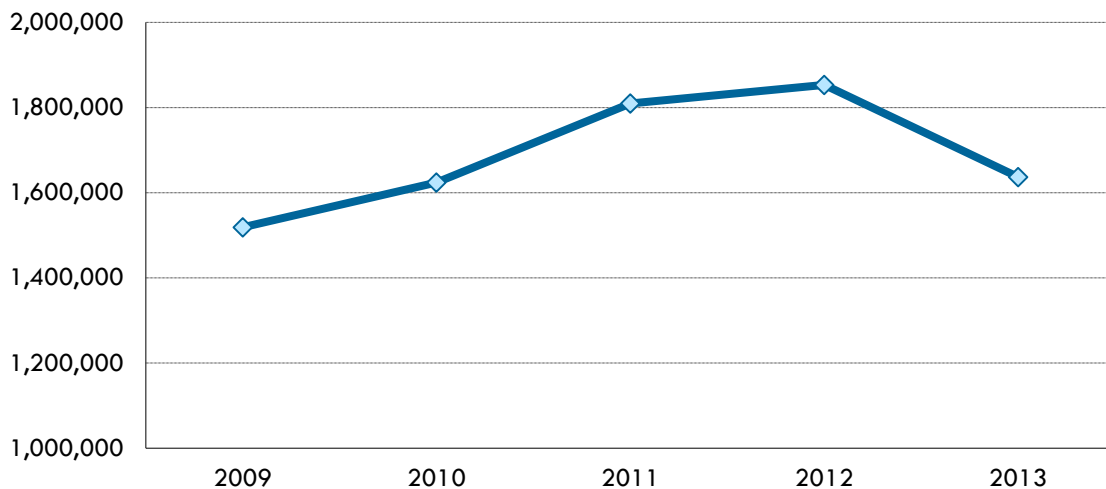
Figure 2-6　　Visalia Transit Boardings per Revenue Hour, FY 13/14
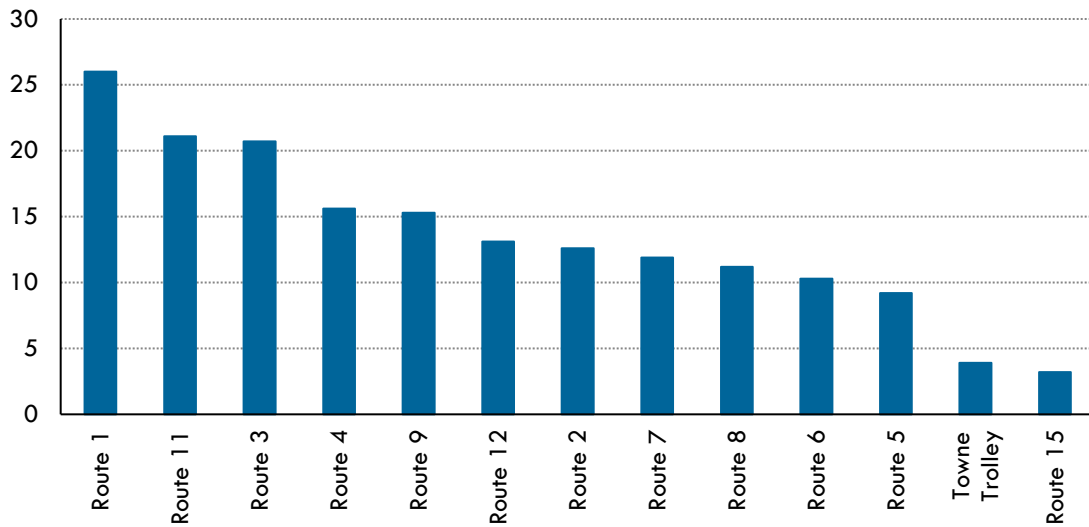
Visalia Transit Route 1A/1B

Route 1 provides service between downtown Visalia and the Government Plaza in south Visalia. Here riders can connect to TCaT Route 40 with service to Porterville. Weekday service runs from 6 a.m. to 9:48 p.m. Weekend service runs from
8 a.m. to 6:58 p.m. Trips operate every 15 minutes on weekdays (30 minutes after 7 p.m.) and every 20 minutes on weekends.

Beginning at the Visalia Transit Center, the Route 1A travels west via East Center Avenue and West Main Street, then travels south to the Government Plaza via South Mooney Boulevard. The northbound route 1B follows the same alignment, but returns to the Transit Center via West Acequia Avenue and North Bridge Street

Visalia Transit Route 1		
Annual Boardings		486,761
Annual Revenue Hours		18,696
Annual Boardings per Hour		26.0
Frequency (minutes)	AM	15
	Midday	15
	PM	15
	Evening	30
	Sat/Sun	20
Span	Mon-Fri	6:00 a.m. -9:48 p.m.
	Sat/Sun	8:00 a.m. - 6:58 p.m.
Trips	Mon-Fri	114
	Sat/Sun	62

instead of East Center Avenue. Destinations served include Recreation Park, Redwood High School, College of the Sequoias, Visalia Mall, Sequoia Mall (with connections to Routes 2 and 12), and Government Plaza.

During the previous fiscal year, Route 1 carried 486,761 passengers with an average of 26 boardings per revenue hour, making it the most productive route in Tulare County.

Visalia Transit Route 2A/2B

Route 2 provides service between downtown Visalia and the Visalia Medical Clinic, passing through south and west Visalia. Weekday service runs from 6 a.m. to 10:16 p.m. Weekend service runs from 8 a.m. to 7:16 p.m. Trips operate every 30 minutes, seven days a week.

Route 2A travels south from the Visalia Transit Center via South Locust Street and South Court Street, west primarily via West Caldwell Avenue, and north primarily via South Akers Street, terminating at the Visalia Medical Clinic on West Hillsdale Avenue. Route 2B returns via the same alignment, but returning to the Transit Center via South Court Street without the South Locust Street deviation. Destinations served include KDH Urgent Care, Sequoia Mall (with

Visalia Transit Route 2		
Annual Boardings		191,933
Annual Revenue Hours		15,270
Annual Boardings per Hour		12.6
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	30
	Sat/Sun	30
Span	Mon-Fri	6:00 a.m. -10:16 p.m.
	Sat/Sun	8:00 a.m. - 7:16 p.m.
Trips	Mon-Fri	62
	Sat/Sun	42

connections to Routes 1 and 12), San Joaquin Valley College, and the Visalia Medical Clinic.

During the previous fiscal year, Route 2 carried a total of 191,933 passengers with an average of 12.6 boardings per revenue hour, falling just below the Visalia systemwide average of 13.4.

Visalia Transit Route 3

Route 3 operates in a clockwise loop through east Visalia. Weekday service runs from 6:30 a.m. to 10:10 p.m. Weekend service operates from 8 a.m. to 7:10 p.m. Trips operate every 45 minutes, seven days a week.

After departing Visalia Transit Center, Route 3 travels along a clockwise loop alignment, primarily via North Santa Fe Street, East Houston Avenue, North Ben Maddox Way, East Noble Avenue, South Lovers Lane, East Walnut Avenue, South Pinkham Street, and East Tulare Avenue. Destinations served include Visalia City Coach, Walmart, and R&N Market.

During the previous fiscal year, Route 3 carried a total of 85,905 passengers with an average of 20.7 boardings per hour, making it the third most productive route systemwide.

Visalia Transit Route 3		
Annual Boardings		85,905
Annual Revenue Hours		4,158
Annual Boardings per Hour		20.7
Frequency (minutes)	AM	45
	Midday	45
	PM	45
	Evening	45
	Sat/Sun	45
Span	Mon-Fri	6:30 a.m. - 10:10 p.m.
	Sat/Sun	8:00 a.m. - 7:10 p.m.
Trips	Mon-Fri	21
	Sat/Sun	15

Visalia Transit Route 4A/4B

Route 4 connects downtown Visalia to west Visalia, traveling parallel to the Highway 198 corridor. Weekday service runs from 6 a.m. to 9:51 p.m. Weekend service operates from 8 a.m. to 6:51 p.m. Trips operate every 30 minutes seven days a week, and every 60 minutes after 7 p.m. on weeknights.

After departing the Visalia Transit Center, Route 4A travels west primarily via East Center Avenue, North Locus Street, and West Tulare Avenue. The route travels in a clockwise loop via South Linwood Street, West Cypress Avenue (beginning route 4B after arriving at the Visalia Medical Clinic), Hurley Avenue, and Chinowth Street. Route 4B returns along a similar alignment via West Tulare Avenue, South Court Street, and North Bridge Street. Destinations served include the College of the Sequoias, Brandman University, and the Visalia Medical Clinic.

Visalia Transit Route 4		
Annual Boardings		156,168
Annual Revenue Hours		10,025
Annual Boardings per Hour		15.6
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	60
	Sat/Sun	30
Span	Mon-Fri	6:00 a.m. - 9:51 p.m.
	Sat/Sun	8:00 a.m. - 6:51 p.m.
Trips	Mon-Fri	59
	Sat/Sun	42

During the previous fiscal year, Route 4 carried a total of 156,168 passengers with an average of 15.6 boardings per hour, making it the fourth most productive route systemwide.

Visalia Transit Route 5A/5B

Route 5 connects downtown Visalia to west Visalia, traveling parallel to the Highway 198 corridor, operating north of Route 2 and south of Route 5. Weekday service runs from 6 a.m. to 9:55 p.m. Weekend service operates from 8 a.m. to 6:55 p.m. Trips operate every 30 minutes seven days a week.

After departing the Visalia Transit Center, Route 5A travels south via East Main Street and South Ben Maddox Way, then west via Walnut Avenue, and north on South Akers Street to terminate at the Visalia Medical Clinic. From there Route 5B returns to Walnut Street via West Tulare Avenue and South Linwood Street, then follows the same alignment as the westbound route to return to the Transit Center. Destinations served include the Visalia Mall, the Visalia Medical Clinic, and various car dealerships on South Ben Maddox Way.

Visalia Transit Route 5		
Annual Boardings		100,339
Annual Revenue Hours		10,917
Annual Boardings per Hour		9.2
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	30
	Sat/Sun	30
Span	Mon-Fri	6:00 a.m. - 9:55 p.m.
	Sat/Sun	8:00 a.m. - 6:55 p.m.
Trips	Mon-Fri	62
	Sat/Sun	42

During the previous fiscal year, Route 5 carried a total of 100,339 passengers with an average of 9.2 boardings per hour, making it the third least productive route systemwide.

Visalia Transit Route 6

Route 6 provides service between Visalia and Goshen to the west, operating north of Highway 198. Weekday service runs from 6 a.m. to 10:30 p.m. Weekend service operates from 8 a.m. to 7:02 p.m. Trips operate every 45 to 60 minute frequencies on weekdays and every 45 minutes on weekends.

Route 6 travels west from the Visalia Transit Center primarily via West Murray Avenue, Houston Avenue, West Goshen Avenue, West Hurley Avenue, and West Doe Avenue. The route then performs a clockwise loop west of Highway 99, travels south on Effie Drive, then returns via the same alignment as the westbound route. Destinations served include Walmart, the Visalia Medical Clinic, Goshen Elementary, and several employers in Goshen.

Visalia Transit Route 6		
Annual Boardings		86,796
Annual Revenue Hours		8,408
Annual Boardings per Hour		10.3
Frequency (minutes)	AM	45-60
	Midday	45-60
	PM	45-60
	Evening	45-60
	Sat/Sun	45
Span	Mon-Fri	6:00 a.m. – 10:30 p.m.
	Sat/Sun	8:00 a.m. - 7:02 p.m.
Trips	Mon-Fri	36
	Sat/Sun	28

During the previous fiscal year, Route 5 carried a total of 86,796 passengers with an average of 10.3 boardings per hour, making it the fourth least productive route systemwide.

Visalia Transit Route 7A/7B

Route 7 circulates through downtown and northwest Visalia. Weekday service runs from 6 a.m. to 10:01 p.m. Weekend service operates from 8 a.m. to 6:55 p.m. Trips operate every 30 minutes seven days a week.

After departing Visalia Transit Center, Route 7A travels in a counterclockwise loop Via North Court Street, deviating north to loop around the Riverway Sports Park and the Target shopping center, then returns to the original alignment, traveling west primarily via West Riggin Avenue, looping back on Road 108, then traveling to downtown primarily via West Ferguson Avenue, West Houston Avenue, and North Locust Street. Route 7B operates on the same alignment, in a clockwise direction. Along with the Target and Riverway Sports Park, Route 7 also provides service to the Manuel Hernandez Community Center.

Visalia Transit Route 7		
Annual Boardings		221,787
Annual Revenue Hours		18,597
Annual Boardings per Hour		11.9
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	30
	Sat/Sun	30
Span	Mon-Fri	6:00 a.m. – 10:01 p.m.
	Sat/Sun	8:00 a.m. - 6:55 p.m.
Trips	Mon-Fri	62
	Sat/Sun	21

During the previous fiscal year, Route 7 carried a total of 221,787 passengers with an average of 11.9 boardings per revenue hour, roughly 1.5 boardings less than the systemwide average.

Visalia Transit Route 8A/8B

Route 8 circulates through downtown and northeast Visalia. Weekday service runs from 6 a.m. to 9:54 p.m. Weekend service operates from 8 a.m. to 7:09 p.m. Trips operate every 45 minutes seven days a week. Route 8B does not operate on weekends.

After departing the Visalia Transit Center, Route 8A travels along a counterclockwise alignment primarily via East Main Street, North Lovers Lane, East Saint John's Parkway (deviating north to serve the Target shopping center), and North Santa Fe Street. Route 8B travels clockwise on the same alignment. Along with Target, destinations served include Valley Oak Middle School and the Department of Motor Vehicles.

Visalia Transit Route 8		
Annual Boardings		100,496
Annual Revenue Hours		8,993
Annual Boardings per Hour		11.2
Frequency (minutes)	AM	45
	Midday	45
	PM	45
	Evening	45
	Sat/Sun	45
Span	Mon-Fri	6:00 a.m. - 9:54 p.m.
	Sat/Sun	8:00 a.m. - 7:09 p.m.
Trips	Mon-Fri	42
	Sat/Sun	15

During the previous fiscal year, Route 8 carried 100,496 passengers with an average of 11.2 boardings per revenue hour, or approximately two boardings less than the systemwide average.

Visalia Transit Route 9

Route 9 provides service between downtown Visalia, Farmersville, and Exeter. Weekday service runs from 6 a.m. to 10:17 p.m. Weekend service operates from 8 a.m. to 7:47 p.m. Trips operate every 90 minutes seven days a week.

From the Visalia Transit Center, Route 9A travels southeast primarily via South Ben Maddox Way, East Walnut Avenue, East Mineral King Avenue, Farmersville Road, and East Visalia Road. Before returning west via Route 9B, the route circles counterclockwise through Exeter via Road 188, All America City Highway, Avenue 276, and East Palm Street. Destinations served include the Exeter Save Mart and various local businesses in downtown Exeter.

Visalia Transit Route 9		
Annual Boardings		80,395
Annual Revenue Hours		5,271
Annual Boardings per Hour		15.3
Frequency (minutes)	AM	90
	Midday	90
	PM	90
	Evening	90
	Sat/Sun	90
Span	Mon-Fri	6:00 a.m. - 10:17 p.m.
	Sat/Sun	8:00 a.m. - 7:47 p.m.
Trips	Mon-Fri	22
	Sat/Sun	16

During the previous fiscal year, Route 9 carried 80,395 passengers with an average of 15.3 boardings per revenue hour, making it the 5th most productive route systemwide.

Visalia Transit/TIME Route 11X

Route 11x is jointly operated by Visalia Transit and TIME, and provides Monday through Saturday service between downtown Visalia and Tulare. Weekday service runs from 6:30 a.m. to 9:30 p.m. Saturday service runs from 8:30 a.m. to 6:30 p.m. Trips operate every 30 minutes.

After leaving the Visalia Transit Center, the route travels west on Highway 198, then south on Highway 99, and arrives to the Tulare Transit Center via J Street.

During the previous fiscal year, Route 11x carried a total of 175,958 passengers with an average of 21.1 boardings per revenue hour, making it the second most productive among all Visalia routes.

Visalia Transit Route 11X		
Annual Boardings		175,958
Annual Revenue Hours		8,349
Annual Boardings per Hour		21.1
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	30
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:30 p.m.
	Sat	8:30 a.m. - 6:30 p.m.
Trips	Mon-Fri	60
	Sat	36

Visalia Transit and TIME coordinate their respective Route 11X services so that they each operate 60-minute headways, allowing for combined 30-minute service. However, they do not share costs or revenues for the service, nor do they allow for transfers between the systems.

Visalia Transit Route 12

The only route that does not serve the Visalia Transit Center, Route 12 connects south Visalia to Farmersville and Exeter. Weekday service runs from 6:00 am to 9:45 p.m. Weekend service runs from 8 a.m. to 6:38 p.m. Trips operate every 60 minutes, seven days a week.

Route 12A departs from South Mooney Boulevard and West Orchard Avenue and travels east to Farmersville and Exeter via Avenue 280. Route 9B returns west along the same alignment, with a terminal counterclockwise loop via South Court Street, West Cameron Avenue, and Visalia Parkway. Route 12 does not connect with Government Plaza on Mooney Blvd. Destinations served include Save Mart in Exeter and the Costco, Lowes, Target, and Sequoia Mall in Visalia.

Visalia Transit Route 12		
Annual Boardings		65,483
Annual Revenue Hours		4,995
Annual Boardings per Hour		13.1
Frequency (minutes)	AM	60
	Midday	60
	PM	60
	Evening	60
	Sat/Sun	60
Span	Mon-Fri	6:00 a.m. - 9:45 p.m.
	Sat/Sun	8:00 a.m. - 6:38 p.m.
Trips	Mon-Fri	32
	Sat/Sun	22

During the previous fiscal year, Route 12 carried 65,483 passengers with an average of 13.1 boardings per revenue hour, just below the systemwide average of 13.4 boardings.

Visalia Transit Route 15

Route 15 operates between downtown and West Visalia. Weekday service runs from 6:00 am to 9:55 p.m. Weekend service runs from 8 a.m. to 6:16 p.m. Trips operate every 60 minutes on weekdays and every 45 minutes on weekends.

Route 15A travels west from the Visalia Transit Center via West Mineral King Avenue and Highway 198, terminating at San Joaquin College. Route 15B returns east along the same alignment. Westbound weekend service extends to the Visalia Airport upon request.

During the previous fiscal year, Route 15 carried 14,795 passengers with an average of 3.2 boardings per revenue hour, making it the least productive route systemwide.

Visalia Transit Route 15		
Annual Boardings		14,795
Annual Revenue Hours		4,604
Annual Boardings per Hour		3.2
Frequency (minutes)	AM	60
	Midday	60
	PM	60
	Evening	60
	Sat/Sun	45
Span	Mon-Fri	6:00 a.m. - 9:55 p.m.
	Sat/Sun	8:00 a.m. - 6:16 p.m.
Trips	Mon-Fri	32
	Sat/Sun	14

Visalia Transit Towne Trolley

The Towne Trolley circulates through downtown Visalia Monday through Saturday from 11 a.m. to 2 p.m., on Friday and Saturday evenings from 5 p.m. to 10:30 p.m., and during special events such as Farmer's Market Days and Visalia Rawhide baseball games (Red Route). Trips operate every 15 minutes.

The Gold Route circulates clockwise via North Santa Fe Street, West Acequia Avenue, South Conyer Street, and East Main Street. On Fridays and Saturdays of during Rawhide baseball games, the Red Route circulates clockwise via West Acequia Avenue and Main Street, looping around the Rawhide Ball Park via North Giddings Street, West Murray Avenue, and North Jacob Street.

Visalia Transit Towne Trolley		
Annual Boardings		6,901
Annual Revenue Hours		1,789
Annual Boardings per Hour		3.9
Frequency (minutes)	Mon-Sat	15
Span	Mon-Sat	11:00 a.m. - 2:00 p.m.
Span	Fri-Sat PM	5:00 p.m. - 10:30 p.m.
Trips	Mon-Thu	12
Trips	Fri-Sat	34

During the previous fiscal year, the Towne Trolley carried 6,901 passengers with an average of 3.9 boardings per revenue hour, making it second to last in terms of systemwide productivity.

Porterville Transit

Porterville Transit operates nine fixed routes along with dial-a-ride service within the city limits of Porterville. The fixed-route system operates seven days a week, with weekday service running between 7 a.m. and 10 p.m., and weekend service between 9 a.m. and 5 p.m. Six of the routes operate at 40 minute frequencies seven days a week, with the remaining three operating at 60 to 80 minute frequencies. All routes begin and end at the Porterville Transit Center on the corner of West Oak Avenue and North D Street. Here riders can connect to five TCaT routes (40, 60, 70, 80, 90) with service to other cities in Tulare County.

Systemwide ridership in Porterville has seen a steady increase since 2010, reaching 625,461 boardings in the 2013 fiscal year. Ridership has increased an average of 7% each year since 2009.

The December 2012 service change included the addition of Route 9 with service to the Tulare Indian Reservation. In July 2012, weekday service span was extended to 10 p.m. Several fare-related changes were made in July 2013, including an increase in fixed-route and demand-response fares and the introduction of daily, monthly, reduced, and student passes. Sunday service was also added in July 2013.

Figure 2-42 shows ridership for Porterville Transit from 2009 to 2013, and Figure 2-43 shows boardings per revenue hour by route for Fiscal Year 2013-2014. References to systemwide data in this section refer to the Porterville system.

Figure 2-7   Porterville Transit Five-Year System Ridership
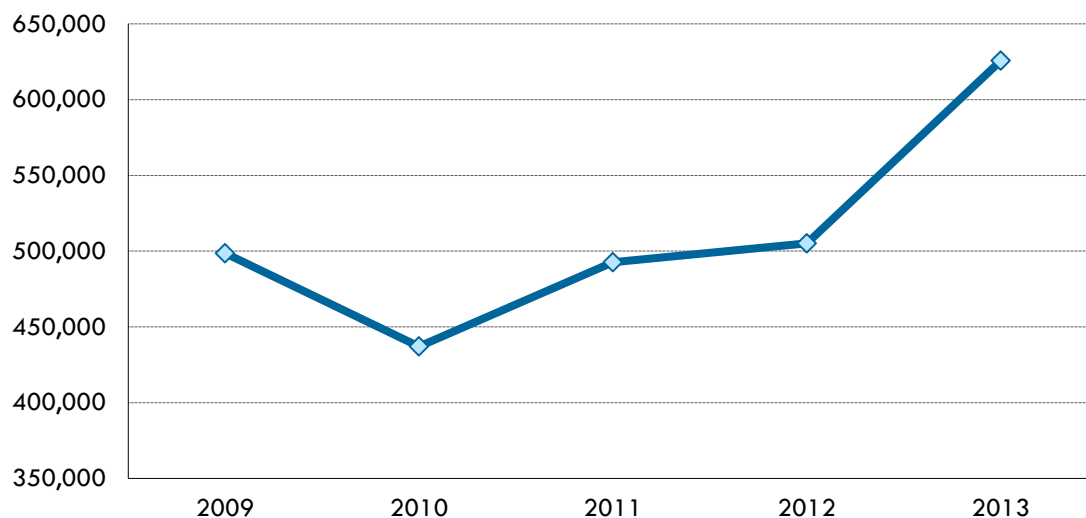
Figure 2-8   Porterville Transit Boardings per Revenue Hour, FY 13/14
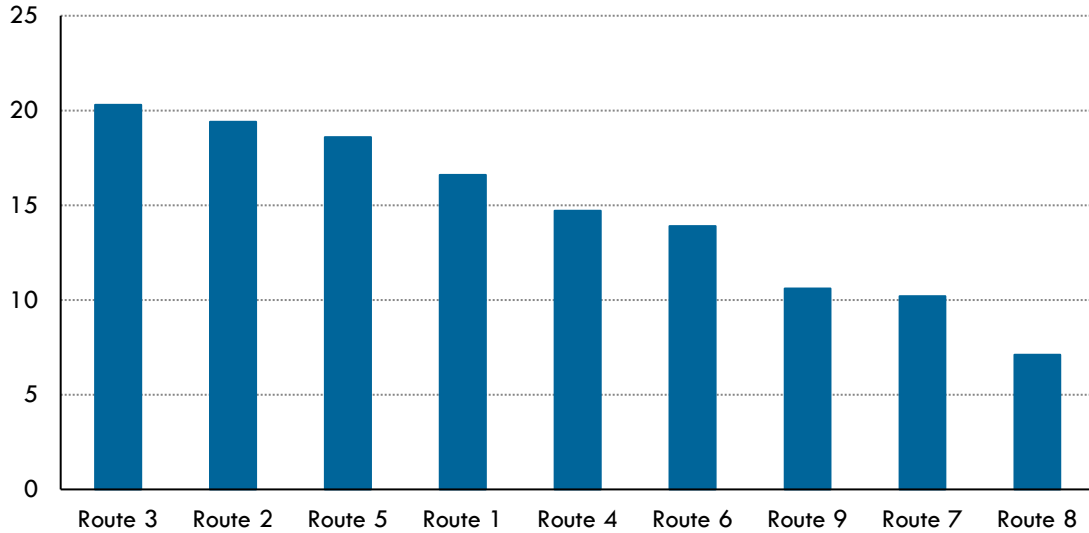
Porterville Transit Route 1

Route 1 operates on a clockwise loop that passes through the western portion of Porterville, primarily via Olive and Morton Avenues. Weekday service runs from 7 a.m. to 9:36 p.m. Weekend service runs from 9 a.m. to 4:56 p.m. Trips operate every 40 minutes, seven days a week.

Beginning at the Transit Center, Route 1 travels north on North D Street then begins a clockwise loop, traveling west on East Putnam Avenue, south on North Plano Street, west on East Olive Avenue, continuing onto West Olive Avenue, turning north on North Westwood Street, east on West Morton Avenue, deviating via North Villa Street, West Putnam Avenue, and Pearson Drive to serve Sierra View Hospital; turning east on West Morton Avenue, and turning south on North D Street to terminate at the Transit Center.

In the previous fiscal year, Route 1 carried 77,393 passengers with an average of 16.6 passengers per revenue hour, making it the fourth most productive route systemwide.

Porterville Transit Route 1		
Annual Boardings	77,393	
Annual Revenue Hours	4,666	
Annual Boardings per Hour	16.6	
Frequency (minutes)	AM	40
	Midday	40
	PM	40
	Sat/Sun	40
Span	Mon-Fri	7:00 a.m. - 9:36 p.m.
	Sat/Sun	9:00 a.m. - 4:56 p.m.
Trips	Mon-Fri	22
	Sat/Sun	12

Porterville Transit Route 2

Route 2 operates on a clockwise loop in northwest Porterville. Weekday service runs from 7 am to 9:36 p.m. Weekend service runs from 9 a.m. to 4:56 p.m. Trips operate every 40 minutes, seven days a week.

Route 2 leaves the Transit Center heading north via North Hockett St. and Main Street. It then begins a counterclockwise loop, traveling west on West Henderson Avenue, north on North Westwood Street, east on West Westfield Avenue, then returning south towards the Transit Center via North Main Street, North Sunnyside Street, and North D Street.

During the previous fiscal year, Route 2 carried 90,702 passengers with an average of 19.4 passengers, making it the second most productive route systemwide.

Porterville Transit Route 2		
Annual Boardings		90,702
Annual Revenue Hours		4,668
Annual Boardings per Hour		19.4
Frequency (minutes)	AM	40
	Midday	40
	PM	40
	Sat/Sun	40
Span	Mon-Fri	7:00 a.m. - 9:36 p.m.
	Sat/Sun	9:00 a.m. - 4:56 p.m.
Trips	Mon-Fri	22
	Sat/Sun	12

Porterville Transit Route 3

Route 3 connects Porterville to East Porterville along a counterclockwise loop. Weekday service runs from 7 a.m. to 9:36 p.m. Weekend service runs from 9 a.m. to 4:56 p.m. Trips operate every 40 minutes, seven days a week.

Beginning at the Transit Center, the route heads east via East Putnam Avenue, turning south on Plano Street, turning east on East Date Drive, continuing onto Springville Ave, turning north onto Doyle Street, turning left onto Crabtree Ave, turning north of Holcomb Street, west on East Olive Avenue, continuing East Putnam Avenue, then returning to downtown Porterville via East Putnam Avenue.

During the previous fiscal year, Route 3 carried 90,705 passengers with an average of 20.3 passengers per revenue hour, making it the most productive route systemwide.

Porterville Transit Route 3		
Annual Boardings		90,705
Annual Revenue Hours		4,672
Annual Boardings per Hour		20.3
Frequency (minutes)	AM	40
	Midday	40
	PM	40
	Sat/Sun	40
Span	Mon-Fri	7:00 a.m. - 9:36 p.m.
	Sat/Sun	9:00 a.m. - 4:56 p.m.
Trips	Mon-Fri	22
	Sat/Sun	12

Porterville Transit Route 4

Route 4 operates in southeast Porterville, providing service between downtown and the Porterville Developmental Center (PDC). Weekday service runs from 7 a.m. to 9:36 p.m. Weekend service runs from 9 a.m. to 4:56 p.m. Trips operate every 40 minutes, seven days a week.

Porterville Transit Route 4		
Annual Boardings		68,792
Annual Revenue Hours		4,667
Annual Boardings per Hour		14.7
Frequency (minutes)	AM	40
	Midday	40
	PM	40
	Sat/Sun	40
Span	Mon-Fri	7:00 a.m. - 9:36 p.m.
	Sat/Sun	9:00 a.m. - 4:56 p.m.
Trips	Mon-Fri	22
	Sat/Sun	12

Beginning at the Transit Center, Route 4 travels north via North D Street, looping back south via West School Avenue, North Main Street, East Morton Avenue, and North 2rd Street; continuing south onto South B Street, southeast on east on East Orange Avenue, south on South Plano Street, east on East Worth Avenue, then completing a terminal loop through PDC. The return trip follows the same portion of East Worth Avenue, but with a deviation to the north to serve Golden Hills Estates. Turning back west on East Worth Avenue, then north on South Plano Street, the route turns west on East Poplar Avenue, then returns to downtown traveling north on South Main Street. The route finishes at the Transit Center via North Hockett Street.

During the previous fiscal year, Route 4 carried 68,792 passengers with an average of 14.7 passengers per revenue hours, falling in the middle of all local routes in terms of productivity.

Porterville Transit Route 5

Route 5 provides service to west Porterville, operating on a clockwise loop primarily via West Morton Avenue and West Henderson Avenue. Weekday service runs from 7 a.m. to 9:35 p.m. Weekend service runs from 9 a.m. to 4:55 p.m. Trips operate every 40 minutes, seven days a week.

Porterville Transit Route 5		
Annual Boardings		87,094
Annual Revenue Hours		4,670
Annual Boardings per Hour		18.6
Frequency (minutes)	AM	40
	Midday	40
	PM	40
	Sat/Sun	40
Span	Mon-Fri	7:00 a.m. - 9:35 p.m.
	Sat/Sun	9:00 a.m. - 4:55 p.m.
Trips	Mon-Fri	22
	Sat/Sun	12

The route begins at the Transit Center, traveling north on North D Street, then begins a clockwise loop, traveling west on West Morton Avenue, turning north on North Westwood Street, looping back east on West Henderson Avenue, turning south on North Main Street, then terminating at the Transit Center via West Morton Avenue and North D Street.

During the previous fiscal year, Route 5 carried 87,094 passengers with an average of 18.6 boardings per revenue hour, making it the third most productive route systemwide.

Porterville Transit Route 6

Route 6 operates in southwest Porterville, connecting downtown with Family Health Care and operating primarily via Jaye Street, Poplar Avenue, and Highway 190. Weekday service runs from 7 a.m. to 9:35 p.m. Weekend service runs from 9 a.m. to 4:55 p.m. Trips operate every 40 minutes, seven days a week.

Beginning at the Transit Center, the route travels south and west primarily Putnam Avenue, Jaye Street, Poplar Avenue, and Highway 190. Along the routes there are several deviations via Prospect and Halsey Streets, West Springfield and West Vandalia Avenues, West Montgomery Avenue, and South East Street. The route returns to the Transit Center via South F Street and North D Street.

Porterville Transit Route 6		
Annual Boardings		64,958
Annual Revenue Hours		4,671
Annual Boardings per Hour		13.9
Frequency (minutes)	AM	40
	Midday	40
	PM	40
	Sat/Sun	40
Span	Mon-Fri	7:00 a.m. - 9:35 p.m.
	Sat/Sun	9:00 a.m. - 4:55 p.m.
Trips	Mon-Fri	22
	Sat/Sun	12

During the previous fiscal year, Route 6 carried 64,958 passengers with an average of 13.9 boardings per revenue hour, falling just below the systemwide average in terms of route productivity.

Porterville Transit Route 7

Route 7 operates in northwest Porterville, connecting downtown to destinations such as Monte Vista School, Porterville Adult School, Sequoia Middle School, and Target Shopping Center. Weekday service runs from 7:40 a.m. to 9:35 p.m. Weekend service runs from 9 a.m. to 4:19 p.m. Trips operate every 80 minutes, seven days a week.

Route 7 begins at the Transit Center, traveling north via North D Street, continuing north on North Main Street via Morton Avenue, turning west via West Westfield Avenue, north on North Milo street, west on Pioneer Avenue, north on All America City Highway, west on North Grand Avenue, then returning south via North Prospect Street. Upon reaching West Putnam Avenue, the route turns west and completes a clockwise loop via North Newcomb Street and Henderson Avenue, then turns south on North Indiana Street and returns to the Transit Center via West Putnam Avenue and North D Street.

Porterville Transit Route 7		
Annual Boardings		24,917
Annual Revenue Hours		2,449
Annual Boardings per Hour		10.2
Frequency (minutes)	AM	80
	Midday	80
	PM	80
	Sat/Sun	80
Span	Mon-Fri	7:40 a.m. - 9:39 p.m.
	Sat/Sun	9:00 a.m. - 4:19 p.m.
Trips	Mon-Fri	11
	Sat/Sun	6

During the previous fiscal year, Route 7 carried 24,917 passengers with an average of 10.2 boarding per revenue hour, placing it second to last in terms of systemwide productivity.

Porterville Transit Route 8

Route 8 operates in northeast Porterville, with service to John J. Doyle School, Foster Farms, and Citrus High School. Weekday service runs from 7:00 a.m. to 8:55 p.m. Weekend service runs from 9:40 a.m. to 4:55 p.m. Trips operate every 80 minutes, seven days a week.

Route 8 begins at the Transit Center, traveling north on North Hockett Street, east on East Morton Avenue, then completes a counterclockwise loop via North Leggett Street, East Orange Avenue, East Roby Avenue, South Holcomb Street, East Olive, and North Conner Street; returning west via East Morton Avenue, deviating north to serve North Legget Street, East Grand Avenue, and North Park Street; returning west on East Morton Avenue, north on North Plano Street, west on Avenue 162, south on North Division Street, continuing south on North Main Street via East Henderson Street, then returning to the Transit Center via East Morton Avenue and North D Street.

Porterville Transit Route 8		
Annual Boardings		15,694
Annual Revenue Hours		2,217
Annual Boardings per Hour		7.1
Frequency (minutes)	AM	80
	Midday	80
	PM	80
	Sat/Sun	80
Span	Mon-Fri	7:00 a.m. - 8:55 p.m.
	Sat/Sun	9:40 a.m. - 4:55 p.m.
Trips	Mon-Fri	11
	Sat/Sun	6

During the previous fiscal year, Route 8 carried 15,694 passengers with an average of 2,217 boardings per revenue hour, making it the least productive route systemwide.

Porterville Transit Route 9

Route 9 is Porterville Transit's newest route, providing service to the Tule River Indian Reservation. Weekday service runs from 6:00 a.m. to 9:49 p.m. Weekend service runs from 8:00 a.m. to 5:49 p.m. Trips operate every hour, seven days a week.

Route 9 begins at the Transit Center and travels east via East Putnam Avenue, Plano Street, Highway 190, and Indian Reservation Road, terminating at the Eagle Mountain Casino.

During the previous fiscal year, Route 9 carried 101,165 passengers, the most of any route systemwide. However, being that it had the most revenue hours, its route productivity was third to last with 10.6 boardings per revenue hour.

Porterville Transit Route 9		
Annual Boardings		101,165
Annual Revenue Hours		9,516
Annual Boardings per Hour		10.6
Frequency (minutes)	AM	60
	Midday	60
	PM	60
	Sat/Sun	60
Span	Mon-Fri	6:00 a.m. – 9:49 p.m.
	Sat/Sun	8:00 a.m. – 5:49 p.m.
Trips	Mon-Fri	11
	Sat/Sun	6

Tulare Intermodal Express

Tulare Intermodal Express (TIME) operates six fixed routes within Tulare and East Tulare, and one jointly-operated fixed route with Visalia Transit. Weekday service occurs between 6:30 a.m. and 10 p.m. Saturday service operates between 9 a.m. and 7:00 p.m. Dial-a-ride service is offered Monday to Friday 6 a.m. to 10 p.m. and Saturday from 9 a.m. to 7:00 p.m. Over the past five fiscal years, annual fixed-route ridership increased from 346,825 to 447,718 (FY 13/14), with a slight drop in FY 12/13. Ridership has increased an average of 7% each year since 2009. The most recent service changes include the addition of evening service during weekday hours and slight reconfiguration of various route alignments. Figure 2-44 shows ridership for TIME from 2009 to 2013, and Figure 2-45 shows boardings per revenue hour by route for Fiscal Year 2013-2014.

Figure 2-9   TIME Five-Year System Ridership
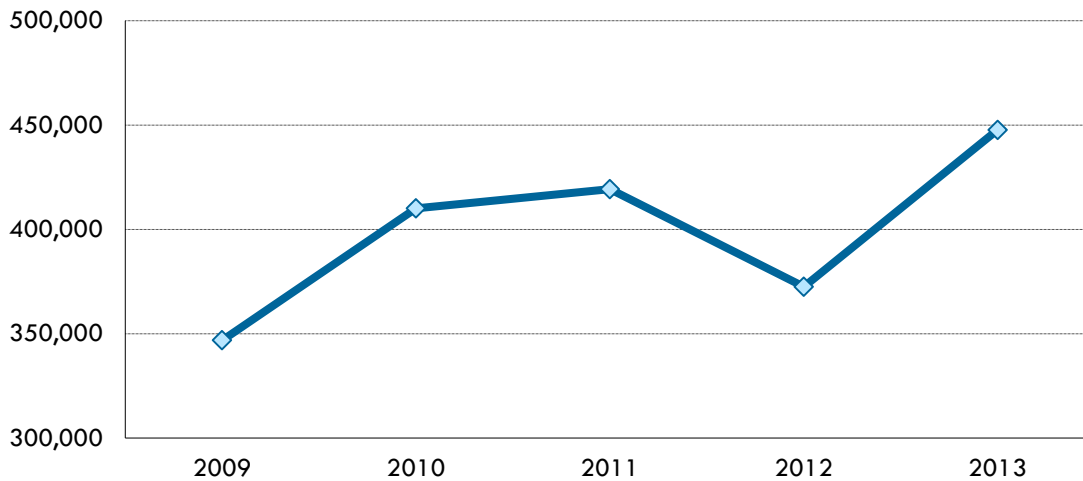
Figure 2-10   TIME Boardings per Revenue Hour, FY 13/14
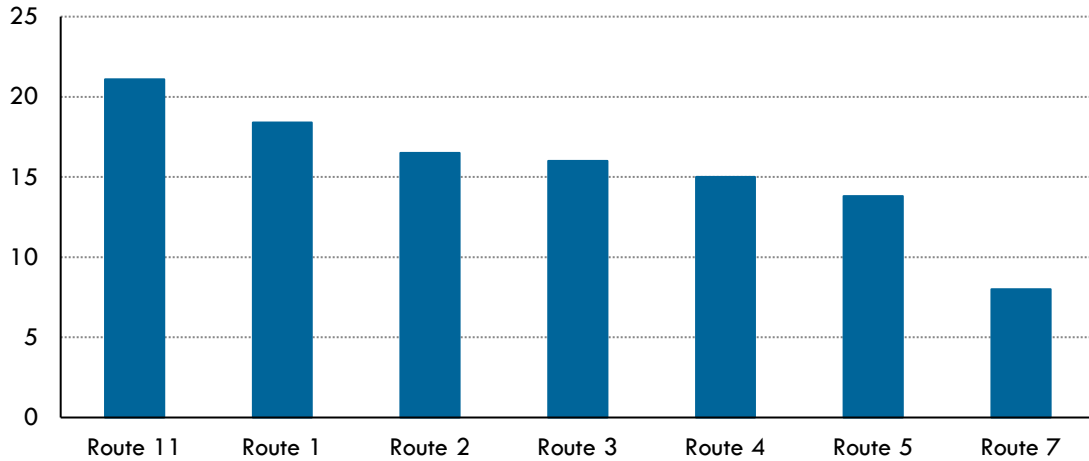
TIME Route 1

Route 1 operates in northwest Tulare on a counterclockwise loop alignment. Weekday service runs from 6:30 a.m. to 9:28 p.m. Saturday service runs from 9:00 a.m. to 6:58 p.m. Trips operate every 30 minutes, then every 60 minutes after 6 p.m. on weekdays.

Route 1 departs Tulare Transit Center, traveling north, then loops counterclockwise primarily via North M Street and Prosperity Avenue. During the loop, the route deviates north to provide service to the Tulare Outlet Center. Other destinations served include the Village Shopping Center.

During the previous fiscal year, Route 1 carried 71,419 passengers with an average of 18.4 boardings per revenue hour, making it the second most productive route systemwide.

TIME Route 1		
Annual Boardings		71,419
Annual Revenue Hours		3,890
Annual Boardings per Hour		18.4
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	60
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:28 p.m.
	Sat	9:00 a.m. – 6:58 p.m.
Trips	Mon-Fri	27
	Sat	17

TIME Route 2

Route 2 operates in southeast Tulare. Weekday service runs from 6:30 a.m. to 9:25 p.m. Saturday service runs from 9:00 a.m. to 5:25 p.m. Trips operate every 30 minutes, then every 60 minutes after 6 p.m. on weekdays.

Route 2 departs the Tulare Transit Center then travels southeast primarily via Tulare Avenue, Martin Luther King Jr. Avenue, and East Bardsley Avenue. After completing a clockwise loop via Mooney Boulevard, Foster Drive, and Laspina Street, the route returns to the transit center via Bardsley Avenue, Blackstone Street, and Tulare Avenue. Destinations served include the Tulare Community Center and Cypress School.

During the previous fiscal year, Route 2 carried a total of 64,194 passengers with an average of 16.5 boardings per revenue hour, making it the third most productive route systemwide.

TIME Route 2		
Annual Boardings		64,194
Annual Revenue Hours		3,901
Annual Boardings per Hour		16.5
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	60
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:25 p.m.
	Sat	9:00 a.m. - 5:25 p.m.
Trips	Mon-Fri	27
	Sat	17

TIME Route 3

Route 3 operates in west Tulare. Weekday service runs from 6:30 a.m. to 9:20 p.m. Saturday service runs from 9:00 a.m. to 5:20 p.m. Trips operate every 30 minutes, then every 60 minutes after 6 p.m. on weekdays.

Route 3 departs the Tulare Transit Center then travels in a counterclockwise alignment primarily via North I Street, West Pleasant Avenue, North West Street, West Cross Avenue, West Tulare Avenue, and West Inyo Avenue. Destinations served include Tulare Western High School and the Senior Center.

During the previous fiscal year, Route 3 carried a total of 62,400 passengers with an average of 16 boardings per revenue hour, falling in the middle of all routes in terms of systemwide productivity.

TIME Route 3		
Annual Boardings		62,400
Annual Revenue Hours		3,901
Annual Boardings per Hour		16.0
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	60
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:20 p.m.
	Sat	9:00 a.m. - 5:20 p.m.
Trips	Mon-Fri	27
	Sat	17

TIME Route 4

Route 4 operates in northeast Tulare. Weekday service runs from 6:30 a.m. to 9:57 p.m. Saturday service runs from 9:00 a.m. to 5:27 p.m. Trips operate every 30 minutes, then every 60 minutes after 6:30 p.m. on weekdays.

Route 4 departs the Tulare Transit Center, then travels in a counterclockwise alignment primarily via Cross Avenue and Blackstone Street. Before completing the loop, the route deviates east via Prosperity Avenue and completes a clockwise loop via Mooney Boulevard, Cross Avenue, and Brentwood Street. Route 4 returns to the Transit Center via Cherry Street, Merritt Avenue, and M Street. Destinations served include Target, Tulare Regional Medical Center, and Tulare Community Health Clinic.

TIME Route 4		
Annual Boardings		60,071
Annual Revenue Hours		4,018
Annual Boardings per Hour		15.0
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	60
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:57 p.m.
	Sat	9:00 a.m. - 5:27 p.m.
Trips	Mon-Fri	28
	Sat	17

During the previous fiscal year, Route 4 carried a total of 60,071 passengers with an average of 15 boardings per revenue hour.

TIME Route 5

Route 5 operates in southwest Tulare. Weekday service runs from 6:30 a.m. to 9:53 p.m. Saturday service runs from 9:00 a.m. to 5:23 p.m. Trips operate every 30 minutes, then every 60 minutes after 6:30 p.m. on weekdays.

Route 5 departs the Tulare Transit Center, then travels in a counterclockwise alignment primarily via H Street, Inyo Avenue, Pratt Street, Paige Avenue, K Street, O Street and M Street. Primary destinations include employers such as Land O'Lakes and Valley Agricultural Softward.

During the previous fiscal year, Route 5 carried a total of 55,415 passengers with an average of 13.8 boardings per revenue hour, placing second to last in terms of route productivity.

TIME Route 5		
Annual Boardings		55,415
Annual Revenue Hours		4,018
Annual Boardings per Hour		13.8
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	60
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:53 p.m.
	Sat	9:00 a.m. - 5:23 p.m.
Trips	Mon-Fri	28
	Sat	17

TIME Route 7

Route 7 operates in east Tulare. Weekday service runs from 6:30 a.m. to 9:58 p.m. Saturday service runs from 9:30 a.m. to 5:23 p.m. Trips operate every 30 minutes.

Route 7 departs the Tulare Transit Center traveling east via Tulare Avenue, then completes a large, clockwise loop via Morrison Street, East Bardsley Avenue (deviating east here to serve College of the Sequoias Tulare), and South Laspina Street. The route then returns to the transit center via Tulare Avenue. Along with COS Tulare, the route also serves Mission Oaks High School and Kohn School.

During the previous fiscal year, Route 7 carried a total of 32,323 passengers with an average of 8 boardings per revenue hour, making it last in terms of route productivity.

TIME Route 7		
Annual Boardings		32,323
Annual Revenue Hours		4,018
Annual Boardings per Hour		8.0
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	30
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:58 p.m.
	Sat	9:00 a.m. - 5:28 p.m.
Trips	Mon-Fri	28
	Sat	16

Visalia Transit/TIME Route 11X

Route 11x is jointly operated by TIME and Visalia Transit, and provides Monday through Saturday service between downtown Tulare and Visalia. Weekday service runs from 6:30 am to 9:30 p.m. Saturday service runs from 8:30 a.m. to 6:30 p.m. Trips operate every 30 minutes.

After leaving the Tulare Transit Center, the route travels north on J Street and Highway 99, east on Highway 198, then into downtown Visalia via North Bridge Street.

During the previous fiscal year, Route 11x carried a total of 175,958 passengers with an average of 21.1 boardings per revenue hour, making it the most productive among all TIME routes.

Visalia Transit/TIME Route 11X		
Annual Boardings		175,958
Annual Revenue Hours		8,349
Annual Boardings per Hour		21.1
Frequency (minutes)	AM	30
	Midday	30
	PM	30
	Evening	30
	Sat	30
Span	Mon-Fri	6:30 a.m. - 9:30 p.m.
	Sat	8:30 a.m. - 6:30 p.m.
Trips	Mon-Fri	60
	Sat	36

Dinuba Area Regional Transit

Dinuba Area Regional Transit (DART) operates two flex-route services with dial-a-ride components, one circulator (Jolly Trolley), and one fixed-route regional service (Dinuba Connection). During the previous five fiscal years, systemwide ridership has seen an increase from 107,044 in 2009 to 145,766 in 2013. Ridership increased an average of 8% between 2009 and 2013, however has been relatively flat for the two most recent years for which data was available. The bulk of ridership can be attributed to the Jolly Trolley, a fare-free downtown circulator that carried nearly the same number of riders as the flex routes and fixed route combined. All routes begin and end at the Dinuba Transit Center on the corner of East Merced Street and North M Street. Figure 2-47 shows ridership for DART from 2009 to 2013. Figure 2-48 shows boardings per revenue hour by route.

Figure 2-11   DART Five- Year System Ridership
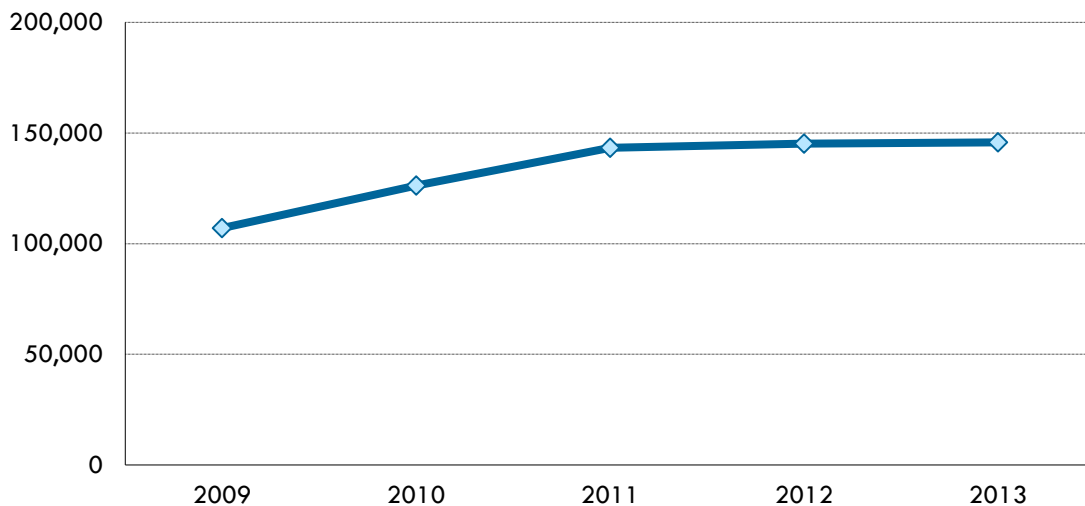
Figure 2-12   DART Boardings per Revenue Hour, FY 13/14
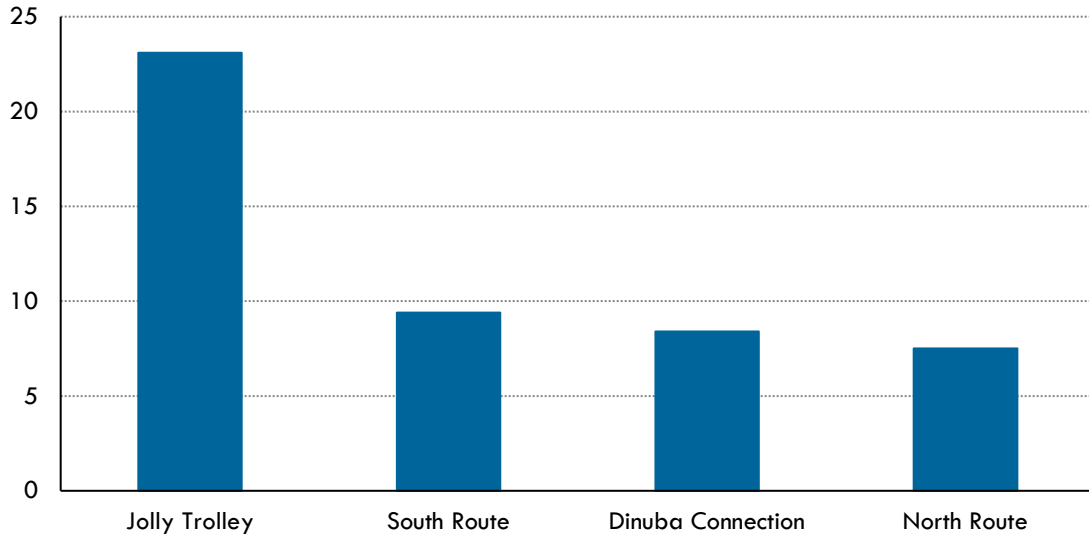
DART North Route

The North Route provides flex-route service through downtown and north Dinuba. Monday through Thursday service runs from 7 a.m. to 6 p.m. with 30 minute frequencies. Friday service operates from 7 a.m. to 9 p.m. with 30 minute frequencies until 6 p.m. and 60 minute frequencies between 6 p.m. and 9 p.m. Saturday service operates from 9 a.m. to 9 p.m. at 60 minute frequencies.

From the Dinuba Transit Center, the North Route travels along a clockwise alignment, reaching Davis Drive to the north, traveling east on E Saginaw Avenue, turning south on Road 88, continuing east on El Monte Way, looping around the Kmart, then returning to downtown via Avenue 416. Destinations served include Tulare Works, the Dinuba Senior Center, Washington Intermediate School, and several businesses on El Monte Way.

DART North Route		
Annual Boardings		24,897
Annual Revenue Hours		3,333
Annual Boardings per Hour		7.5
Frequency (minutes)	Mon-Thu	30
	Fri	60
	Sat	60
Span	Mon-Thu	7:00 a.m. - 6:00 p.m.
	Fri	7:00 a.m. - 9:00 p.m.
	Sat	9:00 a.m. - 9:00 p.m.
Trips	Mon-Thu	22
	Fri	25
	Sat	10

During the previous fiscal year, the North Route carried 24,897 passengers with an average of 7.5 boardings per revenue hour, making it the least productive systemwide.

DART South Route

The South Route provides flex-route service through downtown and south Dinuba. Monday through Thursday service runs from 7 a.m. to 6 p.m. with 30 minute frequencies. Friday service operates from 7 a.m. to 9 p.m. with 30 minute frequencies until 6 p.m. and 60 minute frequencies between 6 p.m. and 9 p.m. Saturday service operates from 9 a.m. to 9 p.m. at 60 minute frequencies.

From the Dinuba Transit Center, the South Route runs in a clockwise loop, traveling primarily along Tulare Street, El Monte Way (looping back around the Kmart), Road 88, Avenue 412, Road 84, Avenue 408, and South Greene Avenue. Destinations served include businesses within downtown Dinuba and along El Monte Way, the Dinuba Library, and Union High School.

DART South Route		
Annual Boardings	26,117	
Annual Revenue Hours	2,768	
Annual Boardings per Hour	9.4	
Frequency (minutes)	Mon-Thu	30
	Fri	60
	Sat	60
Span	Mon-Thu	7:00 a.m. - 6:00 p.m.
	Fri	7:00 a.m. - 9:00 p.m.
	Sat	9:00 a.m. - 9:00 p.m.
Trips	Mon-Thu	22
	Fri	25
	Sat	10

During the previous fiscal year, the South Route carried 26,117 passengers, with an average of 9.4 boardings per hour, making it the second most productive route systemwide.

DART Jolly Trolley

The Jolly Trolley circulates within downtown and into the western portion of downtown. Monday through Thursday service operates from 9 a.m. to 6 p.m. Friday and Saturday service operates from 9 a.m. to 9 p.m. All trips have 30 minute frequencies.

From the Dinuba Transit Center, the route performs a clockwise loop west of downtown, primarily via Surabian Drive, Monte Vista Drive (deviating north via North Alice Avenue and Road 75), West El Monte Way, and Road 80. The route passes through downtown via North M Street and East Tulare Street, then travels east along El Monte Way, loops around Kmart, then returns west to downtown. Destinations served include Walmart Supercenter, the Dinuba Library, and several businesses in downtown Dinuba and along El Monte Way.

DART Jolly Trolley		
Annual Boardings	71,238	
Annual Revenue Hours	3,090	
Annual Boardings per Hour	23.1	
Frequency (minutes)	Mon-Thu	30
	Fri	30
	Sat	30
Span	Mon-Thu	9:00 a.m. - 6:00 p.m.
	Fri	9:00 a.m. - 9:00 p.m.
	Sat	9:00 a.m. - 9:00 p.m.
Trips	Mon-Thu	18
	Fri	24
	Sat	24

During the previous fiscal year, the Jolly Trolley carried 71,238 passengers with an average of 23.1 boardings per revenue hour, making it the most productive route systemwide.

DART Dinuba Connection

The Dinuba Connection links downtown Dinuba with Reedley College in Fresno County. During the school year, Monday through Friday service operates from 7 a.m. to 9 p.m. During the summer, service operates from 7 a.m. to 3 p.m. Trips run every 60 minutes.

From the Dinuba Transit Center, the route operates along a counterclockwise alignment primarily via Alta Avenue, Manning Avenue, Reed Avenue, and El Monte Way. Destinations served include, Tulare Works, Adventist Medical Center, Reedley College, Palm Village, and Walmart.

DART Dinuba Connection		
Annual Boardings		23,514
Annual Revenue Hours		2,795
Annual Boardings per Hour		8.4
Frequency (minutes)	Mon-Fri	60
Span	School Year	7:00 a.m. - 9:00 p.m.
	Summer	7:00 a.m. - 3:00 p.m.
Trips	School Year	12
	Summer	7

During the previous fiscal year, the Dinuba Connection carried 23,514 passengers with an average of 8.4 passengers per revenue hour, falling between the North and South Routes in terms of systemwide productivity.

Woodlake Dial-A-Ride

Woodlake Dial-A-Ride provides door-to-door service within the city limits of Woodlake and some unincorporated areas of Tulare County only. Ridership has increased slightly over the past five years; an average of 4% a year.

Figure 2-49 shows ridership for Woodlake Dial-a-Ride from 2009 to 2013.

Figure 2-13   Woodlake Dial-A-Ride Five-Year System Ridership
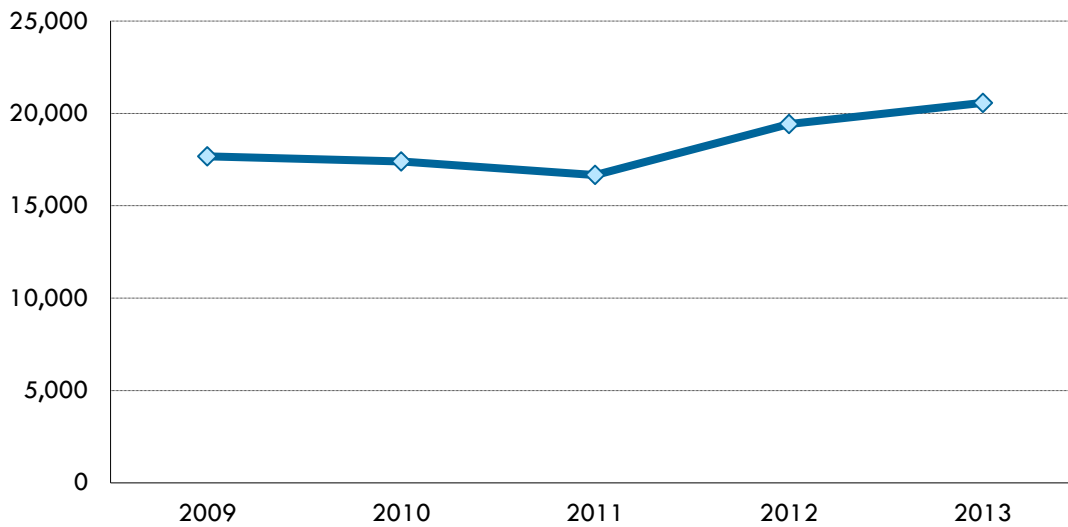
Exeter Dial-A-Ride
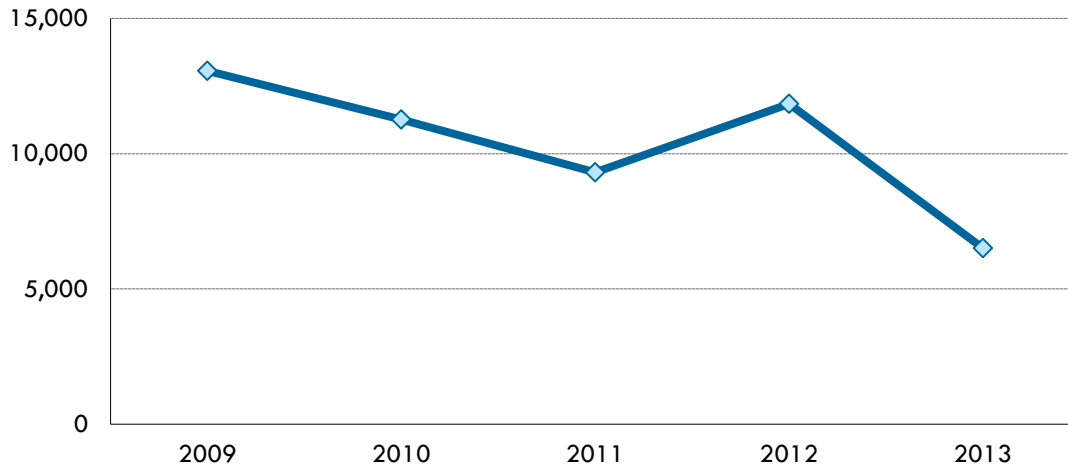
Exeter Dial-A-Ride provides door-to-door service within the city limits of Exeter only. Ridership has trended downward over the past five years, with an average decline of 12% a year.

Figure 2-50 shows ridership for Exeter Dial-a-Ride from 2009 to 2013.

Figure 2-14   Exeter Dial-A-Ride Five-Year System Ridership

APPENDIX B

IT Infrastructure
of Tulare County Transit Operators

Survey Background

	Darlene Thompson	Michael Camarena	Roy Ramirez	Jason Waters	Richard Tree	Ronald Hughes	Monty Cox	Dan Fox	Felix Ortiz
Name	Darlene Thompson	Michael Camarena	Roy Ramirez	Jason Waters	Richard Tree	Ronald Hughes	Monty Cox	Dan Fox	Felix Ortiz
Title	Finance Director	Director of City Services	Management Analyst	Management Analyst	Transit Manager		Transit Manager	Transit Coordinator	Director of Community Services
Agency	City of Tulare	City of Lindsay	City of Dinuba	Woodlake	City of Porterville	CalVans	City of Visalia	Tulare County	City of Exeter
Email Address	dthompson@ci.tulare.ca.us	engineering@lindsay.ca.us	rramirez@dinuba.ca.gov	Jwaters@ci.woodlake.ca.us	rtree@ci.porterville.ca.us	ron.hughes@co.kings.ca.us	mcox@ci.visalia.ca.us	dfox@co.tulare.ca.us	fortiz@exetercityhall.com
Phone Number	(559) 684-4255	5595627102 ext. 4	559-591-3278	559-564-8055	559-782-7448	559-852-2696	559-713-4591	559.624.7180	559-592-2523

Questions For Transit Agencies Only

What is the existing connectivity, and communication protocols between:

	Tulare	Lindsay	Dinuba	Woodlake	Porterville	CalVans	Visalia	Tulare County	Exeter
Buses and dispatch centers	Radios			Phone	2-way radio, CAD/AVL	NA	Direct Radio	Mobile radio & MDT & Phone	radios
Among various dispatch centers	Phone			Phone	CAD/AVL	NA	Telephone	Phone	NA
Dispatch center and local agency Traffic Management Centers (if any)	None			NA	None	NA	None	Phone	NA
Dispatch center and Emergency Operations Center(s)	None			Phone	Patched 2-way radio	NA	Telephone	Phone	NA

What is your current method of communication (phone, email, in-person, radio, etc.) with Emergency Response Providers in the following areas:

	Tulare	Lindsay	Dinuba	Woodlake	Porterville	CalVans	Visalia	Tulare County	Exeter
Route information and proposed route changes	phone			NA	Email	NA	Telephone	Phone	NA
Changes in policies, procedures and protocols	phone			NA	Email	NA	Published Transit Plans	Phone and regional guide	fliers/phone/email
Real-time notification of emergency and nonemergency incidents	phone			NA	Email	NA	Telephone	Phone and E mail	phone
Mutually beneficial funding opportunities	email			NA	Email	NA	Email	TCAG	phone/email
Legislative matters	email			NA	Email	NA	Email	None	NA

What are your existing and future operational challenges in the following aspects:

	Tulare	Lindsay	Dinuba	Woodlake	Porterville	CalVans	Visalia	Tulare County	Exeter
Travel Time Reliability for Transit				NA	No Challenges	NA	Increased traffic	Distance of routes	10 minutes or less
Communication with Transit Vehicle				NA	Some areas of service are lacking 2-way radio communication or cell network	NA	Limited radio reception	Dead zones	3 minutes
Communication with other Agencies	None			None	Agencies are not connected, separate networks	NA	Knowledge of contact info and good relationships	No sturcture	NA
Travel Time for Transit Vehicles				NA	No Challenges	NA	Increased traffic	Traffic, breakdowns	10 minutes

What are the achievable long-term (3 - 10 year) goals to improve operations, and field and onvehicle communication infrastructure for your agency?

	Tulare	Lindsay	Dinuba	Woodlake	Porterville	CalVans	Visalia	Tulare County	Exeter
	Online system for all users			Improve coordination with County fixed routes	Work with radio and cell providers to improve coverage in our service area.	Each vanpool vehicle is in charge of determining their path of travel and the times they depart and arrive.	Increased use of technology. Upgraded technology equipment. Coordinated technology with other agencies.	New MDT's, AVL/GPS upgrades	Start picking up youth for school and sell ads for bus.

Which ITS strategies would help to improve transit operations for your agency?

	Tulare	Lindsay	Dinuba	Woodlake	Porterville	CalVans	Visalia	Tulare County	Exeter
	Online system for all users			NA	Porterville has been at the forefront with ITS. Besides a UFC, Porterville has implemented nearly all ITS strategies.	Our goal is to identify userside subsidies (vouchers) that could be used to attract more residenst to try vanpooling.	Passenger counters, signal priority, increased passenger info systems.	MDT, AVL/GPS & Farebox upgrades	NA

	Darlene Thompson	Michael Camarena	Roy Ramirez	Jason Waters	Richard Tree	Ronald Hughes	Monty Cox	Dan Fox	Felix Ortiz
Name	Darlene Thompson	Michael Camarena	Roy Ramirez	Jason Waters	Richard Tree	Ronald Hughes	Monty Cox	Dan Fox	Felix Ortiz
Title	Finance Director	Director of City Services	Management Analyst	Management Analyst	Transit Manager		Transit Manager	Transit Coordinator	Director of Community Services
Agency	City of Tulare	City of Lindsay	City of Dinuba	Woodlake	City of Porterville	CalVans	City of Visalia	Tulare County	City of Exeter
Email Address	dthompson@ci.tulare.ca.us	engineering@lindasy.ca.us	rramirez@dinuba.ca.gov	Jwaters@ci.woodlake.ca.us	rtree@ci.porterville.ca.us	ron.hughes@co.kings.ca.us	mcox@ci.visalia.ca.us	dfox@co.tulare.ca.us	fortiz@exetercityhall.com
Phone Number	(559) 684-4255	5595627102 ext. 4	559-591-3278	559-564-8055	559-782-7448	559-852-2696	559-713-4591	559.624.7180	559-592-2523
Do you have Automatic Vehicle Locator (AVL) on your transit fleets? If no, do you have any plans to implement AVL in the next ten-years?	Our system is down currently and unable to get parts. Will be looking in getting a system soon			No	Yes	All vans have GPS systems for tracking and determing monthly bills.	Yes	Yes, we have plans to upgrade the AVL in 2016	No
Do you have a system that provides information dissemination for transit users? If yes, what is it?	Not currently			Mailers, flyers, social media	Yes, RouteMatch RouteShout	We provide ridership data as requested.	Yes, phone app & website access.	No	No
Do you have communication network to support ITS elements for transit vehicles?	No			No	Yes	Skipped	AVL	No	No
What type of ITS infrastructure has been implemented for transit vehicles within your agency?	None			NA	In each vehicle we have a Cellular data network, CAD/AVL, Automated Voice Annunciators, Real-time traveler information, and soon to be Automatic Passenger Counters and Transit Signal Priority.	We use the " Webtech" wireless program that stores information in the cloud.	AVL	We have 2008 AVL/GPS system, 2010 video system	none
Do you have automated system to collect ridership data? If no, how do you collect this data?	No, manually			No	No, currently out to bid for APC. APC units should be installed by September 1, 2015.	Yes the present system allows the driver to upload each days passenger count into the cloud for later retrival.	Electronic farebox only.	No, old denominator clickers	no. Driver keeps track of ridership as well as dispatcher.
Do you collect schedule adherence and headway adherence data within your agency and how do you collect them?	No			NA	Yes, CAD/AVL software currently collects this information. APC system will also validate CAD/AVL data.	No	Some via AVL	Occasional onsite visits	no
The below questions are regarding Universal Fare Card (UFC):									
Has UFC been considered for your transit agency?	No			No	Yes, we currently utilize Genfare equipment that is capable of implementing UFC	NA	Yes	No, None	NA
What actions have been taken so far?	Electronic fare boxes to accept them								

Name		Darlene Thompson	Michael Camarena	Roy Ramirez	Jason Waters	Richard Tree	Ronald Hughes	Monty Cox	Dan Fox	Felix Ortiz
Title		Finance Director	Director of City Services	Management Analyst	Management Analyst	Transit Manager		Transit Manager	Transit Coordinator	Director of Community Services
Agency		City of Tulare	City of Lindsay	City of Dinuba	Woodlake	City of Porterville	CalVans	City of Visalia	Tulare County	City of Exeter
Email Address		dthompson@ci.tulare.ca.us	engineering@lindsay.ca.us	rramirez@dinuba.ca.gov	Jwaters@ci.woodlake.ca.us	rtree@ci.porterville.ca.us	ron.hughes@co.kings.ca.us	mcox@ci.visalia.ca.us	dfox@co.tulare.ca.us	fortiz@exetercityhall.com
Phone Number		(559) 684-4255	5595627102 ext. 4	559-591-3278	559-564-8055	559-782-7448	559-852-2696	559-713-4591	559.624.7180	559-592-2523
What challenges do you foresee with implementing a UFC system?		Electronic fare boxes to accept them			NA	County-wide acceptance, some agencies have no UFC infrastructure	NA	Cost & Multi-agency agreement	Not sure what it is ??	NA
Which transit agencies must be on the same system for your system to be successful?		Countywide			NA	All agencies	We do not depend on others schedule.	All in Tulare County	?????	NA

What is your current method of communication (phone, email, in-person, radio, etc.) with other Transit Agencies in the following areas:										
Operational issues (scheduling, transfers, fares, etc.)		Phone, email			Email, phone	All of the above	NA	Email	Phone, in-person e mail	phone/email
Vehicle purchase, equipment upgrade		phone email			NA	All of the above	NA	Email	Phone, in-person e mail	phone/email
Policies		in-person			Email, phone	All of the above	NA	Transit plan	Phone, in-person e mail	same
Partnering on state and federal funding		in-person			Email, phone	All of the above	NA	Email & phone	Phone, in-person e mail	same
Legislative matters		phone, email			Email, phone	All of the above	NA	Email	Phone, in-person e mail	NA

Questions For Cities and County Only										
For implementing Transit Signal Priority (TSP):										
What are the various types of traffic signal controllers used by your agency?		opticome	2 and 4 way controlled intersections (STOP signs) only	15-Model 170E Controllers	None	All signal controllers are capable of using Opticom TSP equipment	NA		None	NA
Do you use any controllers that are not compatible for implementing TSP?				No, controllers are compatible for addition of TSP.	No	No	NA		N/A	NA

Name specific corridors where TSP is currently installed:		Main thorough fairs	none inside city jurisdiction	None	NA	City is currently advertising an RFP for the installation of TSP equipment at 12 intersections along the Morton and Henderson corridors. Following this Phase 1 project, the transit division will begin identifying the next 2 major corridors.			N/A	NA

	Darlene Thompson	Michael Camarena	Roy Ramirez	Jason Waters	Richard Tree	Ronald Hughes	Monty Cox	Dan Fox	Felix Ortiz
Name									
Title	Finance Director	Director of City Services	Management Analyst	Management Analyst	Transit Manager		Transit Manager	Transit Coordinator	Director of Community Services
Agency	City of Tulare	City of Lindsay	City of Dinuba	Woodlake	City of Porterville	CalVans	City of Visalia	Tulare County	City of Exeter
Email Address	dthompson@ci.tulare.ca.us	engineering@lindsay.ca.us	rramirez@dinuba.ca.gov	Jwaters@ci.woodlake.ca.us	rtree@ci.porterville.ca.us	ron.hughes@co.kings.ca.us	mcox@ci.visalia.ca.us	dfox@co.tulare.ca.us	fortiz@exetercityhall.com
Phone Number	(559) 684-4255	5595627102 ext. 4	559-591-3278	559-564-8055	559-782-7448	559-852-2696	559-713-4591	559.624.7180	559-592-2523
What type of ITS infrastructure has been implemented for transit vehicles within your agency?	Respondent skipped this question	none inside city jurisdiction	None	None	Cellular network, Validating Fareboxes with Smart Card, Mobile Fare payment, Automated Voice Annunicators, CAD/AVL, Real-time Traveler Information, IVR, TSP.			Radio, MDT, AVL/GPS	NA
What are the challenges/constraints to improve ITS infrastructure for transit?	Funding and support	NA	Challenge / constraints is financial base upon benefits verses costs.	No need	The only challenge we have been faced with is funding.			Funding & Contractor training and maintenance of ITS	NA
We have a few questions for your Emergency Operations Center (EOC), please provide their contact information.	Cameron Long Fire Department 684-4368	Chris Hughes, Lindsay Department of Public	City of Dinuba Fire Department	NA	John Lollis, City Manager (559) 782-			Tulare County OES 5961 S. Mooney Blvd.	NA

Questions For Emergency Response Providers / EOCs Only									
How do you communicate with transit providers in the following areas:									
Changes in policies, procedures and protocols	email			Email, phone	Transit Forum			Phone email and in person	fliers/phone/email
Changes in key personnel	email			Email, phone	Email			Phone email and in person	phone/email
Response on emergency and non-emergency incidents	email			Email, phone	Phone and Email			Phone email and in person	phone/email, incident report
Resource management	email			Email, phone	Email and Transit Forum			Phone email and in person	n/a
System upgrades	email			Email, phone	Email and Transit Forum			Phone email and in person	n/a
Mutually beneficial funding opportunities	email			Email, phone	Email and Transit Forum			Phone email and in person	phone/email
Legislative matters	email			Email, phone	Transit Forum			Phone email and in person	n/a