

B-LINE ROUTING STUDY

Technical Memorandum One: Existing Conditions and Transit Evaluation

Prepared for

BUTTE COUNTY ASSOCIATION OF GOVERNMENTS

B-Line Routing Study
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Existing Conditions and
Transit Evaluation*

Prepared for

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INTRODUCTION AND BACKGROUND

INTRODUCTION

As the owner and operator of Butte Regional Transit, the Butte County Association of Governments (BCAG) is conducting a route optimization study, herein referred to as the B-Line Routing Study. This document is the first in a series of interim study documents that will ultimately yield an updated service plan (including routes and schedules) for the Butte Regional Transit (B-Line) system serving Butte County.

First, an overview of the study area is presented, with a focus on factors that impact the demand for transit services. This is followed by a detailed analysis of existing (and recent pre-pandemic) fixed route and paratransit services and ridership levels, including a performance analysis by route and by route segment. Results of an onboard passenger survey conducted in December 2021 are highlighted, followed by an overview of existing capital assets, marketing strategies, fare policies and financial resources. Finally, key findings of this study to date are listed in Chapter 5 of this document.

This information will be used as the basis for future study steps that consider alternatives with regards to service strategies, routes, and schedules. Ultimately, the information in this document will be incorporated into the overall study report.

PURPOSE OF THE B-LINE ROUTING STUDY

B-Line routes were most recently comprehensively reviewed in 2010. In the intervening 12 years, there have been many changes that impact the need for transit services as well as the environment in which services are provided, including the following:

- Changes in the region, such as growth in residential areas, changes in school attendance and programs, changes in employment and commuting patterns and changes in social service programs.
- The dramatic effects of the Camp Fire, and subsequent redevelopment efforts in Paradise and Magalia.
- The ongoing effects of the pandemic.
- Long-term societal trends, such as reductions in overall cost of auto use, that were reducing the demand for transit service even before the pandemic.
- Changes in transit services, such as the emergence of more flexible forms of transit including microtransit, as well as the increases in operating costs and new requirements for zero emission buses.

At a broader level, this study is intended to define how BCAG can best allocate the substantial resources (on the order of \$11 Million per year) spent on providing transit services so that the best possible use of funds is achieved, and the mobility needs of the diverse Butte County region are met.

This study will provide a thorough and comprehensive analysis of all aspects of B-Line operations to determine how best to improve the transit system with available resources.

RECENT STUDIES AND REPORTS RELEVANT TO THE CURRENT EFFORT

There have been several recent (and some ongoing) studies and reviews that merit review and coordination with the Routing Study, as discussed below.

Non-Emergency Medical Transportation Study, 2022

BCAG is currently conducting a study of Non-Emergency Medical Transportation (NEMT) options for Butte County as a whole. This focuses on identifying options for residents that have non-emergency medical mobility needs that cannot be met by ADA or Dial-A-Ride services. To date, the study has yielded findings regarding the importance of transportation services with regards to healthcare access: a survey of 179 residents across the county indicates that 52 percent have missed a medical trip due to lack of transportation. Respondents indicate a need for expanded B-Line coverage to outlying areas, as well as increased frequency and the availability of ADA Paratransit service for intercity trips. One particularly useful result from this study to date is the survey results regarding resident location versus the most prevalent destination for medical services within Butte County, as shown in Table 1. As indicated, most residents travel primarily to non-emergency medical destinations within their own community. This also indicates that Paradise/Magalia residents travel either within Paradise or to Chico, Biggs residents travel to Chico, Gridley residents travel both to Chico and Oroville, and Berry Creek residents travel to Oroville.

To the degree that new strategies can reduce the need for traditional transit fixed route or paratransit services, the results of this study may impact the Routing Study, particularly in lower demand areas that are more difficult for traditional transit to effectively serve.

Post-Camp Fire Regional Population and Transportation Study, 2021

The Post Camp Fire Regional Population and Transportation Study was completed in April 2021 to address transportation planning issues resulting from the Camp Fire. It included development of population forecasts (which are discussed in detail in the following chapter of this document), analysis of changes in travel patterns and travel forecasts, public input, and updates of the 2015 Butte County Transit and Non-Motorized Plan. Key near-term transit (by 2025) recommendations include:

- Increased service on Routes 8 and 9 (student shuttles) in Chico.
- Expansion of hours of Chico route services to a consistent 6 AM to 8 PM span of service.
- Maximize service coverage in Oroville, within existing resources, focusing on persons most in need of transit service.
- This plan also includes a long-term (to 2045) service plan, with the following key elements:
 - Establishing a high-capacity transit corridor between North Valley Plaza, Chico State, Downtown and the Chico Mall area.
 - Potential establishment of on-demand rideshare services (such as microtransit) to new service areas.

Table 1: NEMT Survey Results -- Residence Vs. Primary NEMT Destination

Residence Location	Primary Destination for Non-Emergency Medical Trips							
	Butte				Outside Butte			
	Chico	Oroville	Paradise	County	Chico	Oroville	Paradise	County
Berry Creek	0	11	0	0	0%	8%	0%	0%
Biggs	1	0	0	0	1%	0%	0%	0%
Butte Meadows	0	0	0	0	0%	0%	0%	0%
Butte Valley	0	0	0	0	0%	0%	0%	0%
Chico	48	1	2	1	33%	1%	1%	1%
Gridley	4	3	0	0	3%	2%	0%	0%
Magalia	3	0	9	0	2%	0%	6%	0%
Nord	1	0	0	0	1%	0%	0%	0%
Oroville	5	35	0	0	3%	24%	0%	0%
Palermo	0	1	0	0	0%	1%	0%	0%
Paradise	8	0	7	2	6%	0%	5%	1%
Thermalito	0	1	0	1	0%	1%	0%	1%
Yankee Hill	0	0	1	0	0%	0%	1%	0%
Total	70	52	19	4	48%	36%	13%	3%

Source: Survey conducted by AMMA Consultants, March 2022.

- Provide intercity service to Sacramento.
- Review bus stop location, with a focus on reducing close stops.

Chico to Sacramento Inter-City Transit Strategic Plan, 2022

A study was completed in early 2022 regarding consolidation of the existing San Joaquin Joint Powers Authority “Amtrak Thruway” service between Chico, Sacramento, and Stockton to B-Line operation to a Chico-Sacramento commuter service.

The recommended plan calls for a total of nine round-trips per day between Chico and Sacramento, with some runs extending to/from Stockton. Stops would be served at the Chico Amtrak Station, Chico Transit Center, the Chico Park-and-Ride (SR 99 / SR 32), Oroville (3rd/Grand) as well as Marysville and downtown Sacramento. Fares would be consistent with existing B-Line Regional fares (\$2.40 for general public). As the schedule is designed for AM southbound and PM northbound commuters, it would be a viable option for commuting from Chico to Oroville, but with a first Chico arrival at 9:08 AM and a last Chico departure at 3:48 PM it would not serve a full day work shift or student trip to Chico from Oroville. It would, however, provide a faster trip for travel between Chico and Oroville throughout the day as well as improved connections to Marysville and Sacramento.

The commuter service is continuing to be studied as part of the North Valley Passenger Rail Specific Plan.¹ The service would increase the need for local services in Oroville to provide connections to the transit stop at 3rd and Grand. It would also potentially reduce ridership on Route 20, though the fact that Route 20 serves many more stops in Oroville and in southern Chico would tend to reduce this impact. The Rail Study, being led by BCAG, is a multi-year study with commuter rail service implementation planned for 2029.

The actual implementation date for this service is currently uncertain, as it depends on other planning processes. For purposes of the Routing Study, this new service is assumed to not impact local ridership patterns or demand.

Zero Emission Electric Bus Rollout Plan

BCAG/B-Line staff are preparing a Zero-Emission Bus Rollout, Implementation and Operations Plan to demonstrate how B-Line will achieve a zero-emission fleet by 2040. The Plan will guide B-Line's implementation of a zero-emission bus fleet and help staff work through challenges and explore solutions. It will also identify solutions related to electric service, charging systems, scheduling and timing, routing, technologies, maintenance, and other necessary improvements needed to support zero-emission technologies. The Plan is expected to be complete in 2022.

2020 Regional Transportation Plan / Sustainable Communities Strategy

The "RTP/SCS," adopted by BCAG, is a broad guiding document for regional transportation improvements throughout Butte County. Key policies regarding transit services consist of the following:

Goal: Provide an efficient, effective, coordinated regional transit system that increases mobility for urban and rural populations, including those located in disadvantaged areas of the region.

Objective 2.2: Increase transit ridership that exceeds annual population growth rate for Butte County.

With regards to transit services the RTP/SCS cites the *2015 Transit and Non-Motorized Plan* (TNMP). The key mid-term plan element is to provide a new "Route 1 Bus Rapid Transit – Lite" transit corridor between North Valley Plaza in the north and Butte College Chico in the south via downtown, including service as frequent as every 15 minutes, transit signal priority, limited stops and off-board fare payment. It also called for consideration of additional service on weekends. In the long-term, the plan also cites the potential for additional service coverage (such as along the Eaton Corridor and Bruce Road) and additional transit-priority corridors such as East Avenue and Warner Street (the latter only if Warner Street is completed north to 11th Avenue).

¹ More information on the Rail Study can be found here: <http://www.bcag.org/documents/Rail%20Study/NVPRSP-Fact-Sheet-20220430.pdf>

The RTP/SCS also defines a series of three Transit Priority Project Areas within the Chico service area (Figure 4-6) based on the Butte County Transit and Non-Motorized Plan (see Chapter 8 – Non-Motorized Transportation). The three TPP areas are described below:

- A near-term corridor between the Downtown Chico Transit Center and the Butte College Chico Campus area (along B-Line Route 15)
- A mid-range corridor expanding north from the Chico Transit Center to the North Valley Plaza area (along Esplanade and East Avenue)
- Long-range additional corridors along East Avenue and Warner Street, pending increased development (or redevelopment) within the existing built-up areas. The new expanded corridors are included in the TNMP long-term plan.

These corridors are planned to be a focus of higher density (multifamily) residential areas as well as mixed use developments.

BCAG Triennial Review 2019

The Federal Transit Administration conducts audits on grantees on a triennial basis. The most recent audit was completed in December of 2019. Overall, BCAG received a good audit report, meeting requirements in 17 of 21 categories and subsequently making modifications to address deficiencies in the remaining 4 categories. These modifications consisted of changes in documentation of procurement processes, changes in contracting provisions, notifications to provide reasonable modifications to accommodate persons under the Americans with Disabilities Act, and changes in the paratransit eligibility appeals process. None of these deficiencies directly impact the service plan. This audit also noted that BCAG is intending to implement the Paradise Transit Center project within the following five years. Findings are detailed below.

- Between FY 2012/13 and FY 2017/18, total ridership fell by 17 percent while productivity (passenger-trips per vehicle service-hour) fell by 16 percent. Most of this drop in ridership occurred on the urban fixed-route mode.
- There is a need to redesign the Oroville routes to improve performance, as part of an overall, updated transit plan. (This has yet to occur and is an important goal of this current Routing Study.)
- B-Line is at risk of falling below the minimum 20 percent farebox recovery ratio (ratio of fare revenues to operating costs) for urban systems and the minimum 10 percent ratio for rural service. (Note that pandemic-related temporary changes in TDA currently have these requirements on-hold.)

Unmet Needs Hearing Findings (Annual Reports)

The TDA also requires an annual analysis of public input regarding “unmet needs” for public transit services. Minutes for five years (FY 2017/18 to 2021/22) were reviewed with regards to service-related issues, yielding the following public input. For each, the number of years that the specific request was made is identified (if more than one) and the unmet need determination identified:

- In Oroville, combine Routes 25 and 27 and have Routes 24 and 26 operate as separate routes, to reduce waiting time and improve on-time performance. (Four requests. Operational issue, not unmet need.)
- Replace flag stop areas with specific stops. (Three requests. Operational issue, not unmet need.)
- Adjust schedules on Routes 40 and 41 to improve service between Chico and Paradise. (Five requests. Not an unmet need as service is provided but should be considered as population of Paradise grows.)
- Provide Sunday service in Chico. (Five requests. Found not to be reasonable to meet.)
- Provide Sunday service in Magalia. (Two requests. Found not to be reasonable to meet.)
- Provide Saturday service on Route 7 in Chico. (Two requests. Found not to be reasonable to meet.)
- Improve Saturday service in Oroville. (Five requests. Found not to be reasonable to meet.)
- Service to Hegan Lane Business Park and University Farm area. (Four requests. Found not to be reasonable to meet.)
- Consider additional stops, such as moving the Oroville Wal-Mart stop from the adjacent road into the parking lot. (Two requests. Found not to be an unmet need.)
- Resume Route 31 service between Paradise and Chico. (Service was cut after the Camp Fire. While it was found to not meet minimum farebox ratio, it should be reconsidered on an ongoing basis as population of Paradise rebounds.)
- Service between Chico and Sacramento. (Found not to be reasonable to meet as it extends outside of Butte County. Note the more recent specific study on this corridor.)
- Direct service between Oroville and the North County Courthouse in Chico. (Two requests. Not an unmet need, as service is currently available. However, transfer timing should be reviewed to speed this specific trip if possible.)
- Provide stop at 11th/Ivy in Chico. (Two requests. Not an unmet need, as there is a stop within a ¼ mile walk.)
- Provide later service in Chico. (Found not to be reasonable to meet.)
- Provide later Saturday service in Chico. (Two requests. Found not to be reasonable to meet.)
- Provide later service in Oroville. (Three requests. Found not to be reasonable to meet.)
- Provide service to the Chico Airport. (Two requests. Found not to be reasonable to meet: however, it should be noted service to the airport was implemented outside of the UTN process.)
- More frequent service to/from Magalia. (Two requests. Found not to be an unmet transit need. Note this request was made prior to the Camp Fire.)
- Later service between Chico and Paradise. (Two requests. Found not to be reasonable to meet.)

Additionally, unmet needs for Fiscal Year 2022/23 were just completed, with all requests found “not reasonable to meet.” However, several responses noted that the request may be further analyzed in this routing study, including the following:

- Adjust Route 5 to service the VA Clinic and courthouse. Service is only a few times a day on Route 7 and this area could be better served by Route 5.
- Several requests for additional stops along current routes were received.
- In Oroville combine routes 25 & 27 into a single route and have routes 24 and 26 each operate with on its own route. This would reduce the waiting time and help the on-time performance of the Oroville routes.
- Remove flag stop areas and place specific stops along those routes.
- Increase service along Eaton Rd, specifically at the intersection with Floral Ave.
- Add a route from downtown Chico to Doe Mill and Meriam Park neighborhoods.
- Would like earlier service from Biggs to Oroville to accommodate 8:00am work start times, and later return service from Oroville to Biggs for those same commuters.
- Would like more frequent service on highly used routes.
- Would like more consistent timetables for starting times on routes for predictability.

COMMUNITY AND DEMOGRAPHIC OVERVIEW

INTRODUCTION

This chapter provides an overview of the transit environment in which B-Line operates. Because many recent plans conducted by BCAG include detailed evaluations of demographics of Butte County, this study references those plans rather than duplicating their efforts. In particular, the *Post-Camp Fire Regional Population and Transportation Study*, and the *Transit & Non-Motorized Plan (2021)* are cited, with minor updates as appropriate.

RECENT CHANGES TO POPULATION AND COMMUTING

In recent years, there have been multiple public health, socioeconomic, and environmental factors which have impacted the population of Butte County. It is important when planning for the future of public transit to consider how recent events have impacted the population in Butte County, and how these events will continue to influence growth trends in upcoming years.

In November 2018, the Camp Fire ripped through Butte County. The fire destroyed most of the Town of Paradise, and greatly impacted nearby small towns such as Magalia. In April 2021, BCAG released the *Post Camp Fire Regional Population and Transportation Study*. This study identified some of the effects the Camp Fire had on Butte County's population. As shown in Table 2, key findings included that the countywide population was expected to decrease until 2020, which was confirmed by data collected during the recent US Decennial Census (2020). In contrast to this recent trend of declining population, Butte County population was then projected to increase from 2020 to 2025, with an expected net two percent increase in the county population seven years after the Camp Fire. However, this data is contradicted by recent California Department of Finance (DOF) population estimates, which are also presented in Table 2. The DOF determined the countywide population in January 2022 decreased by 2.4 percent from that in January 2021, with the biggest decrease in Oroville (down 1,256 people or 6.2 percent) but an increase of 1,568 people (25 percent increase) in Paradise, and a 0.5 percent increase in Chico. Unincorporated Butte County experienced the greatest loss that year in numeric terms and percentagewise (5,634 people, or 8.2 percent).

Not long after the Camp Fire, in March 2020 the COVID-19 pandemic began greatly impacting daily life in the United States. In addition, the Bear Fire (North Complex) burned the unincorporated community of Berry Creek and surrounding communities in the summer of 2020, which is likely a contributing factor to the decreased population in the unincorporated portion of the county as shown in Table 2. (B-Line provided emergency evacuation as part of an agreement with the Butte County Sheriff's Office during the Camp and Bear Fires.)

Aside from wildfires, the pandemic greatly influenced travel patterns of residents as many people went from commuting daily to being remote workers, and as social service programs and other activities were suspended. As a component of the Chico to Sacramento Inter-City Transit Strategic Plan, LSC Transportation Consultants analyzed how the pandemic would impact transit demand in Butte County. Using the US Census Longitudinal Employer Household Dynamic Dataset, it was

estimated that in 2018 over two-thirds of employed Butte County residents commuted within the county, with most of the remainder commuting to further locations. Through public outreach related to the Chico to Sacramento Plan, it was determined in a May 2021 survey that only 14 percent of respondents expected to work from home, but by October 2021, over half of respondents anticipated regularly working from home. Survey respondents also indicated that they would be more likely to use public transit after the pandemic ends. As attitudes regarding work and the pandemic are rapidly changing, these estimates remain fluid. These data points indicate that commuters will not avoid transit use after the end of the pandemic, though the shift to more remote working will tend to reduce overall demand for commuting, including commuting by transit, by at least 7 percent.

Table 2: Butte County Population Trends and Forecasts

	2018	2020	2025	2030	2021	2022
Population Estimate						
Biggs	1,985	1,964	2,041	2,196	1,974	1,939
Chico	92,286	101,475	111,921	111,513	102,359	102,892
Gridley	6,863	7,421	7,332	8,085	7,413	7,205
Oroville	17,896	20,042	19,621	20,052	20,119	18,863
Paradise	26,256	4,764	14,101	18,867	6,137	7,705
Unincorporated	81,088	75,966	75,040	80,621	68,638	63,004
Total County	226,374	211,632	230,056	241,333	206,640	201,608
Numeric Change						
	Change from 2018			Change from 2021		
Biggs		-21	56	211		-35
Chico		9,189	19,635	19,227		533
Gridley		558	469	1,222		-208
Oroville		2,146	1,725	2,156		-1,256
Paradise		-21,492	-12,155	-7,389		1,568
Unincorporated		-5,122	-6,048	-467		-5,634
Total County		-14,742	3,682	14,959		-5,032
Percentage Change						
	Change from 2018			Change from 2021		
Biggs		-1%	3%	10%		-1.8%
Chico		10%	18%	17%		0.5%
Gridley		8%	6%	17%		-2.8%
Oroville		12%	9%	11%		-6.2%
Paradise		-82%	-86%	-52%		25.5%
Unincorporated		-6%	-8%	-1%		-8.2%
Total County		-7%	2%	7%		-2.4%
Post Camp Fire Study Estimates			California Department of Finance Estimates			
<i>Sources: Post Camp Fire Regional Growth Forecasts, Fehr and Peers, Sept 2020 and California Department of Finance, June 2022</i>						

COMMUNITY / DEMOGRAPHIC OVERVIEW

Butte County is home to a diverse assortment of landscapes and communities, ranging from the urban neighborhoods of Chico to small mountain towns, such as Paradise and Berry Creek. Together, these communities comprise the greater Butte County population and influence travel patterns across the region. More detailed descriptions of the populations, locations, and communities that define Butte County are included below.

Demographics

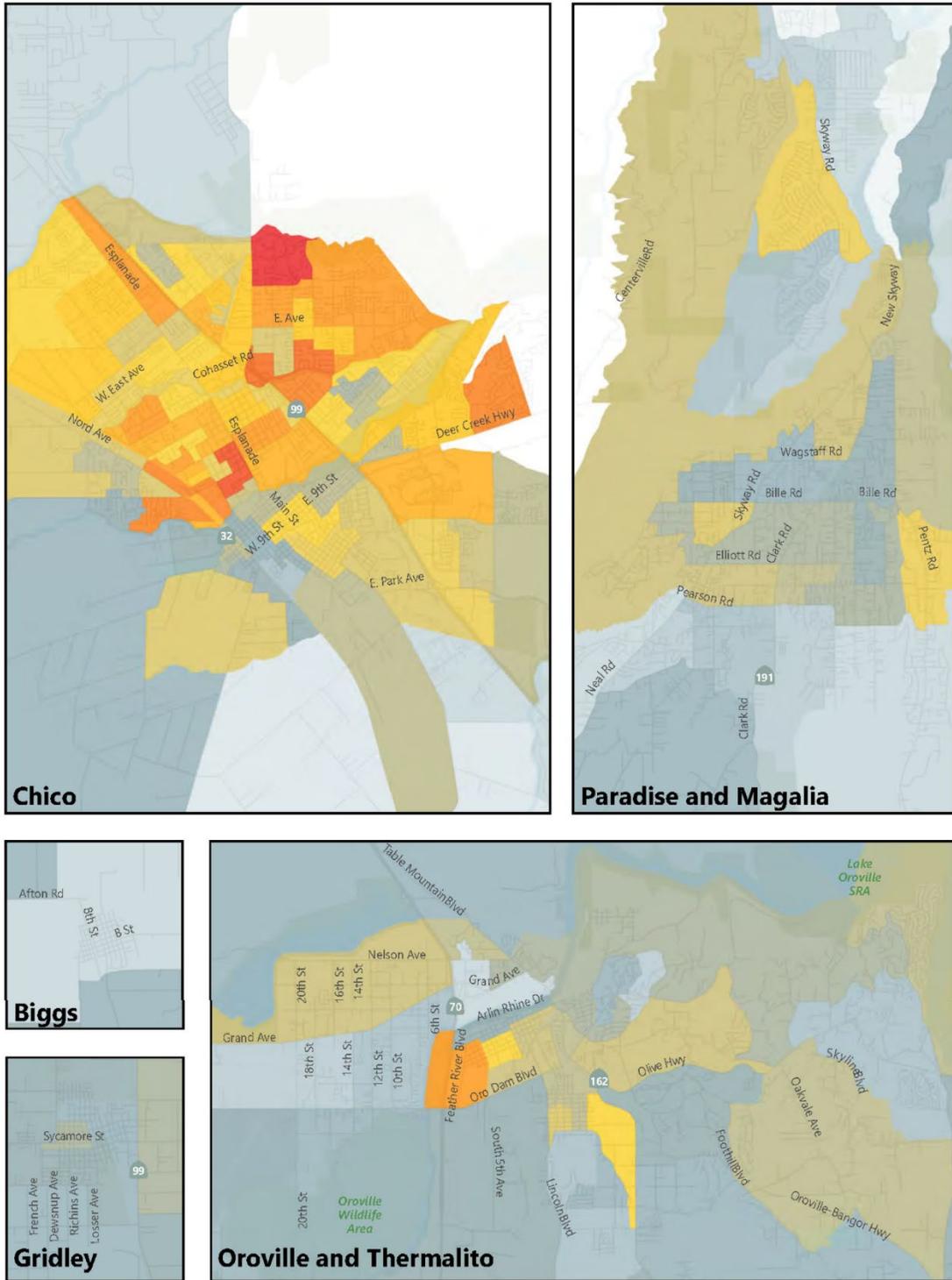
As previously discussed, and illustrated in Table 2, population trends are difficult to predict, and populations have fluctuated at unpredictable rates due to wildfires and the pandemic. Still, certain trends are consistent. Chico, with a population of 102,892 in January 2022, is currently the largest city within Butte County and accounts for 51% of the county's population. Oroville is the next largest with 18,863, or just under 10 percent of the county's population, and nearly a third (63,004) of the county's population lives in unincorporated areas of the county; the smaller, more rural areas, except for Paradise, are losing population, while Chico is expected to grow slowly.

While the DOF provides recent data on the overall population and population by age, the US Census provides better data for certain topics, including household data and other data that are particularly helpful in identifying potentially transit-dependent populations. The *Post Camp Fire Study* includes much of this data, which is highlighted in this report rather than being included in its entirety. Appendix A of this report includes a map developed for the *Post Camp Fire Study* that depicts the population density of different areas across Butte County, as well as a map of where there are high concentrations of employment opportunities. Table 3 presents the potentially transit dependent population in Butte County, with data from California and nationally for comparison.

Table 3 shows population groups that are often transit reliant, including youths, seniors, disabled individuals, low-income individuals, and households without a vehicle available (zero-vehicle households). Compared to the national average, and, even more so, compared to the State of California, Butte County has a smaller youth population and greater senior population. There is also a greater concentration of persons living in poverty, and people who identify themselves as having a disability. However, due to the rural nature of Butte County, there is a smaller percentage of households without a vehicle than in California or nationally.

Maps developed for the *Post Camp Fire Study* of where these transit dependent populations live relative to the B-Line service area are also included in Appendix A. Figure 1, sourced from this study, depicts transit ridership potential in the larger communities across Butte County as determined through Fehr and Peers' analysis of census demographic data. The greatest transit ridership potential is in Chico, specifically near Chico State/Downtown and the northeastern portion of the city. In Oroville, the area with the greatest transit ridership potential is along Feather River Boulevard.

Figure 1: Transit Ridership Potential



Source: Post-Camp Fire Regional Population and Transportation Study, 2021

Low High

Table 3: Butte County Demographics - 2020

	Butte County		California		United States	
	Number	% of Total	Number	% of Total	Number	% of Total
Residents	211,632	--	39,346,023	--	326,569,308	--
Households	83,879	--	13,103,114	--	122,354,219	--
Youth (Ages 0 -17)	42,538	20.1%	8,518,918	21.7%	73,296,738	22.4%
Seniors (Ages 65+)	38,517	18.2%	2,624,349	6.7%	52,362,817	16.0%
Low-Income	37,670	17.8%	4,853,434	12.3%	41,800,871	12.8%
Disabled	27,122	17.0%	4,146,951	10.5%	40,786,461	12.5%
Zero-Vehicle Households	13,968	6.6%	920,362	7.0%	10,344,521	8.5%

Sources: American Community Survey 5-year Estimates, 2020; US Decennial Census

Major Activity Centers

Major activity centers are important to recognize as potential transit trip generators. Below is a discussion of major activity centers by type of activity, type of facility, and/or by group served.

Transportation Hubs

The B-Line Transit Center in Chico is located on W. 2nd Street between Normal and Salem Streets, on the north half of the block. Bus boarding areas are located on all three streets. The facility includes bus shelters, restrooms, and a staffed ticket office. Most local and intercity routes serve the Chico Transit Center.

There is also a B-Line Transit Center in Oroville, located on Spencer Street. The center has five bus loading bays, a parking shelter for passengers, and restrooms.

BCAG has a pending grant to construct a new transit center in Paradise at the intersection of Cedar and Almond. It is anticipated the construction would be complete in the next few years.

Services for Persons with Disabilities

Butte-Glenn 211 and B-Line work together to connect Butte County residents with services that offer help, including transportation and access to health and human services. The Disability Action Center is non-profit organization founded to meet the needs of disabled residents living in Northern California. The Chico Office is located at 1161 East Avenue. The Arc of Butte County provides programming for disabled individuals to actively support their full participation in the community. The Arc of Butte County's office is located at 2030 Park Avenue in Chico. The Work Training Center also provides services to disabled individuals. The Work Training Center is located at 80 Independence Circle in Chico. There are other organizations and programs across Butte County intended to serve and assist disabled residents living in the area.

Senior Centers and Facilities

The Chico Area Recreation and Park District (CARD) offers events and programs for seniors, specifically at the Community Center located at 545 Vallombrosa Avenue and at the Lakeside Pavilion located at 2565 California Park Drive. Passages is a non-profit organization located at 25 Main Street, #202, in Chico, that offers resources and services to older adults and caregivers, including legal support, senior nutrition programs, and transportation services. Senior nutrition sites are located at the Lakeside Pavilion in Chico, the Feather River Senior Citizen Center in Oroville, and the Gridley Recreation Department. The Feather River Senior Citizen Center is located at 1335 Myers Street, Oroville, and offers programs for seniors in the area, including bingo nights.

Government and Social Services

Oroville is the county seat for Butte County, thereby housing many government offices. Numerous branch offices are in Chico as well. The Butte County Department of Employment and Social Services is located at 765 East Avenue in Chico and 78 Table Mountain Road in Oroville. The Community Action Agency of Butte County, Inc., the local community action program established in the wake of the Economic Opportunity Act (1964), manages the North State Food Bank and the Esplanade House, a supportive housing program. The Community Action Agency is located at 181 E. Shasta Avenue in Chico.

The Butte County Superior Court is located at 1 Court Street in Oroville, and the North County Courthouse is located at 1775 Concord Avenue in Chico. The Butte County Juvenile Hall is located at 41 County Center Drive in Oroville.

Education Centers

Butte County is home to two colleges and universities: California State University (CSU) Chico, also referred to as Chico State, and Butte College, both of which are discussed further later in the report. Chico State is in the downtown area of the city, with main offices at 400 West First Street. There are multiple Butte College locations in Butte County: the main campus is located at 3536 Butte Campus Drive in Oroville, there is a class center located at 2320 Forest Avenue in Chico, as well as other smaller class locations.

There are 14 school districts within Butte County, which together have 91 public schools and 18 charter schools. These schools are located across the county. There are three public high schools in Chico: Chico High School is located at 901 Esplanade, Fair View High School is located at 290 East Avenue, and Pleasant Valley High School is located at 1475 East Avenue. There are also three public high schools in Oroville: Las Plumas High School at 2380 Las Plumas Avenue, Oroville High School at 1535 Bridge Street, and Prospect High School at 2060 Second Street.

Medical Centers

There are multiple hospitals and medical centers in Butte County to serve residents. Enloe Medical Center is the largest, with the main services located at 1531 Esplanade in Chico. Adventist Health Feather River is located at 5125 Skyway Road in Paradise. Orchard Hospital is located at 240 Spruce

Street in Gridley, and Oroville Hospital is located at 2767 Olive Highway in Oroville. Butte County Public Health Department is located at 202 Mira Loma Drive in Oroville.

Shopping and Commercial Centers

There are major shopping centers and commercial corridors across Butte County. Some of the more popular locations in Chico, the largest city in the county, include the Chico Marketplace, North Valley Plaza, and the Garden Walk. There are also shopping locations in Oroville, Paradise, Gridley, and the smaller towns of Butte County.

California State University Chico

The California State University Chico, or Chico State, generates approximately 30 percent of ridership on B-Line services. During the 2021 to 2022 school year, there were 29,601 students enrolled at Chico State University, with most students enrolled full-time. Enrollment declined slightly over the last few years, from 33,322 students during the 2019 to 2020 school year to 29,601 students this current school year. This decline is likely a result of the COVID-19 pandemic, as students' plans changed due to the challenges of remote learning and public health concerns. In upcoming years, it is expected that enrollment will likely rebound, and most instruction is expected to be in-person rather than remote.

Chico State does not provide its own transportation services, rather the school coordinates with B-Line to provide free transit to students. Currently, B-Line Routes 8, 9, and 9c serve Chico State. Students have expressed interest in expanding the service options for these three routes through public outreach opportunities. Chico State recently approved a 2030 Master Plan Report, in which the University outlines its goals to encourage more sustainable modes of transit and to improve facilities on campus. There are no planned changes likely to impact the relative number of people driving, walking, biking, or taking the bus to campus.

Butte College

Butte College is a community college primarily serving residents of Butte and Glenn Counties. Butte College has multiple facilities: The Main Campus is located at 3536 Butte Campus Drive in Oroville, the Chico Center is located at 2320 Forest Avenue in Chico, the Cosmetology and Barbering Center is at 2201 Pillsbury Road in Chico, and the Skyway Center is at 2480 Notre Dame Boulevard in Chico. There is also a location in Orland, Glenn County.

Prior to the COVID-19 pandemic, there were approximately 10,000 full-time students enrolled. Enrollment has declined in recent years due to the pandemic, so during this current school year (2021-22) there are only 7,000 full-time students enrolled. Butte College has outlined a plan to return enrollment to pre-COVID levels by the 2024-25 school year. Classes are returning to in-person instruction, yet some classes will remain in a virtual format going forward, specifically at the Main Campus in Oroville. Butte College offers transportation services as discussed in Chapter 3.

DEVELOPMENTS, PROJECTS, AND ACTIVITIES RELEVANT TO THE CURRENT EFFORT

It is important to determine which areas within a community generate demand for public transit services. Upcoming developments and plans that will be approved or completed in the near term and which will potentially impact the need for transit services are discussed below.

City of Chico

The City of Chico is the largest community in Butte County, and subsequently has the most active development sites. Most new development is occurring in eastern Chico due to a previously established growth boundary in the western region of the city. The City of Chico's Community Development Department and Planning Division maintains a map displaying where development activity is located that can be found on the official city website (included in Appendix A). Although Chico is not expected to grow exponentially, slow, and steady growth is expected in upcoming years.

In past years, the City of Chico has received a relatively equal amount of development proposals for multiple family units and for single family homes, but in recent years Planning Department staff have noticed an uptick in multi-family projects due to an influx of recovery money intended to provide relief to those impacted by the 2018 Camp Fire. Approximately 1,000 affordable housing units are currently either in construction or going through the Planning Division's approval process as of March 2022. These units will be located at various sites around Chico; 160 units will be located on a new subdivision road off Bruce Road, 52 units will be located on Bruce Road, 464 units will be located on Native Oaks Road (near Bruce Road), 58 units will be located at 1297 Park Avenue, 101 units will be located at 1250 Notre Dame Boulevard, and there are a few other affordable housing projects across the city as well.

The City of Chico recently approved an Update to its *Climate Action Plan* (2021) that outlines goals to reduce greenhouse gas emissions generated by the transportation sector by improving and promoting public transit services and through constructing active transportation infrastructure. Related to public transit and the B-Line, the Update details that service lines would need to be expanded, route speeds increased, new employer-trip reduction programs established, and public transit planning will be integrated with the new citywide Bike Plan. Although these goals clearly demonstrate Chico's desire to support and improve B-Line services within the city itself, to achieve these goals extensive coordination with BCAG and B-Line staff will be required.

City of Oroville

The City of Oroville's Community Development Department and Planning Division indicates that, as of February 2022, between four new residential development sites there were 85 market-rate units under active construction in the City and 153 units in the final stages of approval. One of these residential development areas is in Thermalito and two are in the western portion of Oroville near the Oroville Municipal Airport. Other multiple unit construction projects that have either been recently completed in or are in the pre-approval stages are in the northern portion of the City, north of the Feather River. Commercial development proposals have been concentrated along the Feather River Boulevard and State Route 162 corridor.

Town of Paradise

The Town of Paradise has experienced a rush of redevelopment proposals in the years following the Camp Fire. As of March 2022, developers were actively securing rebuild approvals for 76 1-bedroom apartments: 48 affordable and 28 market-rate. 44 condominiums are also in the process of securing approval to be rebuilt. There are two previous retirement homes, one at 5900 Canyon View Drive and the other at 1007 Buschmann Road, that are in the process of being converted into apartments. There will be 102 units between these two sites.

The mobile home park developer BoaVida Communities bought five burned parks in Paradise, and now is in the process of rehabbing and reopening all these locations. Between all five mobile home parks there will be 199 sites. All five of these mobile home parks are in western Paradise, with three located south of Paradise High School and two located to the north.

There are four parcels located at 6900 Clark Road and 1633 Cypress Road that will be developed into a 120-unit affordable, multi-family development. Over time, it is expected that rebuild projects will continue to be initiated. Those projects started immediately after the Camp Fire have either recently been finished or will be completed soon.

City of Biggs

The City of Biggs has made it a priority to ensure housing security for its residents and to increase housing opportunities within the City's sphere of influence. City staff are updating the city's Housing Element, a plan that outlines the City's goals and priorities for housing residents for 8-year timespans. The goals of the previous Housing Element (2014-2022) included to construct new housing at a range of costs to meet the needs of both existing and future residents and to construct energy efficient housing. On a longer timescale, officials are developing the City of Biggs Annexation Plan. This plan would increase the City's sphere of influence by increasing the acreage within city limits from 414 acres to 934 acres, allowing for the potential development of approximately 2,380 new housing units.

In recent months, new development has been approved at 509 E. Casey Street, 2891 Ninth Street, J Street, and 2959 11th Street. Most of these projects are single-family residential developments. Commercial development is zoned for the blocks along B Street.

City of Gridley

The City of Gridley's 2030 General Plan defines where current development is located, and where future development will be directed. Gridley's Planned Growth Area is to the north of the city, in the area between the City of Biggs and the City of Gridley. The Planned Growth Area is 1,200 acres, and will eventually include residential development as well as parks, public services, and commercial development. The city also hopes to promote the development of mix of housing types in this area, as currently most of the city's housing stock consists of single-family dwellings. City officials estimate that full development will result in the construction of 3,850 to 4,700 housing units and over 3 million square feet of commercial buildings.

Although there has not been a significant amount of new development in Gridley in recent years, a review of Planning Commission agendas from the last two years reveals that most new subdivisions

have been proposed to the north of Gridley, either in or near the Planned Growth Area. A subdivision proposed for this area would result in the construction of 21 new single-family homes. Commercial development proposals have for now continued to be in the existing downtown area (along Magnolia and Sycamore Streets) or near Highway 99 (Fairview Drive and Highway 99). The City of Gridley is expected to experience the greatest growth (33%) between 2018 and 2040 compared to any other city in Butte County.

Unincorporated Butte County

Development in unincorporated areas of Butte County is managed by the County's Planning Division. A recent project of note in unincorporated Butte County is the Tuscan Ridge subdivision. This project proposes a total of 165 single-family lots, each less than one acre in size. The Tuscan Ridge project site is located between Chico and Paradise off of Skyway Road. Another recent project is the proposed subdivision of a 160-acre parcel in southeastern Butte County off of La Porte Road into four single-family lots. This subdivision was approved, but no construction has yet been proposed as of June 2022.

EXISTING TRANSIT SERVICES IN BUTTE COUNTY

B-Line provides Butte County with regional transit consisting of local and intercity fixed routes and demand-response paratransit service. Service is operated in Chico, Gridley, Biggs, Oroville, the Town of Paradise, and portions of unincorporated Butte County Monday through Saturday, while one route (Route 20 connecting Chico and Oroville) operates on Sunday. While this study focuses on B-Line's fixed route services, this chapter provides an overview of all transit services available in the region.

B-LINE ROUTES

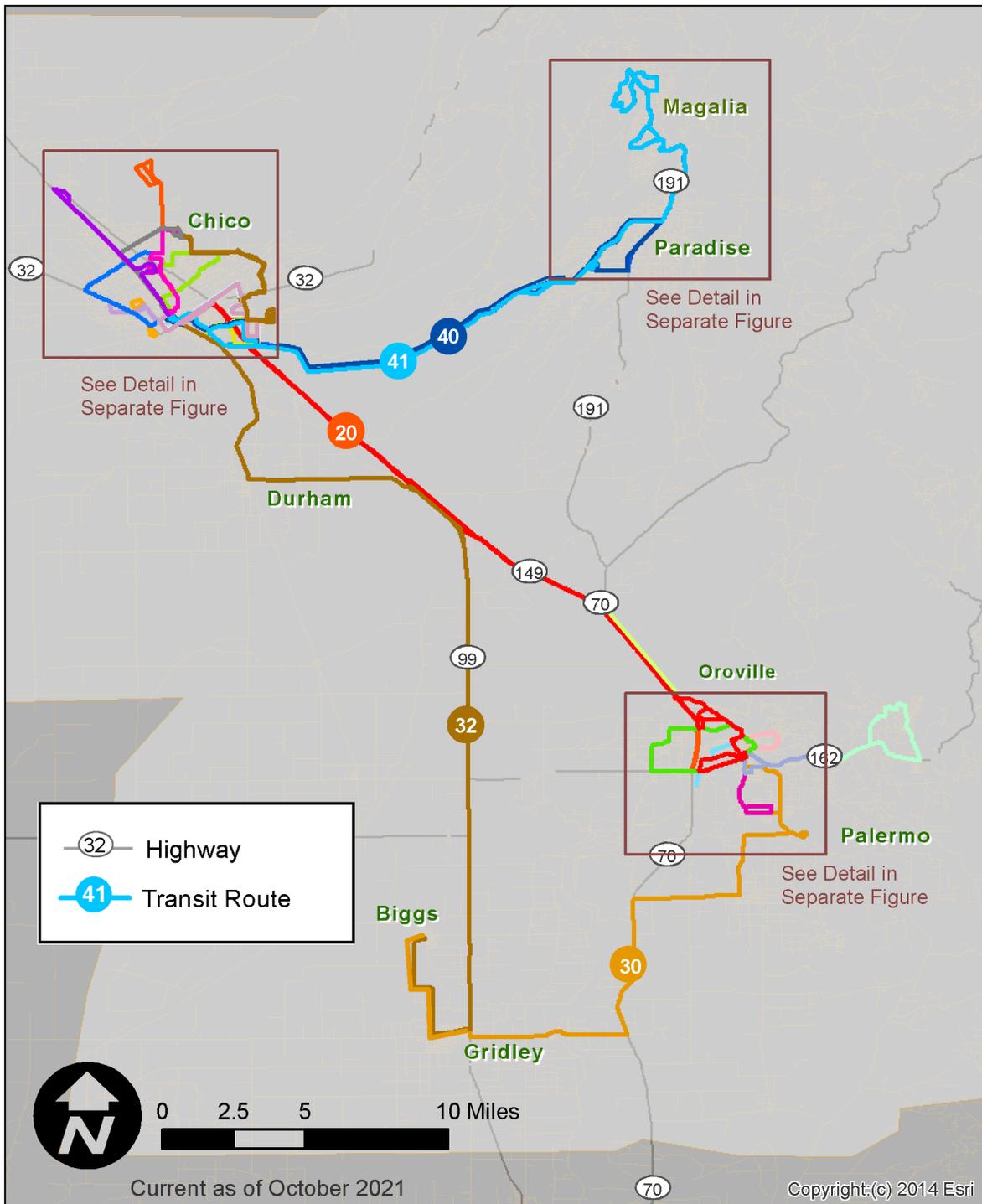
B-Line currently operates 21 fixed routes, consisting of twelve local Chico routes (including an airport route), four Oroville area routes, and five regional routes which serve both as intercity routes and local routes for smaller communities. Most routes operate Monday through Saturday, with Saturday service typically being a shorter span of service. Routes 8, 9 and 9c are also modified when Chico State is not in session. The B-Line routes are shown in Figure 2 and a summary of the route operations is presented in Table 4. Route profiles with an overview of offerings and performance are included in Appendix B, and services are further described below.

B-Line Chico Routes

The Chico Routes are shown in Figure 3, and described as follows:

- *Route 2: Mangrove* – Operates as an out (northbound) and back (southbound) route from the downtown transit center to Ceres/Lassen, Monday through Saturday. Primarily serves Mangrove Avenue and Cohasset Road. Interlines with Route 7.
- *Route 3: Nord/East* – An out (northwest and northeast) and back (southeast and southwest) route from downtown transit center to Ceres /Lassen, Monday through Saturday. Primarily serves Nord and East Avenues. Interlines with Route 4.
- *Route 4: First/East* – An out (northeast and west) and back (east and southwest) route from the downtown transit center to the North Valley Plaza transfer center, Monday through Saturday. Primarily serves First, Manzanita and East Avenues. Interlines with Route 3.
- *Route 5: E. 8th St.* – From downtown to the Forest/Chico Mall transfer center, Monday through Saturday. Primarily serves 8th Street and Forest Avenue outbound (eastbound) but returns on 9th Street inbound (westbound).
- *Route 7: Bruce/Manzanita* – Serves eastern Chico between the Chico Mall to Ceres/Lassen, Monday through Friday. Primarily serves East, Manzanita and Forest Avenues. Interlines with Route 2 weekdays.

**FIGURE 2:
B-Line Transit Routes**



**FIGURE 3:
B-Line Chico Transit Routes**

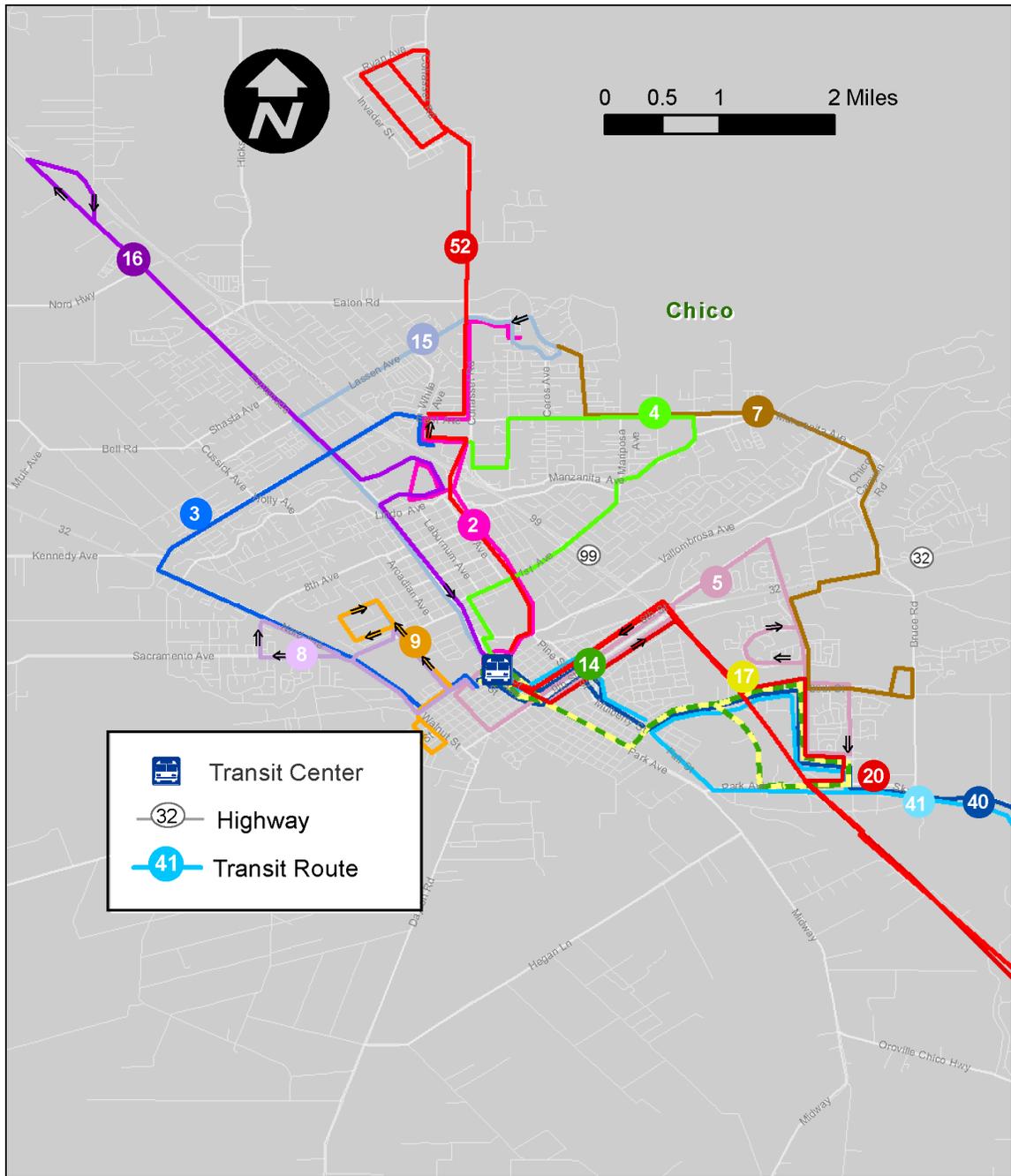


Table 4: Summary of B-Line Services and Frequency

Routes	Service Hours ¹				Service Frequency (Minutes) ²			
	Weekday Service		Weekend Service		Weekday Peak	Weekday	Service	
	Start	End	Start	End	AM PM	Off-Peak	Saturday	Sunday
Chico Routes								
Route 2	6:15 AM	8:34 PM	8:15 AM	7:00 PM	45 60	60	60	--
Route 3	6:18 AM	9:00 PM	8:50 AM	7:00 PM	45 60	60	60	--
Route 4	6:15 AM	9:00 PM	8:50 AM	7:00 PM	40 60	60	60	--
Route 5	6:15 AM	8:34 PM	8:15 AM	7:00 PM	60	60	60	--
Route 7	6:45 AM	5:30 PM	--	--	7.5 RT Daily	--	--	--
Route 8	7:34 AM	9:34 PM ³	--	--	30	35	--	--
Route 9	7:33 AM	10:01 PM	--	--	30	35	--	--
Route 9c ⁴	7:50 AM	8:24 PM	8:30 AM	6:24 PM	7 RT	--	5 RT	--
Route 14/17	6:24 AM	9:45 PM	7:30 AM	6:45 PM	20	30	60	--
Route 15	6:15 AM	9:34 PM	9:35 AM	4:30 PM	30	45	60	--
Route 16	6:55 AM	6:55 PM	7:55 AM	5:55 PM	60	60	60	--
Route 52	6:30 AM	5:40 PM	--	--	5 RT Daily	--	--	--
Intercity Routes								
Route 20	5:50 AM	8:00 PM	7:50 AM	6:00 PM	60 45	60 +	2 hr	2 hr
Route 30	7:45 AM	4:50 PM	8:47 AM	5:00 PM	3 RT	--	3 RT	--
Route 32	6:40 AM	6:20 PM	--	--	1 RT	--	--	--
Route 40	6:50 AM	7:20 PM	9:50 AM	6:00 PM	4 RT	--	3 RT	--
Route 41	6:35 AM	6:24 PM	9:45 AM	6:03 PM	5 RT	--	3 RT	--
Oroville Routes								
Route 24	6:34 AM	7:30 PM	--	--	60	60+	--	--
Route 25	6:12 AM	6:50 PM	--	--	60	60+	--	--
Route 26	6:33 AM	6:21 PM	--	--	60	60+	--	--
Route 27	7:10 AM	6:50 PM	--	--	60	60+	--	--
<p>Note 1: Summary accurate as of March, 2022</p> <p>Note 2: Service frequency represents an average frequency. Peak hours were 7 to 9 AM and 4 to 6 PM</p> <p>Note 3: Service ends at 4:04 PM on Fridays</p> <p>Note 4: Route 9c only operates when Route 9 is not in operation and CSUC classes are not in session.</p> <p>Source: B-Line/BCAG</p>								

- **Routes 8: Nord** – This student shuttle operates Monday through Friday (with reduced hours on Friday) from the downtown transit center to various student housing complexes near the CSU campus. Operates only when the CSUC campus is in session. Interlines with Route 9.
- **Routes 9 and 9c: Oak/Warner/Cedar** – Also a student shuttle, this route operates Monday through Friday. Route 9 operates when CSUC is in session, and Route 9c operates a similar route when the CSUC is not in session. Interlines with Route 8.
- **Route 14: Park Forest/MLK** – Operates as a loop from the downtown transit center to Forest Avenue transfer center. Outbound (southwest) primarily serves Park Avenue, 20th Street, and Forest Avenue, and inbound (northeast) primarily serves MLK Jr Parkway, 20th Street and Park Avenue. Interlines with Route 15.
- **Route 15: Esplanade/Lassen** – Outbound (north/northeast) from the downtown transit center to Ceres/Lassen and inbound (southwest/south), Monday through Saturday. Primarily serves Esplanade and Lassen Avenue. Interlines with Route 14.

- *Route 16: Esplanade/SR 99* – An out (northbound) and back (southbound) route from the downtown transit center to Esplanade and State Route 99, Monday through Saturday, primarily serving Esplanade. Interlines with Route 17.
- *Route 17: Park/MLK/Forest* – A counterclockwise loop from the downtown transit center to the Chico Mall, Monday through Saturday. Primarily serves Park Avenue, 20th Street and MLK Jr Parkway and Skyway outbound, and Forest Avenue, 20th Street and Park Avenue inbound. Interlines with Route 16.
- *Route 52: Chico Airport Express* – Operates several morning and late afternoon express runs between the Chico downtown transit center and the airport, Monday through Friday. No longer serves Oroville.

B-Line Oroville Routes

The Oroville Routes are shown in Figure 4, and described as follows:

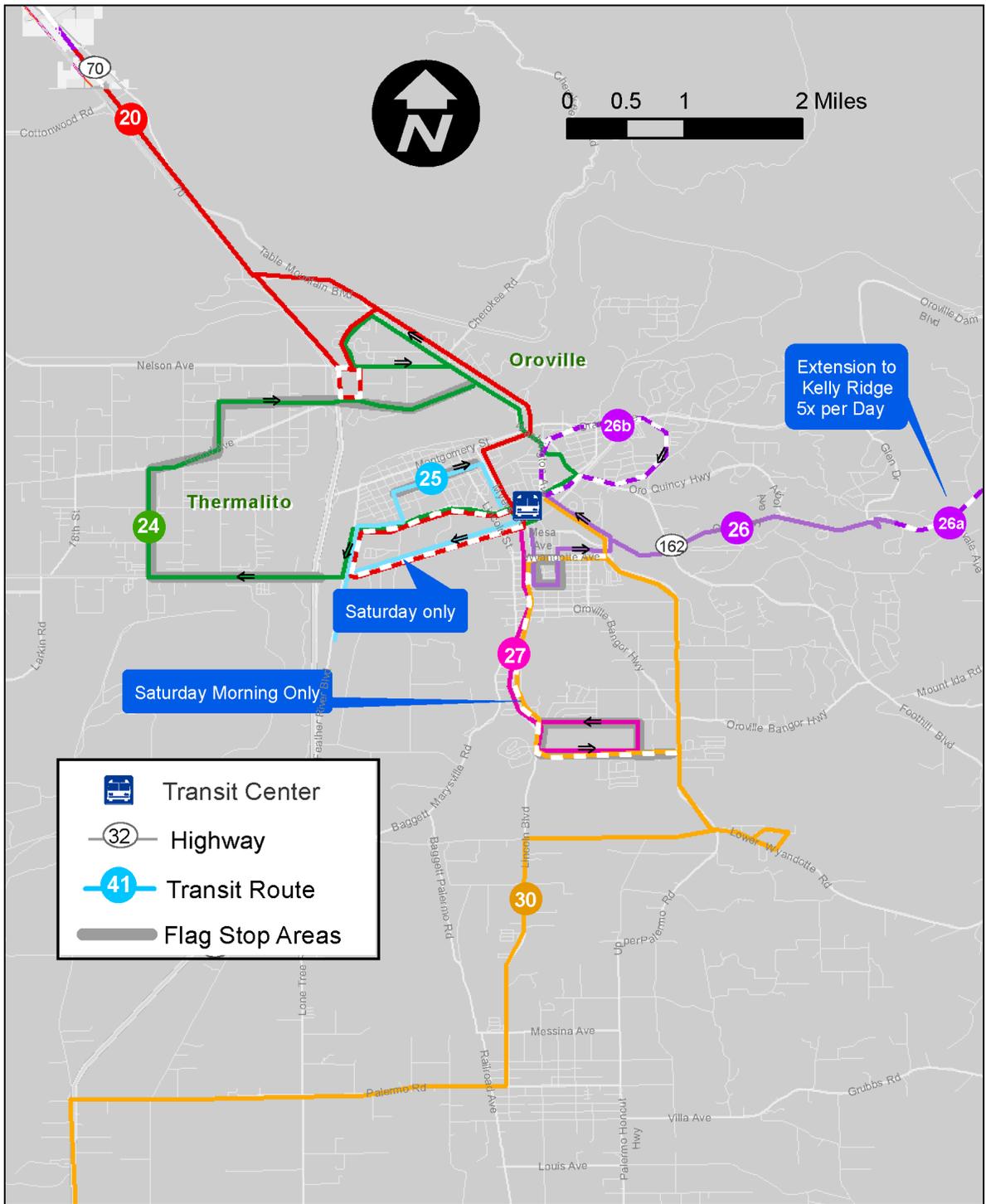
- *Route 24: Thermalito* – Operated as a large clockwise loop from the Oroville transit center through Thermalito, Monday through Friday. Interlines with Route 27.
- *Route 25: Oro Dam* – Operated as a clockwise loop through Oroville from the Oroville transit center, Monday through Friday. Primarily serves Oro Dam and Feather River Boulevards. Interlines with Route 26.
- *Route 26: Olive Highway* – Serves Oroville and Olive Highway, with alternate service to Kelly Ridge and Oroville Highway tied to school schedules. Interlines with Route 25.
- *Route 27: South Oroville* – Operates southbound from the Oroville transit center to South Oroville and Las Plumas high school via Lincoln Highway, Monday through Friday. Interlines with Route 24.

B-Line Regional / Intercity Routes

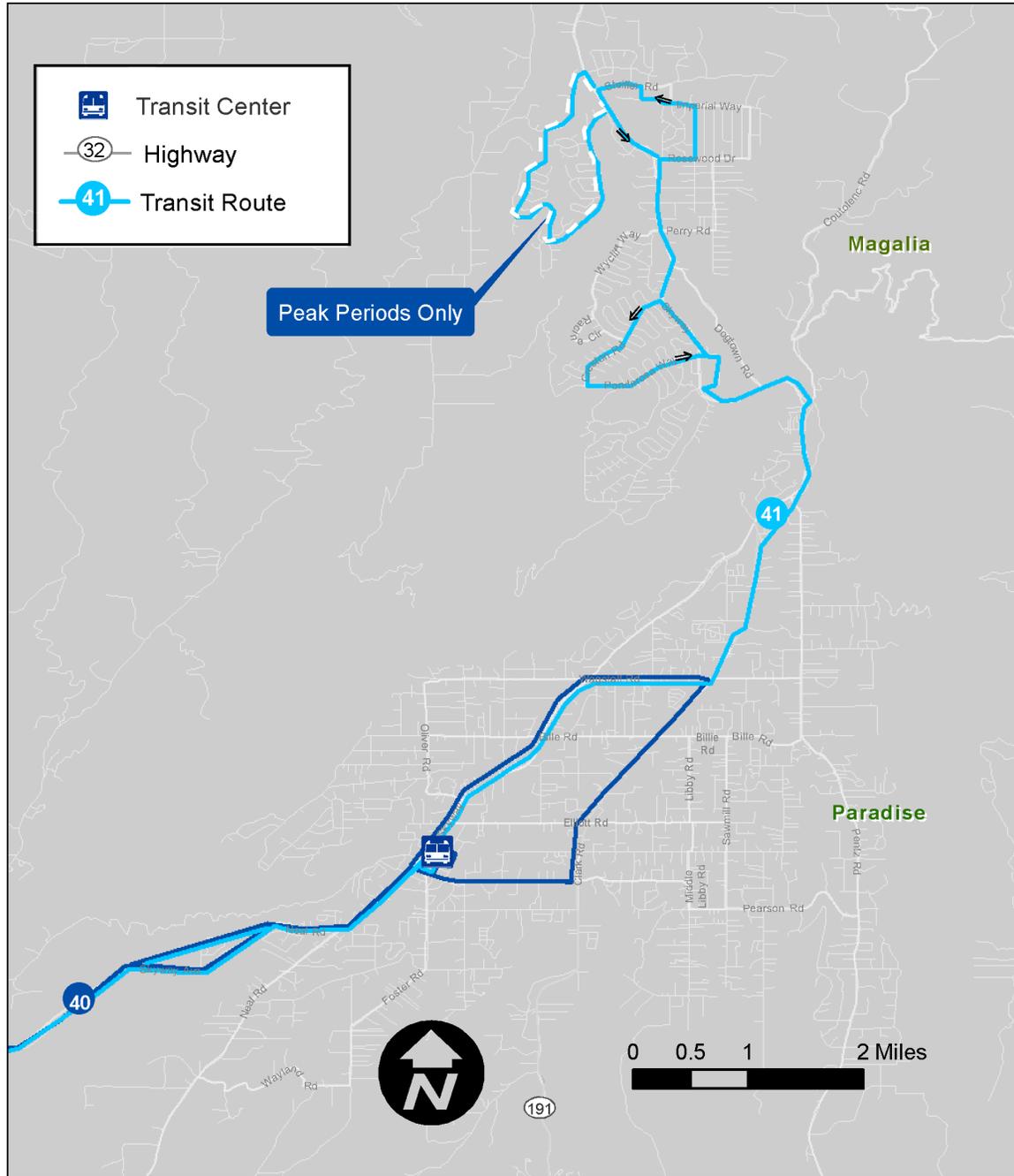
The regional routes double as intercity routes and local routes, typically providing a basic level of service in local communities as well as providing regional connectivity. The routes are depicted in Figure 4 and 5 and described as follows:

- *Route 20: Chico/Oroville* – During peak morning and afternoon periods, buses run hourly in both directions (southbound and northbound). In off-peak (8:50 AM to 2:40 PM) buses run every two hours, Monday through Friday. On Saturdays and Sundays, 5 runs are operated. This is the only route that operate on Sundays.
- *Route 30: Oroville/Biggs* – Southbound from the Oroville transit center to Gridley and Biggs, Monday through Friday. Serves Palermo and Robinson’s Corner.
- *Route 32: Gridley/Chico* – A northbound morning run and southbound evening run between Biggs and the downtown Chico transit center, also serving Gridley and Durham. Operates Monday through Friday.

**FIGURE 4:
B-Line Oroville Transit Routes**



**FIGURE 5:
B-Line Paradise Area Transit Routes**



- *Route 40: Paradise/Chico* – Departs the Chico transit center eastbound, serves a clockwise loop in Paradise, then a counter-clockwise loop before returning to the downtown Chico transit center, Monday through Saturday.
- *Route 41: Magalia/Chico* – An out (eastbound) and back (westbound) route from the Chico transit center to Paradise and Magalia, operated Monday through Saturday.

Recent Changes to B-Line Services

The description of services presented above represents the current operations, but it is important to acknowledge recent changes to B-Line. Most changes were due to the Camp Fire of November 2018. Changes include:

- Route 31 (with one morning southbound Paradise to Oroville run and one evening northbound Oroville to Paradise run) was discontinued in December 2018.
- Routes 40 (Chico-Paradise) and 41 (Chico-Paradise-Magalia) were combined, with five round trips serving Chico, Paradise, and Magalia, and four only serving between Chico and Paradise on weekdays. Saturdays, three eastbound and two westbound runs operate between Chico and Paradise. These modifications were also made in December 2018.
- Route 52 to the Airport: The morning and evening runs of this route between Chico and Oroville were discontinued, as was the noon-time loop to the airport. These changes were made just prior to and not related to COVID in response to low ridership and to make Route 52 an express route as described above.

While the COVID-19 pandemic has had an enormous impact on ridership, and the changes to B-Line have been relatively minor and include the following:

- Routes 8 and 9, both serving Chico State on weekdays while school is in session, saw reductions in service frequency, changing from 30-minute headways to 60-minute headways. This change took place on March 23, 2021 and lasted until April 20, 2021. At that point, Routes 8 and 9 were suspended for the remainder of the spring semester (four weeks). In August 2021, when students returned, B-Line resumed a normal schedule, despite a greatly reduced student population.
- Route 5 peak hour headways were increased from 30 minutes to 60 minutes so that the route is served on 60-minute headways throughout the day.

B-Line Transfer Opportunities

Transfer opportunities for B-Line are available at four locations within Chico, including 1) the Chico downtown transit center at Second and Salem, 2) the Ceres/Lassen transfer stop in north Chico, 3) the North Valley Plaza, and 4) the Forest Transfer Center across from Walmart. These locations are shown in Figure 3, above. Transfer opportunities are also available at the Oroville Transit Center, as shown in Figure 4, above.

Transfer opportunities at each of these locations include the following:

- *Chico Transit Center* – All Chico Routes except Route 7, plus Routes 20, 40, and 41
- *Ceres / Lassen Transfer Stop* – Chico Routes 2, 7 and 15

- *North Valley Plaza* – Chico Routes 2, 3 and 4
- *Forest Transfer Center* – Chico Routes 5 and 7, plus regional routes 20, 40 and 41.
- *Oroville Transit Center* – Oroville Routes 24, 25, 26 and 27, plus regional routes 20 and 30.

Passenger Transfer Analysis

A review of transfers between buses is useful in assessing how routes can best be scheduled to provide convenient multi-route trips. The automated farebox data was reviewed for the full month of February 2020 (pre-COVID). There are many various fare types (as discussed below). For pass users, data is only available for the route the pass was originally purchased on (which is not necessarily the actual route used on a specific day) and where it is used. However, single-ride passengers are provided with paper transfers that can be tracked for specific trips. This data was summarized for an average day, as shown in Table 5. Note that these figures represent the total number of passengers transferring in both directions. The analysis of transfer data indicates the following:

Between Route and Route		Chico										Reg	Oroville				Regional				Chi
		3	4	5	7	8	9	14	15	16	17	20	24	25	26	27	30	32	40	41	52
2	Chico	4	2	4	0	1	1	12	4	1	3	7	1	0	1	1	0	0	1	2	1
3	Chico		1	4	0	0	0	9	2	1	2	3	1	0	1	1	0	0	1	1	1
4	Chico			2	1	0	0	10	3	1	1	4	1	0	0	0	0	0	0	1	0
5	Chico				1	0	1	4	3	1	2	2	0	0	0	0	0	0	0	0	1
7	Chico					0	0	1	2	0	0	0	0	0	0	0	0	0	1	0	0
8	Chico						0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	Chico							1	1	0	1	1	0	0	0	0	0	0	0	0	0
14	Chico								3	4	4	5	1	1	1	1	0	0	1	1	2
15	Chico									2	2	7	1	0	0	0	0	0	0	1	1
16	Chico										1	3	0	0	0	0	0	0	0	0	0
17	Chico											2	0	0	0	0	0	0	0	0	0
20	Regional												4	2	4	2	2	0	2	2	1
24	Oroville													1	1	2	0	0	0	0	0
25	Oroville														1	1	1	0	0	0	0
26	Oroville															0	1	0	0	0	0
27	Oroville																0	0	0	0	0
30	Regional																	0	0	0	0
32	Regional																		0	0	0
40	Regional																				0
41	Regional																				0

Source: BCAG -- Transaction Pass Transferring Report for February 1 to February 29, 2020.

- For trips within Chico, the greatest transfers are to and from Route 14, which constitute 47 percent of a transfers within Chico. Routes 2, 3 and 4 in particular generate a high number of transfers to/from Route 14. There are also relatively high number of transfers between Routes 2, 3, 4, 5 and 15.
- Route 20 generates a relatively high number of transfers, totaling 50 per day. Most of these (69 percent) are to/from Chico routes (particularly Routes 2 and 7) while 23 percent are to/from Oroville routes and 8 percent are to/from other regional routes.
- Very few passengers transfer between the local Oroville routes (at least riding single fare). The greater pattern in Oroville is the transfers between the local routes and Route 20 to Chico.

B-Line Quality of Service

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: travel time, frequency of service, and the need to transfer between buses.

Travel times, service frequency, and transfers for six Chico and six Oroville bus stop locations (reflecting various service areas) were analyzed as shown in Tables 6 and 7. 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 is required to reach the destination, a 10-minute penalty was added to the overall travel time to reflect this inconvenience. Tables 6 and 7 present 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 6 minutes and up to 55 minutes.
- Trips which require a transfer take on average just over twice as long as those that do not require a transfer.
- Within Chico, trips take longest from between Butte College (Chico Campus) to Pleasant Valley High School.
- Within Oroville, trips take longest from Wal-Mart to Las Plumas High School (55 minutes, without a transfer, or slightly less time with a transfer). The trip is more direct in the opposite direction requiring just 35 minutes.

Table 6: B-Line Travel Times, Transfer Requirements, and Service Headways - Chico							
				26 to 39 Minute Frequency	40 - 60 Minute Frequency	More than 60 Minute Frequency	
Travel Time in Minutes T = Transfer Required	Destination Stop						
	Chico Transit Center/Chico State	Nord/W. Sacramento	DMV	Lassen/Ceres	Pleasant Valley HS	Butte College Chico	
Origin Stop	Chico Transit Center/Chico State		6	10	19	15	15
	Nord/W. Sacramento	7		29	46 T	31	42 T
	DMV	14	36 T		13	23	43
	Lassen/Ceres	20	40 T	11		8	34
	Pleasant Valley HS	19	35	23	10		54 T
	Butte College Chico	17	41 T	47 T	38	52 T	

Source: LSC Transportation Consultants, Inc. (based on published schedules and Google Maps).

Table 7: B-Line Travel Times, Transfer Requirements, and Service Headways - Oroville							
					40 - 60 Minute Frequency	More than 60 Minute Frequency	
Travel Time in Minutes T = Transfer Required	Destination Stop						
	Oroville Transit Center	Wal-Mart	Post Office (Robinson St)	County Center	Oroville HS	Las Plumas HS	
Origin Stop	Chico Transit Center/Chico State		8	9	10	13	13
	Wal-Mart	14		15	32	44	55
	Post Office (Robinson St)	7	37 T		14	36 T	47 T
	County Center	10	50 T	14		12	28
	Oroville HS	8	28	17	17		21
	Las Plumas HS	12	35	26	42	52 T	

Source: LSC Transportation Consultants, Inc. (based on published schedules and Google Maps).

Comparison of Auto Travel Times to Transit Travel Times

Based on the travel time analysis above, auto travel times (as reported by Google Maps during typical, non-peak hours) were compared to transit travel times. The transit travel time (from Tables 6 and 7) were divided by the typical auto travel time to identify the ratio of transit/auto travel time, as shown in Table 8 (for Chico) and Table 9 (for Oroville). Lower ratios, such as the ratio of travel times between the Chico Downtown Transit Center and the DMV (which takes 1.4 times as long by bus compared to car), are preferred.

Higher ratios, such as between the DMV and the Chico campus of Butte College (5.2 times as long by bus) indicate such a trip is significantly more convenient by car than by transit.

Table 8: Comparison of Transit and Auto Travel Times in Chico						
LEGEND		Chico Transit Center/Chico State	Typical Auto Travel Times in Minutes (1)			
		1.5	Ratio of Transit Travel Time to Auto Travel Time			
Origin Stop	Destination Stop					
	Chico Transit Center/Chico State	Nord/ W. Sacramento	DMV	Lassen/Ceres	Pleasant Valley HS	Butte College Chico
	Chico Transit Center/Chico State	4	7	12	10	12
		1.5	1.4	1.6	1.5	1.3
	Nord/ W. Sacramento	4	6	12	11	13
		1.8	4.8	3.8	2.8	3.2
	DMV	7	7	6	7	10
	2.0	5.1	2.2	3.3	4.3	
Lassen/Ceres	12	12	9	5	15	
	1.7	3.3	1.2	1.6	2.3	
Pleasant Valley HS	11	10	7	6	12	
	1.7	3.5	3.3	1.7	4.5	
Butte College Chico	12	12	9	11	11	
	1.4	3.4	5.2	3.5	4.7	

Source: LSC Transportation Consultants, Inc. (based on published schedules and Google Maps).

Table 9: Comparison of Transit and Auto Travel Times in Chico

		LEGEND		Oroville Transit Center	Typical Auto Travel Times in Minutes (1)		
				1.1	Ratio of Transit Travel Time to Auto Travel Time		
		Destination Stop					
		Oroville Transit Center	Wal-Mart	Post Office (Robinson St)	County Center	Oroville HS	Las Plumas HS
Origin Stop	Oroville Transit Center		7	3	6	3	7
			1.1	3.0	1.7	4.3	1.9
	Wal-Mart	6		6	6	9	9
		2.3	0	2.5	5.3	4.9	6.1
	Post Office (Robinson St)	4	6		6	4	7
		1.8	6.2		2.3	9.0	6.7
County Center	7	7	7		7	14	
	1.4	7.1	2.0		1.7	2.0	
Oroville HS	3	9	4	6		10	
	2.7	3.1	4.3	2.8		2.1	
Las Plumas HS	7	10	8	12	10		
	1.7	3.5	3.3	3.5	5.2		

Source: LSC Transportation Consultants, Inc. (based on published schedules and Google Maps).

B-Line Vehicle Utilization by Time of Day

B-Line fixed route service requires between 4 and 23 vehicles in service on weekdays, and one to 14 vehicles in service on Saturdays. A vehicle utilization chart is included in Appendix C.

B-Line Driver Shifts

Driver shifts average 37.5 hours per week, ranging from 31.25 hours to 40.7 hours². Of 42 shifts on a typical weekday, approximately a quarter are split shifts, and the three-quarters are standard shifts. Drivers generally deadhead from the garage for the first run of the day, with 10 to 20 minutes required for most local routes to reach their first revenue stop in Chico, and 30 to 45 minutes for out of town or Oroville routes. Meal breaks are a minimum of 30 minutes and up to 65 minutes. During COVID, extra hours were assigned to cleaning vehicles. Staffing conventions appear to be standard for Paratransit.

² Based on driver a typical weekday derived from bid sheets for January 2021.

B-Line Interlining

As described earlier in this chapter, numerous routes are interlined, which can create greater utility for the transit operator in assigning drivers and buses to routes. Interlining can be particularly advantageous when routes are paired in which one route schedule is difficult to maintain while the paired route has ample time scheduled. Currently, interlined routes seem to primarily have similar on-time performance. For example, Routes 2 and 7 are late 10 to 11 percent of the time, and Routes 3 and 4 are late 23 to 25 percent of the time. However, there are a few exceptions. Route 16 is late 33 percent of the time while Route 17 is late 17 percent of the time, and Route 24 is late 33 percent of the time while Route 27 is late 45 percent of the time. When revising future routes, it will be important to note the impacts on interlining on scheduling performance and ease of transferring.

B-LINE PARATRANSIT SERVICES

B-Line Paratransit is a shared ride service designed to meet the needs of seniors and persons with qualifying disabilities who are unable to use the B-Line fixed-route services. B-Line Paratransit is available in Chico, Oroville, and Paradise for local trips, but not for inter-city trips. B-Line offers two types of paratransit services:

1. ADA paratransit for individuals who cannot utilize the fixed-route system. They must receive Americans with Disabilities Act (ADA) certification to utilize this service. This certification ensures trips are given priority status.
2. Dial-a-Ride service for riders who are age 70 or older. Dial-a-Ride trips are not given priority status should individuals with ADA certification need the service.

B-Line Paratransit serves all destinations within $\frac{3}{4}$ of a mile of any B-Line fixed-route service. B-Line also provides supplemental service to areas up to three miles outside the ADA boundaries at an additional cost (given that there is a direct, easily accessible route from the core service area). All trips provided outside the core service area are considered non-ADA and are provided on a space available basis.

B-Line Paratransit operates between 5:50 AM and 10:00 PM on weekdays, 7:00 AM and 10:00 PM on Saturdays, and 7:50 AM and 6:00 PM on Sundays. The base fare for B-Line Paratransit is \$3.50 per one-way ride, with additional zone-based fares. B-Line Paratransit trips can be scheduled by calling into dispatch up to one week prior to the requested trip.

FARES AND FARE POLICIES

The B-Line has a complex system of fares, divided by type of service, type of rider, zone or region, and finally by type or number of rides. As shown in Table 10, fixed route fares are comprised of fare categories including regular fares, discount fares³ (available to seniors over 65, disabled and/or

³ Discount Fare Eligibility Cards were implemented in April 2022.

Table 10: B-Line Fare Summary

Fixed Route Fares	Fare Category	Local Service	Regional Service
One-way Fare	Regular	\$1.75	\$2.40
	Discount ¹	\$0.85	\$1.20
	Youth ²	\$1.25	\$1.75
	Child ³	2 free	2 free
2-Ride Pass	Regular	\$3.50	\$4.80
	Discount	\$1.70	\$2.40
	Youth	\$2.50	\$3.50
All-Day Pass	Regular	\$5.00	\$5.00
10-Ride Pass	Regular	\$15.75	\$21.60
	Discount	\$7.65	\$10.80
	Youth	\$11.25	\$15.75
30-Day Pass	Regular	\$43.50	\$57.50
	Discount	\$21.50	\$30.00
	Youth	\$31.25	\$40.00
Upgrade from Local to Regional Fare	Regular		\$0.65
	Discount		\$0.35
	Youth		\$0.50

Paratransit Fares			
One-way Fare	ADA Paratransit Service Area	Advanced Reservation	\$3.50
		Same Day Request	\$5.25
	Supplemental Zones	Zone 1	\$8.75
		Zone 2	\$10.75
		Zone 3	\$12.75
	2-Ride Pass		
\$25 Value Card			\$25.00

Note 1: Seniors (65+), Disabled, and Medicare card holders are all eligible for discounted fares with supplemental verification (requires a discount fare eligibility card).

Note 2: Youth ages 6 to 18 are eligible for youth fare rate.

Note 3: Children 6 and under can ride free with a fare-paying adult.

Medicare card holders), youth fares (ages 6 to 18), and child fares (under 6 ride free with an adult). Base fares are \$1.75 for a one-way local trip and \$2.40 for a regional trip. Discounted fares are approximately a 50 percent reduction from regular fares, and multi-ride fares generally offer a moderate (20 percent or so) reduction from full price.

One-way paratransit fares are \$3.50 if made by advanced reservation, or \$5.25 for same day requests within the ADA paratransit service area. For service to outlying areas, one-way fares range from \$8.75 to \$12.75 depending on the zone. For convenience, passengers can purchase \$25.00 value cards. Token Transit also offers 10-ride paratransit passes.

Fares can be purchased on the Token Transit app, and in-person at the Chico Transit Center, BCAG office, in Oroville at Butte County Public Works, in Paradise at the Town Hall, and at the Gridley Town Hall. Day passes may be purchased on the buses. Passes can also be purchased by phone or by mail.

B-LINE RIDERSHIP ANALYSIS

B-Line Ridership characteristics are evaluated below, with additional detailed supporting tables and figures presented in Appendix C.

Historical Annual Ridership by Route

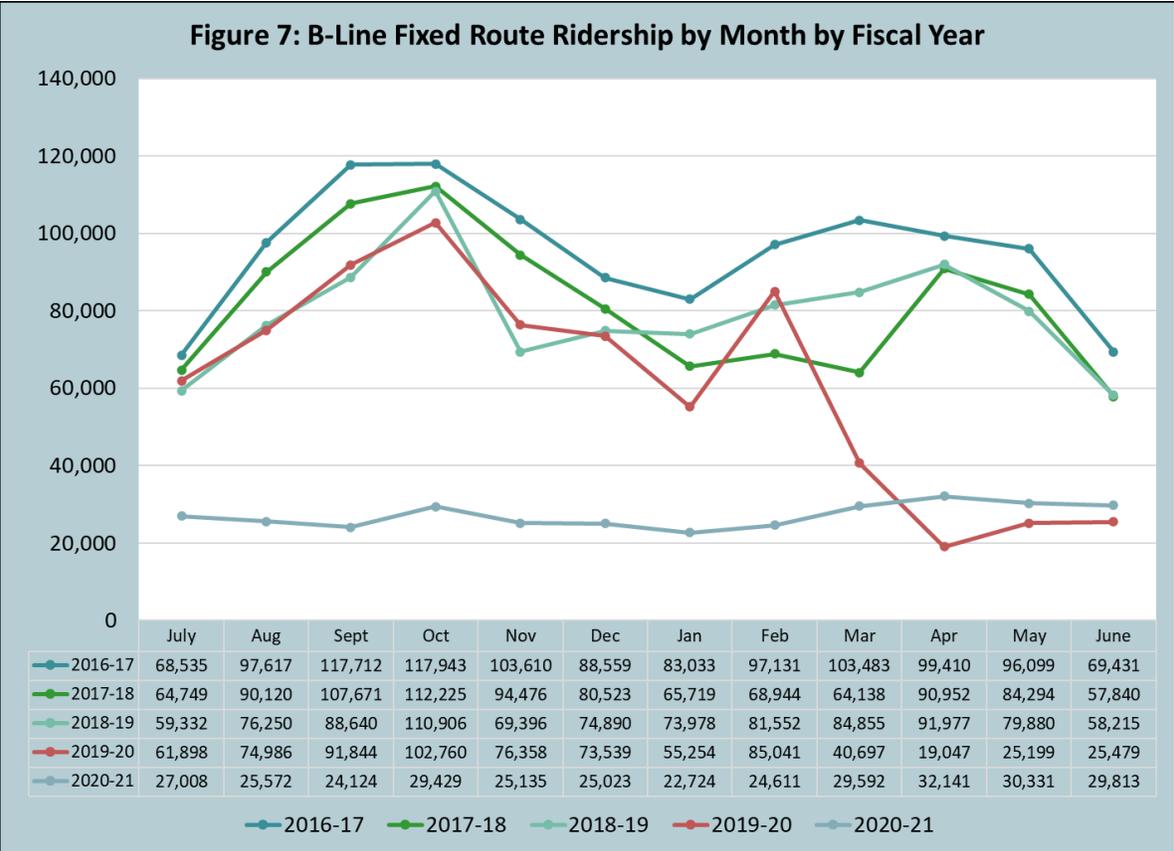
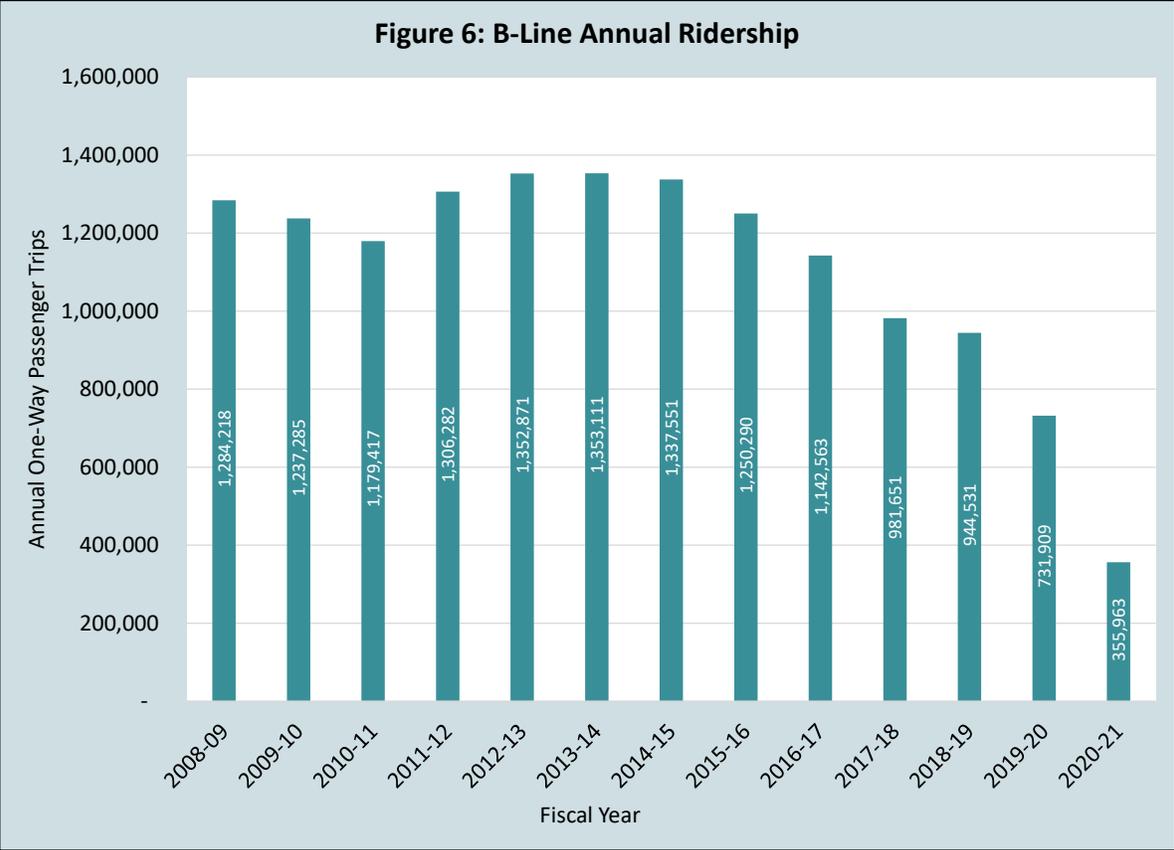
Ridership by route for the past thirteen fiscal years is depicted in Figure 6. As shown, annual ridership ranged from a high of 1,353,111 in FY 2013-14 and dropped to just 355,963 during the height of COVID in 2020-21. Even prior to COVID, however, ridership was declining. There was a 29 percent decrease in ridership in the five years from FY 2014-15 to FY 2018-19. Detailed ridership by route is included in Appendix C.

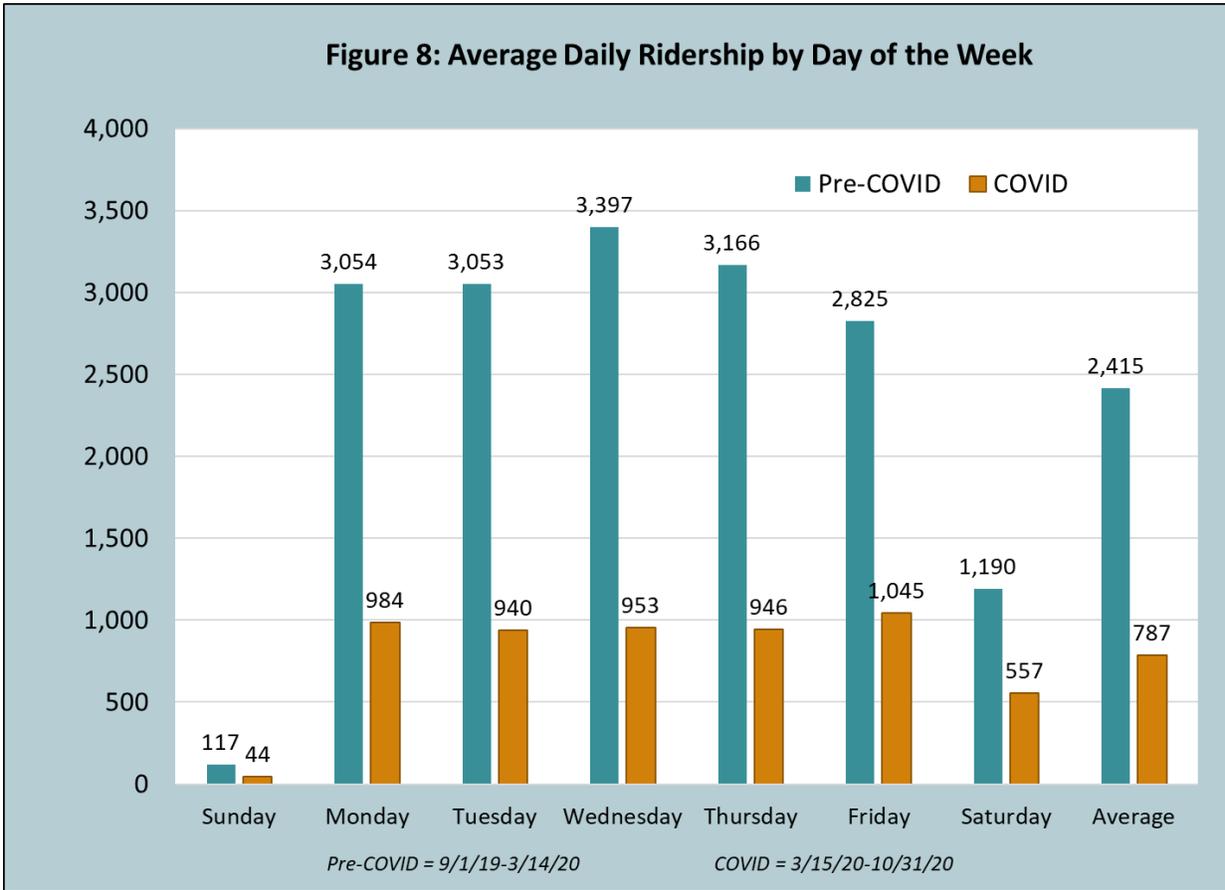
Annual Ridership by Month

Ridership by route by month is depicted for the past five years in Figure 7 (more detailed data for the past for the past thirteen fiscal years is depicted in Appendix C). As shown, ridership has historically peaked in September and October as Chico State students begin the fall session (in August) and drop through the semester as students typically establish carpooling and other routines, with a decline over winter break, a spring increase and then a sharp summer decline. Figure 7 also portrays the impact of COVID in March and April of 2021.

Annual Ridership by Day of the Week

Ridership by day of the week was reviewed for a pre-COVID period (September 1, 2019, to March 14, 2020) and during COVID (March 15 to October 2020), as shown in Figure 8. Pre-COVID, ridership was fairly even through the weekdays, with the highest weekday ridership on Wednesdays and lowest on Fridays. Saturday ridership averaged 38 percent of weekday ridership, and Sunday ridership, with extremely limited offerings, was less than one percent of weekly ridership. Once the pandemic began, ridership dropped by two-thirds, but there was some leveling off by day of the week as Saturday ridership averaged 57 percent of weekday ridership. More detailed ridership by weekday is included in Appendix C.





Ridership by Time of Day

Ridership by time of day for by route was analyzed for October 2019, with detailed tables and figures presented in Appendix C. Weekday ridership had two peaks: one at 8:00 AM and one at 3:00 PM, likely reflecting of class schedules. Ridership was fairly even from 7:00 AM to 5:00 PM, with a lull at noon. Ridership dropped off sharply before 7:00 AM and after 5:00 PM.

Saturday ridership more than doubled between 7:00 AM and 8:00 AM (from 25 passenger trips to 98 passenger trips), increasing through the day from 127 passengers at 9:00 AM to 165 passengers at 4:00 PM, before dropping again to 95 passengers at 5:00 PM, and 51 passengers at 6:00 PM (the last hour of service).

Ridership by Fare Category

Boarding data by fare type from February 2020 (pre-COVID) was compared to boarding data from August 2021 (active, post-peak COVID). Similarly, revenue by fare type was evaluated for October 2018 versus October 2021 to compare pre-COVID and active COVID impacts. Data tables for this analysis are included in Appendix C. The top findings from the analysis indicate:

- Pre-COVID, only 21 percent of the 85,041 boardings were cash fares. During COVID, 41 percent of the 37,594 boardings were cash fares. While ridership dropped by 55 percent overall, cash fares changed very little—from 17,964 in February 2020 to 15,570 in August 2021.

- The biggest drop in fare type (numerically) was from the Chico State Wildcat ID cards, which accounted for 31,239 boardings pre-COVID, and 7,242 during COVID. Percentagewise, the biggest drop was the local two-ride pass, which accounted for 1,791 boardings pre-COVID, and just 200 post-COVID (a 75 percent decline).
- Other than cash fares and Wildcat ID cards, other types of fares dropped in proportion to the overall ridership reduction.
- Fare use estimated from Genfare reports indicate fare revenues of \$196,765 in October 2019, dropping to just \$18,482 in October 2021. The fixed route fares were \$84,697 and paratransit fares were \$112,070 in October 2019, but in October 2021, fixed route fare revenues were \$16,800, while paratransit fares were just \$682. ⁴
- The 30-Day Regional Passes had the biggest loss of revenue with only \$3,308 in sales in October 2021 compared to \$31,292 sold in October 2018, representing an 89 percent reduction in revenue. This was followed by the reduction in local 30-day passes, which saw a drop from \$42,719 in 2018 compared to \$26,940 in 2021—a 37 percent reduction.
- There was an increase in the sales of Paratransit \$25.00 cards, from \$5,400 in 2018 to \$8,600 in 2021; however, the \$50.00 fare cards were discontinued in 2020 accounting for some of this difference.

In sum, the fare types responsible for the greatest proportion of revenues have consistently been the 30-Day passes, specifically the 30-Day Local passes (40 percent of October 2018 revenues and 50 percent of October 2021 revenues). Cash fares also represent a significant proportion of overall boardings. Additionally, the ongoing partnership between California State University Chico and B-Line that provides students and staff with Wildcat ID cards contributes a significant level of ridership and revenue.

Specific Analysis of Impact of COVID Pandemic on Ridership

To gain insight into the impacts of COVID-19, LSC conducted an analysis of ridership both pre-COVID and during COVID. Figure 9 depicts the drop in annual ridership by route from FY 2018-19 (pre-COVID) to FY 2020-21 (COVID). The chart shows both the total loss in ridership, as well as the percentage loss. For example, Routes 8 and 9 had both high ridership loss of over 64,000 trips each (equivalent to 88 and 93 percent of their ridership, respectively), while Route 32 lost 81 percent of its ridership, but this only equated to 4,135 passenger trips. The routes with the highest percentage of loss were Routes 8, 9, 32 and 40 (all over 80 percent), while only a few routes lost less than 50 percent of ridership Oroville Routes 25, 26, 27 and 30, and Airport Express/Route 52).

This trend is depicted chronologically in Figure 10, which groups the Chico routes, Intercity routes, and Oroville routes, and shows the total ridership. The sharp decline in ridership in March 2020 on the Chico routes (and therefore systemwide) is very apparent. The graph also shows the slow recovery that is occurring.

⁴ Based on fares by passenger type keyed by drivers, not ticket sales. From B-Line monthly route summary reports.

Figure 9: B-Line Route Ridership Loss over Pandemic Period
Change From FY 2018/19 to FY 2020/21

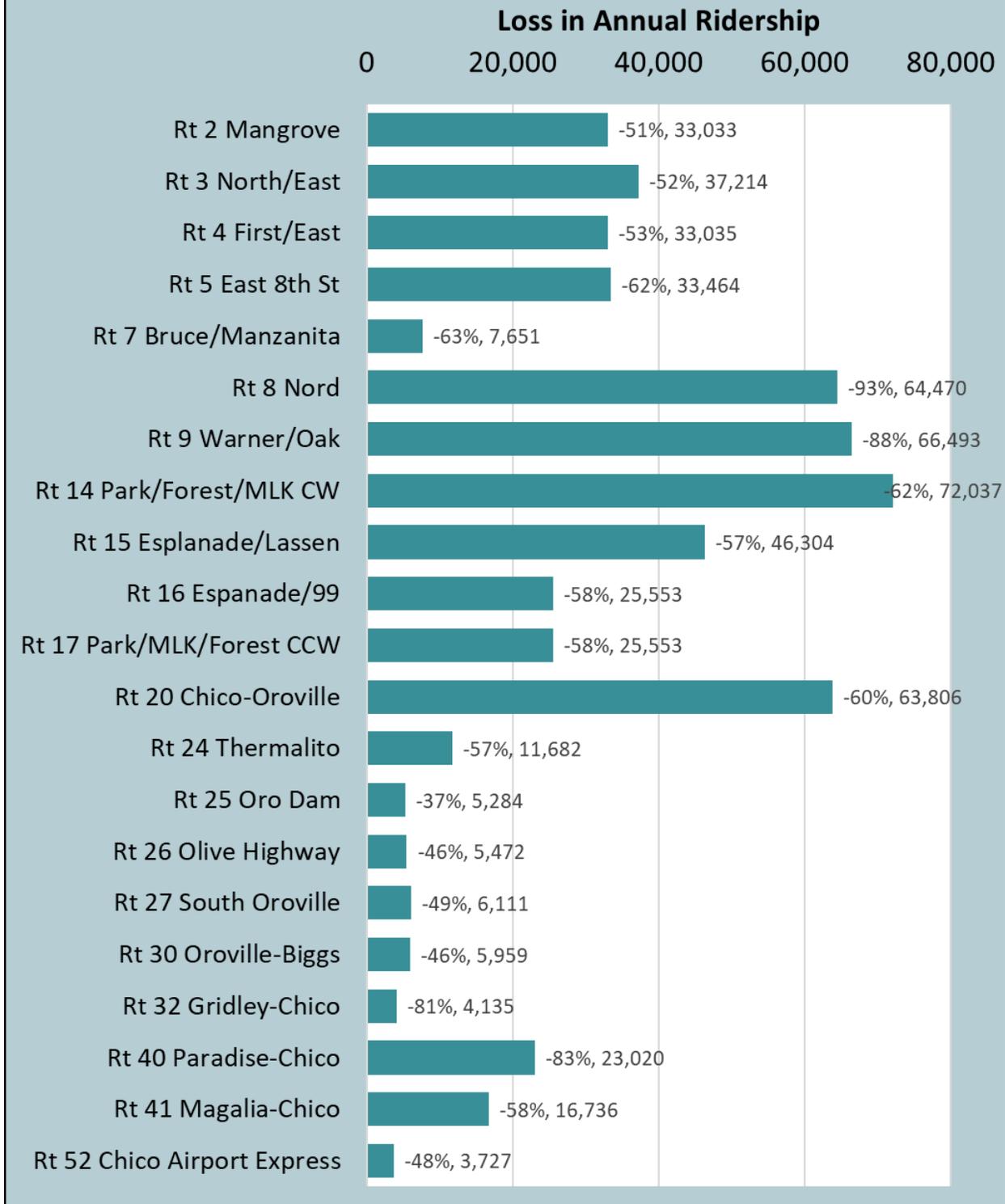
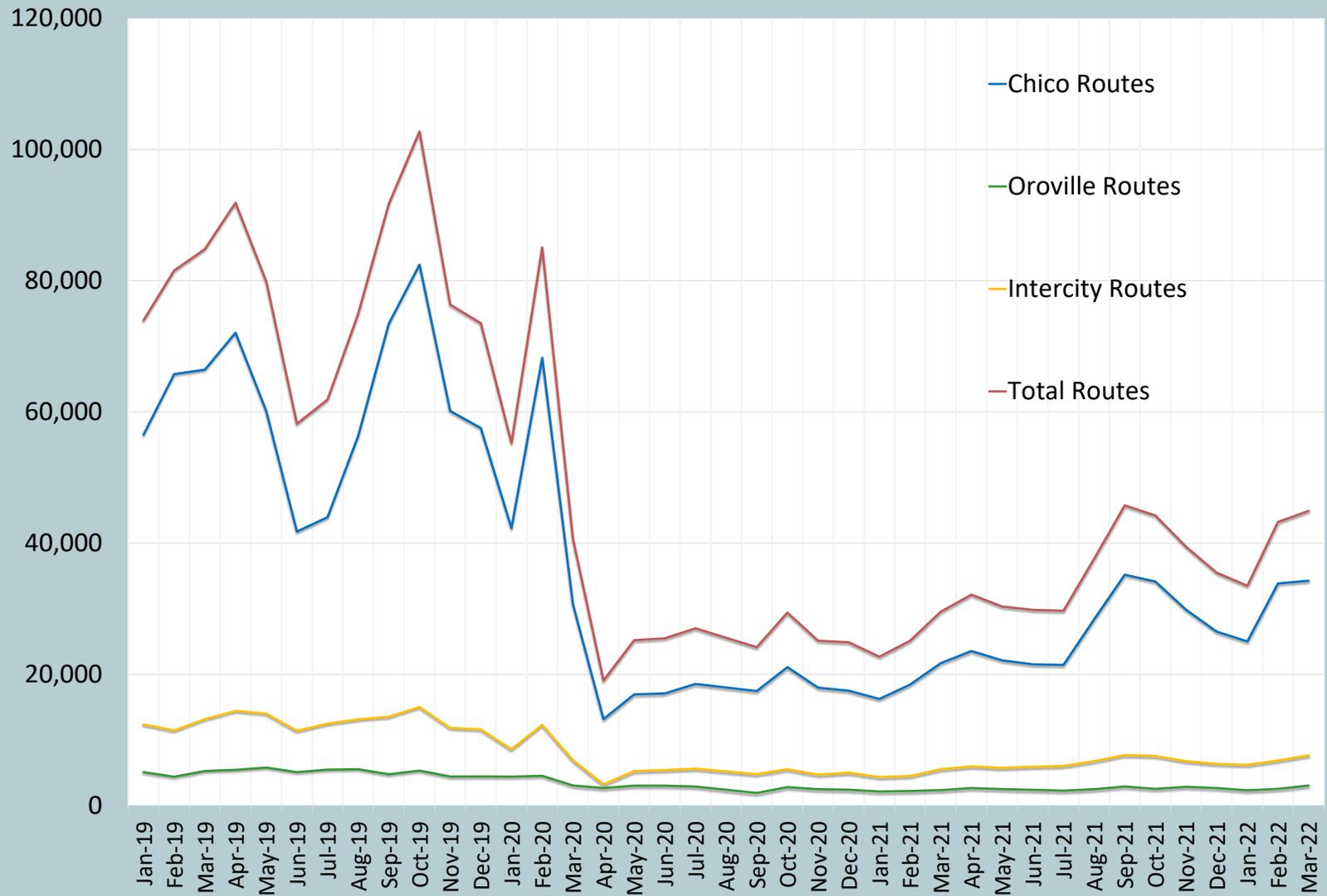


Figure 10: B-Line Fixed Route Ridership by Month by Service



B-Line Financial Analysis

The financial analysis for this study broadly reviews the operating costs and revenues of the public transit services, and not the administration costs of BCAG. The financial analysis focuses on the contract cost and potential impacts on these costs with service changes.

B-Line Expenses and Cost Allocation

B-Line operating budgets for fiscal years 2019-20 (actual) through 2022-23 (adopted) are shown in Table 11. Administration expenses, which cover items such as printing and signage, public outreach, software license and maintenance and support services, et cetera, account for between 7.4 to 8.6 percent of B-Line expenses annually, or \$753,000 on average. Operations and maintenance expenses were \$9.11 million in 2019-20, and are budgeted at \$10.4 million in 2022-23, in large part due to the increased contract cost, which has risen due to higher labor costs.

Table 11 also shows the operating parameters and cost factors which are used to determine costs. The contract is based on the maximum fixed route and paratransit hours for each year. For example, 67,392 fixed route hours and 37,000 paratransit hours were identified as the contract maximum in 2019-20. The operating cost per service hour can be determined by applying the purchased transportation costs to the maximum service hours. Based on the contract maximum of 66,110 fixed route hours and 24,000 paratransit hours for 2022-23, the hourly costs for 2022-23 is calculated at \$88.86, which will be used to estimate the cost impact of changes to services in the next stage of this study. Additionally, an inflationary factor will be applied to estimate cost impacts over the next several fiscal years based on service recommendations.

B-Line Revenue Sources

B-Line operations are funded by a combination of state funds, federal funds, and fares. Prior to COVID, fares generated approximately \$1.5 million in revenues, which accounted for between 15 to 17 percent of operating revenues. Fare revenue dropped to \$1.3 million in FY 2019-20 (covering 14 percent of operating costs), and \$721,894 in FY 2020-21 (8 percent of operating costs), as shown in Table 11. Given the impacts of COVID-19, the B-Line budget assumes fare revenues will increase but continue to cover an estimated 8 percent of operating costs.

Transportation Development Act (TDA) funds, collected and administered by the State of California, generated between \$4.3 and \$5.0 million for transit operations pre-COVID (with additional funds going toward local jurisdictions for non-transit uses), but only \$2.6 million was used for B-Line in 2019-20 and \$3.2 million in 2020-21. The 2021-22 approved budget allocates \$6.5 million in TDA funds, and \$6.2 million was adopted for FY 2022-23, as also shown in Table 11.

Federal funds, primarily Federal Transit Administration's Urban 5311 grant funding program, generated between \$2.9 and \$3.3 million in operating revenues prior to COVID. During COVID, additional federal funds were made available through the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) to support increased costs due to the pandemic. As shown in Table 11, \$5.8 million in federal funds were received in 2019-20 and \$5.5 million in 2020-21 (including additional

Table 11: B-Line Operating Expenses and Revenues

	Fiscal Years			
	2019/20	2020/21	2021/22	2022/23
B-Line Transit Expenses	Actual	Actual	Approved	Adopted
Administration Expense	\$703,515	\$673,986	\$738,248	\$896,646
Operations & Maintenance				
Communication	\$33,376	\$21,564	\$22,025	\$22,025
Fleet Insurance	\$376,580	\$405,017	\$428,434	\$428,434
Vehicle Maintenance	\$152,120	\$29,819	\$160,000	\$140,000
Maintenance Equipment	\$3,200	\$239,957	\$25,000	\$25,000
Purchased Transportation	\$7,129,146	\$6,935,999	\$7,762,812	\$8,007,513
Fuel	\$916,206	\$720,229	\$981,000	\$1,117,000
Transit Center Maint. - Chico/Oroville	\$172,371	\$204,976	\$204,000	\$215,000
Transit Kiosk Lease - Chico	\$7,500	\$6,000	\$6,000	\$6,000
Ops Facility Lease - to BRTC	\$20,821	\$20,821	\$20,821	\$20,821
BRT Facility Ops/Maintenance	\$306,082	\$270,951	\$375,350	\$429,350
Total Ops/Maintenance Expense	\$9,117,402	\$8,855,333	\$9,985,442	\$10,411,143
Appropriation for Contingencies	\$0	\$0	\$107,237	\$113,078
Total Operating Requirements	\$9,820,917	\$9,529,319	\$10,830,927	\$11,420,867
B-Line Transit Revenues				
Fixed Route Passenger Fares	\$1,067,423	\$589,126	\$693,070	\$780,416
Paratransit Fares	\$261,123	\$132,768	\$147,250	\$185,269
Total Operating Revenue	\$1,328,546	\$721,894	\$840,320	\$965,685
Non-Operating Revenues				
TDA	\$2,676,785	\$3,245,973	\$6,561,693	\$6,274,847
Federal / Other	\$5,815,586	\$5,561,452	\$3,428,914	\$4,180,335
Total Revenues	\$9,820,917	\$9,529,319	\$10,830,927	\$11,420,867
Operating Parameters & Cost Factors				
Fixed Route Vehicle Service Hours	67,382	64,793	64,793	66,110
Paratransit Vehicle Service Hours	37,000	30,400	33,000	24,000
Total Hours	104,382	95,193	97,793	90,110
Estimated Operating Cost per Hour				
Fixed Route Vehicle Service Hours	\$68.55	\$79.38	\$79.38	\$88.86
Paratransit Vehicle Service Hours	\$68.55	\$79.38	\$79.38	\$88.86
Source: BRT Annual Budgets				

COVID relief). The approved budget for 2021-22 had a decrease in federal funds, while the approved 2022-23 includes an increase in federal revenues.

B-Line Performance Analysis

A performance analysis was conducted on B-Line routes for pre-COVID (FY 2018-19) and during COVID (FY 2020-21). Two key measures of transit performance are productivity (measured by the number of passengers carried per service hour) and effectiveness (measured by the marginal operating cost per passenger trip). This data is depicted in Table 12 and is discussed below.

Table 12: B-Line Route Performance

			Pre-COVID (FY 2018-19)				COVID (FY 2020-21)				CHANGE -- FY 18/19 to FY 20/21			
			Riders	Vehicle-Hrs	Productivity	Marginal Cost per Psgr	Riders	Vehicle-Hrs	Productivity	Marginal Cost per Psgr	Riders	Vehicle-Hrs	Productivity	Marginal Cost per
Chico	Route 2	Mangrove	65,289	4,385	14.9	\$4.10	32,256	4,432	7.3	\$9.79	-51%	1%	-51%	139%
	Route 3	North/East	71,282	4,404	16.2	\$3.78	34,068	4,427	7.7	\$9.26	-52%	1%	-52%	145%
	Route 4	First/East	62,110	5,076	12.2	\$4.99	29,075	5,084	5.7	\$12.46	-53%	0%	-53%	150%
	Route 5	East 8th St	53,552	5,206	10.3	\$5.94	20,088	4,063	4.9	\$14.42	-62%	-22%	-52%	143%
	Route 7	Bruce/Manzanita	12,163	1,842	6.6	\$9.25	4,512	1,849	2.4	\$29.21	-63%	0%	-63%	216%
	Route 8	Nord	69,345	1,449	47.9	\$1.28	4,875	1,032	4.7	\$15.09	-93%	-29%	-90%	1082%
	Route 9	Warner/Oak	75,876	2,604	29.1	\$2.10	9,383	1,929	4.9	\$14.66	-88%	-26%	-83%	599%
	Route 14	Park/Forest/MLK CW	115,965	6,291	18.4	\$3.31	43,928	6,313	7.0	\$10.24	-62%	0%	-62%	209%
	Route 15	Esplanade/Lassen	81,776	6,408	12.8	\$4.79	35,472	6,431	5.5	\$12.92	-57%	0%	-57%	170%
	Route 16	Espanade/99	44,199	3,391	13.0	\$4.69	18,646	3,547	5.3	\$13.56	-58%	5%	-60%	189%
Route 17	Park/MLK/Forest CCW	44,199	3,292	13.4	\$4.55	18,646	3,251	5.7	\$12.43	-58%	-1%	-57%	173%	
Inter	Route 20	Chico-Oroville	106,292	7,345	14.5	\$4.22	42,486	7,360	5.8	\$12.35	-60%	0%	-60%	192%
Oroville	Route 24	Thermalito	20,386	1,829	11.1	\$5.48	8,704	1,836	4.7	\$15.04	-57%	0%	-57%	174%
	Route 25	Oro Dam	14,322	1,041	13.8	\$4.44	9,038	1,046	8.6	\$8.25	-37%	0%	-37%	86%
	Route 26	Olive Highway	12,025	1,816	6.6	\$9.23	6,553	1,823	3.6	\$19.83	-46%	0%	-46%	115%
	Route 27	South Oroville	12,378	1,118	11.1	\$5.52	6,267	1,122	5.6	\$12.76	-49%	0%	-50%	131%
Intercommunity	Route 30	Oroville-Biggs	12,892	1,637	7.9	\$7.76	6,933	1,666	4.2	\$17.12	-46%	2%	-47%	121%
	Route 32	Gridley-Chico	5,114	508	10.1	\$6.07	979	510	1.9	\$37.13	-81%	0%	-81%	512%
	Route 40	Paradise-Chico	27,624	2,962	9.3	\$6.55	4,604	2,347	2.0	\$36.33	-83%	-21%	-79%	455%
	Route 41	Magalia-Chico	28,754	3,173	9.1	\$6.74	12,018	3,149	3.8	\$18.68	-58%	-1%	-58%	177%
Chico	Route 52	Chico Airport Express	7,826	1,791	4.4	\$13.98	4,099	1,525	2.7	\$26.52	-48%	-15%	-38%	90%
Subtotal: Chico			703,582	46,137	15.2	\$4.01	255,048	43,884	5.8	\$12.26	-64%	-5%	-62%	206%
Subtotal: Oroville			59,111	5,804	10.2	\$6.00	30,562	5,827	5.2	\$13.59	-48%	0%	-49%	126%
Subtotal: Inter			180,676	15,624	11.6	\$5.28	67,020	15,032	4.5	\$15.99	-63%	-4%	-61%	203%
TOTAL			943,369	67,565	14.0	\$4.38	352,630	64,742	5.4	\$13.09	-63%	-4%	-61%	199%

B-Line Productivity

Table 12 shows the passengers carried per service hour by route. Pre-COVID, 14.0 passengers were carried per service hour systemwide. The Chico routes were more productive, carrying 15.2 passengers per hour on average, while the Oroville routes carried 10.2 and intercity routes carried 11.6. The most productive route, by far, was Route 8, which averaged 47.9 passengers per hour, followed by Route 9 with 29.1 passengers. The least productive routes were Route 52 to the airport, with just 4.4 passengers per hour (the route also served Oroville at the time), followed by Routes 7 and 26, each of which carried 6.6 passengers per hour.

After COVID, productivity dropped to just 5.4 passengers per hour systemwide, with Route 25 being the most productive with 8.6 passengers per hour (down from 13.8 pre-COVID). Route 7 carried just 2.4 passengers per hour.

B-Line Effectiveness

The cost effectiveness of B-Line services was impacted by both a loss of ridership and an increase in cost. Pre-COVID, the contract cost was \$61.11 per service hour, which when applied to the hours of service and the riders per hour equated to a marginal cost per passenger trip of \$4.38. On longer routes with low ridership, the cost was highest—such as Route 52 (\$13.98 per passenger trip) and Routes 7 and 26 (\$9.25 and \$9.23, respectively). Routes 8, 9, 14, and 3 performed best, ranging between \$1.28 to \$3.78 per passenger trip.

In 2020-21, in addition to ridership dropping significantly, the contract cost per hour increased to \$71.28. The average cost per passenger trip was \$13.09—a tripling of the 2018-19 cost per passenger trip. Costs were as especially high on the Route 32, Gridley-Chico (at \$37.13 per passenger carried) and Route 40, Paradise-Chico (\$36.33 per passenger carried). Even the most efficient Route 25 had a cost of \$8.25 per passenger trip.

B-Line Assets

The assets needed to support the transit program include the maintenance and operations facility, fleet, and passenger amenities. These are all described below. Additionally, a Transit Asset Management Plan was developed on behalf of the B-Line system.

B-Line Operations Center

The Butte Regional Operations Center (BROC) in Chico was built in 2016 and consists of the maintenance facility, operations facility, and administrative center for the transit contractor and BCAG staff. BCAG's portion of the center includes offices, a front information desk, the BCAG board room, and conference rooms. The portion of the facility used by the contractor includes offices, dispatching center, conference and training rooms, locker rooms, and the maintenance facility including bus bays and a bus wash.

B-Line Fleet

The B-Line fleet consists of 31 fixed route vehicles and 22 paratransit vehicles (tables showing the B-Line fleet is included in Appendix C). Two of the vehicles in the fixed route fleet are powered by Compressed Natural Gas (CNG), and the remainder are diesel fueled. All the paratransit vehicles are gasoline fueled. The fixed-route buses have a useful benchmark life (UBL) of 12 years, indicating that the two CNG vehicles have exceeded this mark and four additional fixed route vehicles are on the cusp of expiring (in 2023). The two CNG buses are being retained but will soon be replaced with electric vehicles, four of which will be on order in FY 2022-23. BCAG recently applied for FTA Section 5310 funds for four paratransit vans. The paratransit vehicles have a UBL of seven years, with half of the fleet already past this benchmark.

BCAG is in the process of developing a Zero Emission Bus Implementation Plan, with expectations to replace the fixed route fleet with electric vehicles by the year 2040. The four buses that will be ordered arriving in FY 2022-23 are the first that will be used by B-Line, and important infrastructure (charging equipment and necessary underground upgrades at the BROCC) is being developed now as well to facilitate the change.

All B-Line vehicles are fully equipped with wheelchair lifts or low-floor ramps and include a wheelchair securement area with space for two wheelchairs. Additionally, all fixed-route buses are equipped with front-mounted bicycle racks.

B-Line Bus Stop Inventory

The B-line service has a total of 544 bus stops systemwide (a table listing the assets is also listed in Appendix C). More than a quarter of the bus stops have shelters. Approximately a third of bus stops in Chico, Biggs and Paradise have shelters, while just 18 percent in Oroville have shelters. In general, shelters appear well spaced and serve locations with high use, though there are also shelters which do not receive use at all.

B-Line Marketing Efforts

B-Line is engaged in extensive marketing in multiple formats. Below is a discussion of the main marketing efforts.

Online Information

B-Line has a well-developed website, including a home page with a drop-down menu to navigate to basic information (complaints, budgeting, marketing, Title VI, etc.), schedules, rider tools, paratransit information, and contact information. The drop-down menu is reproduced in picture format below the top banner for quick navigation to top sites. Below that are important announcements and more detailed information. The website is color-coordinated in B-Line's black, green, and gold colors, along with white and blue. The pages are full of information without being cluttered.

Print Materials

Schedules which are available online are also generally available in print form as well. Additionally, B-Line has a printed riders' guide and flyers promoting Token Transit, as well as comment cards (available at outreach events and on buses).

Phone Information

B-Line has a phone line for inquiries. The phone number is posted on the website, on schedules, and at bus stops. In April 2022, B-Line received or made 7,941 calls, including missed calls. Of those, 5,690 calls were answered, which is an average of over 200 calls per day.

Social Media

B-Line has Instagram, Twitter, YouTube, and Facebook accounts. As of mid-June 2022, the Instagram account had 22 followers and 25 posts but was just established in February 2022. Similarly, B-Line joined Twitter in February 2022 and only has a few followers. The YouTube account has 20 videos posted over eight years, with just 18 subscribers. The most popular videos are advertisements with content showing how to use the mobile app or how to track buses, and these have between 900- to 1,600 views. B-Line's Facebook account has been active since 2010, with 1,376 followers as of June 2022. Service announcements are posted, as well as photos of outreach activities and public engagement. The public is allowed to post complaints and compliments on the page (whereas other transit agencies often only post information and do not allow public postings). Staff respond to postings, particularly complaints.

Outreach Activities and Events

B-Line regularly engages in outreach activities, often by hosting informational booths at events such as the Thursday Night Market. B-Line recently hosted a "community tour" where staff set up tables for several hours during specific mornings or afternoons at various public locations throughout the county to provide information on transit. To attract interest, they offered give-a-ways such as water bottles, reusable bags, and pens.

B-LINE ONBOARD PASSENGER SURVEY RESULTS

Onboard surveys were conducted on all B-Line routes to gather trip pattern information, passenger demographics, opinions on current service quality, and recommendations and suggestions for improvements. The results of the onboard survey, coupled with the performance review of previous chapters, constitute a key component in formulating service alternatives for improvements to B-Line. Detailed results of the survey effort are provided in Appendix D. Key findings are presented in this chapter.

Survey Methodology

Onboard surveys were conducted on all B-Line routes from December 6th to December 13th, 2021. Survey staff were available on buses for approximately 140 hours total during the survey period to

assist and encourage passenger participation. During this time, survey materials were also available on all fixed routes for passengers to complete.

The survey instruments consisted of a one-page questionnaire printed on card stock. One form was in English on one side and Spanish on the reverse side, and a separate form was available in Hmong. The surveys included a simple introduction, with 16 questions in multiple choice, short-answer, or comment format. The number of answers per question varies because many respondents did not answer every single question.

Survey Participation

A total of 280 passengers participated in the survey. 269 passengers (96 percent) completed the survey in English, while 11 (4 percent) completed it in Spanish and no responses were received in Hmong. 36 of the forms were completed online and the remainder were completed on paper. Results by question are presented below.

- 280 passengers participated in the survey
 - 269 completed the questions in English.
 - 11 completed the questions in Spanish.
 - 34 completed the survey online: the remainder filled out paper surveys.
 - Routes 9, 14, 15 produced the highest number of responses.

Trip Patterns

The survey results revealed trip patterns of passengers.

- Just over half of fixed route passengers (56 percent) make round trips on the B-Line.
- Just under a third (30 percent) of passengers used the bus to go to or from school (including primary, secondary and college).
- Work was the second most common reason for riding the bus (24 percent).

The survey also provides useful information regarding passenger trip origin versus destination within the Chico area. The Chico service area was divided into a series of 12 zones, as shown in Figure 11. Survey responses were analyzed to identify those that provided both valid origin and valid destination data. The results are shown in Table 13. As indicated, in total, the greatest passenger activity is generated by the Downtown Zone (61 percent of all passengers board or alight in Downtown), followed by 27 percent in the West Zone 19 percent in the Southeast Zone and 18 percent in the CSU Zone. This shows the prevalence of travel between the Downtown Zone and the South, Southeast and West Zones, which generates 34 percent of the total passenger-trips. Trips between CSU and the West Zone generate 12 percent of all trips. Outside of trips to/from downtown and CSU, other trips are widely scattered, with no origin-destination pair generating more than 2 percent of all passenger activity.

The survey questions also asked about other routes being used as part of the passenger's full trip. This provides an indication of the overall trip pattern for those passengers boarding/alighting in the Downtown Zone simply to transfer between buses. As shown previously in Table 5 (in Chapter 3), of

all these passengers, 51 percent did not transfer between routes (indicating an actual full trip origin or destination in Downtown) while 49 percent transferred between routes. Of those transferring, the highest proportions were between Route 14 and Route 3, Route 14 and Route 15, between Route 14 and Routes 1, 2, 8 and 9, Route 9 and Routes 8 and 15, and Route 8 and Route 20.

Passenger Demographics

- Passengers are largely dependent on transit services:
 - Only 30 percent had a vehicle available to them that they could have used for their trip instead of riding the bus.
 - 54 percent did not have a driver’s license.
 - 6 percent required the wheelchair lift to board or exit the bus.
- Many passengers reported that they were students (108 persons).
- B-Line passengers represent a wide range in ages; about 30 percent are aged 19-24 (in line with student ridership); 40 percent are ages 25 to 61; and 16 percent are seniors.

Passenger Opinions and Desired Improvements

- Passengers have an overall good opinion of B-Line services – 78 percent rank the service as good or excellent (4 or 5 on a scale of 5) on all service factors, and 85 percent rank the overall service as good or excellent.
 - Passengers have the most positive opinions on driver courtesy, the affordability of the service, and how quickly service gets to their location, and ease of transfers.
 - The lowest opinion was regarding the bus shelters (19 percent indicating poor or very poor) followed by the availability of information at the bus stops.
- Most people get information about the B-Line by checking the website (53 percent), followed by the printed schedules. Few get information from social media or the Token app.
- The most desired improvement (cited by 46 percent of passengers) is more frequent weekend service, followed by more shelters at bus stops (29 percent) and later service (27 percent).
- There were 57 general comments which can be categorized as complaints (6), compliments (25) and suggestions (25). Common recommendations to improve B-Line service included:
 - improve bus shelters and their design
 - implement service to Sacramento (specifically the airport)
 - increased weekend and evening service
 - Sunday service
- Many passengers left compliments for some aspect of B-Line service, including many positive words for the bus drivers.

Figure 11:
Zones for Chico Onboard Survey Respondent
Trip Origin/Destination Analysis

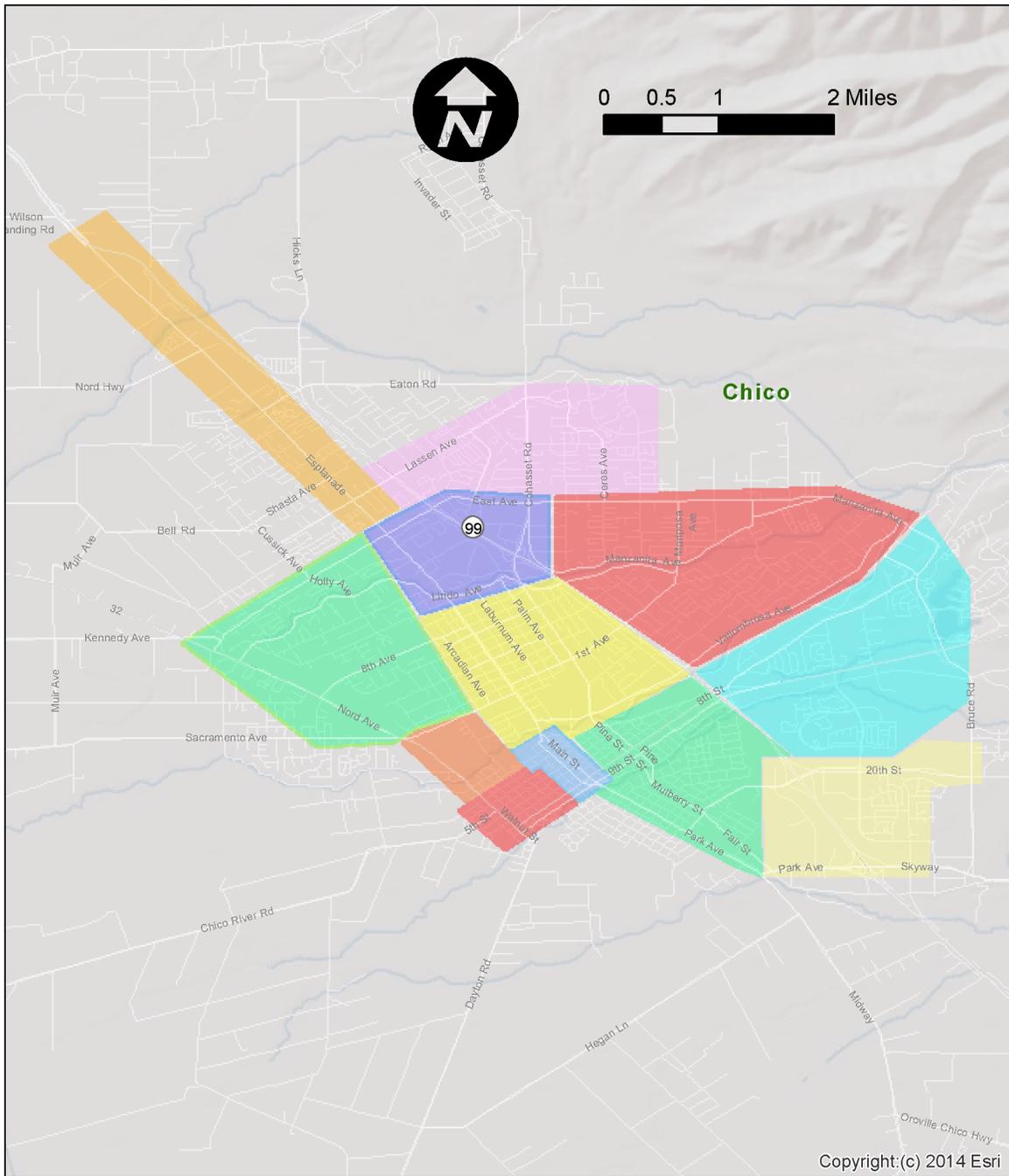


Table 13: Major Origin/Destination Pairs from Onboard Survey Results

Excludes Stops with 1 Boarding or 1 Alighting

Boarding Stop	Alighting Stop																Grand Total (1)	
	20th and Fair	20th and Park	4th and Cedar	Burlap Ave.	Chico Mall	Chico State	Chico Transit Center	Downtown	East Ave.	Esplanade	Forest Ave.	Lassen Ave.	Mall	Oroville Transit Center	University Village	W Sac. & Victorian		Walmart
Total Survey Responses																		
20th St.																		2
7th and Oak							2											2
8th and Forest							2											2
Ceres & Lassen							1										1	4
Chico Mall							2											2
Chico State			3			1									1			11
Chico Transit Center	1	1			1					2		1		1	2	1	3	48
Costco							1	1										2
Downtown					1				1									3
E Lassen											2							2
Esplanade				2			1			1								5
Hickory						1	3	1										6
Hickory 7th St						2												3
Nord Ave					1		1											3
Oroville Transit Center							1											3
University Village							2	1							1			5
W Sacramento			1															2
Walmart							2											2
Warner & Legion			1													1		2
Grand Total (1)	2	3	5	2	3	10	55	6	2	3	2	2	3	3	5	2	7	213
Percent of Total Valid Surveys																		
20th St.	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
7th and Oak	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
8th and Forest	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Ceres & Lassen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
Chico Mall	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Chico State	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	5%
Chico Transit Center	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	1%	0%	1%	23%
Costco	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Downtown	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
E Lassen	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	1%
Esplanade	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
Hickory	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	3%
Hickory 7th St	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Nord Ave	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Oroville Transit Center	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
University Village	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	2%
W Sacramento	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Walmart	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Warner & Legion	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%
Grand Total (1)	1%	1%	2%	1%	1%	5%	26%	3%	1%	1%	1%	1%	1%	1%	2%	1%	3%	100%

Note 1: Excluding stops with 1 boarding or 1 alighting.

OTHER TRANSIT SERVICES IN THE REGION

While this study evaluates and plans B-Line services, it is important that regional connections remain intact. Other transportation services within Butte County, and their connections to B-Line, are described below.

Glenn Ride

Glenn Ride is the public transit service for Glenn County. In addition to local on-demand paratransit service and medical transportation, Glenn Ride operates a fixed route from Willows to Chico, by way of Orland (where passengers can transfer to the TRAX Glenn-Tehama Connect route operated by Tehama County). Glenn Ride stops along East Avenue at Highway 32, Cussick and Esplanade, and then at the North Valley Pillsbury Road Transfer Center (where passengers can transfer to the Butte College Bus). The route then serves several stops on Cohasset Drive with the Chico Transit Center as the final destination.

Pre-COVID, seven round trips were operated weekdays, with two of these being “express” runs (95 minutes versus 110 minutes). Saturdays, a morning, noon, and late afternoon round-trip were operated. In March 2020, weekday runs were reduced to just four departures (at 6:30 AM, 11:00 AM, 1:00 PM, and 5:00 PM). Saturday service remains unchanged, contingent on driver availability. Fares are \$2.00 for an in-county trip, \$3.00 for an out-of-county trip, and \$50.00 for a 30-day pass.

Butte College Transportation

Butte College’s main campus is located halfway between the Chico Transit Center and the Oroville Transfer Station, 14 miles southeast of Chico. The campus is on a hill not easily walkable or bikeable. The college operates a bus service for students and staff Mondays through Thursdays during the fall and spring semesters. The routes include:

- *Chico Routes* – A shuttle is operated throughout the day that circulates between the Main Campus, the Chico Center, and the Skyway Center. There are five routes which start in Chico at various locations, with the first runs departing between 7:05 and 7:10 AM and arriving at the main campus at 7:50 AM. There are five morning runs and three afternoon runs serving these five routes.
- *Durham Route* – One route operates between Durham (Midway and Durham Dayton Highway) and the main campus of Butte College. There are three morning runs and a 1:02 PM run to campus, and one morning run and three afternoon runs from campus.
- *Oroville Routes* – One route begins at Lincoln and Monte Vista in Oroville and another at Oro Dam and Oro Quincy in Oroville, with the first departure at 7:10 AM, arriving at campus at 7:45 AM. There are four morning runs and two afternoon runs to campus on these two routes, and one morning and three afternoon runs returning from campus.
- *Biggs, Gridley & Palermo* – One morning run departs Biggs at 6:33 AM and serves Gridley at 6:45 and Palermo at 7:04, arriving at campus at 7:45 AM. A return bus leaves campus at 4:00 PM.

- *Chico Shuttle* – Butte College operates a shuttle during the day that travels between its campuses and facilities within Chico.

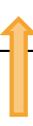
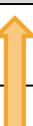
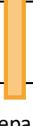
The Butte College bus service provides a much-needed option to get to campus as well as move in between the multiple facilities. However, runs are limited. Due to a lack of midday runs, many students choose to not take the bus because it requires them to stay on campus much longer than desired. Furthermore, Butte College recently stopped providing bus services to Paradise, which leaves few transit options; to get to the main campus, students and staff would have to take the B-Line Route 40 or 41 to Chico and transfer to get to Butte College.

Greyhound

Greyhound has two northbound runs (departing Chico at 7:00 AM and 9:25 PM daily) and two southbound runs (departing at 6:20 AM and 6:55 PM daily). Fares to Redding (an hour and a half trip) are in the \$32-60 range, and to Portland (a 12-hour trip), in the \$104-197 range. Fares to Sacramento (a two-hour trip) are in the \$38-71 range, and to Los Angeles (a 10-hour trip) in the \$54-98 range.

Amtrak Train and Thruway Bus

Amtrak’s Coast Starlight train from Los Angeles to Seattle serves stops in Chico just once per day in each direction in the early morning hours (1:37 AM northbound and 4:12 AM southbound). The Amtrak Thruway Bus Route 3 from Stockton to Redding departs Chico daily at 7:45 AM, 11:45 AM, and 3:45 PM southbound, and at 11:55 AM, 4:20 PM, and 8:10 PM northbound. However, passengers currently must transfer to an Amtrak train as part of their trip, though eventually the plan is that passengers will be able to make trips on Thruway buses independent of train trips. For now, Amtrak Thruway Route 3 still requires a connection. The Amtrak Thruway Bus Schedule is shown in Table 14.

Table 14: Amtrak San Joaquins Thruway Schedule								
Daily Service -- Redding • Chico • Sacramento								
712	716	718	← San Joaquins Connecting Train Number →			711	713	715
3812/ 3712	3816/ 3716	3718	← Thruway Number →			3711/ 3811	3713/ 3813	3715/ 3815
6:05 AM	10:05 AM	--	Depart 	Redding, CA Transit Center	Arrive 	--	5:45 PM	9:35 PM
6:40 AM	10:40 AM	--		Red Bluff, CA Transit Center		--	5:15 PM	9:05 PM
7:45 AM	11:45 AM	3:45 PM	Arrive / Depart	Chico, CA Amtrak Station	Arrive / Depart	11:55 AM	4:20 PM	8:10 PM
8:10 AM	12:10 PM	4:00 PM		Oroville, CA Park and Ride		11:25 AM	3:50 PM	7:40 PM
8:45 AM	--	4:35 PM		Marysville, CA Government Center		10:50 AM	3:15 PM	7:05 PM
9:40 AM	1:45 PM	5:50 PM	Arrive	Sacramento, CA ¹ Amtrak Station	Depart	10:00 AM	2:15 PM	6:15 PM
Note 1: Continues to and from Stockton. Source: Amtrak, 5/3/2022 Bold = PM								

B-LINE ROUTE AND SERVICE ANALYSIS

INTRODUCTION

This chapter provides greater detail and analysis of the B-Line fixed route services, focusing on passenger loads, on-time performance, boarding and alighting data, and ridership by route segments.

PASSENGER LOAD BY ROUTE

Average and peak passenger loads on each route were estimated based on available data, as summarized in Table 15. This was conducted for October 2019 (a busy month with schools in session prior to the pandemic) as well as for October 2021 (after the start of the pandemic). Note that data for deboarding (alighting) locations is not regularly tracked. However, good data regarding ridership by day and run is available. These estimates were developed as follows:

- The Total Ridership by Route reports were analyzed. These reports provide average ridership over the course of a month by route, run, direction and weekday vs. Saturday vs. Sunday. The average ridership per one-way run was defined for each route, as well as the peak ridership per one-way run (average over the week).
- Ridership by day of week data was analyzed to identify the ratio of the peak weekday ridership to the average weekday ridership. This factor was determined to be 1.10 for the October 2019 data and 1.07 for the October 2021 data. Weekday average peak ridership by run was factored by these values (for those routes with a peak load on a weekday).
- As deboarding location data is not available, it is not possible to define the proportion of total ridership by one-way run that is onboard at any one location. To be conservative, it is assumed that all riders are onboard at the peak load location.

As shown, prior to the pandemic, peak loads reached as high as 43 passengers (on Route 14), and a total of five routes (also including Routes 3, 8, 9 and 15) carried 40 or more passengers at peak. All of these are Chico routes. At the other extreme among the Chico routes, Route 52 had a peak load of 6 passengers and Route 7 had 10 passengers. On the Oroville routes, Route 24 and 27 both had a peak load of 11 passengers, while Route 25 and 26 had slightly lower peak loads (8 and 7, respectively). On the Intercity routes, Route 20 carried up to 36 passengers at peak, while the other routes ranged from 9 to 16 passengers.

Peak ridership figures in October 2021 were impacted by the pandemic. The Chico route with the greatest passenger load was Route 8 (19), followed by Route 3 (18). At the low end, Route 52 had an estimated peak ridership of 2, while Route 7 had a peak of 5. Of the Oroville routes, the largest peak passenger load was on Route 27 (6) while the lowest was on Route 26 (3). Route 20 had the highest passenger loads among the Intercity routes (15), followed by 12 passengers on Route 40, 7 on Routes 32 and 41, and 3 on Route 30.

As this analysis did not include a review of every individual day on every route and run, there could be specific unusual circumstances that resulted in peak passenger loads higher than those shown in

Table 15: B-Line Peak Load by Route

Route		Pre-COVID (Oct 2019)		Post-COVID (Oct 2021)	
		Average	Est. Peak Load	Average	Est. Peak Load
2	Chico	8	24	4	10
3	Chico	12	40	6	18
4	Chico	8	26	4	12
6	Chico	8	24	3	9
7	Chico	2	10	1	5
8	Chico	15	40	8	19
9	Chico	12	40	3	9
14	Chico	12	43	5	17
15	Chico	11	41	5	16
16	Chico	7	20	3	9
17	Chico	7	20	3	8
20	Intercity	12	36	6	15
24	Oroville	4	11	2	4
25	Oroville	3	8	1	4
26	Oroville	3	7	1	3
27	Oroville	3	11	2	6
30	Intercity	2	9	1	3
32	Intercity	3	16	1	7
40	Intercity	2	15	1	12
41	Intercity	3	12	2	7
52	Chico	1	6	1	2
Total		137	461	64	195

Source: B-Line

Table 15. However, as it is not efficient to plan for the absolute peak condition, these figures should be considered valid for fleet planning purposes.

B-LINE ON-TIME PERFORMANCE BY ROUTE

Data on schedule adherence and on-time performance is useful input to a transit operational plan. Providing dependable service is a particularly important factor in overall service quality. A review of actual running times and variation by time of day is also useful in establishing realistic schedules. To reflect ridership and traffic delay conditions absent the impacts of COVID, B-Line’s on-time performance was analyzed by route for all weekdays in February 2021. This data tracks actual service times at key scheduled stops along each route. Appendix E presents individual tables summarizing the on-time performance of each individual route, by major stop. Note that the data reflects arrival times (other than the route start, for which departure times are used). In addition, these tables present the average running time by route segment and by hour of the day. This data is useful in comparing

scheduled times with actual times, in order to adjust schedules, as well as to identify specific times of day (such as school bell times) when running times are increased.

Table 16 presents a summary of on-time performance for the various routes. As the B-Line standard for on-time service is less than 5 minutes late, this summary focuses on the proportion of all service times that are moderately late (5 to 15 minutes behind schedule) and severely late (more than 15 minutes late). This data is also depicted in Figure 12. A review of this data indicates the following:

- Over all routes, 77 percent of services were provided on time (or early), while 22 percent were served late (20 percent 5-15 minutes behind schedule and 2 percent more than 15 minutes behind schedule).
- On-time performance is relatively good for the Chico-area routes (80 percent on-time) followed by the intercity routes (75 percent on-time) and relatively poor for the Oroville area routes (Routes 24, 25, 26 and 27). Routes 25, 26 and 27 had particularly low proportion of stops served on-time (56 percent, 53 percent, and 55 percent, respectively), and each had at least 10 percent of stops served more than 15 minutes behind schedule.
- Among the Chico-area routes (Routes 2 through 17 and 52), Routes 9 (Warner/Oak) and 16 (Esplanade/99) have the poorest on-time performance of 68 percent and 67 percent on-time, respectively. In addition, Routes 3 (Nord/East), 4 (First/East) and 15 (Esplanade/Lassen) also have relatively poor on-time performance ranging from 75 percent to 78 percent on-time. None of the Chico-area routes had more than 4 percent of runs severely (more than 15 minutes) late.
- Of the intercity routes (20, 30, 32, 40 and 41), Route 40 (Paradise-Chico) had the best on-time performance with only 11 percent of runs operating late. The other intercity routes ranged between 22 percent and 29 percent late. However, the proportion of runs operated severely late was relatively low, at 3 percent for Route 20 and 1 percent or less on the other intercity routes.

B-LINE PASSENGER BOARDING DATA

Ridership data by stop is tracked by B-Line, and was mapped for each individual route profile included in Appendix B. A review of the data also indicates which stops have the highest overall boardings, as shown in Table 17. The data shows the busiest stops pre-COVID (October 2019) and during COVID (October 2021). Not surprisingly, the top five busiest stops were stops at the transit centers, followed by stops that serve student housing on routes 8 and 9. After transit centers and student housing, other popular stops are at the Costco on MLK Parkway, McDonalds at Notre Dame Blvd, and Grocery Outlet on Pillsbury Road. Additionally, an average of 56 passengers boarded daily at flag stops in 2019, and 19 daily in 2021 (approximately one percent of the daily ridership).

Ridership dropped by 44.7 percent between October 2019 and October 2021. Stops which had higher than average boardings based on this drop include the Chipotle stop on E. 20th Street, Target, and University Village. Stops which lost a greater proportion of ridership include Juvenile Hall and the CSUC Meriam Library.

Table 16: Summary of B-Line On-Time Performance

Weekdays in Month of February, 2020

Route	North/West Bound				South/East Bound				Loop/Extra Route				Total			
	Early/ On Time	5-15 Min Late	> 15 Min Late	Total Late	Early/ On Time	5-15 Min Late	> 15 Min Late	Total Late	Early/ On Time	5-15 Min Late	> 15 Min Late	Total Late	Early/ On Time	5-15 Min Late	> 15 Min Late	Total Late
2 Mangrove	91%	9%	0%	9%	88%	12%	0%	12%					89%	11%	0%	11%
3 Nord/East	75%	20%	5%	25%	75%	23%	2%	25%					75%	22%	3%	25%
4 First/East	80%	19%	1%	20%	74%	21%	5%	26%					77%	20%	3%	23%
5 E. 8th Street	89%	11%	0%	11%	90%	10%	0%	10%					89%	11%	0%	11%
7 Bruce/Manzanita	93%	7%	0%	7%	85%	15%	0%	15%					89%	11%	0%	11%
8 Nord									89%	10%	1%	11%	89%	10%	1%	11%
9 Warner/Oak - NB, SB, WB	58%	40%	2%	42%	95%	5%	0%	5%	78%	21%	1%	22%	68%	30%	2%	32%
9C Cedar Loop									100%	0%	0%	0%	100%	0%	0%	0%
14 Park/Forest/MLK									83%	16%	1%	17%	83%	16%	1%	17%
15 Esplanade/Lassen	85%	15%	0%	15%	71%	28%	1%	29%					78%	21%	1%	22%
16 Esplanade/SR 99	86%	13%	1%	14%	47%	46%	7%	53%					67%	29%	4%	33%
17 Park/MLK/Forest									83%	16%	1%	17%	83%	16%	1%	17%
20 Chico-Oroville	83%	14%	3%	17%	59%	38%	3%	41%					71%	26%	3%	29%
24 Thermalito									67%	28%	5%	33%	67%	28%	5%	33%
25 Oro Dam									56%	33%	11%	44%	56%	33%	11%	44%
26 Olive Highway - 26A, 26B	62%	30%	8%	38%	46%	36%	18%	54%					53%	33%	14%	47%
27 South Oroville									55%	35%	10%	45%	55%	35%	10%	45%
30 Oroville-Biggs	83%	17%	0%	17%	73%	27%	0%	27%					78%	22%	0%	22%
32 Gridley-Chico	88%	12%	0%	12%	68%	31%	1%	32%					76%	23%	1%	24%
40 Paradise-Chico	95%	5%	0%	5%	82%	17%	1%	18%					89%	11%	0%	11%
41 Paradise Pines-Chico	76%	23%	1%	24%	68%	31%	1%	32%					72%	27%	1%	28%
52 Chico Airport Express - NB,SB	93%	7%	0%	7%	85%	15%	0%	15%					90%	10%	0%	10%
52 Chico Airport Express - IPM,OAM	91%	9%	0%	9%	100%	0%	0%	0%					95%	5%	0%	5%
Subtotal: Chico Routes												80%	18%	2%	20%	
Subtotal: Oroville Routes												58%	32%	10%	42%	
Subtotal: Intercity Routes												75%	23%	2%	25%	
TOTAL: All Routes												77%	20%	2%	22%	
<i>Note: Route 31 (Paradise - Oroville) not in operation.</i>																

Figure 12: B-Line Ontime Performance

Weekdays in February 2020

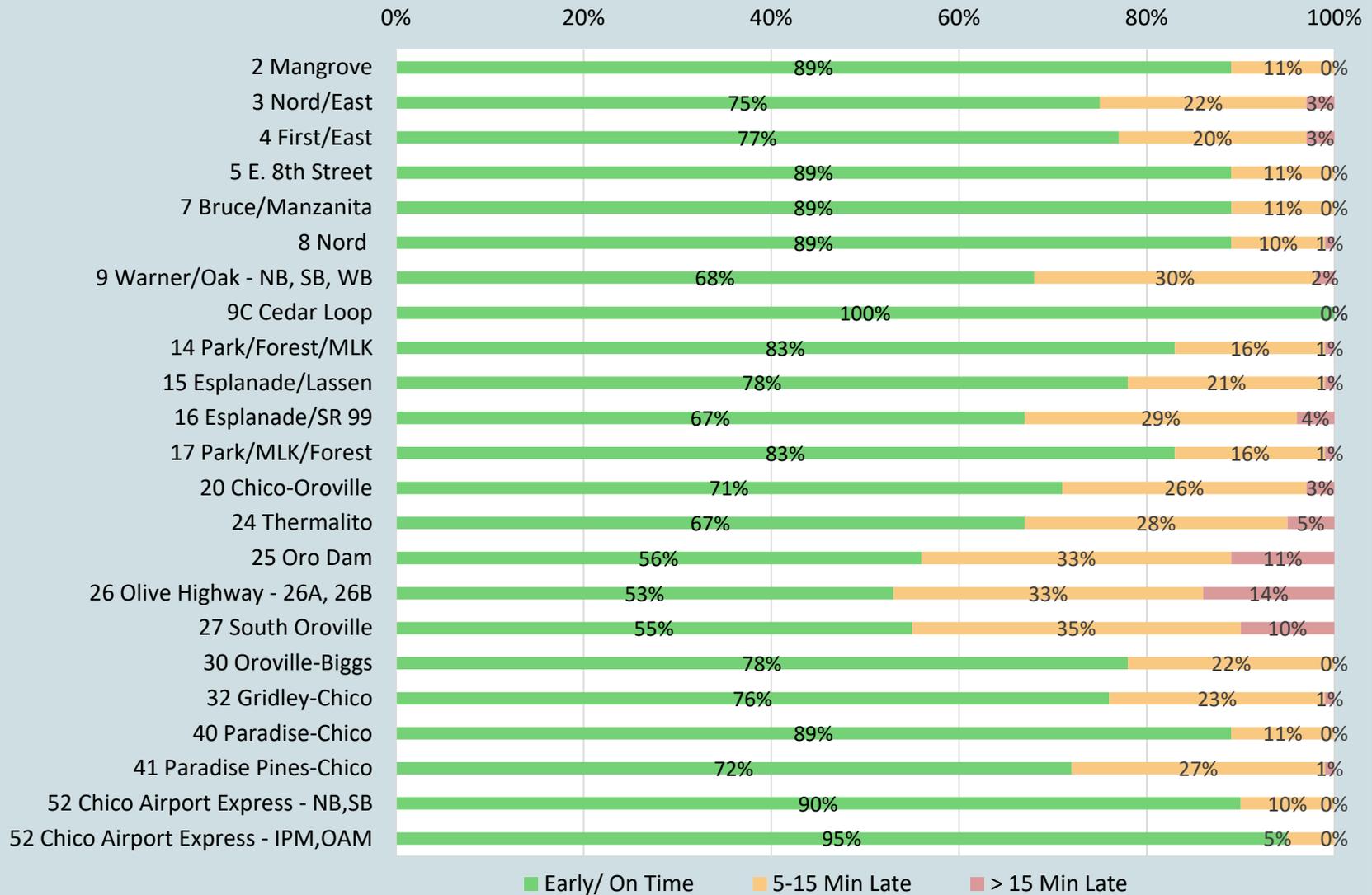


Table 17: Top Boarding Locations

#	Bus Stop			Average Weekday Ridership	
	Nearby Landmark or Street	Cross Street	Routes Served	Oct 2019	Oct 2021
397	Chico Transit Center	W. 2nd St	2, 3, 4, 5, 15, 16	512	275
52	Oroville Transit Center	Mitchell Ave	20, 24, 25, 26, 27, 30, 52	302	128
398	Chico Transit Center	Normal Ave	2, 3, 4, 5, 15, 16	263	96
327	Chico Transit Center	Salem St	14, 17	255	126
326	Chico Transit Center	Normal Ave	8, 9	211	101
383	University Village Apts	Nord Ave	3, 8	206	122
314	Residential W 4th Ave	at N. Cedar	9	102	24
277	Westwood Trees Apts	Nord Ave	3, 8	90	38
178	Timber Cove Apartments	Hickory St	9	80	28
313	CSUC - Whitney Hall	Warner St	8, 9	79	NA
321	CSUC Parking Structure	Warner St	8, 9	61	15
371	Costco	MLK Parkway	14	59	12
198	McDonald's	Notre Dame Blvd	14, 20, 40, 41	58	23
94	Grocery Outlet	Pillsbury Rd	2, 3, 4, 52	58	32
312	CSUC - Meriam Library	Warner St	9	58	11
296	WalMart	Forest Ave	14, 20, 40, 41	57	22
Flagstop *	*	*		56	19
324	Wildcat Recreation Center	W. 2nd St	3, 8, 9	47	23
37	Juvenile Hall	County Center Dr	20, 24	43	7
369	Chipotle	E. 20th St	17, 20, 40, 41	42	33
389	Residential W 4th Ave	at N. Cherry	9	41	NA
85	CVS	Pillsbury Rd	2, 3, 52	39	23
388	Residential N. Cedar St.	at W. 2nd Ave.	9	39	NA
39	County Public Works	County Center Dr	20, 24	39	8
385	by train tracks	W. Sacramento Ave	8	35	NA
309	Jesus Center	Park Ave	14, 17, 32	34	9
38	County Administration	County Center Dr	20, 24	33	10
360	Chevron Gas	W. Sacramento Ave	8	33	NA
370	Pier 1	E. 20th St	14, 20, 40, 41	31	20
301	Barnes & Noble	MLK Parkway	14	31	9
295	Target	Forest Ave	14, 20, 40, 41	30	17
147	Bloodsource	Rio Lindo Ave	2, 16	29	10
454	Social Security	Lassen Ave	2, 15	29	NA
280	Senior Housing Complex	Park Ave	14, 17, 32	28	NA
384	Woodglenn Condos	W. Sacramento Ave	8	28	NA
190	Park 'n Ride lot	Fir St	5, 20	26	na
43	CEC	Table Mountain Blvd	20, 24	24	11
220	Winco	Forest Ave	5, 7	24	12
424	Butte College Chico Campus	Forest Ave	9c, 14, 20, 32, 40, 41, 52	23	NA
116	Veteran's Memorial Hall	Esplanade	15, 16	23	15
306	Perfection Pools	E. 20th St	14, 17	22	7
293	Rabobank	Forest Ave	5, 17, 20, 40, 41	22	12
386	TransPacific Gardens	Nord Ave	3	22	12
133	Ceres Plaza Apts	Lassen Ave	7, 15	20	7
392	Residential Oak St.	at W. 7th Street	9	20	NA
217	Raley's	Notre Dame Blvd	17, 20, 40, 41	20	12
479	Gold County Casino	Olive Hwy	26	18	7
571	Residential E. 20th Street	at C Street	14, 17, 40, 41	18	7
453	Ceres Plaza Apts	Ceres Ave	2, 15	18	7
149	Enloe Medical Center	Cohasset Rd	2, 16	18	7

Note: "NA" = not applicable, as not all stops served both years.

B-LINE ROUTE SEGMENT ANALYSIS

The evaluation of the individual routes presented in Chapter 3 can “hide” portions that are relatively productive or unproductive along a route. To evaluate at a finer level of detail, a “route segment analysis” was conducted, in which each route was divided into three or four segments. For each segment, the passenger boardings and the hours/miles of service were used to identify costs and revenues, and in turn to assess a variety of performance measures. In addition, the passenger load information was considered for each segment. Note that there are some caveats that should be considered when reviewing the results of a route segment analysis. First, passenger activity is considered only for boardings (but not deboardings) to avoid “double counting” individual passengers. Some route segments may see more activity of passengers getting off the bus rather than boarding the bus. Secondly, some segments may not have many passenger boardings but will carry high loads of passengers that are traveling between other segments, and thus may have a higher level of utility than the boarding data might indicate. Finally, transfers impact the number of passenger boardings on routes departing the Transit Centers in Chico and Oroville; these segments inherently benefit from the fact that other routes generate passenger boardings, rather than the land uses along the route segment.

Tables 18 and 19 present the route segment analysis. The marginal operating cost (based on the hourly contract cost) was applied to each route segment based on the hours of service to operate each segment. Boarding data was used to determine the ridership for each segment. This data was applied both pre-COVID and during COVID. As a result, the productivity (passengers carried per service hour) and the marginal operating cost per passenger trip were determined. As indicated, pre-COVID there was an average of 14.0 passengers carried per hour (15.2 in Chico, 10.2 in Oroville, and 11.6 intercommunity). These numbers dropped to a systemwide average of 5.4 (5.8 in Chico, 5.2 in Oroville, and 4.5 intercommunity). The cost effectiveness also dropped significantly, from \$4.38 per passenger trip pre-COVID to \$13.09 during COVID.

Route productivity was mapped for route segments based on FY 2018-19 data. Applying data in the table, productivity of fewer than 7.0 passenger trips per hour was shown to be poor (red), between 7.0 and 16.9 trips was moderate (shown in gold), and anything with 17.0 or more passengers per hour was considered good (green). As shown in Figure 13, there are several key corridors where ridership is particularly productive, such as along 8th and 9th Streets, Park Avenue, Esplanade, University apartments, and around North Valley Plaza. On the other hand, much of eastern Chico has poor productivity, as do portions of southeast Chico (around Oak and W 7th Street, and Ivy and 8th Street).

Route segment productivity is also shown for Oroville in Figure 14 and Paradise in Figure 15. Figure 14 reflects the productivity of Routes 24 and 15 in the downtown area, and the poor productivity of Route 24 in the outlying areas. Figure 15 reflects the poor productivity of the Paradise routes, particularly in Magalia.

Table 18: B-Line Route Segment Analysis - Chico Routes

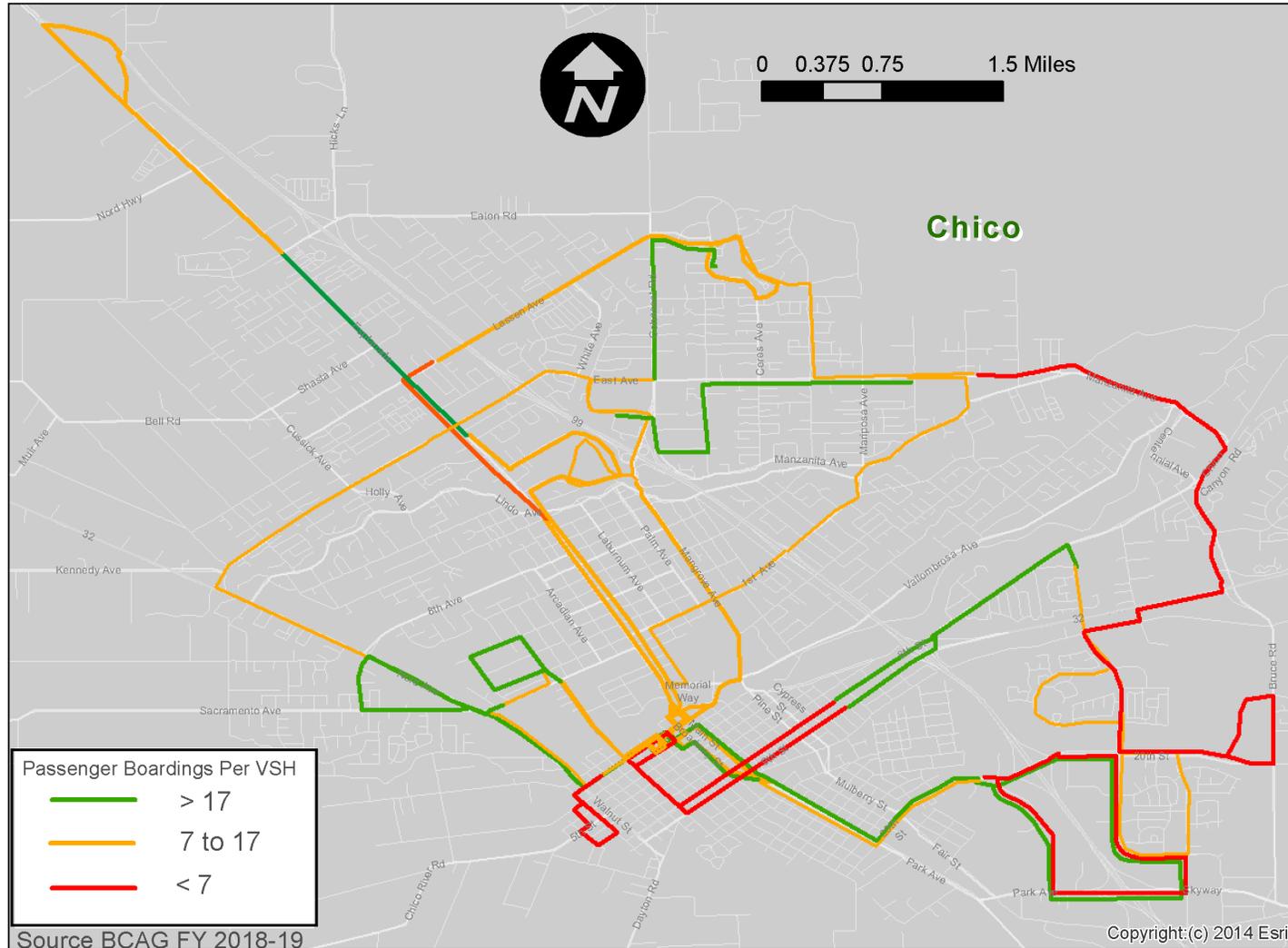
Routes & Segments		Avg Daily Boardings: Oct 2021	Pre-COVID (FY 2018-19)				COVID (FY 2020-21)						
			Annual Boardings	Annual Hours	Marginal Cost	Productivity	Marginal Cost per Psgr	Annual Boardings	Annual Hours	Marginal Cost	Productivity	Marginal Cost per Psgr	
Chico	Route 2 Mangrove	1	50.2	13,182	1,879	\$114,830	7.0	\$8.71	6,512	1,899	\$135,390	3.4	\$20.79
		2	70.6	18,537	1,611	\$98,426	11.5	\$5.31	9,158	1,628	\$116,048	5.6	\$12.67
		3	127.9	33,570	895	\$54,681	37.5	\$1.63	16,585	904	\$64,471	18.3	\$3.89
	Route 3 North/ East	1	181.2	35,895	1,843	\$112,651	19.5	\$3.14	17,155	1,853	\$132,103	9.3	\$7.70
		2	103.3	20,456	1,331	\$81,359	15.4	\$3.98	9,777	1,338	\$95,408	7.3	\$9.76
		3	75.4	14,931	1,229	\$75,101	12.1	\$5.03	7,136	1,236	\$88,069	5.8	\$12.34
	Route 4 First/ East	1	66.1	15,976	1,827	\$111,678	8.7	\$6.99	7,478	1,830	\$130,457	4.1	\$17.44
		2	53.5	12,947	1,320	\$80,656	9.8	\$6.23	6,061	1,322	\$94,219	4.6	\$15.55
		3	137.2	33,187	1,929	\$117,882	17.2	\$3.55	15,536	1,932	\$137,705	8.0	\$8.86
	Route 5 East 8th St	1	37.3	8,073	1,700	\$103,877	4.7	\$12.87	3,028	1,327	\$94,564	2.3	\$31.23
		2	125.9	27,220	1,169	\$71,415	23.3	\$2.62	10,211	912	\$65,013	11.2	\$6.37
		3	84.5	18,259	2,337	\$142,831	7.8	\$7.82	6,849	1,824	\$130,025	3.8	\$18.98
	Route 7 Bruce/ Manzanita	1	27.6	6,785	737	\$45,014	9.2	\$6.63	2,517	740	\$52,712	3.4	\$20.94
		2	10.5	2,586	700	\$42,763	3.7	\$16.53	959	703	\$50,076	1.4	\$52.19
		3	11.4	2,791	405	\$24,757	6.9	\$8.87	1,035	407	\$28,991	2.5	\$28.00
	Route 8 Nord	1	21.7	12,907	845	\$51,650	15.3	\$4.00	907	602	\$42,920	1.5	\$47.30
		2	95.1	56,438	604	\$36,893	93.5	\$0.65	3,968	430	\$30,657	9.2	\$7.73
	Route 9 Warner/ Oak	1	64.3	7,576	1,061	\$64,831	7.1	\$8.56	937	786	\$56,028	1.2	\$59.81
		2	552.2	65,028	482	\$29,469	134.9	\$0.45	8,042	357	\$25,467	22.5	\$3.17
		3	27.8	3,272	1,061	\$64,831	3.1	\$19.81	405	786	\$56,028	0.5	\$138.46
	Route 14 Park/ Forest/ MLK CW	1	83.2	23,699	1,797	\$109,833	13.2	\$4.63	8,977	1,804	\$128,572	5.0	\$14.32
		2	176.3	50,188	2,157	\$131,800	23.3	\$2.63	19,012	2,165	\$154,286	8.8	\$8.12
		3	147.8	42,078	2,336	\$142,783	18.0	\$3.39	15,939	2,345	\$167,144	6.8	\$10.49
	Route 15 Esplanade/ Lassen	1	175.8	42,761	2,767	\$169,102	15.5	\$3.95	18,548	2,777	\$197,955	6.7	\$10.67
2		30.1	7,313	1,165	\$71,201	6.3	\$9.74	3,172	1,169	\$83,350	2.7	\$26.27	
3		130.3	31,702	2,476	\$151,302	12.8	\$4.77	13,751	2,485	\$177,118	5.5	\$12.88	
Route 16 Espanade/ 99	1	106.9	26,676	1,956	\$119,554	13.6	\$4.48	11,254	2,046	\$145,857	5.5	\$12.96	
	2	45.9	11,439	587	\$35,866	19.5	\$3.14	4,826	614	\$43,757	7.9	\$9.07	
	3	24.4	6,084	848	\$51,807	7.2	\$8.52	2,567	887	\$63,205	2.9	\$24.63	
Route 17 Park/ MLK/ Forest CCW	1	69.4	19,692	941	\$57,481	20.9	\$2.92	8,307	929	\$66,208	8.9	\$7.97	
	2	56.9	16,138	1,129	\$68,977	14.3	\$4.27	6,808	1,115	\$79,450	6.1	\$11.67	
	3	29.5	8,370	1,223	\$74,725	6.8	\$8.93	3,531	1,208	\$86,071	2.9	\$24.38	
Route 52 Chico Airport Express	1	16.6	4,548	1,061	\$64,847	4.3	\$14.26	2,382	904	\$64,412	2.6	\$27.04	
	2	12.0	3,278	730	\$44,582	4.5	\$13.60	1,717	621	\$44,283	2.8	\$25.79	
Subtotal: Chico			703,582	46,137	\$2,819,457	15.2	\$4.01	255,048	43,884	\$3,128,021	5.8	\$12.26	

Table 19: B-Line Route Segment Analysis - Oroville & Intercommunity Routes

Routes & Segments			Avg Daily Boardings: Oct 2021	Pre-COVID (FY 2018-19)					COVID (FY 2020-21)					
				Annual Boardings	Annual Hours	Marginal Cost	Productivity	Marginal Cost per Psgr	Annual Boardings	Annual Hours	Marginal Cost	Productivity	Marginal Cost per Psgr	
Inter	Route 20	Chico-Oroville	1	247.2	64,076	5,225	\$319,291	12.3	\$4.98	25,612	5,236	\$373,189	4.9	\$14.57
			2	24.3	6,291	1,136	\$69,411	5.5	\$11.03	2,515	1,138	\$81,128	2.2	\$32.26
			3	138.6	35,925	984	\$60,156	36.5	\$1.67	14,359	986	\$70,311	14.6	\$4.90
Oroville	Route 24	Thermalito	1	40.8	12,353	559	\$34,148	22.1	\$2.76	5,274	561	\$39,988	9.4	\$7.58
			2	25.5	7,731	813	\$49,670	9.5	\$6.42	3,301	816	\$58,164	4.0	\$17.62
			3	1.0	302	457	\$27,939	0.7	\$92.41	129	459	\$32,718	0.3	\$253.46
	Route 25	Oro Dam	1	36.3	9,277	289	\$17,678	32.1	\$1.91	5,855	290	\$20,701	20.2	\$3.54
			2	18.1	4,639	521	\$31,820	8.9	\$6.86	2,927	523	\$37,262	5.6	\$12.73
			3	1.6	406	231	\$14,142	1.8	\$34.84	256	232	\$16,561	1.1	\$64.66
	Route 26	Olive Highway	1	10.5	2,356	1,139	\$69,579	2.1	\$29.53	1,284	1,143	\$81,478	1.1	\$63.46
			2	1.9	437	423	\$25,877	1.0	\$59.26	238	425	\$30,302	0.6	\$127.35
			3	41.0	9,232	254	\$15,526	36.3	\$1.68	5,031	255	\$18,181	19.7	\$3.61
Route 24	Route 24	1	28.5	8,190	726	\$44,393	11.3	\$5.42	4,147	729	\$51,985	5.7	\$12.54	
		2	14.6	4,188	391	\$23,904	10.7	\$5.71	2,120	393	\$27,992	5.4	\$13.20	
Intercommunity	Route 30	Oroville-Biggs	1	11.2	3,556	754	\$46,087	4.7	\$12.96	1,913	768	\$54,708	2.5	\$28.60
			2	26.7	8,487	706	\$43,145	12.0	\$5.08	4,564	719	\$51,216	6.4	\$11.22
			3	2.7	849	177	\$10,786	4.8	\$12.71	456	180	\$12,804	2.5	\$28.05
	Route 32	Gridley-Chico	1	14.5	2,709	205	\$12,514	13.2	\$4.62	519	206	\$14,654	2.5	\$28.26
			2	2.1	384	264	\$16,124	1.5	\$41.98	74	265	\$18,881	0.3	\$256.81
			3	10.8	2,021	39	\$2,407	51.3	\$1.19	387	40	\$2,818	9.8	\$7.28
	Route 40	Paradise-Chico	1	19.0	18,836	820	\$50,094	23.0	\$2.66	3,139	650	\$46,302	4.8	\$14.75
			2	3.8	3,754	1,428	\$87,261	2.6	\$23.24	626	1,132	\$80,656	0.6	\$128.90
			3	5.1	5,034	714	\$43,630	7.1	\$8.67	839	566	\$40,328	1.5	\$48.06
Route 41	Magalia-Chico	1	9.8	3,223	757	\$46,234	4.3	\$14.34	1,347	751	\$53,529	1.8	\$39.73	
		2	58.1	19,205	1,416	\$86,503	13.6	\$4.50	8,027	1,405	\$100,152	5.7	\$12.48	
		3	19.1	6,325	1,001	\$61,149	6.3	\$9.67	2,644	993	\$70,797	2.7	\$26.78	
Subtotal: Oroville				59,111	5,804	\$354,676	10.2	\$6.00	30,562	5,827	\$415,331	5.2	\$13.59	
Subtotal: Inter				180,676	15,624	\$954,791	11.6	\$5.28	67,020	15,032	\$1,071,474	4.5	\$15.99	
Subtotal: Chico ¹				703,582	46,137	\$2,819,457	15.2	\$4.01	255,048	43,884	\$3,128,021	5.8	\$12.26	
Total				943,369	67,565	\$4,128,925	14.0	\$4.38	352,630	64,742	\$4,614,825	5.4	\$13.09	

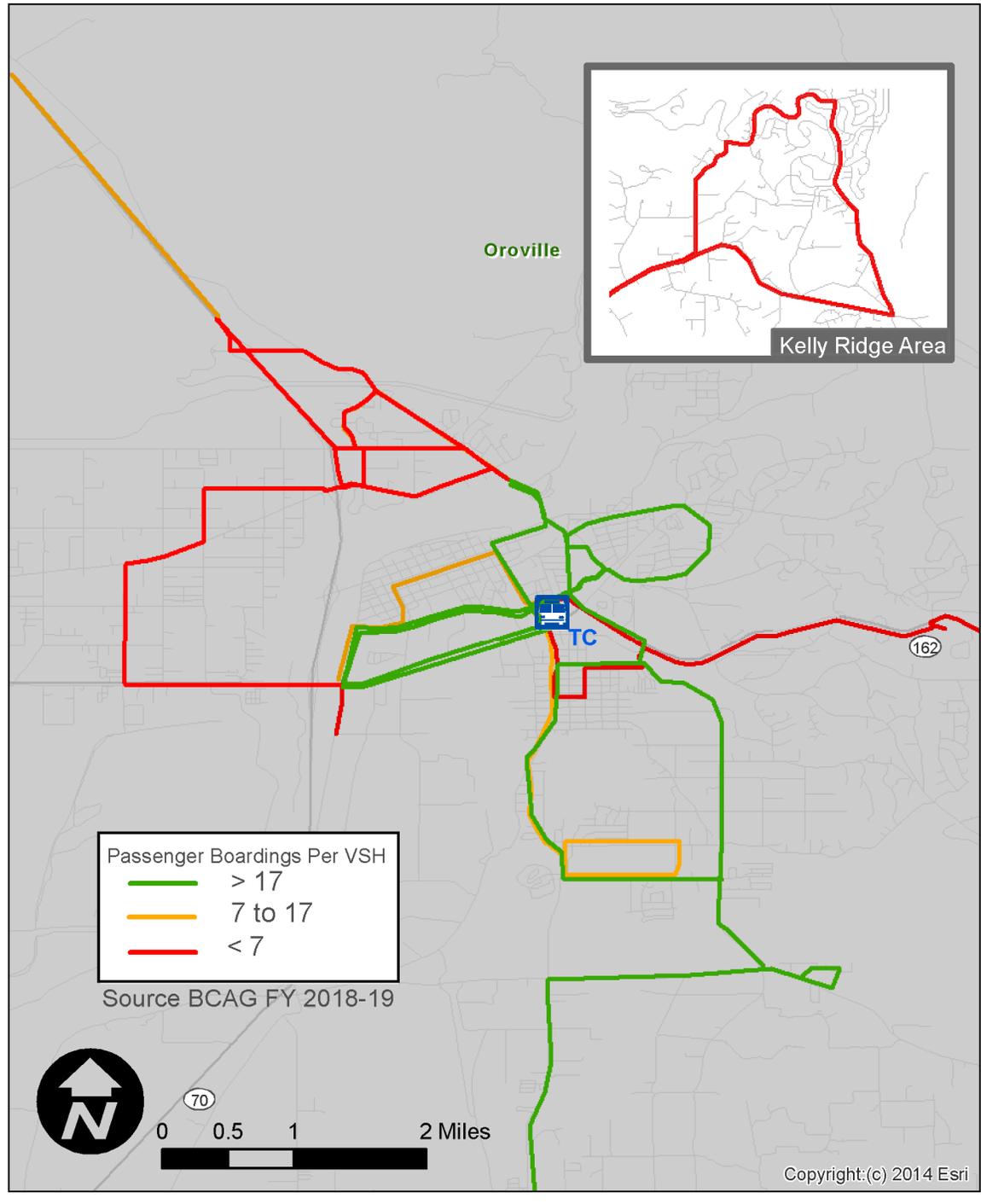
Note 1: Chico total from Table 17.

Figure 13:
Chico Area Route Segment Analysis

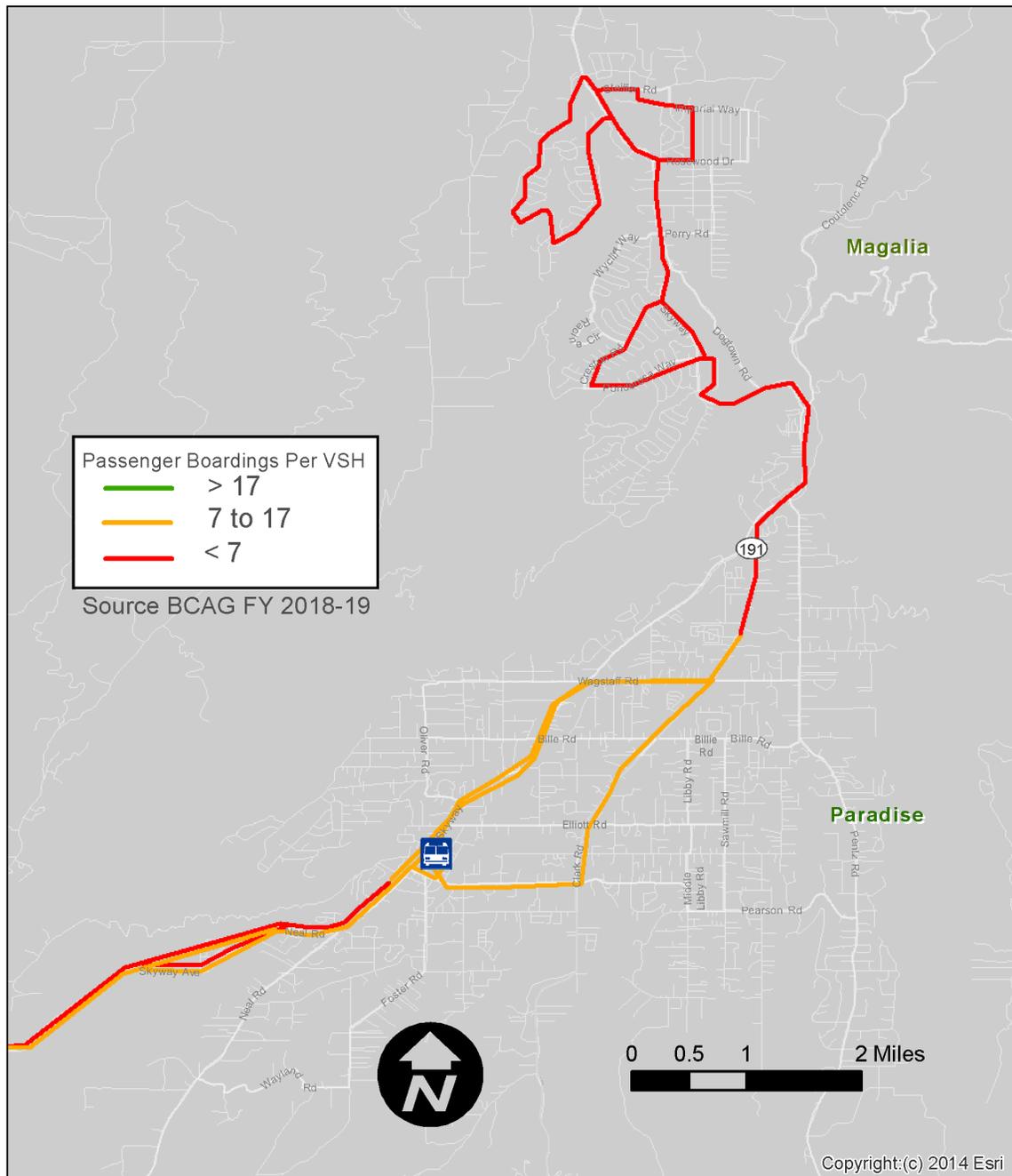




**Figure 14:
Oroville Area Route Segment Analysis**



**Figure 15:
Paradise Area Route Segment Analysis**



Key Findings of the B-Line Route Segment Analysis

Tables 18 and 19 also present the route segment analysis results for Fiscal Year 2020-21, representing conditions during the pandemic. Route segments that saw the largest drop in productivity are those on Route 8 and 9 (serving the Chico State off-campus housing areas, as well as Route 30 (Oroville-Biggs) and Route 32 (Gridley-Chico), all of which dropped by 79 percent or more. Route segments in Oroville saw a relatively small drop in productivity (37 to 50 percent). In Chico, segments along Routes 2, 3, 4 and 5 also saw relatively small drops in productivity, along with Route 52.

B-LINE ROUTING STUDY KEY FINDINGS

The data analysis presented in this Technical Memorandum will be used to analyze B-Line service alternatives in the next stage of this study. Much of the data is presented in extensive detail, including the five appendices to this report. For clarity, the Study Team has defined the following key findings regarding existing conditions:

- The demographics of Butte County indicate a relatively high need for public transit, as the proportion of residents with characteristics that indicate a need for transit are high. 17.0 percent of Butte County residents indicate they have a mobility-related disability, compared with a national average of 12.5 percent. Low-income residents make up 17.8 percent of regional residents, compared with 12.8 percent nationwide. Seniors 65 years of age and older are 18.2 percent of Butte County residents, compared with 16.0 percent nationwide. The presence of Chico State as well as Butte College also increases the demand for public transit services.
- The decline in ridership in recent years – even prior to the pandemic – is substantial. B-Line reached a peak annual ridership of 1,353,000 boardings in Fiscal Year (FY) 2012-13. Particularly starting in FY 2015-16, ridership pre-pandemic fell by 30 percent to a 2018-19 total of 944,531 in FY 2018-19 (the last full year prior to the pandemic, but also the year of the Camp Fire). This pattern tracks with transit ridership trends state- and nationwide. This drop was relatively low for the Oroville routes (22 percent drop) and the Chico routes (24 percent drop) and relatively high for the intercity routes (a 48 percent drop). Some of the intercity ridership decline was due to the Camp Fire in November 2018. However, even prior to the Camp Fire, ridership on the routes serving Paradise/Magalia (31, 40 and 41) dropped by 31 percent (for FY 2017/18).
- The pandemic has resulted in an additional reduction in ridership, both at B-Line and nationwide. At the start of the pandemic, ridership fell by up to 73 percent, particularly during the academic year, due to the loss of student ridership. This loss was seen across both Chico and Oroville/rural services. Since then, ridership has increased, but is still 47 percent below pre-pandemic levels on the rural services and 50 percent on the Chico services. Overall, current ridership is approximately 61 percent lower than the peak year of FY 2012/13.
- While ridership demand can be expected to increase somewhat as more activities resume, there is much evidence that historic ridership levels will not return in the foreseeable future (barring other factors such as continued high gas prices). In particular, the trend to hybrid or remote working has reduced the overall need for commuting on transit, as has growth in online classes. However, there still are very real needs for transit services in the region for the many residents for which the private vehicle is not an option. B-Line services are also an important element of solving congestion and parking challenges, such as on the college campuses, and helping to attain regional sustainability goals. With that being said, B-Line services need to be reconsidered to reflect the “new reality” of the region’s mobility needs. This includes a reassessment of what areas warrant transit service, and what type of service is most appropriate.
- The pandemic has also impacted the “productivity” of B-Line, as measured by the number of passengers boarding for every vehicle-hour of service. Prior to the pandemic in FY 2018/19 an average of 14.0 passengers were carried for every vehicle-hour, ranging from 15.2 for Chico

routes to 11.6 for Intercity routes and 10.2 for Oroville routes. By FY 2020/21, these figures dropped to 5.8 for the Chico routes, 4.5 for the Intercity routes and 5.2 for the Oroville routes. The overall figure dropped to 5.4 in FY 2020/21 but has recovered somewhat to 7.2 for the first three months of 2022, which is still just over half of the figure prior to the pandemic.

- Previous studies, such as the *Post Camp Fire Regional Population and Transportation Study* and the *2020 Sustainable Communities Strategy*, have identified long-term plans for significant transit expansion, such as high-frequency corridors. Given the declines in ridership demand discussed above, implementing costly new services is not viable in the short term (such as the next five years). Instead, the next phases of this study will focus on how best to use existing resources to serve current and foreseeable mobility needs. However, how short-term strategies can help implement longer-term plans, including provision for new housing that can expand the role of transit services in the long term, will still be a consideration.
- Onboard surveys indicate that:
 - Most B-Line passengers are dependent on the transit service for key mobility needs. 54 percent do not have a driver's license, and fully 70 percent do not have a car available for their trip.
 - Passenger's trip purposes are shopping and personal errands (31 percent), school (30 percent), work (25 percent), and other (14 percent).
 - Passengers have a very good overall opinion of B-Line service. On a scale of 1 (very poor) to 5 (excellent), fully 70 percent ranked B-Line as a 4 or 5. The highest rankings were for driver courtesy and the affordability of the service, while the lowest rankings were for bus stop amenities and signage.
 - Passengers would like to see more weekend service (in particular), better shelters, later service, and more frequent service.
- The current overall route structure in Chico serves the community well. However, there are some substantial neighborhoods that are not currently within a convenient (quarter mile) walking distance of a fixed route, including the following:
 - The northwest area bounded by 4th Street, Nord Avenue, East Avenue and Esplanade.
 - The far northwest area north of East Avenue and west of Esplanade.
 - The area east of Mangrove Avenue and west of Manzanita Avenue between E. 1st Avenue/Manzanita Avenue and Bidwell Creek.
 - The area along both sides of E. Eaton Avenue east of Floral Avenue.
 - The area east of Bruce Road and north of State Route 32.
- At the same time, there are some routes that duplicate service, such as Route 15 and Route 16 service along Esplanade. This may provide the opportunity to redesign some routes to expand service area.
- Some portions of the existing Chico service area have very low productivity, such as along much of Route 7 in the eastern portion of Chico. Changes in service strategy warrant consideration.
- Intercommunity services are vital connections, particularly between Oroville and Chico (Route 20) and between Paradise/Magalia and Chico (Routes 40/41).

- Peak passenger loads are currently substantially lower than the bus capacity, due to the pandemic. As ridership resumes, peak loads will get closer to the bus seating capacity of 31 to 44 seats. It is also important to maintain some capacity to address the potential that sustained high gas prices and/or potential state requirements to provide fare-free transit could increase ridership. However, the use of smaller vehicles specifically for the Oroville service area (and potentially some other lower-ridership routes) can be considered.
- There is a core area of Oroville that has relatively high transit demand. However, current service strategies for outlying areas such as Olive Highway and Thermalito need to be reconsidered given the very low productivity.
- Route on-time performance needs to be improved. In Chico, Route 16 is five minutes or more late for 33 percent of its runs, followed by Route 9 which is late 32 percent of its runs. Three of the four local Oroville routes (Routes 25, 26 and 27) are late 40 percent or more of their runs. Other than Route 40, all the intercity routes have between 22 and 29 percent late runs.
- The B-line fare structure is relatively complicated, with 24 individual types of fixed-route fares. Simplifying the fares would reduce administrative costs and make the service easier to understand and operate.