

Tehama County Short-Range Transit Plan



Prepared for the

Tehama County Transportation Commission



TCTC
TEHAMA COUNTY
TRANSPORTATION COMMISSION



Prepared by LSC Transportation Consultants

Tehama County Short-Range Transit Plan

Final Report

Prepared for

Tehama County Transportation Commission
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January 16, 2023

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TABLE OF CONTENTS

<i>CHAPTER</i>	<i>PAGE</i>
Chapter 1: Introduction	1
Chapter 2: Study Area.....	3
Study Area	3
Population Characteristics	3
Employment and Economy	14
Commute Patterns and Travel Information.....	14
Major Activity Centers	17
Chapter 3: Evaluation of Transportation Services.....	21
Tehama Area Rural Transit (TRAX).....	21
Overview of Transit Services	21
TRAX Fixed Route Services	22
ParaTRAX	31
METS	31
Performance Analysis.....	37
Financial Analysis	40
TRAX Capital Assets.....	44
Onboard Survey.....	45
Other Transportation Providers.....	46
First and Last Mile Transportation.....	47
Chapter 4: Services Alternatives.....	51
Introduction	51
Types of Service to Consider.....	51
Potential Revised TRAX Services	53
Potential Additional Services	58
Comparison of Service Alternatives and Performance Analysis.....	60
ParaTRAX Alternatives.....	64
Chapter 5: Capital Alternatives	65
Introduction	65
Vehicle Needs.....	65
Vehicle Replacements.....	67
Passenger Amenities	68
Facility Needs	68
Potential Need for Technical Equipment.....	69

Chapter 6: TRAX Policy Review, Goals, and Performance Standards	71
Introduction	71
TRAX Goals and Standards	71
Chapter 7: Funding Opportunities	77
Introduction	77
Federal Funding Sources.....	77
State Funding Sources.....	78
Local Funding Sources.....	79
Chapter 8: The Plan	81
Introduction	81
Service Plan	81
Capital Improvements.....	83
Marketing and Management Strategies.....	84
Financial Plan	85
Implementation Plan.....	89
Summary	90
<i>Appendix A: Route Profiles</i>	
<i>Appendix B: Boarding Data</i>	
<i>Appendix C: Survey Results</i>	
<i>Appendix D: Examples of Microtransit</i>	

LIST OF TABLES

<i>TABLES</i>	<i>PAGE</i>
Table 1: Historical Population Trends.....	5
Table 2: Tehama County Demographic Characteristics	6
Table 3: Tehama County Population Forecasts by Age Group.....	12
Table 4: Tehama County Largest Employers	15
Table 5: Tehama County Commute Patterns	16
Table 6: TRAX Services Hours and Frequency	22
Table 7: TRAX Ridership by Month and Year	27
Table 8: TRAX Ridership by Route by Year.....	28
Table 9: TRAX Ridership by Year and Time of Day.....	29
Table 10: Top Boardings and Alightings by Stop	30
Table 11: ParaTRAX Ridership by Month and Year.....	33
Table 12: METS Service Provided by Month and Year	35
Table 13: METS Service Performance by Month and Year.....	36

Table 14: TRAX and ParaTRAX Performance Measures by Year	38
Table 15: TRAX Travel Times, Transfer Requirements, and Service Headways	40
Table 16: Comparison of Auto and Transit Travel Times	41
Table 17: TRAX and ParaTRAX Operating Expenses	42
Table 18: Tehama County Local Transportation Funds	43
Table 19: TRAX Vehicle Inventory	44
Table 20: TRAX Service Alternatives	53
Table 21: Example Schedule for Red Bluff Service as Four Routes	56
Table 22: Comparison of Service Alternatives	61
Table 23: Fleet Replacement Requirements	68
Table 24: Example Performance Standards for TRAX Service Efficiency and Effectiveness	73
Table 25: Example Performance Standards for TRAX Service Quality	75
Table 26: Tehama County Short Range Transit Estimated Operating Cost	83
Table 27: Tehama County SRTP Estimated Ridership	83
Table 28: Tehama County SRTP Financial Plan	88

LIST OF FIGURES

<i>FIGURES</i>	<i>PAGE</i>
Figure 1: Tehama County Short Range Transit Plan Site Map	4
Figure 2: Youth Population (Ages 10-17)	7
Figure 3: Population of Older Adults (65+)	9
Figure 4: Population with a Disability	10
Figure 5: Population Living Below the Poverty Line	11
Figure 6: Zero Vehicle Households	13
Figure 7: Activity Centers	19
Figure 8: TRAX Routes – Red Bluff	23
Figure 9: TRAX Routes - Corning	24
Figure 10: TRAX Weekday Ridership by Year	26
Figure 11: TRAX Ridership by Route by Year	28
Figure 12: TRAX Ridership by Hour by Year	29
Figure 13: ParaTRAX Service Area	32
Figure 14: ParaTRAX Trips – December 2021	34
Figure 15: Passengers per Revenue Hour	38
Figure 16: Operating Cost per Passenger Trip	39
Figure 17: Bus Shelter at Cabernet Apartments	50
Figure 18: Routes 1 and 2 Revised as Four Routes	55
Figure 19: Change in Annual Ridership of TRAX Alternatives	62
Figure 20: Change in Annual Operating Cost of TRAX Alternatives	62
Figure 21: Change in Passenger Trips per Hour of TRAX Alternatives	63
Figure 22: Change in Operating Cost per Passenger Trip of TRAX Alternatives	63
Figure 23: Tehama County Short Range Transit Plan	82

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INTRODUCTION

Transportation issues are a vital consideration when trying to enhance the quality of life, environment, and economy of a region. Ensuring that residents have safe and timely access to social and medical services, employment opportunities, educational resources, and necessities is a high-priority concern for governments across the world. Tehama County is situated between two larger metropolitan areas, Redding, and Chico, and its two largest communities lie adjacent to the major transportation corridor of Interstate-5, which bisects the county. Although some residents have easy access to this major transportation network and the cities beyond through their private vehicles, the overall state of transportation access in Tehama County is not that simple. For instance, some Tehama County residents do not have private vehicles available to them, while other residents are dispersed across the County's 3,000 square miles in small agricultural communities or remote mountain towns with much less convenient access to essential commercial, medical, educational, and social service resources. Transit services are a critical tool providing mobility to those residents without personal vehicles, however they also help many other groups of people who are transit-dependent for varying reasons. Effective transit services improve safety and connectivity for available to all residents living within the service area, and in addition can provide a wide range of economic development and environmental benefits.

The Tehama County Transportation Commission, aware of the importance of transportation issues and dedicated to providing excellent services to its residents, has retained LSC Transportation Consultants, Inc., to prepare a Short-Range Transit Plan for the Tehama Rural Area eXpress (TRAX) service. This study provides an opportunity to review and evaluate current services and make recommendations to meet the mobility needs of residents and visitors.

The early chapters of this document present key context for transportation in Tehama County, including demographic factors, the recent operating history of public transit services, and information on connecting services. This is followed by the service alternatives chapter, where various options were analyzed to address findings of the first chapters, as well as capital alternatives, funding alternatives, and institutional alternatives. The final chapter presents the five year plan.

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STUDY AREA

Tehama County lies in the northern Sacramento Valley, with its geography spanning from the floor of the Sacramento River Valley, and its many agricultural fields, to the mountainous Sierra Nevada further east. Tehama County is primarily rural, with most of the development clustered around Interstate-5 (I-5) and near the Sacramento River. State Route (SR) 99 runs north-south, from the City of Red Bluff to Wheeler Ridge in southwest San Joaquin Valley. State Route 36 is an east-west highway from the coast to the mountains, bisecting the northern portion of the county. Smaller agricultural and mountain communities are also dispersed across the county. Tehama County is home to the Paskenta Band of Nomlaki Indians. The county is bordered by Shasta County to the north, Trinity and Mendocino Counties to the west, Glenn County to the south, and Butte and Plumas Counties to the East. Many residents commute or travel to services in Redding to the north or south towards the City of Chico.

The incorporated cities of Red Bluff (the county seat) and Corning, both located along I-5, are the central hubs of Tehama County. The City of Tehama is the only other incorporated city in the county, but only has a population of 481. The study area is shown in Figure 1.

POPULATION CHARACTERISTICS

Population and Recent Population Trends

In 2020, the population of Tehama County was 65,126 (Table 1) as estimated by the US Census Bureau. The largest populations are found in the cities of Red Bluff (14,288), and Corning (4,850), representing approximately one-third of Tehama County's total population. Other population centers include Lake California (3,337 population), Los Molinos (2,098 population), Rancho Tehama (1,485 population), and Gerber (1,060). Most of the study area's population lives in communities that are close to I-5.

The lower portion of Table 1 shows the percent population change over the last four decades. As indicated, the county as a whole grew rapidly between 1980 and 1990 (25 percent), at a more moderate rate between 1990 and 2020 (13 percent), dropping to a lower growth rate (3 percent) over the last full decade. Between 2010 and 2020, the City of Red Bluff grew by 1.5 percent, the City of Corning had a very slight decline in population (6 persons), while the remainder of the county grew by 3.5 percent

Potentially Transit Dependent Population

Across the country, most transit system ridership comes from various groups of people who make up what is referred to as the "transit dependent" population. An area's transit dependent population is considered to include youth, seniors, persons with disabilities, low-income individuals, and persons with no vehicle available to them. Many transit dependent individuals may identify as more than one of these forementioned subgroups. In Table 2, demographic data for transit dependent populations within Tehama County is analyzed, with data separated by individual census tract. The table presents the estimated transit



Figure 1
Tehama County Short Range Transit Plan Site Map

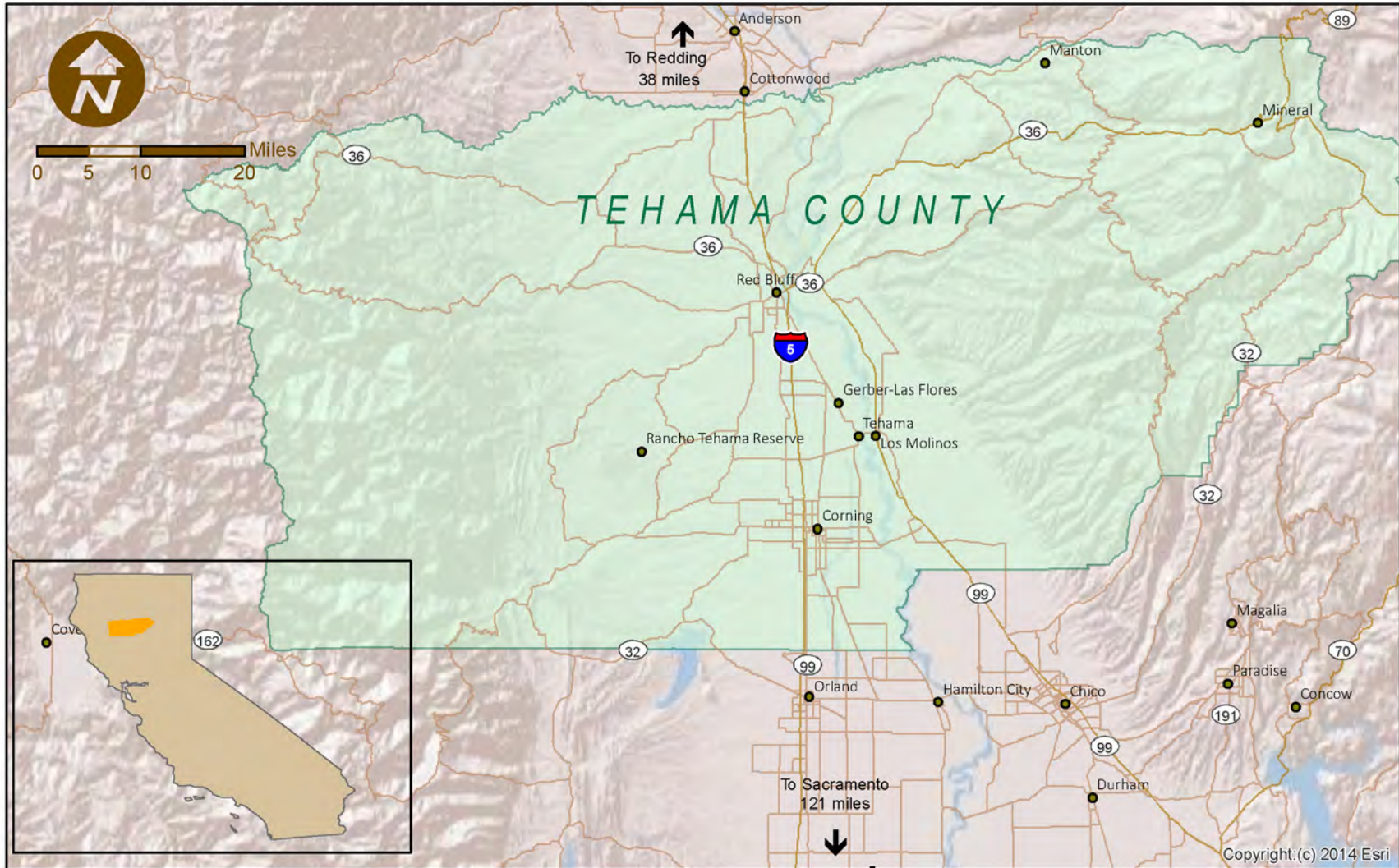


Table 1: Historical Population Trends				
Population by Decade				
Year	City of Red Bluff	City of Corning	Tehama County	California
1980	9,700	4,850	39,650	24,039,000
1990	12,363	5,870	49,625	29,758,213
2000	13,147	6,741	56,039	33,873,086
2010	14,076	7,663	63,463	37,253,956
2020	14,288	7,657	65,126	39,648,938
Percent Change in Population by Decade				
Decade	City of Red Bluff	City of Corning	Tehama County	California
1980-1990	27.5%	21.0%	25.2%	23.8%
1990-2000	6.3%	14.8%	12.9%	13.8%
2000-2010	7.1%	13.7%	13.2%	10.0%
2010-2020	1.5%	-0.1%	2.6%	6.4%
<i>Source: US Census Bureau Decennial Census and the American Community Survey Five Year Estimates 2015-2019</i>				

dependent population, as well as the relative concentration of this population compared to the greater area, within each Census Tract and Block Group. The communities where these populations live is also discussed.

Youth Population

The youth population is considered potentially transit dependent. School age children ages 10 to 17 are often independent enough to ride public transit yet are generally too young to drive, or more likely to not have access to a vehicle. If a child’s parent or guardian relies on public transit, it is likely that the child will ride along as well. A significant portion of Tehama County residents are youths, although the relative amount varies between census tracts.

In Tehama County, youths make up 11.6 percent of the population, and in a handful of the county’s census tracts youths consist of more than 20 percent of the population, including in Census Tract 11, Block 1, where 32 percent of the population are aged 10 to 17 (this block group is in northwest Corning). Census Tract 4, Block 3 (area to the north and west of Red Bluff) has the greatest number of youths, with 584 persons, followed by Census Tract 11, Block 1 (northwest Corning) with 464 youths. Census Tract 11, Blocks 3 and 5 (south and north Corning, respectively), and Census Tract 7, Block 3 (south Red Bluff), all have a relatively small number of youths, each with less than 20 persons in this age group. This information is presented in Table 2 and Figure 2.

Table 2: Tehama County Demographic Characteristics

Census Area		Total Population ¹	Youth (Ages 10-17) ^{1,2}		Seniors (Ages 65+) ^{1,2}		Population with Disability ^{1,3}		Persons in Poverty ^{1,4}		Households ^{1,5}	Zero Vehicle Households ^{1,5}	
Tract	Block Group		#	%	#	%	#	%	#	%		#	%
1	1	1,097	187	17.0%	197	18.0%	233	21.2%	152	14.2%	451	34	7.5%
	2	2,107	226	10.7%	398	18.9%	447	21.2%	293	14.2%	789	4	0.5%
	3	868	40	4.6%	252	29.0%	184	21.2%	121	14.2%	385	21	5.5%
	4	876	86	9.8%	226	25.8%	186	21.2%	122	14.2%	377	59	15.6%
2	1	1,584	106	6.7%	325	20.5%	353	22.3%	327	20.6%	673	75	11.1%
	2	2,506	139	5.5%	445	17.8%	559	22.3%	517	20.6%	967	97	10.0%
	3	3,602	321	8.9%	750	20.8%	803	22.3%	744	20.6%	1,324	17	1.3%
3	1	2,060	173	8.4%	515	25.0%	391	19.0%	406	20.0%	855	40	4.7%
	2	2,373	253	10.7%	495	20.9%	450	19.0%	468	20.0%	883	47	5.3%
4	1	1,774	64	3.6%	808	45.5%	352	19.8%	207	11.8%	720	17	2.4%
	2	2,093	300	14.3%	409	19.5%	415	19.8%	245	11.8%	715	42	5.9%
	3	2,353	584	24.8%	459	19.5%	467	19.8%	275	11.8%	871	0	0.0%
5	1	1,917	314	16.4%	233	12.2%	336	17.5%	439	24.1%	790	0	0.0%
	2	848	141	16.6%	149	17.6%	149	17.5%	194	24.1%	328	0	0.0%
	3	609	32	5.3%	133	21.8%	107	17.5%	139	24.1%	241	21	8.7%
	4	859	72	8.4%	177	20.6%	150	17.5%	197	24.1%	428	159	37.1%
	5	897	192	21.4%	134	14.9%	157	17.5%	205	24.1%	340	32	9.4%
6	1	2,519	286	11.4%	382	15.2%	557	22.1%	783	31.4%	826	77	9.3%
	2	1,889	158	8.4%	400	21.2%	418	22.1%	587	31.4%	887	87	9.8%
	3	1,237	115	9.3%	327	26.4%	274	22.1%	385	31.4%	485	19	3.9%
7	1	2,180	285	13.1%	452	20.7%	461	21.1%	708	26.7%	666	67	10.1%
	2	1,952	394	20.2%	202	10.3%	413	21.1%	634	26.7%	757	53	7.0%
	3	522	17	3.3%	107	20.5%	110	21.1%	169	26.7%	345	58	16.8%
	4	1,528	226	14.8%	244	16.0%	323	21.1%	496	26.7%	618	54	8.7%
	5	1,542	80	5.2%	241	15.6%	242	15.7%	236	20.7%	496	75	15.1%
8	1	1,039	187	18.0%	206	19.8%	163	15.7%	159	20.7%	310	26	8.4%
	2	579	22	3.8%	146	25.2%	91	15.7%	88	20.7%	215	0	0.0%
	3	1,140	235	20.6%	144	12.6%	179	15.7%	174	20.7%	399	6	1.5%
	4	1,557	225	14.5%	263	16.9%	245	15.7%	238	20.7%	528	36	6.8%
9	1	925	85	9.2%	216	23.4%	181	19.6%	188	20.3%	372	6	1.6%
	2	1,083	62	5.7%	333	30.7%	212	19.6%	220	20.3%	490	71	14.5%
	3	1,367	134	9.8%	256	18.7%	268	19.6%	278	20.3%	459	9	2.0%
10	1	613	97	15.8%	136	22.2%	115	18.8%	146	23.9%	216	6	2.8%
	2	2,408	214	8.9%	605	25.1%	453	18.8%	574	23.9%	992	0	0.0%
	3	1,417	224	15.8%	323	22.8%	267	18.8%	338	23.9%	449	49	10.9%
	4	1,221	123	10.1%	108	8.8%	230	18.8%	291	23.9%	439	0	0.0%
	5	949	66	7.0%	186	19.6%	179	18.8%	226	23.9%	318	45	14.2%
11	1	1,445	464	32.1%	124	8.6%	164	11.3%	362	25.1%	365	24	6.6%
	2	1,549	157	10.1%	108	7.0%	176	11.3%	388	25.1%	391	148	37.9%
	3	1,265	14	1.1%	276	21.8%	143	11.3%	317	25.1%	565	37	6.5%
	4	1,139	73	6.4%	116	10.2%	129	11.3%	286	25.1%	588	50	8.5%
	5	439	0	0.0%	78	17.8%	50	11.3%	110	25.1%	253	0	0.0%
	6	1,985	257	12.9%	223	11.2%	225	11.3%	498	25.1%	623	65	10.4%
Total		63,912	7,430	11.6%	12,307	19.3%	12,007	18.8%	13,930	22.1%	24,189	1,733	7.2%

Note 1: All data in this table is from the US Census American Community Survey (ACS) Five-Year 2015-2019 dataset.

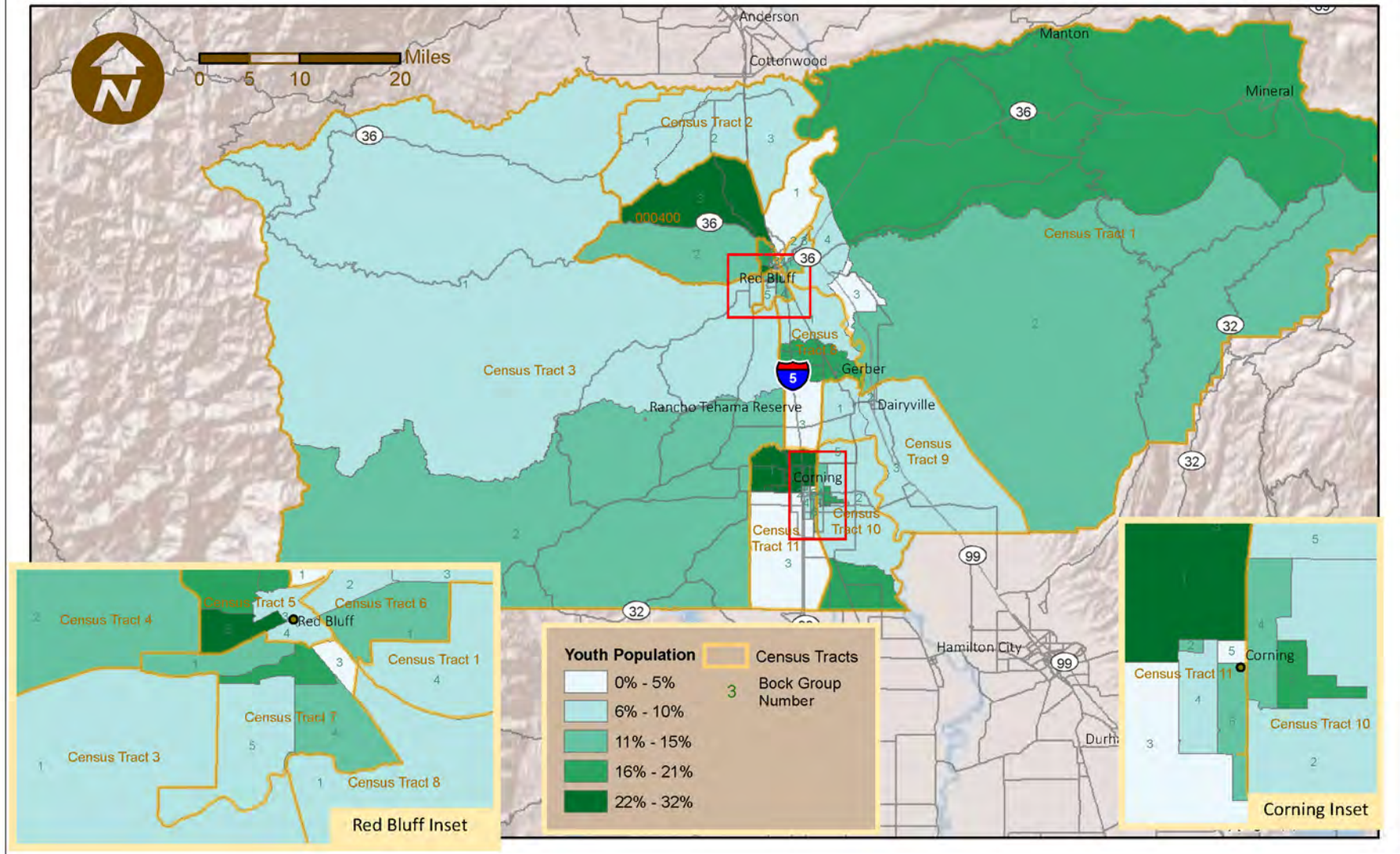
Note 2: Table B01001, Population Sex by Age

Note 3: Table S1810, Non-institutionalized population with a disability

Note 4: Table S17021, Poverty Status in the Past 12 Months

Note 5: Table B25044, Tenure by Vehicle Available

Figure 2
Youth Population (Ages 10-17)



Senior Population

Within the context of this study, the senior population includes those residents aged 65 years or older. Many seniors stop using personal vehicles as frequently compared to younger populations and instead rely more on public transit, making this age group a high transit generating population. Approximately 1 out of every 5 individuals living in Tehama County are 65 years or older, or 19 percent (12,307 persons) of the study area's population. Areas with the highest overall population of those over age 65 include Census Tract 4, Block 1 (808 residents) and Census Tract 2, Block 3 (750 residents), which include the communities of Bend and Lake California, respectively.

The areas of Tehama County with the greatest proportion of seniors are Census Tract 4, Block 1 (Bend) with 46 percent of the population identifying as seniors, as well as Census Tract 9, Block 2 (Los Molinos) with 31 percent. This is followed by Census Tract 1, Block 3, at 29 percent (an area to the east of Red Bluff). The area around Corning (Census Tract 11) has only 13 percent of the population who are senior adults, while south Red Bluff (Census Tract 7) has the second lowest concentration of seniors at 17 percent. The distribution of seniors across Tehama County is shown in Table 2 and Figure 3.

Disabled Persons

About 19 percent of Tehama County's overall population identified themselves as having a disability according to the 2019 ACS. Census Tract 2, which includes the area just south of Cottonwood (Shasta County), has the highest concentration of disabled residents with 22 percent, or 1,715 persons. Census Tract 6, directly east of Red Bluff, has the second highest concentration with 22 percent of its population, or 1,249 persons living with a disability. This data is presented in Table 2 and Figure 4.

Low-Income Population

Due to the expenses associated with purchasing, maintaining, and using a vehicle, for many individuals transit services are a cheaper and more viable alternative for mobility. The number of persons living below the poverty level can indicate a potential transit need. According to the 2019 ACS, an estimated 13,930 people residing in the study area are low-income, representing 22 percent of the total population. Areas within the county with the highest population of low-income persons included Census Tract 7, south Red Bluff, (2,243 persons) Census Tract 10, Corning and surrounding areas to the east, (1,576 persons), and Census Tract 11, Corning and surrounding areas to the west (1,961 persons).

As shown in Table 2 and Figure 5, the greatest concentration of low-income persons occurs within the eastern side of Red Bluff (Census Tract 6) with 1,755 persons (31 percent) estimated to be living below the poverty line. This is followed by the southern portion of Red Bluff (Census Tract 7) with 26 percent (2,243 persons) and Corning (Census Tract 11) with 25 percent (1,961 persons). The community with the lowest concentration of low-income persons is Census Tract 4 (communities north of Red Bluff) with 12 percent, or 727 persons.

Figure 3
Population of Older Adults (65+)

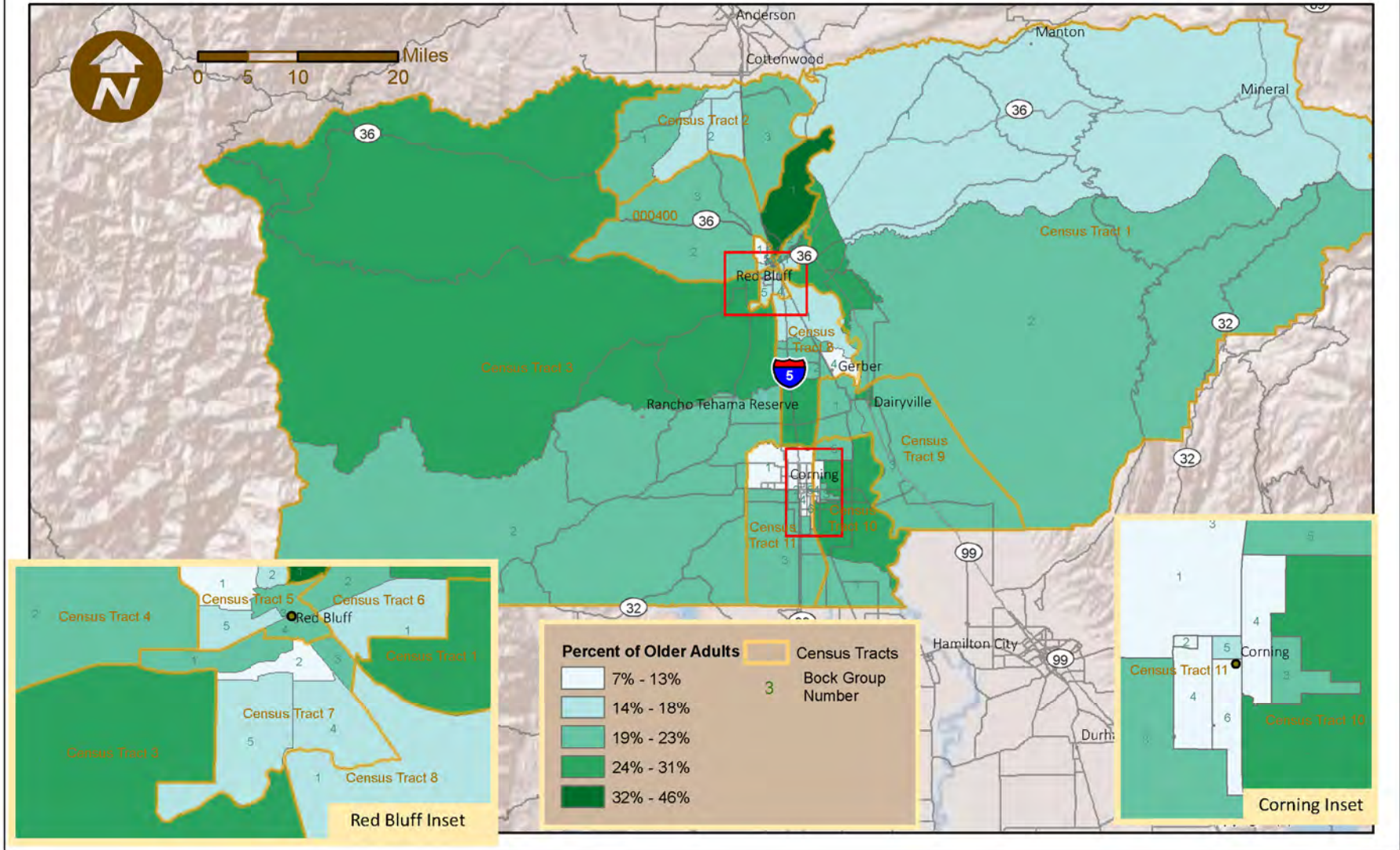


Figure 4
Population with a Disability

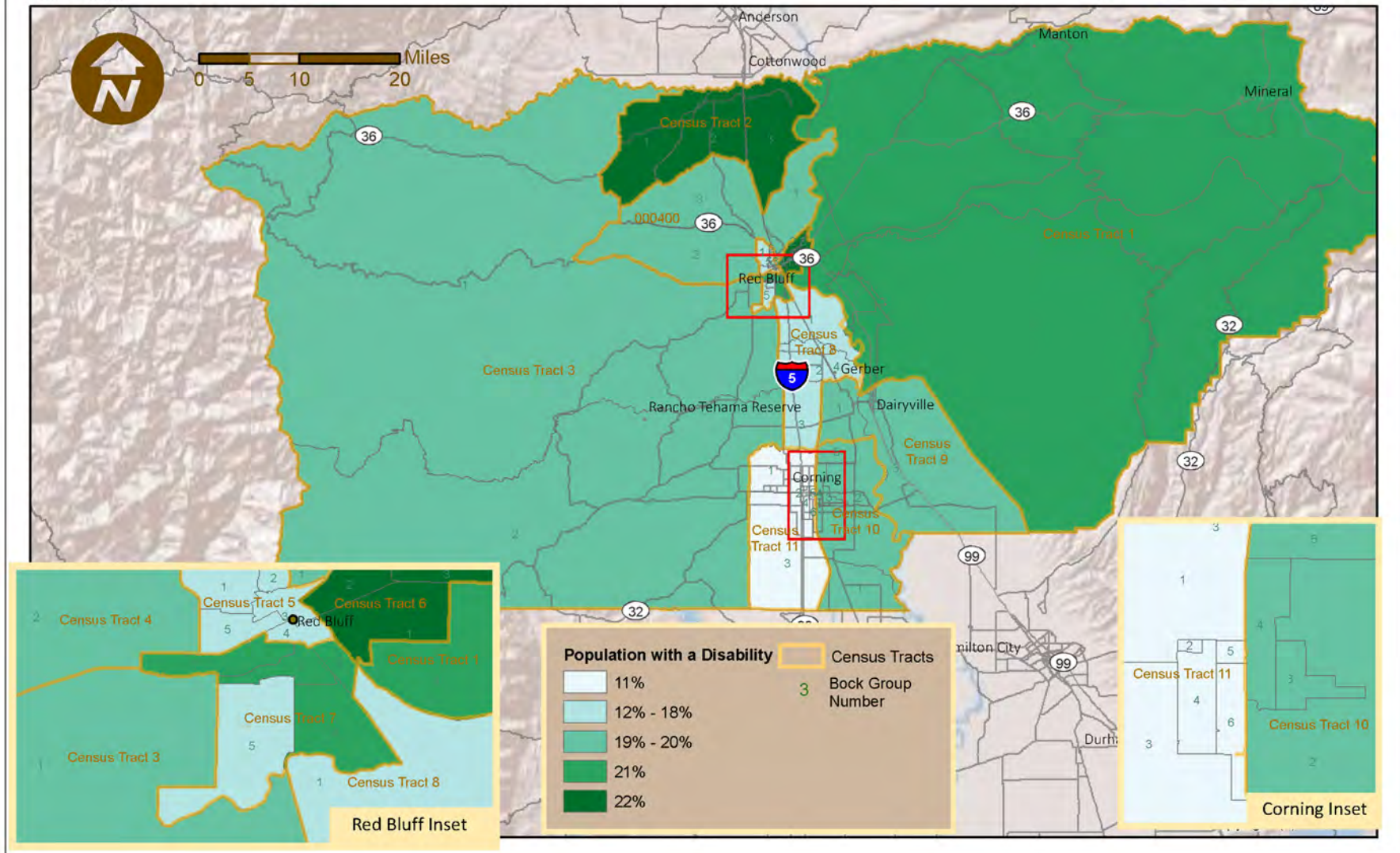
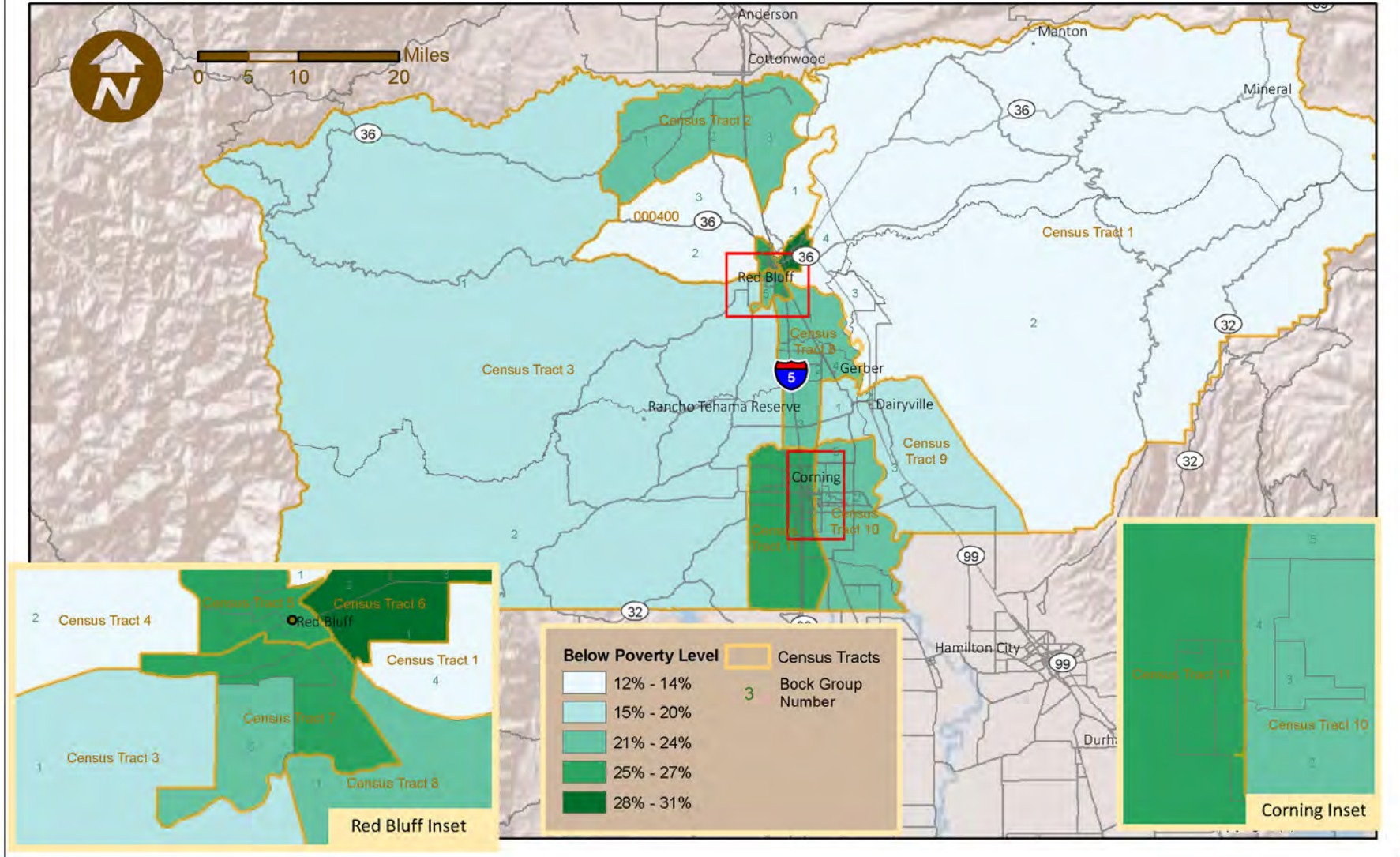




Figure 5

Population Living Below the Poverty Level



Zero Vehicle Households

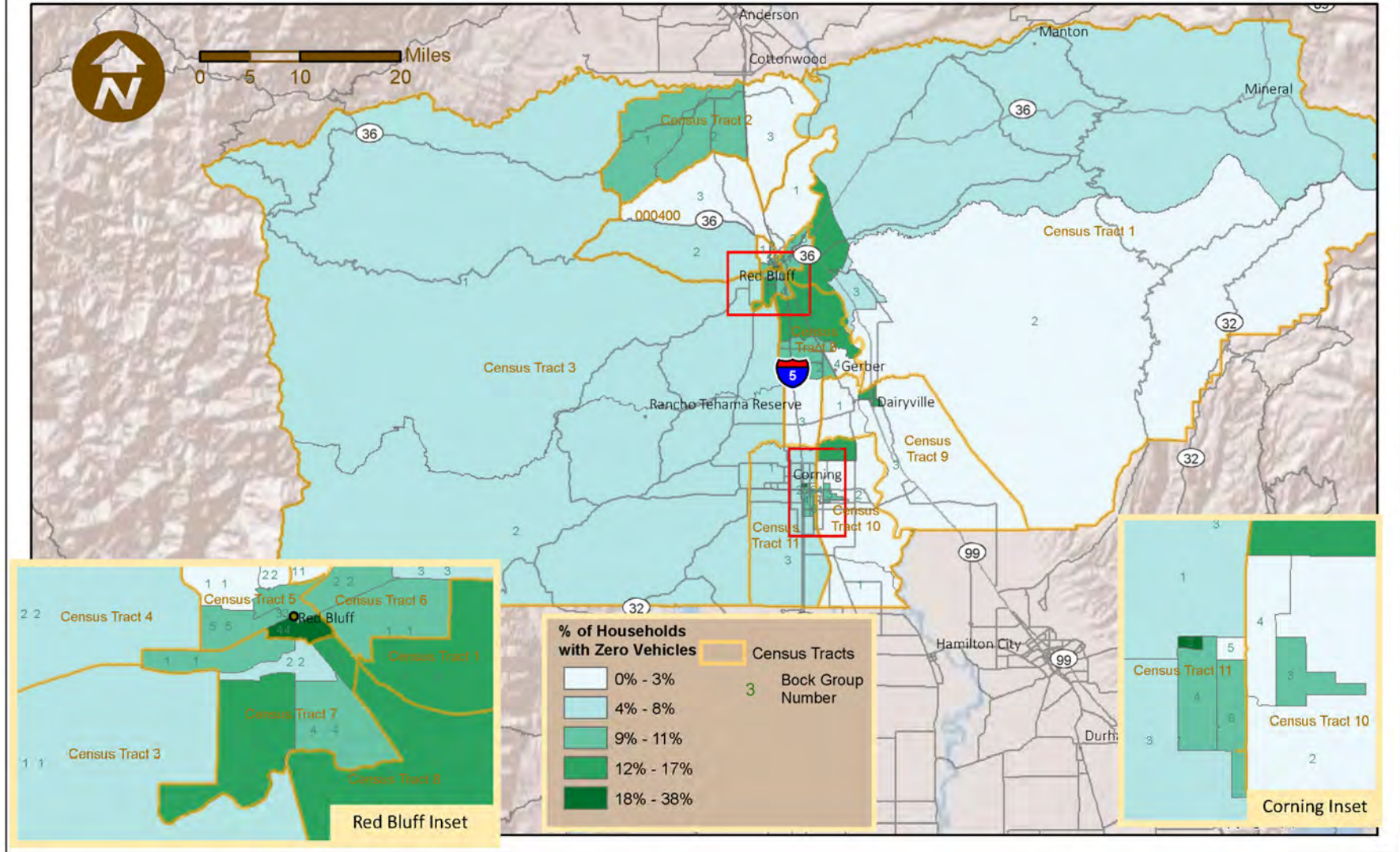
An important demographic group to consider when planning for public transit are households without a vehicle available for use, also referred to as zero-vehicle households. In Tehama County, there are about 1,733 zero-vehicle households (representing 7 percent of the county’s households). The greatest concentration of households without a vehicle available are in Census Tract 11, Block Group 2 (in Corning) with 38 percent and Census Tract 5, Block Group 4 (in Red Bluff) with 37percent. This data is presented in Table 2 and Figure 6. Households with just one vehicle available may also have a higher potential need for transit services, depending on the overall household size.

Population Projections

To effectively plan the future of a transit system, it is important to analyze population trends to gain insight into the potential future needs a transit system will have to address. For instance, as the population ages, there may be a greater need for demand response or ADA paratransit services. Table 3 presents the population projections by age for Tehama County through 2040, as estimated by the California Department of Finance:

Table 3: Tehama County Population Forecasts by Age Group										
Age Range	2020		2025		2030		2035		2040	
	#	%	#	%	#	%	#	%	#	%
0-5	4,757	7.3%	4,704	7.3%	4,980	7.6%	5,174	7.8%	5,148	7.7%
6-18	11,028	16.9%	10,426	16.1%	10,286	15.7%	10,461	15.7%	11,146	16.7%
19-25	6,204	9.5%	5,894	9.1%	5,788	8.8%	5,560	8.4%	5,437	8.1%
26-64	29,785	45.6%	29,071	45.0%	29,092	44.4%	30,151	45.3%	30,789	46.0%
65-74	7,391	11.3%	7,452	11.5%	7,678	11.7%	6,673	10.0%	5,575	8.3%
75+	6,101	9.3%	7,019	10.9%	7,746	11.8%	8,483	12.8%	8,827	13.2%
Total	65,266		64,566		65,570		66,502		66,922	
Change Over Prior Period			-1.1%		1.6%		1.4%		0.6%	
Percent Change From 2020										
0-5			-1%		5%		9%		8%	
6-18			-5%		-7%		-5%		1%	
19-25			-5%		-7%		-10%		-12%	
26-64			-2%		-2%		1%		3%	
65-74			1%		4%		-10%		-25%	
75+			15%		27%		39%		45%	
Total			-1%		0%		2%		3%	
<i>Source: California Department of Finance (2019 base)</i>										

Figure 6
Zero Vehicle Households



- Total population is estimated to increase only slightly (0.5 percent) between 2020 and 2030. The overall population is expected to increase at a greater rate between 2030 and 2040 (2.1 percent).
- The youth population (ages 6 to 18) is estimated to drop by almost 7 percent between 2020 and 2030 and will represent a smaller proportion of the overall population than it currently does (dropping from 16.9 percent to 15.7 percent). Between 2030 and 2040, this population will increase somewhat, resulting in a 2040 population 1 percent higher than in 2020.
- The “young senior” (65-74) population will increase by 4 percent between 2020 and 2030, but then will drop substantially (as the Baby Boom generation ages out of this age group) to result in a 2040 population that is 25 percent lower than in 2020.
- Seniors ages 75 and above are forecast to grow substantially over the next 20 years, increasing by 15 percent by 2025, by 27 percent by 2030, and by 45 percent by 2040. This increase of 2,726 elderly seniors by 2040 will significantly increase the need for specialized transportation (such as for medical trips) over time.

EMPLOYMENT AND ECONOMY

The California Department of Employment Development reports that Tehama County’s unemployment rate was 5.1 percent in November of 2021, just under the statewide average of 5.4 percent. The county’s largest employers are shown in Table 4. While North State Grocery, Inc. in Cottonwood is listed as the largest employer, the markets are distributed throughout the county. The work sites with the most employees include the Walmart distribution center in Red Bluff (1,000 to 4,999 employees), Rolling Hills Casino in Corning (500-999 employees), and Sierra Pacific Industries (with 500-599 employees in Corning, 250-499 in Red Bluff in lumber, and 250-499 at the Sierra Pacific Industries window manufacturing plant in Red Bluff).

COMMUTE PATTERNS AND TRAVEL INFORMATION

Commute Patterns

The US Census maintains the “Longitudinal Employer Household Dataset” which provides detailed data on the location of employment for various areas of residence as well as data on the location of residences of a specific area’s workers. Table 5 presents commute pattern data for 2019 at the county level, as well as for Red Bluff and Corning. The left portion of the table presents information about where residents of Tehama County work, while the right portion shows where workers of Tehama County live. It should be noted that this data set does not differentiate telecommuters from those who work in-person. For example, it is reasonable to assume the 211 Tehama County residents working in San Francisco are likely working remotely most of the time, if not exclusively.

Where Tehama County Residents Work

Approximately 42 percent of working Tehama County residents, or 10,298 workers, also work within Tehama County. The most common area for residents to commute to outside of Tehama County is Shasta County to the north, where 13 percent of employed residents (3,138 residents) work. Red Bluff provides the most jobs for Tehama County residents, with roughly 18 percent of employed residents working there. Approximately 11 percent of county residents work in Redding, 7 percent in Chico, and 5 percent in Corning. Given the more rural and dispersed nature of Tehama County further from the I-5 corridor, it follows

Table 4: Tehama County Largest Employers

Employer Name	Location	Industry	Number of Employees
North State Grocery Inc	Cottonwood	Grocers-Retail	1,000-4,999
Walmart Distribution Ctr	Red Bluff	Distribution Centers (whls)	1,000-4,999
I-5 RV Park At Rolling Hls Csn	Corning	Casinos	500-999
Sierra Pacific Industries	Corning	Lumber-Manufacturers	500-999
Bell-Carter Olive Co	Corning	Olives (whls)	250-499
Sierra Pacific Industries	Red Bluff	Lumber-Manufacturers	250-499
Sierra Pacific Windows	Red Bluff	Windows	250-499
St Elizabeth Community Hosp	Red Bluff	Hospitals	250-499
Tehama County Coroner	Red Bluff	Gov. Offices - County	250-499
Tehama County Dept of Education	Red Bluff	County Gov. - Education Programs	250-499
CAL Fire	Red Bluff	Fire Departments	100-249
Home Depot	Red Bluff	Home Centers	100-249
Pactiv	Red Bluff	Packaging Materials-Manufacturers	100-249
Petro Stopping Ctr	Corning	Truck Stops & Plazas	100-249
Precision Towing & Recovery	Red Bluff	Wrecker Service	100-249
Rbhc	Red Bluff	Convalescent Homes	100-249
Red Bluff High School	Red Bluff	Schools	100-249
Red Bluff Union High Sch Dist	Red Bluff	School Districts	100-249
Tehama County Health Svc	Red Bluff	Gov. Offices - County	100-249
Tehama County Health Svc Agcy	Red Bluff	Gov. Offices - County	100-249
Tehama County Health Svc Agcy	Red Bluff	Gov. Offices - County	100-249
Tehama County Mental Health	Red Bluff	Gov. Offices - County	100-249
Tehama County Sheriff	Red Bluff	Gov. Offices - County	100-249
Tehama County Sherriff/Records	Red Bluff	Gov. Offices - County	100-249
Tehama County Social Svc Dept	Red Bluff	Gov. Offices - County	100-249

Source: California Employment Development Department

expectations that the remaining cities/towns in Tehama County do not employ many residents; Los Molinos was the only other county location with more than 1 percent of jobs for Tehama County residents.

Where Tehama County Workers Live

Approximately a third of the Tehama County work force (5,074 workers) live in the Tehama County communities of Red Bluff, Corning, Los Molinos, Lake California, Gerber and Rancho Tehama, and 13 percent live outside of the county, while 58 percent live at other non-specified locations within the county. This indicates there is likely a high level of commuting and/or remote work, as the smaller communities in Tehama County not already listed do not provide high numbers of jobs.

Table 5: Tehama County Commute Patterns

Where Residents are Employed			Where the Workforce Lives		
Tehama County	# Residents	% Total	Tehama County	# Employees	% Total
Red Bluff	4,316	17.7%	Red Bluff	2,967	16.7%
Redding	2,677	11.0%	Corning	1,296	7.3%
Chico	1,704	7.0%	Redding	1,126	6.4%
Corning	1,222	5.0%	Chico	678	3.8%
Sacramento	538	2.2%	Orland	280	1.6%
Anderson	461	1.9%	Los Molinos	268	1.5%
Los Molinos (CDP)	268	1.1%	Anderson	254	1.4%
Orland	221	0.9%	Lake California (CDP)	204	1.2%
Roseville	211	0.9%	Gerber (CDP)	180	1.0%
San Francisco	211	0.9%	Rancho Tehama Reserve (CDP)	159	0.9%
All Other Locations	12,566	51.5%	All Other Locations	10,305	58.2%
<i>Total Number of Residents</i>	<i>24,395</i>		<i>Total Number of Employees</i>	<i>17,717</i>	
Red Bluff	# Residents	% Total	Red Bluff	# Employees	% Total
Red Bluff	1,722	31.7%	Red Bluff	1,722	29.8%
Redding	586	10.8%	Redding	579	10.0%
Corning	182	3.4%	Chico	261	4.5%
Anderson	118	2.2%	Sacramento	127	2.2%
Chico	112	2.1%	Corning	121	2.1%
Lake California (CDP)	77	1.4%	Anderson	111	1.9%
Rancho Tehama Reserve (CDP)	69	1.3%	Yuba City	53	0.9%
Los Molinos	66	1.2%	Los Molinos	51	0.9%
Bend, (CDP)	64	1.2%	Roseville	51	0.9%
Gerber	51	0.9%	Gerber (CDP)	44	0.8%
All Other Locations	2,380	43.9%	All Other Locations	2,650	45.9%
<i>Total Number of Residents</i>	<i>5,427</i>		<i>Total Number of Employees</i>	<i>5,770</i>	
Corning	# Residents	% Total	Corning	# Employees	% Total
Corning	471	8.2%	Corning	471	8.2%
Chico	361	6.3%	Chico	160	2.8%
Red Bluff	182	3.2%	Red Bluff	121	2.1%
Redding	115	2.0%	Orland	88	1.5%
Orland	80	1.4%	Redding	81	1.4%
Sacramento	52	0.9%	Los Molinos (CDP)	25	0.4%
Richfield (CDP)	50	0.9%	Willows	25	0.4%
Willows	49	0.8%	Anderson	20	0.3%
Anderson	32	0.6%	Richfield (CDP)	17	0.3%
Oroville	25	0.4%	Sacramento	15	0.3%
All Other Locations	1,673	29.0%	All Other Locations	1,203	20.8%
<i>Total Number of Residents</i>	<i>3,090</i>		<i>Total Number of Employees</i>	<i>2,226</i>	

Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics, 2019.

MAJOR ACTIVITY CENTERS

Activity centers for employment, social services, education, and commerce are the drivers of transportation demand. It is helpful to identify the major activity centers to determine if they are accessible by transit, or if they generate an unmet demand. Tehama County's major activity centers are described below and identified in Figure 7. Some key activity centers are listed below.

Transportation Hubs

The TRAX Transit Center in Red Bluff is located at Rio Street and Walnut Street. The facility includes a circular drive for buses, shelters, a public parking lot, street parking, and restrooms (for drivers). Additionally, the transit center is served by Amtrak Thruway buses.

TRAX also has a transit center in Corning at 1081 Solano Street. This facility has a shared commercial space (currently a café) and a parking lot where buses pull through.

Senior Centers and Facilities

The Red Bluff Community Center located at 1500 South Jackson Street hosts senior services including referral services, classes, events, and delivered and congregate meals. The Corning Senior Center is located at 1015 4th Avenue in Corning and provides congregate meals, bingo, tax assistance, and computer classes.

Services for Persons with Disabilities

North Valley Services serves over 270 people in Tehama, Glenn, and Lassen counties. They provide housing, day services, supported and competitive employment, and transportation to the communities where their services reside. Additionally, social activities are provided at the Red Bluff Community Center through the COOL Club.

Government and Social Services

The Tehama County Department of Social Services is located at 310 South Main Street in Red Bluff. The Adult Services Branch administers two distinct programs: Adult Protective Services and In-Home Supportive Services.

The Tehama County Superior Court is located at 1740 Walnut Street, and next door is the Juvenile Justice Center at 1790 Walnut Street. The County Clerk's office is located at 633 Washington Street in Red Bluff.

Education Centers

The Tehama Campus of Shasta College is located at 770 Diamond Avenue in Red Bluff. The campus is currently offering a hybrid of online and in-person classes. The high schools in Tehama County include Red Bluff High School at 1260 Union Street, Salisbury High School at 1050 Kimball Rd in Red Bluff, Centennial High School (Adult Ed) at 250 E Fig Land in Corning, and Corning Union High School at 643 Blackburn Avenue.

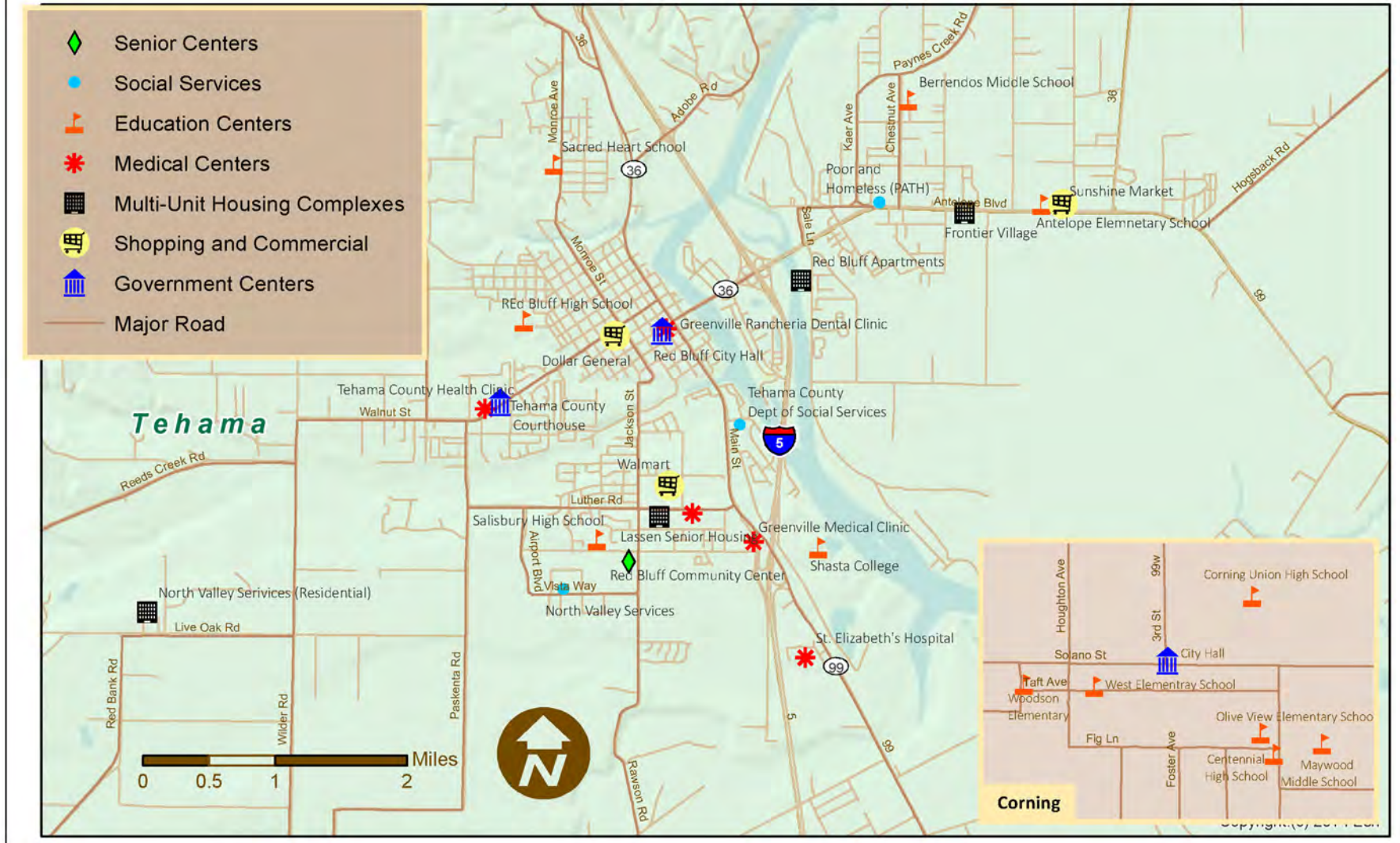
Medical Centers

St. Elizabeth's Hospital located at 2550 Sister Mary Columba Drive in Red Bluff is the major hospital serving Tehama County. Tehama County Health Center at 1850 Walnut Street in Red Bluff is a public clinic. Frontier Village Family Health Center located at 645 Antelope Blvd in Red Bluff also serves the community.

Shopping and Commercial

Downtown Red Bluff has a mix of stores, restaurants, businesses, and services, many of which are walking distance from the TRAX Transit Center. Other major commercial centers include Walmart Supercenter located at 608 Luther Road in Red Bluff.

Figure 7
Activity Centers



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EVALUATION OF TRANSPORTATION SERVICES

TEHAMA AREA RURAL TRANSIT (TRAX)

The Tehama Rural Area eXpress (TRAX) is the public transportation service for Tehama County. Services include local fixed routes in Red Bluff and Corning, regional routes, and complementary paratransit services (ParaTRAX). TRAX began as a demand-responsive service in 1981 and implemented fixed route service in 1986. Although the routes and service schedules have changed over the years, TRAX has continued to help Tehama County residents meet their mobility needs for decades.

Governance and Management

The Tehama County Transportation Commission (TCTC) is the policy making body for TRAX. The TCTC was formed in 1971 to administer and allocate funds provided by the Transportation Development Act (TDA) of 1971. The Tehama County Transit Agency Board (TCTAB) is an advisory board established to serve the County Board of Supervisors. TCTAB members include three representatives from the Tehama County Board of Supervisors, and one representative from each City Council in the County (Red Bluff, Corning, and Tehama).

The TCTC provides staff for the TCTAB who work within the Tehama County Department of Public Works. This includes a Deputy Director, two Transportation Planners, an accountant, and a Transportation Aide. The proportion of time allocated between transit and transportation planning agency functions varies annually depending on workload and staffing levels. The TCTAB staff are responsible for service planning and implementation, including service design, bus and equipment procurement, contract administration, marketing, data analysis, report preparation, community relations, and liaison with state, federal and local governments on matters such as civil rights, vehicle emissions, bus stop locations and street signage. TCTAB staff also prepare all applications for state and federal funding, develop budgets, maintain accounting records, and prepare annual State Controllers Reports.

OVERVIEW OF TRANSIT SERVICES

TRAX and ParaTRAX are operated through a private contractor (currently Paratransit Services) responsible for managing and conducting day-to-day operations and maintenance of the transit system. The contractor also oversees the Medical Transportation Services (METS). The contractor is responsible for maintenance of the headquarters facility, and for dispatching, drivers, fare collection, maintenance of the buses, and operations and ridership data collection. An overview of transit services is provided in Table 6 and discussed below.

Table 6: TRAX Services Hours and Frequency

Routes	Weekday Service			Saturday Service		
	Headway ¹	Start	End	Headway ¹	Start	End
<u>Red Bluff Routes</u>						
Route 1	60 min.	7:00 AM	6:00 PM	60 min.	9:00 AM	4:00 PM
Route 2	60 min.	7:00 AM	6:00 PM	60 min.	9:00 AM	4:00 PM
Route 3A	70 min.	7:10 AM	6:40 PM	70 min.	8:30 AM	3:20 PM
Route 3B	70 min.	6:20 AM	5:25 PM	70 min.	8:40 AM	3:40 PM
<u>Other Routes</u>						
Route 5 - Corning	75 min.	7:05 AM	5:05 PM	--	--	--
Route 6 - Red Bluff - Rolling Hills Casino	--	--	--	4 RT daily	8:30 AM	3:30 PM
Glenn-Tehama Connection	6 RT daily	6:05 AM	6:40 PM	--	--	--
Rancho Tehama Express	2 RT Wed & Fri	8:40 AM	4:40 PM	--	--	--
<u>ParaTRAX</u>						
County-wide	NA	7:00 AM	6:00 PM	NA	9:00 AM	3:00 PM
<u>METS</u>²						
Butte, Glenn, Shasta, Tehama	NA	8:30 AM	3:30 PM	--	--	--
Note 1: Headways in minutes or daily round trips.						
Note 2: METS is a volunteer driver program to and from medical appointments in Butte, Glenn, and Tehama Counties						
Source: Paratransit Services published schedules						

TRAX FIXED ROUTE SERVICES

The core TRAX services include: two local fixed routes within Red Bluff (Routes 1 and 2); bi-directional routes which serve Red Bluff and its outlying communities (Routes 3A and 3B); and a local Corning Route (Route 5). There are also two intercity routes that connect to communities further away (Rancho Tehama Express and Glenn-Tehama Connection). Saturday service is available on select routes. Routes in Red Bluff are shown in Figure 8 and routes in Corning are shown in Figure 9. Detailed route profiles are included in Appendix A. The fixed routes serve designated stops, as well as flag stops (stops wherein passengers wait and flag down the oncoming bus). Flag stops are served at locations deemed safe by the driver.

In August 2020, the TCTAB announced that Coronavirus Aid, Relief, and Economic Security (CARES) Act funding had been approved for the use of fare reimbursement for TRAX and ParaTRAX riders. Therefore, there have been no fares/passes required to use any TRAX or ParaTRAX services since September 1, 2020.

Red Bluff Routes

There are two TRAX routes that solely operate within the City of Red Bluff. Previously, base fares were \$1.00 for a one-way trip on these routes. Route 1 runs weekdays from 7 AM to 5:55 PM, completing eleven runs daily. Route 1 provides transit services to important activity centers in downtown and southern Red Bluff



Figure 8
TRAX Routes - Red Bluff

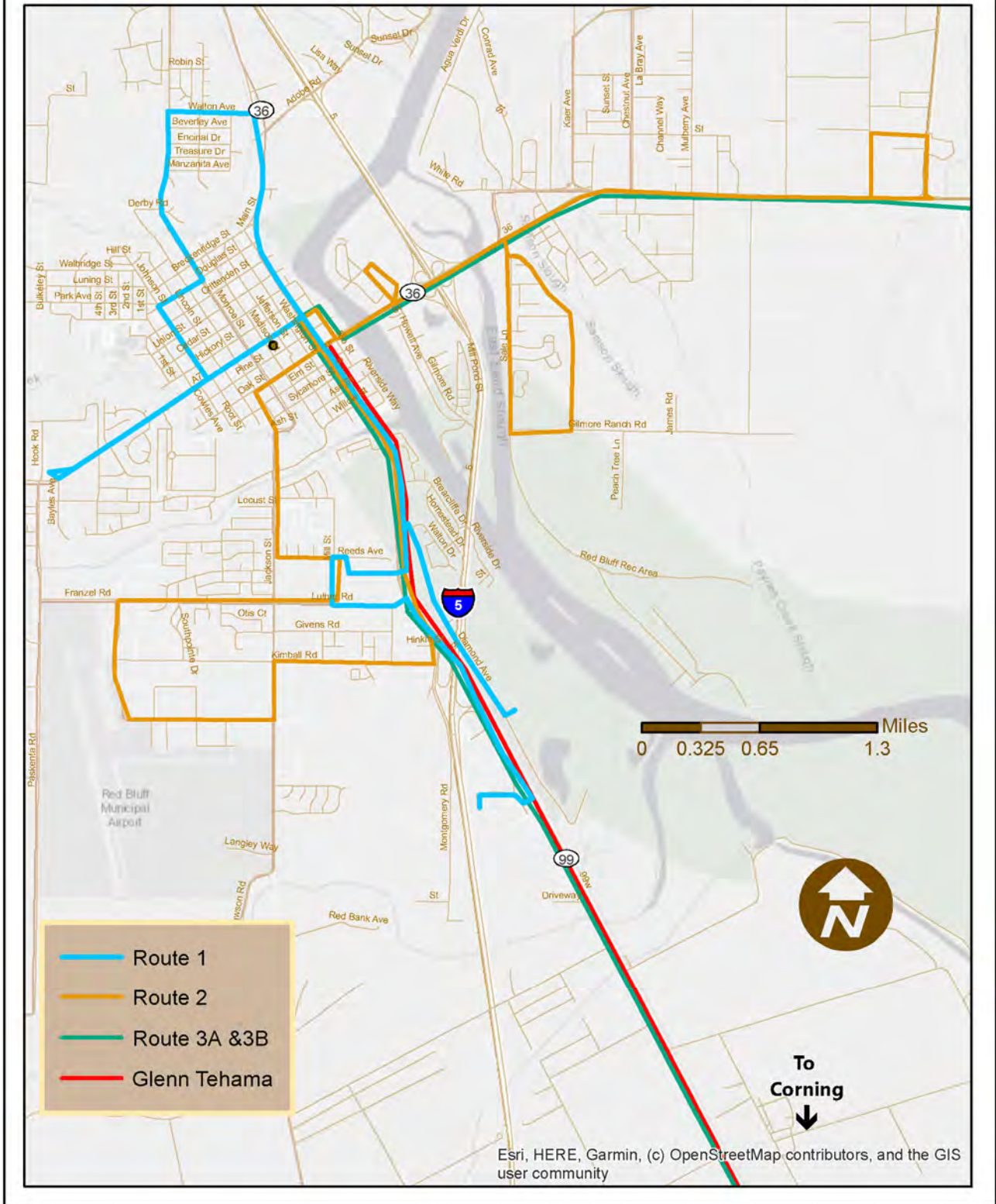
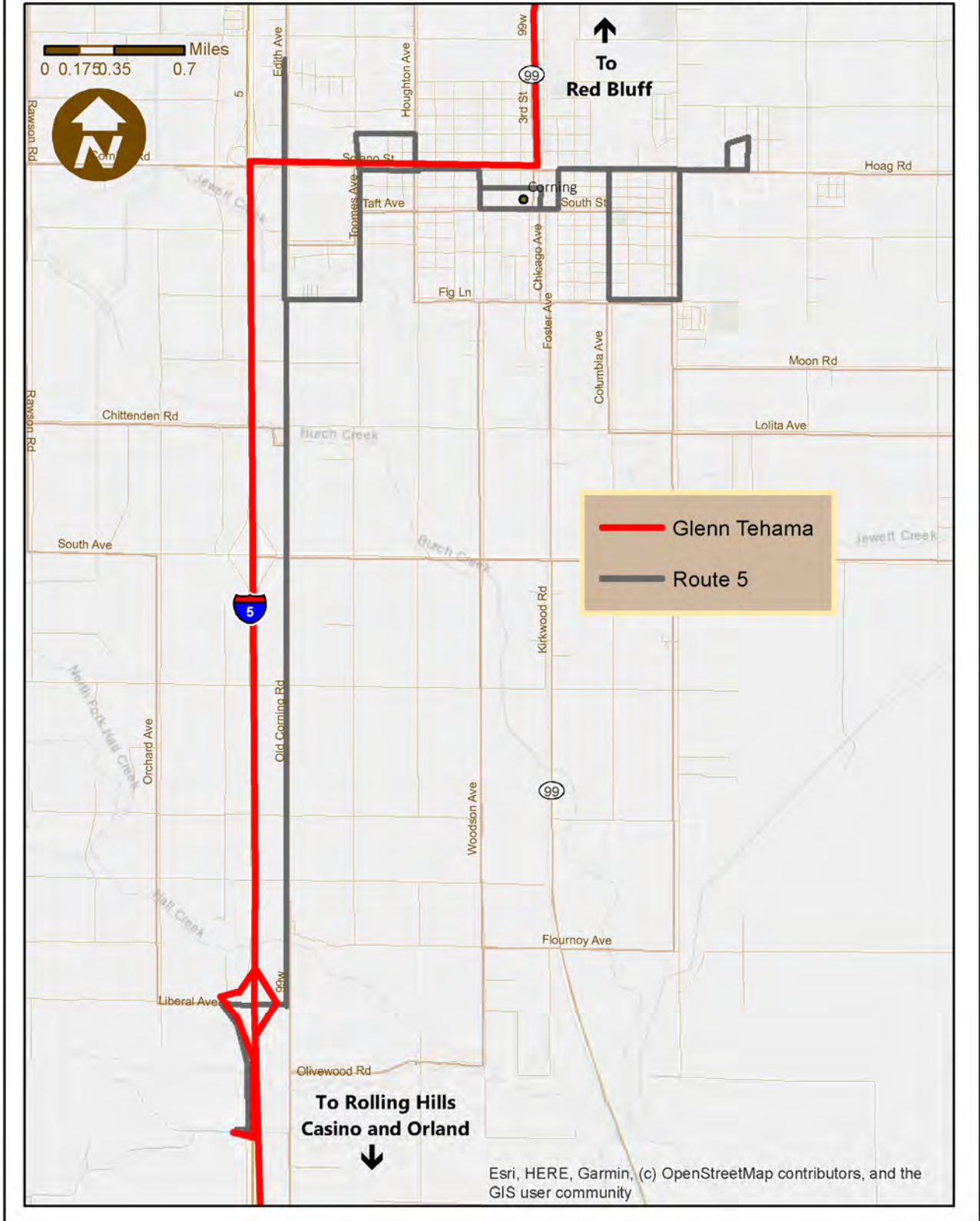


Figure 9
TRAX Routes - Corning



including Shasta College, St. Elizabeth Hospital, and Walmart, among others. On Saturday, there is an abbreviated Route 1 service that begins service at 9 AM and ends at 3:55 PM, eliminating the stop to Shasta College. Route 2 runs weekdays from 7 AM to 6 PM in northern Red Bluff, completing eleven runs daily. Route 2 provides service to the Red Bluff Community Center, City Hall, and the Red Bluff Apartments. The Saturday Route 2 service starts at 9 AM and ends service at 3:59 PM, completing seven runs along the same route as the weekday bus.

Regional Red Bluff Routes

The regional Red Bluff routes provide connectivity between Red Bluff and nearby towns and cities within Tehama County. Routes 3A and 3B offer bi-directional service, with Route 3A traveling clockwise, and Route 3B counterclockwise. Route 3A completes nine runs weekdays from 7:10 AM to 6:40 PM, first passing through Red Bluff before heading south through Dairyville and Los Molinos, then back north again through Gerber and Proberta. Route 3B also completes nine runs each weekday from 6:20 AM to 5:25 PM, first heading towards Proberta after leaving Red Bluff. On Saturday, Route 3A completes six runs between 8:20 AM to 3:20 PM and Route 3B completes six runs between 8:40 AM to 3:40 PM. These routes had both previously cost \$2.50 for a one-way ticket.

Corning Route

Route 5 operates solely in Corning, completing seven runs weekdays between 7 AM to 5 PM. The route loops through Corning and stops at important commercial, social, and residential sites including the Senior Center, Garden Apartments, and City Hall, among others. The bus runs south to Rolling Hills Casino and north to Spring Mountain Apartments, connecting residents to all types of facilities in the Corning area. It had cost \$1 for a one-way ride on Route 5 prior to elimination of fares.

Intercity Routes

The Rancho Tehama Express connects Red Bluff to the community of Rancho Tehama Reserve in the western area of the county, completing two roundtrips on Wednesdays and Fridays between 8:40 AM to 4:40 PM. The Glenn-Tehama Connection runs north-to-south from Red Bluff to Corning, and then further south to the City of Orland in Glenn County (where transit connections to Chico and Willows are available). The Glenn-Tehama Connection runs weekdays from 6:05 AM to 6:40 PM, completing six roundtrips daily. On Saturdays, Route 6 runs from Red Bluff south through Corning and to Rolling Hills Casino, completing four roundtrips daily between 8:30 AM to 3:30 PM. All of these routes had previously cost \$2.50 for a one-way ticket.

TRAX Ridership

Ridership by Year

TRAX ridership has fluctuated greatly throughout recent years, and even within the same year. Figure 10 shows TRAX weekday ridership by year¹. As indicated, ridership dropped by half that of nearly a decade ago,

¹ Saturday ridership was not readily available prior to 2018-19, so for comparison purposes, weekday only is shown.



from 129,021 in FY 12/13 to 61,047 in FY 20/21. Table 7 presents TRAX ridership by month and year (through December of Fiscal Year 2021-2022). While some ridership decline in recent years can be attributed to COVID (as evidenced by the sharp decline in April and May 2020), the largest drop was pre-pandemic. The FY 20/21 percentage of monthly ridership by month (shown in the top right of the table) indicates that ridership in July and August 2020 was below average, while ridership in April through June 2021 was above average, indicating recovery. The bottom half of Table 7 shows the percentage change in ridership by month, clearly showing the ridership decline and beginning of recovery due to the pandemic.

Ridership by Route

Ridership by route for fiscal years 18/19 through the first half of fiscal year 21/22 are shown in Table 8 and Figure 11. As shown, Routes 1 and 2 carry approximately 72 percent of the ridership annually, while routes 3A and 3B carry approximately 21 percent. This table also shows the change in ridership over the most recent three years (FY 2018/19 to FY 2020/21), and projected ridership for FY 2021/22 based on July to December ridership. As shown, Route 2 ridership dropped by 9 percent over these three years, but Route 6 grew by 12 percent and Route 3B grew by 19 percent.

Ridership by Time of Day

Ridership by time of day (weekdays for Routes 1, 2, 3, 5 and GTC) by fiscal year is shown in Table 9 and Figure 12. Peaks during the day reflect the greater availability of services, but the general trend is for highest activity in the middle of the day.

Table 7: TRAX Ridership by Month and Year

Month	Fiscal Year ¹				Ratio of Monthly Ridership to Avg. Monthly Ridership ²
	18/19	19/20	20/21	21/22	
July	5,852	6,369	4,612	5,831	83%
August	7,175	7,233	4,156	6,401	74%
September	5,912	7,018	4,859	6,231	87%
October	7,180	7,757	6,104	6,119	109%
November	6,536	7,576	5,519	6,200	99%
December	5,673	7,578	6,003	5,919	107%
January	6,830	8,254	5,373	5,595	96%
February	5,646	7,472	5,461	--	98%
March	6,260	6,128	6,059	--	108%
April	7,075	3,443	6,619	--	118%
May	7,000	3,621	6,203	--	111%
June	6,129	4,305	6,110	--	109%

Change by Month from Year Prior

Month	19/20	20/21	21/22	Notes
July	9%	-28%	26%	Note 1: Does not include GTC, ParaTRAX or METS ridership. Note 2: Based on FY 2020/21 data.
August	1%	-43%	54%	
September	19%	-31%	28%	
October	8%	-21%	0%	
November	16%	-27%	12%	
December	34%	-21%	-1%	
January	21%	-35%	4%	
February	32%	-27%	--	
March	-2%	-1%	--	
April	-51%	92%	--	
May	-48%	71%	--	
June	-30%	42%	--	

Source: Paratransit Services

Table 8: TRAX Ridership by Route by Year

Route	Fiscal Years				Projected 21/22 ³	% Change: 18/19 to 21/22
	18/19	19/20	20/21	21/22 ²		
Route 1	24,960	24,924	20,279	12,588	25,383	2%
Route 2	32,312	30,977	27,040	14,057	29,439	-9%
Route 3A	8,291	8,733	7,772	4,116	8,899	7%
Route 3B	6,819	7,134	7,401	4,014	8,092	19%
Route 5	3,379	3,660	3,163	1,646	3,318	-2%
RTR	774	738	859	399	804	4%
Route 6	733	588	564	407	820	12%
Total	77,268	76,754	67,078	37,227	75,048	-3%

Note 1: Does not include GTC, ParaTRAX or METS ridership.

Note 2: July 2021 to December 2021 only.

Note 3: Estimated annual, assuming FY 18/19 ratio of total annual to July-December ridership

Source: Paratransit Services

Figure 11: TRAX Ridership by Route by Year

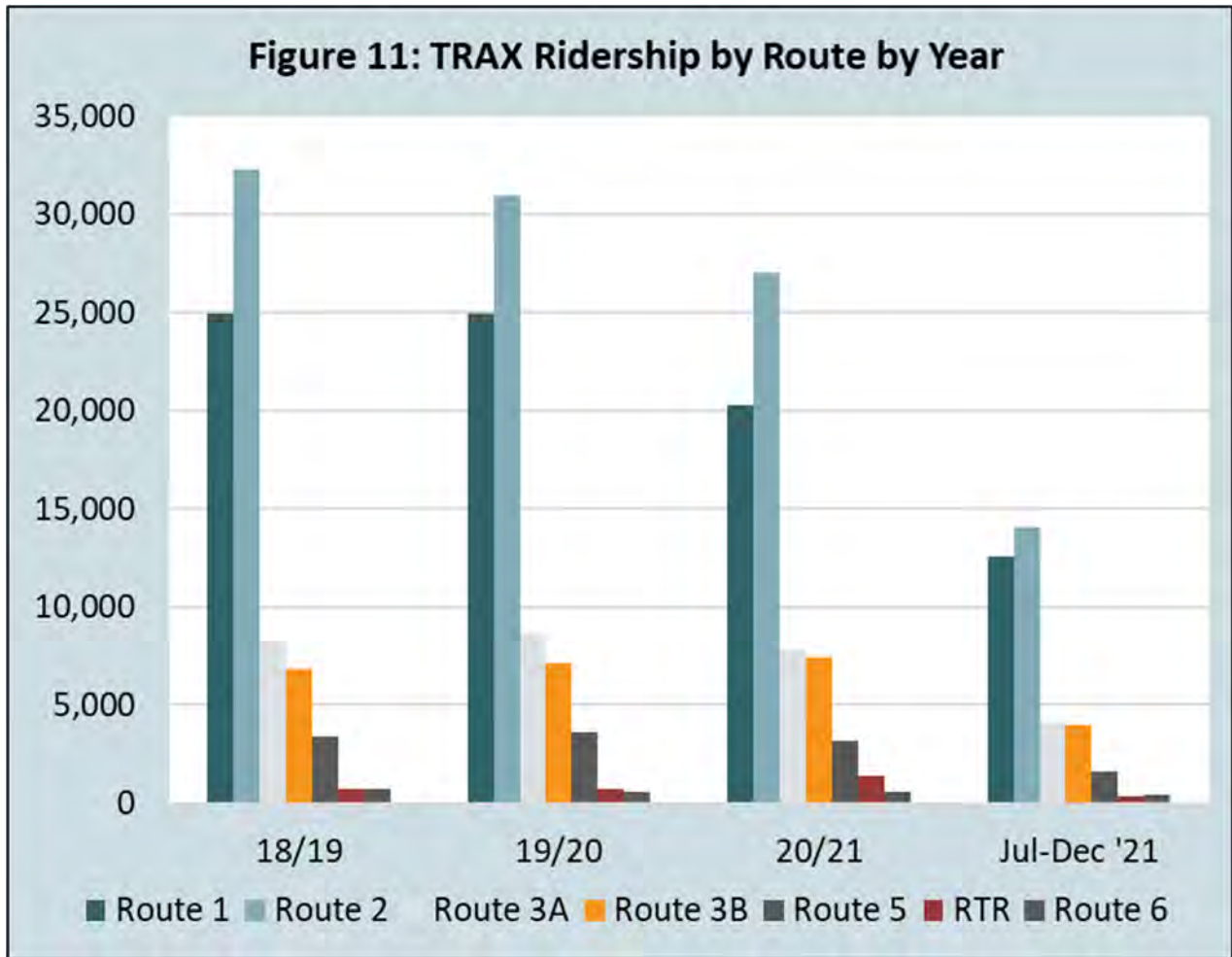


Table 9: TRAX Ridership by Year and Time of Day

Routes 1, 2, 3A, 3B, 5 and GTC

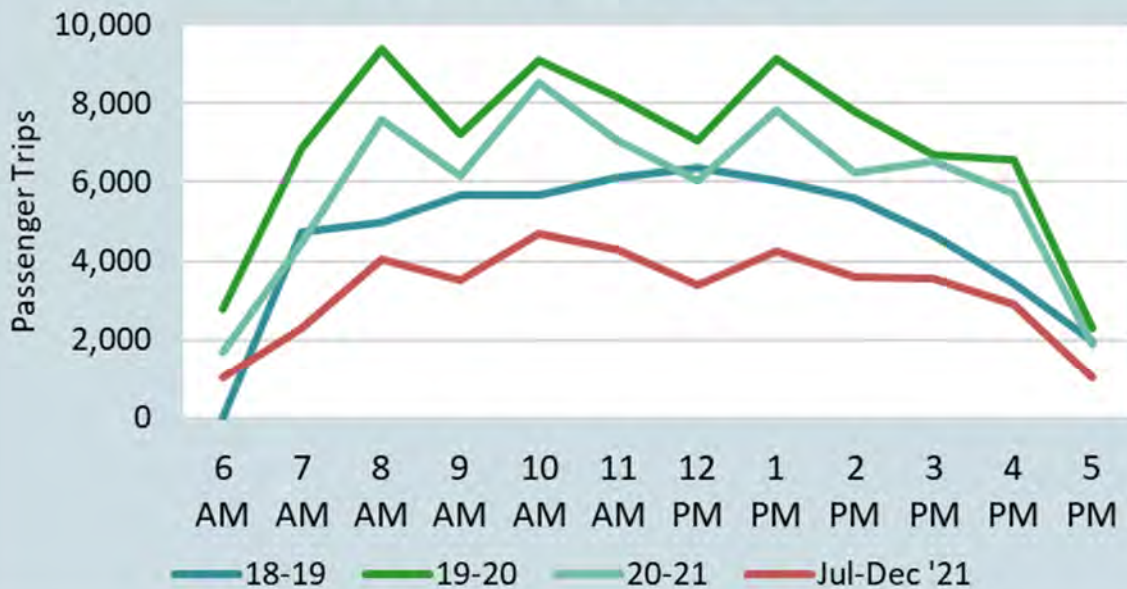
Hour Beginning	Fiscal Years			
	18/19	19/20	20/21	21/22 ¹
6 AM	0	2,766	1,700	1,020
7 AM	4,734	6,841	4,444	2,286
8 AM	4,969	9,384	7,563	4,023
9 AM	5,683	7,214	6,149	3,498
10 AM	5,666	9,071	8,505	4,698
11 AM	6,100	8,147	7,042	4,279
12 PM	6,362	7,036	6,045	3,377
1 PM	6,017	9,148	7,832	4,243
2 PM	5,585	7,792	6,254	3,614
3 PM	4,653	6,691	6,541	3,564
4 PM	3,452	6,559	5,695	2,914
5 PM	1,974	2,280	1,903	1,029
Annual	55,195	82,929	69,673	38,545

Note 1: July 2021 to December 2021 only.

Source: Paratransit Services

Figure 12: TRAX Ridership by Hour by Year

Routes 1, 2, 3A, 3B, 5 & GTC Weekdays



Ridership by Stop

Boarding and alighting counts were conducted concurrent with onboard surveys in November of 2021. Surveyors counted each passenger as they boarded and as they alighted. The data represents a very small sample but is useful in identifying stops with particularly high or low use. Details of this analysis are presented in Appendix B, and highlights are included here.

Count data for top boarding and alighting locations for Routes 1, 2, 3A and 3B are shown in Table 10. As would be expected, the TRAX Bus & Ride at Rio and Walnut has the greatest amount of boarding and alighting activity for each route. Besides the Bus & Ride, other stops with significant use are the Walmart/Ross stop, Tehama County Court/Tehama County Public Health, Egg Roll King, Cabernet Apartments and Dollar General. Routes 3A and 3B generate much less ridership, but popular stops on those routes are the Gerber Market, Tehama County Social Services, and 99/E Grant. Passengers utilized flag stops on every route except for Route 5 and the Rancho Tehama Express.

Table 10: Top Boardings and Alightings by Stop								
<i>Weekday Counts</i>								
Bus Stops	On	Off	% of Total Activity	Bus Stops	On	Off	% of Total Activity	
ROUTE 1 (13 Weekday Runs)				ROUTE 3A (8 Weekday Runs)				
Rio & Walnut - Bus & Ride	31	17	29%	Rio & Walnut - Bus & Ride	6	4	18%	
Baskin Robbins/Brearcliff	4	4	5%	Rio & Antelope	4	0	7%	
CVS/Lariat Bowl	3	5	5%	Egg Roll King	1	2	5%	
Walmart	5	4	5%	Bud's Jolly Cone	2	1	5%	
St. Elizabeth's Hospital	3	4	4%	Frontier Village	0	3	5%	
Library	1	6	4%	Jills Market	1	2	5%	
Riverside Plaza	5	2	4%	99E & Grant	1	1	4%	
Tehama County Health & Court	7	7	8%	Gerber Market	6	0	11%	
Johnson & Douglas	6	5	7%	Proberta/Harvey's Market	2	2	7%	
Monroe & Breckenridge	0	6	4%	St. Elisabeth's Hospital	3	0	5%	
ROUTE 2 (11 Weekday Runs)				ROUTE 3B (6 Weekday Runs)				
Rio & Walnut - Bus & Ride	19	26	19%	Rio & Walnut - Bus & Ride	0	5	17%	
Egg Roll King	8	4	5%	CVS/Lariat Bowl	0	2	7%	
Red Bluff Apartments	8	3	5%	Walgreens	2	0	7%	
Cabernet Apartments	6	6	5%	St. Elizabeth's Hospital	3	0	10%	
Dollar General	6	6	5%	Proberta/Harvey's Market	0	3	10%	
Shell Gas Station	6	4	4%	99E & Grant	2	2	13%	
Chevron	2	7	4%	Dairyville Community Center	2	0	7%	
Walgreens	5	1	2%	Dollar General	2	0	7%	
Community Center	8	1	4%	Shell Gas Station	1	1	7%	
Walmart/Ross	19	13	13%					
Circle K	7	2	4%					

Source: LSC. Based on limited runs in November, 2021

PARATRAX

ParaTRAX is the complementary paratransit service offered for American Disability Act (ADA) certified disabled persons and seniors ages 65 and older. ParaTRAX is available from 7 AM to 6 PM on weekdays, and 9 AM to 3 PM on Saturdays, as indicated in Table 6. Prior to the elimination of fares, one-way rides cost \$2.50 to \$3.00. Trips must be booked in advance, but same-day booking is also available for a minimal charge. The ParaTRAX Service area is depicted in Figure 13.

ParaTRAX Ridership

As indicated in Table 11, ParaTRAX ridership experienced a 45 percent decrease in ridership between FY 18/19 and FY 20/21, showing the pronounced impact of COVID-19 on ridership. ParaTRAX ridership was over 1,200 people every month until March 2020, when it dropped to 343 passenger trips. Much of the decrease was due to cancelled appointments and the closing of the senior center meal site and activities.

More recently, ParaTRAX ridership has steadily been recovering, returning to over 1,000 passenger trips in summer months of 2021. As shown in the right-hand portion of Table 11, the fiscal year 20/21 monthly ridership was proportionally highest in June 2021, and lowest in July 2020. Free fares were implemented in August 2020, and over time, this has impacted people's choice to use the service.

ParaTRAX Origin - Destinations

ParaTRAX trip logs were used to map origin-destination pairs served in December 2021, as shown in Figure 14. During that month, the heaviest trip pattern was from St. Elizabeth's Hospital to a rural residence west of Corning, with a total of eleven trips provided. The data indicate that just a handful of trips provided to one client can impact the overall trip pattern for Paratransit services. Additionally, the data show the hospital and Walmart are top destinations for trips.

METS

METS is a volunteer driver program designed to meet the non-emergency medical transportation needs of residents. This service provides rides to Tehama County residents who are not personally limited with their physical mobility, but who do not have any other means of transportation to a medical appointment either within Tehama County or in an adjacent county. All children under the age of 18 can also utilize METS with an adult rider. Tehama County residents interested in using METS must first call the service to be approved as a rider, then once approved can schedule rides when needed. There are no required fees for METS, however a \$5 donation is recommended for rides within Tehama County and \$10 for rides to more remote locations. Service hours are 8:30 AM to 3:30 PM as shown in Table 6, above.

Table 12 presents the operating statistics for METS for the past three fiscal years. As indicated, close to 1,000 trips are served annually, with between 301 and 435 clients each year. The annual cost for the service ranged from a high of \$56,317 in FY 18-19 to a low of \$37,298 in FY 19-20. Table 13 shows the METS program performance. On average 3.2 to 3.6 trips are provided per client served. The average trip is 71 miles at an average cost of \$40.49 per trip. Passengers' donations cover approximately 4 to 5 percent of the trip.

Figure 13:
ParaTRAX Service Area

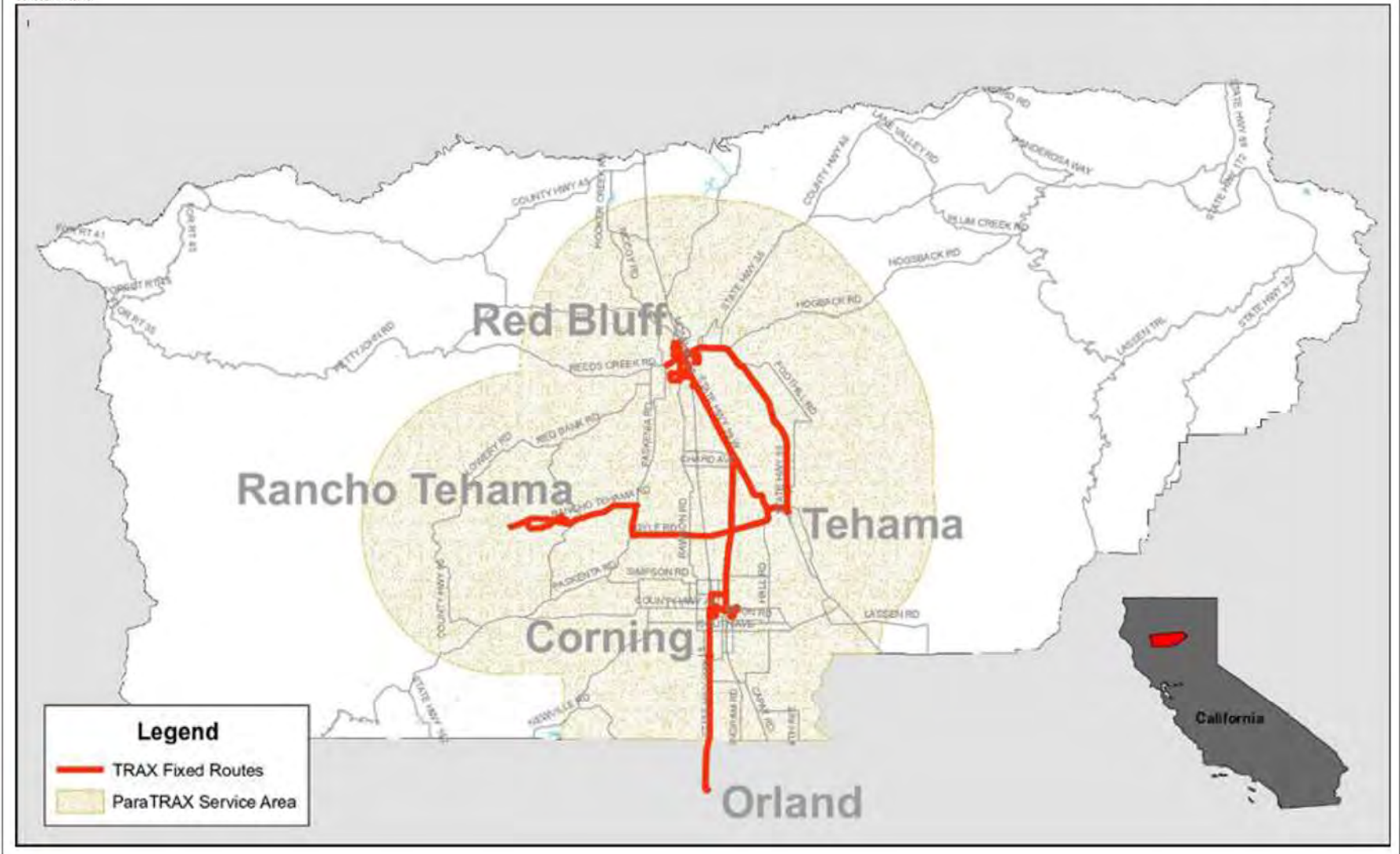


Table 11: ParaTRAX Ridership by Month and Year

Month	Fiscal Year				Ratio of Monthly Ridership to Avg. Monthly Ridership ²
	18/19	19/20	20/21	21/22	
July	1,212	1,337	549	1,016	73%
August	1,412	1,382	558	953	75%
September	1,257	1,258	604	1,037	81%
October	1,398	1,260	798	--	107%
November	1,315	1,232	736	--	98%
December	1,376	1,348	759	--	101%
January	1,467	1,457	645	--	86%
February	1,245	1,205	761	--	102%
March	1,376	895	849	--	114%
April	1,460	343	898	--	120%
May	1,402	398	849	--	114%
June	1,336	490	968	--	129%
Annual	16,256	12,605	8,974	--	

Change by Month from Year Prior

Month	19/20	20/21	21/22	Notes
July	10%	-59%	85%	Note 1: Does not include TRAX or METS ridership. Note 2: Based on FY 2020/21 data.
August	-2%	-60%	71%	
September	0%	-52%	72%	
October	-10%	-37%	--	
November	-6%	-40%	--	
December	-2%	-44%	--	
January	-1%	-56%	--	
February	-3%	-37%	--	
March	-35%	-5%	--	
April	-77%	162%	--	
May	-72%	113%	--	
June	-63%	98%	--	

Source: Paratransit Services

Figure 14
ParaTRAX Trips - December 2021

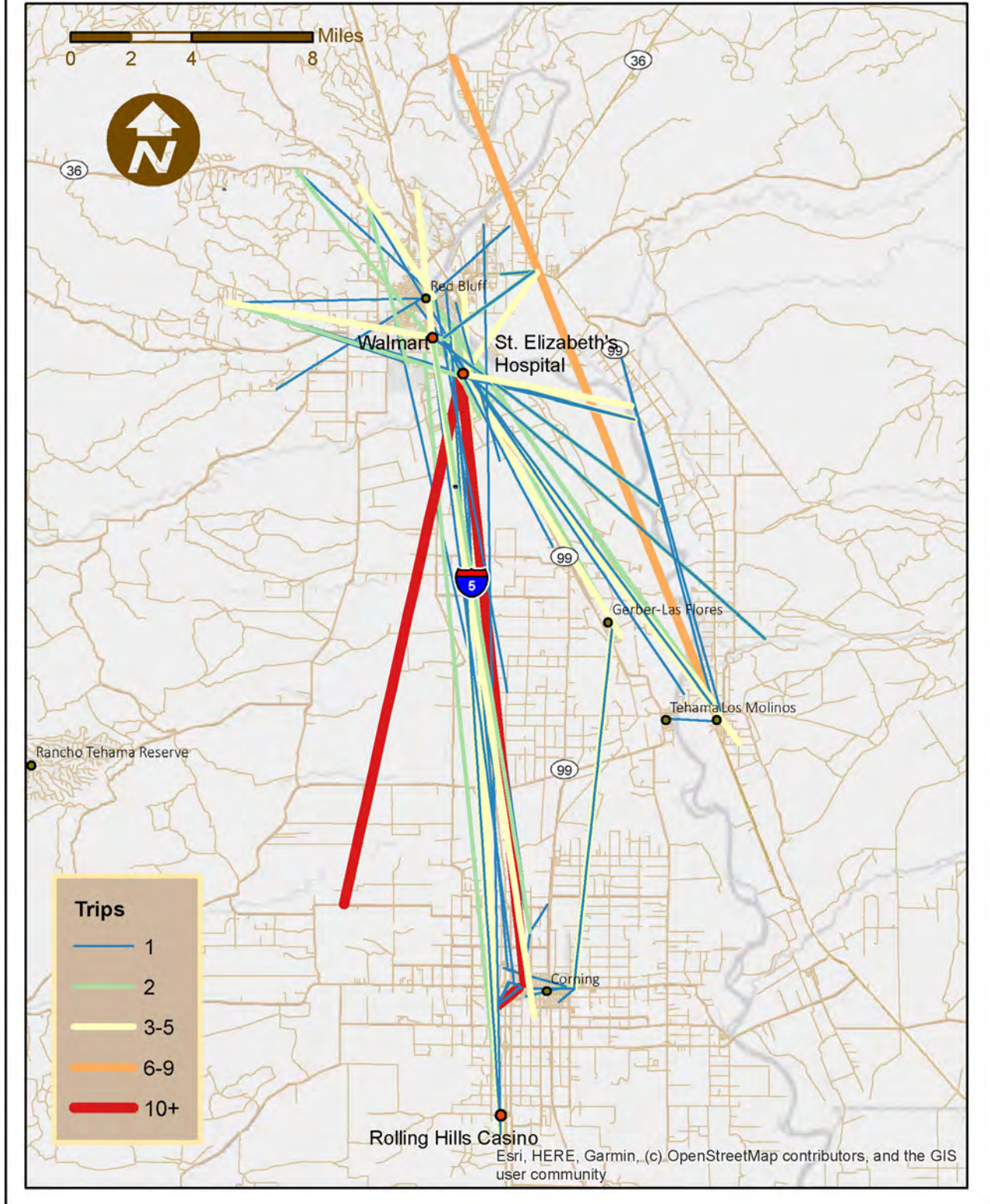


Table 12: METS Service Provided by Month and Year

Month	Number of Trips Fiscal Year			Clients Served Fiscal Year			Miles of Transport Fiscal Year			Trip Cost Fiscal Year			Trip Donation Fiscal Year		
	18/19	19/20	20/21	18/19	19/20	20/21	18/19	19/20	20/21	18/19	19/20	20/21	18/19	19/20	20/21
July	99	103	125	30	36	32	7,802	7,613	8,668	\$4,183	\$4,328	\$5,074	\$150	\$195	\$68
August	145	118	83	45	31	27	11,315	7,553	5,762	\$5,976	\$4,392	\$3,243	\$170	\$75	\$325
September	105	87	90	41	30	21	7,912	6,134	6,972	\$4,337	\$3,495	\$4,263	\$260	\$165	\$65
October	161	90	95	49	29	27	11,611	6,294	7,385	\$6,020	\$3,666	\$4,247	\$275	\$175	\$65
November	162	73	83	48	30	23	12,109	4,843	5,937	\$6,510	\$2,746	\$3,196	\$105	\$260	\$400
December	103	75	111	30	27	25	7,623	4,825	7,448	\$4,453	\$2,665	\$4,287	\$165	\$217	\$200
January	109	46	82	34	22	22	7,613	5,205	5,185	\$4,519	\$3,200	\$2,940	\$140	\$130	\$150
February	99	78	99	30	24	24	6,802	5,417	7,054	\$3,972	\$2,998	\$4,059	\$200	\$130	\$160
March	100	81	98	32	27	23	6,781	4,735	6,496	\$4,214	\$2,732	\$3,883	\$219	\$155	\$190
April	85	53	83	31	15	29	6,148	3,427	5,695	\$3,733	\$1,988	\$3,218	\$140	\$70	\$235
May	129	51	84	37	14	26	9,066	3,282	6,020	\$5,039	\$1,986	\$3,736	\$190	\$130	\$120
June	87	83	63	28	23	22	6,166	5,544	4,679	\$3,360	\$3,103	\$2,793	\$285	\$305	\$65
Annual	1,384	938	1,096	435	308	301	100,948	64,872	77,301	\$56,316	\$37,298	\$44,939	\$2,299	\$2,007	\$2,043

Source: Paratransit Services

Table 13: METS Service Performance by Month and Year

Month	Trips per Client Fiscal Year			Miles per Trip Fiscal Year			Cost per Trip Fiscal Year			Percent Donation per Trip Fiscal Year		
	18/19	19/20	20/21	18/19	19/20	20/21	18/19	19/20	20/21	18/19	19/20	20/21
July	3.3	2.9	3.9	79	74	69	\$42.26	\$42.02	\$40.59	4%	5%	1%
August	3.2	3.8	3.1	78	64	69	\$41.21	\$37.22	\$39.08	3%	2%	10%
September	2.6	2.9	4.3	75	71	77	\$41.31	\$40.18	\$47.36	6%	5%	2%
October	3.3	3.1	3.5	72	70	78	\$37.39	\$40.74	\$44.71	5%	5%	2%
November	3.4	2.4	3.6	75	66	72	\$40.19	\$37.62	\$38.51	2%	9%	13%
December	3.4	2.8	4.4	74	64	67	\$43.23	\$35.53	\$38.62	4%	8%	5%
January	3.2	2.1	3.7	70	113	63	\$41.46	\$69.56	\$35.86	3%	4%	5%
February	3.3	3.3	4.1	69	69	71	\$40.12	\$38.43	\$41.00	5%	4%	4%
March	3.1	3.0	4.3	68	58	66	\$42.14	\$33.73	\$39.63	5%	6%	5%
April	2.7	3.5	2.9	72	65	69	\$43.91	\$37.52	\$38.77	4%	4%	7%
May	3.5	3.6	3.2	70	64	72	\$39.06	\$38.94	\$44.47	4%	7%	3%
June	3.1	3.6	2.9	71	67	74	\$38.62	\$37.38	\$44.33	8%	10%	2%
Annual	3.2	3.0	3.6	73	69	71	\$40.69	\$39.76	\$41.00	4%	5%	5%

Source: Paratransit Services

PERFORMANCE ANALYSIS

Transit programs use several metrics to evaluate system performance to determine efficiency, effectiveness, and service quality. The results of the following performance analyses will serve as the basis for evaluating and recommending service standards by which service alternatives will be judged in the next process of this SRTP study.

TRAX and ParaTRAX Performance Analysis

A systemwide performance analysis was completed based on operating statistics from FY 18/19 through FY 20/21 presented above. Table 14 shows the data used in the performance analysis, which includes revenue hours and miles, passenger trips, fare revenues, operating costs, and operating subsidies. As noted in the tables, fares were subsidized with CARES Act funding beginning in FY 20/21. The operating costs shown represent the invoiced contract operating costs and include fixed costs, but do not include TCTC administrative costs. With these performance measures, it is possible to analyze the efficiency and effectiveness of TRAX and ParaTRAX services. Important trends and data points are summarized below:

- Passenger trips carried per hour of service is an important metric to analyze, as most of the costs of providing transit services are dependent on the hours operated. As shown in Table 14 and Figure 15, TRAX averaged 5.2 passengers per hour prior to the pandemic, and 4.1 passenger trips carried per hour of service in FY 20/21. The productivity of each TRAX fixed route is detailed within the individual route profiles included in Appendix A; the most productive TRAX routes are the two local Red Bluff Routes, Routes 1 and 2, which carried 7.0 and 9.1 passenger trips, respectively, per hour in FY 20/21. Route 5, the local Corning Route, was the least productive in FY 20/21, completing 1.4 passenger trips per service hour. ParaTRAX carried 2.8 passengers per hour pre-pandemic, which is typical of a paratransit program. This dropped to 1.7 passengers per hour in FY 20/21.
- Another method for measuring efficiency of a transit system is to calculate the number of passenger-trips per service-mile. TRAX carried 0.2 passengers per mile each year, while ParaTRAX carried 0.2 in FY 18/19, but only 0.1 per mile thereafter as shown in Table 14.

The annual operating costs were divided by the number of passenger trips recorded to determine the cost per passenger-trip for each fiscal year. A lower cost per passenger-trip represents higher effectiveness. As shown in Figure 16, TRAX ranges from a low of \$11.46 per passenger trip to a high of \$15.16, while ParaTRAX costs range from a low of \$24.80 in FY 18/19, almost doubling to \$45.45 per passenger trip in FY 20/21. The decrease in cost effectiveness for both TRAX and ParaTRAX can be attributed to both increased operating costs and decreased ridership throughout the three years considered. Each TRAX fixed route's operating cost per passenger trip is outlined in Appendix A.

TRAX Travel Quality Matrix

When evaluating a transit service, it is helpful to consider the travel experience from the perspective of the rider. There are three key trip characteristics that influence an individual's opinion of the bus ride:

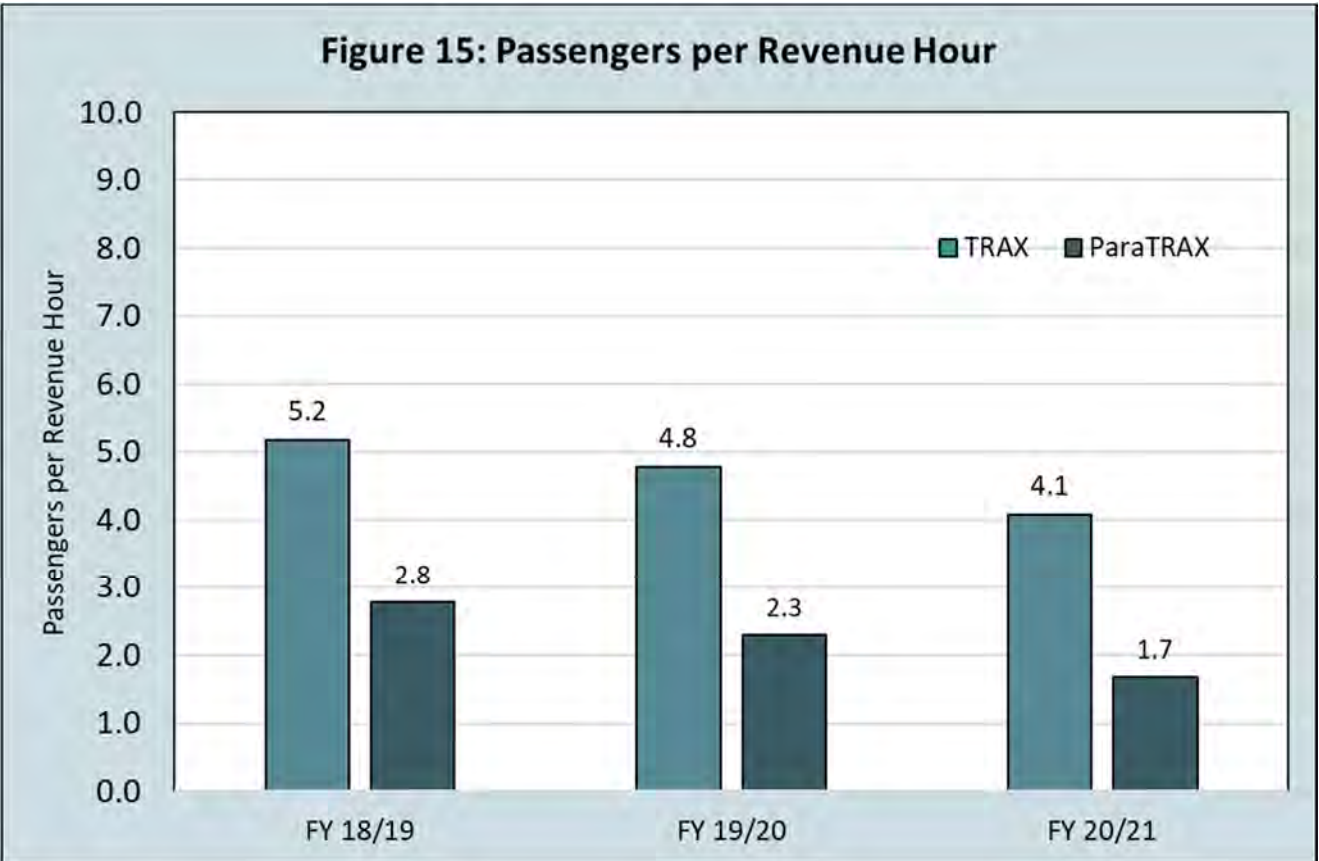
- The actual travel time that is required to complete the trip via transit;
- The frequency of service; and,
- The need to transfer between buses (which is typically seen as a substantial negative factor).

Table 14: TRAX and ParaTRAX Performance Measures by Year

Characteristics	TRAX Performance			ParaTRAX Performance		
	FY 18/19	FY 19/20	FY 20/21	FY 18/19	FY 19/20	FY 20/21
Revenue Hours	16,934	18,107	18,678	5,843	5,501	5,338
Revenue Miles	377,843	396,172	405,308	81,247	92,986	88,691
Passenger Trips	87,730	86,530	76,078	16,256	12,605	8,974
Per Hour	5.2	4.8	4.1	2.8	2.3	1.7
Per Mile	0.2	0.2	0.2	0.2	0.1	0.1
Fare Revenue ¹	\$48,662	\$46,402	\$77,487	\$34,817	\$28,979	\$19,433
Operating Cost ²	\$1,005,769	\$1,108,847	\$1,153,261	\$403,147	\$409,043	\$427,258
Operating Subsidy	\$957,107	\$1,062,445	\$1,075,774	\$368,330	\$380,064	\$407,825
Op Cost/ Psgr	\$11.46	\$12.81	\$15.16	\$24.80	\$32.45	\$47.61
Op Sub/Psgr	\$10.91	\$12.28	\$14.14	\$22.66	\$30.15	\$45.45
Op Cost/Hour	\$59.39	\$61.24	\$61.75	\$69.00	\$74.36	\$80.04

Note 1: Fares subsidized with CARES Act funding as of 9/1/2020
 Note 2: Based on invoiced costs.
 Source: Paratransit Services & LSC Transportation Consultants, Inc.

Figure 15: Passengers per Revenue Hour





Travel times, service frequency, and transfers for six specific TRAX bus stops (reflecting various service areas) were analyzed as shown in Table 15. For each trip origin/destination pair, the existing schedules were used to identify the fastest travel time possible to complete the trip. Once it was determined which buses would provide the fastest travel between each origin/destination pair, the frequency of the buses and whether a transfer was required were recorded. Note that for many trips, the actual travel times vary between individual trip-departure times, as someone may have to wait for a bus much longer if they leave at a different time. If a transfer was required to reach the destination, a 10-minute penalty was added to the overall travel time to reflect this inconvenience. Table 15 presents the fastest travel time between each location considered assuming optimal conditions and no traffic. A review of the table indicates the following:

- Individual trip times range from as short as 5 minutes and up to 65 minutes. Trips to and from Mill Creek Center, in Los Molinos, were the longest trips considered, largely since a transfer was required to complete many of the trips.
- Many of the stops that are along Route 1, such as the Tehama County Public Health Center, are only accessible via transit by riding a Route 1 bus. This means that many of the trips to destinations along Route 1 are surprisingly long. It takes 53 minutes to get from Sunshine Market to the Public Health Center using the bus, even though they are only four miles apart.

Table 15: TRAX Travel Times, Transfer Requirements, and Service Headways

		35 to 60 Minute Frequency		More Than 60 Minute Frequency			
		Destination Stop					
Travel Time in Minutes T = Transfer Required		Red Bluff Transit Center (219 Walnut Street)	St. Elizabeth Hospital	Walmart	Sunshine Market	Tehama County Public Health Center	Mill Creek Center, Los Molinos
Specific Stop							
Origin Stop	Red Bluff Transit Center (219 Walnut Street)		10	8	15	5	33
	St. Elizabeth Hospital	10		43 T	40	18	18
	Walmart	9	9		25	27	50 T
	Sunshine Market	15	40 T	19		53 T	27
	Tehama County Public Health Center	20	42	33	50 T		65 T
	Mill Creek Center, Los Molinos	37	22	65 T	22	65 T	

Source: LSC Transportation Consultants, Inc.

Comparison of Auto Travel Times to Transit Travel Times

Based on the travel time analysis above, auto travel times (as reported by Google Maps) were compared to transit travel times. The transit travel time (from Table 15) was divided by the typical auto travel time to identify the ratio of transit/auto travel time, as shown in Table 16. Lower ratios, such as the ratio of travel times between St. Elizabeth Hospital and Mill Creek Center in Los Molinos, are preferred. Higher ratios, such as between St. Elizabeth Hospital and Walmart indicate such a trip is significantly more convenient by car than by transit.

FINANCIAL ANALYSIS

Operating Expenses

Operating expenses for transit include the contract cost for day-to-day operations provided by Paratransit Services, plus the administrative costs of the transit staff under direction of the Tehama County Transportation Commission. The Paratransit Services contract includes a monthly fixed cost, variable hourly rates, and fuel costs (reimbursed at contractor’s cost), with stipulated service parameters. Additional costs may be incurred, such as additional training, maintenance of the bus shelters, etcetera. Operating costs for the current fiscal year (2021/22) for example, are \$33.45 per vehicle revenue service hour, plus \$97,518 monthly fixed costs, with a contract maximum up to \$1.567 million. This is based on a maximum of 23,457 service hours. Expenses are depicted in Table 17 for TRAX and ParaTRAX. As shown, TRAX costs ranged from \$1,005,769 in FY 2018/19 to

Table 16: Comparison of Auto and Transit Travel Times

Specific Stop		Destination Stop					
		Red Bluff Transit Center (219 Walnut Street)	St. Elizabeth Hospital	Walmart	Sunshine Market	Tehama County Public Health Center	Mill Creek Center, Los Molinos
Origin Stop	Red Bluff Transit Center (219 Walnut Street)		7	5	6	4	19
			1.4	1.6	2.5	1.3	1.7
	St. Elizabeth Hospital	6		5	8	9	16
		1.7		8.6	5.0	2.0	1.1
	Walmart	6	5		9	6	20
		1.5	1.8		2.8	4.5	2.5
	Sunshine Market	6	9	11		10	14
		2.5	4.4	1.7		5.3	1.9
	Tehama County Public Health Center	4	8	5	10		23
		5.0	5.3	6.6	5.0		2.8
	Mill Creek Center, Los Molinos	19	16	21	14	23	
		1.9	1.4	3.1	1.6	2.8	

Source: LSC Transportation Consultants, Inc.

\$1,153,261 in FY 2020/21, and ParaTRAX costs ranged from \$403,147 to \$427,258. The variable hourly contract costs and fixed monthly contract costs will be used later in this study to estimate costs of potential service changes.

In addition to day-to-day operating expenses, there are costs associated with the TCTC/TCTAB’s administration of the contract and transit planning. TCTC staff members who manage the transit contract have multiple duties within the TCTC, and therefore costs are not strictly allocated to the transit program but are instead part of the Overall Work Program (OWP). In Fiscal Year 2021/22, the OWP budget is \$520,013, \$106,000 of which is budgeted for consultants.

Transit Revenues

Transit operating revenues come from numerous sources which vary year to year. The primary source of funding for transit operations is Transportation Development Act (TDA) funds, including Local Transportation Funds (LTF) and State Transit Assistance (STA) funds. TDA funds are generated through a quarter cent sales tax in California, and STA funds are generated through a tax on gasoline and diesel. Funding is disbursed to counties and transit agencies based on population and sales tax generated. Table 18 shows an example of LTF disbursements for FY 2021. The LTF disbursements have averaged just over \$2.12 million over the past seven years, as also depicted in Table 18.

Table 17: TRAX and ParaTRAX Operating Expenses

Operating Expenses ¹	FY 18/19	FY 19/20	FY 20/21
	(Actual)	(Actual)	(Actual)
TRAX Expenses			
Fuel	\$121,537	\$120,769	\$127,930
Red Bluff Bus & Ride	\$8,220	\$8,220	\$8,220
Shelters & Benches	\$19,953	\$19,953	\$19,953
ADA Certification	\$5,280	\$5,280	\$5,280
Mobility Training	\$147	\$522	\$0
Pass Thru Items	\$375	\$6,391	\$10,252
Fixed Monthly Rate	\$534,904	\$534,904	\$534,904
Monthly Deduction	-\$83,023	\$0	\$0
Hourly Costs	\$435,422	\$448,975	\$451,178
COVID PPE	\$0	\$0	\$2,270
Total	\$1,042,813	\$1,145,013	\$1,159,986
Farebox (Subtracted)	-\$38,319	-\$37,426	-\$4,456
Invoiced Total	\$1,005,769	\$1,107,587	\$1,155,531
ParaTRAX Expenses			
Fuel	\$30,482	\$28,160	\$26,327
Farebox (Subtracted)	-\$34,817	-\$28,979	-\$19,433
Invoiced Total	\$403,147	\$409,043	\$427,258
Total Contract Expenses	\$1,408,916	\$1,516,630	\$1,582,788
Contract Cost Factors			
Cost per Vehicle Revenue Service Hours	\$32.60	\$32.63	\$32.63
Cost per Vehicle Revenue Service Mile	\$0.33	\$0.30	\$0.31
Fixed Cost per Month	\$44,575	\$63,679	\$95,518
<i>Note 1: Per TCTC. Does not include METS expenses.</i>			

Table 18: Tehama County Local Transportation Funds

Disbursement Formula Illustration -- FY 2019-2020									
Allocation	Fund Amount								
Total Transit Operations Funding	\$2,491,651								
Minimum to City of Tehama	\$25,000								
3.000% to TCTC/TCTAB Administrative Expense	\$74,750								
TRAX/ParaTRAX Contract Expense	\$1,529,513								
Population Based (Remainder)	\$862,388								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tbody> <tr> <td style="padding: 2px;">Corning</td> <td style="text-align: right; padding: 2px;">\$106,358</td> </tr> <tr> <td style="padding: 2px;">Red Bluff</td> <td style="text-align: right; padding: 2px;">\$192,597</td> </tr> <tr> <td style="padding: 2px;">Balance of County</td> <td style="text-align: right; padding: 2px;">\$563,433</td> </tr> <tr> <td style="padding: 2px;">Total Population Based LTF Funds</td> <td style="text-align: right; padding: 2px;">\$862,388</td> </tr> </tbody> </table>		Corning	\$106,358	Red Bluff	\$192,597	Balance of County	\$563,433	Total Population Based LTF Funds	\$862,388
Corning	\$106,358								
Red Bluff	\$192,597								
Balance of County	\$563,433								
Total Population Based LTF Funds	\$862,388								
LTF Allocation by Year									
Fiscal Year	Allocation								
13/14	\$2,061,126								
14/15	\$1,937,053								
15/16	\$2,058,501								
16/17	\$1,952,881								
17/18	\$2,086,732								
18/19	\$2,299,718								
19/20	\$2,491,651								
<i>7 Year Average</i>	<i>\$2,126,809</i>								
<i>Note 1: TCTC</i>									

Other important sources of funds for operations include Federal Transit Administration (FTA) grants, such as the 5311 formula grant program for rural transit and 5310 formula grant program for enhanced mobility of seniors and individuals with disabilities. These grants can also be used for capital purchases. FTA grants generally require some level of local match, which can include sources such as fares, LTF, or general funds. Revenue sources will be discussed in greater detail as part of the financial plan for the recommended service plan later in this study.

TRAX CAPITAL ASSETS

Vehicles

TRAX has seventeen vehicles used in service, as shown in Table 19, including eleven in full service and six back-up vehicles. This equates to a 35 percent spare ratio. Seven of the vehicles are past the expected date of replacement, with another three needing replacement within five years and eight in the next ten years. The capital plan will need to consider the optimal replacement schedule to maximize cost opportunities and to consider zero-emission requirements.

Passenger Amenities

The Red Bluff Transit Center located at Walnut and Rio Streets has a pull around driveway with bus pull outs, two shelters, a parking lot, and a restroom. The Corning Transportation Center at Solano and Third doubles as a commercial business and transit center. Traffic to enter the center is one-way. Currently, a café operates in the building, and the covered walkway provides a waiting area out of the elements. The center has a parking lot for approximately 30 vehicles. Additionally, all designated TRAX bus stops have signs.

Operations and Maintenance Facilities

The operations facility for TRAX was completed in 2021 and is located at 1820 Bidwell Street in Red Bluff. The facility includes office space, locker rooms, conference/training room, and three bus bays, as well as parking. The facility is owned by Tehama County and provided to the contractor to operate services. Tehama County Transportation Commission administrative staff who oversee the transit contract, work out of the county offices located at 9380 San Benito Avenue in Gerber, California.

MFG Date	Veh. Description	Fuel Type	Mileage	Use	Fund Source	Status	Anticipated Replacement
2020	Freightliner Legacy S2C	Diesel	9,128	GTC Trax	PTMISEA	Full Service	FY 2030-2031
2020	Ford Transit 350 HD	Gas	15,499	ParaTrax	PTMISEA	Full Service	FY 2027-2028
2020	Ford Transit 350 HD	Gas	14,667	ParaTrax	PTMISEA	Full Service	FY 2027-2028
2017	Dodge Mini Van	Gas	103,625	ParaTrax	PTMISEA	Full Service	FY 2023-2024
2008	Chevy Uplander Mini	Gas	144,361	ParaTrax	5310	Backup Spare	FY 2019-2020
2008	Chevy Uplander Mini	Gas	158,268	ParaTrax	5310	Backup Spare	FY 2019-2020
2020	Ford Transit 350 HD	Gas	6,610	RTR	PTMISEA	Full Service	FY 2027-2028
2020	Ford E-450 Cutaway	Gas	59,838	Trax	PTMISEA	Full Service	FY 2027-2028
2020	Ford E-450 Cutaway	Gas	47,438	Trax	PTMISEA	Full Service	FY 2027-2028
2020	Hometown Trolley	Gas	6,231	Trax	PTMISEA	Full Service	FY 2028-2029
2020	Hometown Trolley	Gas	9,735	Trax	PTMISEA	Full Service	FY 2028-2029
2019	Ford E-450 Cutaway	Gas	177,209	Trax	PTMISEA	Full Service	FY 2020-2021
2019	Ford E-450 Cutaway	Gas	166,678	Trax	PTMISEA	Full Service	FY 2026-2027
2018	Ford E-450 Cutaway	Gas	200,641	Trax	Prop 116/5311	Backup Spare	FY 2019-2020
2018	Ford E-450 Cutaway	Gas	130,041	Trax	Prop 116/5311	Backup Spare	FY 2019-2020
2016	Ford Cutaway	Gas	153,283	Trax	PTMISEA	Backup Spare	FY 2019-2020
2014	Ford Cutaway	Gas	175,730	Trax	PTMISEA	Backup Spare	FY 2019-2020

Source: Tehama County Transportation Commission

ONBOARD SURVEY

An onboard survey was conducted on TRAX buses during November 2021 to gain a better understanding of passenger demographics, trip patterns, and passenger opinions regarding TRAX services. The survey instruments consisted of a one-page questionnaire in English on one side and Spanish on the reverse side. Trained survey staff distributed and collected surveys for a one-week period. Additionally, materials were available on the buses for passengers to participate in the survey by themselves. In all, 97 valid surveys were collected. The details of the survey results are provided in Appendix C, with highlights below.

Passenger Profile

- Based on the survey answers, it can be concluded that most TRAX passengers are “transit dependent.” 84 percent of respondents reported that they did not have an alternative vehicle available to complete their trip the day of the survey, and 54 percent did not have a driver’s license. When asked how they would have completed their trip if TRAX were not available, 37 percent said they would have walked, 20 percent said they would have gotten a ride with someone else, and 20 percent would not have made the trip at all.
- Although people reported a variety of reasons for why they were using TRAX, the most common trip purposes were shopping (31 percent) and personal business (20 percent).
- Passengers who ride TRAX buses take advantage of this service multiple times a week: 29 percent ride daily, 35 percent ride 3-4 days per week, and 24 percent ride 1-2 days per week. Only 11 percent of riders said they use TRAX less frequently.
- It is important that a transit system not only maintains loyal riders but also attracts new riders. TRAX demonstrates its ridership is a diverse mix of both old and new passengers: 58 percent of survey respondents said that they have used TRAX for 3 years or longer, but 25 percent have used the service for a year or less.
- 7 percent of survey respondents used the wheelchair lift to board or exit the bus.
- Just under 15 percent of passengers were seniors over age 65 (including just 3 percent over the age of 75); 4 percent were youths, and 76 percent were adults ages 25 to 64.

Trip Patterns

- Passengers travel to and from many origins and destinations along TRAX’s fixed routes, but based on the survey results boarding activity is strongest at the following locations:
 - Local Red Bluff stops (31 percent of boardings)
 - Bus & Ride – Red Bluff (13 percent of boardings)
 - Local Gerber stops (8 percent of boardings)
 - Walmart, Red Bluff (3 percent of boardings)
- Most passengers get to and from bus stops by walking (86 and 74 percent). 6.5 percent said that they had been dropped off at the stop, and 3.5 percent said they would get a ride to their final destination after alighting. Only five percent had transferred from another route, but 18 percent were going to transfer onto another TRAX bus after disembarking.

Passenger Opinions

Passengers were asked to rate the various characteristics of the transit system on a scale of 1 (poor) to 5 (excellent). Considering all the responses, passengers generally approve of TRAX services. Seventy nine percent of answers were either a 4 (good) or 5 (excellent), and the overall service ranked at an average of 4.4. The highest ranked factors included fares (4.6), bus cleanliness (4.6) and driver courtesy and overall service (both 4.4). Every factor considered averaged at least a “good” rating, however the lowest ranked service characteristics were bus stops and shelters (4.1) and service frequency (4.1).

Desired Improvements

Passengers were asked to select what improvements they would most like to see on TRAX services, and then were provided with specific options. The two most popular improvements among survey respondents were to have later or earlier weekday service (72.5 percent) and to have later or earlier Saturday service (63 percent). The most commonly desired weekday service start time was 6 AM and the most desired end time was 8 PM. For Saturday service, most respondents wanted service to start at 7 AM and to end at 5 PM. Over 46 percent asked for TRAX service on Sundays.

Passengers were also asked to provide any additional comments they might have, and many people took the opportunity to list improvements they would like to see. The request most repeated was for later or earlier service (11 passengers), followed by better quality bus seats, more/improved bus shelters, and Sunday service (5 passengers each).

OTHER TRANSPORTATION PROVIDERS

There are several regional and intercity transit providers that connect with or have the potential to connect with TRAX, as described below.

Glenn Transit Service – Glenn Ride

Glenn Transit Service (GTS) is a Joint Powers Authority (JPA) between Glenn County and the Cities of Willows and Orland. GTS oversees Glenn Ride, an intercity fixed route fixed-route service operating between Willows in Glenn County and Chico in Butte County and serving the City of Orland and communities of Artois and Hamilton City. Glenn Ride offers transfers to and from TRAX’s Glenn-Tehama Connection five times daily on weekdays, providing opportunities for Tehama County residents to reach Willows and Chico. However, a bus trip from Red Bluff to the Chico Transit Center takes two hours and 15 minutes, compared to 50 minutes by car.

Redding Area Bus Authority

RABA is a joint powers agency operating by agreement between the Cities of Anderson, Redding, and Shasta Lake, and the County of Shasta. RABA service is operated and maintained by a third-party contractor and administration is provided by the City of Redding. RABA provides fixed route service (10 local routes, a commuter route, and two express routes) and paratransit service. Shasta County provides Burney Express (operated, maintained, and administered by RABA).

The Redding Area Bus Authority (RABA) does not currently provide connections with TRAX but has in the past. RABA currently has a commuter service between Redding and Anderson, as well as a local route which serves Anderson and connects with one regional RABA route. The City of Anderson is approximately four miles north of Cottonwood, which straddles the Tehama County and Shasta County line. RABA previously served Cottonwood.

Shasta Regional Transportation Agency—Salmon Runner

The Shasta Regional Transportation Agency is the regional transportation planning agency for Shasta County. In April 2021, SRTA applied for a grant in collaboration with Shasta County Public Works, Tehama County Transportation Commission, Glenn County Transportation Commission, and the San Joaquin Joint Powers Authority to establish the “North State Intercity Bus” or “Salmon Runner,” a long-distance route between Redding and Sacramento. The intention of the service is to provide connections with local “feeder” routes (such as TRAX) so passengers can travel any and all of the 165-mile distance between Redding and Sacramento, further connecting to other modes including air, train and bus services.

Local Taxicab

Tehama County has only one local traditional cab company, Happy Cab, operating out of Red Bluff. This is a one-person operation available only 9:00 AM to 5:00 PM weekdays. A one-way trip between Red Bluff and Redding was quoted at \$80.

Amtrak

Amtrak’s Coast Starlight train from Los Angeles to Seattle serves stops in Redding and Chico. These stops are served in the early morning hours. The Amtrak Thruway Bus Route 3 from Stockton to Redding departs Red Bluff daily at 6:40 AM and 10:40 AM southbound, and at 5:15 PM and 9:05 PM northbound. However, passengers currently must transfer to an Amtrak train as part of their trip. Amtrak is transitioning this policy so that passengers will eventually be able to make trips on Thruway buses independent of train trips, but Amtrak Thruway Route 3 still requires a connection.

Greyhound

Greyhound offers two northbound bus trips departing Red Bluff at 7:50 AM and 10:15 PM from Sunshine Market on Antelope Boulevard, and two southbound trips departing Red Bluff at 5:25 AM and 6:00 PM. The route extends as far as Vancouver, British Columbia to the north, and San Ysidro, California to the south. One-way Fares to Redding or Sacramento are in the \$24-35 range.

FIRST AND LAST MILE TRANSPORTATION

While fixed route bus service can effectively serve a large proportion of an area’s population, making the connections between trip origins/destinations and the nearest bus stop can be a large impediment to using transit service. This is a particular challenge for the transportation disadvantaged. In the next stage of his SRTP, we will look at opportunities for improving first/last mile strategies. Current challenges to first mile-last mile transportation are discussed below, followed by some examples of how other rural communities have undertaken similar challenges.

Connections to Bus Stops

Most transit riders walk to and from bus stops, making it imperative to provide reasonable sidewalk access to bus stops. Given the rural nature of Tehama County, it is not possible or practical to provide sidewalks to all stops, particularly in outlying communities, but it is important to prioritize bus stop improvements which maximize access to the transit system.

Stop Amenities

A typical goal of rural transit systems is that any bus stop which generates more than ten passenger boardings per day should be provided with a shelter, and any stop which generates five boardings should have at least a bench. Additionally, bus stop improvements at locations where passengers might be more likely to have mobility issues, such as at a senior center or senior housing, should be considered priorities for sidewalk and bus stop improvements.

Stops which currently have a shelter and meet this criterion consist of the following:

- Rio and Walnut: two shelters with benches, signs, restroom
- Raley's Shopping Center
 - South Main Plaza (Chevron Station) – shelter
 - South Main Plaza (Raley's) – protected by building overhead
- Egg Roll King (south side of Antelope at Gilmore) – shelter
- Red Bluff Apartments, Sale Lane – shelter
- Cabernet Apartments – shelter is located on Sale Lane across from Cabernet Court
- Riverside Plaza at Main & Brearcliffe (east and west sides of Main) – shelters
- St. Elizabeth's Hospital – shelter
- Circle K at S. Jackson and Lay – shelter one block north of store

Stops that meet the criterion but which do not currently have a shelter consist of the following:

- Walmart at Mill Street – bench and shade tree, no shelter
- Dollar General at Walnut and S. Jackson
- Shell Gas Station on Antelope at Center (across from Egg Roll King)

Bus Stop Access

An important element in making transit use viable for individuals is consideration of the “first-mile / last-mile” access from individual homes and destinations and the fixed route stops. This often can preclude an individual's use of fixed route services. As a result, more costly use of paratransit service may be generated, or the mobility needs of the individual are not met. In addition to providing amenities at the bus stops, accessibility to the bus stops on foot or wheelchair is essential. A review of the top stops is presented below.

Bus stops with good access consist of the following:

- Rio and Walnut Streets: sidewalks are available in all directions from the transit center.

- Red Bluff Apartments, 111 Sale Avenue: sidewalks are available in all directions, including toward the apartment complex.
- Riverside Plaza at Main Street & Brearcliffe Drive (east and west sides of Main Street): both stops are near a signalized intersection with crosswalks. The paved sidewalks are in moderate condition, and passengers must cross some driveways off Main Street, but overall, pedestrian access is good.
- Dollar General on Walnut Street east of S. Jackson Street: While there are no shelters on the north side of Walnut Street, there are continuous sidewalks, albeit with numerous commercial driveways.

Bus stops with adequate access consist of the following:

- Raley's: passengers disembark at the storefront, with sidewalk access the full length of the commercial area. However, leaving the shopping area requires passengers to cross through parking lots.
- Egg Roll King (south side of Antelope Blvd. at Gilmore Road) and Shell (north side of Antelope Blvd at Gilmore Road): these stops have sidewalks in good condition with access along Antelope Road to the east and west, as well as a signalized crosswalk nearby. However, heading south on Gilmore Road, the sidewalk ends less than half a block away on both sides of the street.
- St. Elizabeth's Hospital: The shelter is in front of one access to the hospital with a paved sidewalk, but if passengers wish to go to a different location within the medical campus, sidewalk access is limited.
- Walmart at Mill Street (east and west sides): The sidewalks on both sides of the street are in excellent condition. However, the stops are approximately a third of a mile from Walmart, and even further to other businesses.

Bus stops with deficient access consist of the following:

- Chevron at Raley's: While there is a landing pad and a sidewalk leading to a crosswalk at Main Street, most passengers are likely to cross directly into the road and parking lot towards Raley's, as this is 1/3 the distance.
- Circle K at S. Jackson Street and Lay Avenue: Access on Jackson Street is good with paved sidewalks on the east and west sides of the street. However, there are no sidewalks on Musick Avenue or Lay Avenue for passengers wishing to access the residential neighborhood to the east of the stop.
- Cabernet Apartments: The shelter at Sale Lane and Cabernet Court has a landing pad, but no adjacent sidewalk, and no crosswalk to reach the residential neighborhood to the east (see Figure 17). While an extensive sidewalk network is available in the Cabernet neighborhood, there is no sidewalk for the first 460 feet of Cabernet Court east of Sale Lane.

Figure 17: Bus Shelter at Cabernet Apartments



Route Deviation and Flag Stop Policies

TRAX allows flag stops at locations deemed safe by the driver. This policy has pros and cons. Flag stops allow passengers greater flexibility in accessing the bus and can reduce the amount of walking required. However, flag stops can cause problems when passengers get missed due to 1) the driver not seeing them, or 2) the driver determining the selected location is not safe. Additionally, flag stops can affect the bus schedule when passengers request a stop close to established stops or when multiple passengers flag the stop along a route. Flag stops can also be a source of conflict between passengers and drivers, particularly if one driver considers a specific stop to be acceptably safe but others do not. As a result, transit providers typically rely solely on fixed stops in urban areas, potentially allowing flag stops only in rural areas.

INTRODUCTION

This chapter presents concepts for service options for TRAX transit services that are designed to serve the mobility needs of Tehama County residents and to make TRAX services more efficient. Potential ridership and operating costs are estimated for each service alternative. Ridership estimates are based on historical ridership trends and standard transit demand estimation models. Costs are based on the contracted hourly and fixed rates for the FY 2022 – 23 operating budget and beyond. TRAX is not charging a fare for the next several years, with CARES Act funding subsidizing the service, and the hope is to continue to be fare free for the foreseeable future. For this reason, fare revenue impacts are not estimated as part of this analysis.

TYPES OF SERVICE TO CONSIDER

Before evaluating alternatives, it is worth considering viable options for general public transit in Tehama County. Brief descriptions of potential service options are described below to provide context for the service analyses.

- ***Fixed Route Service on clock headways:*** The most traditional type of public transit service is fixed route service with consistent clock-headways (meaning each route is served at the same time every hour). TRAX Routes 1 and 2 are an example. The advantages are that the schedules are easy to predict and follow. Once passengers learn the schedule for any one hour, they know the schedule for the remainder of the day. This type of service works well where 30- or 60-minute routes can be designed to provide reasonable coverage within an area. It does not work as well when an area is dispersed with low demand.
- ***Fixed Route Service on irregular headways:*** Irregular headways are often scheduled to serve longer-distance routes or when demand is low enough that hourly service is not warranted. TRAX routes 3A, 3B and the Glenn-Tehama Express are examples.
- ***Fixed Route Limited Schedule or Life-line service:*** This type of service has a fixed route alignment and limited schedule, like the Rancho Tehama Express route. Life-line services are typically used to allow residents to schedule errands and medical trips in advance without needing to make a transit reservation, and where consistent daily service is not warranted.
- ***Fixed Route Service with On-Demand Stops:*** In this scenario, the fixed route alignment and schedule are set, but one or more stops may be included as “on-demand only.” This works well when a location on a route is somewhat out of the way and used sporadically or when a stop only has demand at certain times of the day or year. Passengers can call within a half hour of wanting to be picked up at the stop and request a ride, or when they board the bus at another stop they can request to be let off at the on-demand stop. Depending on the expected frequency of requests, the schedule will be designed without extra time to serve the on-demand stop, or with only a few minutes extra. This means that the bus may occasionally run slightly late, but it also reduces the amount of time passengers would be

traveling out-of-direction and is a benefit to the overall travel time for most passengers most of the time. This works well when a route has layover time built into the schedule and when demand for service to the on-demand stop is low but does not work well when schedules are too tight.

- ***On-Demand Paratransit Service:*** Paratransit is provided on-demand to supplement a fixed route service and is available to an eligible group—usually seniors or people with a disability that makes it difficult to use fixed route service. Typically, it requires 24 hours advanced reservation, or as little as an hour’s notice if space is available. “Subscription trips” can be provided without individual reservations for persons making consistent trips (such as commuters or social service participants). ParaTRAX, which operates the same hours and within ¾ mile of the TRAX fixed routes is an example of complementary paratransit.
- ***General Public Demand Response Transit:*** Like paratransit service, general public, on-demand service is offered by request and possibly by advance reservation. It differs from paratransit in that there is no eligibility requirement, and quite often it is offered with little or no advance reservation. This type of service works best when a regular fixed route is not productive (i.e., carries 3.0 or fewer passengers per hour), but regularly available service is desired. It also needs to be able to respond to requests within a reasonable time frame. It does not work well if the demand outpaces the capacity to provide services within available resources. Typically, it requires limitations in hours or service area or both.
- ***Microtransit Service:*** Microtransit is a concept which has been growing nationally and can be loosely defined as tech-enabled shared transportation. It operates much as a general public dial-a-ride service would but using a smartphone application to schedule and pay for the ride. To ensure equity, particularly since this is a public service, rides can be scheduled by phone as well. Therefore, the service requires both a driver and dispatcher at a minimum (though the dispatcher’s workload can be substantially reduced). For passengers who arrange a ride by phone, the dispatcher would receive the ride request and use the application to schedule the service, with an option to override the app’s scheduling. Examples of microtransit programs are discussed in Appendix A.

The specific transit alternatives explored for Tehama County / TRAX fall into these various service types and are evaluated below.

Base Case Scenario

The first step in this analysis is to project costs for TRAX services in Fiscal Year (FY) 2022 – 23 at service levels currently operated (status quo), as a basis of comparison for potential changes to the service. FY 2022 – 23 estimated operating cost per hour (based on the contract, including the amendment to provide COVID pay) and per mile (based on fuel and vehicle maintenance costs) were applied to service levels currently operated to determine marginal operating costs, as well as a 5.0 percent annual rate of inflation. This is shown at the top of Table 20 as “FY 2022 – 23 Base Case.” Ridership estimates represent FY 2021 – 22 figures.

Table 20: TRAX Service Alternatives

Services	Annual				Ridership Impact	
	Operating Days	Vehicle Service..		Marginal Operating	(One-Way Trips)	
		Miles	Hours	Cost ¹	Daily	Annual ²
Status Quo ²						
TRAX Weekdays						
Routes 1 & 2	256	79,900	5,630	\$290,500	188.3	48,200
Routes 3A and 3B	256	80,400	5,760	\$296,400	62.5	16,000
Route 5	256	30,500	2,560	\$128,600	15.2	3,900
Glenn-Tehama Connection	256	98,600	3,200	\$197,000	43.8	11,200
Rancho Tehama Express	104	14,600	350	\$23,800	8.7	900
Shasta-Tehama Connection	256	54,000	2,020	\$119,400	NA	NA
<i>Weekday Subtotal</i>	<i>256</i>	<i>358,000</i>	<i>19,520</i>	<i>\$1,055,700</i>	<i>313.3</i>	<i>80,200</i>
TRAX Saturdays						
Routes 1 & 2	52	9,700	730	\$37,300	88.5	4,600
Routes 3A and 3B	52	19,400	740	\$43,500	28.8	1,500
Red Bluff - Rolling Hills Casino	52	9,200	360	\$21,000	15.4	800
Shasta-Tehama Connection	52	6,600	250	\$14,700	NA	NA
<i>Saturday Subtotal</i>	<i>52</i>	<i>44,900</i>	<i>2,080</i>	<i>\$116,500</i>	<i>132.7</i>	<i>6,900</i>
TRAX Total	308	402,900	21,600	\$1,172,200	282.8	87,100
ParaTRAX	308	111,700	6,390	\$342,300	39.0	12,000
TRAX and ParaTRAX Total	308	514,600	27,990	\$1,514,500	321.8	99,100
Alternatives						
Shasta College On-Demand (weekdays)	256	-2,600	0	-\$1,600	0.3	80
Reassign Routes 1 and 2 as Four Routes	308	0	0	\$0	8.6	2,640
Replace Route 5 with General Public DAR	256	-4,390	0	-\$2,600	1.5	390
Replace Route 5 with Microtransit	256	-4,390	0	\$22,400	3.8	980
Midday Run on Rancho Tehama Ex - 2X/Week	104	6,670	350	\$19,100	1.8	190
Midday Run on Rancho Tehama Ex - 1X/Week	52	3,340	175	\$9,500	2.5	130
Extend Routes 1 & 2 On Weekdays to 7:30 PM	256	23,730	770	\$47,400	8.2	2,100
Red Bluff Evening General Public On-Demand	256	2,170	256	\$12,300	3.0	770
Red Bluff Evening Microtransit	256	2,170	256	\$37,300	3.8	960
Extend Routes 1 & 2 On Saturdays to 6:00 PM	52	600	208	\$9,300	15.2	790
Sunday General Public DAR in Red Bluff	52	2,600	260	\$12,800	13.5	700
<p>Note 1: Operating cost estimates represent marginal costs (\$43.08 per hour under the modified contract and \$0.60 per mile due to increased fuel costs). Does not include fixed costs. If multiple microtransit options were selected, the annual fee would cover all options.</p> <p>Note 2: Status quo is based on FY 2021-22 parameters and ridership estimates, plus Shasta-Tehama Connect as introduced in July 2022.</p>						

The options discussed in this chapter are presented in an “a la carte” manner, where each option considers the impacts to the status quo individually. Once preferred options are selected, a comprehensive plan will be developed that reflects the overall impact of the selected alternatives.

POTENTIAL REVISED TRAX SERVICES

Service alternatives listed below are options for revising existing services to improve efficiency. Reflecting financial resource limits, these alternatives focus on those with little or no changes to hours and miles of service provided.

Serve Shasta College as an On-Demand Stop

The portion of Route One that goes to the library and to Shasta College on Route 1 is 1.8 miles in length and takes approximately 6 minutes (from Main Street, out and back). Boarding and alighting data indicates light use at many times of the day. This portion of the route is not served on Saturdays.

Rather than having the bus serve this location hourly on Route 1, serving it only by request would eliminate the need for passengers to make the diversion when there is no demand, and would lessen the wear and tear on vehicles by reducing the mileage. However, the library may have sufficient demand to continue service hourly. Under this alternative, the bus would still turn onto Diamond Drive to serve the library, where it would turn around by entering the north driveway and exiting the south driveway (turning left instead of right). This would reduce each run by 1.25 miles. If a passenger wanted to exit at the college, they would simply request to go there. If a passenger wanted to get picked up at the college, they would need to call dispatch at least ten minutes before the bus would be scheduled to arrive at the library.

This would reduce Route 1 by 1.25 miles except on runs when the college is served. It is estimated on-demand requests would be made on just a quarter of the runs. The bus schedule would still operate hourly, so there would not be a reduction in hours, but there would be a savings of 2,600 miles annually, which would save approximately \$1,600. It is expected there would be a minor inconvenience for passengers going to Shasta College, but improved travel time for Route 1 passengers in the outbound direction, netting an increase of just 90 passengers annually.

Reorganize Routes 1 and 2 as Four Routes

Routes 1 and 2 are four loops, serving four different directions and mostly different destinations, though each loop starts and ends at the Rio and Walnut Transit Center. Renaming the routes as four separate half-hour routes (still on hourly headways) would have the following advantages:

1. It would make it clear that each route serves a full loop from the transit center to one of four outlying destinations including 1) Sunshine Market/Fairgrounds, 2) Tehama County Health, 3) Elizabeth Hospital, and 4) the Tehama County Airport.
2. It would be easier to understand which runs are at the top of the hour (0:00) and which are served on the half hour (0:30).
3. The headers on the buses would change each half hour, which would make it easier to change interlining and make the destination clearer for passengers. A pattern of transfers could be recorded for a brief time to see which pairing would be most advantageous for passengers.
4. If a tripper is needed to catch up when a route is running behind, the tripper bus could potentially be used for a shorter time, just to address one of four routes running late instead of half of the routes running late.
5. Combined with the previous alternative (Shasta College on demand), three of the four loops would be at or slightly under 7.0 miles, making it easier to pair the routes to stay on time.
6. It would be easier for the public to understand the service and could improve marketing.

A depiction of the four routes is shown in Figure 18 and an example schedule is shown in Table 21. This alternative would initially require costs for marketing, but there would be no change in annual marginal operating costs. The improved ease of understanding of the service and the potential for better on-time performance would be expected to generate an estimated 2,640 trips annually.

Figure 18
Routes 1 and 2 Revised as Four Routes

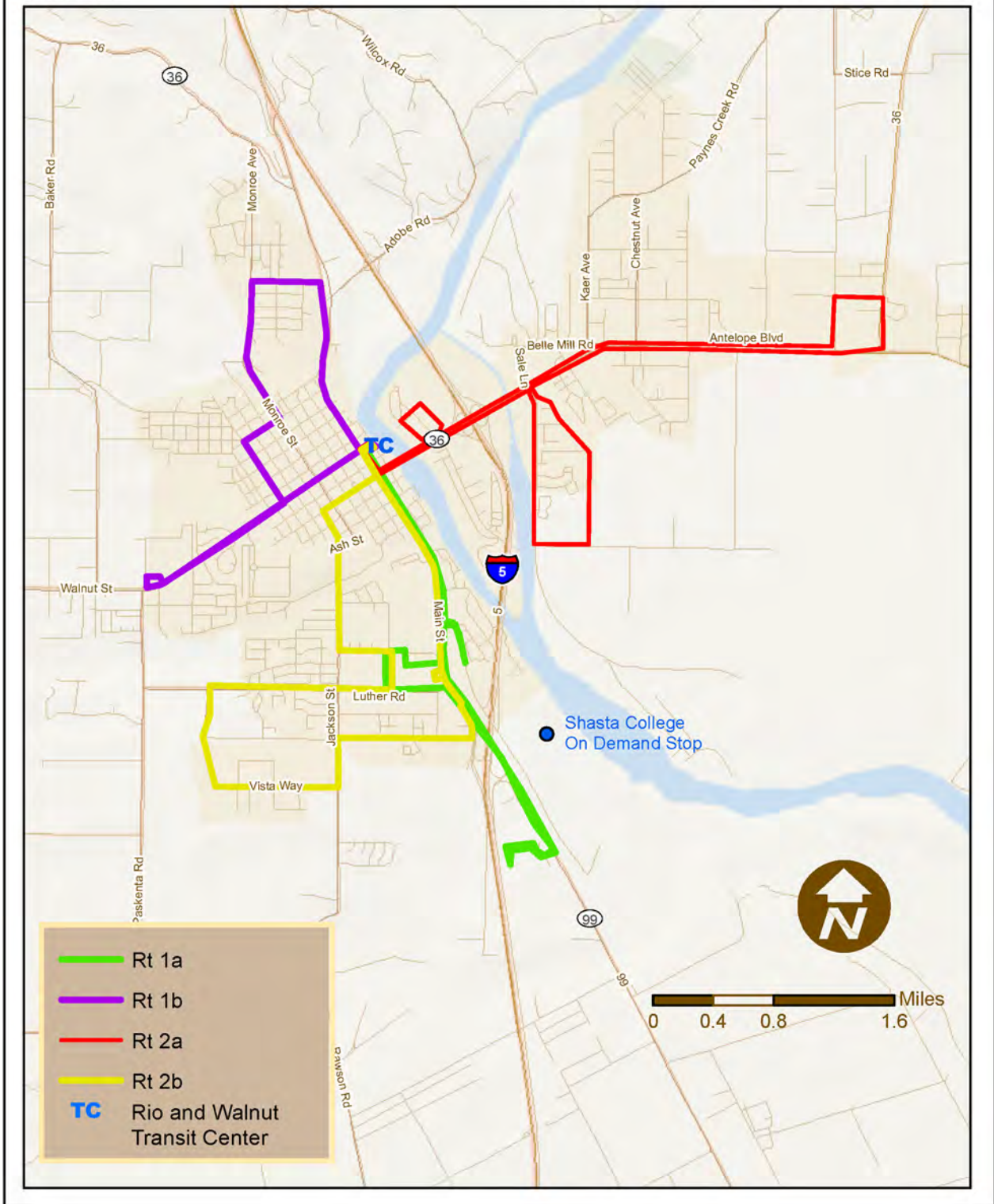


Table 21: Example Schedule for Red Bluff Service as Four Routes

Route / Bus Stop	Minutes After the	Route / Bus Stop	Minutes After the
Route 1A		Route 2A	
Rio & Walnut (depart)	0:00	Rio & Walnut (depart)	0:00
Walmart	0:08	Red Bluff Apartments	0:05
St. Elizabeth Hospital	0:17	Frontier Village	0:10
Shasta College	On Demand	Sunshine Market	0:15
Butte County Library ¹	0:20	East & Bell Mill	0:25
Social Services ¹	0:23	Rio & Walnut (arrive)	0:30
Villa Columba ¹	0:25		
Rio & Walnut (arrive) ¹	0:27		
Route 1B		Route 2B	
Rio & Walnut (depart)	0:30	Rio & Walnut (depart)	0:30
Tehama County Health Cente	0:35	Chevron	0:34
Sacred Heart School	0:45	Community Senior Cente	0:42
Union & North Main	0:50	Walmart/Mill Street	0:50
Rio & Walnut (arrive)	0:55	City Hall	0:55
		Rio & Walnut (arrive)	0:59
Stops served multiple times per hour		Stops served once per hour	
Note 1: Service may experience small delay when Shasta College stop is requested.			

Eliminate Route 5 and Replace with General Public On-Demand Service

Route 5 is the least productive of the fixed routes, carrying only 1.7 passengers per hour on average in FY 2021-22 (and only 2.0 per hour pre-pandemic), or 15 passenger trips per day. The service is operated with one bus which provides three morning and four afternoon round trips. Each run serves Rolling Hills Casino (requiring 18 minutes of the 75-minute run cycle). The Rolling Hills Casino is also served by the Glenn-Tehama Connection Route five times per day.

In this alternative, Route 5 would be replaced with a general public, demand-response service within the City of Corning from 7:00 AM to 5:00 PM. Once per day (at 1:00 PM), the bus would make a scheduled trip to Rolling Hills Casino to compensate for the reduced service on Route 5 and subsequent gap in service to Rolling Hills Casino mid-afternoon but would otherwise be available for curb-to-curb service.

While some passengers prefer the ability to ride a fixed route service without reservations, a demand-response service is better able to serve the relatively low population and low demand in Corning. The grid pattern of the community with uniform density would be ensure trips would be

short², and connections to the GTC at the transportation center could be easily accommodated. Passengers would make reservations 24 hours in advance, and up to 14 days prior. Same day service would be accommodated on a space available basis.

This alternative would require the same number of hours to operate as the current service, though there might be a very small reduction in ParaTRAX service since the new Corning general public DAR would accommodate any local paratransit trips³. There would be a reduced number of miles served, saving an estimated \$2,600 in mileage-related costs. The reduction of service to Rolling Hills casino is expected to have a small negative impact on ridership, but passengers can still ride the GTC to get to the casino. The expanded service area and increased flexibility is expected to increase ridership by approximately 390 additional trips annually.

Eliminate Route 5 and Replace with Microtransit

This alternative would be similar to the previous one, but instead of general public dial-a-ride service with 24-hour advanced reservation, the service would be provided through a smartphone app with a goal of a maximum one-hour waiting time.

Under this alternative, TRAX would purchase and implement an app (and associated automated dispatching software) for the Corning service. There are several companies currently offering such packages (such as Spare Labs, Via and TripSpark), and it would be appropriate to select a vendor through an RFP process. A TRAX driver would operate the service, along with TRAX dispatchers. The app would be available to passengers for free download, and those with the technology and ability to use the software to request trips would do so. Others could call the TRAX dispatch office (where the dispatchers would enter the request into the software) and standing subscription trips (such as individuals regularly going to a senior meals program, as one example) could be made, avoiding the need for ongoing individual bookings. (As an example, 48 percent of the passenger trips on the STARNow microtransit program in Terrell Texas are booked through the app, while the remainder are either phone requests or standing subscription trips.)

The software would then organize the trips, and drivers would generally follow instructions received through devices on the vehicles. TRAX dispatchers would manage the phone reservations and address operational issues as they arise, with the ability to override the software. With the app software handling many if not most of the trip requests, dispatchers could focus on addressing the unusual requests or addressing service issues as they arise.

The cost of obtaining and maintaining the software would be determined through the RFP process and is difficult to specify, but based on other microtransit programs, it is estimated it would be in the range of an annual cost of \$25,000 to \$30,000 per year (with no initial set-up costs).

² ParaTRAX trips in December 2021 averaged 6.6 minutes when served entirely within Corning.

³ Based on December 2021 ParaTRAX data, there were an average of 0.8 passenger trips per day that were operated with both the origin and destination within Corning.

Microtransit has the potential to provide a higher quality demand response service (faster response times) than the general public on-demand service. The increased convenience of the ride request service could also lead to long-term increases in ridership, though there is not sufficient professional literature on which to base specific forecasts. Over time, automated data collection and reporting could also allow better allocation of resources.

It is expected this service could be accommodated with one vehicle and driver and the existing dispatching. Therefore, the cost would increase by an estimated \$25,000 annually to support the app. Ridership is difficult to predict, but is estimated to increase by twenty-five percent, or 980 trips annually.

POTENTIAL ADDITIONAL SERVICES

Alternatives listed below include options for increasing transit services to meet requested or perceived demand. These options increase the marginal operating costs over the status quo scenario.

Add a Midday Run to Rancho Tehama Express

The current schedule has two primary limitations: 1) passengers cannot arrive at a traditional work start time (the bus arrives in Red Bluff at 10:20 AM) and cannot depart at a traditional work time (the bus departs Red Bluff at 3:00 PM), making it impractical for traditional 8-hour work day, and 2) passengers must be in Red Bluff for four hours and forty minutes, which can be a long time for frail passengers whose appointments are likely shorter. To address these concerns, a midday run could be added to the Rancho Tehama Express route, with a schedule such as:

	AM	Midday	PM
Rio & Walnut Bus & Ride	6:10 AM	11:10 AM	5:10 PM
Humboldt Drive	6:55 AM	11:55 AM	5:55 PM
Rio & Walnut Bus & Ride	7:50 AM	12:50 PM	6:50 PM

This would allow workers to arrive and depart Red Bluff for traditional work hours (if their work is close to Rio & Walnut). Additionally, passengers would have three options for the duration of their stay in Red Bluff: 3 hours and 20 minutes in the morning; 4 hours and 20 minutes in the afternoon, or 8 hours and 20 minutes for the full day. It is expected some of the existing ridership would be lost due to some seniors' preference for a mid-morning departure, and some of the existing ridership would simply shift to a different time. The net increase in ridership of this alternative is estimated to be 190 passengers annually—a 21 percent increase. The increased cost is estimated at \$19,100 annually.

A sub-option would be to provide this mid-day run on Wednesdays only, rather than on both Wednesdays and Fridays. Residents desiring a shorter trip would choose to ride on Wednesdays. This would reduce the operating cost increase by half (to \$9,500 annually) and would serve approximately 130 passenger-trips per year.

Span of Service

Onboard passenger surveys indicated most survey respondents desire an increased span of service, both for earlier service and later service, and on both weekdays and Saturdays. However, a review of

ridership shows a strong bell-shaped pattern on weekdays with ridership lowest in mornings and late afternoons, peaking around 11:00 AM to 12:00 PM on Routes 1 and 2, around 12:00 to 1:00 PM on Routes 3A and 3B, and mid-morning on Routes 5 and the Glenn Tehama Connect. Afternoon ridership in particular drops off after 3:00 PM on all routes, indicating later service would have even lower productivity and may not warrant fixed route service.

Similarly, Saturday service consistently is less productive than weekday service, carrying 4.1 passengers per hour in FY 2021-22, compared to 5.3 on weekdays. Pre-COVID, 6.3 passengers were carried per hour on weekdays, and 3.9 on Saturdays, indicating that the gap between weekdays and Saturdays is lessening, but overall efficiency is decreasing as well. This does vary by route. Routes 1 and 2 carried 6.5 passengers per hour on Saturdays in FY 2021-22, compared to 2.4 passengers per hour on routes 3A, 3B and Route 6 combined—indicating expanded Saturday service may be warranted within Red Bluff. Various span-of-service options are presented below.

Extend Routes 1 and 2 Weekday Evenings

Providing evening service within Red Bluff on weekdays would allow those depending on transit to be able to use it to complete errands or work shifts later in the day. It would also provide an option for those arriving on the last runs of Routes 3A and 3B to transfer to Routes 1 and 2 to complete trips in Red Bluff. Under this option, Routes 1 and 2 would be extended to 7:30 PM weekdays. Based on the current pattern and an elasticity formula, ridership would increase by 2,100 passenger trips annually, at a cost of \$47,400.

Evening Service in Red Bluff with General Public On-Demand Service or Microtransit

Due to the drop off in evening ridership, it might be more appropriate to offer general public dial-a-ride or microtransit in the evenings. Under this alternative, service would be offered on-demand within the City of Red Bluff. Routes 1 and 2 would end at 5:30 PM at Rio and Walnut (a half an hour earlier than they currently end), and then either general public dial-a-ride or microtransit would be available from 5:30 PM until 7:30 PM. The service would be offered only within the city limits of Red Bluff. Ending Routes 1 and 2 a half hour earlier would reduce service hours by 256 annually, and the DAR would add 512 hours, for a net increase of 256 hours of service annually at a cost of \$12,300. Ridership would increase by an estimated 770 passenger trips per year. If implemented with microtransit, the increased cost would also include the \$25,000 annual software fee, as described previously, bringing the total cost to \$37,300 as shown in Table 20. It would only make sense to use microtransit in the evenings if microtransit is also offered in Corning (and thus the software fee would cover the cost of expansion for both services). The microtransit option is projected to increase ridership by 960 annually (and probably more long-term) but would incur the software fee.

Extended Saturday Service on Routes 1 and 2

Under this alternative, service would be operated until 6:00 PM in Red Bluff by extending Routes 1 and 2 by two hours on Saturdays. This would have an annual operating cost of \$9,300 and would increase ridership by 790 passenger trips annually.

Sunday General Public Dial-a-Ride Service

When seeking improvements to transit, one of the most often requested is for Sunday service. Typically, transit systems experience productivity rates on Sundays that are significantly lower than on Saturdays or weekdays. A rule of thumb is that Saturday service generates approximately half the productivity of weekdays, and Sunday transit service generates approximately half the ridership of Saturdays. However, as mentioned earlier, TRAX productivity on Saturdays has been closing the gap relative to weekdays, with 4.1 passengers per hour carried Saturdays compared to 4.8 on weekdays in FY 2021-22. It could be assumed that Sunday service might also be more productive than typical transit trends would indicate.

In this alternative, general public dial-a-ride service would be operated within the city limits of Red Bluff on Sundays from 10:00 AM to 3:00 PM using one vehicle, and one dispatcher. If the service proved effective after 6 months to a year (3.0 passenger trips per hour or better), expansion to other areas could be considered. This alternative would cost \$12,800 annually and would be expected to generate 700 additional passenger trips per year.

COMPARISON OF SERVICE ALTERNATIVES AND PERFORMANCE ANALYSIS

A quantitative comparison of the service alternatives is presented in Table 22 and Figures 19-22. For this comparison it is assumed fares will not be charged. Operating cost estimates used to develop these performance measures represent marginal costs, meaning they do not include fixed costs required to operate the transit system. Additionally, any microtransit option will require an additional fixed fee of approximately \$25,000 annually, though if multiple microtransit options are selected, the fee will cover them all. Four performance measures are considered:

- **Annual Ridership (Figure 19)** – In terms of ridership, reassigning Routes 1 and 2 is expected to generate the biggest increase over existing ridership, with an estimated 2,640 annual one-way passenger trips. This is followed by extending Routes 1 and 2 into the evening, which would generate an estimated 2,100 trips annually. The midday run to Rancho Tehama would have the smallest impact, increasing ridership by just 190 one-way passenger trips annually.
- **Annual Operating Cost (Figure 20)** – Extending Routes 1 and 2 into the evening on weekdays has the biggest cost at \$47,400, followed by providing microtransit in the evenings at \$37,000 (including the \$25,000 annual software fee). Replacing Route 5 with general public dial-a-ride would have a moderate savings of \$2,600 annually, as would serving Shasta College on-demand (\$1,600 savings annually due to reduced mileage).
- **Passenger-Trips per Hour (Figure 21)** – Productivity of a transit system is often measured in terms of passenger-trips per hour. The “status quo” carries an average of 4.6 trips per vehicle hour. This analysis shows that productivity would be best by extending Saturday service or adding evening microtransit in Red Bluff on weekdays. Next best is evening general public Dial-a-Ride, followed by extending Routes 1 and 2 in Red Bluff and Sunday general public Dial-a-Ride. Several other options would increase ridership of existing services, but as they add no hours, this measure does not apply.
- **Operating Cost per Passenger Trip (Figure 22)** – Operating cost per passenger-trip is a good measure of the cost effectiveness of each alternative. As shown, adding a midday run to

Table 22: Comparison of Service Alternatives

Alternative	Annual Ridership	Annual Operating Cost	Passenger-trips per Veh-Hour	Marginal Operating Cost per Passenger Trip
Shasta College On-Demand (weekdays)	80	-\$1,600	NA	-\$20.00
Reassign Routes 1 and 2 as Four Routes	2,640	\$0	NA	\$0.00
Replace Route 5 with General Public DAR	390	-\$2,600	NA	-\$6.67
Replace Route 5 with Microtransit	980	\$22,400	NA	\$22.86
Midday Run on Rancho Tehama Ex - 2X/Week	190	\$19,100	0.5	\$100.53
Midday Run on Rancho Tehama Ex - 1X/Week	130	\$9,500	0.7	\$73.08
Extend Routes 1 & 2 On Weekdays to 7:30 PM	2,100	\$47,400	2.7	\$22.57
Red Bluff Evening General Public On-Demand	770	\$12,300	3.0	\$15.97
Red Bluff Evening Microtransit	960	\$37,300	3.8	\$38.85
Extend Routes 1 & 2 On Saturdays to 6:00 PM	790	\$9,300	3.8	\$11.77
Sunday General Public DAR in Red Bluff	700	\$12,800	2.7	\$18.29
Existing TRAX	87,100	\$1,172,200	4.0	\$13.46
Note: Does not include fixed contract costs.		NA = Not applicable, as vehicle-hours do not change.		

Rancho Tehama Express would cost \$100.53 per passenger trip carried, due to the significant cost with very little new ridership generated. The two microtransit options also are relatively expensive per passenger trip carried again due in part to the annual software fee. Replacing Route 5 with general public dial-a-ride would reduce the per-passenger cost as it would slightly lower the operating cost while increasing ridership—but it is still relatively expensive per passenger carried. The Shasta College option would also save a small amount of cost annually while increasing ridership slightly, which would save \$11.25 per passenger added.

Performance Analysis Findings

This performance analysis indicates that reassigning Routes 1 and 2 would be a benefit with only marketing costs up front and no change in operating costs. Additionally, replacing Route 5 with general public DAR service would save money while increasing ridership, but still not perform well relative to other services. Serving Shasta College on demand would also be a cost savings with a minor ridership benefit. All other options would carry a higher cost per passenger trip carried than the status quo, although evening Red Bluff general public DAR (\$9.09) and extended Saturday service hours (\$9.05) are both close to the current status quo cost of \$8.71 per passenger trip.

Figure 19: Change in Annual Ridership of TRAX Alternatives

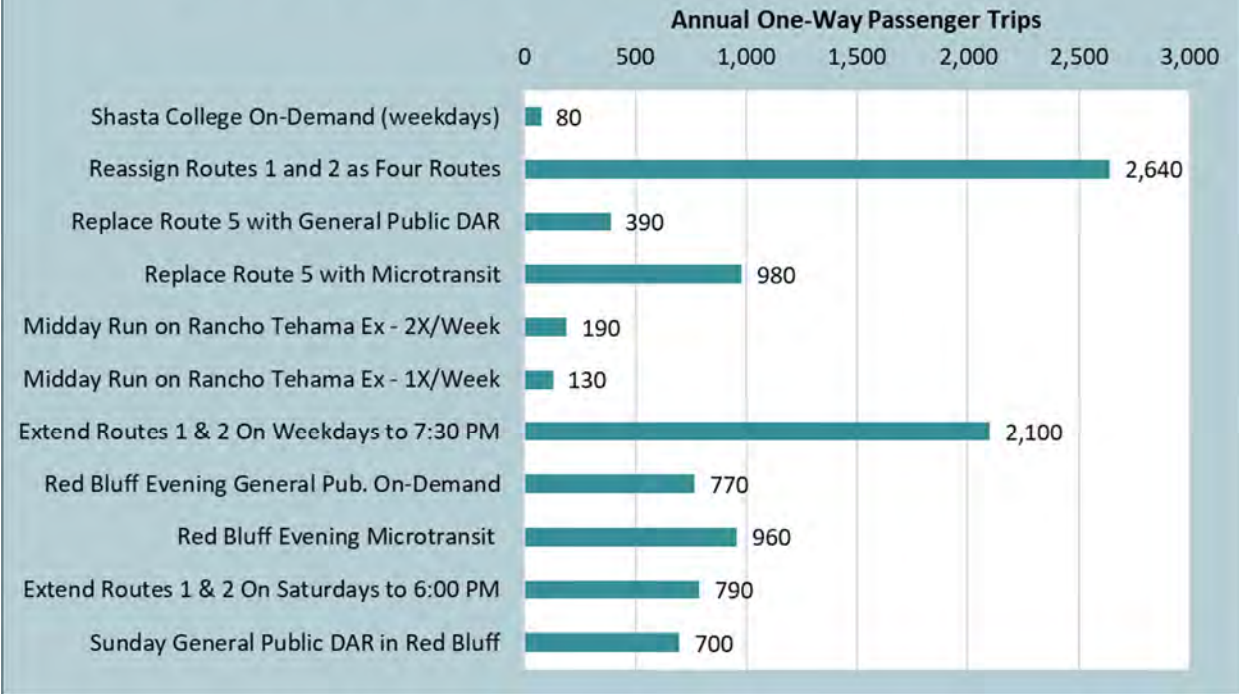


Figure 20: Change in Annual Operating Cost of TRAX Alternatives

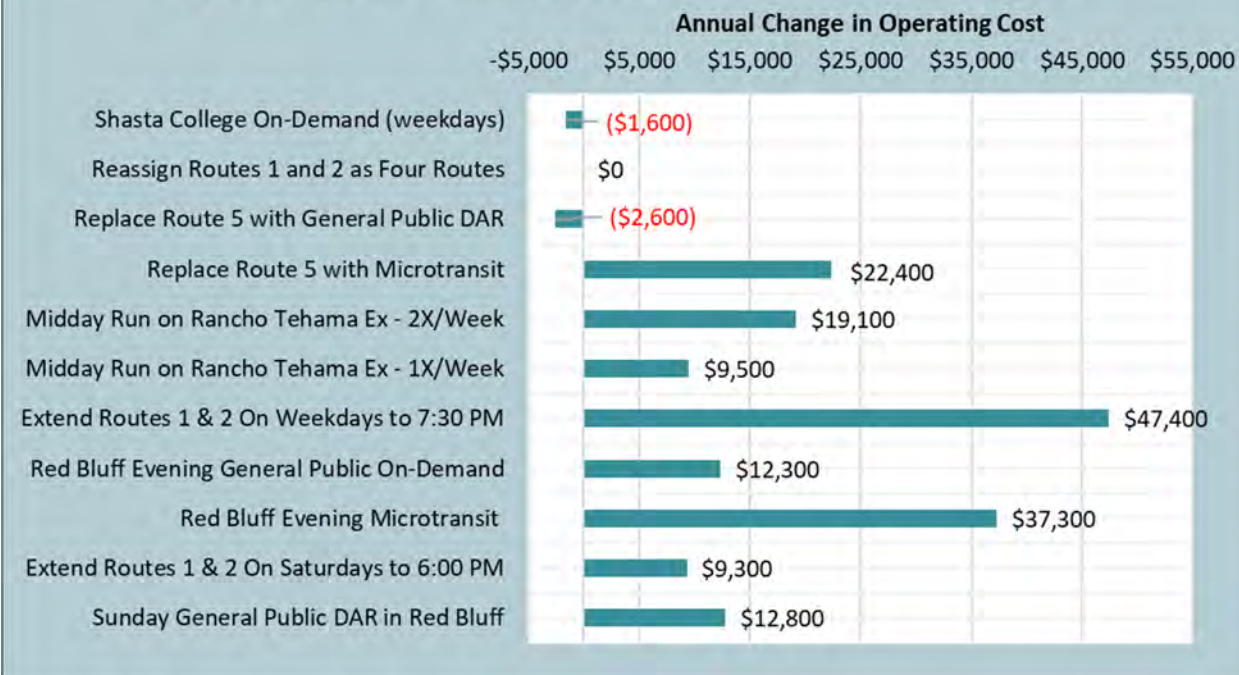


Figure 21: Change in Passenger Trips per Hour of TRAX Alternatives

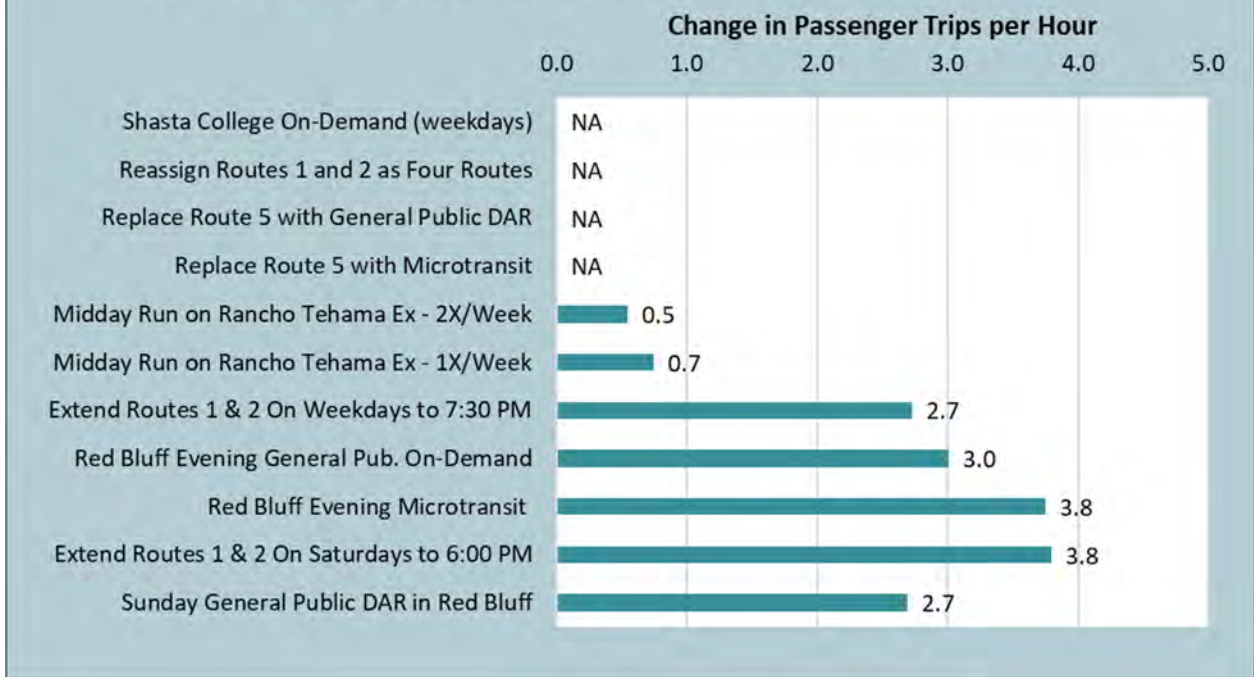
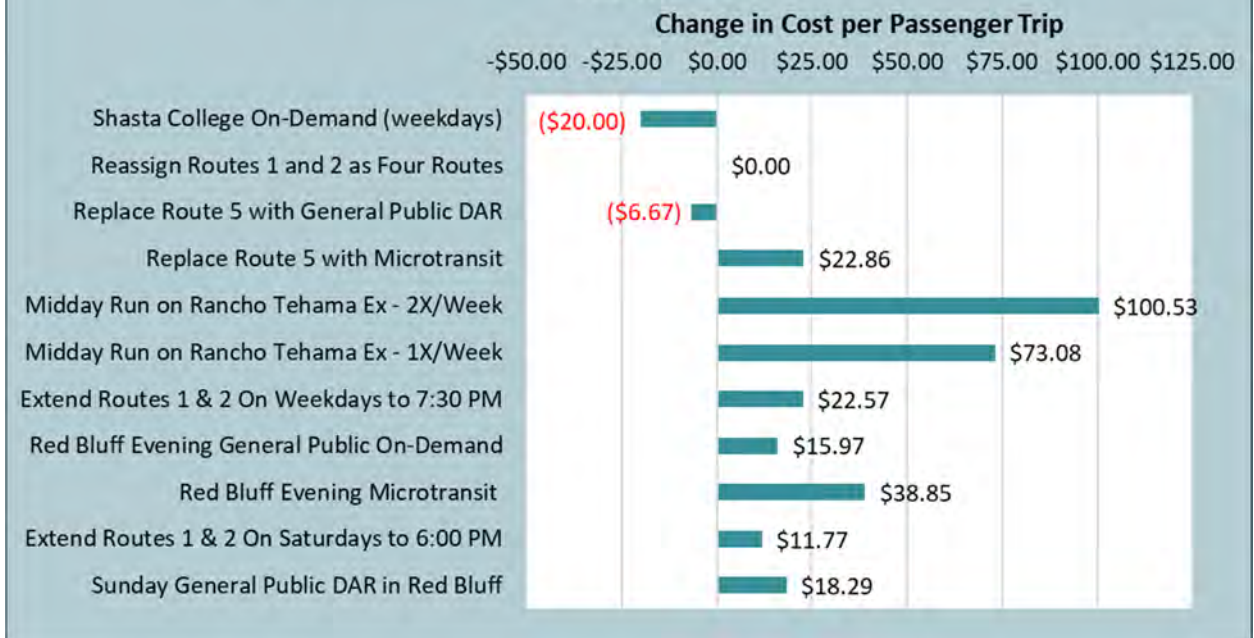


Figure 22: Change in Operating Cost per Passenger Trip of TRAX Alternatives



PARATRAX ALTERNATIVES

Per requirements of the Americans with Disabilities Act (ADA), Tehama County must provide complementary paratransit service within $\frac{3}{4}$ of a mile of fixed routes. ParaTRAX operates in a wide area of the county⁴ beyond what is required by the ADA. Prior to the pandemic, ParaTRAX carried 2.8 passengers per revenue hour over 16,256 hours. In FY 2021-22, 1.8 passenger trips were carried per hour of service over 6,390 hours of service (up from 1.7 passengers per hour over 8,974 hours the previous year). However, the number of miles operated has increased each year: 109,011 miles were operated in FY 2021-22 compared to 81,247 in FY 2018-19, as shown in Table 11 of Chapter 3. This indicates that passengers are traveling greater distances—an average of 9.3 miles in 2021-22 compared to just 5.0 in 2018-19.

Transit programs generally expect curb-to-curb transit services to be less efficient than fixed route service due to the nature of the service provided. One reason for the decreased productivity is that fares have temporarily been suspended due to COVID, which has increased demand and distance of trips. While no changes to the service are currently recommended, if demand outpaces resources, the following options are potential means of reducing costs:

- **Reinstate fares:** Free fares are funded with COVID relief funds for at least the next three years, and TRAX intends to continue free fares indefinitely. However, the FTA may reinstate requirements for transit entities to maintain a minimum farebox return ratio, which cannot be funded through TDA monies. Fares, even if low, and even if partially subsidized, can be a means of impacting transit demand.
- **Reduce ParaTRAX Service Area:** Currently, ParaTRAX service covers roughly 900 square miles of service—much beyond the ADA-required complementary paratransit (which requires service to be provided only as far as $\frac{3}{4}$ miles around every fixed route). If demand began to outstrip resources, the service area could be reduced by staying closer to the I-5 corridor. To meet the needs of passengers living beyond a reduced zone, a lifeline service could be offered a set number of days per week or month.

These options are included in broad terms, rather than quantitatively. The need to reduce service would be the determining factor in what size the zone would become, or what fares would be appropriate.

⁴ The service area is roughly ten miles east and ten miles west of Interstate 5, plus further west surrounding Rancho Tehama.

INTRODUCTION

This chapter discusses the need for capital equipment for the upcoming five- to ten-year period. The discussion is general, addressing issues such as replacement vehicles and passenger amenities. The recommended capital plan will be developed once preferred service alternatives are selected so that the capital plan specifically supports those alternatives. Therefore, the current chapter is a broad discussion of needs and requirements.

VEHICLE NEEDS

The current TRAX fleet and replacement needs were identified in Table 19 in Chapter 3. As previously discussed, TRAX has seventeen vehicles used in service, with up to eleven in service at peak times and six back-up vehicles. Seven of the vehicles are past the expected date of replacement, with two more needing replacement in the short term (within five years) and eight in five to ten years at the current level of service. None of the service alternatives presented in the previous chapter would require an additional vehicle initially.

Zero Emission Vehicle Requirements

An important consideration with respect to transit vehicle replacement is meeting the California Air Resources Board (CARB)'s Innovative Transit Regulations. Beginning with buses purchased after January 1, 2026, 25 percent of new transit vehicle purchases over 14,000 pounds gross vehicle weight rating will need to be Zero Emission Buses (ZEB) per CARB regulations. At present, ZEB vehicles (whether battery electric buses or hydrogen) are much more expensive than gas or diesel buses. By 2029, 100 percent of new vehicle purchases must be ZEB (with some exemptions for situations where ZEBs are infeasible). Small transit agencies such as TRAX will need to develop a Zero Emission Bus Rollout Plan by July 1, 2023. The Rollout Plan should demonstrate how the agency will gradually transition 100 percent of their fleets to ZEB by 2040, as well as the types of buses to be purchased, schedule of construction for infrastructure facilities, training plan, funding sources and how ZEBs will be deployed in disadvantaged communities. This SRTP addresses strategies for working toward a ZEB fleet in the five-year time frame, though the ZEB Rollout Plan should provide greater detail.

Battery Electric Buses

Current technology essentially offers two fuel choices for zero emission vehicles: battery electric or hydrogen fuel cell. Both have pros and cons, but the emerging infrastructure in the northern Sacramento Valley region currently favors battery electric buses and TRAX services do not include very long runs that pose a particular problem for battery electric buses (BEBs). The BEB option is therefore the focus of this SRTP.

In the current TRAX fleet, several of the existing vehicles are considered cutaways. At present, there are no vehicles in this class that have been certified by the Federal Transit Administration's testing program, located in Altoona, Pennsylvania. As only vehicles that have passed "Altoona Testing" can

be purchased with federal funds, the CARB draft Fleet Rule indicates that ZEB vehicles are only required for cutaway vehicle purchases if ZEB cutaway vehicles have passed this testing.

There are significant issues regarding conversion to electric vehicles, including the impact on facilities, vehicle costs, operating range, charging options and time-of-day charging strategies. Tehama County should plan for eventually acquiring an electric vehicle fleet, but until Altoona testing is available and funding for electric infrastructure is determined, it is best to delay as allowable conversion to electric until such issues are addressed. Some of the factors to be considered to accomplish the transition include:

- A key factor regarding battery electric buses is the potential range between charges. Buses with a range of 120-150 miles have been available for several years, which is consistent with a full day of service on the TRAX routes. However, these claims do not reflect the requirements to also power onboard heating and cooling systems – an important consideration in Tehama’s hot summers. Some manufacturers have recently announced new technology that can operate up to 350 miles between charges.
- A ZEB fleet will require charging equipment. These can take the form of slow-charge stations at the vehicle storage facility (for charging overnight) or fast-charge facilities at the Transit Center, which typically require 10 minutes to provide sufficient charge for an hour’s operation. Identifying the appropriate charging strategy and location also requires addressing several issues:
 - Is there adequate space for charging equipment to be installed at the Transit Center and/or the vehicle storage area?
 - Would fast-charging during the operating day be possible without delaying transit routes?
 - Other transit systems have found that providing adequate charging capacity requires very extensive upgrades in the electrical system both on-site as well as in nearby power substations and supply lines, such as an upgrade from a 240-volt service to a 480-volt service. What is the electrical supply available at the two locations, and what are the cost implications of any necessary system upgrades?
 - For major power users (such as a transit system with full BEB fleets), electrical rates typically vary by load and by time of day. What are the long-term operating cost impacts of various charging scenarios?

Defining the best BEB strategy for the TRAX transit program will require a detailed study, focusing on the electrical engineering and cost implications of the charging options. The overall results of this study should be a BEB implementation plan that minimizes costs to the local jurisdictions, maintains a good quality of service to the passengers and achieves the environmental benefits of BEB technology as it matures.

Review of Appropriate Bus Size

Using a bus of appropriate size is important in providing efficient and convenient transit services. TRAX currently uses a wide range of vehicle types, ranging from a seating capacity of 8 to 26 passengers (excluding wheelchair users). While the operating cost of a larger bus is only slightly

higher than operating a smaller vehicle (as driver costs—the main cost of operations—do not vary by vehicle size), larger vehicles do tend to have higher capital costs and fuel costs, while smaller vehicles may not adequately manage passenger loads and have a shorter lifespan, thus need replacing more frequently. A mix of small and large vehicles is appropriate for the various services provided by TRAX.

Trolleys

TRAX has two trolleys in its fleet which are used to operate Routes 1 and 2 in Red Bluff. The trolleys are attractive and are popular for special events, and sometimes attract first-time riders who want to try transit specifically to ride the trolleys. However, in regular service, passengers find the vehicles uncomfortable due to the hard wooden seats⁵. The vehicles do not expire until FY 2028-29, but they should be put into back-up service when possible and should be replaced with mid-sized buses.

Accommodating Bicycles

Combining bicycling with transit trips is a popular travel pattern in Tehama County, and beneficial to passengers and to the environment. In FY 2020-21, for example, two percent of passenger trips included a bicycle as part of the trip—over 1,300 one-way bicycle trips. TRAX should continue to encourage this mixed mode of travel by ensuring future fixed route vehicles are equipped with bike racks, and transit centers and major bus stops should have places for passengers to lock bikes. The bike racks currently in use accommodate two bikes, but it is recommended moving forward bike racks should be purchased which accommodate three bikes.

VEHICLE REPLACEMENTS

Based on the discussion above, and considering no additional buses are needed for any of the recommended alternatives, the bus replacement and preliminary cost estimate is presented in Table 23. The planned replacements take into consideration the “useful life benchmark” or ULB⁶ of each vehicle. The vehicles are categorized as fixed route vehicles or dial-a-ride vehicles. The costs will vary depending on availability and whether pooled purchases with other transit agencies are possible, but in general, gas or diesel fixed route buses cost approximately \$150,000, while electric vehicles are approximately \$500,000. Dial-a-ride vehicles, which for this planning period can remain gasoline or diesel, are currently approximately \$82,000, based on recent purchases. The rate of inflation for FY 2022-23 is estimated at 5.0 percent, and 3.0 percent per year thereafter.

The number of vehicles which need replacing in the next decade includes eight fixed route vehicles and three dial-a-ride vehicles, assuming no additional services are implemented which would require another vehicle. It is recommended that the vehicle due to expire in 2026/27 (bus #974) should instead be purchased one year earlier which would give Tehama County more time to establish the required electric infrastructure and would provide significant cost savings since gas/diesel buses are

⁵ Survey respondents repeatedly noted the seats of the trolleys were uncomfortable.

⁶ Useful life benchmark (ULB) means the expected life cycle or the acceptable period of use in service for a capital asset, as determined by a transit provider, or the default benchmark provided by FTA

Table 23: Fleet Replacement Requirements

Plan Period (by Fiscal Year) ²	Fixed Route Vehicles				Dial-A-Ride Vehicles				Total Cost of Vehicle Needs
	Number of Vehicles			Subtotal of Cost	Number of Vehicles			Subtotal of Cost	
	Gas/Diesel Vehicles	Electric Vehicles	Total		Gas/Diesel Vehicles	Electric Vehicles	Total		
22/23	1	0	1	\$157,500	0	0	0	\$0	\$157,500
23/24	0	0	0	\$0	1	0	1	\$88,700	\$88,700
24/25	0	0	0	\$0	0	0	0	\$0	\$0
25/26	1	0	1	\$172,100	0	0	0	\$0	\$172,100
26/27	0	0	0	\$0	0	0	0	\$0	\$0
27/28	2	1	3	\$973,800	2	0	2	\$199,600	\$1,173,400
28/29	0	0	0	\$0	0	0	0	\$0	\$0
28/29	1	1	2	\$839,400	0	0	0	\$0	\$839,400
29/30	0	0	0	\$0	0	0	0	\$0	\$0
30/31	0	1	1	\$685,000	0	0	0	\$0	\$685,000
Total	5	3	8	\$2,827,800	3	0	3	\$288,300	\$3,116,100

Estimated Current Cost of Vehicles	Gas/Diesel \$150,000	Electric \$500,000	Gas/Diesel \$82,000	Electric NA
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Note 1: All costs include 5.0 percent annual inflation in 2022/23, and 3.0 percent thereafter.

Note 2: By 2026, 25% of TRAX new vehicle purchases over 14,000 lbs are required to be zero emission. By 2029, this increases to 100%.

Source: LSC Transportation Consultants, Inc.

much cheaper to purchase. Therefore, the plan recommends the purchase of five electric vehicles and six gas/diesel vehicles. The first electric vehicle would not be purchased until 2027/28, giving Tehama County several years to develop the infrastructure.

This replacement plan would require \$3.11 million over the next decade. Federal capital grants typically cover 80 percent of the cost, which indicates the local match would be an estimated \$623,000 over ten years. This does not include the cost of charging stations.

PASSENGER AMENITIES

A review of existing bus stops was included in Chapter 3, including a list of stops with deficiencies. The capital plan will recommend an annual maintenance fund for improving existing stops, as well as recommendations for improved or additional bus stops, particularly if any routes are realigned. A list of priority improvements will be part of the recommended capital plan.

FACILITY NEEDS

TRAX is in the fortunate position of having recently built a transit facility which meets the administrative, operational and maintenance needs of the transit program. The Bidwell Building and yard includes office space, storage space, conference rooms, a dispatch room, a customer service

window, fenced parking, and maintenance facility. This facility was opened 2021 and is owned by Tehama County and provided to the contractor to operate services. The building has been built in phases, and a future phase will include solar panels and potentially vehicle charging equipment.

POTENTIAL NEED FOR TECHNOLOGICAL EQUIPMENT

Transit systems across the United States are increasingly moving toward technological solutions to improve transit. For example, vehicle location services paired with software and/or mobile apps can allow dispatchers and passengers to track vehicles. For dispatchers, this can alert them to the need to send a tripper if a vehicle is falling behind, for example, and passengers can know if their vehicle is arriving on time. Furthermore, these types of applications can be used for ride-hailing services, including at the transit agency level.

TRAX does not currently have automatic vehicle location (AVL) equipment or software, but it would benefit the transit program. In simple terms, AVL has two major parts: 1) geographic positioning systems (GPS) that track the real-time location of the bus, and 2) software which displays the location of the buses on a map. An AVL tracking system can be very basic, or can include real time passenger information, video displays at transit centers, automatic passenger counters, and vehicle annunciators. The benefit to TRAX in the short term would be the ability to track and monitor buses while in service, which assists dispatching; and to collect important operational and passenger data.

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Chapter 6

TRAX POLICY REVIEW, GOALS, AND PERFORMANCE STANDARDS

INTRODUCTION

Having a means by which to measure how well transit is performing is a crucial aspect of transit planning. This chapter reviews goals, objectives, and performance standards for TRAX and ParaTRAX. Per requirements of the California Transportation Development Act (TDA), both organizations track and record the five following standards:

- Operating cost per passenger
- Operating cost per vehicle service hour
- Passengers per vehicle service hour
- Passengers per vehicle service mile
- Vehicle service hours per employee

In addition to these five quantitative measures, a review of helpful policies and goals are included in this chapter.

TRAX GOALS AND STANDARDS

Below are goals and related standards to help TRAX achieve optimal performance. The intent is for the standards to be ambitious enough to encourage improvement but realistically achievable to be meaningful. The goals apply to the TRAX services overall, and where appropriate, to specific services that vary in effectiveness and efficiency. For example, Red Bluff routes serve a denser area than regional routes, and it is therefore appropriate to expect higher efficiency for those routes. The standards apply to the following categories of service:

- Local Routes, which include Routes 1 and 2 in Red Bluff
- Regional Routes, which include Routes 3A and 3B and the GTC
- Second Tier Local Routes (for smaller communities, including Corning)
- Lifeline Service (such as the Rancho Tehama Reserve route)
- Paratransit
- Systemwide

The standards are shown in Tables 24 and 25 and include a minimum or maximum standard as a means of reaching each goal. Using the status quo 2021-22 data shown in Table 20, the standards are shown as either being met or not. It is emphasized that these goals and standards are examples which should be further explored by the TCTC, TRAX staff and the SSTAC to ensure they reflect local objectives.

Goal 1: Service Efficiency Goal

Service Efficiency Goal: To maximize the level of services that can be provided within the financial resources associated with the provision of transit services. The standards should not be strictly applied to new routes for the first two years of service, so long as 60 percent of the standard is achieved after one full year of service and a favorable trend is maintained.

Farebox Recovery Ratio Standard: In simple terms, the farebox return ratio is the ratio of the operating income (largely fare revenues, but also including advertising revenue) divided by the non-capital expenses. Under TDA ruling, TRAX was required to establish a farebox ratio of 10 percent overall, though this has been temporarily suspended due to COVID. If the TDA reinstates this requirement, TRAX may want to consider this standard as a means of reaching this goal.

Operating Cost Standards: The marginal operating costs are divided by passenger trips, vehicle-hours of service, and vehicle-miles of service to measure efficiency. The operating costs are subject to influences which are difficult to control, such as contract costs, fuel costs, and inflation. Therefore, the operating cost standards should be reviewed annually as part of the budget process to determine a fair and appropriate standard. Based on recent performance and the anticipated 2022-23 budget, the following standards are recommended:

- **Operating Cost Per Passenger-Trip Standard:** The marginal allocated operating cost per passenger-trip should not exceed \$6.50 on Local Routes, \$18.00 on regional routes, \$25.00 on lifeline and community services, \$30.00 on dial-a-ride, and \$14.00 overall fixed route weekday service. The services currently meet these standards except for Route 5, which has a relatively high cost per passenger trip at \$32.44, and the Rancho Tehama Route, which costs \$26.44 per passenger trip. This is shown in Table 24.
- **Operating Cost Per Vehicle Service Hour Standard:** The marginal operating cost per vehicle service hour should not exceed \$55.00 on any services. This is a difficult standard to control but makes the transit agency more cost conscious. This should be reviewed at least annually but is currently set relatively high due to the recent inflation and impacts of COVID (including increased driver pay). This standard is currently being met, as shown in Table 24.

Goal 2: Service Effectiveness Goal

Service Effectiveness Goal: To maximize the ridership potential of TRAX service. The criteria presented below should not be strictly applied to new routes for the first two years of service, so long as 60 percent of standard is achieved after one year and a favorable trend is maintained. As ridership had been trending downward nationally for public transit before the pandemic, it is recommended standards be lowered to be achievable but still seeking improvement.

Passenger-trips Per Vehicle Service Hour Standard: Serve a minimum of 8.0 passenger-trips per vehicle service hour on the local routes, 3.0 on the regional and community routes, 2.0 on the lifeline dial-a-ride, and 4.5 systemwide. All but Route 5 currently meets these standards, as shown in Table 24.

Table 24: Example Performance Standards for TRAX Service Efficiency and Effectiveness

Shading Indicates Does Not Meet Standard
 Shading Indicates Meets Standard

1. SERVICE EFFICIENCY STANDARDS		
Marginal Operating Cost per Passenger Trip (Weekdays)		
Service	Proposed Standards	Current Status
	Maximum	
Local (example - Routes 1 & 2)	\$6.50	\$6.03
Regional (example - Routes 3A, 3B, GTC)	\$18.00	\$18.14
Lifeline (example - RTR)	\$25.00	\$26.44
Small Community (example - Route 5)	\$20.00	\$32.97
Dial-a-Ride	\$30.00	\$28.53
Systemwide (Fixed Routes Weekdays)	\$14.00	\$13.16

Marginal Operating Cost per Vehicle Hour		
Service	Proposed Standards	Current Status
	Maximum	
Dial-a-Ride	\$55.00	\$53.57
Fixed Routes (Weekdays)	\$55.00	\$54.27

2. SERVICE EFFECTIVENESS STANDARDS		
Passenger Trips per Revenue Hour (Weekdays)		
Service	Proposed Standards	Current Status
	Minimum	
Local (example - Routes 1 & 2)	8.0	8.6
Regional (example - Routes 3A, 3B, GTC)	3.0	3.0
Lifeline (example - RTR)	2.0	2.6
Small Community (example - Route 5)	2.5	1.5
Dial-a-Ride	1.7	4.0
Systemwide (Fixed Routes Weekdays)	4.5	4.1

Passenger Trips per Revenue Mile (Weekdays)		
Service	Proposed Standards	Current Status
	Minimum	
Local (example - Routes 1 & 2)	0.60	0.60
Regional (example - Routes 3A, 3B, GTC)	0.10	0.15
Lifeline (example - RTR)	0.07	0.06
Small Community (example - Route 5)	0.25	0.13
Dial-a-Ride	0.10	0.22
Systemwide	0.25	0.22

*Note: Evaluates fixed route weekday service. Saturday service should be no more than 30 percent less efficient.
 Source: Based on Status Quo parameters presented in Table 1.*

Passenger-trips Per Vehicle Service Mile Standard: Serve a minimum of 0.60 passenger-trips per vehicle service mile on the local routes, 0.10 on regional routes, 0.07 on lifeline, 0.25 on small community routes, and 0.10 on Dial-a-Ride, as shown in Table 24. The RTR and Route 5 service do not currently meet the minimum standards.

Goal 3: Service Quality Goal

Service Quality Goal: To provide safe, reliable, and convenient transit services. These standards are recommended to affect service quality, such as the availability of services and amenities. Standards for this goal, when they can be quantified, are presented in Table 25.

Passenger Amenity Standard: Systemwide, benches should be provided at locations serving five or more passengers per day, and shelters should be provided at locations serving 10 or more passengers per day, so long as passenger amenities can be installed in full compliance with requirements of the ADA. Currently, this standard is met.

Service Availability Standard, Complementary Paratransit: This standard encourages wide yet targeted coverage of transit service. On the Local Services, the standard is to provide complementary paratransit service within three-quarters of a mile of the local and regional routes, which is currently achieved. The recommended standard for lifeline service is to serve populations of 2,500 at a minimum, with a target of serving populations of 500 or more. The minimum is met. The standard for the dial-a-ride is to serve populations within a mile of urban populations and with a target of service within two miles of urban populations. The ParaTRAX service extends far beyond this minimum requirement since dial-a-ride is offered approximately 10 miles either side of Highway 5.

On-Time Performance Standard: All route services should be on-time 85 percent of the time (with “on-time” defined as never early and not more than five minutes late). While TRAX records a high level of on-time compliance, during surveys, buses ran late, and a quarter of passengers surveyed ranked this factor as just fair and several complained about late performance in the afternoons. It may be that on-time performance is only monitored at the transit center, and other stops should be periodically checked as well. For ParaTRAX, trips should never be early and should be served within 30 minutes for at least 95 percent of the trips.

Missed Trips/Denials Standard: All fixed route services have a maximum of no more than 1.0 percent missed or denied trips. For Paratransit, no pattern of trip denials to ADA eligible passengers shall exist due to vehicle unavailability. This data needs to be reviewed to determine if the status.

No Shows Standard: No more than 1 in 20 Paratransit trips should be a “no show” (defined as a passenger not acknowledging the bus within five minutes of its arrival). The practice is to arrive, and honk the horn within, then leave after five minutes. This standard is being met.

Ride Time Standard: For fixed routes, travel time should not take more than three times what it would take to drive in an automobile as calculated by a typical trip (see Table 16 from Chapter 3).

Table 25: Example Performance Standards for TRAX Service Quality

Shading Indicates Does Not Meet Standard
 Shading Indicates Meets Standard

3. SERVICE QUALITY STANDARDS		
Service Quality Standard - Passenger Amenity Standard		
Service	Proposed Standards	Current Status
	Minimum	
All Fixed Route Services	Benches at stops with 5 or more boardings per day; shelters at stops with 10 or more boardings per day	Met

Service Quality Standard - Service Area		
Service	Proposed Standards	Current Status
	Minimum	
Local (example - Routes 1 & 2)	Within 3/4 of Route	Met
Regional (example - Routes 3A, 3B, GTC)	Within 3/4 of Route	Met
Lifeline (example - RTR)	Serve Populations of 2,500 or more	Met
Small Community (example - Route 5)	80% of Community	Met
Dial-a-Ride	Serve within 1 mile of urban populations	Met

Service Quality Standard - On-Time Performance		
Service	Proposed Standards	Current Status
	Minimum	
All Fixed Route Services	85% of trips no later than 5 minutes behind schedule, no early departures	Data indicates met; better tracking needed

Source: Monthly Reports

Most trips meet this standard, but there are a handful of origin/destination pairs for which this standard is not met. For ParaTRAX, 90 percent of trips should be completed within 20 minutes and 100 percent should be completed within 60 minutes.

Miles Between Roadcalls Standard: A standard should be established of 20,000 miles between roadcalls, which is met.

Miles Between Accidents Standard: There shall be 100,000 miles between preventable accidents, which is met.

Goal 4: Planning and Management Goal

Planning and Management Goal: To evaluate strategies that help management maximize productivity while meeting the transit needs of the community and develop a transit program that supports comprehensive planning goals.

Planning Criteria: Transit Development Plans shall be updated at a minimum of every five years, with financial plans updated annually.

Service Monitoring Standard: Monitoring reports on the effectiveness and efficiency of transit service will be collected and reviewed monthly. Currently, data is provided in multiple worksheets for weekdays versus Saturdays and for the various services, making it difficult to summarize systemwide data. The data detail currently available is helpful for planning purposes, but should be better organized, consistently named, and headings should be carefully checked to ensure they match the data provided.

Transportation Development Act Standard: The requirements of the Transportation Development Act shall be fully met, particularly regarding addressing those unmet transit needs of the community that are “reasonable to meet.”

Land Use Planning Standard: Development proposals shall be reviewed with the Tehama County, Red Bluff, and Corning planning departments to assess the effects of development on transit service, and to encourage land development that is compatible with transit service. In addition, roadway modification plans along existing or planned transit service routes shall be reviewed by transit staff. The TCTC should adopt ADA Transit Design Standards which should be utilized with the project review phase on development proposals or modifications.

Coordination Standard: On at least a bi-annual basis, potential coordination opportunities with all other public transportation providers in the service area shall be reviewed to ensure convenient connections between services and to avoid unnecessary duplication of service. TCTC staff should regularly coordinate with RABA and Glenn Ride staff.

Goal 5: Safety Goal

Safety Goal: To develop and maintain a Public Transportation Agency Safety Plan (PTASP) and to adhere to the recommended policies and standards recommended in the plan.

CHAPTER 7

FUNDING OPPORTUNITIES

INTRODUCTION

This chapter reviews funding options for transit services, including sources for operational and capital costs. Past use of such sources is described, as well as potential opportunities for future use.

FEDERAL FUNDING SOURCES

The Federal Transportation Administration has numerous grant programs available to transit agencies for both operating and capital assistance. Eligibility in many programs is dependent upon population, distinguishing between “urban” and “nonurbanized” areas for funding allocations. Those applicable to Tehama County and its communities are FTA 5311, 5310 and 5339; each of these is discussed in detail below.

FTA Section 5311 Formula Grants for Rural Areas

The Formula Grants for Rural Areas program provides capital, planning, and operating assistance to states to support public transportation in rural areas with populations of less than 50,000, where many residents often rely on public transit to reach their destinations. The program also provides funding for state and national training and technical assistance through the Rural Transportation Assistance Program. In FY 2020-21, Tehama County’s apportionment was \$398,943, increasing to \$518,574 in FY 2021-22, and \$528,946 in 2022-23.

Coronavirus Relief and Response Supplemental Appropriations Act

Transit agencies were awarded additional 5311 Federal Funds through the Coronavirus Relief and Response Supplemental Appropriations Act (CRRSAA) in Fiscal Year 2021. Tehama County’s share was \$1,054,601. This money was intended to address increased costs and recovery associated with the pandemic.

FTA Section 5311(f) Formula Grants for Rural Areas – Intercity Bus Program

The 5311 program requires each state to dedicate 15 percent of its apportionment for an intercity bus program. In March 2018, Caltrans published an assessment of the Intercity Bus Program, including a revision of funding criteria for projects. The City of Dinuba does not currently receive 5311(f) grants for intercity bus service, but it could be something to explore to support the Glenn-Tehama Connection and the Shasta Tehama Connection (the latter being just introduced using LCTOP funds).

FTA Section 5310 Enhanced Mobility of Seniors and Individuals with Disabilities

FTA funds are also potentially available through the Section 5310 Elderly and Persons with Disabilities Program (largely vehicles), which is administered by Caltrans. This program is designed to improve the mobility of seniors and disabled persons, and monies are apportioned based on population. FTA

5310 requires a 50 percent local match for operating expenses, and a 20 percent match for capital expenses.

FTA Section 5339 Bus and Bus Facilities

The Grants for Buses and Bus Facilities is a federal grant program for recipients to replace, rehabilitate and purchase buses and related equipment and to construct bus-related facilities including technological changes or innovations to modify low or no emission vehicles or facilities. Funding is provided through formula allocations and competitive grants. A sub-program provides competitive grants for bus and bus facility projects that support low and zero-emission vehicles.

There are three components to this program. The first is a continuation of the formula bus program established under MAP-21. The remaining two components include the bus and bus facilities competitive program based on asset age and condition, and a low or no emissions bus deployment program. A pilot provision allows designated recipients in urbanized areas between 200,000 and 999,999 in population to participate in voluntary state pools to allow transfers of formula funds between designated recipients during the period of the authorized legislation.

Congestion Mitigation and Air Quality Improvement Program

The CMAQ program provides a flexible funding source to State and local governments for transportation projects and programs to help meet the requirements of the Clean Air Act. Funding is available to reduce congestion and improve air quality for areas that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter (nonattainment areas) and for former nonattainment areas that are now in compliance (maintenance areas).

STATE FUNDING SOURCES

Local Transportation Funds

A mainstay of funding for transit programs in California is provided by the Transportation Development Act (TDA). The major portion of TDA funds is provided through the Local Transportation Fund (LTF). These funds are generated by a one-fourth cent statewide sales tax, returned to the county of origin. The returned funds must be spent for the following purposes:

- Two percent may be provided for bicycle and pedestrian facilities per TDA statutes.
- The remaining funds must be spent for transit and paratransit purposes, unless a finding is made by the TCTC that no unmet transit needs exist that can be reasonably met. (Article 4 or 8)
- If a finding of no unmet needs reasonable to meet is made, remaining funds can be spent on roadway construction and maintenance purposes. (Article 8)

The average amount received over the last five years was approximately \$2.1 million.

State Transit Assistance (STA) Funds

In addition to LTF funding, the TDA includes a State Transit Assistance (STA) funding mechanism. The sales tax on gasoline is used to reimburse the state coffers for the impact of the 1/4 cent sales tax

used for LTF. Any remaining funds (or “spillover”) are available to the counties for local transportation purposes. The apportionment for TRAX for FY 2021-2022 was \$565,477.

Low Carbon Transit Operations Program

The Low Carbon Transit Operations Program (LCTOP) is an element of the Transit, Affordable Housing, and Sustainable Communities Program established under Senate Bill 862 by the California Legislature in 2014 and renewed in November 2018 via the ballot. LCTOP was created to provide operating and capital assistance for transit agencies to reduce greenhouse gas emission and improve mobility, with a priority on serving disadvantaged communities.

Approved projects in LCTOP support new or expanded bus or rail services, expand intermodal transit facilities, and may include equipment acquisition, fueling, maintenance and other costs to operate those services or facilities, with each project reducing greenhouse gas emissions. For agencies whose service area includes disadvantaged communities, at least 50 percent of the total money received are to be expended on projects that will benefit disadvantaged communities. Five percent of the annual auction proceeds in the Greenhouse Gas Reduction Fund (Fund) are allocated for LCTOP.

Tehama County has used this money for strengthening intercity connections. Most recently, Tehama County used this money to initiate the Shasta-Tehama Connection between Red Bluff and Anderson (Shasta County). LCTOP money has also supported the Glenn-Tehama Connection (GTC).

State of Good Repair

In April 2017, Senate Bill 1, a landmark transportation funding package, was signed into law. This measure was in response to California’s significant funding shortfall to maintain the state’s multimodal transportation network. SB 1 increased several taxes and fees to raise over \$5 billion annually in new transportation revenues. SB 1 prioritizes funding towards maintenance and rehabilitation and safety improvements on state highways, local streets and roads, and bridges and to improve the state’s trade corridors, transit, and active transportation facilities. In addition, an estimated \$350 million will be available in public transit funding each year. Approximately \$250 million will be added to the State Transit Assistance Program, and \$105 million will be available through the State of Good Repair (SGR) program annually. In 2021-22, Tehama County was apportioned \$99,283, and \$102,261 is estimated for 2022-23.

LOCAL FUNDING SOURCES

Some jurisdictions have a local tax to support transit. Other local sources of revenue could include general funds from jurisdictions, but this is not often used for transit. Other local sources are discussed below.

Advertising Revenues

Many transit systems typically use advertising on their vehicles and at passenger facilities to raise additional revenue. Advertising on the outside of buses raises the most revenue, followed by advertising at shelters or on benches. Interior advertisement on buses may bring in significant revenue in urban and smaller urban areas. One reason advertising on buses is so attractive to

advertisers is that buses are highly visible and provide a “traveling” advertisement, while it can also be used by the transit system to “brand” itself. The TCTC currently does not have a policy in place for advertising, and small communities sometimes have limited ad agencies to help with sales. However, a city the size of Red Bluff might expect to receive in the range of \$10,000-\$20,000 in advertising revenue annually by advertising on buses and at stops. The revenue earned from advertising can be deducted from overall operating costs, which has the impact of slightly improving the overall fare box return ratio.

Passenger Revenues

An important (and previously required) source of funding for TRAX has been passenger fares. The TDA required that a minimum 10 percent fare box return ratio was maintained (the percentage of operating cost covered by fare revenue), until this was put on hold due to the Coronavirus pandemic. If the 10 percent minimum was not maintained, other local revenues would have had to be used to account for the difference. Currently, TRAX is fare-free, subsidized by the CARES Act for at least three years. Going fare-free has been a significant factor in ridership recovery, and TRAX desires to continue to offer services fare-free for as long as possible. The State of California is considering reinstating minimum farebox recovery ratios, which would mean that TRAX would either have to start charging fares or subsidize fares with local funding sources, such as city or county general funds or donations.

INTRODUCTION

The following plan presents service enhancements, capital improvements, management plan elements and marketing and financial strategies to enhance public transit services in Tehama County, within the constraints of realistic funding projections. It is based on a review of existing transit service and demand conditions, analysis of a wide range of alternatives, as well as public input. This chapter presents the individual plan elements in brief, based on the substantial discussions presented in previous chapters; the reader is encouraged to refer to previous chapters for additional background on the plan elements.

SERVICE PLAN

The recommended service enhancements are described below and depicted in Figure 23.

Reassign Routes 1 and 2 as Four Routes

For this element of the plan, the two loops of Routes 1 and 2 will be identified as separate routes, reflecting how they serve north/south loops of Route 1 and east/south loops of Route 2. Identifying them as four routes will make it easier for passengers to understand that each route serves the Rio and Walnut Transit Center once per hour. This service element has no associated operating costs, as shown in Table 26, but will have costs associated with marketing and redesigning the riders' guide. The revision of the routes is expected to increase ridership by 2,100 passenger trips in the first year (reflecting that it will take time to reach the full potential), and 2,700 to 2,800 each year thereafter as shown in Table 27.

Replace Route 5 with General Public DAR

This element of the plan addresses the low ridership in Corning by replacing Route 5 with on-demand, general public dial-a-ride service, as described in Chapter 4. It will improve overall transit service quality by providing service directly to individual homes. This element of the plan results in cost savings of \$2,800 annually, as shown in Table 26, with an annual increase of approximately 400 passengers per year, as shown in Table 27.

Extend Routes 1 & 2 On Weekdays to 7:30 PM

This element of the plan extends Routes 1 and 2 service on weekdays until 7:30 PM, which facilitates the option for residents to rely on TRAX for a normal workday and also provides local service for passengers arriving at the transit center on the last run of Routes 3A and 3B. This addresses one of the most requested service improvements. This element of the plan has a marginal operating cost of \$50,200 in FY 2023-24, increasing to \$59,300 by FY 2027-28 due to inflation, as shown in Table 26. In the first year, this is projected to add 2,120 passenger trips, increasing to 2,440 by the last year of the plan, as shown in Table 27.

Figure 23
Tehama County Short Range Transit Plan

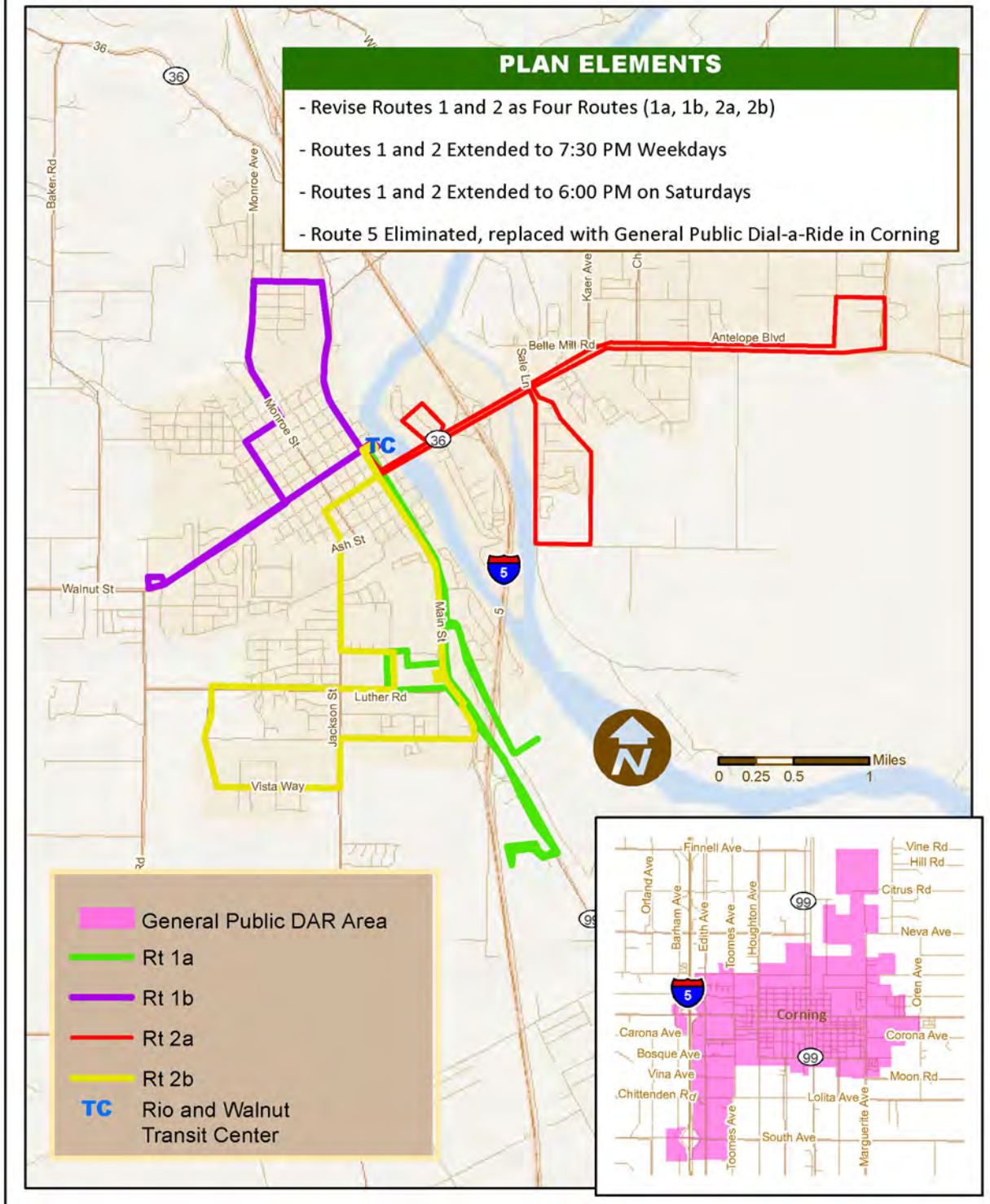


Table 26: Tehama County SRTP Estimated Annual Operating Cost

Plan Element	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28
Base Case Operating Marginal Cost¹	\$1,605,370	\$1,685,639	\$1,753,064	\$1,823,187	\$1,896,114
Reassign Routes 1 and 2 as Four Routes	\$0	\$0	\$0	\$0	\$0
Replace Route 5 with General Public DAR	-\$2,800	-\$2,800	-\$2,800	-\$2,800	-\$2,800
Extend Routes 1 & 2 On Weekdays to 7:30 PM	\$50,200	\$52,800	\$54,900	\$57,100	\$59,300
Extend Routes 1 & 2 On Saturdays to 6:00 PM	\$9,900	\$10,400	\$10,800	\$11,200	\$11,600
Plan Element Subtotal	\$57,300	\$60,400	\$62,900	\$65,500	\$68,100
Fixed Costs	\$830,830	\$857,332	\$887,856	\$921,150	\$957,996
Total Operating Cost	\$2,493,500	\$2,603,370	\$2,703,820	\$2,809,837	\$2,922,211
<i>Change Over Base Case</i>	2%	2%	2%	2%	2%

Note 1: Operating costs as shown in Table 20, increased by annual inflation, plus fixed costs per the Paratransit Services cost proposal. Includes TRAX and ParaTRAX services.

Table 27: Tehama County SRTP Estimated Annual Ridership

Plan Element	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28
Base Case Ridership¹	88,000	88,900	89,700	90,600	91,500
Reassign Routes 1 and 2 as Four Routes	2,100	2,700	2,700	2,700	2,800
Replace Route 5 with General Public DAR	390	400	410	430	450
Extend Routes 1 & 2 On Weekdays to 7:30 PM	2,120	2,160	2,230	2,320	2,440
Extend Routes 1 & 2 On Saturdays to 6:00 PM	800	820	840	870	910
Plan Element Subtotal	5,410	6,080	6,180	6,320	6,600
Total Ridership²	93,410	94,980	95,880	96,920	98,100
<i>Change Over Base Case</i>	6%	7%	7%	7%	7%

Note 1: Base Case ridership is estimated based on FY 2021-22 trends.

Note 2: Ridership estimates are based on Table 20, with an annual increase based on population growth.

Source: LSC Transportation Consultants, Inc.

Extend Routes 1 & 2 On Saturdays to 6:00 PM

Service on Routes 1 and 2 will be extended to 6:00 PM on Saturdays to better serve Red Bluff riders, adding \$9,900 in marginal operating costs the first year, up to \$11,600 in FY 2026-27 with inflation, as shown in Table 26. The service will generate 800 annual passenger trips in the first year, increasing to 910 by the final year of the plan, as shown in Table 27.

CAPITAL IMPROVEMENTS

The recommended service plan does not require an expansion of vehicles, only replacement. The vehicle replacement schedule discussed in Chapter 5 and presented in Table 23 should therefore be implemented, with a total 5-year cost of \$418,300 and a 10-year cost of \$3.18 million⁷. Additionally, as discussed in Chapter 3, several bus stops have deficient access and should be improved. The cost

⁷ This represents the total estimated capital cost of vehicles. Typically, federal grants are available for 80 percent of the cost of a vehicle, requiring an estimated \$83,700 of local match over the next five years, and \$539,600 in the subsequent five-year period.

of improving sidewalk access is approximately \$20,000⁸. To also include lighting and landscaping, it is recommended that \$25,000 annually be budgeted (plus inflation) to address bus stop improvements. The top priorities for improvements include:

- Stop at Cabernet Apartments: extend the sidewalk between the shelter on Sale Lane at Cabernet Court and the end of the sidewalk north of the shelter. Consider installing a crosswalk across Sale Lane on the north side of Cabernet Court.
- Circle K at S. Jackson Street and Lay Avenue: Extend the sidewalk on Musick Avenue from the corner of South Jackson Street to the existing sidewalk on the south side of Musick Avenue.

An annual assessment should be conducted to determine which stops are the highest priority for improvements.

MARKETING AND MANAGEMENT STRATEGIES

Marketing is an important component of any business, transit service included. Marketing strategies should include education (to ensure the public understands the transit services) and promotion (to encourage ridership). Marketing is one of the responsibilities of the TCTC, with ongoing web site upkeep, printing of riders' guides, and participation at special events. However, when a transit system undertakes significant changes, it is important to increase marketing efforts to ensure the public has a clear understanding of the pending changes. When services are reduced, for example, it is important to explain the reasoning behind cuts, and how they will impact the service. When services are improved, it is a prime opportunity to engage the public to ensure they understand the changes and benefits, and to create enthusiasm for the changes.

Marketing Recommendations

To enhance marketing for TRAX and ParaTRAX, it is recommended the TCTC implement the following marketing strategies:

- *Improved Riders Guides:* The current riders' guides are attractive, detailed, easy-to-read with clear maps and schedules, but they are produced in a booklet form that is not easily portable and that is expensive to print and produce. A simpler format should be developed which can be cheaply reproduced and widely distributed. Riders' guides should be updated with any major routing or schedule changes.
- *Website and Information Updates:* The TRAX website is offered in English and Spanish, and hosts a trip planner, route maps and schedules, ADA paratransit information, and links to resources and announcements. It is a well-developed, attractive site with thematic colors and easy to navigate. Updates should be provided promptly, and outdated information should be removed as quickly as possible to give visitors the confidence that information is up to date. For example, as of December 2022, there is a link to the Susanville to Redding to Red-Bluff service (provided by the Susanville Rancheria) though the service was discontinued in 2018.

⁸ Cost estimates calculated by engineering firm CHS Consulting Group for the Lake Transit Bus Passenger Facility Study.

Additionally, information for the Shasta-Tehama Connection service launched in July 2022 was only added June 30, 2022, without any fanfare, and without notifying Shasta County where the service terminates. The website should be reviewed regularly to remove outdated information and any service changes should promptly be added. The Gallery has photos of the trolley (under “Trolley”) and photos of the Bidwell building—both of which are somewhat out of date. More recent and relevant photos should be provided in the gallery.

- **Outreach:** TRAX engages with the community at special events, such as the Christmas Parade, and has used the trolleys for special events. This outreach helps TRAX to be more visible and known as part of the community. Additional outreach directed at target markets such as the senior centers, Shasta College and schools would be beneficial. For example, at least annually, TRAX or TCTC staff should visit schools and the senior centers to describe how the service works, and similarly, staff should provide information to Shasta College students each new session.
- **“Launch” Activities:** Beyond the activities described above, TRAX should hold special launch activities any time a new service is introduced, such as the expansion of evening or weekend service, the changes to routes 1 and 2, and the change from Route 5 to Dial-a-Ride service. At a minimum, TRAX should send press releases to local news sources such as The Daily News. Other launch activities could include ribbon cutting, or pop-up events to engage in Q&A’s about the changes (possibly offering prizes or small giveaways).
- **Social Media:** TRAX does not currently have a social media presence. Social media is an inexpensive option for providing information about services and can help to keep the public aware of transit. Updates can be simple, such as announcing street detours, minor schedule delays, etc., or can be helpful in making big announcements about service changes. Maintaining social media can take less than half an hour daily, particularly if the site does not allow public posts so that monitoring is not required.

Some of these activities fall within the responsibility of the TCTC as the marketing entity for TRAX, but large marketing efforts require additional time and budget, such as revising the Riders’ Guides or undertaking launch activities. A marketing budget is part of the recommended financial plan to accommodate these strategies.

Adopt Updated Goals and Performance Measures

The TCTC staff should review goals, objectives and standards presented in Chapter 6 and Tables 24 and 25 and adopt performance measures which are in line with current operating conditions while still providing appropriate incentives to improve services. Performance standards should be reviewed and adjusted annually.

FINANCIAL PLAN

The information presented in Tables 26 and 27 provides the basis for the financial plan, presented in Table 28. Table 28 includes the following:

- **Operating Costs:** The operating plan includes the following operating costs:

- Service plan operating costs, including the status quo service and recommended service elements as presented in Table 26.
- Operating costs of the METS service, based on 2021-22 costs, plus inflation.
- Annual TCTC costs for administering the transit program.
- Marketing expenses beyond those provided by the TCTC, for revising Riders' Guides and activities related to launching new services.
- *Operating Revenues:* The operating plan relies on sources of transit operating revenue (with an estimated 3 percent annual inflation), as follows:
 - Annual Local Transportation Funds (LTF), which are available by jurisdiction based on population. Before distribution, 3 percent of the total LTF is allocated to the TCTC for administration. Approximately half of LTF monies fund the TRAX contract and the remainder of LTF is distributed to the cities of Tehama, Red Bluff and Corning as well as Tehama County (as shown in Table 18 in Chapter 3). Total LTF funds apportioned to Tehama County are estimated at \$2.5 million.
 - State Transit Assistance (STA) funds are expected to continue at approximately \$500,000 annually.
 - Federal Transit Administration (FTA) 5311 operating funds are estimated at approximately \$350,000, which will fund TRAX operations.
 - FTA 5310 operating funds for elderly and disabled transportation in the amount of \$150,000 will help fund the ParaTRAX services.
 - The Low Carbon Transit Operations Program (LCTOP) funds of approximately \$250,000 are being used for the Shasta – Tehama Connect and will continue to be used for services which serve disadvantaged communities.
 - CARES Act funding has contributed to increased driver wages and increased costs due to the COVID pandemic. Approximately \$700,000 remains for transit and will be expended in the next two years.
- *Capital Costs:* Table 28 also shows the year-by-year costs of capital equipment based on the vehicle replacement plan (Table 23) and an annual bus stop improvement allowance.
- *Capital Revenues:* Capital purchases are typically covered by federal or state grants, with a requirement for a 20 percent local match (usually through LTF funds or local measures if available). Revenues for capital purchases are available through various formula and competitive grants, including newer programs such as the *Infrastructure Investment and Jobs Act* (IIJA). Many newer funding programs are not well defined, and with changing focuses, it is recommended the TCTC review grant opportunities on a year-by-year basis for upcoming capital needs to determine which are most advantageous. A list of potential capital funding sources is included in Table 28, and listed below:
 - FTA 5310, 5311, 5311(f) and 5339 grants can be used for operations or capital.
 - State grants, including State Transportation Improvement Program (STIP) and STA funding.
 - Infrastructure Investment and Jobs Act (IIJA). The recent passage of the IIJA greatly expands federal funding opportunities for transit services, including an additional \$8 billion in transit Capital Investment Grants, a 70 percent increase in 5310 (Enhanced Mobility for Seniors and Persons with Disabilities) funding and a 42 percent increase in

5311 (Formula Grants for Rural Areas) funding by 2026.

Given the positive annual balance of operating funds, the capital needs should have adequate funding for the plan period. The list of potential capital funding programs included above and in Table 28 were discussed in more detail in Chapter 7.

Table 28: Tehama County SRTP Financial Plan						5-Year Plan
	FY 23-24	FY 24-25	FY 25-26	FY 26-27	FY 27-28	Total
Operating Costs						
Service Plan Operating Costs ¹	\$2,493,500	\$2,603,370	\$2,703,820	\$2,809,840	\$2,922,210	\$13,532,740
METS ²	\$32,790	\$33,770	\$34,780	\$35,820	\$36,890	\$174,050
Administrative Costs (TCTC) ³	\$74,750	\$76,990	\$79,300	\$81,680	\$84,130	\$396,850
Marketing Plan	\$15,000	\$7,000	\$7,210	\$7,430	\$7,650	\$44,290
Total Operating Costs	\$2,601,040	\$2,714,130	\$2,817,900	\$2,927,340	\$3,043,230	\$14,103,640
Operating Revenues						
Annual LTF ⁴	\$1,324,750	\$1,364,490	\$1,405,420	\$1,447,580	\$1,491,010	\$7,033,250
Annual STA ⁵	\$500,000	\$505,000	\$505,000	\$505,000	\$505,000	\$2,520,000
FTA 5311 (TRAX operations)	\$350,000	\$360,500	\$371,315	\$382,454	\$393,928	\$1,858,198
FTA 5310 (ParaTRAX operations)	\$150,000	\$154,500	\$159,135	\$163,909	\$168,826	\$796,370
LCTOP	\$250,000	\$265,000	\$265,000	\$278,300	\$289,400	\$1,347,700
CARES Act	\$350,000	\$350,000	\$0	\$0	\$0	\$700,000
Total Operating Revenues	\$3,274,750	\$3,384,490	\$3,129,370	\$3,243,144	\$3,360,664	\$16,392,418
Annual Balance	\$673,710	\$670,360	\$311,470	\$315,804	\$317,434	\$2,288,778
Capital Plan						
Vehicle Replacement ⁶	\$88,700	\$0	\$172,100	\$1,173,400	\$1,173,400	\$2,607,600
Bus Stop Improvements	\$25,000	\$25,750	\$26,520	\$27,320	\$28,140	\$132,730
Total Capital Requirements	\$113,700	\$25,750	\$198,620	\$1,200,720	\$1,201,540	\$2,740,330
Local Match Requirements (20 percent)	\$22,740	\$5,150	\$39,720	\$240,140	\$240,310	\$548,060
Total Grant Funding Required ⁷	\$90,960	\$20,600	\$158,900	\$960,580	\$961,230	\$2,192,270
Potential Capital Funding Programs ⁷						
FTA 5339 Capital	State Transit Assistance Capital					
FTA 5311 and 5311(f)	State Transportation Improvement Program					
FTA 5310	State of Good Repair					
Infrastructure Investment and Jobs Act (IIJA)						
<p>Note 1: As presented in Table 26, rounded. Includes annual inflation.</p> <p>Note 2: METS operating costs are based on FY21-22, plus annual inflation.</p> <p>Note 3: The TCTC receives 3 percent of LTF funds for administering the transit programs.</p> <p>Note 4: See note 3. Additionally, approximately 50% of LTF monies fund the operations contract. See Table 18 for historical LTF distributions.</p> <p>Note 5: STA funds fluctuate. The recent level of funding is expected to continue for the next two years.</p> <p>Note 6: Vehicle replacement as presented in Table 23.</p> <p>Note 7: Typically 80 percent of capital equipment needs are covered through federal grants. Potential grant programs are listed here and described in Chapter 7.</p>						

IMPLEMENTATION PLAN

Fiscal Year 2022-23

- Prepare and release a Request For Proposal for service contract with additional service elements
- Develop marketing materials and plan marketing events for the Routes 1 and 2 redesign, evening service, and conversion of Route 5 to General Public Dial-a-Ride
 - Develop new Riders' Guides
 - Plan launch activities
 - Visit Senior Center, schools in Corning
 - Update website and social media
- Identify bus stop improvements for FY 2023-24
- Review and adopt performance measures
- Purchase a gas fixed route vehicle

Fiscal Year 2023-24

- Market and initiate revised Routes 1 and 2
- Market and expand evening service in Red Bluff on weekdays and Saturdays
- Eliminate Route 5
- Market and establish General Public Dial-a-Ride in Corning
- Review performance measures and revise as appropriate
- Major improvement of one bus stop; continued maintenance and upkeep of all stops
- Identify bus stop improvements for FY 2024-25
- Purchase one Dial-a-Ride vehicle

Fiscal Year 2024-25

- Review performance measures and revise as appropriate
- Major improvement of one bus stop; continued maintenance and upkeep of all stops
- Identify bus stop improvements for FY 2025-26

Fiscal Year 2025-26

- Review performance measures and revise as appropriate
- Major improvement of one bus stop; continued maintenance and upkeep of all stops
- Identify bus stop improvements for FY 2026-27

Fiscal Year 2026-27

- Review performance measures and revise as appropriate
- Major improvement of one bus stop; continued maintenance and upkeep of all stops

- Identify bus stop improvements for FY 2027-28

Fiscal Year 2027-28

- Review performance measures and revise as appropriate
- Major improvement of one bus stop; continued maintenance and upkeep of all stops
- Identify bus stop improvements for FY 2028-29
- Prepare updated SRTP

SUMMARY

In summary, key strategies that this plan will accomplish are:

- A significant improvement in Red Bluff services with the redesigning of Routes 1 and 2 and expanded evening weekend and Saturday evening hours.
- On-demand service in Corning which will better meet the low ridership demand while still providing connections to fixed routes serving the Rolling Hills Casino and Red Bluff
- Increased marketing
- Ongoing bus stop improvements
- Accountability through establishing performance measures beyond TDA requirements
- Improving the transit fleet
- Sustainable funding

The overall cost impacts of these improvements are relatively modest, with a 2 percent increase in existing total annual operating costs, while ridership is expected to increase by 6 to 7 percent. As ridership increase is greater than cost increase, the plan overall improves the cost-effectiveness of the transit service. This plan can be achieved using existing funding sources, though new opportunities may arise through programs such as the IJA.

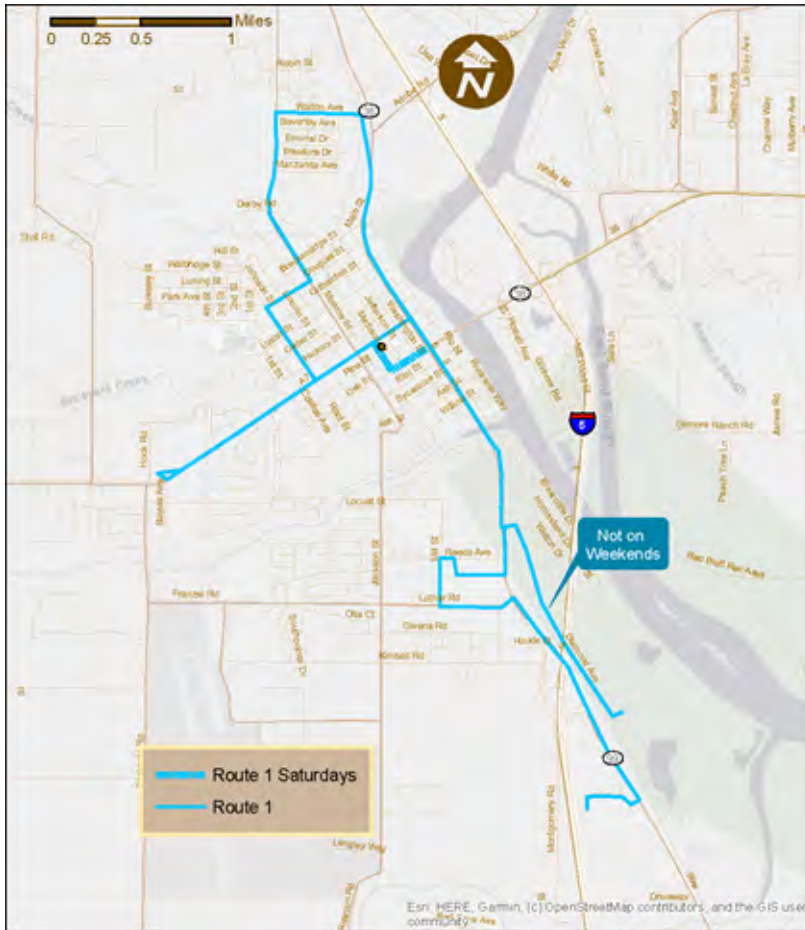
Appendix A: Route Profiles
TEHAMA RURAL AREA EXPRESS (TRAX)
ROUTE PROFILES

The attached route profiles provide a summary of services for each route, as well as a recent performance review of hours, passenger trips and cost. This data is derived from reports provided by the Tehama County Transportation Commission staff and Paratransit Inc.

Additionally, a list of strengths and challenges are listed for each route.

TRAX Route 1

Monday - Saturday
Red Bluff Local Route



Service Summary

- Weekday Service: 7:00 AM to 6:00 PM, 60-minute headways
- Saturday Service: 9:00 AM to 4:00 PM, 60-minute headways
- Shasta College loop not served Saturdays

Weekday Boarding Data	18/19	19/20	20/21	21/22*
Annual Weekday Boardings	24,960	24,011	18,886	11,569
Annual Weekday Vehicle Hours	2,542	2,667	2,709	1,365
Passengers per Hour	9.8	9.0	7.0	8.5



STRENGTHS

- ✓ Serves Shasta College, St. Elizabeth's Hospital, Tehama County Health Center
- ✓ Transfers to 2, 3A/3B, the Rancho Tehama Express and the Glenn Tehama Connection
- ✓ Hourly clock headways with stops at Rio and Walnut every 30 minutes

CHALLENGES

- ✗ Some passengers dislike the new trolley buses/find them uncomfortable

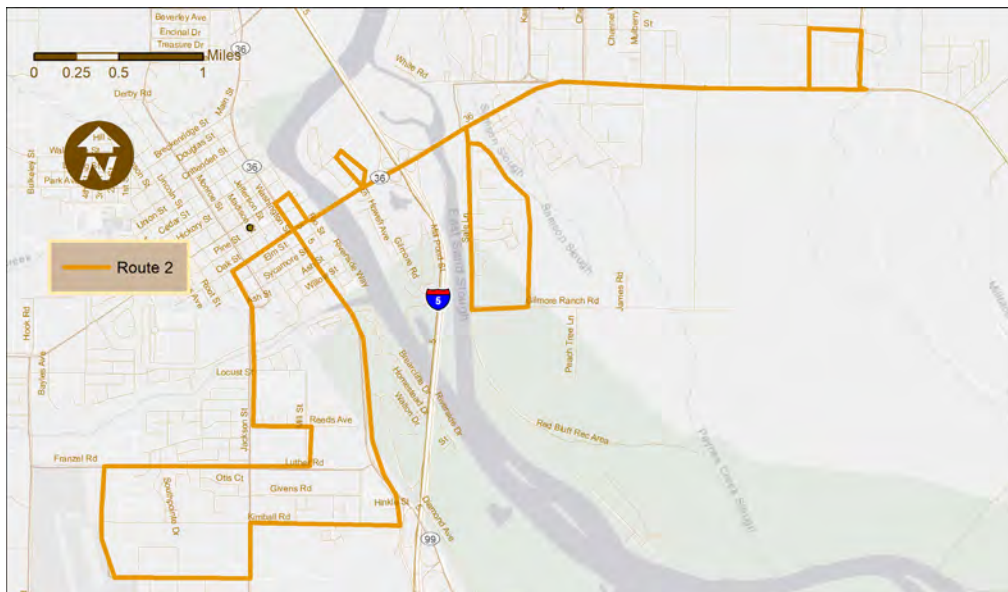
TRAX Route 2 Monday - Saturday Red Bluff Local Route



Service Summary

- Weekday Service: 7:00 AM to 6:00 PM, 60-minute headways
- Saturday Service: 9 AM to 4 PM, 60-minute headways

Weekday Boarding Data	18/19	19/20	20/21	21/22*
Annual Weekday Boardings	32,312	30,977	20,279	12,516
Annual Weekday Vehicle Hours	2,542	2,667	2,730	1,365
Passengers per Hour	12.7	11.6	7.4	9.2



STRENGTHS

- ✓ Provides service to large portion of Red Bluff
- ✓ Serves the Community Senior Center, Red Bluff Apartments, Frontier Village, WalMart
- ✓ Transfers to 1, 3A/3B, the Rancho Tehama Express, and the Glenn Tehama Connection
- ✓ Hourly clock headways with stops at Rio and Walnut every 30 minutes
- ✓ The most cost effective TRAX route (as measured by cost per passenger trip)
- ✓ Most efficient TRAX fixed route (as measured by passengers per hour)

CHALLENGES

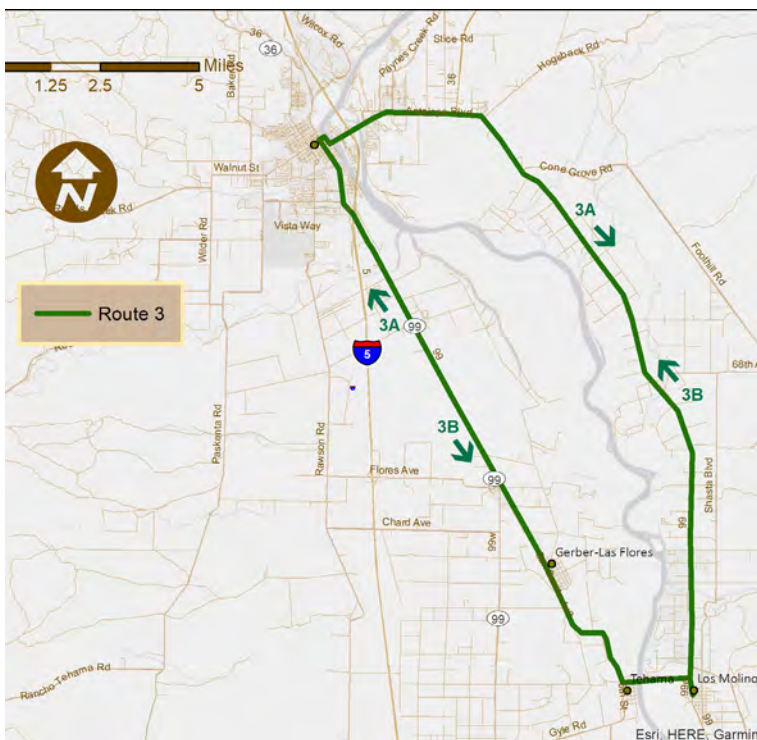
- ✗ Some passengers dislike the new trolley buses/find them uncomfortable

TRAX Routes 3A/3B

Monday-Saturday
Bi-directional Routes

3A: Weekday Boarding Data	18/19	19/20	20/21	21/22*
Annual Weekday Boardings	8,291	8,733	7,772	3,753
Annual Weekday Vehicle Hours	2,657	2,740	2,751	1,387
Passengers per Hour	3.1	3.2	2.8	2.7

3B: Weekday Boarding Data	18/19	19/20	20/21	21/22*
Annual Weekday Boardings	6,819	7,134	7,401	3,572
Annual Weekday Vehicle Hours	2,542	2,621	2,631	1,380
Passengers per Hour	2.7	2.7	2.8	2.6



STRENGTHS

- ✓ Provides connectivity between local communities and Red Bluff
- ✓ Provides mobility for commuters living in outlying communities
- ✓ Provides mobility for low-income areas
- ✓ Transfers to 1, 2, Rancho Tehama Express, and Glenn Tehama Connection
- ✓ Bi-directional loop effectively increases frequency

Service Summary

Routes 3A and 3B are bidirectional Route

ROUTE 3A

- Weekday Service: 7:10 AM to 6:40 PM, 70-minute headways
- Saturday Service: 8:30 AM to 3:20 PM, 70-minute headways

ROUTE 3B

- Weekday Service: 6:20 AM to 5:25 PM, 70-minute headways
- Saturday Service: 8:40 AM to 3:40 PM, 60-minute headways

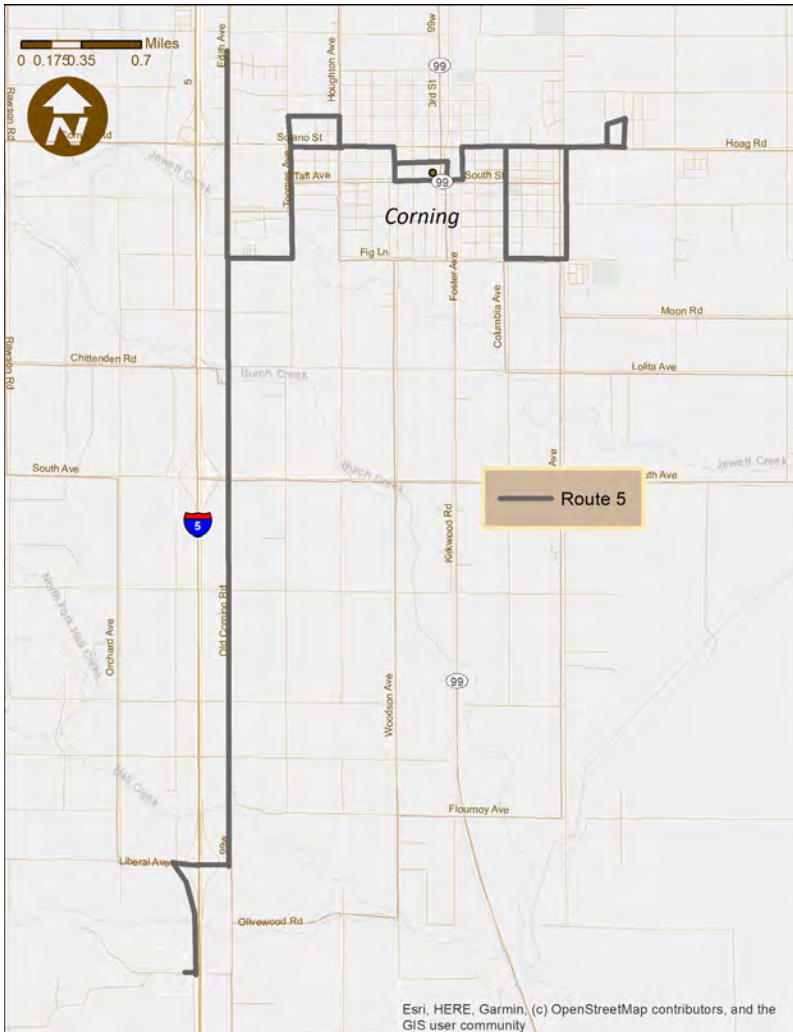


CHALLENGES

- ✗ First and last mile access to routes is challenging—many residences are far from the routes
- ✗ Not very cost-effective (in terms of cost per passenger trip)
- ✗ Not productive (as measured by passengers carried per hour)
- ✗ Not on clock headways—makes schedule hard to remember

TRAX Route 5

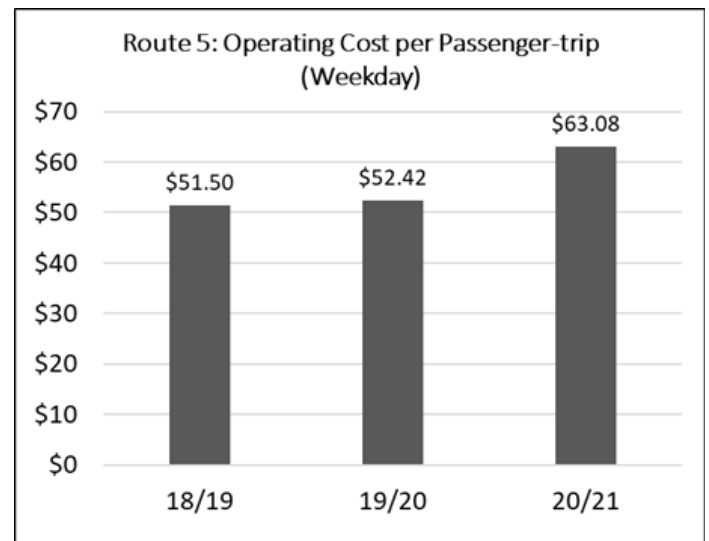
Monday – Friday Corning Local Route



Service Summary

- Weekday Service: 6:05 AM to 6:40 PM
- 6 daily roundtrips
- No Saturday Service

Boarding Data	18/19	19/20	20/21	21/22*
Annual Boardings	3,379	3,660	3,163	1,656
Annual Vehicle Hours	2,311	2,383	2,392	1,138
Passengers per Hour	1.5	1.5	1.3	1.5



STRENGTHS

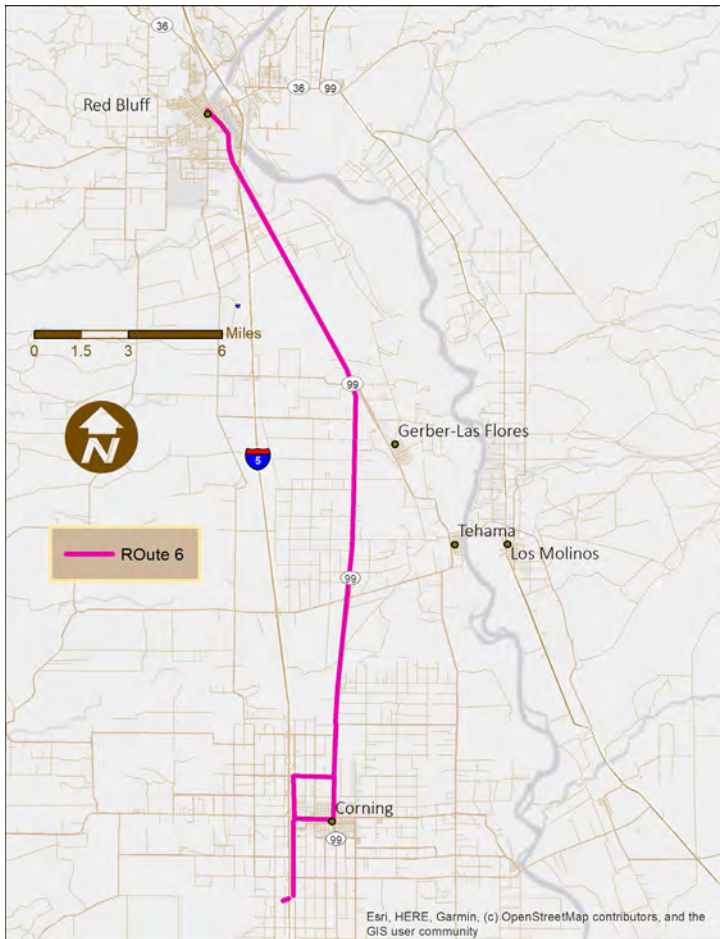
- ✓ Serves Corning City Hall, the Corning Senior Center, the Transportation Center
- ✓ Good coverage and frequency within Corning
- ✓ Transfers to Glenn Tehama Connection
- ✓ Serves Transportation Center twice per run, improving travel times for many passengers

CHALLENGES

- ✗ Most ineffective in terms of cost per passenger trip
- ✗ Low efficiency (as measured by passengers per hour)
- ✗ Not on clock headways—makes schedule hard to remember

TRAX Route 6 Saturdays Only

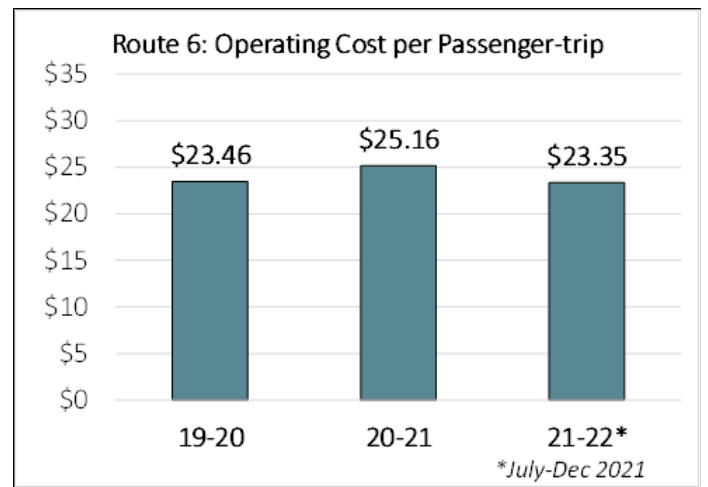
Red Bluff to Rolling Hills Casino



Service Summary

- Saturday Service: 8:30 AM to 3:30 PM, 4 daily roundtrips
- No weekday service

Boarding Data	18/19	19/20	20/21	21/22*
Annual Boardings	733	588	564	345
Annual Vehicle Hours	312	312	312	156
Passengers per Hour	2.3	1.9	1.8	2.2



STRENGTHS

- ✓ Provides an Intercity transportation option on Saturday
- ✓ Provides moderate level of service in Corning on Saturdays in lieu of Route 5

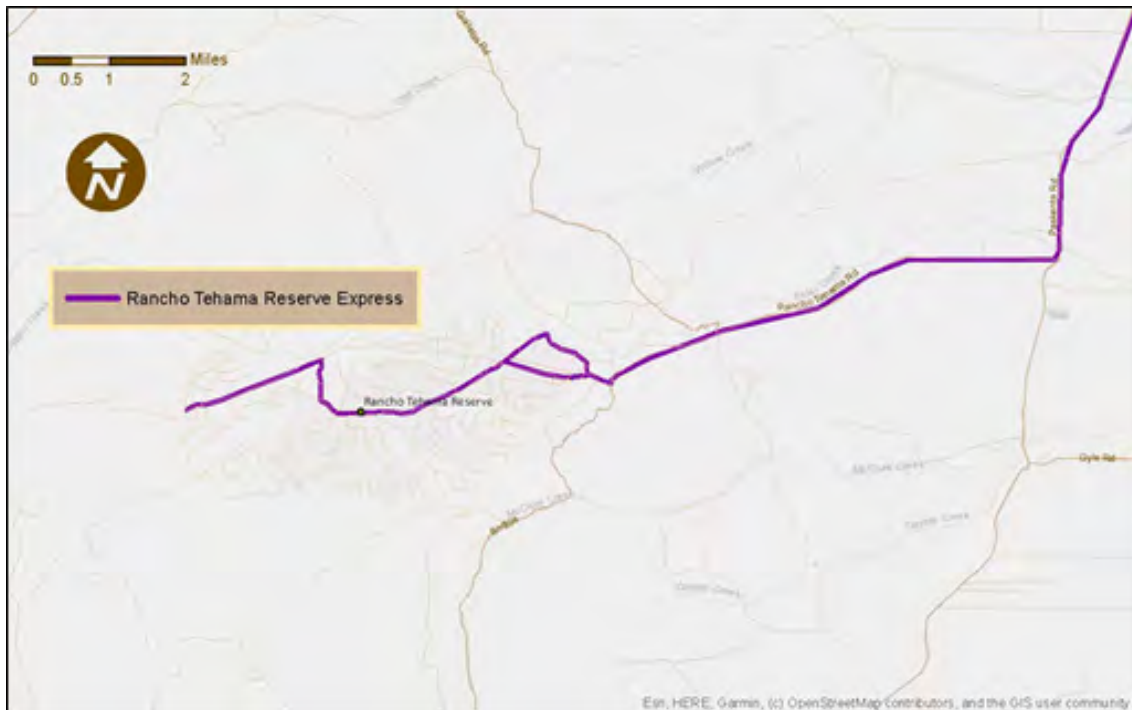
CHALLENGES

- ✗ Infrequent service

Service Summary

- Service on Wednesdays and Fridays, from 8:40 AM to 4:40 PM
- 2 daily roundtrips

Boarding Data	18/19	19/20	20/21	21/22*
Annual Boardings	569	738	859	399
Annual Vehicle Hours	321	321	321	160
Passengers per Hour	1.8	2.3	2.7	2.5



STRENGTHS

- Life-line service for Rancho Tehama Reserve
- Provides connectivity between the eastern region of the County and Red Bluff

CHALLENGES

- Limited service (only 2 days per week)
- No mid-day service – requires a long day in town
- Infrequent service

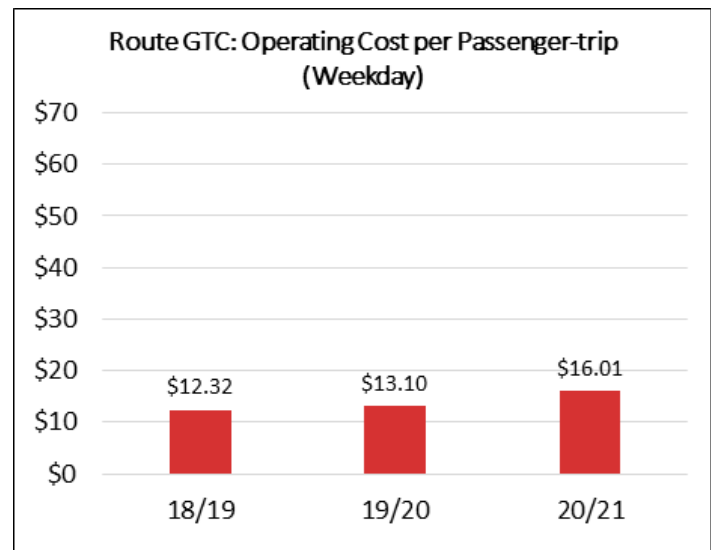
TRAX Glenn Tehama Connection Monday - Friday



Service Summary

- Weekday Service: 6:05 AM to 6:40 PM
- 6 daily roundtrips
- No Saturday Service

Boarding Data	18/19	19/20	20/21	21/22*
Annual Boardings	10,386	9,962	8,848	5,479
Annual Vehicle Hours	2,966	3,105	3,117	1,747
Passengers per Hour	3.5	3.2	2.8	3.1



STRENGTHS

- ✓ Provides good intercity service with connections to neighboring Glenn County
- ✓ Transfers to Routes 1, 2, 3A/3B, 5, and Rancho Tehama Express and Glenn County Ride
- ✓ Relatively cost effective and productive considering the long distance of the route

CHALLENGES

- ✗ Not on clock headways; schedule is difficult to remember
- ✗ Less frequent service

Appendix B

TEHAMA RURAL AREA EXPRESS (TRAX) BOARDING COUNTS

TRAX Boarding Counts

Surveyors conducted boarding and alighting counts on Routes 1, 2, 3A and 3B in mid-November 2021. Counts for each route are presented in the tables below. This data provides just a snapshot of the boarding activity but is helpful in identifying bus stop locations which generate high activity versus those which generate no activity. The data is shown in the order of stops served, which also provides a snapshot of activity by route segment.

Key Findings

- As would be expected, the Walnut and Rio Street transit center generates the highest activity, as do stops at Walmart, Tehama County Court, Gerber Market, and St. Elizabeth’s Hospital.
- In terms of low activity, Route 2 has light activity between Frontier Village and Dollar General, indicating an earlier turn-around might be warranted, or service to Sunshine Market might be served as an on-demand stop. However, the current turn-around location is best for bus maneuverability.
- Because Routes 3A and 3B are large bi-directional loops, there are not segments which could be eliminated from the routes.

Table B1: Route 1 Boardings and Alightings by Stop
**13 Weekday Runs*

Stops	On	Off	% of Total Activity by Stop
Rio & Walnut - Bus & Ride	15		9%
Sacred Heart Church	3	0	2%
Baskin Robbins/Brearcliff	4	4	5%
CVS/Lariat Bowl	3	5	5%
Raleys	2	2	2%
Walmart	5	4	5%
Walgreens	0	1	1%
St. Elizabeth's Hospital	3	4	4%
Wendy's/AM/PM	0	2	1%
Library	1	6	4%
Shasta College	0	0	0%
Riverside Plaza	5	2	4%
Social Services	4	1	3%
River Park	0	0	0%
Villa Columba	0	2	1%
Rio & Walnut - Bus & Ride	16	3	12%
Across from Post Office	0	2	1%
Flower Shop	1	1	1%
Bidwell School	1	1	1%
Tehama County Health & Court	7	7	8%
Bidwell Apartments	0	1	1%
Johnson & Douglas	6	5	7%
Sacred Heart School	2	3	3%
Casa Ramos	1	2	2%
Union and Main	1	3	2%
Flag Stops (please list closest intersection):	0	0	0%
Walnut & Main	0	1	1%
Beverly & Monroe	1	1	1%
Monroe & Breckenridge	0	6	4%
Bliss Apartments	1	0	1%
Rio & Walnut - Bus & Ride (arrive)	0	14	9%
Total	82	83	

Source: LSC. Based on 13 runs in November, 2021

Table B2: Route 2 Boardings and Alightings by Stop

**11 Weekday Runs*

Stops	On	Off	% of Total Activity by Stop
Rio & Walnut - Bus & Ride	11		5%
Rio & Antelope	7	1	3%
Egg Roll King	8	4	5%
Red Bluff Apartments	8	3	5%
Cabernet Apartments	6	6	5%
Bud's Jolly Cone	3	4	3%
Frontier Village	1	0	0%
Sunshine Market	1	1	1%
Antelope School	3	1	2%
Fairgrounds	2	2	2%
Dollar General	6	6	5%
Shell Gas Station	6	4	4%
East & Bell Mill	3	2	2%
Rio & Walnut - Bus & Ride	8	10	7%
Main & Brearcliff	4	1	2%
CVS/Lariat Bowl	6	1	3%
Chevron	2	7	4%
Walgreens	5	1	2%
Greenville Rancheria	0	1	0%
Community Center	8	1	4%
Vista Way	2	4	2%
Walmart/Ross	19	13	13%
Circle K	7	2	4%
City Hall	0	0	0%
Flag Stop [illegible]	3	1	2%
Flag Stop - Airport Road	4	3	3%
Flag Stop - Gilmore Ranch Road	3	0	1%
Flag Stop - Kimbol & Jackson	1	1	1%
Flag Stop - Reeds & Jackson	0	1	0%
Flag Stop - Oak & Madison	2	0	1%
Flag Stop - Sacred Heart Church	1	2	1%
Flag Stop - Food Max	0	1	0%
Flag Stop - Raley's	0	2	1%
Rio & Walnut - Bus & Ride (arrive)	0	16	7%
Total	140	102	

Source: LSC. Based on 11 runs in November, 2021

Table B3: Routes 3A Boardings and Alightings by Stop
**8 Weekday Runs*

3A Stops	On	Off	% of Total Activity by Stop
Rio & Walnut - Bus & Ride	6		11%
Rio & Antelope	4	0	7%
Egg Roll King	1	2	5%
Bud's Jolly Cone	2	1	5%
Frontier Village	0	3	5%
Highway 36/99 Junction	0	1	2%
Jills Market	1	2	5%
Mill Creek Center	1	0	2%
99E & Grant	1	1	4%
Tehama Museum	0	0	0%
Gerber Market	6	0	11%
Public Works	0	1	2%
Proberta/Harvey's Market	2	2	7%
St. Elisabeth's Hospital	3	0	5%
Wendy's/AM/PM	1	1	4%
Riverside Plaza	0	0	0%
Social Services	1	4	9%
River Park	0	1	2%
Villa Columba	0	1	2%
Los Molinos Dollar General	0	1	2%
99 & [illegible]	0	1	2%
99 & Gravel Pit Road	2	0	4%
Rio & Walnut - Bus & Ride (arrive)	0	4	7%
Total	31	26	

Source: LSC. Based on 8 runs in November, 2021

Table B4: Routes 3B Boardings and Alightings by Stop

**6 Weekday Runs*

3B Stops	On	Off	% of Total Activity by Stop
Rio & Walnut - Bus & Ride	0		0%
Sacred Heart Church	1	0	3%
Baskin Robbins/Brearcliff	0	0	0%
CVS/Lariat Bowl	0	2	7%
Walgreens	2	0	7%
St. Elizabeth's Hospital	3	0	10%
Proberta/Harvey's Market	0	3	10%
Across from Public Works	0	0	0%
San Benito & Vestal	0	1	3%
3rd & C St.	0	0	0%
99E & Grant	2	2	13%
99E and Tehama/Vina Rd	0	0	0%
Lassen View School (Dairyville)	0	0	0%
Dairyville Community Center	2	0	7%
Sunshine Market (Red Bluff)	0	0	0%
Antelope School	0	1	3%
Fairgrounds	0	0	0%
Dollar General	2	0	7%
Shell Gas Station	1	1	7%
Salt Creek & 99	1	0	3%
Denny's	0	1	3%
Rio & Walnut - Bus & Ride (arrive)	0	5	17%
Total	14	16	

Source: LSC. Based on 6 runs in November, 2021

Appendix C

TEHAMA RURAL AREA EXPRESS (TRAX) ONBOARD SURVEY RESULTS

TRAX Survey Results

TRAX passengers were invited to complete onboard surveys as part of the planning process for the Tehama Short Range Transit Plan (SRTP) during November 2021. Surveyor staff were available to assist with surveys for a one-week period, and then passengers were able to complete surveys on their own for an additional week. Detailed results of the survey effort are provided in this appendix, with highlights provided in the text of the SRTP.

The survey instruments consisted of a one-page questionnaire in English on one side and Spanish on the reverse side, printed on card stock. The surveys included a simple introduction, with 16 questions in multiple choice, short-answer, or comment format. Most respondents did not answer every question, therefore the number of answers per question varies. All results presented in this Appendix clarify the amount of people that answered the question.

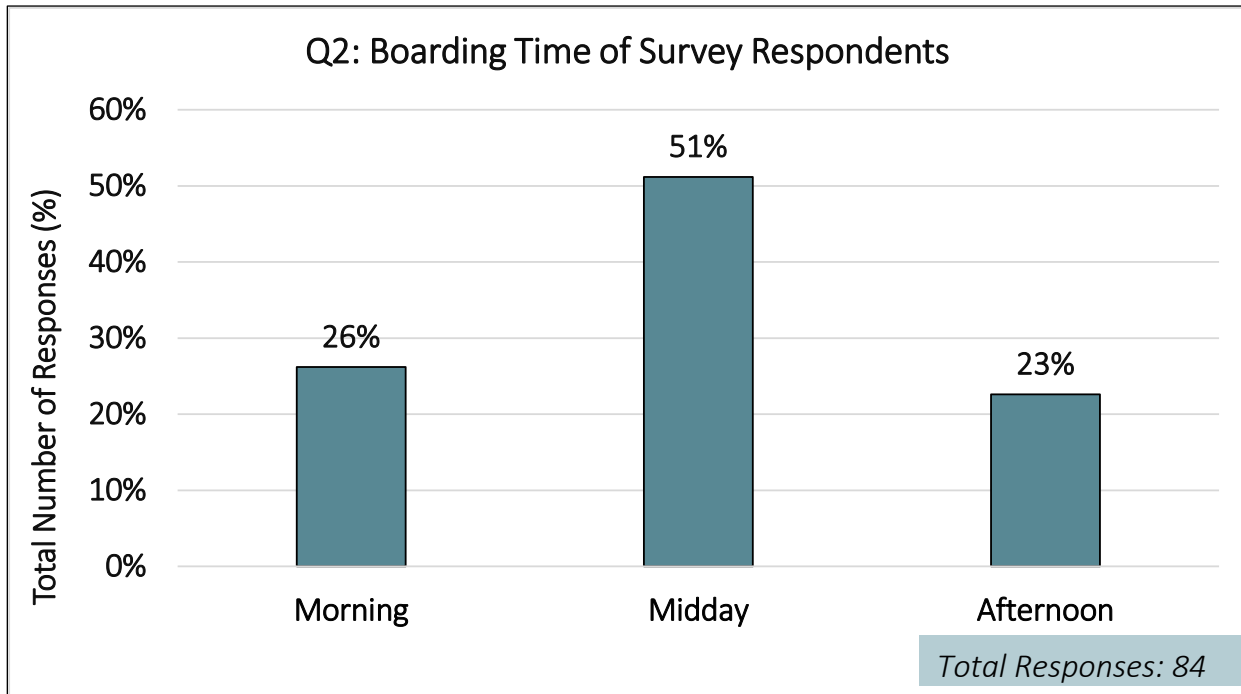
A total of 97 passengers participated in the survey. About 96 percent (93) completed the form in English, and 4 percent (4) in Spanish. No passengers utilized the Hmong survey form. Results by question are presented below.

Q1. Responses by route (91 responses):

Passengers completed the onboard survey on each TRAX fixed route. Most passengers (41 percent) responded on local Red Bluff routes (Routes 1 and 2). Route 3A passengers constituted 15 percent of the total responses, and 10 percent of respondents were riding the Glenn Tehama Connection. The lowest response rate was on Route 6 (just 4 surveys or 4 percent), a Saturday route from Red Bluff to Rolling Hills Casino. Most of the respondents who chose “Other” listed multiple routes that they had recently ridden in Tehama County.

Q1: Responses by Route		
Route 1	14	15%
Route 2	24	26%
Route 3A	14	15%
Route 3B	8	9%
Route 5	7	8%
Route 6	4	4%
Rancho Tehama Express	6	7%
Glenn-Tehama Connection	9	10%
Other	5	5%
Total responses	91	100%

Q2. Boarding Time (84 responses): In order to accurately understand the ridership patterns of the survey respondents, passengers were asked to record what time they boarded the bus. Results are summarized by whether the individual boarded in the morning (between beginning of service and 10 AM), midday (from 10 AM to 2 PM) or afternoon (after 2 PM until the end of the service day). Over half (51 percent) of respondents boarded the bus during midday, while approximately one quarter boarded in the morning and then another quarter in the afternoon.



Q3. Boarding locations (91 responses):

Respondents were also asked to identify where they had boarded the bus. The majority of passengers boarded at a local stop in Red Bluff (31 percent), which is an expected outcome given that 41 percent of respondents reported to be riding either Route 1 or 2. A significant number of passengers (13 percent) boarded specifically at the Bus & Ride in Red Bluff. Respondents boarded in other communities as well, with some reporting to have boarded at local stops in Gerber (8 percent), Corning (3 percent), and Los Molinos (3 percent). Nearly one third of respondents (31 percent) provided an answer to this question that was unclear. Most people who provided an unclear answer did not provide enough detail for the exact boarding location to be determined. For instance, one passenger wrote down “Market” to answer this question, yet there are multiple TRAX stops near markets.

Q3: Boarding Locations of Survey Respondents		
Bus & Ride (Red Bluff)	12	13%
Corning stop	3	3%
Corning Transit Center	2	2%
Gerber stop	7	8%
Los Molinos stop	3	3%
Proberta stop	1	1%
Rancho Tehama Express stop	2	2%
Red Bluff stop	28	31%
Richfield stop	1	1%
Tehama stop	1	1%
Walmart, Red Bluff	3	3%
No clear response	28	31%
Total responses	91	100%

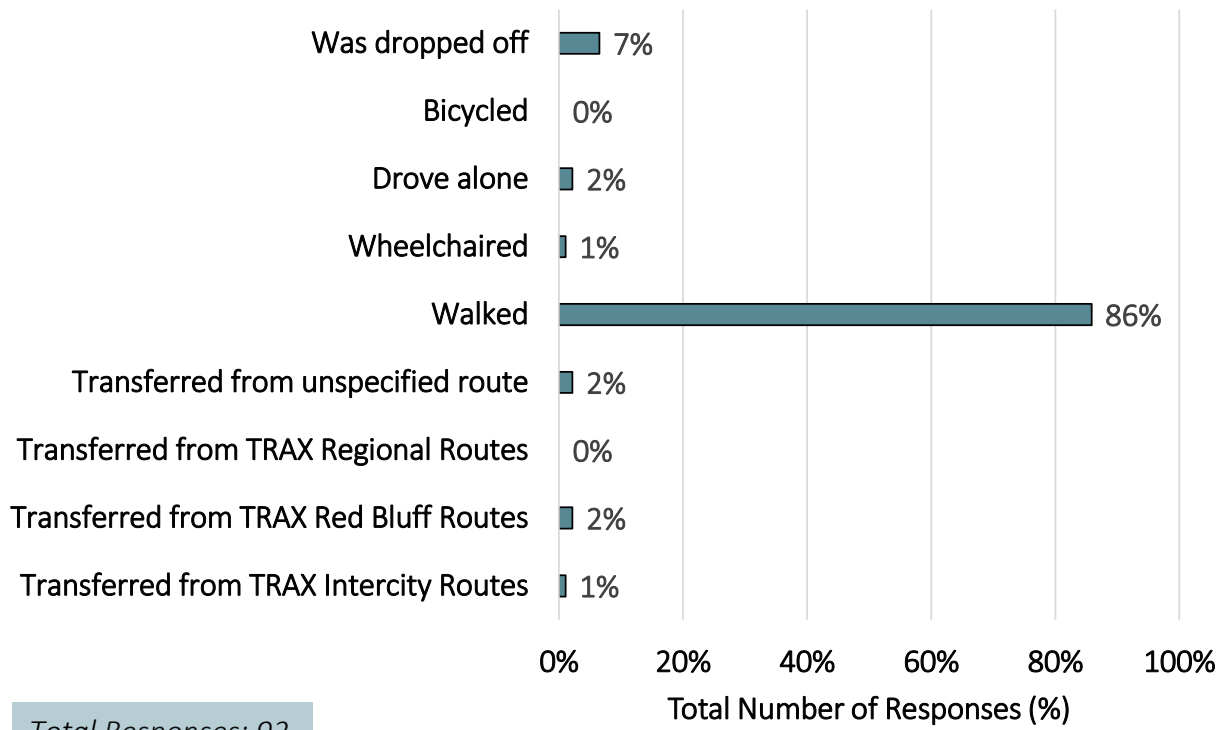
Q4. Trip Purpose (88 responses): It is especially important during the COVID-19 pandemic to understand why people are traveling and using public transit, as many commitments have changed from being in-person to virtual. Respondents were asked the main purpose of their trip in order to identify their motivations for traveling the day they completed the survey. Shopping (31 percent) and personal business (20 percent) were the most common reasons for people to be riding TRAX buses, followed by work (16 percent) and medical/dental appointments (11 percent).

Q4: Trip purpose		
School/College	5	6%
Shopping	27	31%
Recreation/Social	3	3%
Work	14	16%
Medical/Dental	10	11%
Personal Business	18	20%
Home	4	5%
Multiple Responses	6	7%
Picking up a relative	1	1%
Total responses	88	100%

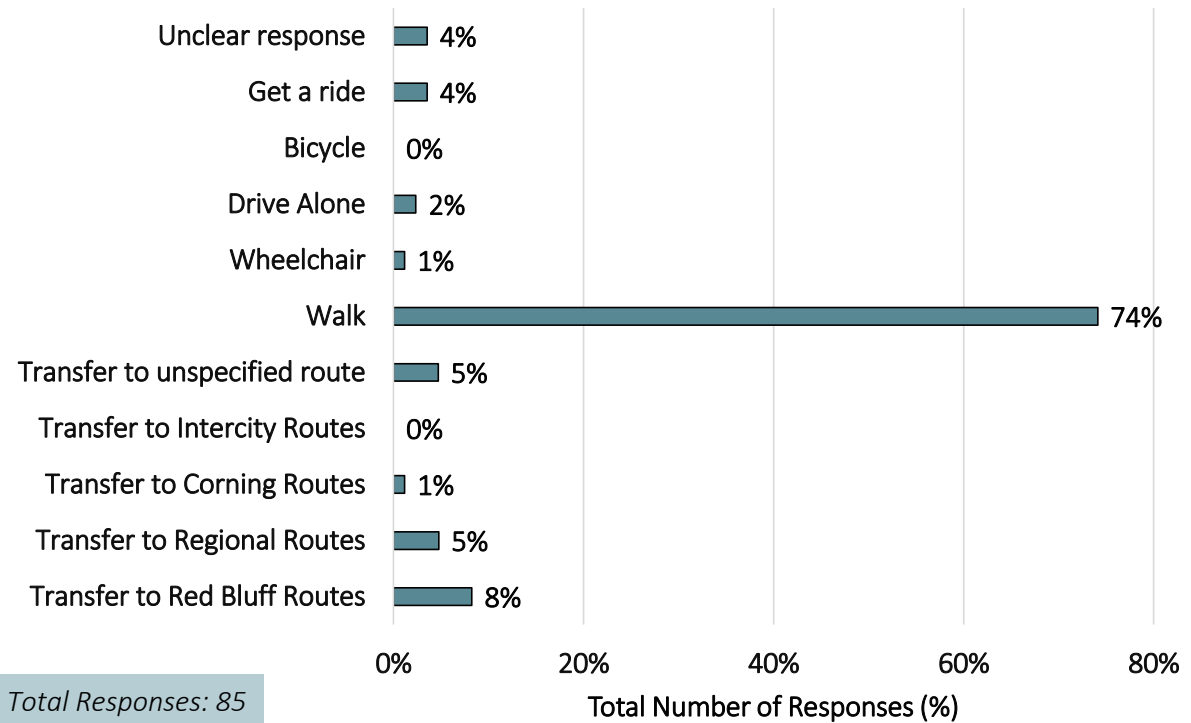
Q5 & Q6. How passengers arrived (92 responses) at the bus, and then completed their journey (85 responses) after alighting: To better understand the overall travel patterns of TRAX passengers, respondents were asked to identify how they got to and from the bus. The vast majority of respondents walk both to and from the bus stops (85.8 percent walk to, and 74.1 percent walk from stops). Just over 5 percent of respondents had transferred from a TRAX route before boarding the bus, while more than 17 percent would transfer onto a TRAX route after disembarking. Some individuals either got a ride to the bus stop or planned on catching a ride to their final destination after alighting. None of the survey respondents bicycled either to or from the bus, which may reflect either a lack of bicycle infrastructure in the area or a low rate of bike ownership. The lack of bikers could also just be because the survey was conducted in the winter when the weather is less pleasant for biking.

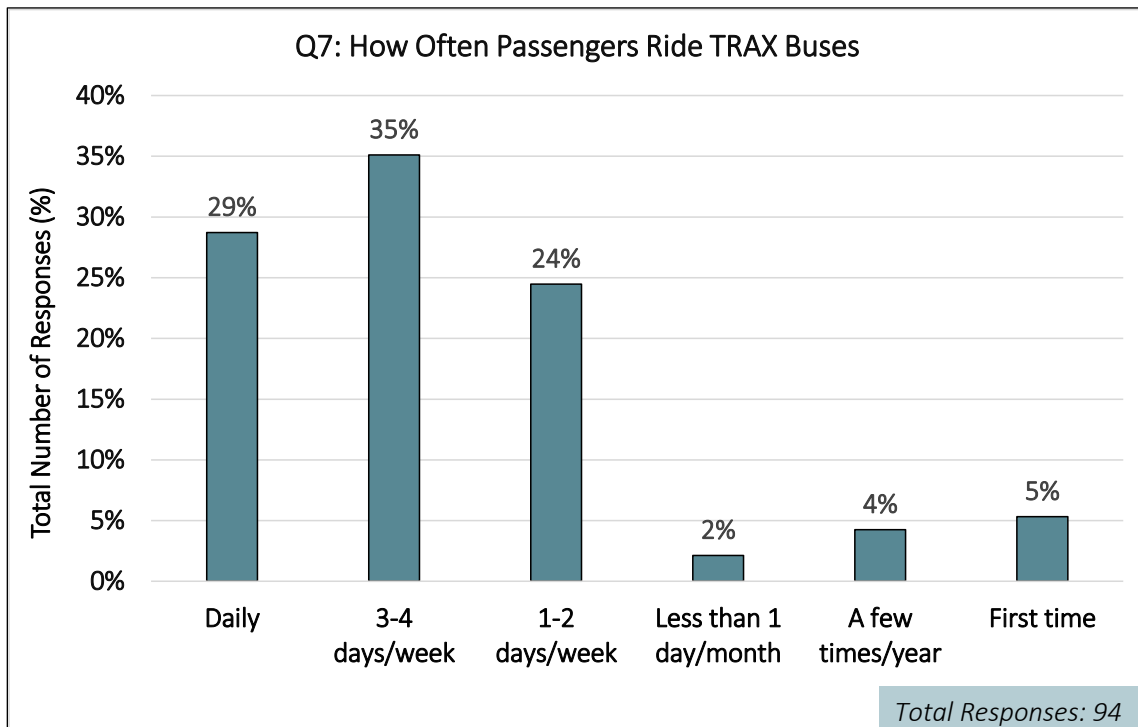
Q7. How often passengers ride TRAX buses (94 responses): The frequency that each individual passenger rides TRAX buses provides insight into overall TRAX ridership and how TRAX services are utilized. Many respondents reported that they use TRAX daily (28 percent), and 35 percent said they use the service 3 to 4 days per week. In contrast, over 5 percent of respondents were riding TRAX for the first time when they completed the survey. This data suggests that while most TRAX passengers use the services regularly, other residents are still aware of TRAX and utilize these services for special circumstances or singular instances.

Q5: How passengers arrived at the bus

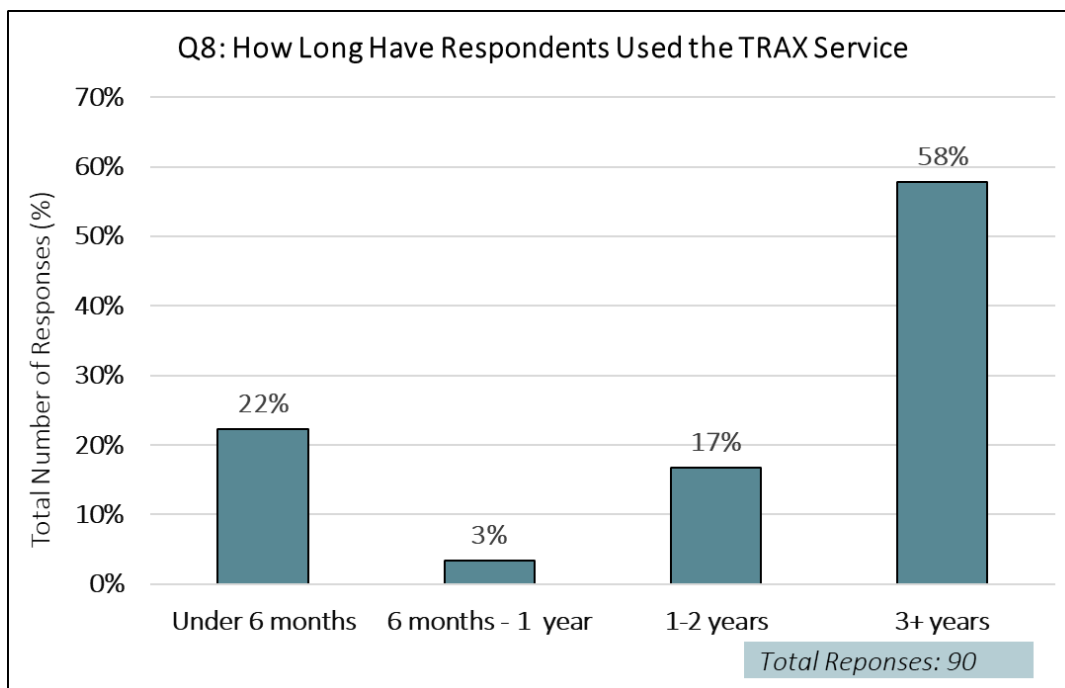


Q6: How Passengers Traveled After Alighting



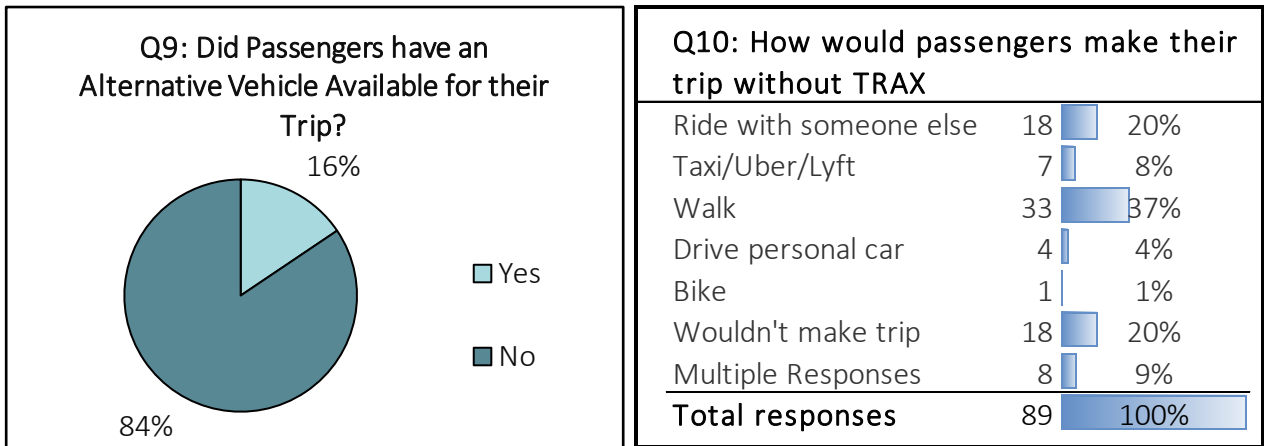


Q8. How long have respondents used the TRAX service? (90 responses): Most respondents have been using TRAX for 3 years or longer (57 percent), and another 16 percent reported using TRAX for 1 to 2 years. Although many passengers have taken advantage of TRAX for years, a significant number of respondents reported that they only starting riding TRAX buses within the previous 6 months (22 percent). This data suggests that TRAX’s ridership consists of both regular passengers that have frequented the service for years as well as individuals who are brand new.



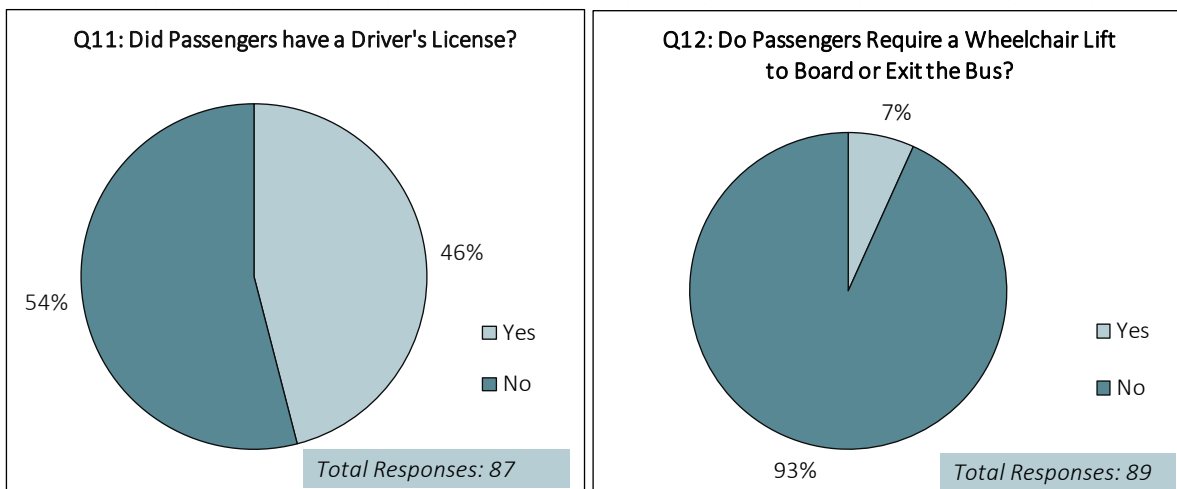
Q9. Did passengers have a vehicle available for their trip? (94 responses): Most respondents (84 percent) did not have an alternative vehicle available for their trip. TRAX is helping individuals in Tehama County that are likely mobility-limited due to not having a personal vehicle.

Q10. How would passengers make their trip if TRAX was not available? (89 responses): Passengers were asked to answer a hypothetical scenario, which is if TRAX services were unavailable how would they have completed their trip. Many passengers said they would have walked instead (37 percent), while one-fifth would have caught a ride with another person. Another one fifth stated that they would have simply not made their trip without TRAX available, a data point that reflects the importance of TRAX in ensuring regional residents have their mobility needs met.

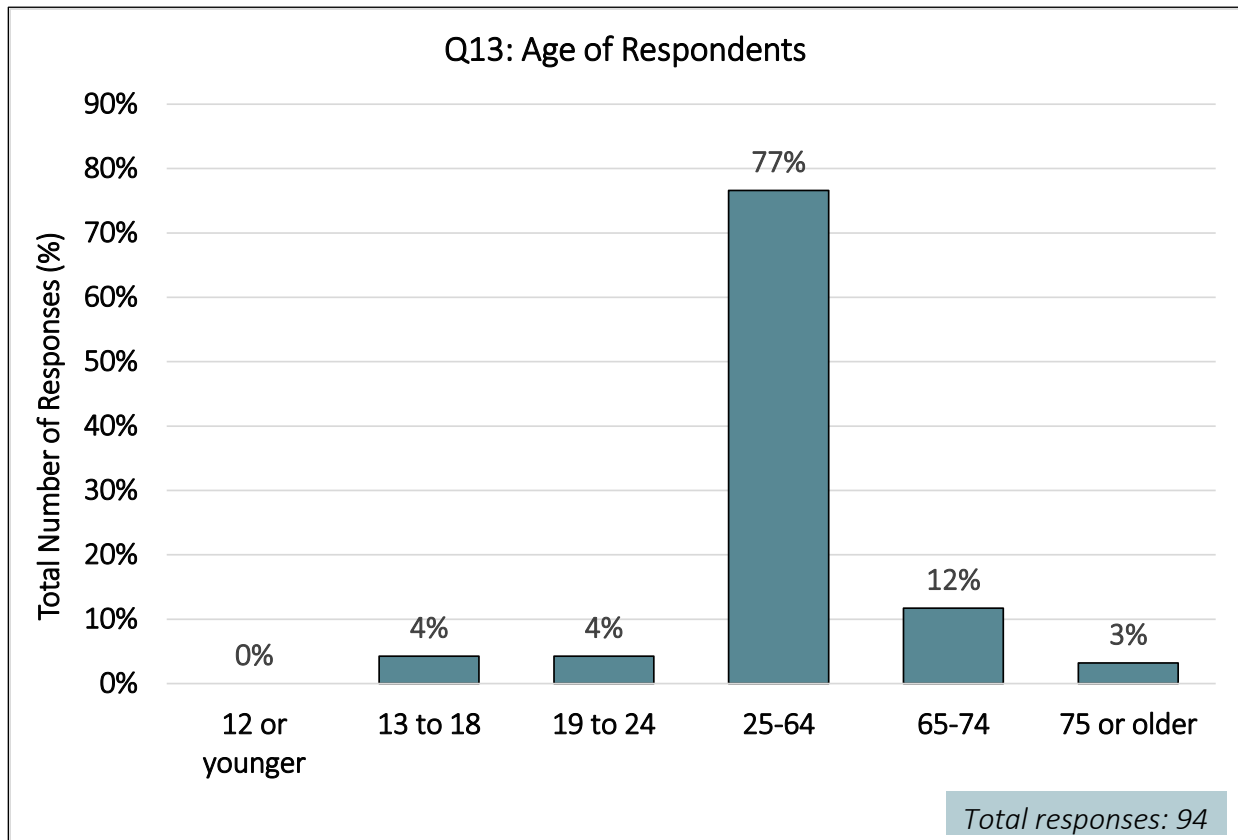


Q11. Did passengers have a driver's license? (87 responses): Just over one-half (54 percent) of respondents reported that they did not have a driver's license, while the remaining portion does.

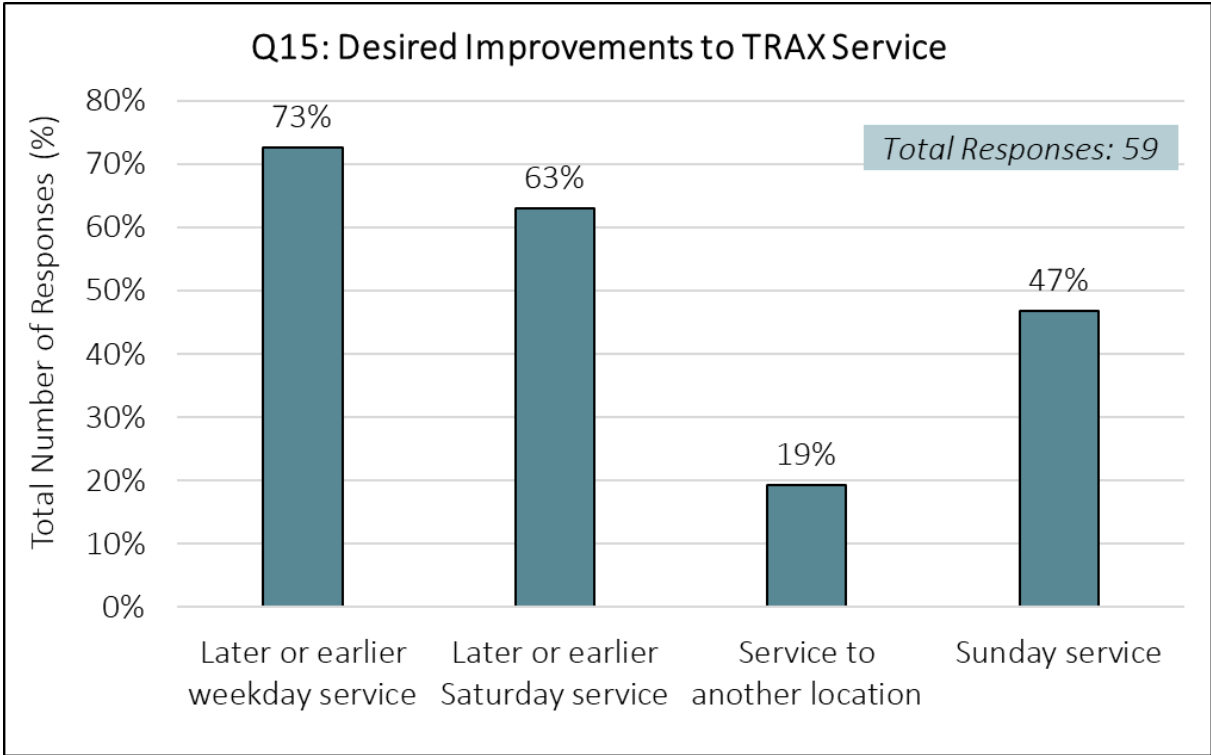
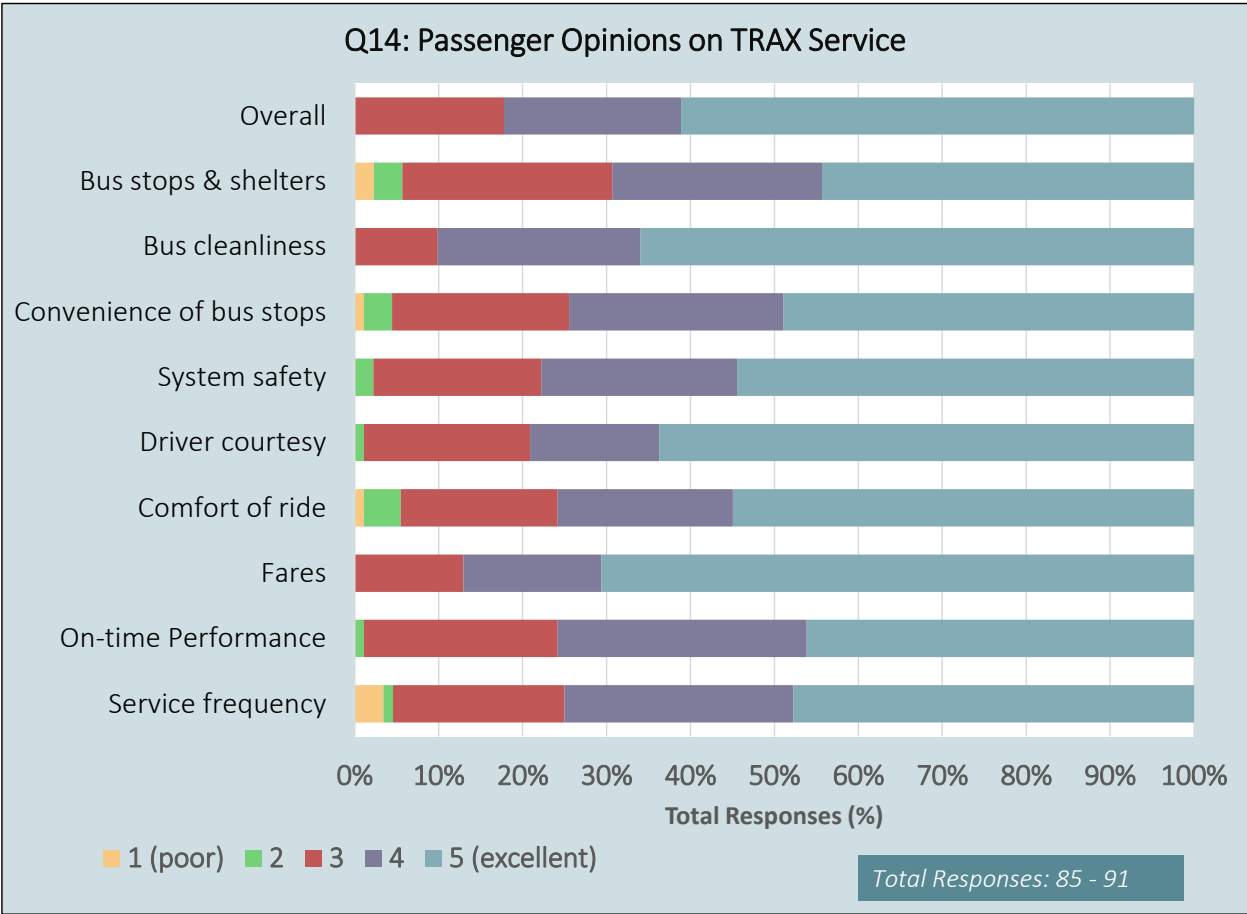
Q12. Do passengers require a wheelchair lift to board or exit the bus (89 responses): While most passengers do not require a wheelchair lift (93 percent), 7 percent of passengers reported they do require this feature to ride TRAX buses.



Q13. Age of Respondents (94 responses): Respondents identified how old they were, with most respondents reporting to be between the ages of 25 to 64 (76 percent). 11 percent of respondents were aged 65 to 74 years old, and approximately 8 percent of respondents were either aged 13 to 18 or 19 to 24 years old. No children younger than 12 completed the survey.



Q14. Passenger opinions on different components of TRAX service (85-91 responses): Passengers rated various components of TRAX service on a scale of 1 (poor) to 5 (excellent). 85 to 91 individuals ranked each feature. Considering all the responses, 78.6 percent of answers were either 4 (good) or 5 (excellent), and the overall service ranked an average of 4.4, meaning over 80 percent of passengers ranked the overall service as either “good” or “excellent.” The highest ranked TRAX service characteristics included fares (4.6), bus cleanliness (4.6) and driver courtesy and overall service (both 4.4). Although every service component averaged a “good” rating, the lowest ranked components were bus stops and shelters (4.1) and service frequency (4.1).



Q15. Desired improvements to TRAX Service (59 responses): Respondents were asked to select what improvements they would most like to see on TRAX, and then were provided with specific options: later or earlier weekday service, later or earlier weekend service, service to another location, or Sunday service. The two most popular improvements among survey respondents were to have later or earlier weekday service (72.5 percent) and to have later or earlier Saturday service (62.9 percent). Over 46 percent said they would like TRAX service on Sundays. A much smaller group of passengers wanted service to a new location (19.3 percent), yet this may be because those who desire service to new locations are unable to utilize TRAX currently and were not riding. Many people wrote down what their desired service hours would be for both weekday and Saturday TRAX service. Specific times listed are shown below.












Q15. Desired weekday service hours		
5:00 AM or earlier start	7	14%
6:00 AM start	8	16%
7:00 AM start	6	12%
6:00 PM end	4	8%
7:00 PM end	7	14%
8:00 PM end	15	30%
9:00 PM end	3	6%
Total responses	50	100%

Q15. Desired weekend service		
6:00 AM or earlier start	7	13%
7:00 AM start	8	15%
8:00 AM start	6	12%
9:00 AM start	4	8%
5:00 PM end	9	17%
6:00 PM end	2	4%
7:00 PM end	7	13%
8:00 PM end	8	15%
9:00 PM end	1	2%
Total responses	52	100%

Q16, Part 1. Desired Improvements to TRAX service per the comments (41 responses): To complete the survey, passengers were asked to provide any additional comments. Some passengers used this question as an opportunity to further explain or describe a recommendation they had to improve TRAX services. Common themes were identified and included in the adjacent table. 27 percent of respondents further expressed their desire for later or earlier service, and 10 percent reiterated their desire for more bus stops in new locations. Many people expressed frustration regarding the seats on the new TRAX trolley buses (12 percent). Another 12 percent asked for either more or improved bus shelters. As discussed in the analysis of responses to question 14 of this survey, bus stops and shelters were the lowest ranked factor of TRAX service, therefore it is unsurprising people would desire improvements.

Q16, Part 2. Compliments for TRAX per the comments: Within their final comments, many passengers took the time to provide a compliment to some aspect of the TRAX service. Some of these compliments have been listed in the below table.

Q16. Desired improvements to TRAX service - per comments

Later/earlier service	11		27%
Better quality bus seats	5		12%
More bus stops	4		10%
More/improved bus shelters	5		12%
Free WIFI	1		2%
Sunday service	5		12%
Improved driver communication	4		10%
More frequent service to Redding	3		7%
More service days (unspecified)	2		5%
No more masks	1		2%
Total responses	41		100%

Q16: Compliments (from Comments)

"Bus drivers are very friendly and very helpful"

"All excellent"

"Drivers are very polite"

"Everything is good!..."

"Everything is great..."

"Excellent work!"

"Great drivers"

"I don't have any [complaints or suggestions]."

"The drivers on bus #1 are great"

"Most of the time riding the bus is a good experience...Most of the drivers are great."

FIRST MILE / LAST MILE TRANSPORTATION AND EXAMPLES OF MICROTRANSIT

FIRST MILE / LAST MILE TRANSPORTATION

In the past decade as transit programs have evolved, a common shortcoming of transit is the ability to get passengers between a bus stop and their final destination or from their trip origin to a bus stop. This is known as first mile / last mile transportation. Often, people must walk, bike, drive or get a ride for this portion of the trip (or choose to not use transit entirely). Many communities look for creative solutions to address this issue. Some initiate scooter rentals, subsidized taxi programs, or microtransit service. Some case studies are described below, followed by a description and examples of microtransit programs.

Transportation Network Companies

Many larger urban communities have Transportation Network Companies (TNCs) such as Uber and Lyft to provide connections to public transportation. Some transit systems or local governments in these larger areas choose to subsidize TNC riders that connect with public transit service. As an example, the Washoe Regional Transportation Commission funds an “Uber Rides Program” that subsidizes 75 percent of the cost (up to \$9.00) for up to five trips per month within an area that encompasses urbanized Reno/Sparks. This program is available for seniors, persons with disabilities and Veterans.

Uber and Lyft are available in Tehama County, but the level of availability is uncertain, and prices vary. An early morning (6:20 AM) trip between the Rio and Walnut and Walmart, for example, was available in spring 2022 at three rates: \$6.75, \$8.02, and \$11.35 with no wait time. At the same time, a trip from Red Bluff to Corning was \$29.00. Another day, an afternoon trip to Corning was available for \$29.94 to \$39.71, or to Los Molinos for \$15.60 to \$20.48, with no wait time. However, during this same period in the late afternoon, no ride hail services were available at all. The nature of TNCs is that drivers can operate at will, with no guarantee of availability or price. As a result, many smaller communities and rural areas have little or no TNC availability, as it is not a viable business for the individual drivers. While this can fill in the gap for some trips, it is not a reliable means of providing first and last mile transportation in Tehama County. Two examples of other first mile / last mile solutions for particularly rural areas are described below.

First and Last Mile Case Studies

Beyond the improvements in pedestrian access discussed in the Short Range Transit Plan, first and last mile strategies for rural areas are much more challenging than for urban areas. In fact, in an area such as Tehama County, many potential passengers are much more than one mile from transit services. It should be noted that the METS program and ParaTRAX both provide significant first/last mile access for many Tehama County residents, though both have eligibility and service span limitations. Below are a few examples of how other rural and small urban areas have tried to address first and last mile access.

City of Huron – The Green Raiteros

The City of Huron is a small community with just over 6,000 residents, located in the Central Valley near Fresno, California. The City has a growing fleet of nine electric cars in a shuttle program managed by town's mayor, Ray León. The Green Raiteros program shuttles residents all over Fresno County free of charge.

The Green Raiteros program's costs are covered mostly with hundreds of thousands of dollars in grants León cobbled together from state climate programs. Passengers are asked to reserve their rides a few days in advance, and they are welcome to use the service as often as they need. The program has hired a crew of local residents to provide clients needing to get to other cities in the valley, mostly for medical appointments.

Green Raiteros cars are charged at the program headquarters, a former diesel mechanic shop. Establishing the Green Raiteros program has led the City of Huron to have as many public charging stations per capita as anywhere in America. There are already 30 ports in town.

Rancho San Pedro

Rancho San Pedro is a community of 450 subsidized apartments that border the Port of Los Angeles. Nearly 40 drivers in the community have enrolled in a program that allows them to rent compact, electric cars for \$3.00 an hour. No information about the capital and operational costs of this program.

INTRODUCTION TO MICROTRANSIT

Over the last several years, the concept of “microtransit” has seen increasingly widespread application across the nation. The goal of microtransit service is to provide coverage over an area not served efficiently by fixed-route service with a short response time, typically within 15 minutes of the request. Microtransit applies app-based technology developed for transportation network companies (such as Uber and Lyft) to provide a new form of public transit service in lower demand and lower density areas. While the concept of real-time, demand-response service has been envisioned for many years, it could not be effectively implemented until recently with the advent of new technology. Passengers typically use an app downloaded on their smartphone or computer to request a ride, and a routing algorithm (rather than a dispatcher) assigns the ride request to a specific driver/vehicle. The passenger is provided with an estimated service time, and fares are typically handled through the app. In addition, to ensure equitable accommodation, rides may also be requested directly over the phone. However, most trips are assigned without the need for manual dispatching. As microtransit is a shared-ride service, multiple passengers may be on the vehicle at the same time. Requirements of the Americans with Disabilities Act may be met by ensuring that a sufficient number of accessible vehicles are available to serve those who require accessible service.

Examples of Microtransit Programs

As mentioned, microtransit is a relatively new concept which is gaining traction in many communities to enhance first mile / last mile transportation needs, or to fulfill demand in difficult to serve circumstances. Examples of microtransit programs are described below, followed by some “lessons learned” for Tehama County.

Cheyenne Transit Program, Cheyenne, Wyoming

The Cheyenne Transit Program shifted its paratransit program from traditional Dial-A-Ride to microtransit, as a response to the COVID pandemic. City staff drives and maintains the vehicles, while the Spare Lab app is used to obtain on-line ride requests and to dispatch the service. City staff has found that the large majority of the trips can be dispatched directly by the app, freeing the staff to address service issues or particular travel needs. Over the first six month of microtransit service, productivity increased from 2.1 passenger-trips per vehicle-hour to 3.6. However, productivity is still substantially lower than that of the previous fixed-route service, which ranged between 7 and 8 passenger-trips per vehicle-hour.

Citibus System in Lubbock, Texas

As a result of the pandemic, the Citibus system in Lubbock, Texas reduced fixed route service from half-hourly to hourly in the peak periods and implemented an in-house microtransit program called “Citibus On-Demand.” Rides are booked through the Spare Labs app, available through the App Store, or by calling in. The pilot program was fare-free, but a fare of \$2.00 was subsequently added. Up to 14 vehicles are in operation at peak times, with approximately 10 during midday. With an average of 205 passenger-trips per day, productivity is in the range of 1.0 to 1.5 passenger-trips per vehicle-hour, which is not meeting their desired standard.

The Regional Transportation Commission (RTC) of Washoe County in Reno, Nevada

RTC has implemented their FlexRIDE service using the microtransit concept. The services are operated by a contractor and a base fare of \$2.00 is charged, with a discounted fare of \$1.00. Service is provided from 5:30 AM to 11:00 PM. Rides may be scheduled using a smartphone app or by calling the FlexRIDE dispatch center. Rides are scheduled on a first-come/first-served basis. Depending on the level of demand at any moment, the response time may be much higher than 15 minutes and RTC does not publish a standard response time for trip requests. The passenger is informed when making the request, either using the app or by phone, of the time the ride will be scheduled and may accept/reject that scheduled time. The pick-up time is then set within a window of 15 minutes of the scheduled time.

This approach has allowed RTC to extend service into low density, low demand areas and expand coverage within their service area. A total of three areas are served, each of which connects with fixed route services. The areas were defined to replace low-productivity route areas, and each service also connects with key nearby activity centers (such as medical facilities) as well as major transit stops. Annual ridership is currently approximately 60,600 boardings per year. Requiring a total of approximately 13,400 vehicle-hours of service, in total this service carries approximately 3.5 passenger-trips per hour.

TART Connect, Placer County

Placer County (California) contracts for the TART Connect service, which provides microtransit service in three zones encompassing the West Shore and North Shore of Lake Tahoe. These services are operated in both summer and winter and began service in the summer of 2021. Total summer ridership was just under

50,000 boardings, with productivity ranging from 5 to 8 boardings per hour. Note that ridership is augmented by the many visitors staying in the area, and also by the fact that the service is free to the rider.

ShastaConnect, Shasta County, California

ShastaConnect in Shasta County is an example near to Tehama County. The Shasta Regional Transportation Agency (SRTA) provided on-demand services for over twenty years, but when they added long-requested Sunday service in October 2019, they rebranded the service as ShastaConnect and supported the service with an app. The SRTA refers to the service as “general public demand responsive service with a smartphone app,” noting that the term “microtransit” is not well defined. In addition to the Sunday service, ShastaConnect provides service in rural areas on weekdays, and to residents of Burney, Cassel, Fall River and McArthur (the “Intermountain Area”) on weekdays. Fares for the Intermountain service are \$3.00, but temporarily free due to state grant funds. Initially, about half of the reservations remained scheduled by calls to dispatch, but more recently, the proportion scheduled by app is increasing. According to SRTA staff reports, the cost per passenger trip on Sundays was \$71.84 pre-pandemic but has increased to \$80.12 per passenger trip. The rural service cost per passenger trip on weekdays is much more reasonable at \$20.59 per passenger trip.

LESSONS FOR TEHAMA COUNTY

Some of the lessons learned from the programs described include the following:

1. Microtransit can increase the efficiency of services in areas where fixed route is not productive, but steady demand exists, as in the case for Cheyenne, Wyoming. However, if a community tries to serve too large of an area, as in the case of Lubbock, Texas, the productivity can be low and cost ineffective.
2. Microtransit has been increasingly introduced in tourist communities, like Truckee, California, and North Lake Tahoe. The success can be linked to the high number of patrons traveling as a group and going a relatively short distance. These examples are not particularly applicable to Tehama County.
3. Service such as the ShastaConnect has mixed success. The Sunday service is very expensive per passenger trip, but the rural weekday service seems to be meeting a difficult-to-serve need with reasonable productivity.
4. Overall, microtransit can make sense particularly in areas where it replaces an existing, ineffective fixed route transit service.

