2019 Tulare County Regional Transit Coordination Study

Final Report

Prepared for Tulare County Association of Governments

by SBLB, LLC in association with Multimodal Solutions

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Section 1: Executive Summary

The Regional Transit Coordination Study is designed to assess the potential for the evolution of the six transit systems in Tulare County into a regional network that offers citizens in the urbanized areas improved mobility and improved economic productivity while maintaining the rural transit connections.

Planning and Regulatory Context

The 2017 Tulare County Long Range Transit Plan identified 35 action plan items in eight functional areas.

The Regional Transit Coordination Study addresses several of those items:

1. Implement Countywide Performance Metrics
2. Create Cooperative Governance Covenant with all Transit Operators
3. Consider Joint Powers Authority (JPA) among Transit Providers
4. Consider Feasibility of Volunteer Driver Programs
5. Consider Flexible Service including Community Shuttles
6. Consider Flexible Services as Those Offered by Transportation Network Companies (TNC)
7. Expand Vanpool Programs
8. Develop Bus Stop Improvement Program

A clear understanding of the Transportation Development Act Statutes and California Code of Regulations guides the study. Among the key features are these PUC sections:

99222 Funds available are to be fully expended to meet transit needs.

99230 Transportation Planning Agency determines amount allocated to each claimant based on relative needs of each claimant for purposes for which fund was intended.

99231 City or county providing transit service may file claim up to the apportionment.

99268 Allows operator to supplement fare revenues with nonstate, nonfederal revenue.

99400 Allows Local Transportation Fund (LTF) claims to the TPA for local roads after unmet needs process.

99401 TPA adopts rules for submission of claims, stating criteria for evaluation.

99401.5 Unmet Needs process requires annual public comments and analysis.

99401.6 If there are no unmet needs that are reasonable to meet, TPA may allocate funds for roads.

It is important to keep in mind that the LTF funding process includes three local steps:

Apportionment – TPA apportions LTF by population.
Allocation – Discretionary action by TPA for specific claimant for specific purpose.
Payment – County auditor makes claim payments by instruction from TPA.

The balance to be struck by the TPA LTF funding criteria is the point at which reasonable unmet needs have been met and the economic productivity exceeds the fare recovery requirements.

This allows the remaining LTF to be considered for road needs. In a county the size of Tulare, these will be critical.

The coordination of the six transit systems can be accomplished slowly or rapidly; through adoption of the Joint Powers Authority structure or through TPA funding criteria in a less structured method.

The challenge of reaching these funding balance points is straightforward in a stable transit demand environment, or one of modest growth for transit trip generation. The last few years have presented a challenge of a different type.

Transit System Operating Environment

The transit demand environment changed dramatically due to external forces in 2015 and 2016. These forces were not caused by a deterioration in transit service quality or quantity. The six systems in Tulare County continue to offer customers reasonable fares, safe operation, reliable trips, above average service frequency and service hours span, superior transit stops in most locations with attention to multiple customer information connections for route and schedule choices, and high-quality transit centers.

The transit demand decreased due to a rapid change in employment, wages, availability of subprime auto loans for liquidity, and availability of driver's licenses. Rarely have these four occurred simultaneously. Average weekly wages in California increased 6.7% in the twelve months ending in December 2016. The period from April, 2015 through December, 2016 included seven consecutive fiscal quarters of subprime auto loan origination amounts exceeding $20 billion. The number of driver's licenses provided to undocumented California residents increased by over 800,000 during the two years ending December 2016.

Evidence that this was not confined to Tulare County includes the two year (2015-2016) decrease in national bus ridership reported by members of the American Public Transportation Association (APTA) totaling 6.9%. More striking was the California transit ridership impacts in ONE year (2016): 5.7% decrease (San Diego), 8.5% decrease (San Jose), 8.9% decrease (Los Angeles), 9.4% decrease (Orange County), and 13.9% decrease (Antelope Valley).

These factors have begun to normalize, the subprime auto loans are decreasing, the employment rate of increase has slowed, the increase in licenses has slowed.

Against this 2016 – 2017 backdrop, the decrease in fare recovery ratio of the six systems in Tulare County from over 20% to an average of less than 12% was predictable considering that service hours increased 13% and the riders decreased 14%.

Study Overview

To analyze the challenges and the potential of the transit coordination strategies, the following sections offer detailed measures of the issues, perspectives of coordination in other transit systems, innovation of alternative transit solutions, the four strategies that can improve the productivity and two different coordinated service models combined with three mobility alternatives that could yield the anticipated results.

Section 1 summarizes the findings of the analysis.

Section 2 describes the changes in service levels, ridership, operating costs, revenue, cost per passenger, cost per hour and cost per mile. The findings point to the need for prompt remedial action. The increase in the cost of transit contractor agreements makes action critical.

Section 3 examines the potential for coordination to improve efficiency from the results of other systems that faced similar challenges. It explains how other transit systems have added service or lowered costs through coordination strategies. The possible savings seems clear even without service modifications, through coordination of administrative activities. The case study summaries offer specific guidance on how to create these solutions.

Section 4 identifies innovations in use today in other markets to use transportation network companies or similar strategies to generate new first/last mile connections, late night service and small zone door to door service. The latest developments in mobile ticketing and smart card fare technology are the focus of nine case study summaries.

Section 5 explains the comparison of the six Tulare systems in relation to a peer group of California transit systems. The comparison reveals more than 20% higher costs per hour in the peers, but more than 20% higher ridership productivity in the same systems. The four methods of increasing economic productivity are assessed: increasing riders, increasing fares, coordinating administrative functions and coordinating and modifying service.

Section 6 assesses the Clean Slate Model and the One Region Model, two types of coordinated service models presented to optimize mobility choices while minimizing unproductive service. Many of the service modifications are so clear we might expect some of these to be implemented before this report is completed. The normal budgeting and service plan processes may lead to several changes.

Section 7 explains the details of the three recommended transit mobility alternatives. The volunteer driver program will not displace the existing Demand Response service, but would provide several trips that are not met. There are many programs of this type throughout the nation. The volunteers are often younger retirees or young adults. California is one of the leaders in the nation for programs of this type. None of the programs replace the ADA service in the community, but there are 59 programs of this type in the state, (National Center for Mobility

Management, 2019). The service substitute for late evening trips could be established using the existing demand response fleet. Since virtually every late evening trip that would be reduced is solely serving the "take home" trip, the vans simply eliminate unused miles of the last fixed route trips. The car share hourly rental program allows those who do not own a car, but do not have time to ride transit for a longer trip to rent the car for an hour or more. There are 79 programs of this type on college campuses and several others including citywide operations in 12 cities, three hotel/apartments and the Victor Valley Transit Authority in California.

Conclusion

Tulare can be proud of the accomplishments of the six transit systems. The services offered to the customers are safe, customer friendly, moderately priced, and reliable. The fleets are above average for the most part and the transit centers and passenger stops are exceptional.

These transit systems remain challenged by the economic environment.

The national decrease in bus transit passengers was even more dramatic in California. The population density in the urbanized areas of Tulare County are higher than that found in many larger transit systems. The portion of transit trips used for the daily journey to work is low, 0.7% compared to the national average (over 5%). There are few systems in the nation that offer a route with 15-minute service frequency in a city with a large portion of free parking in the central business district.

Each of these issues are predictable given the rural nature of the Tulare County economy and the rapid growth of the urbanized areas within the county. Any county that is facing the transition from predominantly rural transit demand to predominantly urban transit demand would face challenges in changing allocations to focus more on route productivity and less on population.

The strategies presented as recommendations in Section 6 are carefully chosen based on comparisons to practical methods used around the country. The Joint Powers Authority structure is strongly recommended but the objectives of improved matching of funding and productivity can be accomplished in several manners. The coordinated services and coordinated organization envisioned in the One Region Model have a net impact of saving more than $1 million per year after adding several low-cost mobility choices. The impact on fare recovery ratio is expected to exceed 4%. The impact of these changes plus coordination of the administrative functions is expected to exceed 5%.

Section 2: Current Conditions

Section 2.1: Confluence of Unusual Developments

The existing organization structures, funding formulas, population growth, economic growth and federal and state policies have combined for an unusual pattern of service increases and ridership decreases.

Tulare County includes six transit systems that are each striving to provide exceptional customer service with modern facilities and equipment in a manner that balances two competing objectives. The need to serve as prudent stewards of public resources must be optimized with the need for frequent service close to the trip origins and destinations.

Compared to other transit markets in the nation, the combination of Federal Transit Administration and Transportation Development Act funding provides predictable funding that exceeds the norm. The rural economy has grown such that the urbanized areas that support that economy are becoming more dense than other transit markets in counties with similar population size. Normally that is a predicate of high transit use.

Though the growth in the employment sectors other than agriculture have continued at a normal pace, the density of those jobs has not been concentrated. The 95 vanpools that have a capacity of 300,000 passenger trips per year is a perfect illustration of this issue. The 95 vanpools have destinations that are widely dispersed both inside and outside Tulare County. This low-density growth of employment is a predicate of low transit use.

The unmet needs process of the TDA LTF funding cycle leads to service additions each year if those individual service changes are “reasonable to meet” and the existing service meets the productivity required in the TDA reporting process.

Between 2012 and 2017 there have been dramatic changes in the amount or riders, transit service miles and hours, and operating costs. Had this occurred during a period of slightly rising demand for transit, the five-year change in productivity would have been modest.

But this five-year period led to significant ridership changes. These changes were not unique to Tulare County. Due to rapid increases in the employment and wage rates during the later years of the five-year period the demand for autos and trucks changed quickly. The ease of access to loans through the subprime market accelerated the trend. Changes in Tulare County were large, but changes in other California markets were larger. Each of the California markets also experienced a large number of undocumented residents receiving their first operator license.

Section 2.2: Measures of Productivity Changes

The most significant metrics are indicated in Table 2.1 below:

Table 2. 1 Comparison of Transit Performance Metrics

Comparison of Transit Performance Metrics, 2012 versus 2017 (The six Tulare County transit systems are combined in this summary view)			
	2012	**2017**	**Change**
Hours	220,937	286,846	30% increase
Miles	3,554,814	4,598,480	29% increase
Riders	3,208,493	2,904,502	9% decrease
Operating Cost	$14,120,605	$21,308,276	51% increase
Riders per Hour	14.52	10.13	30% decrease
Cost per Rider	$4.40	$7.34	67% increase
Fare Recovery	25%	12%	52% decrease

Source: National Transit Database reports, Triennial TDA audits

The nine percent ridership decrease would have been greater if not for the service increases. But the cost per rider increase of 67% is quite high due to the combination of the service increases at the time of demand decrease.

Section 2.3: Implications for TDA LTF Financial Uses Sustainability

The TDA LTF may be used for transit operations and capital, planning, pedestrian and active transportation, community transit services, stations and rail projects. If certain conditions are met the counties of 500,000 population or smaller may use available LTF funds for streets and roads. The three-step funding process includes:

1. Apportionment – TPA (TCAG) apportions LTF by population

2. Allocation – Discretionary action by TPA (TCAG) for specific claimant for specific purpose

3. Payment – County auditor makes claim payments by instructions from TPA (TCAG)

Ten percent of the LTF is to be allocated for planning, audit expense, bike and pedestrian facilities and community transit services. The remaining 90% is first apportioned by population and second allocated to each claimant for the specific purpose that supports the objectives and legislative intent of the fund.

The pattern of TDA LTF funds use is presented in Table 2.2 below.

Table 2. 2 Audited LTF Forecast of Spending

Table 2.2 Audited LTF Spending; Forecast of Spending if Trends Remain Constant (In millions)			
	Total LTF	**Transit**	**Roads**
FY 2014 Actual	$14.697	$6.580	$6.716
FY2018 Actual	$18.993	$9.571	$8.554
FY2023 Forecast	$24.501	$13.974	$10.527
FY2028 Forecast	$31.606	$20.402	$11.204
FY2033 Forecast	$40.771	$29.787	$10.984

Source: Report of Independent Auditors - TCAG Financial Statements

Table 2.1 clarifies the decrease in economic productivity. It is stark, but the market economy for transit was impacted by several unusual patterns simultaneously. Table 2.2 highlights the trend of LTF funds use. Looking five years back or fifteen years forward, questions of sustainability arise. The recommendations that are included in this study offer a reset of the future patterns based on a coordination of transit provision. Changes of this type would have a large impact on the patterns of funds use in the next fifteen years.

Prompt action is needed. New propulsion power for buses will be bring much promise but some fiscal uncertainty and infrastructure costs. The decrease in transit demand of the last few years is a cycle that is now ending. New residents and eventually new rail customers will create new demands for service. Coordination strategies that offer over $1 million in cost efficiency improvement are needed. These can be implemented gradually or rapidly. The do-nothing alternative is not practical.

Section 3: Best Practices – Governance and Organization

Section 3.1 - What types of coordination are in process currently in Tulare County?

Grant Review – TCAG

The region currently uses the metropolitan planning organization screening to coordinate the grant application process. Significant highway and transit projects that use Federal Highway Administration or Federal Transit Administration funds are submitted by sponsors to the regional review process.

Transportation Development Act of 1971 (including Local Transportation Fund and State Transit Assistance)

Each Regional Transportation Planning Agency apportions the Local Transportation Fund within the county based on population, thereby conducting a basic coordination function.

TDA Audits, (Fiscal Audits and Performance Audits) – Auditors designated by MPO, county transportation commission, or transit operator

Though it is not required that the MPO coordinate the selection and work of the fiscal auditors, it represents a logical step in coordination. TCAG is required to select the performance auditors as well.

Unmet Transit Needs Hearings – Transportation Planning Agency

At least one public hearing must be conducted by the planning agency to determine the unmet transit needs. Since Tulare County is under 500,000 population, the TDA allows the LTF to be used for streets and roads if there are unused transit funds available. Comparing the street and road needs to the unmet transit needs is not allowed during the process of determining and documenting unmet transit needs that are reasonable to meet.

During the monthly meetings the coordination of holiday service, regional fares, ADA processes and free days are discussed and resolved. There are some debates, but significant progress on several of these issues is proof of the initial steps of coordinated policies.

2017 Tulare County Long Range Transit Plan

The September 2017 Long Range Transit Plan included these top nine priorities:

1. County-wide fare structure partial implementation
2. County-wide transit map, rider guide, Google transit implementation complete
3. Coordinated 20-year low emission bus procurement pending

4. Expand intercity fixed routes pending
5. Increase frequency of TCaT, Porterville routes pending
6. Implement BRT along Mooney Boulevard in review
7. Mobile app for all fixed route info (real time) in review
8. Expand Transit Centers (Exeter, Lindsay) in review
9. JPA for the six transit systems (eventual consolidation) in review

Regional Fare Structure – T-Pass

The regional transit pass is one step of coordination that both illustrates how useful these efforts can be and how important the association of government actions can be. The T-Pass provides unlimited rides throughout Tulare County for $55 per month (31 day period). The regional pass does not supplant the local fare structures. But to the customer it provides a benefit.

There was some concern by transit operators that fare revenue could be diluted. The TCAG discussed the possibility of reimbursement for lost revenue. This was not needed after full consideration.

The College of the Sequoias transit pass is also regional in practice. The revenues are fairly distributed based on ridership and average miles per passenger.

Regional Routes – 11x, TCaT

There are currently four intercity routes operated by TCaT that connect parts of the county. The 10 route connects Cutler-Orosi with Visalia. The 20 route connects Delano with Tulare. The 30 route connects Three Rivers and Woodlake with Visalia. The 40 route connects Porterville, Lindsay, Tulare and Visalia. The 11x route is operated by Visalia Transit and connects Tulare and Visalia with trips every 30 minutes for 15 hours per day. Trips from Tulare to Bakersfield are operated by Greyhound for fares of $8 to $18 per trip.

Section 3.2 - What models of cooperative processes are available?

Coordination Challenges and Benefits

The current state of transit expense and revenue growth in the six transit systems of the TCAG region require a serious review of the potential benefits of innovation and coordination. The benefits include cost savings potential and customer use simplification. But there are challenges.

Before the Dallas and Fort Worth regions individually voted to create different transit authorities in 1983, the two attempted to pass a single transit authority which failed. It failed because the one cent sales tax was viewed as too high for the Fort Worth (Tarrant County) side, the rapid increase in service levels seemed too much for the same voters, and rail plans in the two were vastly different.

The types of coordination or consolidation that may best fit the citizens in Tulare County do not require a new local option sales tax, but it remains practical to consider the variance in transit needs among the six transit service areas. Visalia offers greater frequency and more routes than the other systems. Porterville and Visalia are implementing electric buses. Porterville plans to be the first 100% electric transit fleet in the state. Visalia and Porterville have invested in modern farebox technology. Mobile ticketing is in development in Porterville. Tulare has chosen less expensive fare collection technology. These differences do not tell which strategy is better, but it exemplifies a challenge that may impact the ability of the six systems to cooperate or consolidate. It does remind us how important it may be to consider the different choices that they have made.

The Atlanta region is currently enjoying a rapid transit development phase. But it is an overnight success that was forty-five years in the making. In 1968 the property tax election failed that would have created MARTA. In 1973, the vote passed. The changes included lower fares, (benefited existing riders), the tax base changed from property tax to sales tax, (reduced anxiety of older property owners and exported some of the cost to visitors), and other items of busway and rail line alignment.

The Texas and Georgia examples are of larger urban areas, yet transit consolidation on a regional basis will always find challenges in the gap between what the larger community plans find important and what the smaller region or neighborhood or market segment finds important.

Coordinated Public Information, Sales and Marketing

For a decade the Metropolitan Transit Authority of Nashville-Davidson County Tennessee and the Regional Transportation Authority agreed that their missions complemented each other, though important differences remained. That led to a large confluence of shared public information and marketing strategies. The coordinated efforts of carpools and vanpools led to joint work on the Guaranteed Ride Home Program.

These two efforts led to joint pass sales efforts and recommendations to the state legislature for improved funding; to the Tennessee Department of Transportation (TnDOT) for rapid development of High Occupancy Vehicle lanes; and to the Federal Transit Administration and TnDOT for development of the first Commuter Rail line in the state.

Consolidated Administration (grants, accounting, reporting, marketing)

The combination of Red Rose and BARTA in Pennsylvania offers a clear example of saving large amounts by consolidating the administrative functions while retaining the two transit system operations such that the riders of both systems noticed little difference. Policy decision makers realized savings, the state commended the efforts and the riders experienced a seamless transition.

Joint Powers Authority

Joint Powers Authorities (JPAs) are a popular solution in California to solve the transition from city transit services or rural transit services to regional or countywide transit services. The organization structure is readily created, even if the political will takes months or years to solidify. The process is relatively simple (Article 1 Joint Powers Agreements Section 6502): "If authorized by their legislative or other governing bodies, two or more public agencies by agreement may jointly exercise any power common to the contracting parties, including, but not limited to, the authority to levy a fee, or tax….".

The ability to have joint ownership of assets and economic elements of the system is important. The ability to maintain a structure of some decentralized decisions make the process quite flexible. The fact that the agencies can create these agreements by local legislative action, rather than by voter referendum, leads to more flexibility. The fact that the combining entities may not create new powers, but may only combine existing powers, is a reason that the voters are often comfortable with the structures.

JPAs are not limited to transit services. Several counties have used the structure to provide more efficient education or public safety services. The concept is not new in Tulare County. There are Vocational Education, Groundwater Sustainability, and Regional Water Alliance JPAs in service currently.

The TCAG was formed by a Joint Powers Agreement in 1971. TCAG was designated as the Metropolitan Planning Organization in 1982. TCAG is also the Regional Transportation Planning Agency and the Transportation Authority created with the passage of Measure R to manage those activities.

Regional Transit Authority or District

Should there be a reason that the regional coordination does not fit the Joint Powers Authority model, there are other structures to consider. The San Diego transit region has evolved over time. The dense southern portion of San Diego County had three city transit operations (San Diego, Chula Vista, National City) before the San Diego Trolley was completed. The original agreements led to the eventual state

legislation that provides the regional planning framework and state and local funding needed for the bus and rail services. The city bought the private company in 1967. SB101 allowed the creation of the Metropolitan Transit Development Board. In 1980 the San Diego Trolley Inc. was formed. In 1981, the San Diego Trolley began service, within the five - year construction deadline. In 1985, the city completed the merger of the San Diego Transit Corporation into the Metropolitan Transit Development Board. In 2002, the County Transit System moved to the Metropolitan Transit Development Board.

Section 3.3 - Case Studies

What does consolidated service look like at comparable organization structures?

Case Studies

- Case 1 South Central Pennsylvania
  Offers 800,000 reasons to consider consolidating transit administration

- Case 2 Victor Valley California
  Provides blueprint in two-step consolidation

- Case 3 Solano County California
  Offers a glimpse of a reluctant partner reaching agreement plus 800,000 Reasons

- Case 4 Merced County California
  Illustrates the combination of organizations while maintaining local decisions

- Case 5 Coachella Valley California
  Shows how many smaller cities structure governance process and lead innovation

- Case 6 San Luis Obispo RTA California
  Demonstrates that JPA can have two levels: one - administration, one - consolidation

- Case 7 Dutchess County New York
  Example of straightforward merger of city service into larger county operation

- Case 8 Stigler Oklahoma
  This rural area encompasses 9,800 square miles. The $1.62 per mile cost is evidence of the inherent efficiency.

Case 1 – South Central Pennsylvania Transit Authority

The case identifies the possible solution that maintains two separate operations. The two operations look the same to customers as before. The savings of over $800,000 was based on eliminating a variety of duplicative positions.

Combination – Red Rose Transit Authority; Berks Area Regional Transit Authority

Location – Berks County, Lancaster County, Pennsylvania

Impact to Customer – The services and look of the system did not change.

Important Details – Merger discussions began in September 2013 after unexpected death of executive.

A temporary eighteen-month agreement governed the initial interaction.

Impacts – Both five member boards continue. Both transit services continue. The ten-member combined board meets as the SCPTA. Projected first year savings $830,000.

Case 2 – Victor Valley Transit Authority

The Victor Valley Transit Authority (VVTA) covers the cities and distances comparable to that of Tulare's six systems. The initial 1991 four cities included Hesperia, Adelanto, Apple Valley and Victorville. Barstow merger followed in 2015.

The initial four cities had very different approaches to wages and services. The later Barstow merger provided both parties several protections.

Combination – Apple Valley, Adelanto, Hesperia, and Victorville and portions of San Bernardino county were later joined by Barstow and larger portions of the county.

Location – There are now over 20 local governments that receive transit service from the JPA.

Impact to Customer – Fleet improvements, schedule improvements, facility improvements were significant. Customer reaction was favorable.

Important Details – The last twelve months before the Barstow merger, the parties joined in an intergovernmental agreement.

Impacts – Administrative savings were clear in both the first JPA establishment and the merger.

Barstow reported significant operations cost reductions.

Case 3 – SolTrans, Solano County Transit – Joint Power Authority

The City of Benicia had viewed the JPA skeptically, but through the course of the year the savings were clear. It is not uncommon for a smaller JPA participating government to be cautious regarding the future of their decision-making authority. It is often practical for that entity to seek strategies to assure their members.

Combination – The City of Valencia began operation of Vallejo Transit in 1949. The City of Benicia started what is now the Benicia Breeze in 1986. The JPA is governed by a six-member Board of Directors including MPO and council members.

Location – The JPA provides fixed route and demand response to both cities. The fixed route service extends to Fairfield. Express service extends to Walnut Creek, Pleasant Hill and El Cerrito.

Impact to Customer – Benicia reluctantly agreed to a joint study of the merger in 2009. The final agreement was signed in 2010. The merger was completed in 2011. The mutual goals included maintaining service levels and promoting greater fund stability.

Important Details – The population of 234,000 is now served by 1.4 million trips per year.

Impacts – The first-year savings exceeded $800,000.

Case 4 – Transit Joint Powers Authority of Merced County

The size and scope of the potential Tulare JPA is similar to that of Merced. To balance the rights and duties of the participants, the JPA has a ten-year term and then it must be renewed or the participant leaves. The exit clause is clear.

The JPA owns the assets but the local decisions direct the service that customers see.

Combination – Merced County and the incorporated cities of Merced, Atwater, Dos Palos, Gustine, Los Banos and Livingston are members.

Location – The JPA provides fixed route and demand response service in each of the participating areas.

The eleven-member Board of Directors includes five county, six city appointees.

Impact to Customer – Current fixed routes total 27, in seven sectors.

Important Details – Assets are owned by JPA and local governments decide service amounts.

Impacts – The initial Consolidation Agreement was signed in January 1995, the consolidation took place on July 1996. The agreement was modified in 2013. The JPA includes a ten-year term and exit clause. The current structure includes grant administration by the MCAG, (analogous to TCAG).

The population of 269,000 is now served with 1.0 million transit trips per year.

Case 5 – Transit Joint Powers Authority of Coachella Valley

The JPA has a similar population to that of Tulare County. The eleven-member Board of Directors includes one from each of six cities and five from the county. This reflects the reality that there are significant urbanized population sectors but no large cities in the service area. Together they have been able to implement transit service innovations that would not have been practical for any individual city.

Combination – The 1977 JPA established the formal cooperation among the several cities and Riverside.

County. The initial cities were Coachella, Desert Hot Springs, Indio, Palm Springs and Palm Desert. The cities of Indian Wells, Cathedral City, La Quinta and Rancho Mirage were added later.

Location – Several of the cities are connected by I-10. The JPA provides fixed route and demand response service to the participating governments. The cities and county are balanced in representation.

Impact to Customers – The population of 443,000 receives 3.4 million revenue miles of service each year. The budget is $38.9 million. Three of the routes are quite busy serving over two million annual trips (routes 14, 30, 111). The proximity to the large employment centers of the Los Angeles basin leads to these concentrations.

Important Details – The service funding flows through the Riverside County Transportation Commission, which is one division of the six county Southern California Association of Governments.

Impact – The population of 443,000 is served by 4.1 million trips annually.

Case 6 – Transit JPA San Luis Obispo County (including part of Santa Barbara County)

There are two levels to this coordinated JPA. Seven communities coordinate through this process. The county population is 424,000, the service area population is 206,000. There are a number of cities under 50,000 population.

Combination – The JPA established the formal cooperation between both counties. The cities include Morro Bay, Paso Robles, Pismo Beach, San Luis Obispo and three others. The RTA offers oversight to South County Area Transit as well.

Location – These communities along the Pacific coast offer seven fixed routes and demand response service to each city. The county appoints five members to the Board of Directors and the cities appoint seven members.

Impact to Customers – The 1.9 million revenue miles serve 1.2 million trips. The average trip length (10 miles) is longer than that of many 90 vehicle transit systems.

Important Details – The operating budget is $10.6 million. The service area is small (130 square miles) in a large county (3,616 square miles).

Impact – The population of 206,000 in the service area is served by 1.9 million trips.

Case 7 – Dutchess County, NY DCPT merges Poughkeepsie transit system

The challenges of merging urban and suburban/rural systems are illustrated in this New York county of 423,000. The fixed routes were modified. The headways were converted to sixty and thirty minute frequency. Three local college or university agreements and three Metro North Commuter Rail station shuttle agreements are important features of the service. The demand response services include three types (ADA, Flex and Dial-a-Ride). The ADA service meets the regulatory requirements. The Flex service is limited in service hours, but open to all customers, and the Dial-a-Ride service is a fixed amount of service contracted by the cities or towns in the county.

Combination – Dutchess County Public Transit (DCPT) serves the vast majority of the county. The remote northeast portion of the county is served by a separate system. The Poughkeepsie rail station connects Amtrak and Metro North rail lines with several transit systems. In 2017, Poughkeepsie agreed to have their transit system merged into the DCPT. It benefitted both parties.

Location – Approximately 30% of the county is served by the fixed routes. The vast majority of the county is served by the demand response services. The County Executive and Legislature are together the policy-making leaders for the system. There is no separate Board of Directors.

Impact to Customers – The merger led to better service with an improved fleet for the Poughkeepsie city riders. The merger led to the Poughkeepsie schools and DCPT agreement for transit passes. The agreement was highly unlikely before the merger.

Important Details – The operating budget of $11.6 million included 9% in fare recovery. The State of New York does not use fare recovery as a minimum standard, instead basing the state operating assistance on both the number of riders and the revenue miles of service.

Impact – The population of 352,000 in the service area was served with over 800,000 trips on 1.4 million miles.

Case 8 – Stigler, Oklahoma Ki Bois Area Transit System

This rural system has the largest geography of any case presented here. The rural system was several counties at inception and operated so efficiently that neighboring systems gave their systems and fleets to Ki Bois, one at a time. The 9,800 square mile service area in Eastern Oklahoma is a model for decentralized operations with centralized administration.

Combination – The several merged entities each reached the decision that the marginal cost that Ki Bois would incur was lower than that of the prior entity. Ki Bois now serves Adair, Cherokee, Haskell, Hughes, Latimer, LeFlore, McIntosh, Okmulgee, Okfuskee, Pittsburg, Sequoyah, and Wagoner counties.

Locations – The system now serves an area 140 miles (east-west) by 125 miles (north-south). Only one of the 13 counties in the region operates separately.

Impact to Customers – The coordination with tribal transit increases efficiency. Trips in the 12-county service area are simple to book and serve.

Important Details – The operations are geographically dispersed over a large area, yet Ki Bois has been recognized as a model for rural transit in terms of routine maintenance at centralized facilities.

Impact – The system is a model of efficiency at $1.62 per mile, $30.82 per hour.

Section 4: Emerging Technologies and Innovative Solutions

Emerging and innovative technological solutions to provision of public transportation service may be models for consideration in Tulare County. The approaches include addressing first-last mile issues, improving service to underserved populations, increasing use of technology to improve fare collection and wayfinding, and improving service productivity and cost control.

Included in this review are innovations that involve increased use of technology such as smart phone applications to improve communication and coordination with customers.

Public – private partnerships (PPP) are also key strategies in expanding transit access as described in this section.

Section 4.1 - Addressing first-last mile issues through innovation and alternative transportation

Transit agencies have recently addressed first-last mile challenges through third-party app-based ride-hailing and ride-sharing transportation network companies (TNCs). Services using TNCs can provide extensions to the reach of fixed route public transportation, additions to the span of service provided, full or partial replacement of services in lower demand areas, or as an alternative to typical public transportation modes.

One of the earliest agencies to adopt the use of third-party services as part of its agency's network of transit services was Pinellas Suncoast Transit Authority (PSTA) in St. Petersburg, Florida. The program, which began in February 2016, partners PSTA with UBER and United Taxi Company to connect persons who do not live near bus stops to fixed route bus service. The program offers $5.00 off rides taken by persons on UBER or United Taxi when travelling to or from designated "Direct Connect" bus route locations. The program currently includes 24 bus stop locations where a trip can begin or end. The other end of the trip can extend in an 800-foot radius of any of the designated Direct Connect bus stop/station locations. The span of service for Direct Connect is between 6:00 am to 11:00 pm.

Customers without smartphones can choose to take advantage of the Direct Connect service by booking an on-demand trip through United Taxicab. Customers using Direct Connect through United Taxicab also receive a $5 discount for trips taken under the program.

A third provider, Wheelchair Transport provides a service similar to that provided through UBER or United Taxicab to PSTA for persons with disabilities requiring accessible transportation. PSTA pays $27 of the $30 cost charged by Wheelchair Transport for the first mile of the trip. Any remaining distance is charged to the customer at $2 per mile (with the agency paying the other $1). Even with that reduced cost, though, customers have not utilized this service in significant numbers as regular ADA paratransit service through PSTA is provided to the same areas.

The annual budget for the overall program for 2018 was originally $60,000 with the program averaging 1,000 uses per month. With the expansion to 24 eligible bus stops and one larger zone in April, 2018, though, the use of the ride-hailing services has expanded rapidly to over 3,000

trips per month. The cost of the program is similarly expanding to provide the necessary $5 per trip credits.

Other examples of first-last mile connectivity include Charlotte Area Transit System's (CATS) pilot program for connections to light rail stations and Denton County Transportation Authority's (DCTA) Highland Village public-private ride-hailing program.

In the CATS program, limited rides are subsidized each month to persons travelling within two particular zones using LYFT with trips to or from certain light rail stations. Both zones have established and frequent fixed route bus service. One of the zones borders downtown Charlotte to the North. The other zone is near the end of the light rail route in and around the University of North Carolina Charlotte campus. Both zones contain significant barriers (either a rail yard or heavily travelled roadways) separating a light rail station from nearby transit trip generators. The ride-hailing service operated by LYFT provides a means of addressing the barrier issues while expanding public transit availability. To obtain the subsidy, customer must have a LYFT account and purchase a CATS monthly pass. The customer then receives a promotional code that can be used to receive a $4 subsidy per LYFT trip while commuting to or from the designated rail station within the neighboring geofenced zone.

Denton County Transit Authority (DCTA) provides commuter rail and bus service throughout Denton County, Texas. Highland Village is a smaller city within Denton County (population 16,587). DCTA operates commuter rail through Highland Village as well as a single local bus route. DCTA supplements these transit services with a TNC ride-hailing service provided under an agreement with LYFT. The program, begun in April 2016, allows customers to request a ride from LYFT within a designated zone that incorporates the city of Highland Village along with portions of the adjacent city of Lewisville, Texas (population 106,000). Ridership on the service was 2,448 in 2017.

The service provided through DCTA is different from the PSTA or CATS service described above in that trips are provided to or from any origin/destination within the designated zone rather than just to or from designated bus or rail stop locations. The DCTA Highland Village service is managed entirely through LYFT's smart phone app with the discount applied when the customer enters the applicable promotional code.

The DCTA Highland Village program provides subsidies of up to $10 per trip for persons within that City for rides on LYFT. Customers select the DCTA promotional code when booking the trip to receive the DCTA discount. If the LYFT charge for the ride is $10 or less, the ride is free to the customer.

First – Last mile programs – Considerations for Tulare County

For Tulare County, the programs described above are examples of how agencies are extending the reach of public transportation to areas not currently served by fixed route or other service, improving service within transit served areas or offering ride-hailing services as an alternative to other means of expanding public transportation.

For first-last mile ride share programs to be effective in Tulare County, the fares charged must be attractive to customers. There must also be a Transportation Network Company (TNC)

already operating in the County or, alternatively, a TNC willing to expand into the County. Both UBER and LYFT provide service in Tulare County and so there is the possibility of sufficient capacity through these providers to manage the marginal extra demand from public transit agency sponsored trips.

Availability of wheelchair accessible transportation is a consideration when deciding whether to contract with a TNC for ride-hailing services as the TNC typically has limited if any wheelchair lift capability. Agencies such as in Pinellas County, Florida have established a comparable service for persons with disabilities requiring wheelchair accessible transportation.

The agency must also consider whether a program for subsidizing ride-hailing trips will require trips to either originate or terminate at designated bus stop locations, or whether trips must take place within a designated geofenced zone as in the Highland Village example described above.

Section 4.2 - Ride-sharing services as alternatives to public transit provision

Transit agencies have enlisted ride-sharing services to reduce agency cost or provide alternatives to fixed route bus services.

In Arlington, Texas, a suburban area between Dallas and Fort Worth, the City has contracted with “VIA”, a ridesharing TNC, to provide on-demand ride-sharing service within a large designated area of the City. The suburban city of nearly 400,000 in population has long been resistant to the introduction of city-wide fixed route public transportation. There is limited fixed route public transportation in its entertainment district. Arlington recently completed a pilot program for fixed route service. The City has provided demand response service for its elderly and disabled population using city operated paratransit vehicles for many years.

The City has contracted with VIA as an alternative to fixed route bus service. The service operates between 6 a.m. and 9 p.m. Monday through Friday and between 9 a.m. and 9 p.m. on Saturdays. VIA provides service between any two locations within a specified large zone within the city of Arlington, Texas serving 120,000 residents and 83,000 jobs. VIA vehicles differ from other ride-hailing services through the use of its own vehicles and drivers, and through the vehicles’ inclusion of City of Arlington (and VIA) logos. Customer fare is $3.00 per trip regardless of distance within the designated zone.

The program began in December, 2017 as a pilot project and has just been renewed for the 2019 calendar year. The projected cost of the VIA service for 2019 is $1,802,375. The City’s portion of the program funding is up to $995,000 with the Federal Transit Administration providing funding of up to $807,375. $300,000 in fare revenues are projected for 2019 resulting in a cost per trip of approximately $18 and a 16.6% fare recovery rate.

The VIA service is a cashless service at the point of boarding the VIA vehicle. Customers typically pay through the VIA smartphone app, but, alternatively, can purchase a prepaid credit card at a retail outlet before requesting a ride to use as payment for a trip on the service. On-demand trips can be booked either through the smartphone app or by phone.

VIA operates similar ride-sharing services in New York City, Washington D.C., Chicago, Illinois, West Sacramento, California and most recently in Los Angeles, California.

Targeting specific subgroups of transit customers

Options for provision of public transportation to subgroups of a larger public transit customer base are growing with the availability of Transportation Network Companies (TNCs). The Las Vegas Regional Transit Commission (RTC) has identified its paratransit customers as a subgroup that can receive improved transportation options that also result in cost savings to the agency. RTC has established a program with LYFT to provide on-demand trips to a select group of current Americans with Disabilities Act (ADA) certified paratransit clients. Using RTC's regular paratransit service, ADA clients pay a $3 fare of a trip costing the agency $32. For a select group of clients in the pilot program, the agency will provide same day on-demand transportation to clients for as little as the same $3 fare. The agency subsidizes the customer in an amount up to $15 per trip. If the trip exceeds $18, the customer must pay the additional LYFT fare. This arrangement benefits the ADA customers by providing same day transportation available within minutes after request. The agency is benefitted by reducing its cost by more than 50% for trips that would have otherwise been taken on its more expensive ADA paratransit service. Trips can be requested either through the LYFT smart phone app or through calling RTC. Customers using wheelchairs can participate in the program by calling into to RTC to request transportation. Phoned in reservations are taken from 7 am – 6 pm seven days per week. On-demand trips can be request through the LYFT app 24 hours per day.

Other innovative approaches to targeting customer subgroups have focused on service hours when regular fixed route or demand response transit services do not typically operate. This approach is most commonly provided within college campus and tourist areas where accessibility to shared ride transportation in very late night or weekend hours at an affordable cost is a priority.

One example of this approach involves overnight public transportation at the University of North Texas (UNT) in Denton, Texas. The service at UNT is part of its broader "e-Ride" service. The e-Ride service provides rides during later hours up to 2:00 am. Before 2:00 am, students can request demand response trips either with the University's regular shuttle service or through LYFT. After 2:00 am, the university operates service exclusively through a contract with LYFT to provide overnight service from 2:00 am to 7:00 am. The service is free to students during these hours. The service operates in a designated area on and near campus for students with a valid student ID card. Users may only request rides through the LYFT app.

Pinellas Suncoast Transit Authority (PSTA) in St. Petersburg, Florida operates a somewhat similar service it has coined "Late Shift". The service offers twenty-five on-demand (demand response) one-way trips per month for regular transit customers who qualify for the service based on household income and employment. The purpose of the program is to provide transportation to second and third shift workers whose jobs end or begin after the end of regular fixed route bus service.

The program specifically assists those persons deemed by the agency to be transportation disadvantaged (defined as those with documented household incomes no more than 150% of the Federal poverty limit).

In order to enroll in the Late Shift monthly transportation disadvantaged program a $20 monthly bus pass must be purchased by the customer. The customer can use the pass for bus trips as well as up to 25 free on-demand trips per month to or from work when bus service is not available. Persons using the program must apply for it with the agency, purchase the month pass and have a job that begins or ends between 10:00 pm to 6:00 am.

Targeting transit availability expansion – Considerations for Tulare County

Programs of the type described above may benefit from financial support from an area University, employer or other entity. Colleges in particular may be willing to fund the entire cost of a program that is perceived as benefiting their students through improved mobility and safety.

Outreach to major area employers and colleges may result in interest and a possible financial commitment. A survey of current public transportation riders may indicate the potential level of demand for the services described above. Alternatively, a ride-hailing program can be instituted as a limited "pilot" project to better determine the cost and demand for subgroup targeted transit services before a long-term commitment is made.

General considerations in use of TNC ride-hailing/ride-sharing services in Tulare County

While use of ride-hailing and ride-sharing services through a private TNC can bring important benefits to transit agencies in service availability and cost control, there are limitations and issues related to their use.

One of those mentioned above is the lack of accessible service by ride-hailing TNCs. This may result in a transit agency deciding to supplement ride-hailing services with other accessible transportation in order to provide equivalent service to persons with disabilities in areas served by TNCs.

A second common issue especially with ride-hailing services such as UBER or LYFT is that customers can typically contact the service through a smartphone. Agencies have responded to this limitation by providing a taxi or other provider-based alternative on-demand service that can be reserved by telephone. As of 2017 in the United States, 67.3% of the population own a smartphone (per statistica.com). It is very likely that a significant portion of the transit customer base does not have access to a smart phone to reserve or pay for trips at the current time.

Agencies have also found that providers like UBER and LYFT often do not provide complete trip related data to transit agencies as the data is considered as private information by the TNCs. As reported in *"Where new mobility and traditional transit are actually getting along"* in the website SideWalkLabs.com:

"The PSTA obviously knows how many rides are logged by Uber drivers — they have to pay for each one — and starting in 2018, the ride-hail company is also providing figures on which pickup/drop-off locations are most popular, as well as average response time and average distance traveled on a monthly basis. But citing the privacy concerns of its riders, Uber doesn't share more granular data that the agency would like to use in its planning, such as origin and

destination, time of trip, total cost of trip, and names and email addresses of users so that PSTA could contact them and learn more about whether the program is working for them."

Regarding cost of service to the customer, ride-hailing services typically employ variable rates that can increase or decrease depending on demand. Even with the transit agency per ride discount, a fare can be unaffordable to customers in times of high demand. Unlike ride-hailing TNCs, ride-sharing service such as VIA typically have a standard fare set by the agency. While the set fare may result in higher cost to the transit agency, the fare to the customer is more reasonable and predictable.

Nevertheless, ride-hailing and ride-sharing TNCs can provide expanded transit service options in areas of Tulare County where transit service availability is non-existent or minimal. These areas include communities in the Northern part of the County such as East Orosi, Seville, Yettem, Monson and the Southern part of the County including Terra Bella and Ducor.

Section 4.3 - Customer fare payment and trip information

Rapid technological innovation in transit system fare payment and trip information processes have yielded benefits for customer convenience, information dissemination and improved wayfinding. Technology has improved the ease with which customers can purchase fares, navigate large and multi-agency service areas and obtain news and service updates.

Smartphone, tap card and cellular capabilities improve the customer experience navigating public transportation networks.

For transit agencies, moving customers from cash fares to digital fare payments results in improved fare collection reliability, reduced fare evasion, lower fare equipment maintenance cost and the potential for ridership increases through more convenient customer access to services.

Examples of transit agencies providing improved fare collection and other services through technology are widespread. Below are examples from several agencies.

Dallas Area Rapid Transit (DART) has been an early adopter of fare payment technology. The system offers customers various options in fare payment. Customers can pay cash fares through the farebox when boarding a bus, or through a rail platform ticket vending machine (TVM). Alternatively, a customer can purchase a "GoPass" "tap card" which is activated when boarding a bus or train and "tapped" every time a customer boards a different vehicle or enters a rail station area.

A third method is the use of DART's "GoPass" smartphone application (app). The smart phone app provides additional flexibility and advantages to customers through its web-based platform. The customer chooses and activates the needed fare type before boarding the transit vehicle and displays it on his or her phone when entering a bus or upon fare inspector request. Even though they carry the same "Go Pass" name, DART tap card fare payment is separate and distinct from the DART smart phone-based fare payment method. Customers use just one or the other method.

DART tap card users have multiple ways to purchase their fares. Users can purchase the cards at various retail outlets around the Dallas area using either cash or a credit card including 7-11 convenience stores and various other outlets. The user can also log into the DART on-line website to add money to their tap card from a credit card or add money at retail outlets. The pass is validated by tapping it on the reader upon entering a bus or train platform.

The "GoPass" smartphone fare payment type has advantages over the tap card method. One is the ability to purchase a regional fare that is valid not only on DART services but also when riding in Fort Worth on Trinity METRO, or in Denton County using DCTA buses or trains. The reason for this advantage is that Trinity METRO and DCTA buses do not have tap card readers in their vehicles.

The GoPass smart phone app also allows a person to pay for two or more riding together at one time via fares purchased and displayed through a single user's smartphone. The phone displays the activated tickets showing the date and time activated, ticket type and number of tickets purchased. The smart phone payment "wallet" can be reloaded with additional money through the smartphone app, web-based portal or via cash or credit payment at retail outlets.

Beyond ticketing, the smart phone app provides a trip planning function where a user can put in their desired origin and destination and have the smart phone app propose trip alternatives using public transit. Links are provided to UBER and LYFT apps as well as an option to call DART police.

A second system using a smart phone-based application is used in Porterville, CA. The application used by Porterville allows users to purchase and load the agency's "Go Card" smart tap card in person or on-line through a web site or smart phone app. The cards are then read by the system's GFI "Fast Fare" electronic fareboxes. Additional fare credit can be loaded to the smart card either through the smartphone app or through logging into the agency's website. The customer can register his or her smart card on the website and recover the unused value of the Go Card if the card is lost or stolen. Customers in Porterville can continue to pay cash fares through fareboxes mounted in each bus. For passengers paying with cash, the farebox system will also generate change cards so that customers do not have to pay with exact change. The farebox will also print a day pass for customers who pay the $3.00 (full fare) charge when boarding the bus.

The "Fast Fare" GFI farebox is equipped to read QR (Quick Response) codes generated by Porterville's mobile app and shown on the customer's smart phone. Customers can establish an account on their smartphone, enter credit card information for purchases, purchase tickets of varying denominations and activate single or multiple fares when boarding the bus.

Porterville has purchased GFI Genfare "Fast Fare" fareboxes for its revenue vehicles. Cost per farebox is approximately $15,000. Additional purchases of vaults and other ancillary equipment are required to operate the system. A fee is also paid to GFI Genfare for its cloud "account-based" hosting of the fare collection back-end processing.

The Porterville smart phone application provides additional benefits to customers. Actual bus locations can be tracked on a map so that riders can tell where a bus is on its route. The agency

can utilize the application to send Twitter messages such as system news and alerts to customers.

Use of technology for fare payment and rider information – Considerations for Tulare County

Multiple manufacturers are available to meet the fare collection needs of Tulare County transit systems. These systems can accommodate regional fare structures such as Tulare County's "T-Pass" regional pass.

While transit agencies are increasingly transitioning customers to electronic fare payment, any fare collection system in Tulare County will need to be able to handle cash fares for the foreseeable future. Fare collection equipment can range from as simple and inexpensive as a drop box to sophisticated modern electronic fareboxes and digital media readers.

Electronic and digital transactions (smart "tap" cards, magnetic strip cards, QR code smart phones or paper displays, credit cards or other media) can be processed either with a reader that is integral to the farebox or a separately mounted stand-alone unit on a vehicle, station or loading platform. Smart phones can also utilize an app to purchase and display purchased fares to the bus operator or fare inspector entirely independent of any other agency fare collection processes and system.

Ticket vending machines (TVMs) are the next step up in complexity and cost for locations with heavy volumes of customers needing to purchase and pay fares. These permanently mounted machines can typically accept various fare payment types (credit cards, cash, etc.) and dispense tickets, smart cards or other fare types. For example, in Mexico City, TVMs for dispensing tap cards are located at stations along the system's Bus Rapid Transit (BRT) lines. Customers purchase tap cards from the TVM's to use throughout the system as no cash fares are accepted on the system's buses. TVMs are expensive to purchase and require ongoing maintenance in the field. Maintenance cost are likely to be higher when the TVM is exposed to the elements.

There are numerous manufacturers of fare collection equipment available to U. S. transit systems. Cost for these systems can range to a few thousand dollars up to fifteen thousand or more per electronic farebox.

Considerations when choosing fare collection equipment include up-front capital cost as well as ongoing operations and maintenance cost, staffing requirements to administer the system, internal and external security considerations and integration with the agency's accounting processes. Additional vendor cost such as per transactions fees and one-time or periodic software license fees should be weighed before making purchase decisions.

Generally, moving customers from cash and magnetic card fares to digital based fare collection reduces agency cost, instances of equipment malfunctioning and fare evasion. Considerable fare evasion can occur through customer defacing of magnetic fare cards for example. Cash fare revenue is also lost (or vehicle operators are forced to handle fares by hand) when a farebox cash throat becomes jammed or the cash fare collection mechanism otherwise malfunctions.

While electronic fareboxes can cost upwards of $15,000 or more each, add-on card readers able to handle at least tap card and QR code ticket or smart phone transactions may cost a fraction of that cost. The separate digital readers though don't typically handle cash fares, change cards or non-swipe passes or tickets.

Consideration of the back-end cost, capabilities and staffing requirements of any system are also important. Systems are moving away from customer information stored on a smart card and/or in a farebox or reader. More "account-based" systems are being adopted where the fare reader performs validation of a digital fare and updates customer accounts immediately through constant cellular communication with a back-end processor.

For smart phone related functions, the agency should evaluate whether the mobile app can merge its processes with other functions such as bus tracking, schedule and mapping information, system news and security communications. Does the system provide for open API architecture or are there other paths to integration available within the system? If so, what are the associated one-time or ongoing cost of that integration?

Other functionality is equally important. For cash fares, it may be necessary that the farebox system provide change card functionality for non-exact cash fares. It is important also to consider how various types of pass media are handled. What is the system's ability to accommodate free or extra charge transfers?

For digitally based payments, what capabilities does the system have to "cap" fares? An example of fare "capping" is a system that never charges a customer for more than the value of a day pass for making multiple trips during a single day regardless of the number of trips taken by the customer. Does the system require the vehicle operator to validate a fare purchase on a smartphone, or is there a QR code that is read by the farebox or separate on-bus reader?

In a broader sense, it is clear that public transit fare collection like similar trends with other retail businesses will likely continue towards integration of digital technology into point of sale purchasing. It is also very clear that in the United States the adoption process for non-cash and digital fares will be lengthy unless forced. Nevertheless, agencies should consider the viability of potential fare collection solutions in an environment where the use of contactless credit cards and smart phones should significantly increase in the United States to mirror what has occurred in other countries with Point of Sale (POS) transactions.

Volunteer driver programs

Another possible service type that Tulare County may consider is establishment of a volunteer driver program to provide transportation assistance to areas with unmet transportation needs. The "TRIP" Program is one model of a volunteer driver program initiated by the non-profit Independent Living Partnership. In that program, rides are free to the customer. Drivers are reimbursed on a mileage basis. By not charging fees, issues regarding insurance, legal and tax reporting are avoided.

Drivers use their own private vehicles to provide the transportation. Expenses due to vehicle purchase and maintenance are avoided. Volunteers receive reimbursement of their vehicle cost through mileage expense reimbursement.

The volunteer program is typically supported through donations, area businesses and institutions and fund-raising events. The program has also in instances entered into fee- for-service contracts with public agencies.

Section 4.4 – Innovation Case Studies

Case 1: Pinellas Suncoast Transit Authority (PSTA) – Direct Connect

Importance to Tulare Regional Transit Coordination

Program provides an example of how to potentially extend the reach of public transportation to areas adjacent to fixed route transit services. Approach may benefit smaller communities in the Northern or Southern part of Tulare County just beyond reach of current fixed route transit services.

Geography

St. Petersburg, Florida

Service impact to customers

Extends the area accessible to fixed route bus service through provision of connecting ride-hailing service.

Important details

Service operates with multiple demand response providers: UBER, United Taxi and Care Ride (for accessible vehicle service).

Program originated in February 2016 as a replacement for a low performing circulator bus route. Program expanded in 2018.

The program offers up to $5.00 off rides taken by persons on service providers when travelling to or from designated “Direct Connect” bus route locations.

24 eligible qualifying bus stop locations.

Service is available between 6:00 am to 11:00 pm.

Monthly ridership in 2017 averaged approximately 1,000 customers per month. With expansion of the program in April 2018 the ridership has grown to over 3,000 customers per month.

Impact to taxpayers/local governments

The original budget for the ride-hailing/taxicab service for 2018 was $60,000. That cost is increasing to match the recent usage increase in the program.

Case 2: Charlotte Area Transit System (CATS)

Importance to Tulare Regional Transit Coordination

Program provides example of targeting specific zones around outlying major transit stops to provide an additional transportation alternative to access public transit. Potential applicability to Tulare County is as a strategy for increasing transportation alternatives available to the public to high volume bus stops or stations or extending service for short distances beyond fixed bus routes.

Geography

Charlotte, North Carolina

Service impact to customers

Expanded accessibility to particular CATS light rail systems.

Important details

Discounted LYFT ride-share service provided between designated zones and two CATS light rail stations near one end of the transit line.

Trips must originate or end at authorized light rail stations.

Qualifying LYFT trips are discounted by $4.00.

Available to CATS riders who possess a current CATS monthly pass.

Subsidy limited to forty trips per rider per month with purchase of CATS monthly pass.

One-year pilot program.

Impact to taxpayers/local governments

Minimal likely budgetary impact from the limited pilot program at this time given the scope of the ride-hailing service.

Case 3: Denton County Transportation Authority (DCTA)

Importance to Tulare Regional Transit Coordination

Provides example of service to an area that does not have sufficient population and/or population density to warrant the provision of fixed route bus service. Potentially applicable to low density areas in the northern or southern parts of Tulare County.

Geography

Highland Village and Lewisville, Texas

Service impact to customers

Provision of on-demand public transit services in portions of the DCTA service area where fixed route bus services is limited or unavailable.

The service averages less than 100 trips per month.

Important details

Trip scheduling available through a mobile application.

Service is provided to the general public.

A $10 discount is provided for rides on the LYFT mobile app in designated zones (Highland Village and portions of Lewisville, Texas). Trips where the LYFT cost is less than $10 are free to the customer.

Impact to taxpayers/local governments

Program has small impact to the DCTA budget.

Case 4: Denton County Transportation Authority (DCTA)

Importance to Tulare Regional Transit Coordination

Case is an example of potential for extending hours of service in an area that is already served by fixed route transit services during certain hours. Tulare could adopt strategy to provide greater hours of service at reduced cost in certain zones with established fixed route ridership.

Geography

Denton, Texas

Service impact to customers

Provision of overnight service to students on the campus of the University of North Texas (UNT) in Denton, Texas.

Important details

Service is provided by LYFT through the LYFT smart phone mobile application.

Service is provided to current UNT students.

Service area is limited to the UNT campus and designated nearby areas. Service area is "geofenced" through LYFT technology.

Rides on LYFT are discounted through subsidy from DCTA.

Service is available between 2:00 am and 7:00 am (after end of other shuttle bus routes).

Initiation of service with the Fall 2018 school year.

Impact to taxpayers/local governments

The budgeted limit of expenditures for the program for the Fall, 2018 semester is $72,000.

Case 5: Pinellas Suncoast Transit Authority (PSTA) – "Late Shift" program

Importance to Tulare Regional Transit Coordination

Case is an example of designing a transit service that specifically targets a segment of the customer base (in this instance riders who go to or leave work during hours that regular fixed route services do not operate) to provide cost effective extra service to this group.

Geography

St. Petersburg, Florida

Service impact to customers

Provides late night return from work transportation to qualifying customers.

Important details

Specifically targeted to lower household income customers.

Provides deeply discounted fares.

Per customer use limited to 25 one-way trips per month.

Late Shift began in July 2016 as a pilot program funded by a $475,000 state Mobility Enhancement grant.

The program provides approximately 4,000 trips per month.

The purpose is to help get lower wage second and third shift workers to and from work when buses aren't available. UBER, United Taxi and CareRide provide the service.

It is available to income-eligible workers between the hours of 10 p.m. and 6 a.m. seven days a week.

Impact to taxpayers/local governments

No current impact to local government. Funding is through a state transportation grant.

Case 6: Dallas-Fort Worth area mobile payment and wayfinding application

Importance to Tulare Regional Transit Coordination

Case provides multiple examples of fare payment structures and how these structures provide differing benefits to customers. Case also provides example of multi-agency cooperation and joint acceptance of common fare type including incorporation of current Tulare County "T-Pass".

Geography

Greater Dallas - Fort Worth metropolitan area

Service impact to customers

Improved way finding and more convenient fare payment options. Improved security through the elimination of need to carry cash for fares and ability to track and deactivate lost or stolen tap card.

Ability for customers to purchase stored cash value in tap card recharging card value through smart phone app, web portal or retail outlets.

Important details

Free application is downloaded to smart phones for Apple & Android platforms.

Ticketing functions include paying for bus or rail fares using smart phone, advance fare purchase, use of tap cards and storing of credit card information within app.

Wayfinding function includes ability to plan trips across multiple public transit carriers using smart phone. Function provides both schedule information and displays route map of requested trip.

DART mobile app is an example of an open platform mobile ticketing app rather than proprietary smart card system.

Impact to taxpayers/local governments

Approximately 6 million DART fares have been purchased through the mobile app.

Case 7: Porterville Transit

Importance to Tulare Regional Transit Coordination

Case is an example of how a system can use upgraded fare collection equipment to improve fare collection processes to customers with positive impacts on ridership. System fully integrates electronic fare handling modes such as smart cards, smart phones and magnetic strip cards with cash fares and passes.

Geography

Porterville, California

Service impact to customers

Improved fare collection with expanded cash handling options, printed pass, magnetic strip, smart card and smart phone-based capabilities.

Important details

Existing fareboxes replaced with GFI Genfare "Fast Fare" model fare collection equipment.

On bus fare collection system works in conjunction with GFI Genfare "account based" back end processes to provide one-stop solution for all fare modalities.

Mobile app on smart phones can be used to buy and validate fares as well as view purchased tickets through the app's wallet feature.

Mobile app allows customers to track actual revenue vehicle locations on a map displayed on the smart phone or on Porterville website in conjunction with RouteMatch product.

Travel alerts are provided to customers through the apps Twitter feed.

Impact to taxpayers/local governments

Porterville Transit observed ridership increases from compared to before implementation of the new fare collection system.

Case 8: Las Vegas Regional Transportation Commission (RTC)

Importance to Tulare Regional Transit Coordination

Program demonstrates the possibility of using ride-hailing services to partially address trip demands and high paratransit per trip cost resulting from the requirements of the Americans with Disabilities Act (ADA) for complimentary paratransit service when fixed route transit service is provided.

Geography

Las Vegas, Nevada

Service impact to customers

Agency provided LYFT trips provide another option for ADA paratransit customers qualifying for participation in the pilot program.

On-demand same day service is available rather than service that must be requested one day in advance.

Participants must choose between LYFT pilot program or regular agency provided ADA paratransit service.

Important details

Ongoing pilot program for paratransit customers.

LYFT provides same day or advance reservation trips to select group of existing RTC paratransit customers.

Same day on-demand trips can be requested through LYFT app or by calling RTC customer service.

Impact to taxpayers/local governments

RTC pays a maximum of $15 per paratransit trip under this program. To the extent that these trips replace journeys that would be taken on RTC's paratransit service, savings are approximately $17 per trip.

Any trips resulting from pilot program that would not have otherwise been taken would increase RTC cost by $15 per trip.

Case 9: Arlington, Texas

Importance to Tulare Regional Transit Coordination

Case provides an example of an alternative model for provision of public transportation to the general public. Case demonstrates instance where a medium sized city chooses to use the private party ride-sharing model of transit provision instead of providing regular fixed route service.

Geography

Selected areas within Arlington, Texas.

Service impact to customers

Provision of rideshare service to locations within Arlington, Texas.

Important details

Shared ride service provided with VIA provided vehicles.

Trips booked through SMART phone mobile application or by phone.

Program offered every day of the week except Sundays.

Service area includes most central areas of Arlington, Texas.

$3 flat fee charged for each trip.

Limited number of wheelchair accessible vehicles available.

Impact to taxpayers/local governments

The City of Arlington budgeted $322,500 for its 1/3rd portion of the service cost in 2018 with the Federal Transit Administration (FTA) providing the other two thirds of the funding through grant funds.

Funding increased in 2019 to $1,802,375 with program expansion. The City of Arlington provides up to $995,000 in funds matching FTA funding of $807,375.

Section 5: Coordination Needs Assessment Report

Section 5.1 - The Current Imbalance of Revenue and Expense

Understanding the Demand Pattern

TCAG and Tulare County face several unusual confluences. The county is very large (4,839 square miles) and rural in nature but is becoming more urban. In the definitions of the TDA, counties with population above 500,000 are urban; those under 500,000 are rural for the purposes of the allocation decisions; Tulare county population was 442,178 in the 2010 Census and is forecast to reach 543,749 in 2020 (California Department of Finance, July 2018). The urbanized areas in this rural county include Porterville-East Porterville-Strathmore and the larger Visalia-Tulare urbanized area. The Metropolitan Statistical Area – Visalia Porterville is synonymous with the county, though there are vast rural areas. As of the 2010 Census the total population included rural population of 15.5%; urban population of 84.5%.

Each of the state transit funds flow through the TCAG for planning and allocation purposes. The Federal Transit Administration allocates the 5307/5340 formula funds directly to the Visalia-Tulare urbanized area as the designated recipient since it is over 200,000 population ($5,768,442 in 2019). The Porterville urbanized area is allocated funds from the FTA through the Governor's office of the State of California since the urbanized area is over 50,000 and under 200,000 population ($2,570,802 in 2019). The program of projects for the federal grants flow through the TCAG for Metropolitan Planning Organization purposes.

Large, Low Density County with Dense Cities

Tulare county is becoming more urban but currently is home to both enormous agricultural output and cities with growing population. There are long rural gaps between several of the cities, yet these cities are more densely populated than one might expect.

Tulare total crop output last year included $1.7 billion in milk, $0.9 billion in grapes, $0.8 billion in oranges, $0.6 billion in cattle, $0.5 billion in tangerines, and $1.5 billion in a variety of other farm products.

The population has roughly tripled from 1960 (168,403 US Census) to 2018 (466,000 estimate).

Greater Density in Small Areas

Each of the cities has greater density than would be expected in an agricultural economy. Visalia has 3,433 persons per square mile; the city of Tulare has 2,832 per square mile; Porterville has 3,076 per square mile; Dinuba has 3,315 persons per square mile; Woodlake has 3,238 persons per square mile (United States Census Bureau, 2010). Density is one of the most important independent variables which predict transit need. Density is important for transit demand because it allows efficient grouping of trip origins. Density of employment, education, medical, and retail destinations are the second part of the equation.

Employment density is relatively low compared to the population density since the number one employment sector is agriculture. As of December 2018, there were 186,600 employed including 51,600 persons employed in farm wage or salary jobs in the Visalia-Porterville Census area. In general, there are corridors with many employment, retail and medical destinations but no single large trip concentration. The College of the Sequoias is the exception, it is a large concentrated destination.

Moderate Transit Use with Growing Trends Despite Short Term Drop

Only 0.7% of the population of the county use transit for their journey to work, according to the Census Bureau, American Community Survey, 2013-2017. The average for all respondents who used transit for their journey to work in the USA was 5.2% in 2013. This small portion for the employment trips is very low but not unexpected given the automobile ownership rates. Two or more vehicles are available in 78.2% of Tulare county households; 19.4% had one vehicle; 2.4% had no vehicles (US Census Bureau, American Community Survey 2013-2017).

The population is growing. California added 0.78% in population during 2017. Tulare County added 1.1%. Visalia added 1.8%; and Tulare city added 2.2% which was the fastest growth rate of any city in the county (California State Controller's Office, reported in Sacramento Sun Gazette, May 16, 2018).

There are long distances between some of the stops on the regional routes, but Bus Rapid Transit, East-West Cross Valley Regional Rail and California High Speed Rail are in development or construction.

No policymaker wants to reduce service, but we face several tests for compliance with the Transportation Development Act. The most common issue in the 2017 Tulare County Long Range Transit Plan – Summary of Existing Transit Plans was the farebox/expense ratio. Five of the systems identified this issue as a key area of concern. The basic rule of 20% fixed route, 10% demand response portion paid by the riders is a fundamental element of the law. There have been adjustments by amendments of the law. The ability to supplement the ratio with local funding and other revenues is important as is the process of considering TCAG waivers. But policymakers will continue to view the farebox/expense ratio as a fundamental metric of productivity that balances user benefit and public benefit.

The last few years have produced lower transit productivity. Costs are up, and revenue has decreased as explained in Task 2. Much of this is the transit economic climate, not the local policy decisions or policy execution. National trends of increased vehicle miles travelled, automobile registrations and wage increases combined with significant employment increases in the lower income strata, and rapid increases in sub-prime automobile lending combined to create a challenging environment for transit management. The ability to apply for a driver's license changed the daily lives of 900,000 California residents who had previously been outside the system also (Sacramento Bee, July 26, 2019).

The TDA regulations, though made more flexible by recent amendments, remain a test of productivity that Tulare must solve.

Section 5.2 - Patterns in Tulare Similar to Other California Systems

The following peer transit systems were selected to evaluate any commonality in these issues. Each of the data sets refer to the report by the transit system to the National Transit Data process. In each case the year is the 2017 report year.

San Louis Obispo (population 58,219), Victor Valley (population 328,454), Antelope Valley (population 341,219), Solano (population 165,074) and Palm Springs (population 345,580) yield an average population of 247,709. The combination of the six Tulare operations yield a 2017 NTD reported operating budget of $21,308,276 compared to the peer average of $19,416,004.

Table 5. 1 Transit System Peer Comparison

Transit Systems Peer Comparison		
	Peer Combined Average	**Tulare Combined Average**
Operating Cost 2017	$19,416,004	$21,308,276
Revenue Hours Operated	195,662	286,846
Passenger Trips per Hour	12.7	10.1
Cost per Hour	$106.80	$74.28
Cost per Passenger	$8.76	$7.34
Fare Revenue divided by operating cost		
Fixed route	20.40%	15.70%
Demand Response	4.90%	9.40%

Data Source: FTA National Transit Database, 2017

This is Clearly a Challenge, How Did the Patterns Evolve?

Tulare is an automobile-oriented county. There were 233,032 cars and 100,993 trucks registered in the county in 2017 (DMV, Jan-Dec 2017, Registrations by County). The entire state licensed over 905,000 drivers pursuant to AB 60 as of June 2017. That number is expected to be over one million at this point. Subprime auto loans have grown to record numbers. California, like each state in the country experienced a surge in subprime auto loans in 2015, 2016, and 2017. So many high interest, low credit score auto loans have been made in California that repossessions tripled (13,167 to 44,897) from 2013 to 2017. But for every subprime borrower who was 90 days delinquent on the car loan there were ten or more on the road that would not have been there without these unusual lending practices. The average cost per gallon of retail gasoline in the U.S. dropped from 2014 ($3.44) to 2016 ($2.25). Prices were higher in California.

From 2008 to 2013, the national vehicle miles of travel changed less than 1%. Beginning in 2014 the VMT rate jumped. The 2013 national total was 2.99 trillion miles. In three years consecutively, the number increased to 3.22 trillion in 2016. The VMT percent increases were 1.3% (2014), 3.5% (2015), and 2.8% (2016). These changes led to a national transit ridership slump (Babbitt, Transit Ridership in the U.S. April 2017).

UCLA researchers Manville, Taylor, and Blumenberg found increased auto ownership to be the predominant explanation of ridership loss in the Los Angeles area in the 2018 report: *Falling Transit Ridership*. The recent ridership performance in Tulare County should be viewed in this context.

The Fundamentals of the Transportation Development Act

Since 1971 the TDA has been a critical component of the transit services throughout the state and Tulare County. The TDA established two funding sources. The Local Transportation Fund is the one quarter cent sales tax. Each county apportions the LTF funds within the county based on population. The State Transit Assistance fund is appropriated by the legislature. The allocation of STA funds is 50% according to population and 50% according to transit operator revenues from the prior fiscal year (Caltrans, TDA Description based on SB 325, the Mills-Alquist-Deddeh Act, 1971).

How Serious is the Problem Related to the Operating Ratio?

The concept of the operating ratio (fares/expenses) has a fundamental value in creating a balance between what the user pays and what the taxpayer pays for the provision of public transit. Recent legislation has modified the test.

In 2015, SB 508 established the 20% urban, 10% rural test. The law also added a new definition of local revenues (including advertising, non-federal and non-state grants or revenue) that may be counted in the calculation. The law relieved several of the STA Performance Measures. It also created several exemptions to the operating expense calculations (including items of price increases above the CPI).

In 2018, AB 1969 authorized the exemption request process and the temporary exemption while the request is in process. It also changed the pass/fail process to a proportional reduction test.

Section 5.3 – Riders, Fares, Service Modifications, Administrative Coordination

Possibilities of Ridership Increases

In simplest terms, the revenue increases needed to bring the operating ratios back into compliance could be attained by increasing ridership while holding costs constant. If these strategies were easily achieved, many transit systems would have pursued them.

In Section 4 several innovations were identified that are being used at different transit systems interacting with TNCs or emulating their apps and services. There were 29 joint transit system – TNC projects documented in the September 2018 report published by DePaul University-Chaddick Institute. The field is rapidly evolving. Some service innovations are clever and suitable for Tulare. But in this rapidly evolving field, eight of the 29 have already been halted.

After the "instant success" of Uber, several new companies were founded. In the last few years three of the most notable have gone out of business. In January 2019 Chariot (which had been acquired by Ford for $65 million) announced it was closing. Chariot was launched in 2014 and offered San Francisco travelers and residents peak hour trips for $5, and off-peak trips for $3.80. Had every seat been full every trip, it could have made it.

In an effort by Chariot to reinvent itself for economic survival it opened market segments serving first mile/last mile trips to connect with transit and private company trips for employees. These steps helped, but not enough for economic survival. Leap opened and went out of business in 2015. Bridj temporarily ceased operations in the USA during 2017, after the sale to Tower Transit based in Australia.

These companies learned that inventing new ridership patterns that fit transit is possible, but the economics are challenging. It is not much different in public transit. Customers and taxpayers see a new service like Megabus disrupt the intercity bus industry with mobile ticketing and trip reservations teamed with new buses and schedules tailored to the college age weekend trips. If they can create new transit market share, can some of these ideas be applied to city transit?

A win-win scenario for increased ridership with the current set of revenue vehicles can create increased revenue. This often takes the shape of service agreements to meet community segment needs with existing fixed route service. In Dutchess, New York, the county merged city of Poughkeepsie service, added three college service agreements and a large junior high/high school service agreement in rapid succession. The component which improved the revenue to cost ratio the most was the large junior high/senior high service agreement. It was priced to equal one monthly pass per student but valid for the entire school year. The increase in revenue from the discounted pass sold to the entire school student body through the agreement exceeded the lost revenue from the few students who had been paying the regular student fares. Except for a few overflow buses for overcrowding, no new service costs were incurred.

In Tulare County, the College of the Sequoias (10,647 students) program has been successful. Expanding this concept to several other schools and colleges can be advantageous but requires community partners which are ready for the new services and have a budget or student fee capacity to make the financial commitment. Porterville College (3,853 students) and SJVC (1,608 students) are both smaller than that of typical college transit programs. A broad-based student program might be expected to be an attractive and economical resource for the middle and high school students throughout the county. This would require agreement among the school districts and the transit providers. The financial potential of this strategy is $25,000 to $30,000 per year.

Large employers may also find a discount pass program useful, but this is more likely with employer campuses of 15,000 or more. The Walmart Distribution Center, Kaweah Delta Medical Center, and Ruiz Food Products each have between 1,000 and 4,999 employees, but not all share the same shifts and location.

It would be challenging to budget for large short-term increases in ridership at current service and fare levels. One of the most promising corridors is served by the 1A, 1B routes every fifteen

minutes. Some periods have productivity above 25 riders per hour, other periods have modest productivity.

Possibilities of Fare Increases

There certainly could be an impact on the operating ratio if there was a concerted countywide increase in the fare revenue, or citywide fare increases in one or more of the larger cities. The challenge, of course, is that fare increases must be carefully analyzed for presumed impacts prior to implementation. That analysis would include the impact on ridership of different types. The public hearing process can be a challenging one.

The possibility to consider is: what if the potential fare increases could be tailored such that there were very few negative impacts. What if, for example, the fares could be increased by 25 to 35 percent with very minor ridership impact? It is not easy to do, but there are critical issues to evaluate.

Flat fares are easy to understand, yet not the most efficient.

The next step in complexity is the zone fare. The fare chart tends to look like a target or dart board with the lowest fares in the center and each ring or boundary costs an additional increment.

Differentiated fares recognize a range of prices based on length of trip in miles or minutes, or time of day, or day of week, or type of service.

Service agreements that offer deep discounts in exchange for 100% market share availability can be successful in terms of both ridership and revenue. Hundreds of examples exist throughout the nation of college and junior high/high school programs. Most are quite successful, such as the College of the Sequoias pass program.

It is possible to partner with social service agencies, large and midsize employers in addition to the larger school campuses. Any large concentration of trip destinations can be a target-rich environment for deep discount fares in conjunction with deep market share penetration.

The transit operators in Tulare County have a variety of day pass, multi-ride passes, and weekly/monthly passes.

The regional pass is the T-Pass. It is sold for $55 per month and is valid for unlimited adult rides on the six transit systems within the county. The pass is available at five locations:

Dinuba Transit Center
Porterville Transit Center
Tulare Transit Center
Tulare County Government Plaza
Visalia Transit Center

Another type of revenue/ridership optimization is the value proposition of period fare capping. Under this technique fares are free once the customer has used an electronic pass to pay for the

number of trips that would have equaled the pricing of a period pass (37 trips at $1.50 for example). For example, if the monthly pass (31 day) is priced at the value of 45 one-way trips, the electronic fare-capping process simply recognizes the pass as valid for more trips as free trips after the price of 45 trips in 31 days has been reached.

The regional pass and fare-capping strategy are best adopted along with a standard method of validating and counting the uses. The current protocols include visual inspection and tracking of the riders. The regional pass sales are recorded by location by month and the trip uses are also recorded by location (transit system) by month. There is a sales allotment process among the operators through the TCAG meetings which returns the revenue to the systems based on rider counts. A simplification of the next generation pass reading equipment is explained in detail in Task 4-Attachment A.

To analyze fare techniques of these types, the analysis process must include careful assessment of the many different fare elasticities. Other variables remaining constant, a fare increase on all trips of 25% might be expected to yield 8% fewer trips purchased. This ratio of 1% trip reduction for every 3% of price increase is the elasticity ratio. Fare elasticities are not identical for all trips. Peak hour trips are less sensitive than off-peak due to the nature of “I must be there on time” to work or school. Adult fares are less sensitive than senior citizen fares due to both the impact of fixed incomes for many retirees and the more flexible trip patterns of seniors, in general.

The possibility of a $0.25 fare increase by each of the transit systems in the county would be predicted to raise over $200,000 if applied to all full fare single trip categories with a pro rata amount applied to each discount category. It would be best to add a fare capping strategy at that point to limit the one ride prices accumulated over 31 days to the equivalent price of the 31-day pass.

Possibilities of Service Modifications

It is unlikely that any customer or transit system in the county will find it useful to make enough service modifications to meet the revenue to cost ratio goals needed. But it must be noted that among the six transit operations there is a variety of service spans, service frequencies, and service types.

Throughout the USA, transit systems have struggled during 2016 and 2017 with reduced ridership. Most of the few transit systems that grew ridership during this period opened new rail stations, Bus Rapid Station segments, added more frequent weekday service or added more frequent weekend service.

It is practical at this point to consider questions that non-rider taxpayers might be expected to ask. How much could be saved by reducing or eliminating Sunday service in some systems; how much if Saturday service was reduced; how much if evening service were eliminated?

These questions lead to challenging scenarios. Each of the transit systems has worked diligently to provide the transit service mix that best fits the needs of each of these communities. None of the transit systems would wish to eliminate service on a day of the week.

Think About the Transit Service with a Fresh Outlook

What if the policy making "tables were turned" in a planning exercise? If the transit system currently offered six day per week service with service ending at 6:30 pm. The hypothetical revenue to cost ratio was currently in compliance at 20% but the addition of late-night service and Sunday service would trigger a dilution of the ratio to 18%. From an individual taxpayer perspective, it would not be reasonable to add Sunday service if the system did not yet offer this, given the current condition of revenues to expenses. These types of policy debates may be difficult but necessary in the current environment.

Painless Modifications

As the team made over 150 field observations of transit operations in normal settings, on busy routes and lightly used routes it became clear that the evening service span and the service frequency represented the most logical productivity improvements possible in a coordinated system.

Table 5.1 presented two important findings. First, the peer group was significantly higher in riders per hour. Second, the peer group was significantly higher in cost per unit of service. This reminds us that the potential of savings or productivity improvements from coordinated services should include both coordinated administrative functions and coordinated lean service strategies.

The savings from coordinated administrative functions are predicted to exceed $250,000 per year and the savings from service modifications (after providing alternative mobility choices) are predicted to exceed $650,000.

Possibilities of Administrative Efficiency Modifications

The basic assumption of this study is that coordination of the six transit systems is important. It is mentioned as a pressing issue in the recent transit plans of five of the operations.

It was documented in Section 3 that Solano County saved over $800,000 in year one. The South-Central Pennsylvania Transit Authority (York) saved over $830,000 in year one through the similar process.

But does that mean savings in Tulare could save as much as Solano or York? The cost of operations of the Tulare systems is rising due to new operations contracts, but the first issue is the current cost of the non-operations items. Excluding the costs of contracted service, the NTD reported (2017) cost per hour, excluding purchased service was $15.43 in Visalia, $18.33 in Porterville, $18.39 in TIME, and $22.18 in TCaT. How does that compare to other transit systems? The same cost in Victorville, CA is $14.24; in Marin, CA is $16.34; in Santa Clarita is $18.26; and in Modesto, CA is $31.44.

The coordination of administrative functions offers the simplest form of improvement in the eyes of the customer. The estimate of $1.00 to $1.50 per hour leads to the projection of $270,000 to $410,000 in savings without loss of revenue.

Section 5.4 - Implementation Considerations

Several systems have merged the administrative support functions without merging the operations functions. The Task 3 example from Pennsylvania is a clear path to consider. The balance of needed fiscal efficiency and practical employment rights considerations led more than one system to evaluate a process of merging support functions without forcing current employees to change positions. The process of offering other employment opportunities to these talented individuals and reducing redundant staffing through attrition was successful.

Several systems that have merged functions of two or more transit systems have left the appearance of the vehicles and the public information identity as it had been before the change in organization structure. This offers the benefit of maintaining customer purchasing patterns and creates assurances in that services will remain reliable for trip patterns.

Similarly, with a service area of over 2,000 square miles, there will be the need to maintain several of the current operations/garage facilities to minimize deadhead costs.

A predictable method of merging the operations contracts could include a phasing approach. At the inception of a coordination of the six county operations the contracts may remain as they currently exist.

In the second step, the client could be changed to a regional organization.

In the third step, a decision would be made (after careful review) to leave the operations contracts separate or to blend them into a smaller number of agreements.

Section 5.5 - Differences Among the Six Transit Systems

The six systems that comprise the Tulare County transit services meet the more important needs of the residents of this large county.

The largest, Visalia Transit provides seven routes with 15 or 30-minute trip frequency, five routes with 45 or 60-minute frequency, and one route with 90-minute frequency. Evening service is similar, though two routes have less frequent service. Saturday and Sunday service levels are comparable to weekday levels, though one route is not operated on Sunday.

Porterville Transit provides six routes with 40-minute frequency and three routes with 80-minute frequency. Evening service is not offered. Saturday and Sunday service frequencies are the same as that provided by Tulare Intermodal Express (city) transit routes. These include seven routes with 30-minute frequency. Evening and Saturday service levels are the same as weekday levels. Sunday service is not offered.

Tulare County Area Transit (county) routes include one route with 35-minute frequency, three routes with 60 to 90-minute frequencies, two routes with 9 trips per day and three routes with 4 trips per day. TCaT routes do not offer evening or weekend trips.

Dinuba uses flex routes on the north and south routes. The three routes, including the Trolley route, offer 30-minute frequency. These routes provide 60-minute frequency on Saturdays and Weekday evenings. These routes are not operated on Sunday.

Section 5.6 – Recommendations for Coordination Modifications

The most salient recommendations are those that put the customers of the six transit systems on the path to assured financial sustainability under the current funding parameters. Though the costs of the purchased service contracts are increasing each year in a significant manner, the need for transit will soon be increasing dramatically. The three-year period of transit ridership decreases in most California cities is ending. The initial planning for the East-West Regional rail and the construction of the initial operable segment of the California HSR will alter the demand for transit trips, and perhaps for housing near stations.

The future density of residential development will increase either steadily or rapidly, if legislation is adopted to create new rules for density around stations. The next decade will certainly witness dramatic changes in the composition of the six bus fleets, pursuant to the CARB requirements for zero emission vehicles.

It is vital that the transit systems be prepared for these important changes; it is essential that the systems be resilient in view of the pending need to reduce cost per unit and respond to predicted increases in demand.

The rapid return to 20% fare recovery ratios is not complicated. It is not without merit.

In summary, there are four strategies recommended for consideration:

1. Fare Coordination and Service Agreements with Schools and Employers

Probable Annual Impact	$25,000 to $40,000

2. Fare Increases Combined with Fare Capping

Probable Annual Impact	$175,000 to $225,000

3. Service Modifications

Probable Annual Impact	$650,000 to $1.5 million

4. Coordination of Administrative Functions

Probable Annual Impact	$250,000 to $411,000

Section 6: Coordination Recommendations and Financial Analysis

Recommendations for Policy Makers to Implement Coordinated Transit

Two different models of coordinated transit are presented. Both make significant improvements in efficiency. The most likely outcome is a full coordination approach through a Joint Powers Authority.

1. The region appoints a Task Force to study the details of the transition.

2. The Service Plan options presented herein are the basis of more detailed service decisions.

3. The structure of the Joint Powers Authority including governance and representation is reviewed.

4. Consider leaving the contractor agreements with the local governments through the budget process.

5. Monthly route level serve productivity for all operations are reviewed.

6. Monthly financial performance for all operations are reviewed.

7. The balance of regional funding allocation and local decision making are reviewed.

8. The next three-year capital and operating budgets are evaluated.

9. The decision is considered to transition to JPA in one year or phased in over three years.

10. If the decision to move to the Joint Powers Authority is no, several regional decision processes would remain.

Section 6.1 - Normal Evolution of Transit Organization

The Tulare County transit systems have experienced a recent drop in economic productivity. Section 2 explains the pace of these changes. Many transit systems in California and the United States had similar patterns of ridership decline in the four-year period.

Section 6 explains the transit coordination recommended steps that offer relief from this issue.

As a group, the six transit systems were expanding service during this recent period of market contraction.

The county remains a leader in the agriculture economy of the state and the nation. The agriculture sector remains the largest employment sector for now and the foreseeable future, but the urbanized areas are growing more quickly than many realized. This leads to a large county with medium to high population density but low employment density. Transit is the means of travel to work for 0.7% of those employed, compared to 5.2% nationwide (U.S. Census Bureau, 2013 ACS Table S0801). Transit use for education, medical, shopping and other trips are comparable to other cities.

Vanpool use is high; as of 2017 there were 95 vans commuting each day from Tulare County to employers in Kern, Fresno, Tulare and Kings counties. If these vans were full each day, the transit ridership equivalent would be over 300,000 annual passenger trips. TCAG partners with the Fresno COG for the Valley Rides carpool and intermodal information service. TCAG also cooperates with South Valley Rideshare (Kings Area Rural Transit).

The population density of the urbanized areas of Visalia -Tulare (3,460) and Porterville (3,426) exceed that of Tulsa, OK (1,951) which is building a $25 million Bus Rapid Transit project, Oklahoma City (2,098) which just opened the $136 million streetcar project, and Victorville-Hesperia (1,969) which recently expanded the JPA to serve Barstow, CA.

Though the population density of each of the three larger Tulare cities is sufficient to support more intensive transit, the recent transit ridership declines hit harder in communities that do not have automobile economic constraints.

There is little paid parking in the three central business districts, there is no expensive parking either. There is little traffic congestion in the three cities. There are few large employers since the largest employment category is agriculture.

Kaweah Delta Health, Sierra View Hospital, and Walmart each have over 1,500 employees. College of the Sequoias has over 1,100 employees and over 12,000 enrollees. The three transit centers in Visalia, Tulare and Porterville, along with the Visalia Mall and the College of the Sequoias campus are large ridership destinations or connection points.

How Did Similar Systems Fare During 2013 – 2017?

Service levels in the region have risen over the last few years. But comparable systems that expanded significantly during the period have clear explanations. Note the number of trips per

capita over the 2013 year. Compared to the four-year increase by 2017 four systems have small increases and two had clear reasons for large increases.

Table 6. 1 Peer System Population and Service Comparison

Comparison of Population, Trips per Capita and Service Increases 2013 – 2017				
	2010 Urbanized Population	**2013 Ridership per Capita**	**2013 Bus Revenue Hours**	**2017 Bus Revenue Hours**
Fresno	654,628	19.3	328,312	340,918
				Up 4%
Visalia-Tulare-Porterville	294,311	8.1	167,686	210,776
				Up 26%
Comparison Group	258,727	9.1	117,510	142,960
				Up 22%
Bakersfield	523,994	11.1	296,066	311,069
Yuba City	116,719	10.7	48,119	48,724
Modesto	358,285	10.4	144,404	156,258
Hanford	87,941	9.2	38,773	48,917
Victorville-Hesperia	328,454	6.7	105,948	166,438
Merced	136,969	6.7	71,750	126,357

Source: Population, Urbanized Areas 2010 United States Census; Ridership and Rev. Hours, NTD

Note: This comparison only presents the revenue hours operated in the urbanized areas.

The table includes the urbanized areas of over 50,000 in each transit service area, not the entire service area.

Fresno, Bakersfield and Yuba City grew by less than five percent over the period. Modesto grew by less than 10% over the period. Of this small group of comparison transit systems, each had the same federal and state regulations to follow and the same funding processes.

Barstow agreed to merge with Victor Valley during the period which contributed the large increase in the Victorville-Hesperia urbanized area.

The Transit Joint Powers Authority for Merced County was formed in 1995 and modified in 2013 to deal with changes in the demand. The UC Mercer expansion changed ridership patterns. Both the Altamont Commuter Express and the California High Speed Rail service are expected in the future.

Expansion in the Tulare transit systems grew from the unmet needs process. The route coverage and frequency mix are relatively high for communities of this size.

Service was added in logical sequential decisions. But the ridership was eroding due to external variables during the period. The result was the decrease in economic productivity of the fixed routes as a region.

Redesigning the services to increase riders per hour of service and offer trip substitution to offset inconvenienced riders is best illustrated by examining the Clean Slate model. The simplest path to achieve most of the productivity improvements with little disruption is best illustrated by examining the One Region model.

Section 6.2 - Challenges in Growing Transit Systems at the Rural to Urban Inflection Point

All Federal Transit Administration and state TDA funding attempts to balance two critical factors: taxpayer equity and transit demand patterns.

At population levels that appear more rural than urban, transit funding is allocated on population. The FTA recognizes one level of rural transit and three levels of urban transit. The rural population threshold is up to 50,000. The Federal Transit Administration recognizes the differences with separate funding categories for rural (less than 50,000 population) and urban (small 50,000 to 200,000 population; medium 200,000 to 1,000,000 population; and large over 1,000,000 population). Tulare County receives three types of FTA funding, one for its rural share of population, two for its share of urban population and related variables.

The Visalia-Tulare urbanized area falls in the 200,000 to 1,000,000 population level. The current allocation is $5.768 million. The calculation is based on the comparison to all other urbanized areas in this category. This category distributes the federal apportionment based on these variables:

25% population
25% population * population density
50% revenue miles

The Porterville urbanized area falls in the 50,000 to 200,000 population level. The current allocation is $2.571 million. But this allocation is a suggested amount to the Governor's office who has the authority to adjust the amount. This category distributes the federal apportionment based on these variables:

50% population
50% population * population density

The state recognizes the transit demand differential in several ways. The Transportation Development Act Local Transportation Fund process balances the user versus taxpayer funding of operating costs with two standards: 20% (fare revenue/operating costs) in urbanized areas, 10% (fare revenue/operating costs) in rural areas. It also recognizes that roads are critical to the economic health of rural counties, allowing any excess LTF after considering unmet transit needs to be used for local streets and roads, construction and maintenance. This provision is limited to counties with population under 500,000 (1970 census). As mentioned in several meetings and in this report, there are several refinements and modifications of the 20% standard. The most important of which is the ability of the county transportation commission to lower the standard to 15%.

The LTF calculation attempts to balance taxpayer equity with transit demand through the unmet needs process.

The 20% urban area fixed route, 10% demand response, 10% rural benchmarks remain useful as objective measures of the balance between customers and taxpayers. Most importantly, the four-year trend downward is juxtaposed against the new service agreements which will exacerbate the challenge over the next three years.

The coordination steps which follow are intended to create a significant, but moderate, economic restructuring with the perspective of protecting current riders trip patterns, providing new transit flexible services and improving taxpayer financial productivity.

Section 6.3 - Clean Slate Model

Fixed Route Service Design

The Clean Slate Model takes the position that the current transit organizations do not yet exist. It assumes that the new plan will meet the transit demand based on the actual employment numbers and locations; the actual population and density; and the actual shopping, medical, and school destinations as efficiently as possible.

There are a variety of differences comparing the Clean Slate Model to the existing service. The differences are minor, but broad in nature. For example, the more frequent service offered in the Clean Slate Model is 20-minute service rather than 15-minute service. The routing changes deliver more direct routes and more frequent free transfers.

SERVICE FREQUENCIES

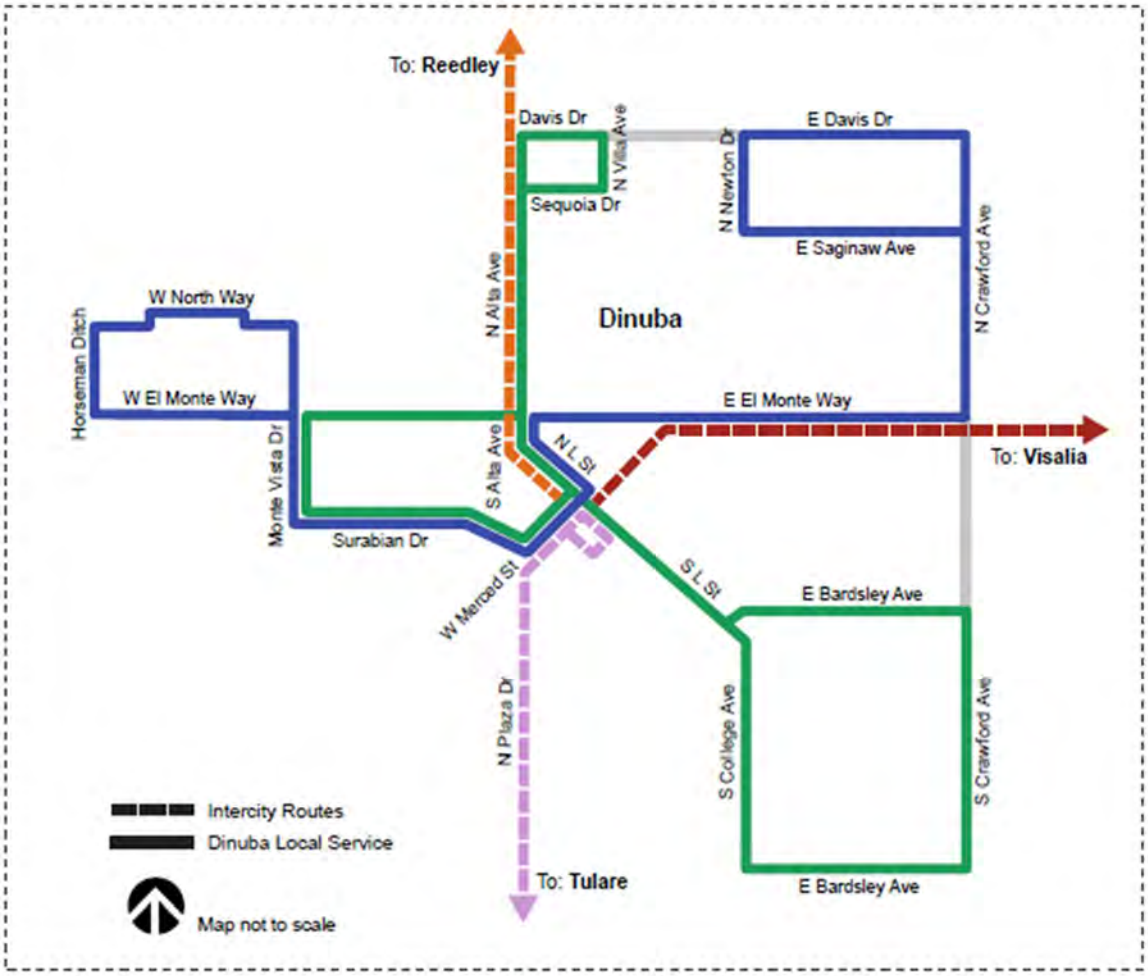
Route #	Name	Weekday				Saturday	Sunday
	Visalia Local Routes	**AM**	**Midday**	**PM**	**Evening**		
V1	Mooney Blvd Visalia-Tulare	20	20	20	30	30	30
V2	Visalia Caldwell Med Center	30	30	30	60	30	60
V3	Visalia Tulare Ave -Walmart	30	30	30	30	30	60
V4	Exeter Medical Cntr via Walnut	30	60	30	60	60	60
V5	Visalia Goshen Ave	30	60	30	60	60	60
V6	Visalia St Johns Target-Lovers LN Golden West HS	30	60	30	60	60	0
V7	Visalia Houston Demaree Riggin	30	60	30	0	90	0
	Tulare Local Service						
T8	Tulare Northeast-Northwest	30	30	30	60	30	60
T9	Tulare South K Street	30	30	30	0	30	30
T10	Tulare South East	30	30	30	0	30	30
T11	Visalia Tulare Express	30	30	30	60	30	0
	Porterville Local Service						
P12	Porterville Putnam Prospect Walmart	30	30	30	30	30	30
P13	Porterville Olive Westwood Walmart	30	30	30	30	30	60
P14	Porterville Eastside Crosstown Bi-Directional	15	15	15	30	15	30
P15	Porterville College	30	30	30	60	30	30
P16	Tule Indian Reservation	60	60	60	60	60	60
P17	Porterville Jaye St Walmart	30	30	30	30	30	30
	Dinuba Local Service						
D18	Dinuba Blue Line East West	30	30	30	0	30	0
D19	Dinuba Green Line North South	30	30	30	0	30	0
	Intercity Service						
M20	Dinuba Visalia Med Center Express	60	60	60	60	60	0
M21	Dinuba Visalia via Orosi	60	60	60	60	60	0
M22	Ivanhoe Woodlake Three Rivers	60	60-120	60	0	60-120	60-120
M23	South County Tulare-Delano	60	60-75	60	0	75	75
M24	Visalia Porterville	60	60	60	0	60	60
M25	Porterville Tulare	120	120	120	0	120	120
M26	Porterville Springville	60	0	60	0	0	0
M27	Visalia Fresno	60-120	0	60-120	0	180	180
M28	Dinuba Reedley	60	60	60	60	0	0

SERVICE MILES AND HOURS BY ROUTE

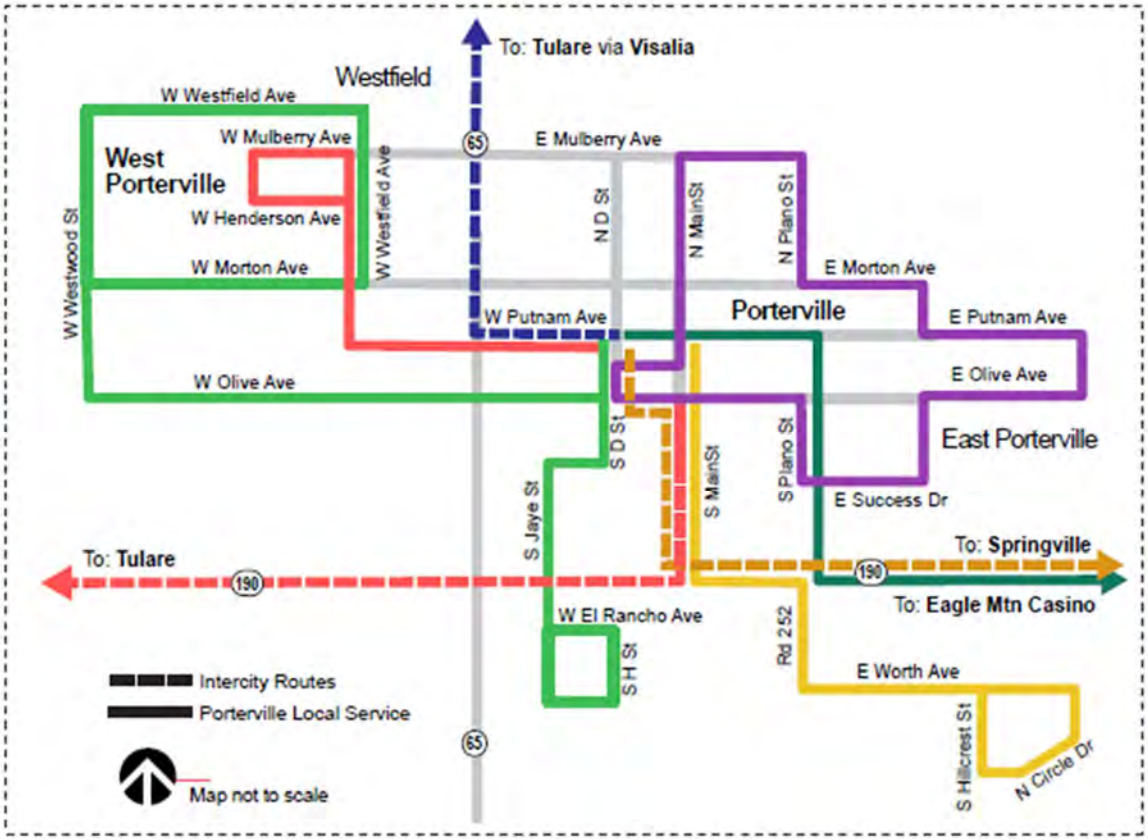
Route #	Name	Miles			Hours		
		Weekday	Saturday	Sunday	Weekday	Saturday	Sunday
	Visalia Local Routes						
V1	Mooney Blvd Visalia-Tulare	1047	738	619	72	47	39
V2	Visalia Caldwell Med Center	467	467	210	42	42	13
V3	Visalia Tulare Ave -Walmart	341	341	143	31	31	13
V4	Exeter Medical Center via Walnut	681	474	326	45	32	22
V5	Visalia Goshen Ave	554	386	265	45	32	22
V6	Visalia St Johns Target-Lovers LN Golden West HS	319	207	0	29	14	0
V7	Visalia Houston Demaree Riggin	412	157	0	31	12	0
	Tulare Local Service						
T8	Tulare Northeast-Northwest	378	378	168	27	27	12
T9	Tulare South K Street	280	280	235	12	12	10
T10	Tulare South East	270	270	227	13	13	11
T11	Visalia Tulare Express	1021	1021	0	29	29	0
	Porterville Local Service						
P12	Porterville Putnam Prospect Walmart	189	153	128	15	12	10
P13	Porterville Olive Westwood Walmart	354	293	132	29	24	10
P14	Porterville Eastside Crosstown Bi-Directional	454	389	186	28	24	10
P15	Porterville College	270	195	195	16	11	11
P16	Tule Indian Reservation	592	518	407	32	28	22
P17	Porterville Jaye St Walmart	186	162	126	15	13	10
	Dinuba Local Service						
D18	Dinuba Blue Line East West	319	271	0	27	23	0
D19	Dinuba Green Line North South	325	277	0	27	23	0
	Intercity Service						
M20	Dinuba Visalia Med Center Express	629	629	0	16	16	0
M21	Dinuba Visalia via Orosi	682	469	0	31	21	0
M22	Ivanhoe Woodlake Three Rivers	438	351	351	14	11	11
M23	South County Tulare-Delano	757	261	261	26	9	9
M24	Visalia Porterville	780	300	300	27	10	10
M25	Porterville Tulare	408	377	377	12	11	11
M26	Porterville Springville	145	0	0	4	0	0
M27	Visalia Fresno	672	384	384	17	12	12
M28	Dinuba Reedley	217	0	0	15	0	0

The Clean Slate Approach represents annualized totals of 4,061,796 miles and 226,373 hours.

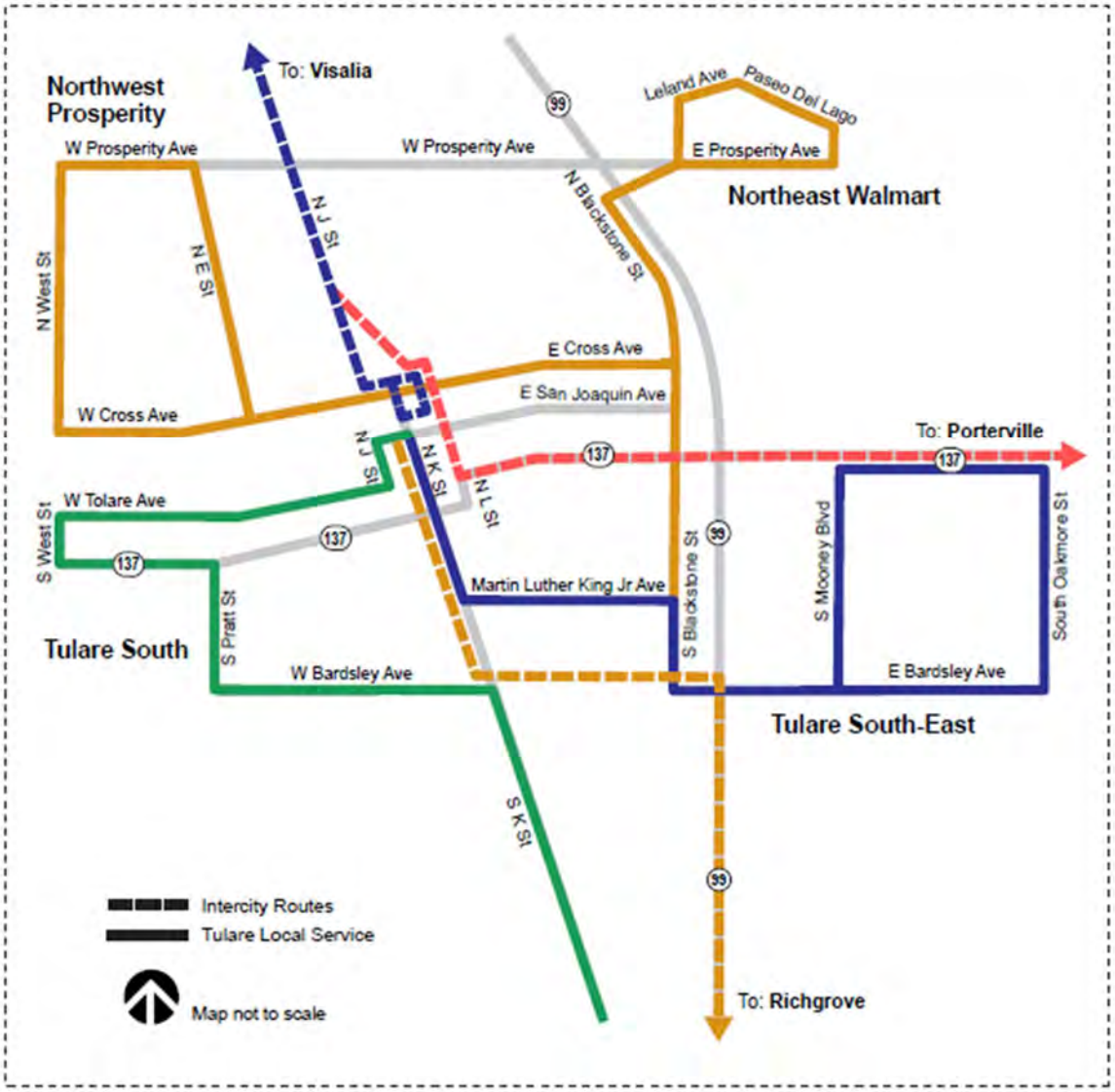
Dinuba Local Service



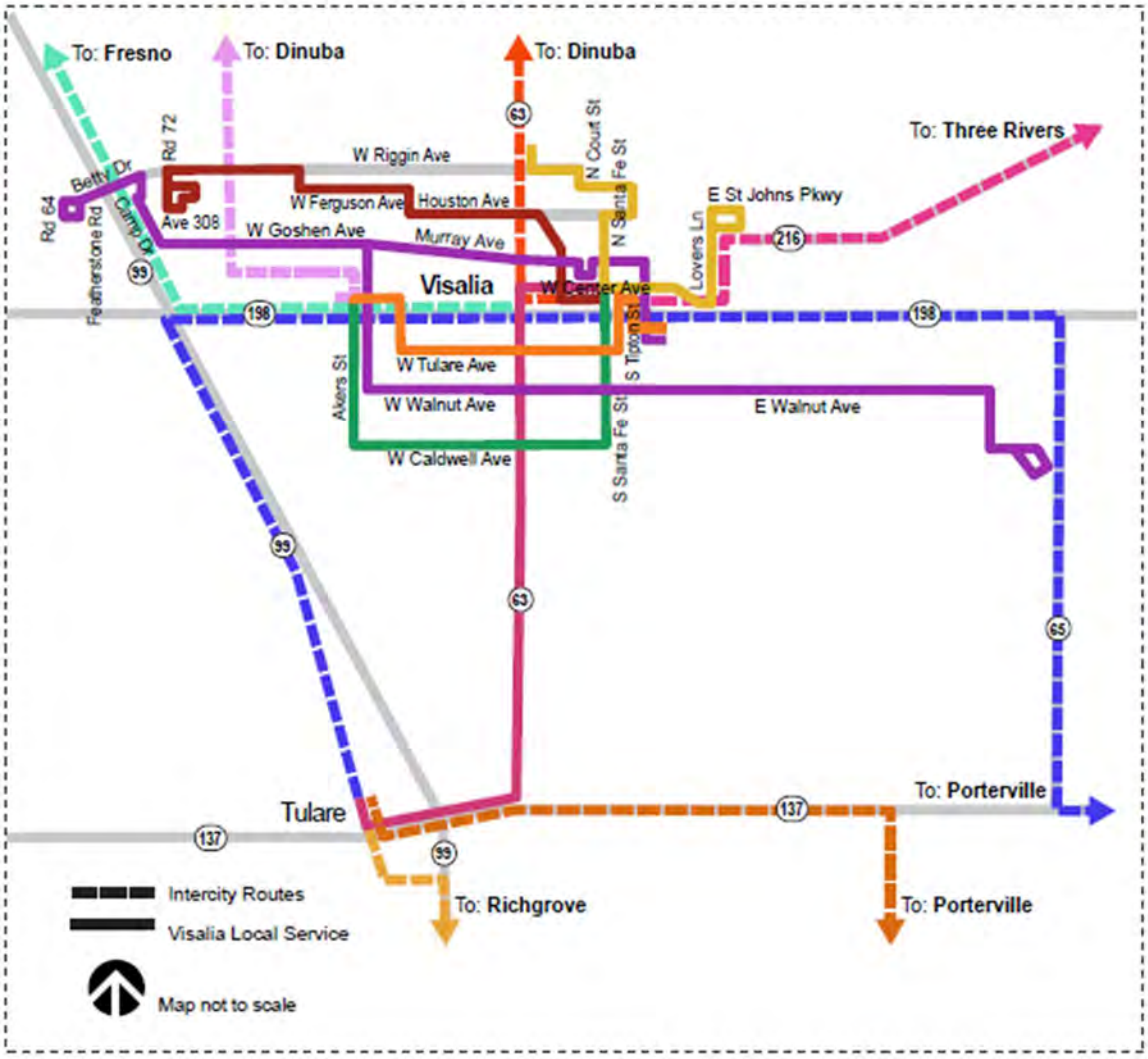
Porterville Local Service

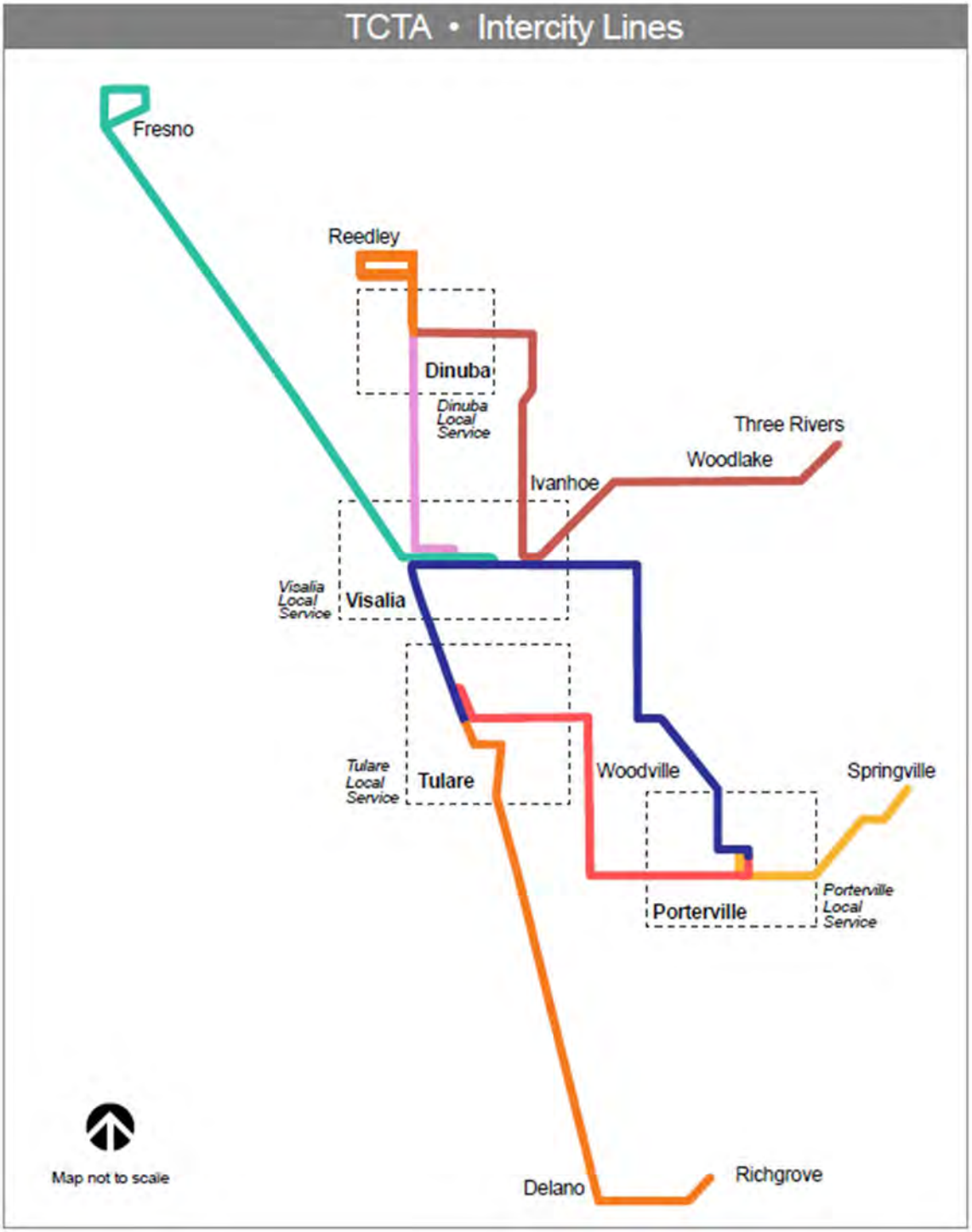


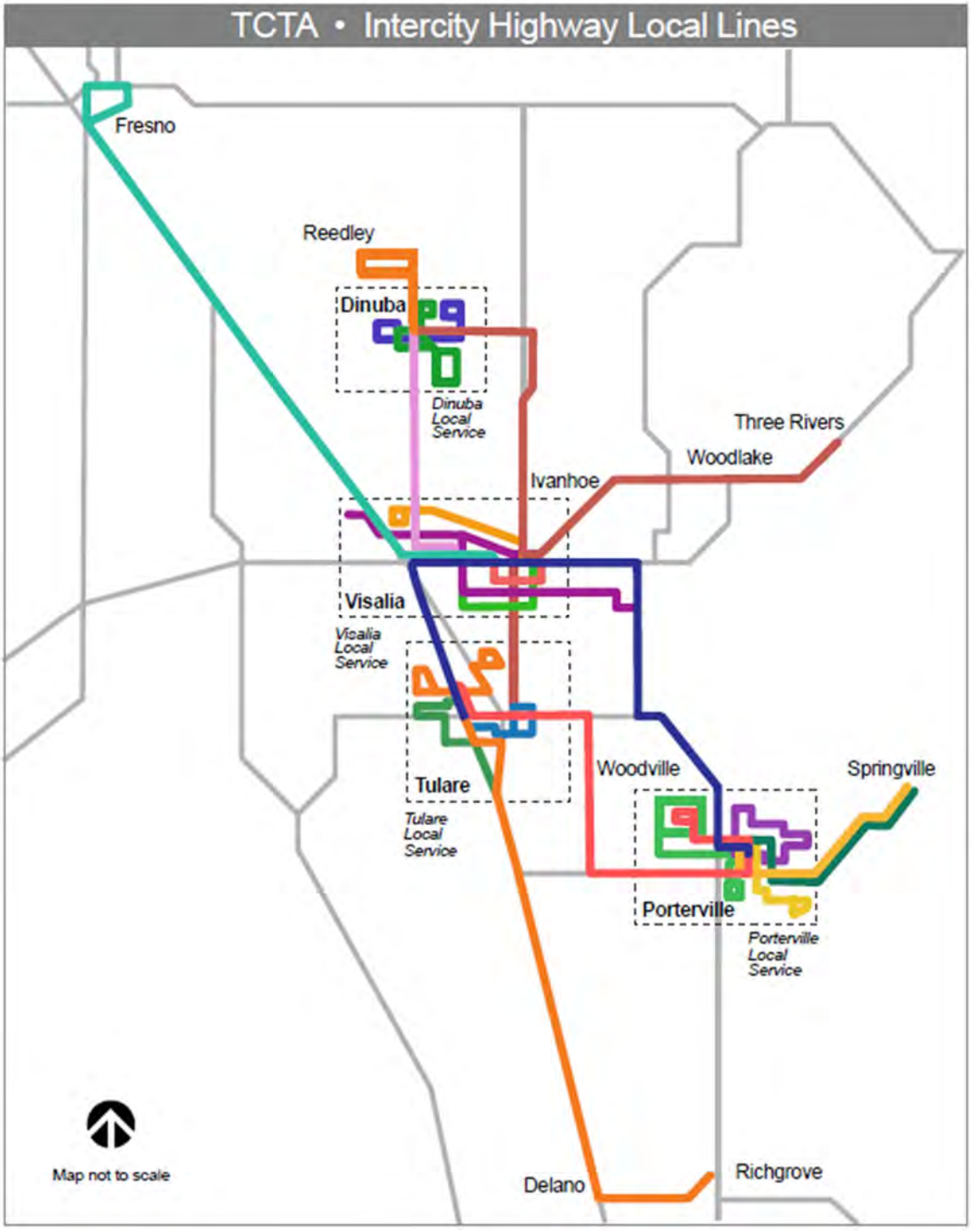
Tulare Local Service



Visalia Local Service




TCTA • Intercity Lines
Fresno
Reedley
Dinuba
Dinuba Local Service
Three Rivers
Woodlake
Ivanhoe
Visalia Local Service
Visalia
Tulare Local Service
Tulare
Woodville
Springville
Porterville
Porterville Local Service
Map not to scale
Delano
Richgrove


TCTA • Intercity Highway Local Lines
Fresno
Reedley
Dinuba
Dinuba Local Service
Three Rivers
Woodlake
Ivanhoe
Visalia
Visalia Local Service
Tulare
Tulare Local Service
Woodville
Springville
Porterville
Porterville Local Service
Map not to scale
Delano
Richgrove

Clean Slate Fixed Route Summary of Significant Differences

The summary of noticeable changes includes:

Visalia – the most frequent service is changed from 15-minute to 20-minute frequency

Visalia routes - streamlined to eight regular routes

Porterville - routes are streamlined to six regular routes

Tulare routes - are streamlined to three regular routes

Dinuba routes - are streamlined to two regular routes

Intercity routes - have minor changes

Transfer Pricing

In the Clean Slate Model there are no individual transit systems beyond the single unit. The issues regarding the interaction of transfers between systems and acceptance of each system tickets, fares, or passes is resolved.

Rideshare Service Design

Volunteer Drivers – A new program would be established to use volunteer drivers to supplement services for seniors and those customers with disabilities. The National Center for Mobility Management provides the latest data on this rapidly changing field.

Volunteers would register, (as they do in the 58 similar services in California), for mileage reimbursement. After one year of operation and evaluation, transit-owned vehicles could be considered for inclusion in the program.

Transportation Network Companies – Shared rides would be offered through existing demand response service, Uber, Lyft and other providers. The cost for trip reduction substitution would be identical to the fixed route price. The cost for additional trips through private carriers would be shared equally by the customer and the JPA. This discount would be offered for eligible trips. The eligible trips would initially be limited to the areas and times that had limited fixed route service. The service would be expanded to supplement ADA trips once the JPA were convinced the trips were more beneficial to the service delivery.

Car Share Service – The Car Share model would emulate the model operating in large markets. Recent evidence suggests this service can be practical in much smaller communities also. The Victor Valley Transit Authority service in Needles, California is a simple solution. The Enterprise Carshare program uses a small automobile. The normal refuel cost and membership fee are paid by the transit system. The user pays a simple $5 per hour (to a maximum of $40 per day) for the use of the vehicle. This service is available in over 70 locations in the nation with Enterprise. Other providers offer car share at different rates. The cost to the transit system is less than $45

per day. The service is useful to those who use transit for most trips, but have an occasional need for a longer trip.

Elasticities of service modification

The services comprising the Clean Slate model reflect a closer balance of transit supply and demand. The service efficiencies include an estimation of twenty percent of the savings to be spent on service substitutes. For example, as the late-night fixed route service is reduced by one hour in many cases, the substitute flex service is offered to meet the smaller need.

Elasticities of fare modifications

Fare capping is used in the Clean Slate model. The concept is simple. Using either tap card pass technology or mobile phone app pass technology, customers of different income levels can each take advantage of the deepest discounts available. Typically, the deepest discount is the unlimited 31-day pass. It is also the more expensive one-time purchase. The technology sorts the number of trips by this user in the last 31-day period and the amount of fares paid or passes purchased. If the customer reaches the amount of fares equal to the 31-day pass sale, the remainder of trips are added to the stored value at no extra charge.

Other Fixed Route Services

The V Line service is not impacted by this model. The route to Delano is not modified by this model.

The Sequoia Shuttle is not modified by this model. The intercity services provided by Amtrak, Greyhound, and Orange Belt Trailways are not modified by this model.

Section 6.4 - One Region Model: From Current Service to Lean

Fixed Route Service Design

The following modifications are designed to tighten economic productivity. The changes range from minor to moderate. None would be attempted without updated metrics, public hearings, alternative service and recognition of possible changes in progress. The total hours saved in comparison to 2017 actual levels total 26,475. This represents probable savings of over $1,000,000 per year after mitigating service alternatives have been provided and after the minor revenue losses have been recognized.

Shorten Visalia Weekday Evening Service

Removing the last hour of service – saves 3,315 annual revenue service hours.

Shorten Porterville Weekday Evening Service

Removing the last hour of service - saves 2,295 annual revenue service hours.

Shorten Porterville Saturday Evening Service

Removing the last hour of service - saves 459 annual revenue service hours.

Shorten Dinuba Saturday Service

Removing the last hour of service – saves 153 annual revenue service hours

Modify Visalia Routes 7A, 7B Midday and Evening Service (alternate rotations each 30 minutes)

Changing midday and evening service to two trips per hour, not four saves 2,295 annual hours.

Serve Visalia Route 15 with Route 11X (11X on Noble, Mineral King between Mooney and Akers)

Redirect Route 11X to replace Route 15 - saves 4,583 annual revenue service hours.

Eliminate/Reassign Porterville Route 8

Serve with adjoining routes – saves 2,695 annual revenue service hours.

Eliminate TCAT Route 60

Productivity does not support fixed route service – saves 1,594 annual revenue service hours

Eliminate Dinuba Route 1

No point of route is over four blocks from another route – saves 4,024 annual hours.

Eliminate Tulare Route 7

Redirect customers to Tulare Route 2A, 2B, TCAT service - saves 5,062 annual revenue hours. The 2A route and 2B route would provide alternating 60-minute frequency on each branch.

Changes with Savings Based on Choices of Transition

The following three organization changes would save over $250,000 annually once staffing is reorganized.

These changes do not have to be completed immediately.

The savings might be deferred if the transition process includes the efficiency through attrition method.

Combine TCAT, TIME Operations

The two operations are managed under one contract, the new Transit Operations and Maintenance Facility (TOMF) would provide a practical maintenance and operations base for these routes and for the demand response services.

Reassign TCAT Routes 10, 30, 50 to Visalia

These three routes would be operated by the modified Visalia organization.

Reassign TCAT Routes 40, 70 to Porterville

These two routes would be operated by the modified Porterville organization.

Operate Revised Dinuba Routes by Visalia

The remaining three routes would be operated by the modified Visalia organization. The vehicles would be fueled and cleaned daily at Dinuba, supervised and dispatched by Visalia.

Transfer Pricing

In the One Region Model, the need for transfers between systems is solved by a regional free transfer approach. The “free” transfer from Visalia to TCAT to Porterville, for example is considered offset by the marginal increment of additional trips taken. In practical terms, this step is administered by the use of period of time limits, rather than trip limits. The monthly TPass is already a model of user simplicity. The day passes for each system would simply be recognized as valid regardless of where purchased. The one trip pass would be valid for 2.5 hours; long enough to board virtually any combination of one direction trips.

Demand Response Service Design

The Demand Response service would continue to provide trips that conform with the complementary paratransit service requirements of the Americans with Disabilities Act. The different local providers would eventually become one by virtue of the Joint Powers Authority. As soon as practical, the operation would be shifted to the new TOMF at the Tulare Government Plaza. There would be minor changes that reflect the fixed route efficiency changes. There would also be expanded trip options provided through the coordination with Transportation Network Companies.

Rideshare Service Design

The new set of rideshare services identified in the Clean Slate Model would also be adopted by the One Region Model. The Volunteer Driver, Transportation Network Companies, and Car Sharing services will offer more trip options for more customers. The new services are paid by the customers and by a portion of the savings of the productivity redesign of fixed routes.

Differences between Existing Service and Clean Slate Model; One Region Model

The analysis has considered the current services from a variety of perspectives. The current operations deserve commendation for their safe operation, frequent headways, and clear customer information systems in place.

Few transit systems of this combined size provide more information about which bus comes to this passenger shelter and when it is to be expected. It is also rare to find a transit system of this size that offers significant amounts of 15-minute frequency and late evening service. The customer information is commendable. The service levels should be reconsidered.

The recurring process of public hearings to identify unmet needs is a vital part of the state funding process. It is important to note the distinction of “reasonable to meet”. This standard is to consider the potential of the service to quickly reach the expected service productivity. The standard is also to consider if the TDA funds would be required in excess of the population apportionment. This is a relatively straightforward process when considering a growing economic market for transit service. As ridership is growing, a new route or an increase in service frequency can be reasonably estimated. The problem is different in a market of reduced demand. The transit operators in Tulare County have made adjustments with slight service reductions and moderate fare increases. It seems logical that the adjustments should be reviewed.

The Clean Slate Model identifies a high level of fixed route transit service at a reduction of 30,237 hours per year, compared to the 2017 reported levels. It does not leave any significant portions of the urbanized area unserved; and lowers the amount of service to 226,371 annual revenue hours.

The One Region Model also identifies a high level of transit service yet yields a reduction of 26,475 hours per year. The 2017 revenue hours of the six transit systems was 256,608; the modified revenue hours total 230,133 annual revenue hours.

In Section 6 the comparison is made to 2017 revenue hours for fixed route service in the six transit systems.

It does not require dramatic changes to operating structures, though the Joint Powers Authority approach is recommended for both options. The move to a regional operating process will change the decision-making process.

Section 6.5 - What are the Probable Benefits Beyond Basic Economics

Preparation for Future Rail Transit Needs

Interaction with eventual rail services may seem to be distant in the future but consider for a moment two rail projects that are in planning and construction phases. These projects change the dynamic by creating travel trip ends that do not include auto trips.

The Cross-Valley Corridor rail project is planned to eventually connect Porterville, Lindsay, Exeter, Farmersville, Visalia, Goshen, Kings Tulare High Speed Rail Station, Lemoore, Naval Air Station Lemoore, and Huron. It is important that the interaction among the six Tulare County communities served by transit and the Cross-Valley Corridor rail project be based on coordinated assessment of needs and objective performance measurement. The first ten years of service are to be provided by regional bus service. The second phase is to provide the initial rail service from Visalia to Lemoore. The third phase is to provide regional rail service along the full alignment.

The California High Speed Rail Initial Operable Segment is under construction from Bakersfield to Merced. New ridership estimates are expected after the decision to open only the Initial Operable Segment in the current funding scenario. The new trips made by the High Speed Rail line customers will generate new transit trip connection opportunities.

The potential for new transit trip demand in Tulare County from the opening of this project may seem unlikely at present. The recognition of housing affordability problems outside the region is being taken seriously. The possibility of attracting millennials to live in Fresno, Tulare and Kern counties was once remote. The trends are changing and will accelerate if or when either rail project opens.

The Brookings Institute 2018 Report: *The Millennial Generation* identifies the top 15 urban areas in terms of portion of millennials to total population: Bakersfield is currently 7th (26.3%) and Fresno is 12th (25.8%). It is not complicated to see the path to higher relocation decisions to take advantage of the affordable housing solutions near the commute shed of each of the proposed stations.

From public comments to Title VI assessments to ridership projections to service integration with bus transit in the six cities, the coordination with both rail services will be facilitated by the integration of transit governance among the six cities.

Interaction with Federal Transit Administration

The federal transit grant process includes requirements for coordinated transit planning and public input processes through the Metropolitan Transportation Planning process in areas over 50,000 population. Congestion Management planning is also required for urbanized areas over 200,000 population.

The process shall be continuous, cooperative and comprehensive while addressing the ten factors: economic vitality; safety; security; accessibility (people/freight); energy conservation and environmental protection; intermodal connectivity; efficient system operation; preservation

of existing transportation systems; improve resiliency and reduce stormwater impacts; and enhance travel/tourism. (23 Code of Federal Regulations 450.306)

The requirements in the federal planning cycle include a step wise process:

Goals and Objectives
Problems and Needs Identification
Evaluation of Potential Solutions
Long Range Transportation Plans
Transportation Improvement Programs
Project Development
Performance Monitoring, and return to shape the new Goals

The use of performance-based planning is critical to the success of the required transportation planning functions. Performance targets allow transit system managers to determine their relative successes on a monthly (or daily) basis. The new regional approach to the six transit systems' decision processes would add the annual performance targets and metrics to the annual budget cycle. The targets can be set to uniform thresholds throughout the urban areas, or the targets can be adapted to reflect the differences in sub-fleets, traffic patterns and topography. The requirements for coordinated transit planning are clear. The regional move to coordinate the organization would normally strengthen the process.

The decisions would be expected to be updated each year, much as the budget process.

Our recommended starting point for the region takes into account existing published metrics from Short Range Transit plans in the region and offers four simple assessments as follows:

Table 6. 2 Proposed Performance Measures

Urban Fixed Route Bus		
Fare/Operating Expense	20%	
Productivity	25 riders/hour	- evaluate increase
	10 to 25	- norm
	5 to 10	- evaluate modifications
	Under 5	- evaluate service type
Safety	Under 2.0 prev. accidents/100k miles	
Reliability	8,000 miles per service interruption	

Rural Fixed Route Bus		
Fare/Operating Expense	10%	
Productivity	15 riders/hour	- evaluate increase
	7 to 15	- norm
	4 to 7	- evaluate modifications
	Under 4	- evaluate service type
Safety	Under 2.0 prev. accidents/100k miles	
Reliability	8,000 miles per service interruption	

Demand Response		
Fare/Operating Expense	10%	
Productivity	5 riders/hour	- evaluate increase
	1.5 to 5	- norm
	Under 1.5	- evaluate service type
Safety	Under 2.0 prev. accidents/100k miles	
Reliability	8,000 miles per service interruption	

Each of the steps will benefit from increased coordination of the six transit systems. The performance monitoring will be significantly different than in prior years.

There are several regional plans called for in the Federal Transit Administration process:

Transit Asset Management Plans
Transit Safety Plans
Congestion Management Evaluation
Coordinated Public Transit – Human Services Plans
Pedestrian and Active Transportation Plans

These five plans and the six local Transit Development Plans will become clearer to the community when the six transit systems coordinate at the county or regional level.

There are a variety of compliance activities that will be assumed by the Joint Powers Authority as the member governments choose to transfer their responsibilities as grantees. These include, but are not limited to:

National Transit Database information
Triennial Review documentation
Buy America compliance actions
Americans with Disabilities Act compliance activity
Disadvantaged Business Enterprise plans and compliance
School Bus service limitations
Charter Bus service restrictions
Section 5333b compliance actions
Davis Bacon Prevailing Wage activities
Equal Employment Opportunity reporting
NEPA – Categorical Exclusion documentation
NEPA – Environmental Analysis
NEPA – Environmental Impact Statement Preparation (for large projects)
Title VI Plan, Public Input during Fare or Service Modifications

Each of these will be prepared at the Joint Powers Authority level once the JPA is approved.

Interaction with State of California

Caltrans offers several funding programs in addition to the TDA. The 2018 Transit and Intercity Rail Capital Program 2018 awards included many projects in the largest cities, but also included the Southwest Community Connector in Fresno. The multiple year award was $7.798 million for six electric buses and charging infrastructure to connect Southwest Fresno with 15-minute frequency to the job centers in North Fresno.

The State of Good Repair projects approved by Caltrans in 2018 included eight awards to Tulare County regional transit systems. The total was over $600,000, six of the eight awards were for less than $100,000. The Victor Valley Transit Authority received one award for $671,195. The Transit Joint Powers Authority for Merced County received one award for $384,908. The Stanislaus Council of Governments was awarded $732,743 for cleaning and maintenance of all transit stops in the region.

The TDA allocation and TDA audit processes require coordination and that currently is provided through the TCAG. It is not certain, but seems probable, that with the certain adoption of new bus technology and the probable opening of two new rail services in the future, the region will need a unified voice to compete effectively for the maximum capital through Caltrans programs.

CARB

The 2020 CARB Electric Bus rollout plan will be prepared by the Joint Powers Authority, once the JPA is approved and adopted.

Though the 2026 deadline for phased purchase of electric buses allows the new technology problems to be resolved at the larger transit systems first, the technology change has created several range and reliability issues. The lessons being learned by the advance deployment in Visalia and Porterville and the new original equipment manufacturers competing in the market will be instrumental in making the new technology successful.

The electric buses offer zero vehicle emissions, lower fuel costs, and lower maintenance costs. The challenges include range between recharge and the cost of infrastructure improvements. The electric buses will achieve the promised benefits in the transit systems with the best training and problem solving. There will likewise be a period of problem solving while the unusual technology matures. It will be vital to have one garage focus on the range issues, reliability issues, and recharge cycle/battery life issues.

Section 6.6 - Implementation Process

JPA Approach

The Joint Powers Authority method would include the affirmative decisions of each member that choose to join. There is an assumption that each of the six would join, but there is no such requirement.

Recommended Organization

The organization (authority) would be governed by the Board of Directors. The Board would normally meet monthly though six meetings per year may suffice after the first year. The number of Board members would depend on the number of systems participating. It is practical to appoint an elected official from the participant governments to be Board Members of the Joint Powers Authority.

Assuming, for the sake of discussion, that each of the six transit system member cities and county join in year one, the recommended board composition is:

County 4 members
Visalia 2 members
Tulare 1 member
Porterville 1 member
Dinuba 1 member

Exeter 1 member
Lindsay 1 member
Farmersville 1 member
Woodlake 1 member

The Board will appoint the chair, vice-chair, secretary, treasurer, and general counsel.

The appointment of each Board member is the responsibility of the local government participating. The members will be elected officials of the participating local government.

The term of each board member would be two years or longer. The number of consecutive terms allowed would be determined by the participating local government. The decision to join or exit the Joint Powers Authority by the member local government will be guided by three principles: taxpayer fairness, governance representativeness, and potential effectiveness. The JPA will have a ten-year term and may be renewed for each following ten-year term by the affirmative action of each member. The exit of a member government requires a six-month notice process and the liquidation of the financial liabilities and obligations attributed to that member. The Joint Powers Authority may be terminated by expiration of the ten-year term or by unanimous vote of the members. The termination would be followed by the transition of the assets and services and financial responsibilities to a successor organization or it may lead to an equitable division of all remaining assets, liabilities, and services under the principles described above for a single member exit.

Executive

The Joint Powers Authority will be led by a chief executive. The assumption is that one of the existing executives involved in the transit or transit planning process would be selected to lead the organization. The executive director will be responsible to plan, direct and organize the team and oversee the service agreements and/or collective bargaining units.

At the inception of the authority, the chief executive would monitor the performance of the member systems. The presumption is that the first year of service would leave the daily operations to operate in much the same manner as before joining the Joint Powers Authority. The performance reports each month would yield clear directions for increasing productivity. The first budget cycle after formation would be expected to include service, fare, and staffing modifications to eliminate redundancy of tasks and create the continuous improvement cycle that measures performance against the most relevant peer transit systems.

Executive Duties Mature with Organization Development

The new Board of Directors can decide any public policy needed to make the JPA performance achieve the goals of the organization, subject to the JPA organizing documents. The first year, it is expected that each of the transit systems that join the JPA would continue to operate, that each city or county agreement with a service provider will be maintained, and that the daily operations will be governed by the annual service agreements and annual budget. These agreements and budgets will be led by the chief executive and subject to review and approval by the Board of Directors. The first year would include the first round of Federal Transit

Administration grants and California Transportation Development Act allocations to the JPA rather than to the six agencies or member governments.

Year one would be the first year for preparation of the service agreements and annual budgets. It is expected that the demand response call center would be transferred to the JPA in the first quarter of year one. It is expected that the regional transit marketing and fixed route service customer service functions would be transferred during the second quarter of year one. In the third quarter of year one, it is expected that the financial audits, National Transit Database, TDA performance reports, and TDA audit functions would be transferred to the JPA.

The second year it would be expected to include a transfer of the assets by lease agreement to the JPA. That would provide an insurable interest and lead the JPA to provide the insurance policies, deductibles, and retention of risk funds. The vehicle leases would cover and reflect the process of member exit, should that be necessary.

By the second or third year it would be expected that the members and the Board of Directors will be comfortable enough to acknowledge all future assets be purchased and owned by the Joint Powers Authority.

The second year it is expected that the chief executive would assume the lead in all transit planning efforts, all service performance verifications, and all customer service functions. It is expected that the model organization size will be accomplished by transition of several transit positions to other functions within local government, such that any overall reductions in number are achieved through attrition.

Service Allocations

The members of the Joint Powers Authority remain free to operate the amount of service they choose under this model. The first year of the JPA, it is expected that all operations will begin as they are organized currently. Using the most productive elements from the coordination approaches, the JPA would agree on the regional service mix that will be supported by the TDA funds. The service miles and hours for the year would be clearly identified, along with the regional fare structure and marketing approach. That does not mean that each neighborhood in the county will have the same service. It will be clear upon adoption of the first service plan that the region collective decision making has assured the entire county achieves basic mobility, that the areas of greatest ridership receive service that reflects the demand, and that areas that have any service reduction have a service alternative available.

Similarly, each city that chooses to offer more service than the regional funding allocation process supports would also choose to support that effort with local funds and fares of their choice. These additional services are expected to be a minor portion of the overall service mix but might be important to a neighborhood or a chamber of commerce or a college.

Provision of Service

At inception, there is no need to change operations or operations contracts except to the extent that service quantities evolve. Gradually, the term of the operations contracts will end. The

future operations contracts would evolve such that the JPA will be the transit provider rather than the local government.

The JPA would reach a decision, at a later date, regarding the structure of the future operations contracts. There are logical arguments to have more than one contractor. The competitive benefit to the taxpayers is maximized as the number of competitors increases and as the scale of units to be provided increases. The solution may be to provide the competitors with the use of maintenance facilities and to structure the eventual bids into service packages that could be awarded all to one provider or to more than one provider. This method is often used in Foothill Transit and Los Angeles DOT competitive procurements.

Policy Setting

Many policies will be changing or evolving. The performance metrics and service standards would be among the first policy issues to be resolved. These determinations would have important impacts on the service allocation policy choices and budgets. The local government members will retain the ability, at the inception, to decide on the service levels for their community.

The evolution would include a transition to regional choices of the funding allocations. The policy choices for regional fares, the interpretation of operating ratios and service substitutions will be among the more important issues that the JPA will decide in the initial years of service. Later issues that would form the strategic direction of the JPA for many years include: procurement policies, human resources decisions, and public involvement approaches. The way that purchases are approved, talent is recruited and rewarded, and the public kept informed of both issues determines the success of most transit organizations.

The important policy choices in redesigning compliance activities for Federal Transit Administration, Caltrans, and CARB would follow the general pattern of the last several years. The most signify ant change in compliance processes would be a simpler approach. It is not expected that the first five years would see dramatic changes in any compliance activity.

Recommendations for Current Transit Managers to Prepare for Coordination

1. Create a Task Force of the managers.
2. Evaluate, improve the service alternatives presented here and prepare public hearings.
3. Implement regional fare process, including free transfers.
4. Consider the impacts on service contracts with private providers.
5. Consider asset transfer by either merger into the JPA, or lease or other coordination action.
6. Explain the possibilities to the employees, customers, and taxpayers.
7. Explain to bargaining units that existing collective bargaining agreements would be honored.
8. Determine which regulatory compliance activities and plans can be coordinated.
9. Consider a progression from each of the six systems within a JPA structure to one structure.

Table 6. 3 Steps in Implementation of the Coordinated One Region Model

Steps to Implement a Coordinated One Region Model		
	Phase 1	**Evolution Complete**
Reporting	Monthly Report	Monthly Report
Governance	JPA Board	JPA Board
Federal Grants	Basic Mobility and Productivity	JPA Uses Grants to Provide Service Directly
State Allocations	Basic Mobility and Productivity	JPA Uses Grants to Provide Service Directly
Local Funds (excl. TDA: LTF,STA)	No Change	Not Needed
Service Plans/Budgets	No Change	JPA Annual Process
Service Contracts	No Change	JPA Provides Service
Assets	No Change	Fleet Owned by JPA
Maintenance Facilities	No Change	Facilities Owned by JPA
Operating Facilities	No Change	Facilities owned by Local Government
Marketing	JPA Process	JPA Process
Fare Processes	No Change	JPA Process

Section 6.7 - Illustrations of the Moving to One Region Approach

The following four examples clarify the manner in which the Joint Powers Authority, once approved, could resolve important issues. The timing of implementation will be driven by policy and political decisions. Several steps could be completed in the first year of the Joint Powers Authority. The actual timing will depend on the progress to consensus.

Moving to One Region

Example 1 – Service Standards

The One Region model is the coordinated effort to serve all of the citizens in the county with responsive transit service that balances the needs of customers and taxpayers.

Step 1 Discuss Regional Standards to Balance Productivity and Coverage

The region would first work to a consensus of the need for both basic mobility coverage (public transportation) and more frequent (mass transit) service. The first set of basic standards would include the service hours span, service frequency, and coverage that are fair and practical in this environment. For example, a regional system might reach the consensus that all residences in densities of 2,000 persons per square mile will be served by fixed route transit every sixty minutes or more frequently between six a.m. and six p.m.

Served, in this case, means a route with passenger stops within one-half mile of homes with safe, protected pedestrian pathways. Most would be within one-quarter mile of the pathways.

The regional demand response service area would, by Americans with Disabilities Act regulations, also have service in the one-quarter of a mile (on either side) zones constructed by the fixed route base area.

Step 2 Agree on Regional Standards for Funding Priorities

The region would next reach consensus on the use of Federal Transit Administration and Transportation Development Act funding for improved services. The first improved level of service would be forty-minute frequency, the next is thirty-minute frequency, the third is twenty-minute frequency, and the fourth is fifteen-minute frequency. Ten-minute frequency is unlikely, in the near future, for regular fixed route service; but might be deployed eventually in a congested area for shuttle movements.

The regional performance metric for funding approvals would be simple: routes currently achieving 15 or more riders per revenue hour would be considered for funding at the 30-minute level, routes achieving 25 or more riders per revenue hour would be considered for funding at the 15 or 20 minute level.

Once agreement is reached on funding based on performance metrics, decisions can be made on service differentiation. This could include adding peak service in parts of the day or adding more peak service in the afternoon than in the morning if the ridership patterns warrant that service.

Step 3 Initiate Regional Route Productivity Reporting – Monthly

This is another feature that could be started immediately whether all six systems become members of the Joint Powers Authority at the outset or over a longer period.

The report would clearly indicate the different systems by their current names and logos. The base mobility routes would be listed first in each system followed by the routes with service determined based on rider productivity. Those routes that fit the normal productivity range for the service level funded by FTA and TDA and fare amounts would require no further explanation. The routes that fell short of the productivity that was the basis of funding decisions would require analysis by the executive in charge of that system.

Similarly, routes that are experiencing higher productivity than the requisite for the funding level would begin the process of designing more frequent service and requesting the funding approvals for that added service.

None of these steps are dependent on new data collection, the processes are in place. The difference is the forum for the monthly reporting by route of total riders, total fares and riders per hour.

Step 4 Initiate Public Regional Reporting by Route

This study recommends that the route level productivity and the service standards be posted monthly after the policy or management meeting such that the public may see the results. The addition of service to busy routes and the reduction of service on lower performing routes must be understood by the taxpayers and the riders and the many constituencies in between.

Step 5 Initiate Route Service Adjustment Process - Quarterly

The process of adjusting service to productivity will include several steps. The routes that fall below standard would first be evaluated for greater information and promotion, second for slight modifications to improve productivity, and third for complete redesign. The modifications step may, and the redesign step will, trigger the required public hearing processes.

Step 6 Prepare Service Options – Public Comment Process

The public reporting of the route level data will help the public understand the existing performance and the conditions that may explain that performance. The routes that are making progress will be clear. The significant progress or lack of progress will be clear. These public information steps are the foundation of consistent understanding and support of balancing mobility and productivity in all transit spending.

Moving to One Region

Example 2 – Passenger Stop Amenities

Step 1 – Regional Inventory of Existing Passenger Features

Stations

Each of the six transit systems currently have stations that are a source of community pride. Visalia incorporates outdoor and indoor waiting facilities, offices, intermodal connections and vendors for refreshments. Porterville, Tulare and Dinuba have similar stations. Woodlake provides a small transit center. Each of the five are above average in terms of features, size, condition and customer features, compared with similar size transit systems in the nation.

The first, simple step is to record the inventory of existing passenger facilities including the age, size, capacity, annual trip generation rate, and features. Many of these details would be documented in the Transit Asset Management Plan.

Transit Hubs

The Visalia Medical Clinic plaza and the Tulare County Government Plaza are examples of transit hubs. The first step is the same: record the inventory of existing passenger shelters, including age, size, annual trip estimates and features.

Shelters

There are several hundred transit passenger shelters in the six transit systems currently. The inventory would identify the location, the site placement, access to ADA walking paths and sidewalks, date of installation, and give details of the information features.

The most useful passenger information currently placed at transit shelters in the study area include printed schedules for each route, passenger stop signs including route and stop number and direction of travel, how to call the Green Line for information, and how to use the bus locator service by text or mobile device.

Convenience features include lighting and trash receptacles at some locations. All stops should include the customer ease and safety of access noting any impediments to safe egress, ingress.

Other Passenger Stops and Customer Information

There are also several hundred passenger stops that are safe and located at convenient locations for rider access but have no shelter. The inventory should geo-locate each of these. The passenger information should be identified along with the connection to the sidewalk or ADA pathway.

Step 2 – Regional Recommendations for Repairs, Replacements

The current demand for repairs, replacements, and new locations would lead to a transit customer facilities program of projects. The region would include a line item in a federal or state grant to complete the expected work for the year. The FTA 5339 Formula funding would be the most likely source for the more expensive items. The operating budget items of trash removal and cleaning would evolve from the member cities to the budget responsibility of the Joint Powers Authority.

Step 3 – Regional Standards for Both Basic and Enhanced Features

Basic

The existing passenger shelter types found in the six transit systems are well suited for the needs of the customers and the climate of the area. Where practical, the passenger shelters are sited at bus loading berths or bays. The region would consider standards for sizing that fits the load expected. Site preparation costs and sidewalk connectivity would depend on the local street and sidewalk network.

It is important that each new shelter comply with sections 301-309 of the Architectural Metrics of the United States Access Board. Simply stated, each shelter would include a firm, stable surface (normally concrete), slope of the boarding area not more than the parallel road in that direction and not more than 1 in 48 perpendicular to the road. It must connect to an ADA accessible street, sidewalk or pedestrian path. The maneuver area for wheelchair boarding must include at least 60 inches in width and 96 inches of approach.

Enhanced

Before the region invests in Bus Rapid Transit or Light Rail, there is a normal progression to larger and higher functioning transit shelters. The shelters provide two primary functions to protect the customers from the heat or cold or rain and to encourage new riders to try transit. The current features in many shelters in the region include lighting, multiple links to phone, text, or static schedule information and trash bins. The next step is to provide larger shelters as demand grows and to include more cues as to the destinations ahead. The highest level of amenities would include live information on next bus arrivals without looking up the information.

Step 4 – Regional – Local Decisions and Responsibilities

One of the critical decisions to be made is the balance of authority and responsibility. Many regional transit providers agree on demand metrics and passenger access safety standards for normal regional transit investment in the passenger facilities. To prevent practical problems there is often a balance that includes the local government approving the site location and the interaction with public works for sidewalks or other pedestrian paths.

Moving to One Region

Example 3 – Transit Asset Management

Step 1 – Transit Asset Management Plan – Electric Bus Example

The move to electric battery buses is advancing rapidly in California. The Porterville and Visalia systems have purchased new zero emission buses. The cost increment for these buses is decreasing, though still significant. The rapid charge infrastructure is expensive for the customer either through demand charges or through installation costs. Would emergency generators protect the fleet fueling needs in case of weather emergency? Would solar roof panels lower our demand or usage charges? What changes do we need to make to our garage? Do we need spare battery units? How do we prepare all personnel and first responders for different fire risks?

The six transit systems could meet the requirements individually, but with the combination of rapid investment and rapid manufacturing quality changes, the strength of joint procurement and training is clear.

Step 2 – Electric Bus Choices and Decisions

Porterville received eight of the ten electric bus order from Green Power through March 2019. Buses nine and ten are near completion as of that date. As of April, 2019 the buses were completing the in service commissioning process.

Visalia purchased three Proterra buses through a California Air Resources Board grant. The buses are in service and transit maintenance personnel are working to improve the range and reliability.

The market of electric bus manufacturers is changing rapidly. Green Power, Proterra and BYD each have buses in operation in California today. Gillig, New Flyer and MCI have each begun offering electric buses. With the field of innovation changing so quickly, and the promise of zero vehicle emissions so important, the ability of the region to work in a coordinated manner will be important. The region could allow different systems to purchase different vehicles to comparison test these solutions.

The region could also pursue regional solutions for emergency generators and cooperative efforts with the electric utility (SCE or PG&E). The customer will be responsible for the infrastructure from the substation to the vehicle charging station. The utility will continue to be responsible for the infrastructure from the generating plant to the substation. But there are many innovations available to allow renewable sources to reduce the peak demand or to allow the peak demand to be reduced simply by user controls of how many buses to charge how rapidly. These efforts offer more synergies as a region than as six smaller systems.

Step 3 – Electric Bus Example; Funding and Competitive Procurement

Federal Transit Administration, California Transit Development Act, and California Air Resources Board grants are possible funding sources. The FTA 5307 formula funds are the most flexible,

but these are normally programmed for routine operating and capital costs. The FTA 5339 formula funds are well suited to this issue, but these are also programmed for routine needs. The 5339 subsection for Low or No Emission Vehicles is also useful, but it is a highly competitive national program. Congestion Mitigation and Air Quality sources may be used for these buses as part of an air quality improvement plan. TDA funds can be used for electric buses, but these are normally programmed for routine capital needs. The new sources include the Clean Transportation Incentives in the CARB 2018-2019 Funding Plan. The one-year budget included $180 million for Clean Truck and Bus Vouchers which are paid directly to the qualified original equipment manufacturer.

The FTA funds restrict the ability to favor local bidders. The CARB funds have different regulations. The region as a group is in the position to determine the optimal solution for the local economy and taxpayer.

Step 4 – Electric Bus Example; Infrastructure Modifications

An important benefit of the regional system will be the solution of several problems involved in preparing the maintenance facilities for the transition. The low cost of operation for electric buses is based primarily on the lower fuel costs. The lower fuel costs depend on the cost of power generation. The region may improve the chances of low charging costs by coordinating the timing of the recharges. Charging every bus at the same time would result in the higher demand profile.

The region may also improve the economics of electric bus use by shaving the peak demand with solar or wind electrical generation. In the event of power charging equipment problems, it is valuable to have emergency back-up generation available that can be shared in the region.

Moving to One Region

Example 4 – Regional Fares Conversion

Regional fares coordination will need no further decisions if the One Region Model is implemented. Even if the Joint Powers Authority needs time to develop, the regional fares could proceed immediately upon vote of the participating systems.

Step 1 – T Pass

The T Pass has been successfully implemented. The pass allows riders to move freely from one system to another. The fare settlement process is slow but practical. Each system records both pass sales and pass use by customers. The revenue is collected by the selling system and rebated to the transit systems based on recorded trip use.

Step 2 – Joint Pass Acceptance Technology

As described in Task 3, the rapid deployment of machine readers for the regional pass is not complex. The product from either Delerrok or a competitor can be added to each bus in the region. The reader can accept different fare media including RFID proximity or “tap” cards, or

QR code information. Mobile phone payments for fares could be viewed as eliminating the need for the other three types of pass reader capabilities, but it is not likely to be universally accepted that every rider purchase passes by mobile ticketing devices.

Step 3 – Uniform Acceptance of Transfers

The further the six systems move toward use of the regional pass, the less critical this issue becomes. But at present, should a rider not choose a regional pass the trip from one system to another requires two fares. The need for long distance trips on two or more of the transit system providers is small, but it offers a growth opportunity for transit trips. The immediate implementation of free transfer from one system to another based on a limited time ticket or proof of payment is a low risk solution that is recommended for rapid deployment to increase ridership.

Step 4 – Uniform Acceptance of Fare Media

The natural evolution of these issues is the regional collection and recording of fares. The rapid transition to one armored car pick-up process for all six systems is not complicated. As soon as the six systems gain accounting internal control acceptance, the revenue can remain credited to the route that the customer chose to ride. The rapid acceptance of the Joint Powers Authority obviates the need for individual financial statements. But even if there is an intervening period of months or more, the revenue from all passes and cash fares can be properly credited to the route that accepted the fare.

Section 7: Service Innovation Recommendations

Innovative transit solutions are recommended to replace some late-night fixed route trips, supplement paratransit services, and to improve mobility options for area residents. This report recommends reductions in late night fixed route bus service across multiple agencies. It also recognizes the need to expand mobility options for those Tulare County residents not served by all day bus service and recommends innovative solutions to this problem.

Three solutions for the provision of alternative forms of public transportation services are recommended. These three new programs are: (1) volunteer driver transportation; (2) on-demand transportation using ride-hailing services; and, (3) a car share program sponsored by local public transit agency funding.

The volunteer driver and car share programs are tested in other markets and are particularly useful for longer trips. In a county as large as Tulare County, the travel time for longer trips is a dramatic comparison between fixed route transit and auto travel.

The on-demand transportation would begin as a service substitute for the late-night service modifications. After it is proven successful for this objective, it could easily be expanded to serve a broader service span, subject to budget limitations.

Section 7.1 – Volunteer Driver Program Recommendation

This report recommends the implementation of a volunteer driver transportation program to be administered by Tulare County through its transit agencies. Successful volunteer programs have been implemented around the country to provide mobility services for persons who are unable to utilize regular public transportation due to age or disability. An individual may not be able to access public transportation due to a need for more extensive wayfinding assistance than what is authorized to be provided by ADA paratransit drivers.

One example of a volunteer driver program is the Independent Living Partnership (ILP) through its “TRIP” program. The TRIP program has been operating in Riverside County, California since 1993. It provides volunteer driver transportation services for health and other life services. In 2016, more than 130,000 trips were provided to Riverside County residents. The county population of 2.39 million now has over 1,200 volunteer drivers.

The cost incurred by volunteer drivers are reimbursed to the drivers through mileage-based payments. Drivers report their mileage while operating their personal vehicle and are reimbursed accordingly.

Advantages to volunteer transportation include lower program cost as compared to transit services operated by paid professional drivers, possibly more flexibility both in days and hours of availability from volunteer drivers, and service to a wider array of destinations. Challenges with a voluntary driver program include the need for extensive ongoing efforts to recruit new and replacement volunteer drivers, the need for a high level of management oversight to monitor all facets of the volunteer program, and the potential need for vehicles for volunteer drivers to operate especially when accommodating persons with disabilities. Further areas that program

managers must address is the provision of additional insurance for drivers and vehicles, establishment of procedures for response to accidents and incidents, effective data tracking and tracking the volunteer program expenditures.

When setting the rules for the program, it is important to limit the program to those in need of these services. Typically, the only persons who qualify for the volunteer service are those who need travel assistance beyond what can be provided on the agency's fixed route or ADA paratransit services.

Ridership projection

Lake County, California has developed a volunteer driver program similar to this recommendation for Tulare County. The county, located northwest of Sacramento, has had a volunteer driver program since 2015.

The population per square mile is higher in Lake vs. Tulare, 91.7 to 51.5, due to the smaller size of Lake County. The population of Lake County is one quarter the size of Tulare County. The median household income is comparable but higher in Lake County; $44,871 to $40,446. Both counties have had recent employment increases, but the unemployment rate in Lake County is lower; 5.15 to 9.8%.

Lake County's volunteer driver program has provided over 6,000 trips for area residents between 2015 and August, 2018 at an average of $7.09 per trip.

A county-wide volunteer driver program in Tulare County can be expected to result in a demand of over 5,000 trips per year once the program is established.

Budget

Expenditures for this program are recommended at no more than $50,000 in the first year of operation as the program becomes established. This service level would yield an estimated 6,700 annual trips. It is likely that a new volunteer driver program will experience limitations on the amount of service that can be provided based on the initial lack of available volunteer drivers and local area resident lack of familiarity with the program. The County should establish a budget for the program and restrict use of the service per qualified customer until firm demand, cost and driver availability projections are established through experience.

Section 7.2 – Late Night Service Substitution

Various forms of ride-hailing and ride-sharing models using transportation network companies (TNCs) are growing throughout the nation. This report recommends the use of the TNC model using in-house drivers and vehicles to provide on-demand service between 9:00 pm and 10:00 pm after regular fixed route bus service has ended. The on-demand service is recommended to utilize agency demand response and paratransit vehicles that are available at the end of their other services.

The proposed service is an on-demand service type. Customers would register for the service in advance through an on-line process or by telephoning the transit agency. Once registered, a customer will be able to contact the agency through a web-based app or telephone to request a ride within the designated service area. The customer will specify the origin and destination for the trip. A customer's trip will be combined with other customers' trips in a shared ride service model to provide the best possible service cost-effectiveness.

The recommendation is to use this process for late night service substitution initially and expand to other trips as the program matures. The fare for service substitution of trips reduced on fixed route would have the same fare as the fixed route bus. If the service is expanded, and it is more of a premium offer than regular fixed route services, consideration of a fare higher than the regular bus full-fare is recommended. A similar program in West Sacramento charges a base fare of $3.75 as compared to the single ride local bus service (Yolobus) fare of $2.25. The City of Arlington, Texas charges $4.00 for its VIA provided shared ride service.

This service fills a need created by elimination of low ridership late-night bus service. The same coverage area as that previously covered by the bus routes is recommended.

Projected Impacts

The "One Region Model" discussed in Section 6 of this report includes ending the service day one hour earlier in Visalia and Porterville on weekdays; and, one hour earlier in Porterville and Dinuba on Saturdays. In its place, three small vehicles in Visalia and two in Porterville should be available for on-demand service during the hour that fixed route service is eliminated. The on-demand service should cover the same service area as was previously covered by fixed route service.

If the number of in-house provided on-demand vehicles is found to be insufficient to meet the late-night demand, additional trips could be provided through contracting with either Uber or Lyft, or both.

An additional 1,632 hours of on-demand service is recommended per year. This service replaces 6,222 deleted hours of fixed route bus service. The net savings per year is 4,590 hours. The 26,475 total hours of modifications therefore yields net hours savings of 24,843 based on 2017 National Transit Database reported service levels. This net impact of over $1,000,000 is expected along with the promise of reasonably convenient service substitutes for each modified trip.

Section 7.3 – Shared Automobile Rental Program Recommendation

Transit agencies have recently implemented innovative transit services involving partnerships with rental car companies. These programs are based on a peer-to-peer car sharing approach where the vehicle is owned by participating owners. These owners can be an individual, public agency, employer or car sharing service such as Zipcar. Customers using these programs reserve vehicles for their individual use renting them by the hour.

The recommended program for Tulare County resembles most closely the one that VVTA has implemented in its rental car program in Needles, California. This program provides cars through Enterprise Rental Car that can be rented for as little as one hour for travel from designated rental car staging locations. Enterprise has started 91 of these programs around the country, most on college campuses. Other bidders would be welcome to compete to serve the Tulare County customers.

The cars are returned at the end of their use to their original pickup point. Victor Valley Transit Authority (VVTA) discounts the price of rentals to registered participants to as little as $5.00 for a one-hour rental. The rate for a full day is $40. In a city such as Needles, California where there are very limited services and retail businesses, this program enables residents to travel far outside the transit service boundaries including across state lines to access needed products and services.

In addition to discounting the rentals, VVTA guarantees program cost to Enterprise Rental Car including property liability insurance and refueling cost. VVTA waives any program registration fees. Enterprise Rentals manages the day to day use of the cars including roadside assistance and provision of vehicles. VVTA works with a local bank in Needles to provide two designated parking spaces for the rental cars. The bank also provides a computer kiosk inside the bank for program participants without computers or smart phones to reserve cars on-line. VVTA has worked with another financial company to provide debit/credit cards for rental car program members use. These cards allow persons to reserve and pay for the vehicle rental on-line. The debit cards can also be a depositary for social security payments and to make credit or debit card charges.

This report recommends a similar program be considered by Tulare County. Working with Enterprise Rental Car or other similar business, cars can be offered at a discounted rate to extend the availability of shared ride offerings provided by Tulare County. This program attracts more potential public transit customers through providing a comprehensive alternative choice to car ownership.

Customers interested in this service would pre-register with Tulare County. Renters are required to have a valid driver's license. In the VVTA program, a free gas card is provided with the vehicle. A registered customer simply reserves a car at a specified location, scans his or her key fob to unlock the car, and refuels the car before return. In the VVTA program, a "failure to refuel" fee is charged if the car is returned with less than ¼ tank of gas.

Benefits of the program include that customers can combine public transit use with a car rental to extend the effective coverage area of public transit services. Participants use this innovation to access needed services outside of the transit service area or time parameters. The cars are available 24 hours per day, 7 days per week and can be rented without the typical paperwork and time requirements of a normal car rental. Cars must be returned to the same location where the rental began.

There are several limitations. The rentals are limited to those with valid driver's licenses. The cars are only available at a limited number of specified locations. In the case of the VVTA, the program is limited to residents of Needles, California and a limit of two cars are available at a single location. A related program limitation occurs when demand for the vehicles exceeds

supply. Once the two cars are rented, no more cars are available until one of the two is returned.

This program has proved to be very popular in Needles where approximately 25 rental per week occur. This report recommends that Tulare County consider establishing this program initially in remote areas of the county where all day bus service is not available. Specifically, it is recommended that the county explore locations in Springville and Terra Bella as car sharing locations.

Projected rental usage

Assuming two locations are provided with one car each (or one location with two cars), the projected combined total of rentals per week for both cars is 58.

Budget

The VVTA car share program cost is approximately $16,000 per car per year. Assuming two available cars for car sharing, an annual program cost of between $30,000 - $34,000 is projected for Tulare County. Actual cost will be dependent on what agreement can be made with the vehicle provider, and the County's decision on hourly rental cost to the program participant. The service can be offered with transit sedans to offer the program at even lower cost. Projected ridership is 3,000 roundtrips per year. The comparison to transit one-way trips would be 6,000.

Endnotes

Section 1

"2017 Tulare County Long Range Transit Plan", Nelson Nygaard, TCAG, September, 2017

"Transportation Development Act (TDA) Statutes and California Code of Regulations", CALTRANS, July, 2018.

"California Average Weekly Wages", USDOL, Bureau of Labor Statistics, Western Information Office, Wages and Employment by Quarter 2010 – 2018.

"Is Subprime Auto Lending the Next Housing Bubble?", Angie Schmitt, Streetsblog/United States Public Interest Research Group, February 13, 2019.

"Number of Drivers Licenses to Non-citizens - Legislation is Assembly Bill 60; Latest News update" - Andrea Castillo, Los Angeles Times, April 5, 2018.

"Transit Ridership Report", American Public Transportation Association, 2014 - 2018
National Transit Database fare ratios are derived from the Federal Transit Administration NTD Summary Profile Page for each Urbanized Area in the study.

National Center for Mobility Management website explains the provision of volunteer trips. Additional details are found at the website of the National Aging and Disability Transportation Center (2018 Transportation Trends Volunteer Transportation Programs).

Enterprise Rent Car hourly rentals are described on the VVTA and Enterprise websites. For users that do not use credit cards, the SOLE Paycard is available.

Section 2

Transportation Development Act (TDA) Statutes and California Code of Regulations, CALTRANS, July, 2018.

Table 2.1 National Transit Database, Triennial Transportation Development Act audits
Tulare County Association of Governments Financial Statements.

Section 3

"2017 Tulare County Long Range Transit Plan", Nelson Nygaard, TCAG, September, 2017 Top Ten Priorities.

Joint Powers Agreements, Title 1, Division 7, Chapter 5, Article 1 Joint Powers Agreements South Central Pennsylvania Red Rose saved $4 million by the merger. The cost savings included $800,000 and the incentive under State Act 89 reduced local government share by a combined $4 million. South Central Transit Authority (Berks and Lancaster counties, PA) Annual Report June, 2015.

VVTA Merger with Barstow was implemented by amendment to the VVTA Joint Powers Agreement. The five-member board of directors was enlarged to seven. This merger took effect July 1, 2015.

Solano County Transit JPA was approved by the city councils of Benicia and Vallejo and the Solano Transportation Authority in November, 2010.

Transit Joint Powers Authority for Merced County was established in July 1996 with the merged services of four local transit providers. The JPA contracts with the MCAG for administrative and grant support to the Policy Board.

SunLine was established in July, 1977 through a Joint Powers Agreement between Riverside County, Coachella Valley (Coachella, Desert Hot Springs, Indio, Palm Desert, and Palm Springs. Cathedral City, Indian Wells, La Quinta and Rancho Mirage were added by amendment.
San Louis Obispo Regional Transit Authority is a JPA that operates transit service connecting Arroyo Grande, Atascadero, Grover Beach, Morro Bay, Paso Robles, Pismo Beach, San Luis Obispo, and oversees the South County Area Transit which serves five cities.

Dutchess County operates transit service in the majority of the county. DCPT merged the services and assets of Poughkeepsie Transit in 2018. There are three Metro North commuter rail stations in the western part of the county, each served by connecting bus service
Stigler Oklahoma is served by Ki Bois Area Transit. The parent organization is the Ki Bois Community Action Foundation, a 501 c 3 nonprofit organization. The six-county core area has added eleven other counties due to their operation of the most effective rural system in the region.

Section 4

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Section 6

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