BCAG
BUTTE COUNTY ASSOCIATION OF GOVERNMENTS

B-Line
Butte Regional Transit

B-LINE ROUTING STUDY

Prepared for

BUTTE COUNTY ASSOCIATION OF GOVERNMENTS

LSC TRANSPORTATION CONSULTANTS, INC.
Prepared by LSC Transportation Consultants, Inc.

B-Line Routing Study

Prepared for

Butte County Association of Governments
326 Huss Drive, Suite 150
Chico, CA 95928

Prepared by

LSC Transportation Consultants, Inc.
2690 Lake Forest Road, Ste. C
Tahoe City, CA 96145
530-583-4053

July 13, 2023

This page intentionally blank

TABLE OF CONTENTS

CHAPTER *PAGE*

LIST OF TABLES

TABLES *PAGE*

LIST OF FIGURES

FIGURES *PAGE*

Chapter 1

INTRODUCTION AND BACKGROUND

INTRODUCTION

As the owner and operator of Butte Regional Transit (B-Line), 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 an updated service plan (including routes and schedules) for the 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. Existing services are reviewed, and key findings regarding existing conditions are presented.

Chapter 6 presents analyses of potential fixed route and service modifications. Chapter 7 presents analysis of alternatives to the span of service. Chapter 8 presents analysis of paratransit service alternatives. Finally, Chapter 9 pulls together the data and analysis presented in the preceding chapters to provide the comprehensive Routing Plan for B-Line in a concise format.

PURPOSE OF THE B-LINE ROUTING STUDY

B-Line routes were most comprehensively reviewed in 2010. In the intervening 13 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 recent wildfires, including the Camp Fire and Bear Fire, and subsequent redevelopment efforts in Paradise, Magalia, and other areas.
- The ongoing effects of the COVID-19 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 recently completed 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. The study 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.

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

	Primary Destination for Non-Emergency Medical Trips							
Residence Location	Chico	Oroville	Paradise	Outside Butte County	Chico	Oroville	Paradise	Outside Butte 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.

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" Route 3 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 roundtrips 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 continues to be studied as part of the North Valley Passenger Rail Specific Plan.[1] The commuter 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 initial commuter rail service planned for 2028.

The actual implementation date for the commuter bus 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 Bus Rollout Plan, 2022

BCAG/B-Line staff prepared the Zero-Emission Bus Rollout, Implementation, and Operations Plan to demonstrate how B-Line will achieve a zero-emission fleet by 2040. The Plan guides B-Line's implementation of a zero-emission bus fleet and helps staff work through challenges and explore solutions. It identifies solutions related to zero-emission bus service, charging systems, scheduling and timing, routing, technologies, maintenance, and other necessary improvements needed to support zero-emission technologies.

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:

[1] More information on the Rail Study can be found here: http://www.bcag.org/Planning/North-Valley-Passenger-Rail-Strategic-Plan/index.html

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

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 TNMP was subsequently updated in 2021. In the near-term, it calls for evaluation of alternatives to fixed route service (such as microtransit), reduced number of stops and improvements to the North Valley Plaza transfer center. More long-term, it calls for 15-minute service connecting North Valley Plaza in the north and Butte College Chico in the south via downtown, including transit signal priority, and limited stops. It also called for consideration of additional service on weekends. In addition, expanded service areas in southeast Chico are recommended along with modifications to Route 5, 7, 1, 2, 14 and 15.

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.

The 2024 RTP/SCS is underway, and updates can be found on the BCAG website at: http://www.bcag.org/Planning/RTP--SCS/2024-RTPSCS-Update/index.html

BCAG FTA Triennial Review 2019

The Federal Transit Administration conducts audits on grantees on a triennial basis. BCAG staff is currently working with FTA and their auditors on the FY 2023 Triennial Review. The most recent audit before that was completed in December of 2019. Overall in 2019, 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.)

TDA Triennial Performance Audit of the Butte County Association of Governments: FY 2018/19 – FY 2020/21

A Triennial Performance Audit is also a requirement under the California Transportation Development Act. The most recent such audit was completed in May 2022 for the three previous fiscal years. BCAG was found to be in compliance with all applicable elements, with the exception that a calculation of State Transit Assistance funding efficiency should be prepared as part of the TDA processes. In addition, the study includes recommendations to conduct a SRTP for the City of Gridley and to secure funding for a backup vehicle for Gridley.

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 the 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 and 2023/24 were reviewed, with all requests found "not reasonable to meet." However, specific comments included 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.
- Service to Sterling City.
- Reinstatement of service between Paradise and Oroville.

BACKGROUND REGARDING EXISTING NEEDS AND SERVICES

To provide a context for this report, the following are key findings regarding existing conditions, as discussed in detail in following chapters:

- 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. Butte County residents with a mobility-related disability accounted for 17.0 percent, 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 CSUC 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 are still very real needs for transit services in the region for the many residents for which private vehicles are not an option. B-Line services are also an important element of solving congestion and parking challenges, particularly on and around college campuses, and helping to attain regional sustainability goals. 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 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 (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. 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 the service area.
- Some portions of the existing Chico service area have very low productivity, e.g., 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.
- Overall, the paratransit program is operating at appropriate performance levels. The productivity of the rural services is particularly good considering the challenges of serving large low-density areas.

This page intentionally left blank.

Chapter 2
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 (2021)*, 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

Sources: Post Camp Fire Regional Growth Forecasts, Fehr and Peers, Sept 2020 and California Department of Finance, June 2022

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

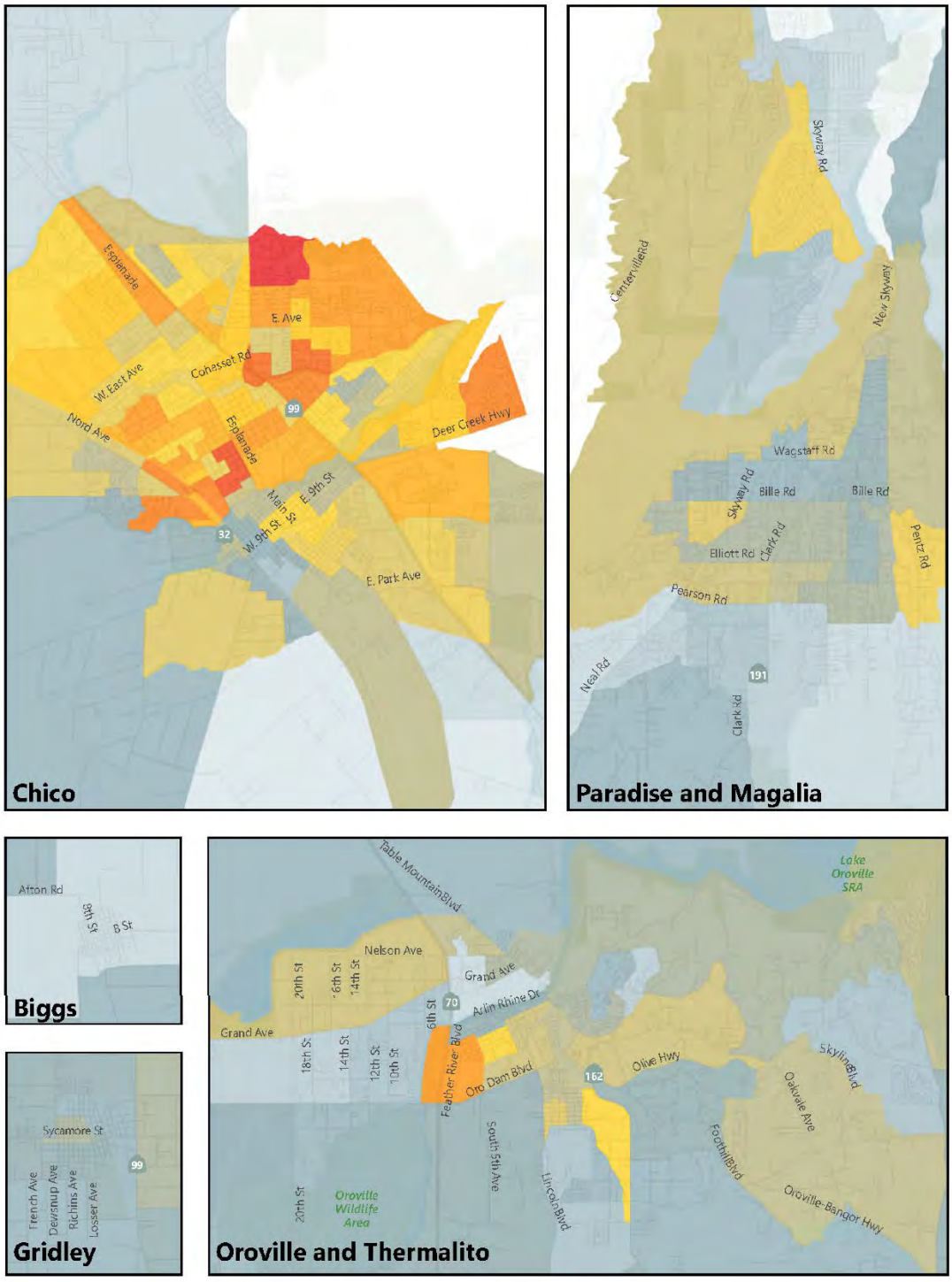
As previously discussed, and illustrated in Table 2, population trends are difficult to predict, and populations have fluctuated at unpredictable rates due to wildfires and the pandemic. Still, certain trends are consistent. Chico, with a population of 102,892 in January 2022, is currently the largest 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 Dicennial 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 was recently awarded CRRSAA funds to construct a new transit center in Paradise at the intersection of Cedar and Almond. It is anticipated the construction will be completed in 2024.

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 a non-profit organization founded to meet the needs of disabled residents living in Northern California. The Disability Action Center's 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 California State University (CSUC, also referred to as Chico State), as well as Butte College (a community college), both of which are discussed further below. 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 two full-service hospitals and outpatient centers in Butte County to serve residents. Enloe Medical Center is the largest full-service hospital, with the main services located at 1531 Esplanade in Chico. Oroville Hospital is another full-service facility, located at 2767 Olive Highway in Oroville. Adventist Health Feather River is an outpatient facility located at 5125 Skyway Road in Paradise and

Orchard Hospital is located at 240 Spruce Street in Gridley. The 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. As of the Fall Term of 2022, there were 13,840 students enrolled at Chico State University, with most students enrolled full-time. Enrollment declined slightly over the last few years, from 17,019 students during the 2019 Fall Term. 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 11,800 full-time students enrolled. Enrollment has declined in recent years due to the pandemic; as of Fall 2022 there were 10,238 student 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 ROUTING STUDY

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 developments are 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 have either recently been constructed, are currently under construction or are going through the Planning Division's approval process as of November 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.

In 2021, the City of Chico approved an Update to its *Climate Action Plan* 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 reported that in 2022 there were 85 market-rate units and 317 affordable units under active construction in the City. Some of these project locations include Thermalito, Table Mountain Boulevard, and Mitchell Avenue. Other multiple-unit construction projects that have either been recently completed or are in the approval stages are in the northern portion of the City, north of the Feather River. Recent 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 the summer of 2022, over 1,400 single-family homes had been rebuilt and nearly 2,400 building permits were either under review, under construction, or near completion. Some of the rebuild projects which advanced during 2022 included 76 1-bedroom apartments (48 affordable and 28 market-rate) and 44 condominiums. There are also two previous retirement homes, one at

5900 Canyon View Drive and the other at 1007 Buschmann Road, being converted into apartments, which once completed will result in 102 units between the two sites.

In the years after the Camp Fire, the mobile home park developer BoaVida Communities bought five burned parks in Paradise to refurbish and reopen, four of which have since been opened and now have spaces available for future residents. Once all five mobile home parks are developed, there will be 199 homes between the five locations. 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. The rebuilding process after the Camp Fire has been extensive and will continue to be an ongoing effort in Paradise during upcoming years.

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 constructing 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.

Some development projects approved during 2022 were located at 509 E. Casey Street, 2891 Ninth Street, J Street, and 2959 11th Street. Most of these projects will be 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 Cities of Biggs and 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 a 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. For instance, in 2022 a subdivision was proposed for this area that 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. While construction has yet to begin, the 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 been proposed so far.

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.

Chapter 3
OVERVIEW OF EXISTING SERVICES

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 from 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

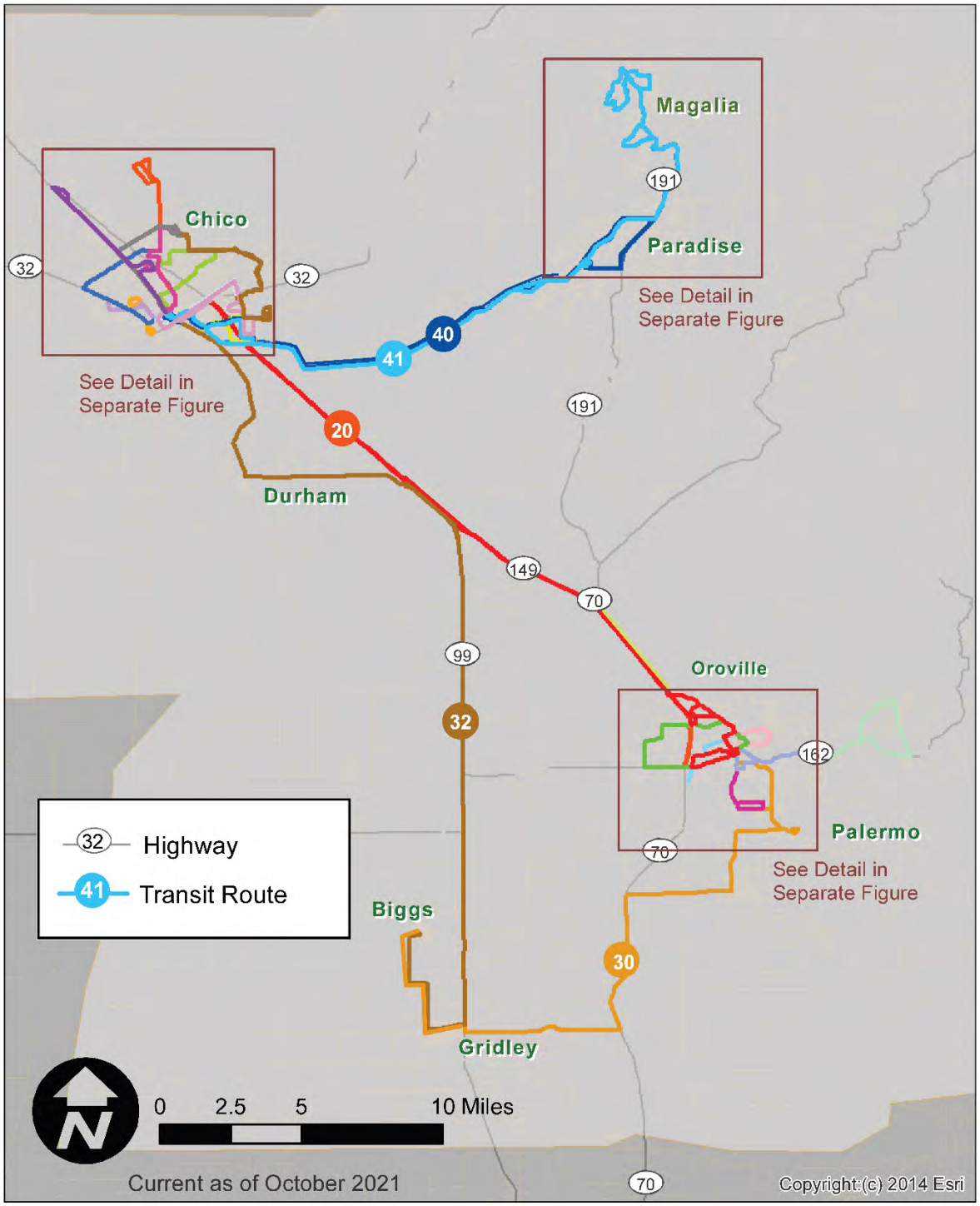


Figure 3:
B-Line Chico Transit Routes

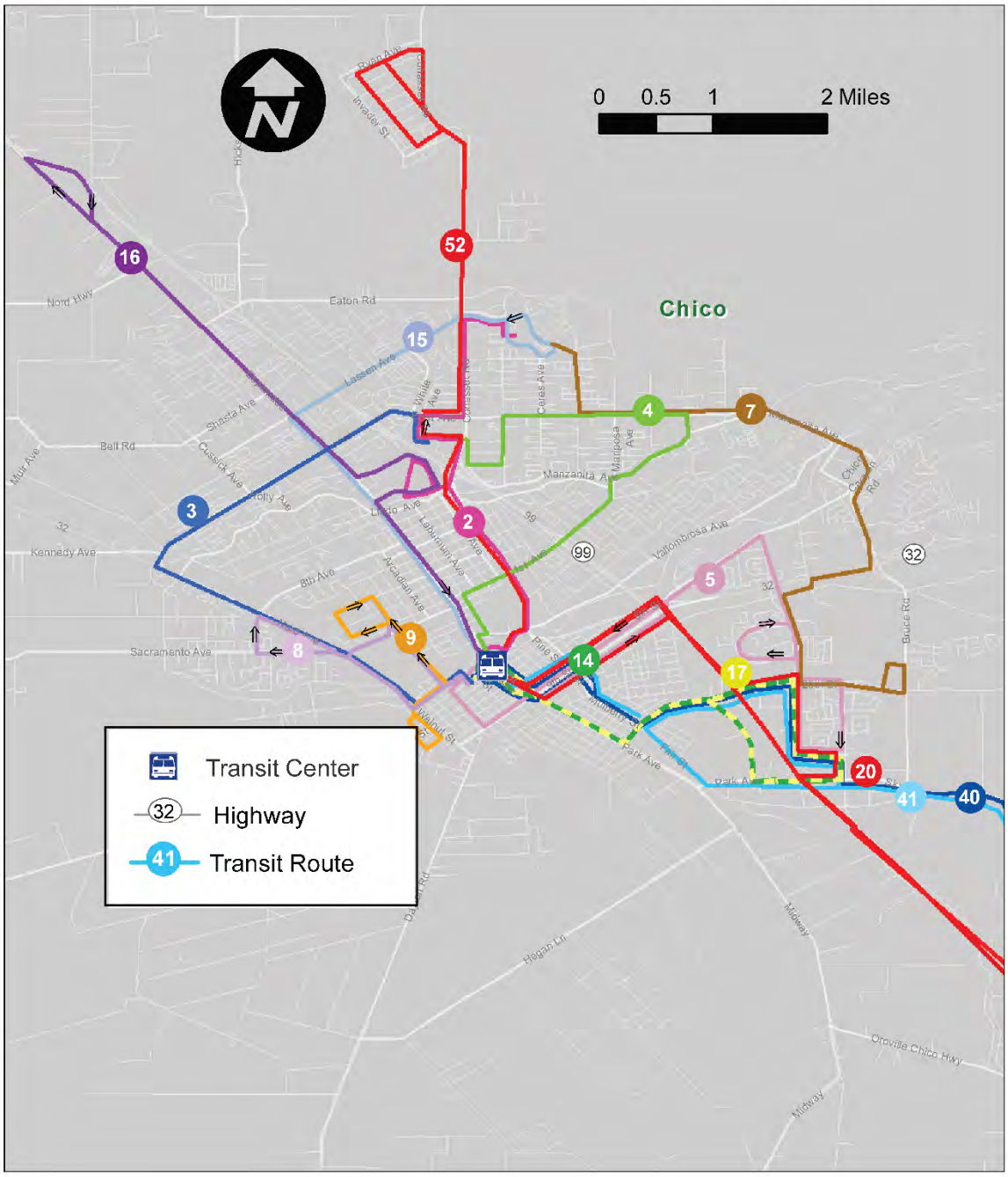


Table 4: Summary of B-Line Services and Frequency

	Service Hours[1]				Service Frequency (Minutes)[2]			
	Weekday Service		Weekend Service		Weekday Peak	Weekday	Service	
Routes	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+	--	--

Note 1: Summary accurate as of March, 2022
Note 2: Service frequency represents an average frequency. Peak hours were 7 to 9 AM and 4 to 6 PM
Note 3: Service ends at 4:04 PM on Fridays
Note 4: Route 9c only operates when Route 9 is not in operation and CSUC classes are not in session.
Source: B-Line/BCAG

- *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 CSUC 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 JR.* – 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

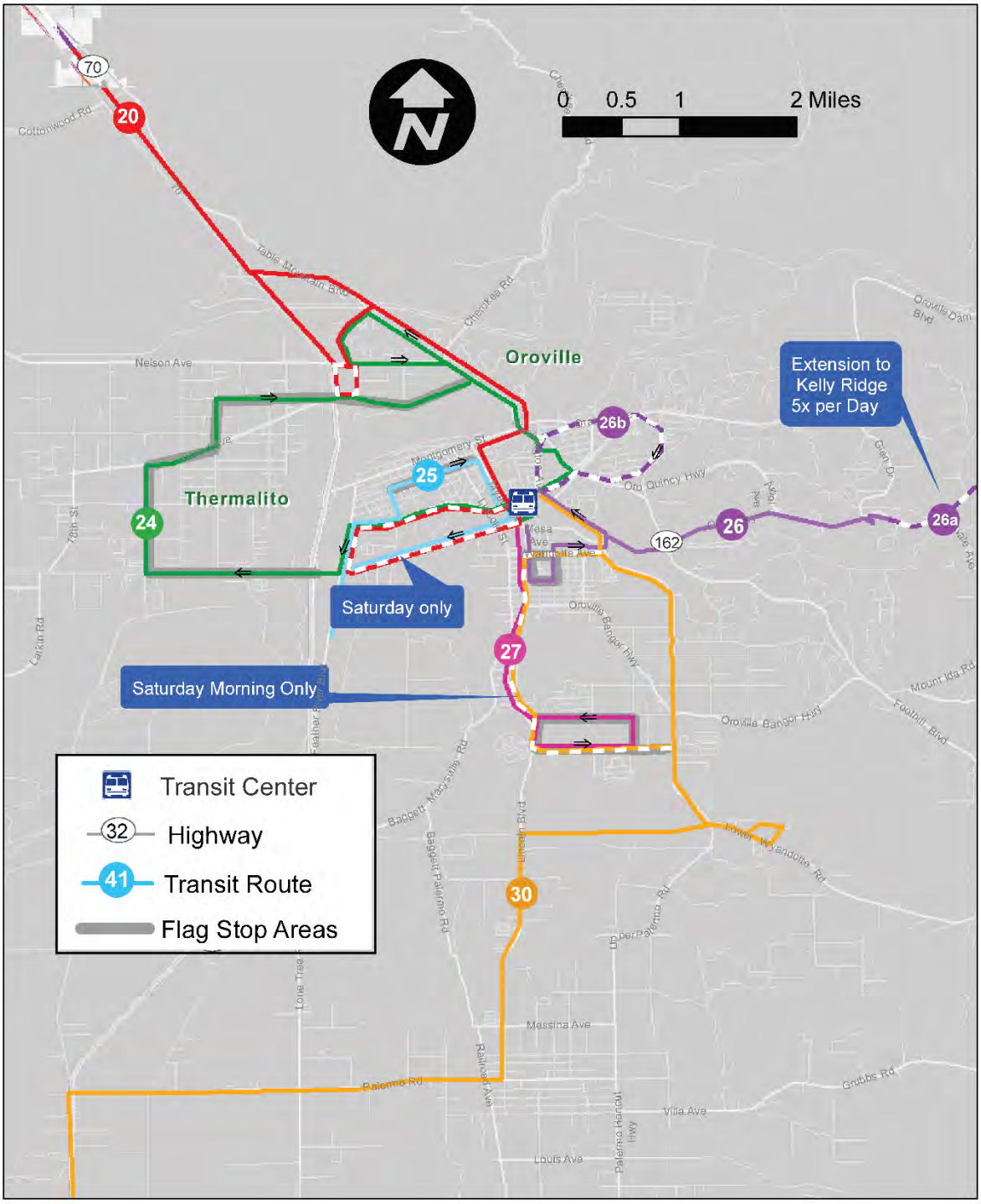
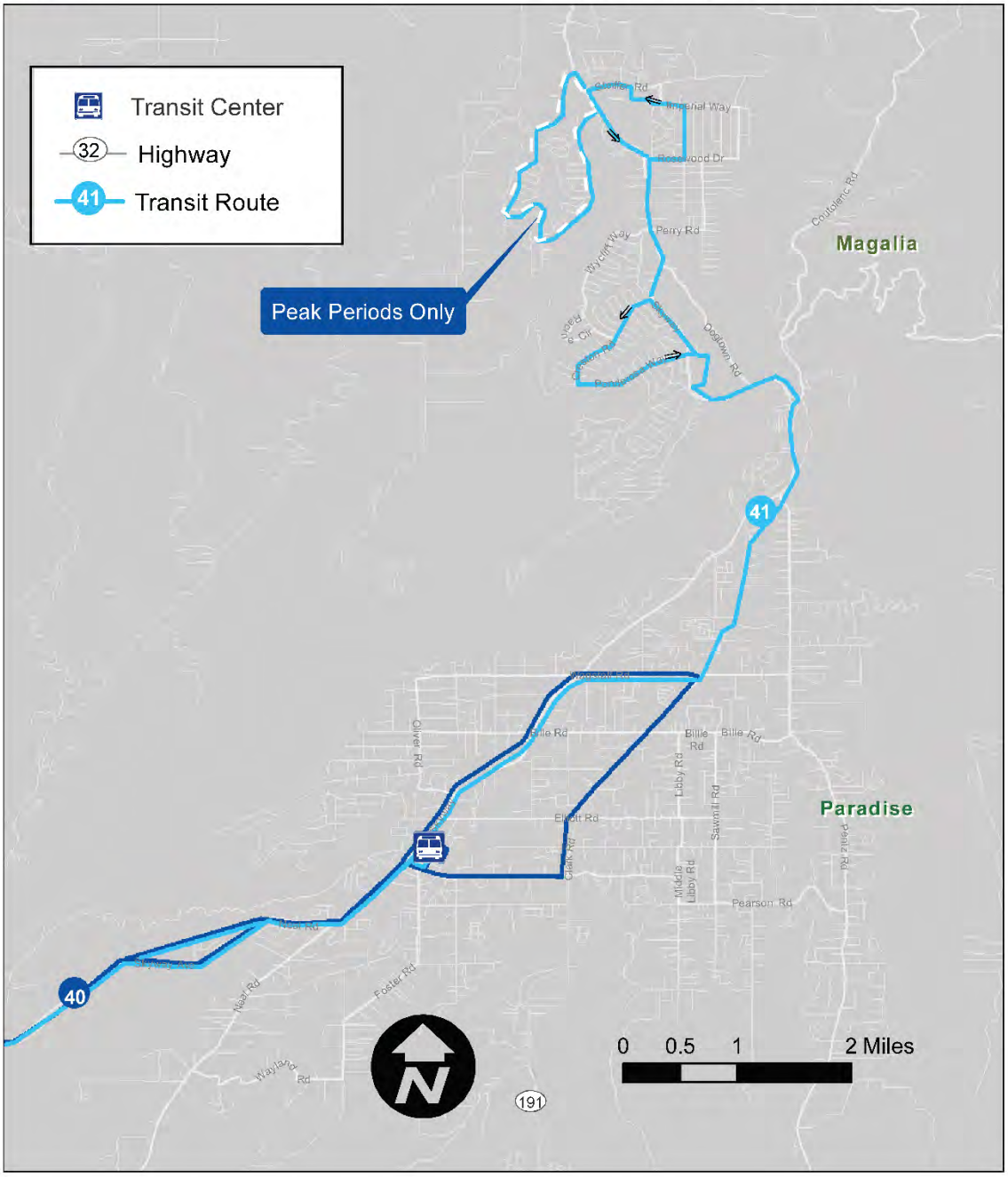


Figure 5:
B-Line Paradise Area Transit Routes



- *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. On 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:

Table 5: Average Daily Transfers

Total Transfers in Both Directions Between Routes for February 2020

		Chico										Reg	Oroville				Regional				Chi
Between Route ↓ and Route →		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	3	1	3	6	1	0	1	1	0	0	1	1	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	2	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	6	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 transfers within Chico. Routes 2, 3, and 4 in particular generate a high number of transfers to/from Route 14. There are also a 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 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 times (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

Origin Stop	Destination Stop: Oroville Transit Center	Wal-Mart	Post Office (Robinson St)	County Center	Oroville HS	Las Plumas HS
Oroville Transit Center		7 *1.1*	3 *3.0*	6 *1.7*	3 *4.3*	7 *1.9*
Wal-Mart	6 *2.3*		6 *2.5*	6 *5.3*	9 *4.9*	9 *6.1*
Post Office (Robinson St)	4 *1.8*	6 *6.2*		6 *2.3*	4 *9.0*	7 *6.7*
County Center	7 *1.4*	7 *7.1*	7 *2.0*		7 *1.7*	14 *2.0*
Oroville HS	3 *2.7*	9 *3.1*	4 *4.3*	6 *2.8*		10 *2.1*
Las Plumas HS	7 *1.7*	10 *3.5*	8 *3.3*	12 *3.5*	10 *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 hours[2]. 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 ¾ 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 fares[3] (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			$5.25
$25 Value Card			$25.00

Note 1: Seniors (65+), Disabled, and Medicare card holders are all eligible for discounted fares with supplemental verfication (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

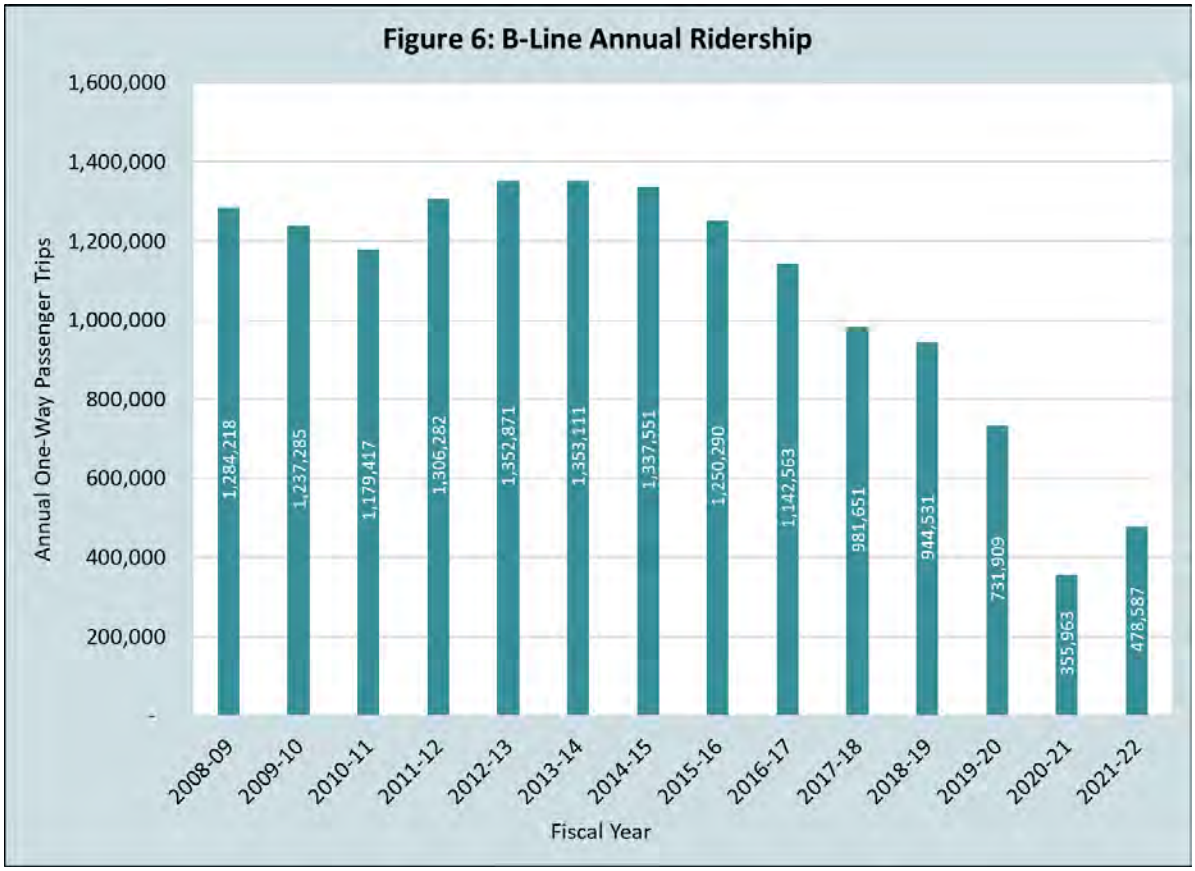
Ridership by route for the past thirteen fiscal years is depicted in Figure 6. As shown, annual ridership ranged from a high of 1,353,111 in FY 2013-14 and dropped to just 355,963 during the height of COVID in 2020-21, with some recovery shown in 2021-22 (478,587 trips). Even prior to COVID, however, 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.

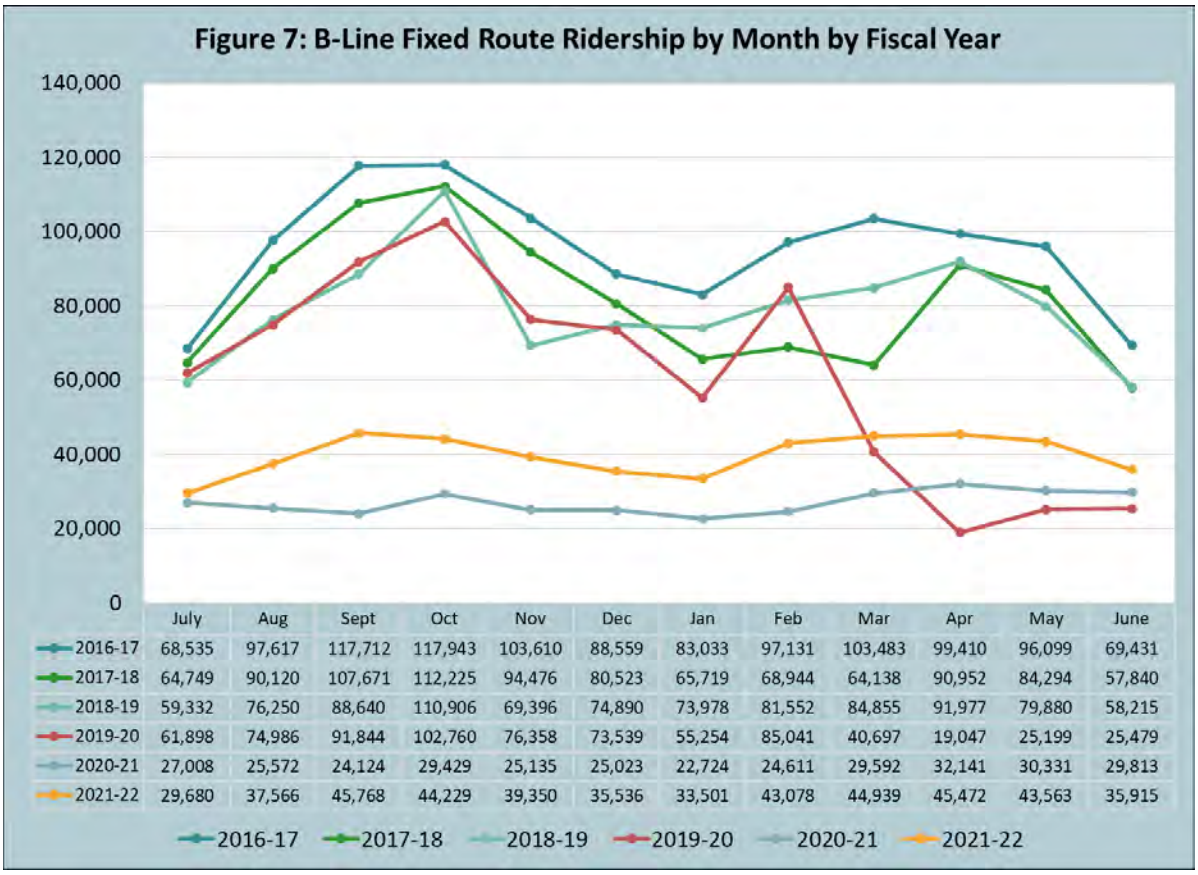
Annual Ridership by Month

Ridership by route by month is depicted for the past five years in Figure 7 (more detailed data for the past 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.

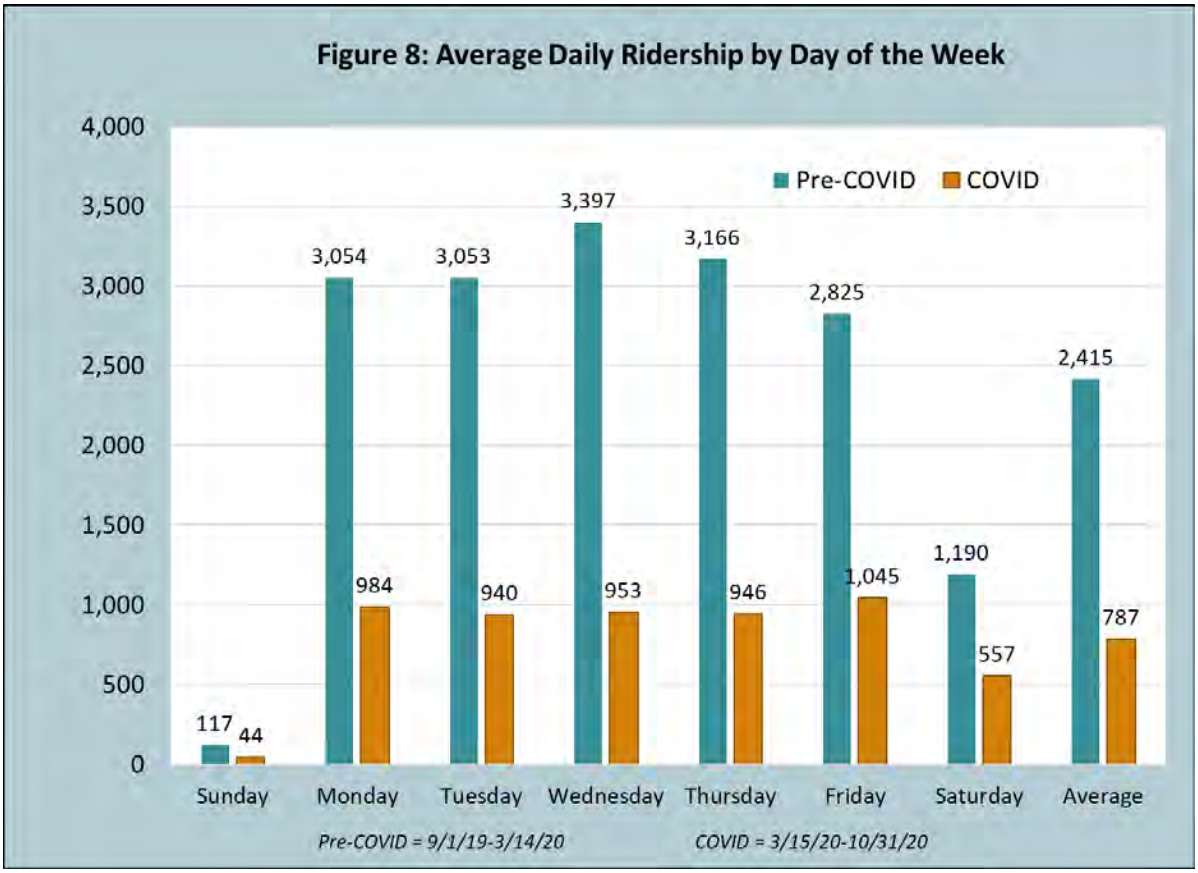
Annual Ridership by Day of the Week

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.





	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June
2016-17	68,535	97,617	117,712	117,943	103,610	88,559	83,033	97,131	103,483	99,410	96,099	69,431
2017-18	64,749	90,120	107,671	112,225	94,476	80,523	65,719	68,944	64,138	90,952	84,294	57,840
2018-19	59,332	76,250	88,640	110,906	69,396	74,890	73,978	81,552	84,855	91,977	79,880	58,215
2019-20	61,898	74,986	91,844	102,760	76,358	73,539	55,254	85,041	40,697	19,047	25,199	25,479
2020-21	27,008	25,572	24,124	29,429	25,135	25,023	22,724	24,611	29,592	32,141	30,331	29,813
2021-22	29,680	37,566	45,768	44,229	39,350	35,536	33,501	43,078	44,939	45,472	43,563	35,915



Ridership by Time of Day

Ridership by time of day 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 both had 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

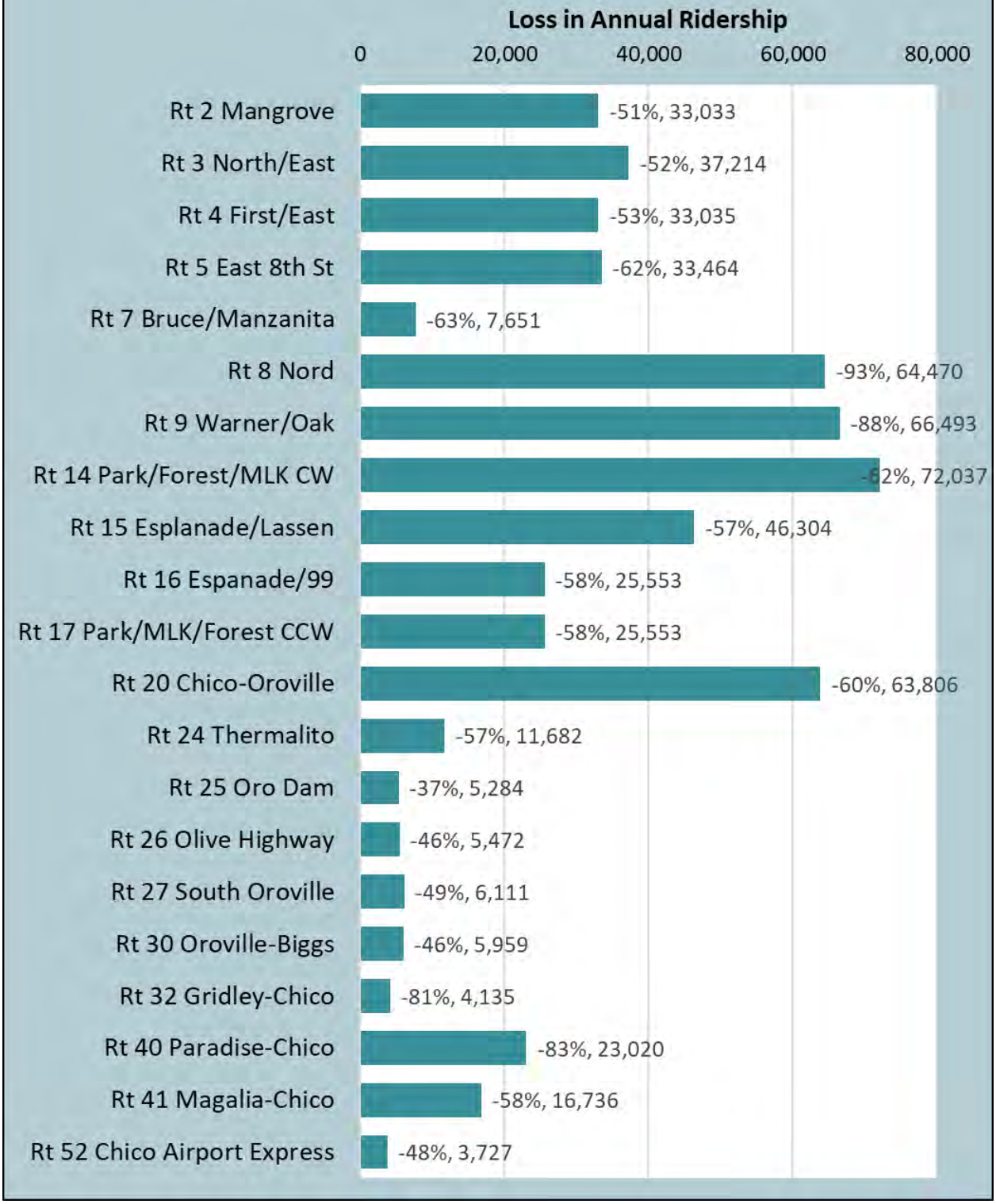
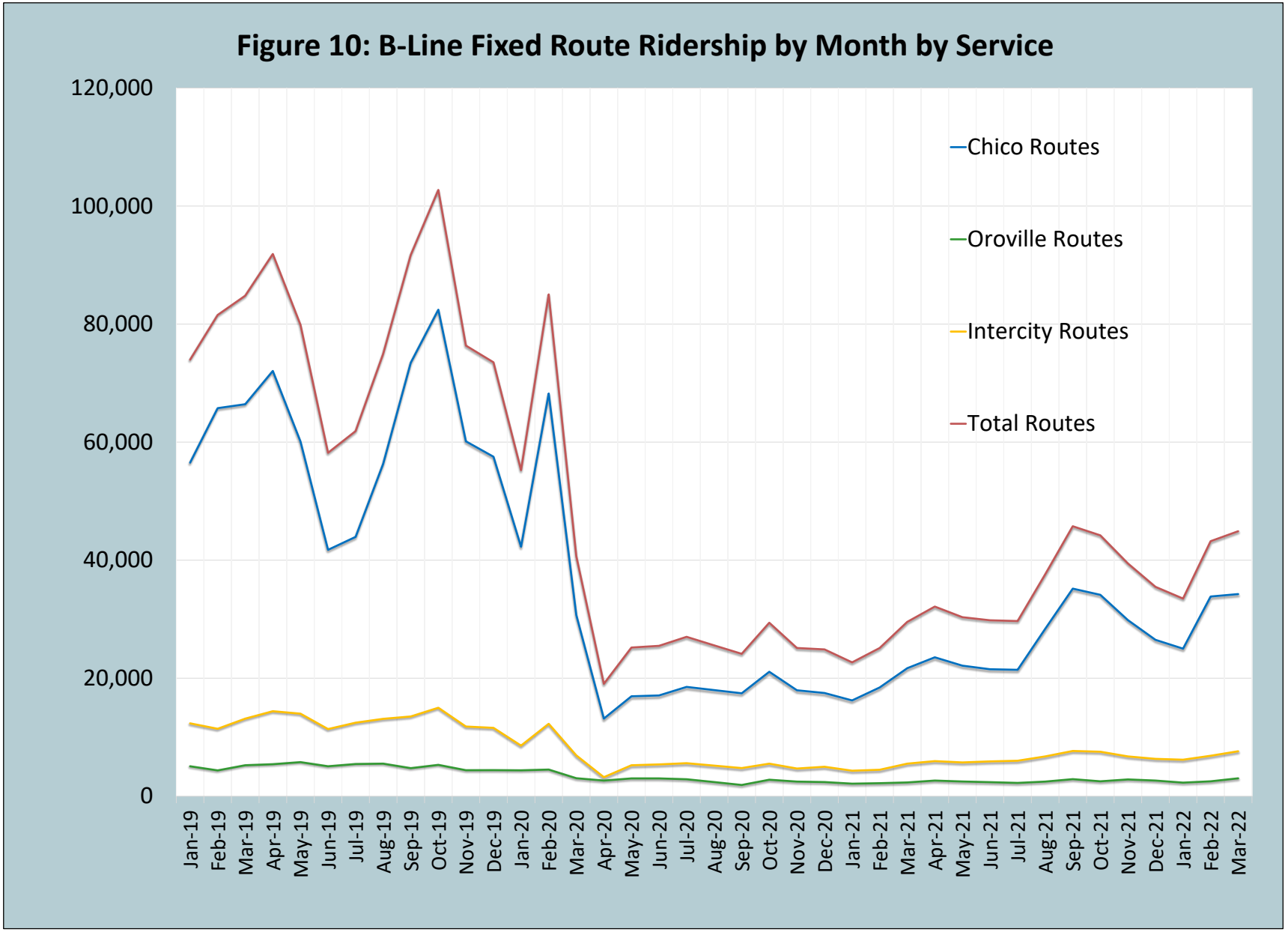


Figure 10: B-Line Fixed Route Ridership by Month by Service



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 but have since been decreased to account for reduced ridership. 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 in FY 2022/23 (increasing to $94.72 in FY 2023/24).

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 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.

Table 11: B-Line Operating Expenses and Revenues

B-Line Transit Expenses	Fiscal Years 2019/20 Actual	2020/21 Actual	2021/22 Approved	2022/23 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

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	Produc-tivity	Marginal Cost per Psgr	Riders	Vehicle-Hrs	Produc-tivity	Marginal Cost per Psgr	Riders	Vehicle-Hrs	Produc-tivity	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%
Intercomunity	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 29 fixed route vehicles and 22 paratransit vehicles (tables showing the B-Line fleet are included in Appendix C). All of the fixed route fleet are diesel fueled, while all the paratransit vehicles are gasoline fueled. The fixed-route buses have a useful benchmark life (UBL) of 12 years or 500,000 miles, indicating that four fixed route vehicles are on the cusp of expiring (in 2023. Four battery electric buses are on order in FY 2023-24. The paratransit vehicles have a UBL of seven years, with half of the fleet already past this benchmark. BCAG recently was awarded FTA Section 5310 funds for four paratransit vans.

BCAG recently developed the Zero Emission Bus Implementation Plan, with expectations to replace the fixed route fleet with zero-emission vehicles by the year 2040. The four buses that will be ordered in 2023 are the first that will be used by B-Line, and important infrastructure (charging equipment and necessary underground upgrades at the BROC) 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 and Paradise have shelters, while just 18 percent in Oroville have shelters and the one stop in Biggs does not have a shelter. 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 the menu 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 February 2023, the Instagram account had 38 followers and 59 posts. B-Line joined Twitter in February 2022 and has 22 subscribers. The YouTube account has 20 videos posted over eight years. 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 approximately 1,400 followers as of February 2023. 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 CSUC 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 CSUC and the West Zone generate 12 percent of all trips. Outside of trips to/from downtown and CSUC, 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 Routes 2, 3, 4, and 20, and between Routes 15 and 20. There is substantial transfer activity between Route 20 and local routes in Chico and Oroville, but not significant transfers between other regional routes and the local routes.

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.

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.

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

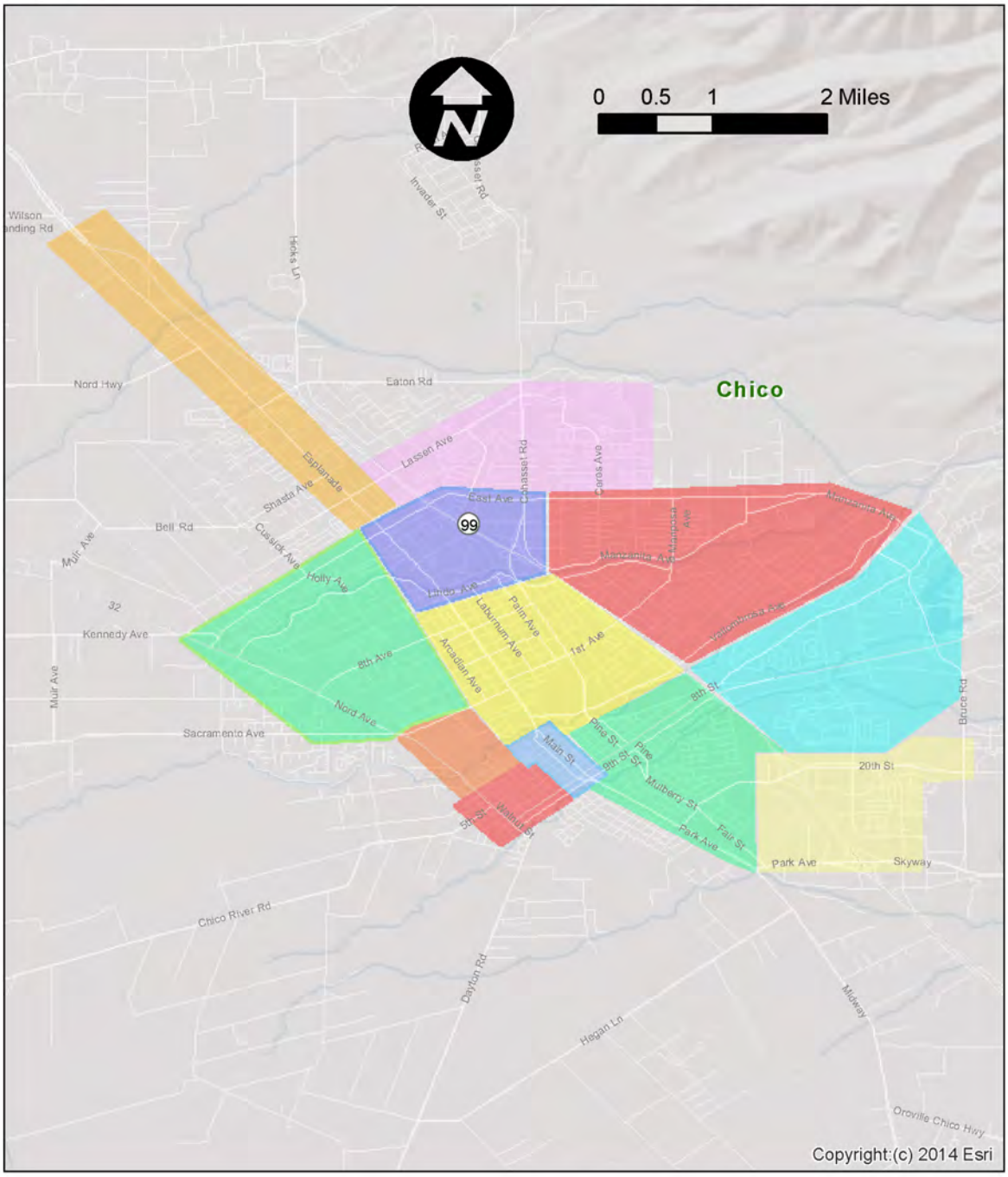


Table 13: Major Origin/Destination Pairs from Onboard Survey Results

Excludes Stops with 1 Boarding or 1 Alighting

Boarding Stop	Alighting Stop: 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	Grand Total (1)
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.

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). On 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

This page intentionally left blank.

Chapter 4

B-LINE FIXED ROUTE 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) Average	Pre-COVID (Oct 2019) Est. Peak Load	Post-COVID (Oct 2021) Average	Post-COVID (Oct 2021) 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 JR. 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%***

Note: Route 31 (Paradise - Oroville) not in operation.

Figure 12: B-Line Ontime Performance

Weekdays in February 2020

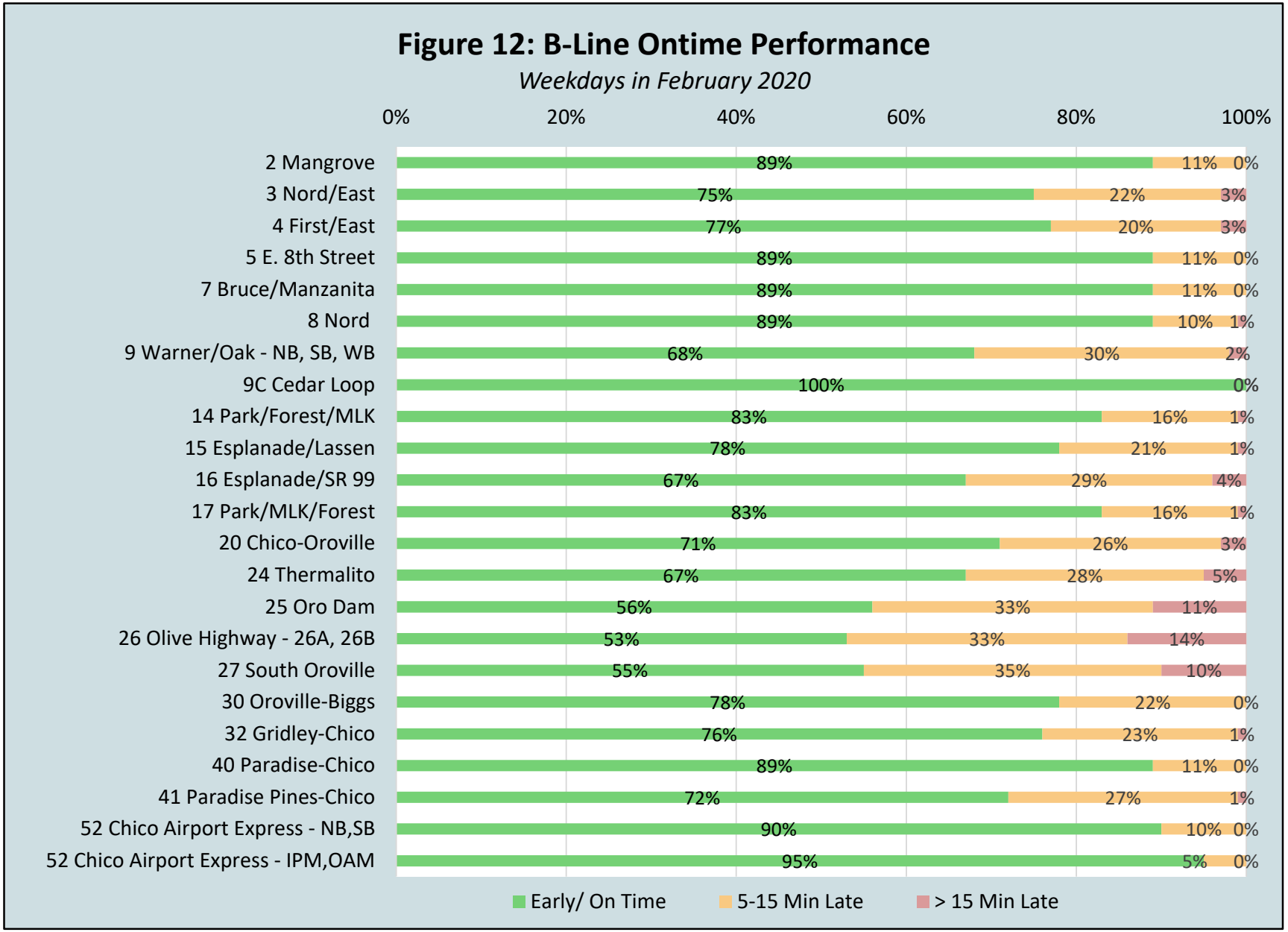


Table 17: Top Boarding Locations

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	Cheveron 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) Annual Boardings	Annual Hours	Marginal Cost	Produc-tivity	Marginal Cost per Psgr	COVID (FY 2020-21) Annual Boardings	Annual Hours	Marginal Cost	Produc-tivity	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) Annual Boardings	Annual Hours	Marginal Cost	Productivity	Marginal Cost per Psgr	COVID (FY 2020-21) 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
Intercomunity	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	0 255,048	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.

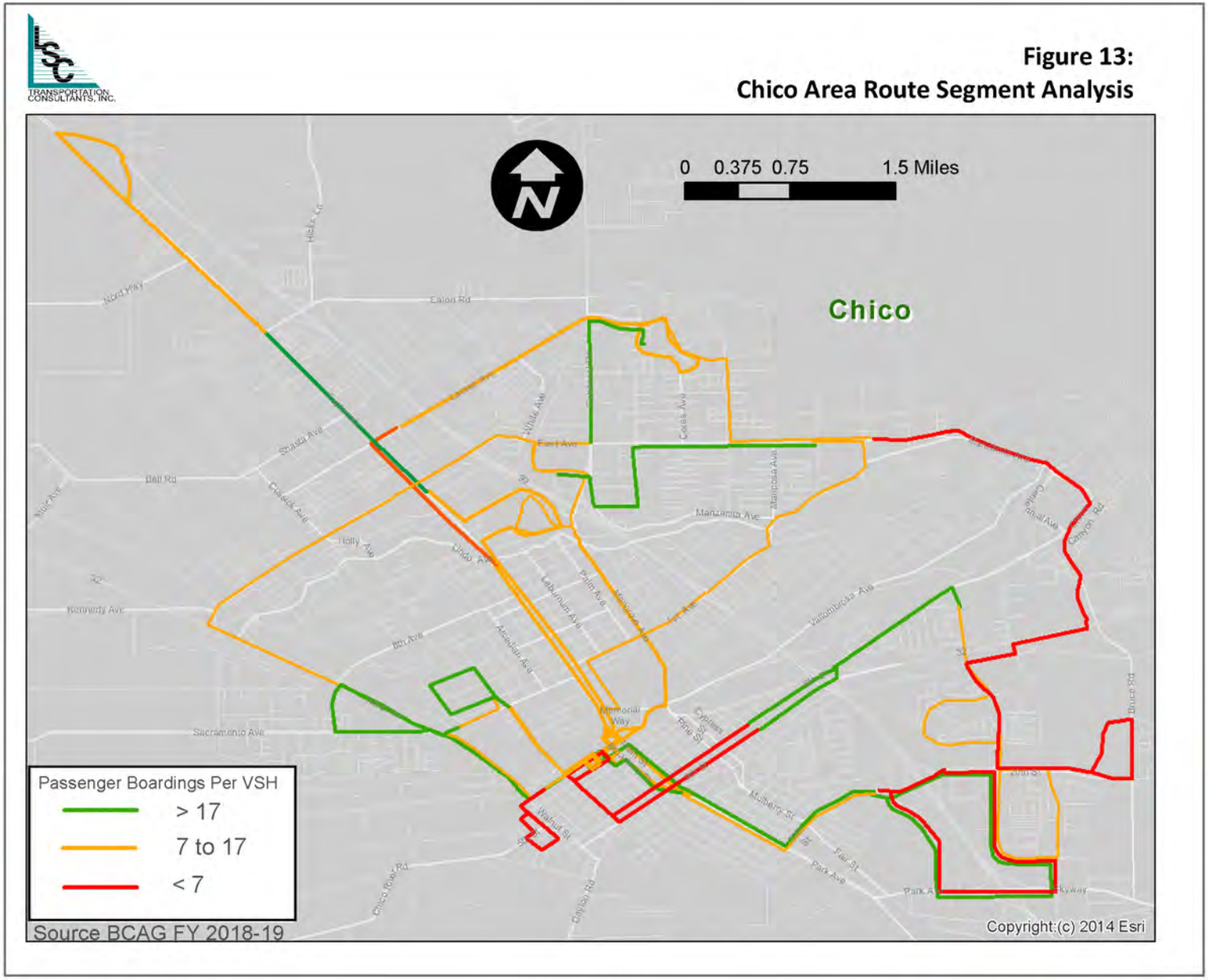


Figure 13:
Chico Area Route Segment Analysis
TRANSPORTATION CONSULTANTS, INC.
0 0.375 0.75 1.5 Miles
Chico
Passenger Boardings Per VSH
> 17
7 to 17
< 7
Source BCAG FY 2018-19
Copyright:(c) 2014 Esri

Figure 14:
Oroville Area Route Segment Analysis

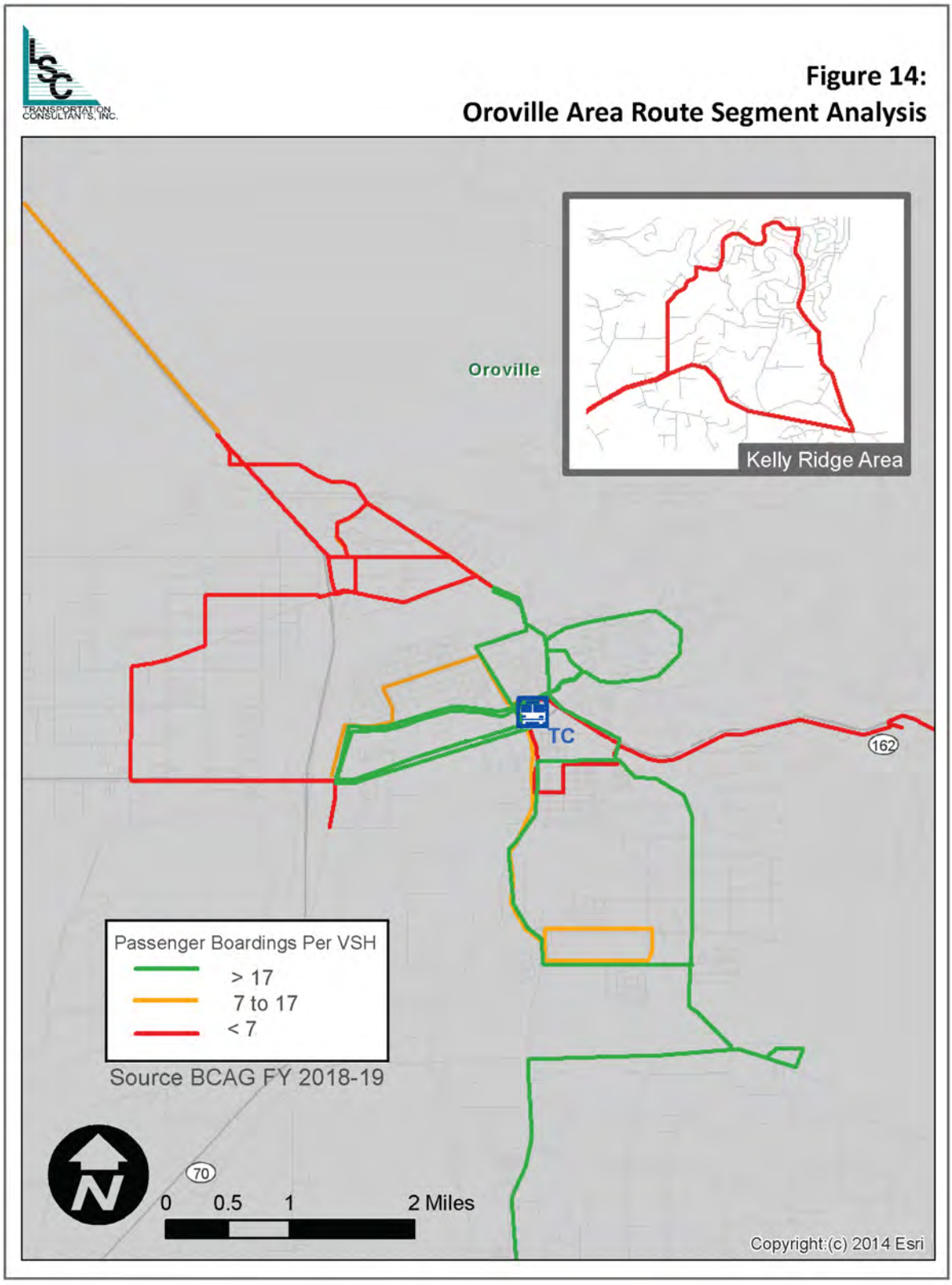
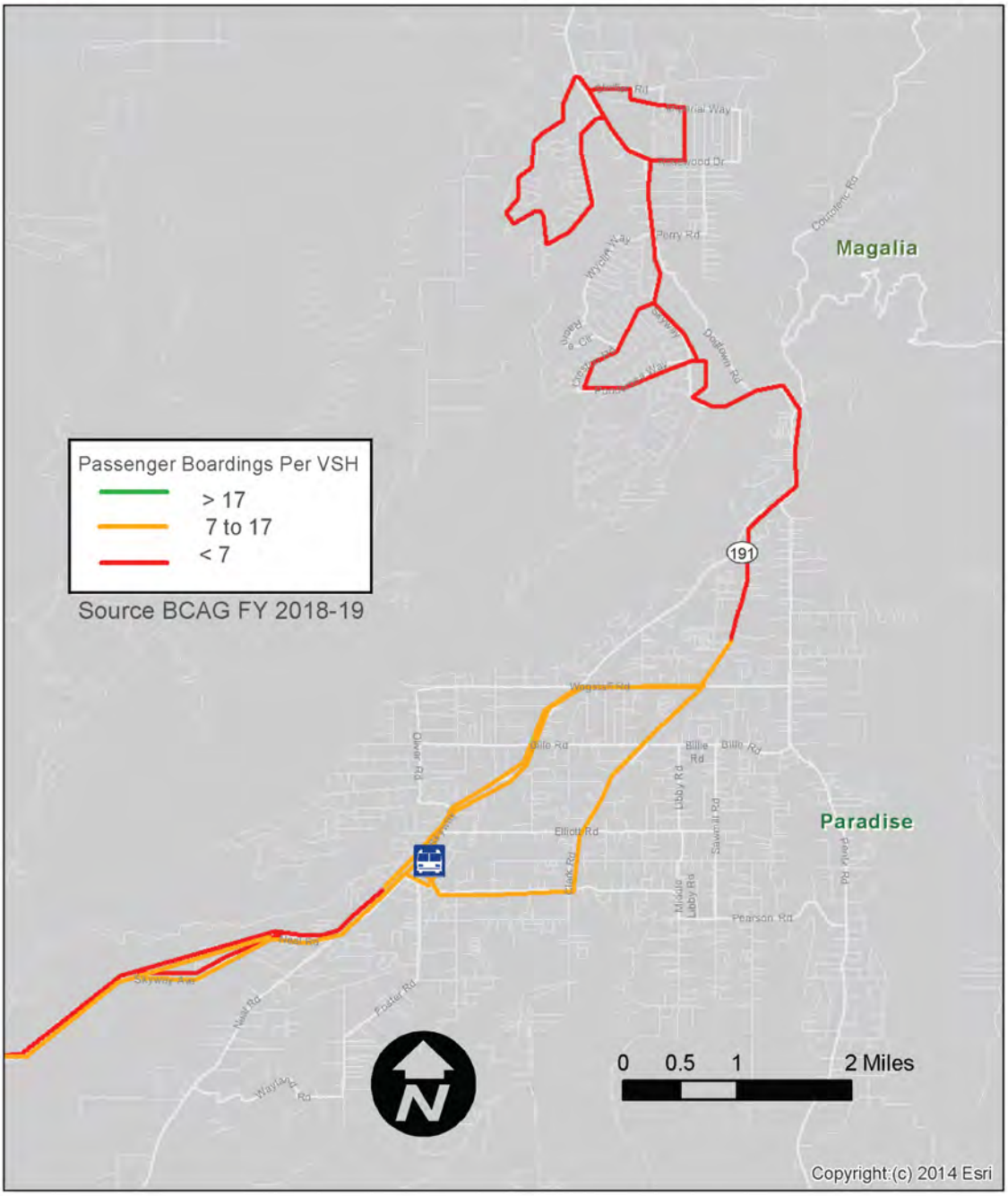


Figure 15:
Paradise Area Route Segment Analysis



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.

This page intentionally left blank.

Chapter 5
REVIEW OF EXISTING PARATRANSIT SERVICES

INTRODUCTION

This chapter presents an overview of the B-Line Paratransit Service. It is prepared as part of the B-Line Routing Study to provide a resource for assessment of potential changes in paratransit services.

B-LINE PARATRANSIT SERVICE

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 or trips within any other portion of Butte County, such as Gridley/Biggs or other unincorporated areas. B-Line offers two types of paratransit services (all served by the same fleet):

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 over Dial-a-Ride trips.
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 ¾ 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. The paratransit service area showing the core areas and zones is shown in Figure 16. Note that Chico, with a core area and zones, represents the "urban area" and the core service area and supplemental zones in Oroville and Paradise/Magalia represent the "rural areas"[5].

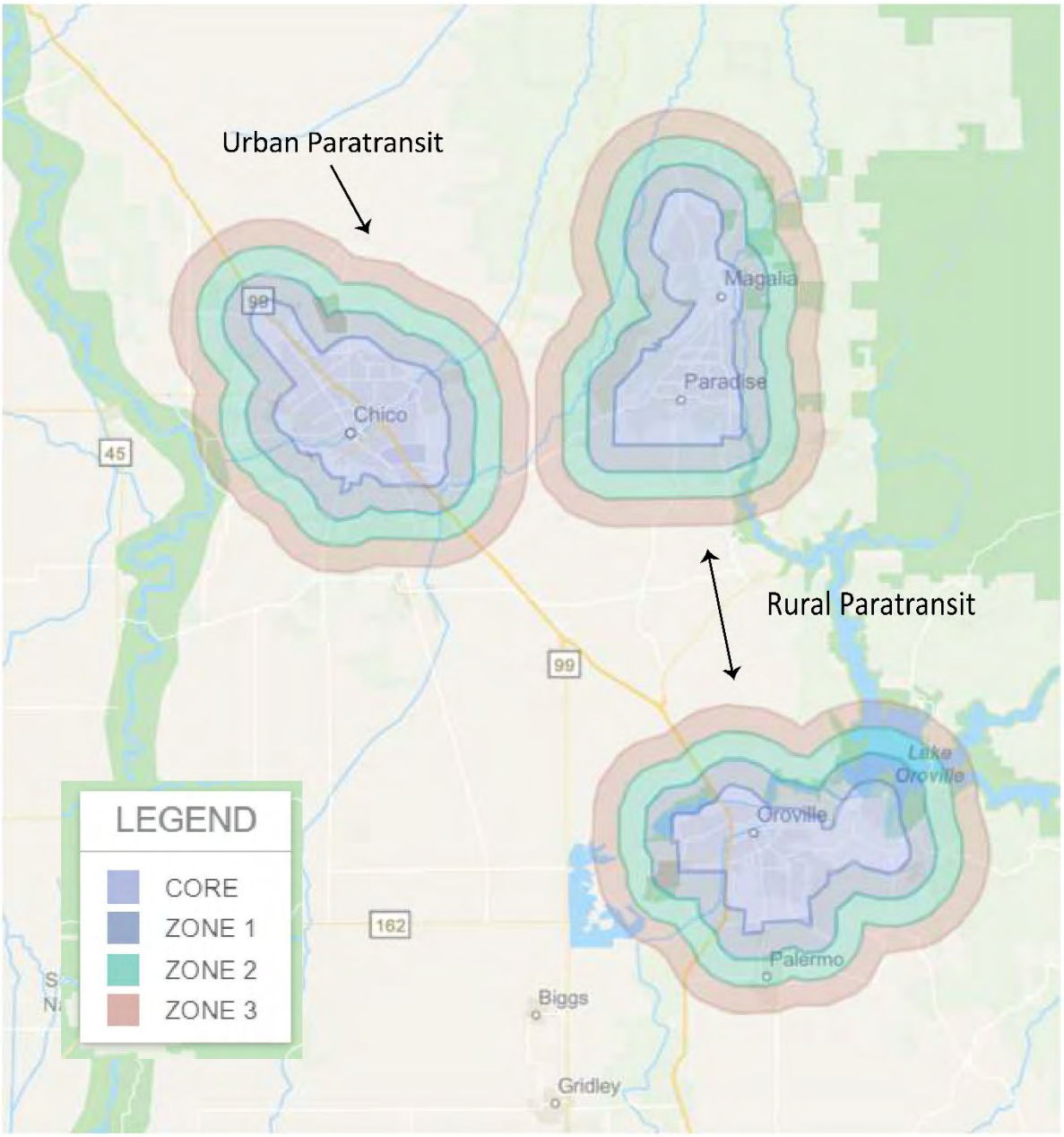
B-Line Paratransit operates between 5:50 AM and 10:00 PM on weekdays, 7:00 AM and 10:00 PM on Saturdays, and 7:50 AM and 6:00 PM on Sundays. The base fare for B-Line Paratransit is $3.50 per one-way ride, with additional zone-based fares. B-Line Paratransit trips can be scheduled by calling into dispatch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

B-Line Paratransit Fares

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. Paratransit fares (including Dial-a-Ride) for the ADA paratransit service area are $3.50 for an advanced reservation and $5.25 for a same day request. For service to outlying areas, fares are $8.75 for Zone 1, $10.75 for Zone 2, and $12.75 for Zone 3. A 2-Ride Pass can

[5] The urban and rural designations are for the purposes of tracking FTA 5307 (urbanized) and FTA 5311 (rural) grant funding.

Figure 16:
B-Line Paratransit Service Areas



be purchased for $7.00 (good for the core zone only), and for convenience, a $25.00 value card can be purchased and used until the value is expended.

B-Line Paratransit Application Process

As mentioned, there are two types of services offered: ADA paratransit for those with qualifying disabilities, and Dial-a-Ride for riders over the age of 70. Both types of riders require an application to access services, as described below:

- Dial-a-Ride Application: A form must be completed which asks for the rider's name, address, date of birth, and whether the applicant requires a Personal Care Attendant (PCA) or mobility device (such as a wheelchair). A photocopy of proof of age must be provided with the application. Acceptable documents include an official State Identification/Driver's License, Birth Certificate, Passport or any other State or Federal issued identification.
- ADA Paratransit Application: A form must be completed which asks for contact information, whether a Personal Care Attendant (PCA) is required, the nature of the rider's disability and functional mobility. After completing the form, the applicant must provide information for a healthcare or social service professional who can certify to their functional mobility needs and who may be contacted if staff needs clarification on the application. B-Line takes up to 21 days to review the application and grant or deny eligibility.[6]

B-LINE PARATRANSIT RIDERSHIP ANALYSIS

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

Annual Ridership by Month and Area

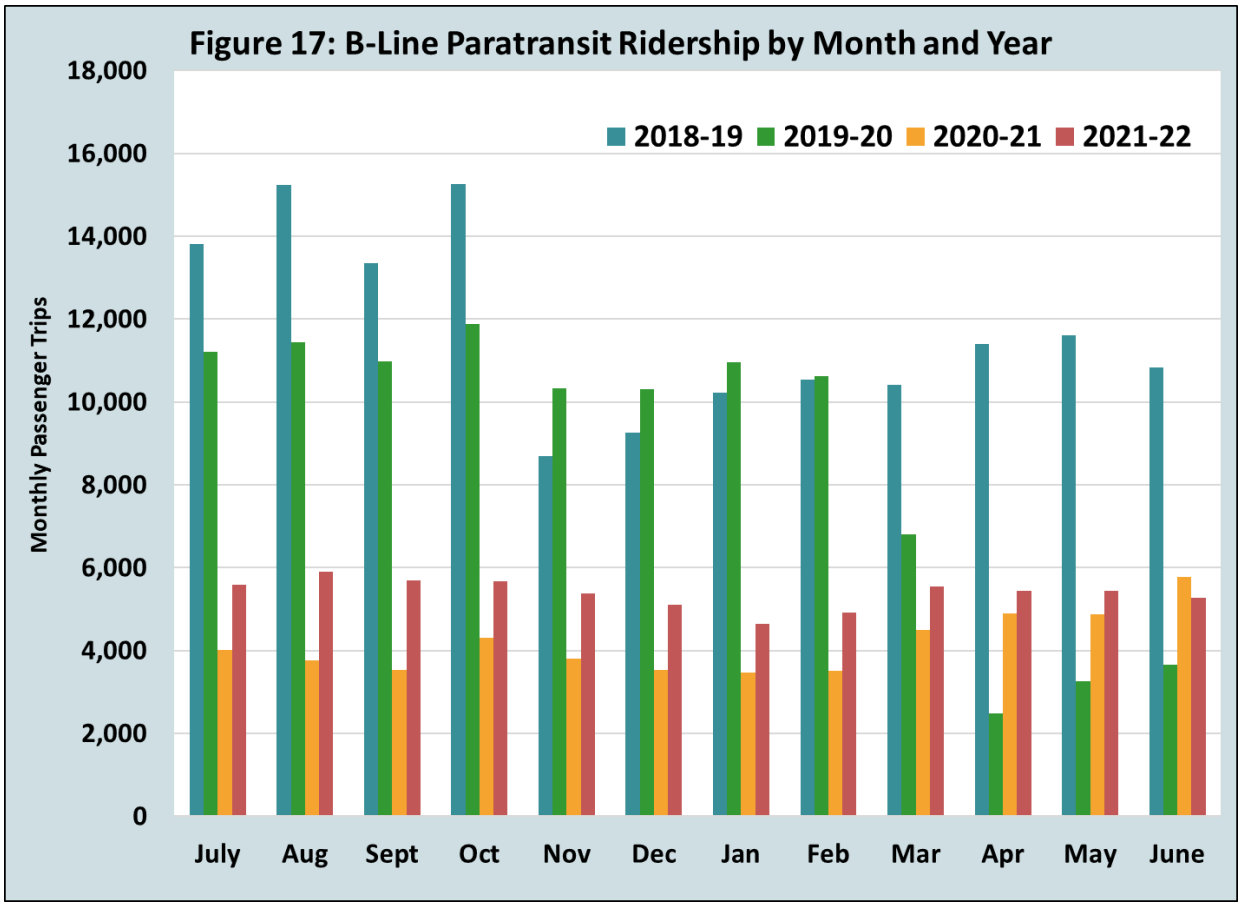
Ridership by route by month is depicted for the past four years in Figure 17 and Table 20. As shown, ridership has historically peaked in July to October, while spring ridership was lowest. The impacts of COVID are also evident, showing a sharp decline in March and April 2020, with some recovery starting in spring 2021. Prior to COVID (July 2018 to February 2020), paratransit ridership averaged 11,418 trips per month. The year after COVID started, this dropped to an average of 3,653 passengers per month, or 32 percent of the pre-COVID average. Over the year from July 2021 to June 2022 the average was 5,381 passenger trips per month, which is 47 percent of the pre-COVID average. Table 20 also shows the urban paratransit ridership (including the Chico core service and the three zones around Chico) versus rural paratransit ridership (all non-Chico service). The urban ridership was just over half of all ridership from July to December 2018 but while the number of passengers has decreased since the pandemic, the urban ridership has since increased as a percentage to make up approximately three quarters of the paratransit ridership.

[6] Presumptive eligibility is given at the start of the application process for 30 days to accommodate more urgent needs to use the system.

Table 20: B-Line Paratransit Annual Ridership by Month

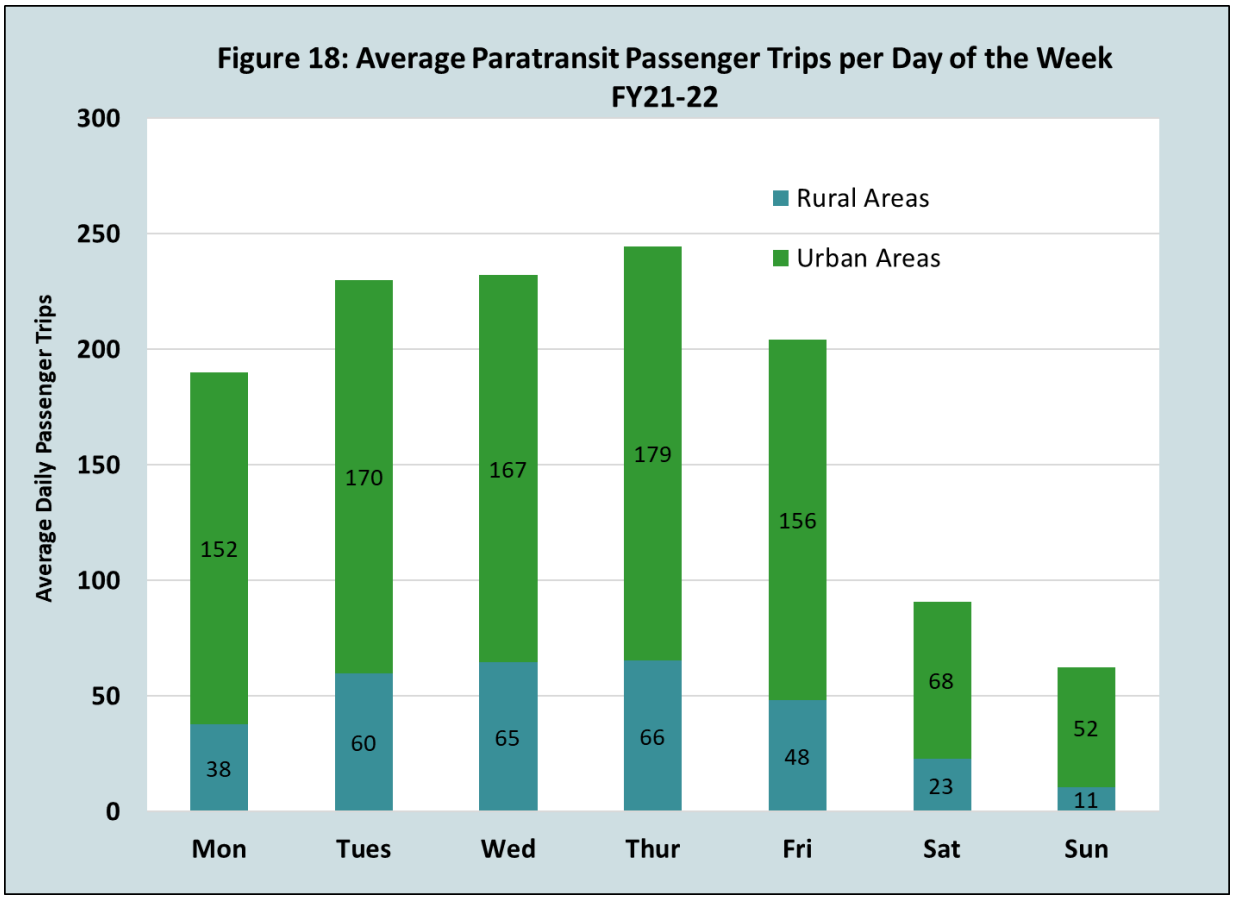
Fiscal Year	Months (Fiscal Calendar) July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Annual
Urban	7,264	7,946	7,079	8,201	5,708	6,704	7,613	7,981	7,588	8,333	8,492	8,151	91,060
Rural	6,556	7,286	6,276	7,057	2,978	2,549	2,614	2,553	2,825	3,062	3,127	2,674	49,557
2018-19	13,820	15,232	13,355	15,258	8,686	9,253	10,227	10,534	10,413	11,395	11,619	10,825	140,617
Urban	8,422	8,626	8,366	8,983	7,894	7,892	8,366	8,125	5,130	1,674	2,090	2,273	77,841
Rural	2,790	2,807	2,611	2,908	2,432	2,418	2,592	2,505	1,683	809	1,169	1,387	26,111
2019-20	11,212	11,433	10,977	11,891	10,326	10,310	10,958	10,630	6,813	2,483	3,259	3,660	103,952
Urban	2,596	2,522	2,592	3,020	2,612	2,393	2,453	2,428	3,242	3,731	3,781	4,450	35,820
Rural	1,422	1,233	941	1,298	1,188	1,137	1,014	1,081	1,264	1,158	1,102	1,317	14,155
2020-21	4,018	3,755	3,533	4,318	3,800	3,530	3,467	3,509	4,506	4,889	4,883	5,767	49,975
Urban	4,260	4,535	4,404	4,426	4,148	3,798	3,396	3,627	3,943	3,982	4,017	3,796	48,332
Rural	1,321	1,375	1,282	1,237	1,240	1,307	1,247	1,285	1,593	1,465	1,420	1,470	16,242
2021-22	5,581	5,910	5,686	5,663	5,388	5,105	4,643	4,912	5,536	5,447	5,437	5,266	64,574
Urban Average	5,636	5,907	5,610	6,158	5,091	5,197	5,457	5,540	4,976	4,430	4,595	4,668	63,263
Rural Average	3,022	3,175	2,778	3,125	1,960	1,853	1,867	1,856	1,841	1,624	1,705	1,712	26,516
Average	**5,772**	**9,083**	**8,388**	**9,283**	**7,050**	**7,050**	**7,324**	**7,396**	**6,817**	**6,054**	**6,300**	**6,380**	**89,780**

Note 1: Urban paratransit includes the core area and three zones in Chico. Rural paratransit includes the core of Oroville and Paradise and their three zones.
Source: BCAG



Ridership by Day of the Week

Average daily ridership by day of the week for FY 2021-22 is shown in Figure 18. As shown, ridership was highest on Thursdays, followed by Wednesdays and then Tuesdays. Ridership was lowest on Sundays, and then Saturdays. Weekdays averaged 220 passengers per day, while weekends averaged 77 passengers per day. Rural ridership accounted for between 17.5 percent of total ridership (on Sundays) to 28.0 percent of total ridership (on Wednesdays).



B-Line Paratransit Trip Requests

For paratransit to run efficiently, policies must be in place to limit the number of missed and cancelled trips, both by the contractor and by the passenger. The contractor had no missed trips in FY 2021-22. Of 57,821 paratransit trip requests in FY 2021-22, 8.2 percent of trips were cancelled in advance, meaning the prospective rider cancelled by 5:00 PM the day before the requested trip. An additional 7.8 percent were same day cancellations, meaning they cancelled between 5:00 PM of the day before the requested trip and 2 hours before the requested trip. Additionally, 2.4 percent were late cancelations with less than two hours' notice before the requested trip. B-Line also tracks site closures[7], which affected 0.5 percent of trip requests. Finally, in tallying the data, there are inherent

[7] A "site closure" notation is used to denote cancelled trips when the actual business the trip is planned to serve will not be open at the time of the trip. This became a regular occurrence during COVID and wildfires.

data errors which in FY 2021-22 accounted for 2.7 percent of the trip requests. These errors could be from incomplete calls, mis-entered data, et cetera. Trip request data is summarized in Table 21.

Table 21: B-Line Paratransit Requested Trip Information

	Urban	Rural	Total
Total Requested	43,880	13,941	57,821
Unscheduled	89	40	129
Cancelled In Advance	3,543	1,223	4,766
Late Cancels	1,049	332	1,381
Same Day Cancels	3,395	1,094	4,489
Site Closure	270	31	301
User Error	1,231	302	1,533
Total Requested	100.0%	100.0%	100.0%
Unscheduled	0.2%	0.3%	0.2%
Cancelled in Advance	8.1%	8.8%	8.2%
Late Cancels	2.4%	2.4%	2.4%
Same Day Cancels	7.7%	7.8%	7.8%
Site Closure	0.6%	0.2%	0.5%
User Error	2.8%	2.2%	2.7%
Source: BCAG, LSC			

B-LINE PARATRANSIT PERFORMANCE ANALYSIS

A performance analysis was conducted on B-Line Paratransit for pre-COVID (FY 2018-19) and during COVID (FY 2021-22). 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 22 and is discussed below.

B-Line Paratransit Productivity

Table 22 shows the passengers carried per service hour by route. Pre-COVID, 3.4 passengers were carried per service hour on paratransit services. The rural services were actually more productive than the urban services, carrying 3.6 passengers per hour compared with 3.3 in the urban areas. After COVID, 3.1 passenger trips were carried overall, with 2.9 on the rural paratransit and 3.2 on the urban paratransit. Both before and after COVID, clients made up 67 to 71 percent of passenger trips, with companions and attendants accounting for 29 to 33 percent of passenger trips.

B-Line Paratransit Efficiency

Efficiency can be measured in part by the number of passengers carried per passenger mile, also shown in Table 22. Pre-COVID, 0.4 passenger trips were carried per mile of service. That dropped to 0.3 passengers per service mile in the past year overall, and just 0.2 on the rural services.

B-Line Paratransit Cost Effectiveness

The cost effectiveness of B-Line services since COVID 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 $18.25 per urban passenger trip, $16.94 per rural passenger trip, or $17.85 overall per paratransit passenger trip. This increased to a marginal cost per passenger trip of $24.66 per urban passenger trip, $27.00 per rural passenger trip, or $25.25 overall paratransit passenger trip—primarily due to increased costs. Using 2018 dollars, this would be $18.99 per urban passenger trip, $20.79 per rural passenger trip, or $19.44 overall marginal cost per paratransit passenger trip, indicating the increase per passenger trip due to lost productivity would have been an 8.2 percent increase.

Table 22: B-Line Paratransit Performance

	Pre-COVID (FY 2018-19)			FY 2021-22			Change FY 18/19 to FY 21/22		
	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total
Clients	62,859	34,404	97,263	34,129	10,880	45,009	-46%	-68%	-54%
Companions	28,092	15,110	43,202	14,157	5,356	19,513	-50%	-65%	-55%
Attendants	109	43	152	45	10	55	-59%	-77%	-64%
Passenger Trips	**91,060**	**49,557**	**140,617**	**48,331**	**16,246**	**64,577**	**-47%**	**-67%**	**-54%**
Vehicle Hours	27,339	13,735	41,074	15,014	5,526	20,540	-45%	-60%	-50%
Psgrs/Hour	3.3	3.6	3.4	3.2	2.9	3.1	-3%	-19%	-8%
Vehicle Miles	230,957	118,582	349,539	150,596	74,775	225,371	-35%	-37%	-36%
Psgrs/Mile	0.4	0.4	0.4	0.3	0.2	0.3	-19%	-48%	-29%
Marginal Operating Cost	$1,670,710	$839,346	$2,510,055	$1,191,811	$438,654	$1,630,465	-29%	-48%	-35%
Marginal Op. Cost per Psgr	$18.35	$16.94	$17.85	$24.66	$27.00	$25.25	34%	59%	41%

Note: Based on operating cost of $61.11 per hour in 2018-19 and $79.38 per hour, as shown in Tables 11 and 12 in Chapter 3.
Source: BCAG, LSC

This page intentionally left blank.

Chapter 6
FIXED ROUTE SERVICE ALTERNATIVES

INTRODUCTION

This chapter presents alternatives regarding the fixed route structure, as well as the potential replacement of fixed route services with microtransit services (as discussed below). Following chapters will discuss changes in the span of service (i.e., days and hours of service), as well as changes in paratransit services and capital needs. Finally, the recommended elements are used to define the overall Plan.

Two near-term comprehensive alternative scenarios were developed, for implementation over the next 1 to 5 years. The first incorporates the conversion of some fixed route service areas to microtransit service. The second assumes reliance on fixed route services only. The primary focus of these near-term scenarios is to improve the overall services using the existing resources. The recommendations can be implemented with minimal net increases in operating cost and minimal capital costs for new bus stops.

In addition, a mid-term scenario (5 to 10 years implementation) is also presented. This assumes additional financial resources are available to expand service levels and span of service.

NEAR-TERM SERVICE SCENARIO WITH MICROTRANSIT SERVICES

Introduction to Microtransit Services

This scenario is designed to build on the foundation of the existing B-Line fixed route network. The recommended service plan is focused on the implementation of a network that improves on-time performance, ridership and productivity of the service through an emphasis on service reliability, faster more direct routing, and improving overall coverage through lower-cost and innovative service delivery such as microtransit.

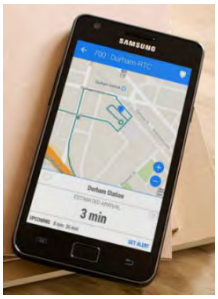
Analyzing all the information gathered for this effort from previous reports and the public outreach effort, as well as historical performance trends for B-Line, several key operational/service issues were identified:

- On-time performance issues
- Out of direction, circuitous routing segments
- Low ridership and productivity on route segments
- Improved service needs to potential transit generators such as points of service for social service organizations such as the Jesus Center
- Use of new technology and innovative services to provide coverage to low density areas
- Faster travel times on primary corridors

B-Line will need to continue to provide equitable service that meets the requirements of the Title VI Civil Rights Act of 1964 (Title VI). Title VI ensures that no person shall be excluded from participation in, denied benefits of or be subjected to discrimination on the basis of race, color, or national origin

under any program receiving federal financial assistance. B-Line will also need to continue to meet the requirements for public transit services under the Americans with Disabilities Act.

The Concept of Microtransit Service



Over the last several years, the concept of "microtransit" has seen increasingly widespread application across the nation. The goal of microtransit service is to provide coverage over an area not served efficiently by fixed-route service with a short response time, typically within 15 minutes of the request. Microtransit applies the app-based technology developed for transportation network companies (such as Uber and Lyft) to provide a new form of public transit service in lower demand and lower density areas. While the concept of real-time, demand-response service has been envisioned for many years, it could not be effectively implemented until recently with the advent of new technology. Passengers typically use an app downloaded on their smartphone or computer to request a ride and a routing algorithm assigns the ride request to a specific driver/vehicle. The passenger is provided with an estimated service time, and fares are typically handled through the app. In addition, to ensure equitable accommodation, rides may also be requested directly over the phone. However, most trips are assigned without the need for manual dispatching. Unlike traditional dial-a-ride services, there is no need for a 24-hour-or-more advance reservation. As microtransit is a shared-ride service, multiple passengers may be on the vehicle at the same time. Requirements of the Americans with Disabilities Act may be met by ensuring that a sufficient number of accessible vehicles are available to serve those who require accessible service.

Table 23 presents a summary of various existing microtransit services in Northern California and Nevada, including Napa, Bakersfield, Sacramento and Reno. This reflects the substantial ridership that can be served by a microtransit program, as well as the variation in service area size and level of service. In addition, other transit services are currently planning to implement microtransit services, including Woodland (Yolobus), Fairfield (FAST Transit) and Placer County (Placer County Transit).

Chico Service Modifications

The existing route network in Chico works well overall. The system provides connections in downtown Chico as well at secondary transfer points at the North Valley Plaza and Forest Avenue in the south. However as identified in Chapter 4, there are a number of low ridership route segments throughout the system especially in the lower density areas to the north and east. Other service challenges are primarily related to on-time performance of some routes at various times of the day. This scenario has been developed to address those issues and improve the system overall. The guiding principles to redesign the services in Chico include:

- Retain key services in downtown Chico
- Reflect community unmet needs
- Address on-time performance issues on existing Chico routes
- Replace low performing routes with microtransit service

Table 23: Example Existing Microtransit Services in Similar Areas

					SmART Ride (Sacramento)[5]								
	City of Napa On-Demand[1]	FlexRide Sparks-Spanish Village Zone[2] (Washoe RTC)	Golden Empire Transit On-Demand[3] (Bakersfield, CA)	KART "Smart" Services - Hanford[4] (Kings County)	Citrus Heights Zone	Franklin Zone	Gerber Zone	Rancho Cordova Zone	Downtown / CSUS Zone	Natomas / N. Sac Zone	Arden/ Carmichael Zone	Folsom Zone	Elk Grove Zone
Service Area (Sq. Mi.)	6	13.1	24	17.5	35.9	14	10	6.9	7.7	15.1	15	27.9	26.4
Hours of Operation (1)	M - F: 7AM - 5:30PM Sat: 7:30AM - 5:30PM	M - F: 5:30AM - 11PM Sat - Sun: 6AM - 10:30PM	M - F: 6AM - 11PM Sat: 7AM - 7PM	M - F: 7AM - 8PM	M - F: 6AM - 9PM	M - F: 7AM - 7PM	M - F: 7AM - 7PM	M - F: 7AM - 7PM	M - F: 6AM - 9PM	M - F: 7AM - 7PM	M - F: 7AM - 7PM	M - F: 7AM - 7PM	M - F: 7AM - 7PM
Annual Vehicle Revenue Hours	11,867	9,410	16,912	--	12,700	6,782	3,581	5,842	12,014	7,290	3,581	4,775	3,581
Annual Vehicle Revenue Miles	113,367	152,305	215,084	--	--	--	--	--	--	--	--	--	--
Peak Vehicles in Operation	6	5	--	1	6	4	2	3	6	4	2	3	2
Annual Ridership	25,787	36,256	29,590	6,000	34,544	20,320	10,414	30,988	36,576	21,590	10,160	16,002	10,160
Average Daily Ridership	84	99	81	24	136	80	41	122	144	85	40	63	40

Note 1: Statistics are for FY 2021-22. Data sourced from Napa Short Range Transit Plan 2023-2028 and staff. Staff indicated a desire to reduce peak vehicles to 4 in FY 2022-23 in response to rebounding fixed route ridership.

Note 2: Statistics for FY 2021-2022. Data sourced from RTC Washoe staff.

Note 3: Statistics for Golden Empire Transit (GET) On-Demand Zone prior to July 2022 expansion. Statistics for FY 2019-20. Data sourced from GET Short-Range Transit Plan FY 2022-23.

Note 4: Statistics for FY 2022-2023. Annual ridership projections made based on average monthly ridership. Data sourced from Transit Manager.

Note 5: Statistics for FY 2021-22. Data sourced from SacRT Short-Range Transit Plan FY 2022-2027 and SacRT staff.

- Add direct service in the southeast of the City and to new destinations such as the Jesus Center, which was recently relocated to a location on Fair Street.
- Emphasize North Valley Plaza as the secondary transit center

Figure 19 and Figure 20 illustrate the existing and the proposed new transit system in the Chico service area.

The following describes the recommended changes for each route.

Route 2 Mangrove

Route 2 continues to operate from downtown Chico to northeast Chico primarily by the Mangrove Avenue and Cohasset Road corridors. Route 2 has productive service throughout the day with connections to the North Valley Transit Center and downtown Chico.

There are two changes to Route 2 under this scenario. First, the route would no longer serve the DMV loop on Rio Lindo Avenue and Parmac Road. The change would allow for faster travel times and more reliable service. In addition, the north end of the route is revised to better serve the Social Security office and shorten the travel time. The route would no longer operate on Ceres Avenue and Eaton Road south of Lassen Avenue. The new routing would travel north on Ridgewood Drive, south on Ceres Avenue and west on Lassen Avenue. The overall revised route is 9.0 miles in length compared with the current 11.1 miles in length. This reduction in length will significantly improve the ability for this route to stay on schedule.

Route 3 Nord/East

There are no service changes proposed for Route 3. It is recommended to consider implementing a transit signal priority (TSP) program to improve the travel time and reliability of the service. Potential locations for TSP could include Nord Avenue and West Sacramento Avenue, Nord Avenue and West 8th Avenue, East Avenue and Esplanade, and East Avenue at the SR 99 interchange.

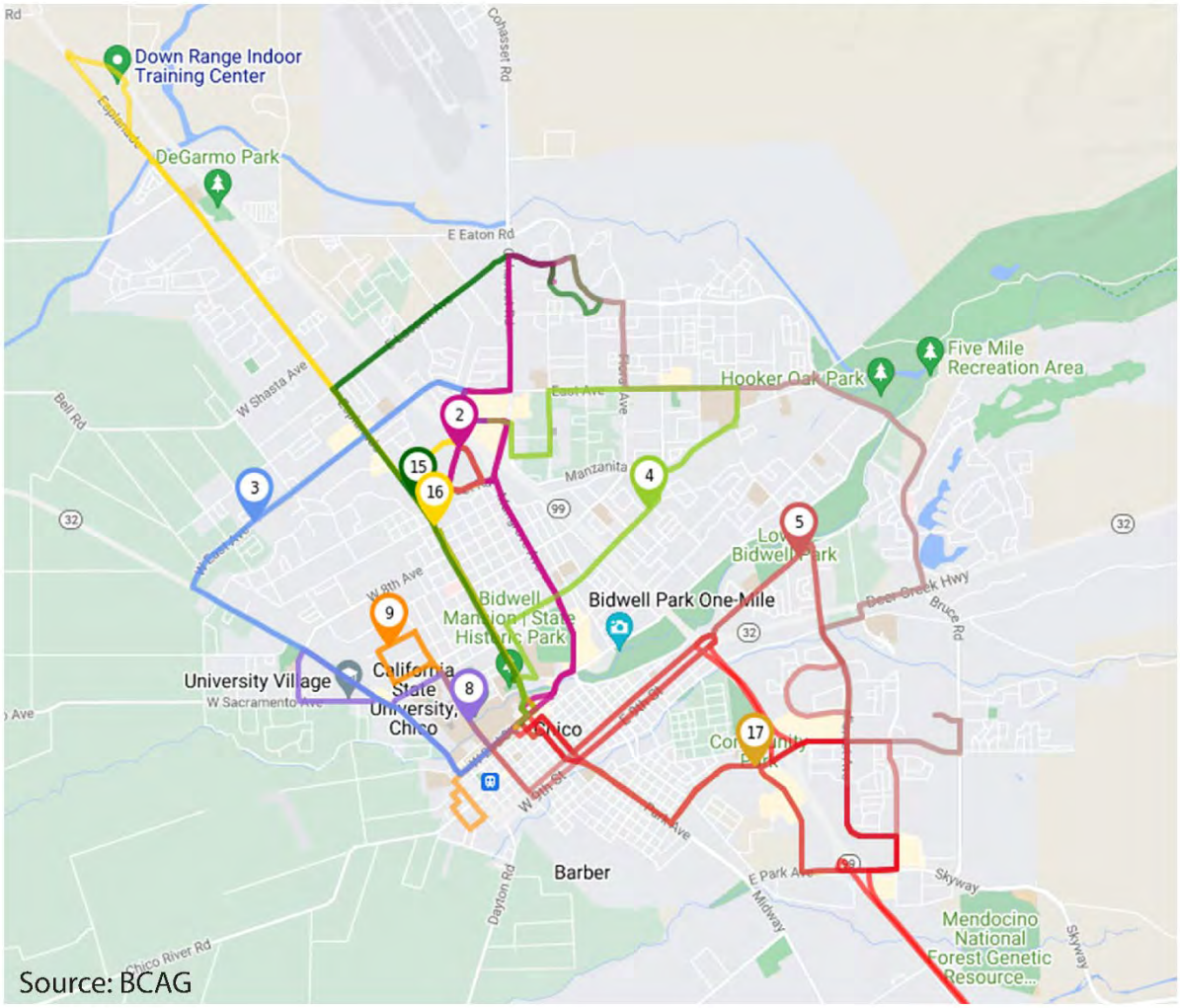
Route 4 First/East

No changes are proposed for Route 4.

Route 5 East 8th Street

Under this scenario there are two proposed changes to the route. First, the Springfield Drive loop would be operated in both the inbound and outbound directions, rather than the current route which only travels on the loop in the inbound direction. This will provide more convenient service to the Chico Marketplace Mall, Kohl's, as well as the residential neighborhoods. The second change is to shorten the southern terminus loop to operate south on Forest Avenue, east on Parkway Village Drive and north on Huntington Drive. This new routing shortens the travel time while still making the connection to Walmart and to other routes at the Forest Avenue Transit Center. The Notre Dame Boulevard loop would be discontinued on Route 5 but would be served by a new microtransit zone, as discussed below. The revised route would be 11.2 miles in length, 0.3 miles less than at present. This will reduce running time by several minutes, improving on-time performance.

Figure 19:
Existing B-Line Map in Chico



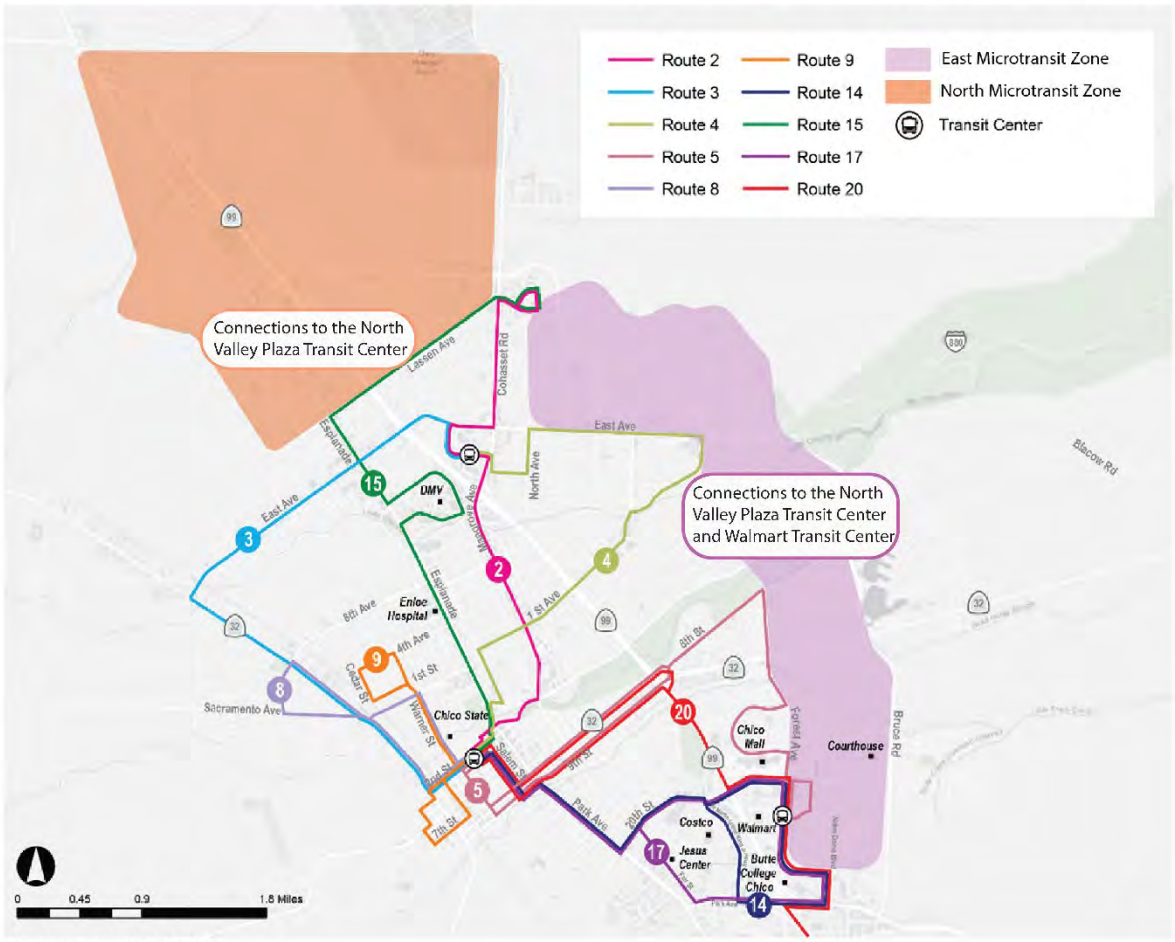
Route 8 Nord

No routing changes are proposed for Route 8.

Route 9 Orange/Warner/Cedar

Route 9 will continue to operate the existing route in the CSUC area. The only proposed change to the service is to shift the southern terminus loop to Orange Street instead of Oak Street to provide additional coverage in the neighborhood. This does not change the length or operating time of the route but will provide more convenient service along West Seventh Street and Orange Street, as well as provide service to the Amtrak station and Amtrak Thruway buses. Only one existing stop (on Oak Street just north of West Seventh Street) will need to be moved.

Figure 20:
B-Line System Map in Chico – Near Term Microtransit Scenario



Source: AECOM

Route 14 Park/Forest/MLK

No changes are proposed for Route 14.

Route 15 Esplanade/Lassen

Route 15 will continue to provide service from downtown Chico to north Chico via the Esplanade corridor. Under this scenario, Route 15 would take over the Rio Lindo Avenue / Cohasset Road loop to serve the DMV. In addition, the northern terminus routing would shift north to Ridgewood Drive to better serve the Social Security office and to offset some of the additional running time needed to serve the Rio Linda / Cohasset Road loop. While this adds route length and running time, at 11.3 miles in length, this route can still maintain its schedule.

Route 16 Esplanade/ Hwy 99

Route 16 would be eliminated under this scenario. This addresses the inefficient overlap between Routes 15 and 16 on Esplanade south of Lassen Boulevard (with Route 15 continuing to provide service). North of Lassen Avenue, service would be provided by microtransit, as discussed below.

Route 17 Park/Fair/Forest

Route 17 provides service from the Downtown Transit Center to the Walmart and Butte College Chico Campus on Forest Avenue. The proposed routing would shift the service from MLK JR. Parkway to Fair Street in the outbound direction to provide direct service to the Jesus Center and Fairgrounds. Stops along MLK JR. Parkway would continue to be served by Route 14. The resulting route would be 7.0 miles in length, 0.5 miles shorter than the current route.

Route 52 Chico Airport Express

Route 52 operates limited express service to the airport (five runs per weekday). This service would be discontinued and replaced by microtransit.

North Microtransit Zone

The zone is designed to replace the low-performing Routes 16 and 52 that are currently serving the community in northwest Chico. It consists of the area north of Lassen Avenue as far west as Alamo Avenue and as far east as Cohasset Road, extending as far north as the airport terminal on the northeast and the SR 99 / Wilson Landing Road intersection on the northwest. The microtransit van would also serve the key stops at North Valley Plaza and at the Social Security office on Lassen Avenue to connect the on-demand service with the fixed route system.

The Northwest Zone will utilize the revenue hours from the existing Route 16 to operate weekdays and Saturdays. One vehicle will be sufficient to provide service in the zone.

East Microtransit Zone

The East Zone is designed to replace the existing poorly performing Route 7. It would serve the areas on the east side of Chico between Forest Avenue and Bruce Road/Manzanita Avenue, as well as the area north of East Avenue and east of Cohasset Road. Route 7 currently has the lowest ridership in the system. The area is made up of lower density land uses that can be better served by microtransit than fixed route. The vehicle will also serve transfer points at North Valley Plaza, Social Security office and Forest Avenue Transfer Point, to provide connections with fixed routes, and serve the existing bus stops at Pleasant Valley High School.

The zone will utilize the revenue hours from the existing Routes 7 and 52 to operate weekday service. One vehicle will be sufficient to provide service in the zone.

Chico Operations

The primary change to revenue hours is the addition of two microtransit zones. The new microtransit service will utilize resources from discontinued services such as Routes 7, 16, and 52. On weekdays, the new service will utilize five fewer revenue hours and on Saturdays the service will need 10 additional revenue hours to accommodate Saturday service for the East Microtransit zone.

Overall, this scenario for Chico saves 374 revenue hours per year as shown in Table 24.

Table 24: Near Term Microtransit Scenario Impact on Chico Service Revenue Hours

	Vehicle Revenue-Hours of Service			
Route	Weekday	Saturday	Sunday	Total Annual
2	15.5	11.0	0	4,457
3	15.8	10.0	0	4,453
4	17.8	10.0	0	5,114
5	14.3	11.0	0	4,083
East Microtransit	11.8	10.0	0	3,540
8	14.0	0.0	0	1,369
9	14.5	0.0	0	2,066
14	23.0	11.0	0	6,360
15	22.5	11.0	0	6,480
North Microtransit	11.5	10.0	0	3,476
17	10.5	9.5	0	3,265
Total	171.1	93.5	0	44,662
Total Existing[1]	176.1	83.5	0	45,035
Difference	-5.0	10.0	0	(374)

Note 1: FY 2021/22

Scenario Benefits

Overall, this scenario has the following benefits in the Chico Area:

- Travel times are reduced on Routes 2 and 5, improving the on-time performance.
- Lower performing routes have been replaced with microtransit to better align the service with the market it serves.
- Transit coverage is extended with microtransit in the east and north areas, with continued connection points at Downtown Chico, North Valley Plaza and Forest Avenue.
- Direct fixed route local service on Fair Street to the Jesus Center

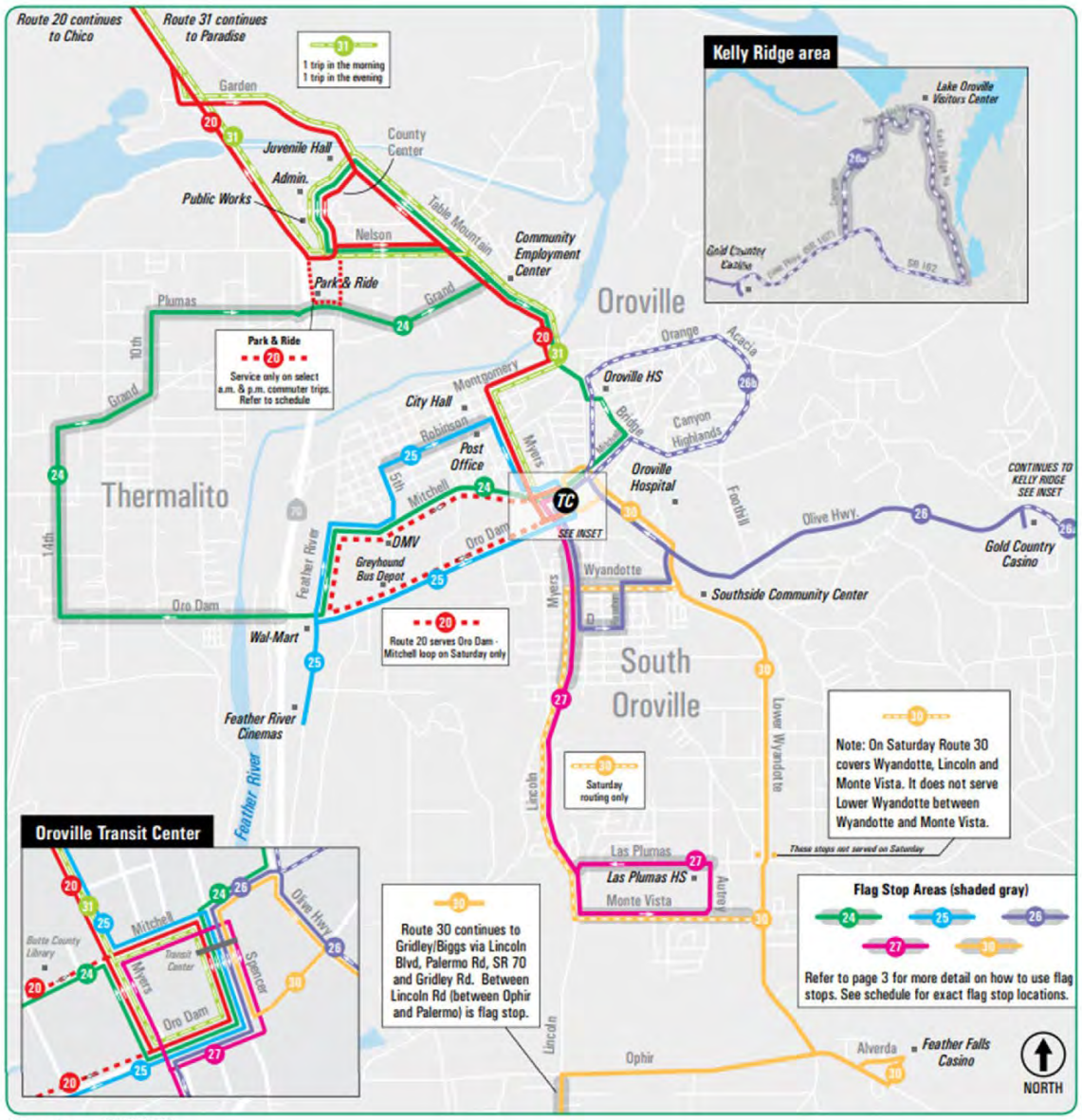
Oroville Service

The existing service in Oroville operates four routes at 60-minute headways using two buses. This scenario reallocates the service hours to improve on-time performance and coverage in the area. The service plan introduces three microtransit zones and three fixed routes to expand the service to more areas. The key components of the services in Oroville include:

- Retain high ridership route segment
- Replace low ridership segments with microtransit
- Commingle paratransit and general public demand response to extend coverage

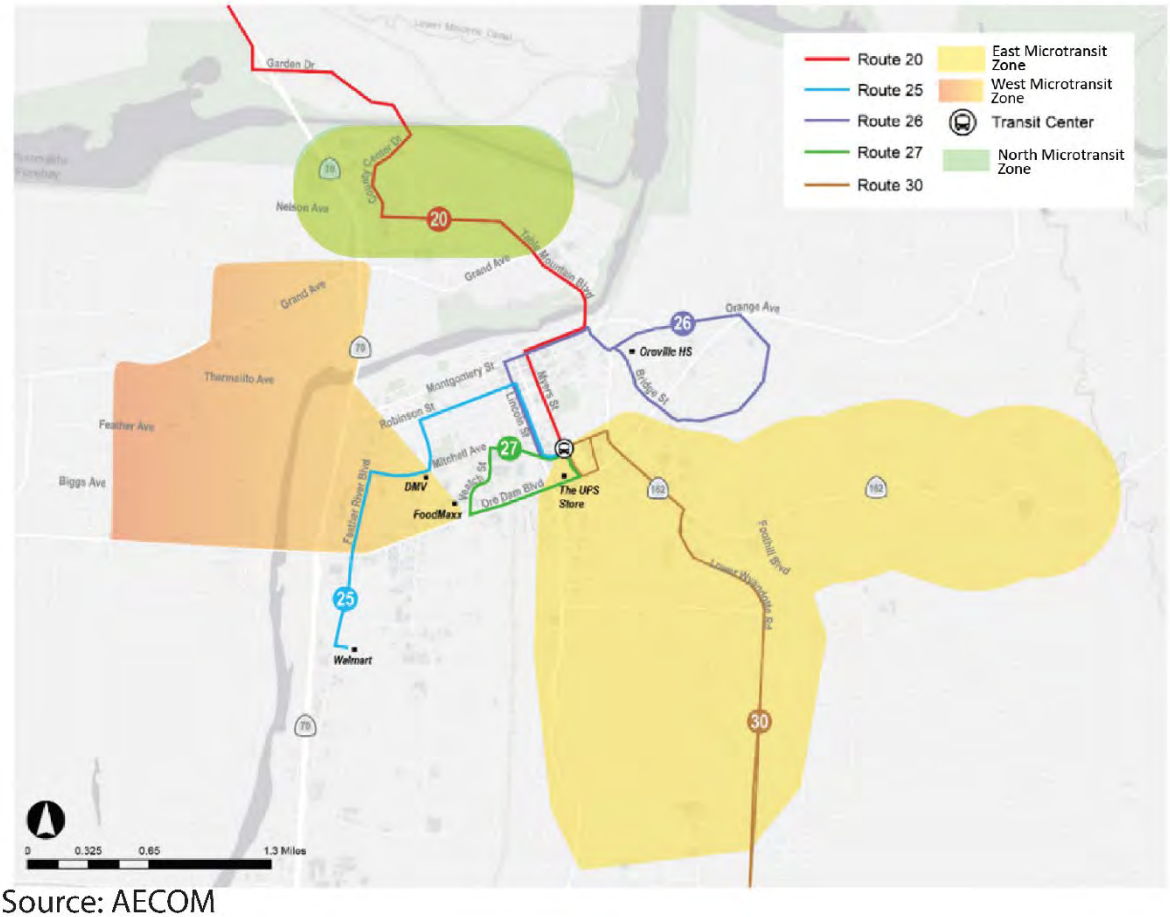
Figure 21 and Figure 22 illustrate the existing and the proposed new transit system in the Oroville service area. The following provides an overview of the recommended changes for each route.

Figure 21:
Existing B-Line System Map in Oroville



Source: BCAG

Figure 22:
Oroville Microtransit Scenario Service Map



Source: AECOM

Route 25 Feather River Boulevard

Route 25 provides service from the Oroville Transit Center to Walmart and the retail area along Feather River Boulevard in the southwest part of the city. Under this scenario, the route would operate in a bi-directional pattern along the existing service on Feather River, Mitchell Avenue to the DMV, north on 5th Avenue to Robinson Street and Lincoln Street to the Transit Center. The route would follow the same routing in the outbound direction back to Feather River and Walmart. The route would no longer serve the Oro Dam corridor.

Route 26 Orange Avenue

The new Route 26 extends the loop along Orange Avenue, Canyon Highlands Drive, and Bridge Street to service the High School, as well as the retail and residential in that area. The route connects to other routes at the transit center. It is interlined with Route 27.

Route 27 Oro Dam/Veatch

Route 27 would take over the segment of Oro Dam Boulevard between the Transit Center and Veatch Street near FoodMaxx and Las Plumas Plaza. The route would travel in a small loop to provide service along Oro Dam and connect back to the Transit Center for connections to other routes. The route would be interlined with Routes 25 and 26.

West Microtransit Zone

The existing Route 24 which serves the Thermalito area has very low ridership and productivity. Under this scenario a West Zone encompassing the Thermalito area would be operated as a combined paratransit and general public demand response service. The service in the zone would connect riders from Thermalito to areas in central Oroville for transfer opportunities to other routes and zones.

Southeast Microtransit Zone

The Southeast Zone provides coverage to the areas along Olive Highway (as far east as Gold Country Casino) and along Lincoln Street and Lower Wyandotte Road as far south as Monte Vista Avenue, serving the areas currently served by Route 27 and Route 26 would no longer operate on Olive Highway. These areas would be covered as part of the Southeast Zone. The zone would also cover Las Plumas High School, Gold Country Casino and connect to the Transit Center for transfer opportunities. Route 30 would also continue to serve the southern portion of this zone.

North Microtransit Zone

The North Zone would share a vehicle with the Southeast Zone. The zone would provide microtransit service to County Center Road and Grand Avenue area. This would take over for the discontinued portion of the existing Route 24. Trips to and from the Oroville Transit Center would also be accommodated to allow transfers to the fixed routes. Note that Route 20 would continue to serve this area on a more direct route (as discussed below).

Oroville Operations

As shown in Table 25, there are no changes to the total revenue hours between the existing service and this scenario. This scenario utilizes two buses:

- Bus 1: Operates Routes 25, 26, 27 at hourly headways
- Bus 2: Operates the North and Southeast Microtransit Zones
- West Zone is a shared service with the existing paratransit service

Benefits of Scenario in Oroville

This scenario would have the following benefits in Oroville

- Improved on-time performance for fixed route

Table 25: Near Term Microtransit Scenario Impact on Oroville Service Revenue Hours

Route	Vehicle Revenue-Hours of Service			
	Weekday	Saturday	Sunday	Total Annual
25	6.0	0.0	0	1,257
26	5.5	0.0	0	1,137
27	2.9	0.0	0	599
Southeast	3.0	0.0	0	1,451
North	3.0	0.0	0	1,451
Thermalito	0.0	0.0	0	0
Total	24.3	0.0	0	5,895
Total Existing[1]	24.3	0.0	0	5,895
Difference	0	0	0	0

Note 1: FY 2021/22

- Lower performing routes have been replaced with microtransit to better align the service with the market it serves. This has the potential to expand ridership in the future.
- Extended transit coverage with microtransit in the southeast and north areas
- No additional revenue hours

Paradise/Magalia Service

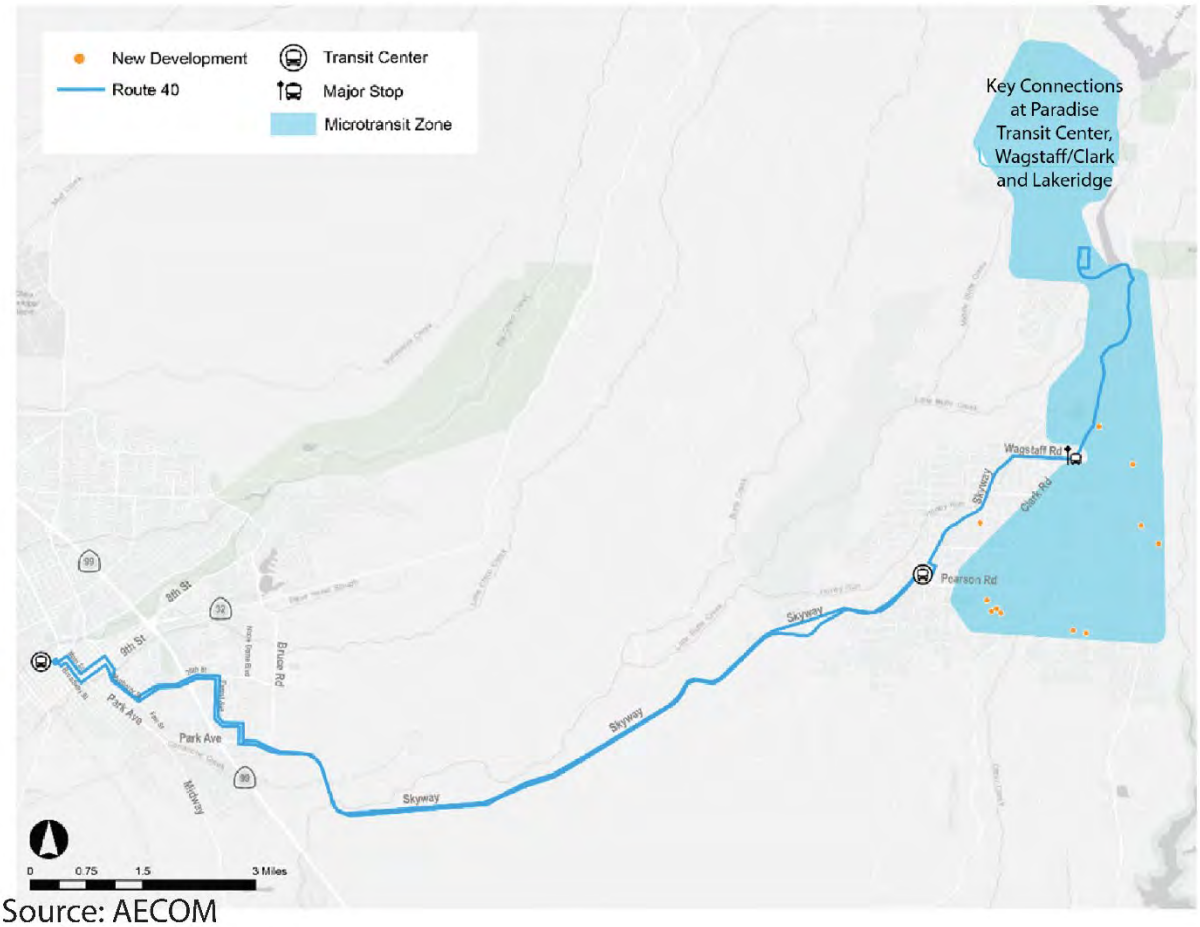
Route 40

The scenario would combine Routes 40 and 41 and provide a consistent and faster service connecting Magalia, Paradise and Chico. As shown in Figure 23, the route operates along most of the segment of the old Route 40 to Wagstaff/Clark and continues north to the Lakeridge Loop. The Paradise Transit Center would be served in both directions. Note that the existing Route 41 service along Fair Street in Chico would be eliminated (all service would be along the existing Route 40 in Chico), but the revisions to Route 17 would replace and expand service along Fair Street. As current ridership demand in the corridor does not presently warrant an expansion in overall service, the number of weekday runs would be reduced to save costs. Five westbound runs would be provided along with four eastbound runs on weekdays, which would serve commute trips (in both directions) as well as two mid-day runs. The current three daily runs on Saturdays would be maintained.

Paradise/Magalia Microtransit

Outlying areas of Paradise and Magalia would be served by a microtransit zone. This would replace the various low-ridership loops operated currently by Route 41 and also substantially expand the transit service area to encompass new developments in Paradise that are part of rebuilding the community (these new development sites are also shown in Figure 23.) To provide connections with the fixed route, service would operate from 6:30 AM– 6:00 PM on weekdays and 9:30 AM – 5:30 PM on Saturdays. Initially, one van would be in operation. If demand grows to the point when a consistent average response time exceeds 30 minutes, a second van could be put into operation during peak periods (approximately 6 AM to 10 AM and 3 PM to 7 PM) on weekdays.

Figure 23:
Paradise/Magalia Service Under Microtransit Scenario



Paradise/Magalia Operations

As shown in Table 26, this scenario would increase the overall vehicle-hours of service provided to serve Paradise and Magalia slightly (192 vehicle-hours per year), largely through the provision of Saturday microtransit service.

Benefits of Scenario in Paradise/Magalia

This scenario would have the following benefits in Paradise and Magalia:

- Improved on-time performance for fixed route.
- Lower ridership fixed route runs have been cut, to provide resources for microtransit.
- Lower performing route segments have been replaced with microtransit to better align the service with the market it serves.
- Microtransit significantly expands the portions of the Ridge communities that have transit service. Importantly, this includes scattered multifamily residential developments that cannot be efficiently served by fixed routes.

Table 26: Near Term Microtransit Scenario Impact on Paradise/Magalia Service Revenue Hours

Route	Vehicle Revenue-Hours of Service			
	Weekday	Saturday	Sunday	Total Annual
40	8.1	5.4	0	2,366
Microtransit	11.5	8	0	3,367
All Paradise/Magalia Services	19.6	13.4	0	5,733
Total Existing[1]	20.0	7.5	0	5,541
Difference	-0.4	5.9	0	192

Note 1: FY 2021/22

Other Intercity Services

Beyond the Paradise/Magalia service, the existing intercity network provides coverage and delivers the needs from communities within the B-Line service area. The system provides regional connections between Chico, Oroville, Gridley, and Biggs. However as identified in Chapter 4, the primary service challenge of the intercity routes is related to on-time performance at various times of the day. This Plan has been developed to address this issue and improve the system coverage. The guiding principle to redesign the service is to improve on-time performance issues on existing intercity routes.

Figure 24 illustrates the existing and the proposed changed intercity routes.

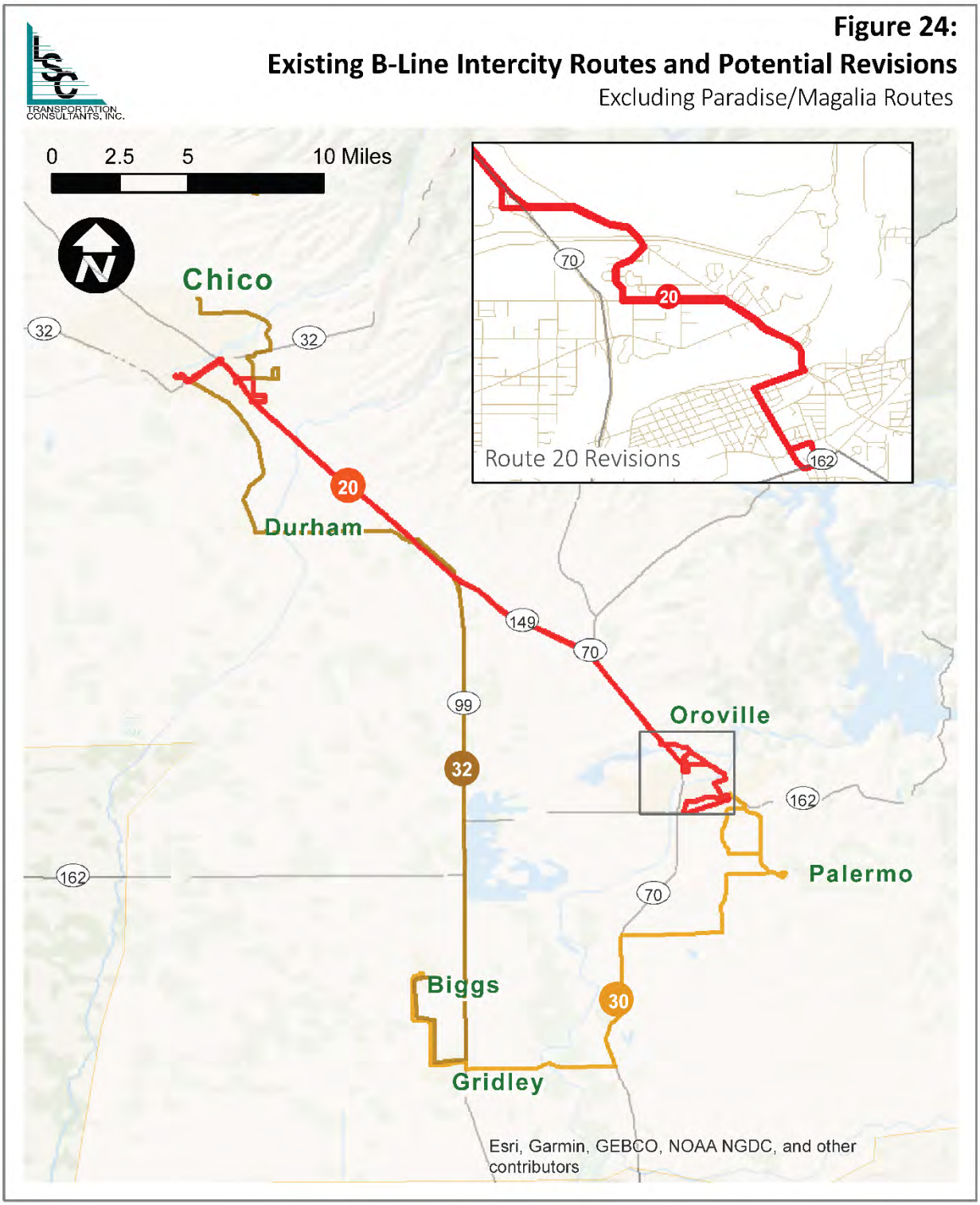
Route 20

Route 20 is currently providing critical connections between the most populous areas within the B-Line system – Chico and Oroville. In this scenario most of the routing of Route 20 will remain the same. The proposed rerouting will be focused on the Butte County public service complex in Oroville as illustrated in Figure 24. The proposed new Route 20 will be bidirectional along SR-70, Garden Dr, Table Mountain Blvd, County Center Dr, Nelson Ave, and back to Table Mountain Blvd. This will reduce running time by 1 to 2 minutes and improve on-time performance.

Route 30

No major routing changes to Route 30. Consideration was given to making the bus stop at the Feather Falls Casino on Route 30 an on-demand stop in order to reduce the total travel time and address the on time performance issue, but the time saved is small in comparison with the inconvenience to riders.

Figure 24:
Existing B-Line Intercity Routes and Potential Revisions
Excluding Paradise/Magalia Routes



Route 31

Prior to the Camp Fire, Route 31 provided service between Paradise and Oroville. Even before the pandemic and fire, ridership on this route was very low. Given that the bulk of the need for a transit connection to Paradise/Magalia is to/from Chico, available transit resources are better used in expanding that service (as discussed above) and reinstatement of Route 51 is not part of this scenario.

Route 32

No changes are considered for Route 32. While ridership is low, it is an important lifeline service, and serves disadvantaged communities.

Operations

Under this scenario, no changes in vehicle-hours of service would be made for Routes 20, 30, and 32. As Route 31 has not operated for several years, the impact of the elimination of this route is not included in the calculations.

Benefits to Intercity Services

- Improved on-time performance for intercity routes
- Maintain key service areas of the intercity routes
- Improve regional service efficiency

Total Systemwide Operations Impacts

Over the B-Line system, the Near-Term Scenario would require 65,882 annual vehicle-hours of revenue service, as shown in Table 27. This is 182 less than the total services under the existing service plan. As reflected in this table, this reflects a small increase in service for Paradise/Magalia, a slight decrease in Chico service, and no change in other services.

Table 27: Summary of Near Term Microtransit Scenario Impact on Revenue Hours

	Annual Vehicle Revenue-Hours of Service			
	Existing[1]	With Scenario	Change	% Change
Chico	45,035	44,662	(374)	-1%
Oroville	5,895	5,895	0	0%
Paradise/Magalia	5,541	5,733	192	3%
Other Intercity	9,592	9,592	0	0%
Total Systemwide	**66,064**	**65,882**	**(182)**	**0%**

Note 1: FY 2021/22

Ridership Impacts

Table 28 presents the ridership impacts under the near-term microtransit scenario. Overall, systemwide ridership is forecast to increase by 8 percent, or 31,300 boardings per year. (Note that this does not reflect any changes from external factors such as the continued rebound from the impacts of the pandemic.) By service area, this consists of:

- Chico: 6 percent increase
- Oroville: 2 percent increase
- Paradise/Magalia: 16 percent increase
- Other Intercity: 3 percent increase

Ridership improvements vary by routes. For example, Route 17 has an increase of over 60% due to the new routing on Fair Street which serves a higher density residential area and the social service organization, the Jesus Center. Other routes such as Route 2 had more modest ridership increase (7%) due to faster travel times with the removal of the DMV loop. Route 26 in Oroville had a reduction in ridership as the eastern portion of the route along Olive Highway was removed from the route and replaced by microtransit.

Fixed route ridership estimates were calculated using an elasticity of demand model which measures the demand shift based on demographic and operational changes. Microtransit ridership was calculated based on the total population and jobs in each zone. We have found that these two metrics have the strongest correlation to ridership for the microtransit service. The ridership formula was developed using a regression model that found that as population and employment increased so did ridership. By using existing ridership from fixed route segments in the area, the team used the following formula as part of the projections: Y (Weekly Ridership) = 11 (intercept) + Regression coefficient * X (Sum of population and employment in the zone). The microtransit ridership ranges show the population and employment potential growth scenarios. All ridership projections were checked through the ridership statistics produced through the Remix transit planning tool. As a new service to the region, however, the ridership estimates for the microtransit services have a relatively high level of uncertainty. These should be considered to have a possible error range of + or – 50 percent.

Table 28: Ridership Impacts - Near Term Scenario With Microtransit Service

Excluding Impacts of Change in Service Span

Route		Annual Ridership: Existing - Factored 2022 Estimated	Annual Ridership: Factored 2022 Estimated With Plan	Change	% Change
Chico Area					
2	Mangrove	34,200	36,500	2,300	7%
3	North/East	58,400	61,400	3,000	5%
4	First/East	37,900	37,900	0	0%
5	East 8th St	27,000	30,400	3,400	13%
7	Bruce/Manzanita	6,700	0	-6,700	-100%
8	Nord	30,400	30,400	0	0%
9	Warner/Oak	47,800	47,800	0	0%
14	Park/Forest/MLK CW	29,600	29,600	0	0%
15	Esplanade/Lassen	44,000	64,900	20,900	48%
16	Espanade/99	25,900	0	-25,900	-100%
17	Park/Fair/Forest CCW	14,100	23,000	8,900	63%
52	Chico Airport Express	1,800	0	-1,800	-100%
	Chico East Microtransit Zone	0	9,800	9,800	--
	Chico North Microtransit Zone	0	7,500	7,500	--
	Subtotal: Chico Area	*357,800*	*379,200*	*21,400*	*6%*
Oroville					
24	Thermalito	5,300	0	-5,300	-100%
25	Feather River	4,400	4,700	300	7%
26	Orange/Bridge St	3,800	3,100	-700	-18%
27	Oro Dam/Foodmaxx	4,300	1,700	-2,600	0%
	Oroville Microtransit Zones	--	8,600	8,580	--
	Subtotal: Oroville	*17,800*	*18,100*	*280*	*2%*
Paradise/Magalia					
40	Paradise/Magalia-Chico	26,600	41,600	15,000	56%
41	Magalia-Chico	19,300	0	-19,300	-100%
	Paradise/Magalia Microtransit Zone	0	11,700	11,700	--
	Subtotal: Paradise/Magalia	*45,900*	*53,300*	*7,400*	*16%*
Intercity (Excluding Paradise/Magalia)					
20	Chico-Oroville	57,900	60,100	2,200	4%
30	Oroville-Biggs	5,700	5,700	0	0%
32	Gridley-Chico	1,500	1,500	0	0%
	Subtotal: Intercity	*65,100*	*67,300*	*2,200*	*3%*
TOTAL SYSTEMWIDE		**486,600**	**517,900**	**31,300**	**6%**

NEAR TERM SERVICE SCENARIO WITH FIXED ROUTE SERVICE ONLY

Under this scenario, Routes 7 and 11 would remain unchanged, as would the Oroville Services and Routes 30 and 32. Route 52 would be eliminated. Routes that would be modified are defined below. Note that other routes not mentioned would remain unchanged.

Chico Service

Route 5 East 8th Street

This scenario would include two changes to the route. First, the Springfield Drive loop would be operated in both the inbound and outbound directions, rather than the current route which only travels on the loop in the inbound direction. The second change is to shorten the southern terminus loop to operate south on Forest Avenue, east on Parkway Village Drive and north on Huntington Drive. Service would be eliminated along the Notre Dame Boulevard loop. The revised route would be 11.2 miles in length, 0.3 miles less than at present. This will reduce running time by several minutes, improving on-time performance.

Route 9 Orange/Warner/Cedar

Route 9 would be modified to shift the southern terminus loop to Orange Street instead of Oak Street to provide additional coverage in the neighborhood. This does not change the length or operating time of the route but will provide more convenient service along West Seventh Street and Orange Street as well as provide service to the Amtrak station and Amtrak Thruway buses.

Route 15 Esplanade/Lassen

Under this scenario, Route 15 would take over the Rio Lindo Avenue / Cohasset Road loop to serve the DMV. In addition, the northern terminus would shift north to Ridgewood Drive to serve the Social Security office and to offset some of the additional time needed to serve the Rio Linda / Cohasset Road loop. While this adds length and time, at 11.3 miles this route can still maintain schedule.

Route 17 Park/Fair/Forest

The proposed routing would shift the service from MLK JR. Parkway to Fair Street in the outbound direction to provide direct service to the Jesus Center and Fairgrounds. Stops along MLK JR. Parkway would continue to be served by Route 14. The resulting route would be 7.0 miles in length, 0.5 miles shorter than the current route.

Route 52

Reflecting the low ridership, Route 52 would be eliminated.

Chico Operations

Under this scenario the annual revenue vehicle hours in the Chico area would be unchanged, except for the elimination of Route 52 (a reduction of 1,543 annual vehicle-hours).

Scenario Benefits

Overall, this scenario has the following benefits in the Chico Area:

- Travel times are reduced on Routes 2 and 5, improving the on-time performance.
- Direct fixed route local service is provided on Fair Street to the Jesus Center

Paradise/Magalia Service

Route 40

Under this scenario, the combination of Routes 40 and 41 discussed in the previous scenario would be implemented. This would provide a consistent and faster service connecting Magalia, Paradise and Chico. Additional runs from the old Route 41 will be added to the new Route 40. The Paradise Transit Center would be served in both directions.

Paradise Local Route

To provide service to the dispersed developments in Paradise, it would be necessary to operate a "Paradise Local" route. As shown in Figure 25, one bus would operate hourly over a 10.7-mile one-way loop. Service would be provided from 6 AM to 6:30 PM on weekdays and from 9:30 AM to 5:30 on Saturdays.

Magalia Local Route

A local route would also be needed to serve the outlying areas of Magalia, making transfers to Route 40 at the Lakeridge Loop. Service would be provided from 6:00 AM to 6:30 PM on weekdays, and 9:30 AM to 5:30 PM on weekends.

Paradise/Magalia Operations

As shown in Table 29, this scenario would increase the overall vehicle-hours of service provided to serve Paradise and Magalia by 3,559 vehicle-hours per year, 11.1 hours per weekday and 13.9 hours per Saturday.

Benefits of Scenario in Paradise/Magalia

This scenario would have the following benefits in Paradise and Magalia:

- Improved on-time performance for fixed route.
- Reduced travel times along the fixed route.
- Expansion of fixed route services to additional neighborhoods of Paradise.

Other Intercity Routes

Route 20

Route 20 would be revised to streamline service at the County public service complex in Oroville. The proposed new Route 20 will be bidirectional along SR-70, Garden Dr, Table Mountain Blvd, County Center Dr, Nelson Ave, and back to Table Mountain Blvd. This will reduce running time by 1 to 2 minutes and improve on-time performance.

Figure 25:
Paradise/Magalia Service under All Fixed Route Scenario

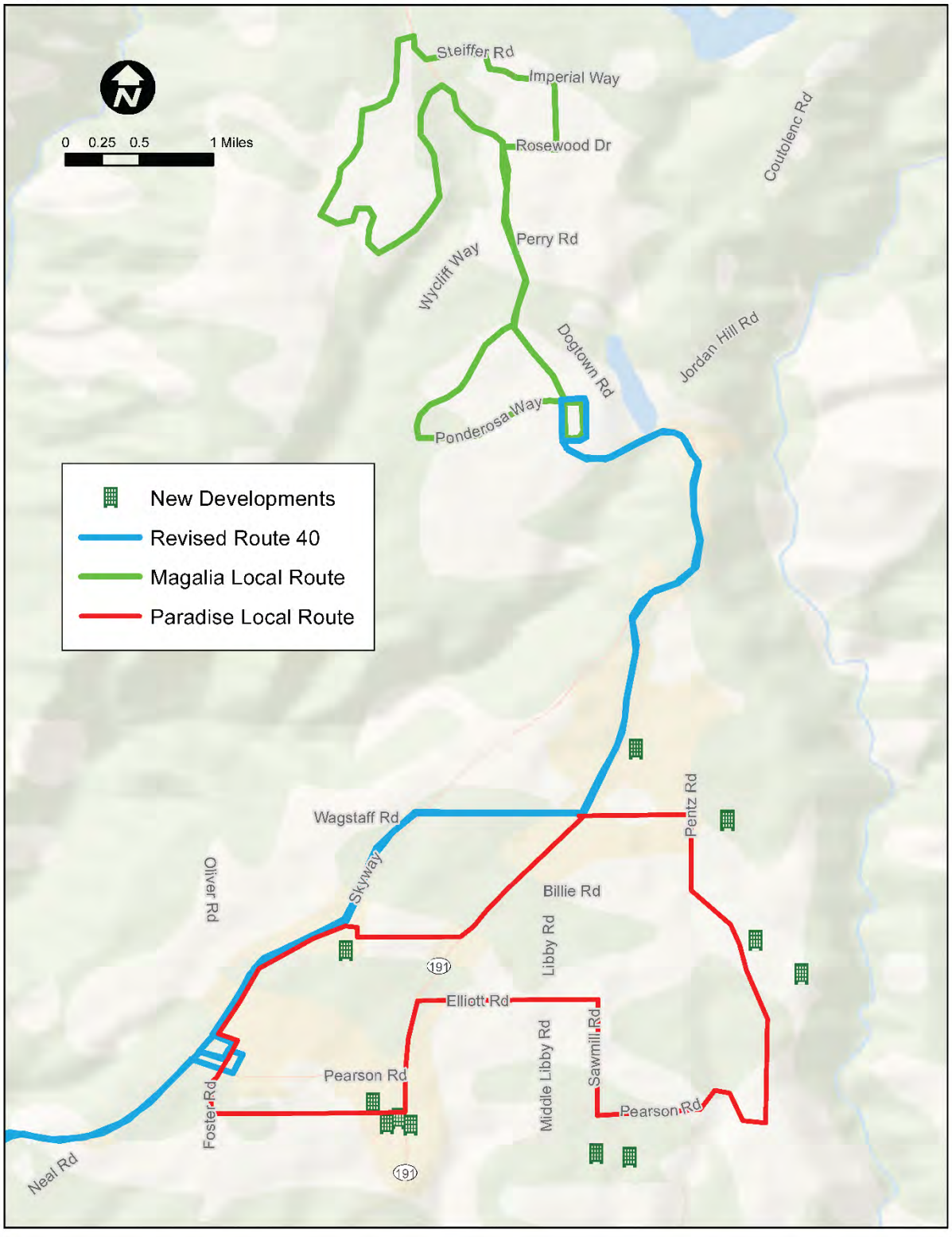


Table 29: Near Term Fixed Route Scenario Impact on Paradise/Magalia Service Revenue Hours

Route	Vehicle Revenue-Hours of Service			
	Weekday	Saturday	Sunday	Total Annual
40	8.1	5.4	0.0	2,366
Paradise Local FR	11.5	8.0	0	3,367
Magalia Local FR	11.5	8.0	0	3,367
All Paradise/Magalia Services	31.1	21.4	0	9,100
Total Existing[1]	20.0	7.5	0	5,541
Difference	11.1	13.9	0	3,559

Note 1: FY 2021/22

Total Systemwide Operations Impacts

With fixed route service only, the scenario would require an additional 2,547 annual vehicle-hours, as shown in Table 30. This is a 4 percent increase over the current service level of 66,064. Vehicle-hours would be increased to serve Paradise/Magalia and reduced in Chico.

Table 30: Summary of Near Term Fixed Route Scenario Impact on Revenue Hours

	Annual Vehicle Revenue-Hours of Service			
	Existing[1]	With Scenario	Change	% Change
Chico	45,035	43,493	(1,543)	-3%
Oroville	5,895	6,426	531	9%
Paradise/Magalia	5,541	9,100	3,559	64%
Other Intercity	9,592	9,592	0	0%
Total Systemwide	**66,064**	**68,610**	**2,547**	**4%**

Note 1: FY 2021/22

Ridership Impacts

Ridership forecasts for this scenario are shown in Table 31. Total systemwide ridership is forecast to increase by 5 percent, or 22,800 boardings per year. By service area, this consists of:

Chico: 4 percent increase
Oroville: no change
Paradise/Magalia: 10 percent increase
Other Intercity: 3 percent increase

Ridership improvements vary by route. For example, Route 17 has an increase of over 60% due to the new routing on Fair Street which serves a higher density residential and the Jesus Center social

service organization. Other routes would have a more modest ridership increase, such as a 13 percent increase on Route 5 due to new service areas and faster travel times, and a 7% increase on Route 2 due to faster travel times with the removal of the DMV loop.

Comparison of Near-Term Scenarios

Table 32 presents a comparison of the systemwide annual ridership and vehicle-hours of service of the two scenarios, indicating the following:

- While both scenarios would increase ridership, the Microtransit Scenario would generate more ridership for the system as a whole: 8,500 annual boardings or 1.1 percent more than the All Fixed Route Scenario.
- The All Fixed Route Scenario would require an increase of 2,547 annual vehicle-hours of service, while the Microtransit Scenario would result in a slight (182) decrease.
- At the marginal contractor operating cost of $88.86 per revenue vehicle-hour and considering $47,500 per year for microtransit software costs, the Microtransit Scenario would increase annual operating cost by $31,500, compared with $226,000 for the All Fixed Route Scenario.
- Both scenarios would improve the cost-effectiveness of B-Line operations, as measured by the operating cost per passenger-trip. Compared with the current overall B-Line fixed route value of $18.97, the Microtransit Scenario reduces this cost by 6 percent to $17.88, while the Fixed Route Scenario reduces it by 2 percent to $18.57.
- The marginal change in operating cost per additional passenger-trip would equal $1.01 for the Microtransit Scenario, versus $9.91 for the All Fixed Route Scenario. By this measure, the Microtransit Scenario is a much more effective a use of operating dollars as the All Fixed Route Scenario.
- Total systemwide productivity (passenger-trips per revenue vehicle hour) would be 7.86 under the Microtransit Scenario and 7.42 under the All Fixed Route Scenario. Compared with the current systemwide value of 7.37, the Microtransit Scenario generates a 7 percent improvement, compared with a 1 percent improvement for the Fixed Route Scenario.
- As discussed in more detail in Chapter 9, below, the Microtransit Scenario would reduce average annualized capital costs by $169,600, while the Fixed Route Scenario would increase these costs by $107,200.

Table 31: Ridership Impacts - Near Term Scenario With All Fixed Route Service

Excluding Impacts of Change in Service Span

Route		Annual Ridership: Existing - Factored 2022 Estimated	Annual Ridership: Factored 2022 Estimated With Plan	Change	% Change
Chico Area					
2	Mangrove	34,200	36,500	2,300	7%
3	North/East	58,400	61,400	3,000	5%
4	First/East	37,900	37,900	0	0%
5	East 8th St	27,000	30,400	3,400	13%
7	Bruce/Manzanita	6,700	6,700	0	0%
8	Nord	30,400	30,400	0	0%
9	Warner/Oak	47,800	47,800	0	0%
14	Park/Forest/MLK CW	29,600	29,600	0	0%
15	Esplanade/Lassen	44,000	54,450	10,450	24%
16	Espanade/99	25,900	15,450	-10,450	-40%
17	Park/Fair/Forest CCW	14,100	23,000	8,900	63%
52	Chico Airport Express	1,800	0	-1,800	-100%
	Subtotal: Chico Area	*357,800*	*373,600*	*15,800*	*4%*
Oroville					
24	Thermalito	5,300	5,300	0	0%
25	Feather River	4,400	4,400	0	0%
26	Orange/Bridge St	3,800	3,800	0	0%
27	Oro Dam/Foodmaxx	4,300	4,300	0	0%
	Subtotal: Oroville	*17,800*	*17,800*	*0*	*0%*
Paradise/Magalia					
40	Paradise/Magalia-Chico	26,600	41,600	15,000	56%
41	Magalia-Chico	19,300	0	-19,300	-100%
	Paradise Local Route	0	5,100	5,100	--
	Magalia Local Route	0	4,000	4,000	--
	Subtotal: Paradise/Magalia	*45,900*	*50,700*	*4,800*	*10%*
Intercity (Excluding Paradise/Magalia)					
20	Chico-Oroville	57,900	60,100	2,200	4%
30	Oroville-Biggs	5,700	5,700	0	0%
32	Gridley-Chico	1,500	1,500	0	0%
	Subtotal: Intercity	*65,100*	*67,300*	*2,200*	*3%*
TOTAL SYSTEMWIDE		**486,600**	**509,400**	**22,800**	**5%**

Table 32: Summary of Near-Term Scenarios			
	Existing [2]	With Microtransit Scenario	All Fixed Route Scenario
Annual Fixed Route Ridership	486,600	517,900	509,400
Change in Annual Ridership		*31,300*	*22,800*
Annual Fixed Route Revenue Vehicle-Hours	66,064	65,882	68,610
Change in Annual Revenue Vehicle-Hours		*(182)*	*2,547*
Operating Cost per Passenger-Trip	$18.97	$17.88	$18.57
Change in Operating Cost per Passenger-Trip		-6%	-2%
Marginal Operating Cost per Passenger-Trip		*$1.01*	*$9.91*
Total Productivity (Psgrs per Revenue Vehicle Hr)	7.37	7.86	7.42
Change in Productivity		*7%*	*1%*
Impact On Annual B-Line Non-Paratransit Costs			
Existing Costs			
Operations and Maintenance	*$8,334,367*	*$8,365,867*	*$8,560,367*
Administration	*$896,646*	*$896,646*	*$896,646*
Total: Operating/Administration	*$9,231,013*	*$9,262,513*	*$9,457,013*
Change in Annual Operating Costs [(1)]		$31,500	$226,000
Percent Change in Annual Operating Costs		0.3%	2.4%
Capital	*Varies Depending Largely on Vehicle Purchases*	*-$33,920*	*$21,440*
Note 1: At a marginal cost per revenue vehicle-hour of $88.86 plus $47,500 per year for microtransit software costs.			

MID-TERM SERVICE SCENARIO

An additional service scenario was developed for possible implementation in the mid-term (5 to 10 years) planning horizon. This assumes that future ridership warrants expansion[8]. A potentially viable means of enhancing transit quality and generating increased ridership is to provide high frequency (every 15 minutes) on high ridership potential corridors connecting key activity centers in Chico. As shown in Figure 26, this consists of 15-minute weekday service on Routes 3 and 14 from approximately 6:30 AM to 6:00 PM. Route 3 is identified over Route 2 for 15-minute service due to the higher existing ridership (70 percent higher). Similarly, Route 14 ridership is currently 108 percent higher than Route 17 ridership.

[8] Chico fixed routes (excepting Routes 8 and 9 largely serving CSUC ridership), reflecting the ridership impact of the pandemic, currently have an average productivity of 6.8 passenger-trips per vehicle-hour, with the most productive route (Route 3) generating a productivity of 13.1. While B-Line does not have specific standards that would warrant 15-minute service, these values are substantially below those typically considered to warrant significant frequency improvements in other similar transit systems.

This service enhancement would require 32 additional daily Route 3 runs along with 29 additional daily Route 14 runs. As shown in Table 33, over the course of a year a total of 16,254 additional vehicle-hours would be operated in revenue service. At current marginal contract rates, this would increase annual operating costs by $1.18 Million.

Table 33: Mid Term Service Improvements Vehicle Revenue-Hours

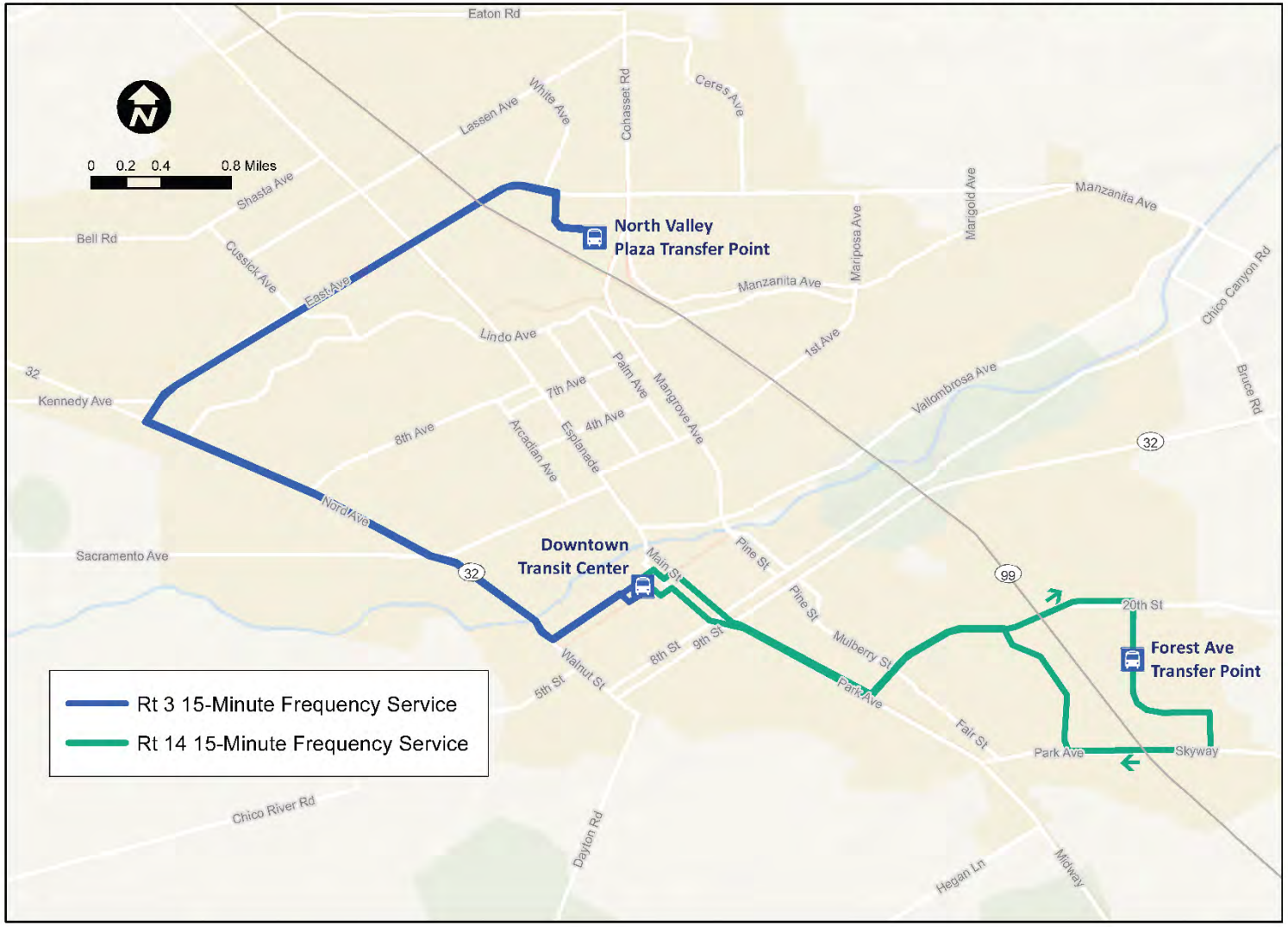
	Additional Vehicle Revenue-Hours of Service			
Route	Weekday	Saturday	Sunday	Total Annual
3	32.0	0.0	0	8,256
14	19.3	0.0	0	4,988
Total	51.3	0.0	0	13,244
Annual Operating Cost				$1,177,000

Note 1: At a marginal cost per revenue vehicle-hour of $88.86 plus $47,500 per year for microtransit software costs.

Ridership Impact

Ridership elasticity analysis indicates that enhancing service frequency to every 15 minutes would increase total ridership by approximately 56,000 boardings per year, or a 62 percent increase over the near-term scenario ridership. Note that this ridership estimate does not assume any "background" increase in ridership (due to rebound from pandemic ridership patterns, for example) nor does it reflect ridership generated by any new development along the high frequency corridor.

Figure 26:
Mid-Term Service Improvements



This page intentionally left blank.

Chapter 7
SPAN OF SERVICE ALTERNATIVES

This chapter focuses on alternatives to the current hours and days of B-Line services, also known as the "span of service." One of the most often requested improvements is the expansion of B-Line service hours. This chapter presents an evaluation of service expansion on routes which are likely to have the greatest potential to generate additional ridership, or that have been a common request. These alternatives are evaluated in comparison with the status quo, and separately from other alternatives developed as part of the route design effort. Note that no changes in B-Line Paratransit services would be needed, as paratransit services are already provided in the potential additional hours of fixed route service.

Operate Routes 8 and 9 Friday Evenings while CSU Chico In Session

Routes 8 and 9 are referred to as the student shuttles because they focus on serving student housing, the Chico State campus, and the Chico Transit Center during CSU Chico sessions. The routes operate on half-hourly headways Monday through Thursday from approximately 7:30 AM to 9:34 PM (Route 8) and 10:01 PM (Route 9). On Fridays, service ends at just after 4:00 PM, and there is no Saturday service. A reduced route, Route 9C, operates on hourly headways on a portion of Route 9 on Friday evenings (until 8:24 PM), Saturdays (8:30 AM to 6:24 PM), and when Routes 8 and 9 are not operating (during CSUC's winter breaks and summers).

Weekends, including Friday evenings and Saturdays, are typically busy times for students as they visit restaurants, bars, and events. To serve this active time, several options were considered. In the first option, Route 8 would end at 9:34 PM and Route 9 at 10:01 PM on Fridays. Route 9C would continue to be operated during winter and summer breaks, but not on Friday evenings while CSUC is in session. This option would add 219 hours of service annually at a marginal cost of $19,400[9]. Given current Route 8 and 9 ridership, it is expected that 1,300 additional passenger trips would be generated annually.

Under the current agreement, CSUC provides funding to B-Line at a rate of $1.75 per student boarding the local routes. As students comprise 96 percent of ridership on these routes, the overall average revenue per new passenger would be $1.69, indicating that an additional $3,200 in fare and student subsidy revenue would be generated. The net subsidy needed to fund this additional service would be $17,300 per year.

Operate Routes 8 and 9 Friday Evenings and Saturdays while CSU Chico In Session

While the above alternative is a low-cost option to expand service on Fridays, there is a demand for Saturday service on Routes 8 and 9 as well. Under this alternative, Routes 8 and 9 would be served Friday evenings, as described above, and Saturday service would be operated from approximately

[9] Based on a Fiscal Year 2022/23 marginal operating cost of $88.86 per vehicle-hour of service.

Table 34: B-Line Span of Service Alternatives

Alternative	Days per Year	Change in … Daily Vehicle-Hours [1]	Annual Vehicle-Hours [1]	Marginal Operating Cost [1]	Annual Ridership [2]	Fare Revenue [3]	Marginal Subsidy [4]
Routes 8 & 9 Fri. Eve. When CSUC in Session	32	6.9	219	$19,500	1,300	$2,200	$17,300
Routes 8 and 9 Fri Eve, Saturdays When CSUC in Session	64	25.3	869	$77,300	12,600	$21,300	$56,000
Expand Chico Saturday Service to Match Weekday Span [5]	52	77.8	4,048	$359,700	23,800	$28,500	$331,200
Expand Chico Weekday Service to 10:00 PM [6]	257	9.5	2,442	$217,000	7,240	$8,700	$208,300
Route 20 One Additional Evening Run	358	2.0	716	$63,600	1,900	$1,700	$61,900
Route 40 - Additional Saturday Run	52	2.0	104	$9,200	440	$370	$8,830
Route 40 - Sunday Service	49	4.8	233	$20,700	910	$770	$19,930
Drop Last Run on Oroville Routes	257	-2.0	-514	($45,700)	(1,500)	($1,330)	($44,370)

Note 1: Compared with status quo, and applying a FY 2022-23 operating cost of $88.86 per VSH. A negative operating cost represents savings.
Note 2: Ridership based on ridership patterns in Sept 2021 and Sept 2022 (changes in ridership per hour, day of week).
Note 3: Based on average fare collected per passenger trip in October of 2021 and 2022.
Note 4: Marginal subsidy is calculated by subtracting fare revenue from operating cost. However, Routes 8 and 9 are designed to serve CSU Chico, and the increased operating cost should be negotiated with the college.
Note 5: Excludes Routes 7, 16 and 52 which will be replaced by microtransit. Would add 8.5 hours Fridays (Routes 8 & 9) and 71.25 Saturdays.
Note 6: Excludes Route 7, 16 and 52. *Source: LSC*

8:20 AM until 10:00 PM while CSUC is in session. Route 9C would continue to be operated during winter and summer breaks, but not on Friday evenings or Saturdays while Chico State is in session.

As shown in Table 34, the combined Friday evening and Saturday service on Routes 8 and 9 during CSUC session would add 869 hours of service annually, at a marginal cost of $77,300. Saturday service would generate an estimated 11,300 passenger trips, bringing the Friday and Saturday ridership to 12,600, and generating $21,300 in passenger revenue. The net subsidy needed to fund this additional service would be $56,000 per year.

Expand Saturday Hours on Chico Routes to Match Weekday Hours

In this alternative, operating hours of all Chico Routes would be expanded to operate the same on Saturdays as on weekdays, except Routes 7, 16, and 52 which would be served by microtransit. Routes 8 and 9 would also be expanded on Friday evenings to match Monday through Thursday hours. As shown in Table 34, this would increase operating hours by 4,048 hours annually at a marginal operating cost of $359,700. It is projected ridership would increase by 23,800 passenger trips annually, with $28,500 generated in revenue, for a subsidy of $331,200.

Expand Chico Weekday Service to 10:00 PM

In this alternative, operating hours of all Chico Routes would be expanded to operate until 10:00 PM on weekdays, again excluding Routes 7, 16 and 52. As shown in Table 34, this would increase

operating hours by 2,442 hours annually at a marginal operating cost of $217,000. It is projected ridership would increase by 7,240 annually, generating $8,700 in fare revenues. This would result in a marginal subsidy of $208,300 annually.

Expand Route 20 Evening Hours

At present, the last southbound departure from Chico is at 6:10 PM on weekdays and 4:10 PM on weekends. Under this alternative, Route 20 would be expanded on weekday and weekend evenings by adding one round trip at the end of each service day. Weekdays, Route 20 would be operated until 9:00 PM by adding one southbound run at 7:10 PM, arriving in Oroville Transit Center at 8:00 PM, departing northbound at 8:10 PM, and arriving at the Chico Transit Center at 9:00 PM. Similarly, on weekends, one round trip would be added at 5:10 PM southbound, returning to the Chico Transit Center to end Route 20 service at 7:00 PM.

As shown in Table 34, this alternative would add 716 hours of service annually, at a marginal cost of $63,600. Given current end-of-day ridership on Route 20 and considering recent ridership recovery from 2021 to 2022, it is expected that this alternative would generate 1,900 additional passenger trips annually, generating $1,700 in farebox revenue. The subsidy required would be $61,900.

Add One Run to Route 40 on Saturdays

Paradise continues to recover from the Camp Fire and COVID. Over the years, residents have asked for more consistent service between Paradise and Chico, and later service after the current last departure time at 6:10 PM. Under this alternative, an additional round-trip would be operated on Saturdays, departing eastbound from Chico at 8:10 PM, This would add 104 hours annually at a cost of $8,830 and add an estimated 440 passenger trips annually, as shown in Table 34.

Operate Route 40 on Sundays

Residents in Butte County, including in Paradise, have long sought Sunday service. Currently, only Route 20 provides Sunday service, but comparisons of ridership in September 2021 versus September 2022 show Sundays have among the better ridership recovery rates. However, as mentioned, Route 40 is among one of the few routes for which ridership has not improved on Saturdays from September 2021 to September 2022 (though weekday ridership improved by a small margin). Under this alternative, Route 40 would operate the same schedule as the current Saturday service. This would add 233 hours of service at a marginal operating cost of $19,930 annually, but it is expected based on ridership patterns that this service would serve just 910 additional passenger trips per year, also shown in Table 34.

End Oroville Routes Earlier on Weekdays

In addition to considering expansion of services, it is important to consider potential reductions to routes which operate inefficiently, as these resources might be better spent elsewhere. Productivity on Oroville routes drops off starting after 4:00 PM, with a sharp decline in ridership after 6:00 PM. Furthermore, ridership from September 2021 to September 2022 improved only slightly for Routes 24 and 26 and declined slightly for Routes 25 and 27. Under this alternative, the last run of each

Oroville route would be dropped, meaning that service would end at 6:30 PM on Route 24, 5:50 PM on Route 25, 5:27 PM on Route 26, and 5:50 PM on Route 27. This would reduce annual hours by 514, saving $44,370 in marginal operating costs. It can be expected that some passengers (on the order of 20 percent) would shift to earlier runs, but some additional ridership would be lost on earlier runs because the round trip would no longer work for some passengers. It is estimated that annual ridership would be reduced by 1,500 passenger trips overall. Considering the $1,330 loss in passenger revenue, this option would reduce subsidy requirements by $44,370.

Performance Comparison of Span of Service Alternatives

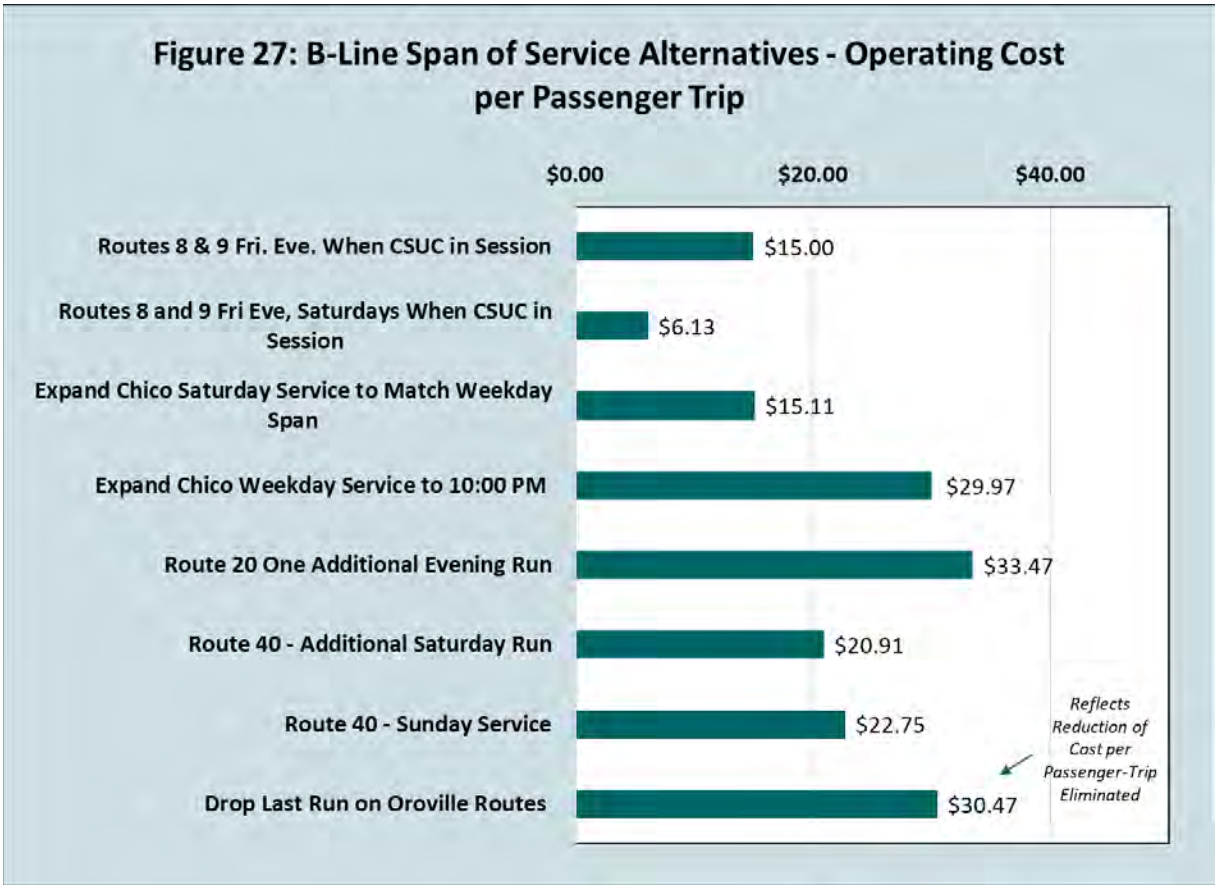
Table 35 shows a comparison of the marginal passenger-trips per vehicle-hour and marginal operating cost per passenger-trip for the various alternatives. As reference points, the systemwide fixed route average values are also provided for both pre-pandemic and pandemic years.

Table 35: B-Line Span of Service Alternatives Performance Measures

Alternative	Change in … Operating Cost per Passenger Trip	Change in … Passengers per Service Hour
Systemwide Fixed Route		
FY 2018-19	*$4.38*	*14.0*
FY 2020-21	*$13.09*	*5.4*
Routes 8 & 9 Fri. Eve. When CSUC in Session	$15.00	5.9
Routes 8 and 9 Fri Eve, Saturdays When CSUC in Session	$6.13	14.5
Expand Chico Saturday Service to Match Weekday Span	$15.11	5.9
Expand Chico Weekday Service to 10:00 PM	$29.97	3.0
Route 20 One Additional Evening Run	$33.47	2.7
Route 40 - Additional Saturday Run	$20.91	4.2
Route 40 - Sunday Service	$22.75	3.9
Drop Last Run on Oroville Routes (Note 1)	$30.47	2.9

Note 1: A positive value reflects a reduction in both parameters.
Source: LSC

The number of passengers carried per service hour is a measure of productivity. As shown in Table 35 and Figure 27, the most efficient alternative would be Routes 8 and 9 on Friday evenings and Saturdays while CSUC is in session, which would carry an estimated 14.5 passenger trips per hour of service. This is above the average systemwide efficiency, even for pre-pandemic conditions. Evening service on Routes 8 and 9 performs better than average at 5.9 passenger-trips per vehicle-hour and expanding Saturday service to match weekday service generates an estimated 5.8 passengers per hour added. Other span-of-service alternatives perform relatively poorly, at values less than current systemwide averages. Note that the value for eliminating the last weekday Oroville runs (2.9) reflects the drop in ridership over the drop in vehicle-hours, indicating that few riders would be eliminated for every vehicle-hour of service reduced, as ridership in this period is currently very low.

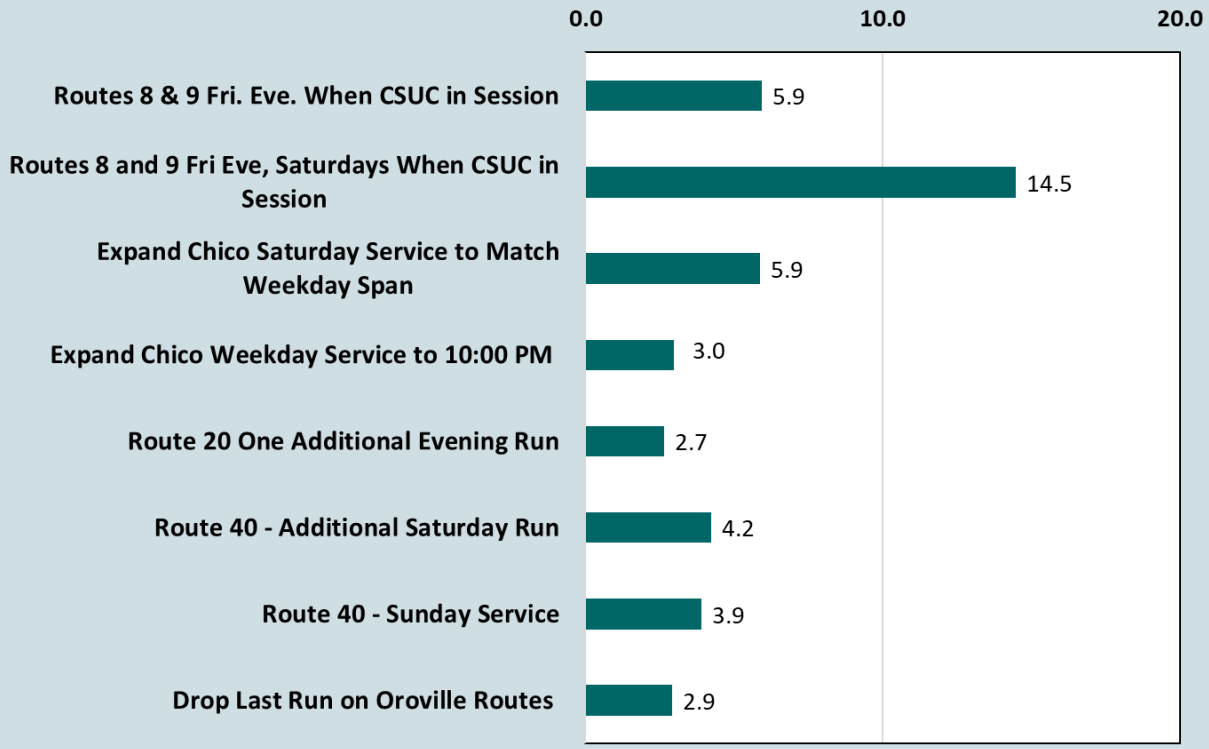


For the operating cost per passenger-trip performance measure, a lower value reflects a better performing alternative. As shown in Figure 28, the provision of Routes 8 and 9 service on Friday evenings and Saturdays performs relatively well, with a value of $6.13 per passenger-trip (less than the existing systemwide average). Friday evening Routes 8 and 9 service would require $15.00 per passenger-trip and full expansion of Chico Saturday service would require $15.00, slightly higher than the current systemwide average. All other options would require over $20 per additional passenger-trip, well above the current average. Dropping the last runs of the Oroville routes would save $30.47 in operating cost for every passenger-trip eliminated, indicating that this option would improve overall cost-effectiveness.

Conclusions

This analysis indicates that increased span of service could be considered on Routes 8 and 9 (both Friday evenings and Saturdays). Cutting the last hour of Oroville service would offer cost savings without significant loss of ridership. All other options would reduce the overall cost-efficiency and productivity of B-Line fixed route services.

Figure 28: B-Line Span of Service Alternatives - Passenger Trips per Service Hour



Chapter 8
PARATRANSIT SERVICE ALTERNATIVES

INTRODUCTION

This chapter presents an overview of the B-Line Paratransit Service alternatives. It is prepared as part of the B-Line Routing Study to provide a resource for assessment of potential changes in paratransit services.

EXPAND PARATRANSIT SERVICE AREA

B-Line already provides paratransit service in a relatively broad area. While the ADA only requires service within ¾ of a mile of fixed routes, B-Line also offers service up to 3 miles beyond the ¾ mile area (a total of 3.75 miles).

As is common for a service area defined by travel distance, there are some areas where regions of relatively consistent development are split by the service boundaries. A review of the existing service areas indicates two such areas:

- To the south, the existing Zone 3 outer boundary narrowly excludes residences in the northern Durham area, as well as rural residential areas along Lott Road, Cummings Road, Esquon Road and adjacent streets.
- To the north, there is a rural residential area along Meridian Road, Munjer Road and adjacent streets that is within a mile of the existing outer edge of Zone 3.

Other portions of the existing Zone 3 boundary are largely undeveloped.

Service could be expanded by establishing a Zone 4, allowing service to an additional 1-mile ring around the existing Zone 3 boundary. Due to the long travel distances, an average service request in this new area would require approximately 40 minutes of vehicle time (compared with the current systemwide average of 19 minutes). At the FY 22/23 contractor cost of $88.86, this would incur a cost of approximately $63. Due to the low density of development, the potential for shared rides in this new area would be very low. Based on the current fare structure, the fare would be $14.75 per one-way trip, indicating a subsidy of approximately $48 per passenger-trip.

While B-Line does not have defined performance measures for paratransit services, it is useful to compare these figures against the existing system averages. The current paratransit service generates a marginal operating cost of approximately $25.25 per passenger-trip, and an operating subsidy need of $22.75. Providing service to an expanded Zone 4 would generate operating costs approximately 2.5 times the existing average cost, while operating subsidy would be over twice the current average.

REPLACE GRIDLEY GOLDEN FEATHER FLYER PROGRAM WITH B-LINE PARATRANSIT SERVICE

At present, paratransit service in Gridley is provided by the *Golden Feather Flyer* service, operated by the City of Gridley Mondays through Fridays from 8 AM to 6 PM. Available information (such as recent unmet needs hearing minutes or the most recent Triennial Performance Audit) does not indicate any particular operational or service issues with the current service. As this is the only paratransit service in Butte County not operated through B-Line, however, it is worth reviewing whether service should instead be provided by B-Line Paratransit.

Recent operating and performance data for the Golder Feather Flyer is provided in Table 36. Data is provided both for a pre-COVID year (FY 2018/19) as well as the most recent available data year (FY 2020/21). As is commonly seen, ridership has dropped substantially. Of most importance to this evaluation, however, is the cost per vehicle service-hour. In FY 2020/21, this equaled $55.57. To provide a current figure, the City budget documents were reviewed to identify a 15 percent increase in costs between FY 2020/21 and FY 2022/23. This in turn indicates a current rate of $64.20 per vehicle service hour. In comparison, the current B-Line contract rate is $88.86, which indicates that the City of Gridley is providing service at 28 percent lower costs than could B-Line. This also does not consider the additional out-of-service travel time (approximately one daily vehicle-hour, round trip). In conclusion, shifting paratransit service in Gridley from the Feather Flyer program to B-Line would substantially increase costs, with no defined benefits.

Table 36: Gridley Golden Feather Flyer Performance Analysis

	FY 2018/19	FY 2020-21
Annual Operating Cost	$124,527	$96,412
Vehicle Service Hours	2,023	1,735
Vehicle Service Miles	15,426	8,532
Passenger-Trips	7,713	2,364
Passenger Revenues	$15,838	$4,322
Operating Subsidy	$108,689	$92,090
Cost per Vehicle Service-Hour	$61.56	$55.57
Cost per Passenger-Trip	$16.15	$40.78
Subsidy per Passenger-Trip	$14.09	$38.96

Source: FY 2018/19 - FY 2020/21 TDA Triennial Performance Audit of the City of Gridley.

Chapter 9
CAPITAL CONSIDERATIONS

While the focus of this study is not on the capital improvements to the B-Line system, the routing strategies do impact the capital requirements of the system. This chapter presents a discussion of the capital requirements to implement routing changes, including bus stop modifications, assuming implementation of the Microtransit Service Scenario.

PLAN CAPITAL REQUIREMENTS

Added and Eliminated Service and Bus Stops

The recommended route network will have impacts to locations of the bus stops. In some cases, stops have been added but overall there is a greater number of stops removed as part of the replacement of fixed route with microtransit. A complete list of impacted bus stops is provided in Appendix F.

Chico

In Chico the primary locations of added stops are along the southern terminus of Route 9, the new northern loop for Routes 2 and 15 on Ridgewood Drive and the Route 5 southern loop on Huntington Drive. The new bus stop locations are show in Figure 29.

With the discontinuation of Routes 7, 16 and 52, there are numerous proposed bus stops to be removed in the recommended route network. As shown in Figure 30, the northern portion of Esplanade and the eastern portion of Chico will be served by the Northwest and Northeast microtransit zones. These areas will continue to have transit service but will no longer have designated bus stops.

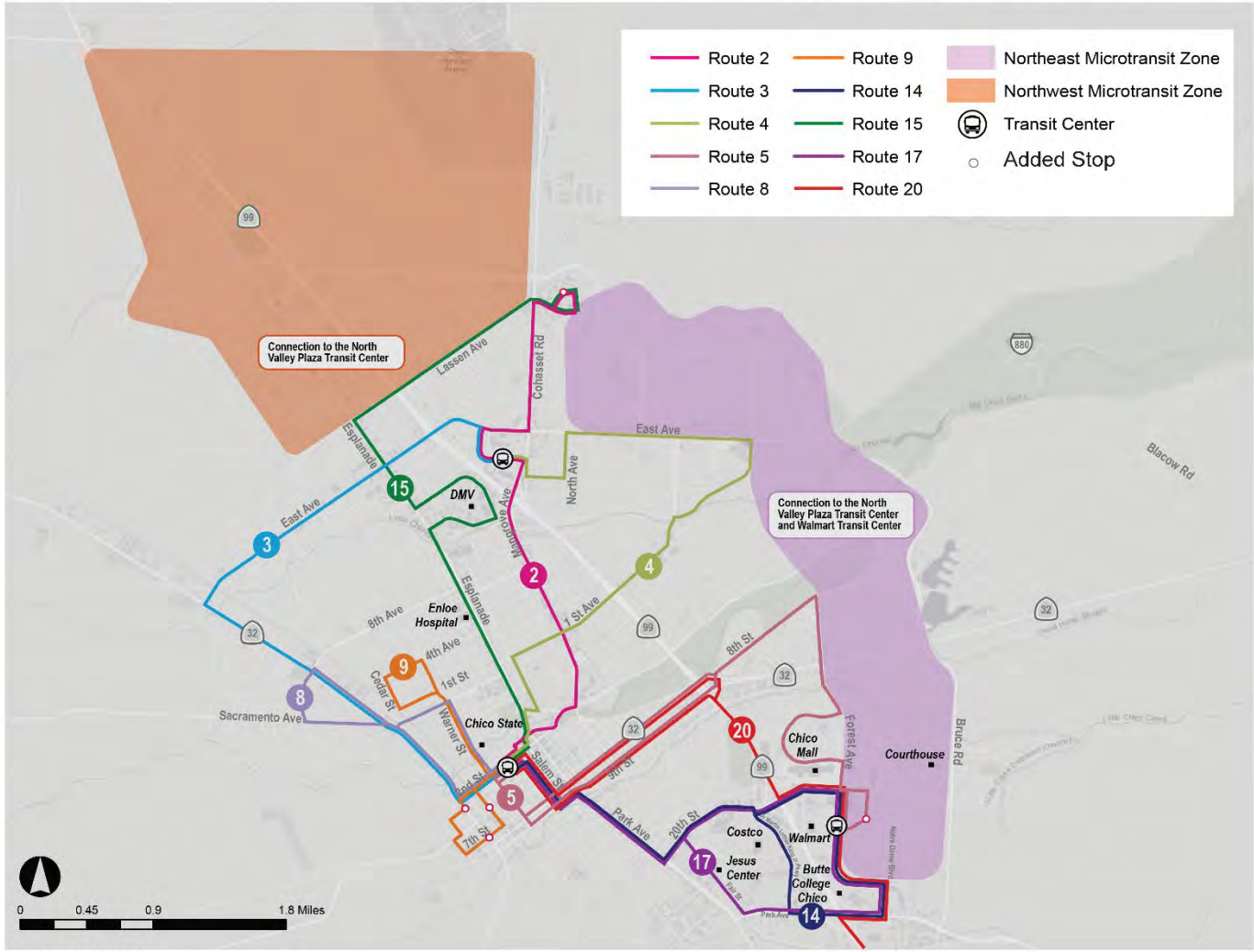
Oroville

In Oroville there are minimal number of stops added as most of the proposed fixed route service follows existing lines. The only added stops are a layover location at the Walmart on Route 25 and a stop along Veatch Street on Route 27 to serve the FoodMaxx. A number of stops have been removed as part of the recommended service changes. The impacted stops in Thermalito and in north and south Oroville will be served by new microtransit zones. The proposed added and removed bus stops are shown in Figures 31 and 32.

Paradise/Magalia

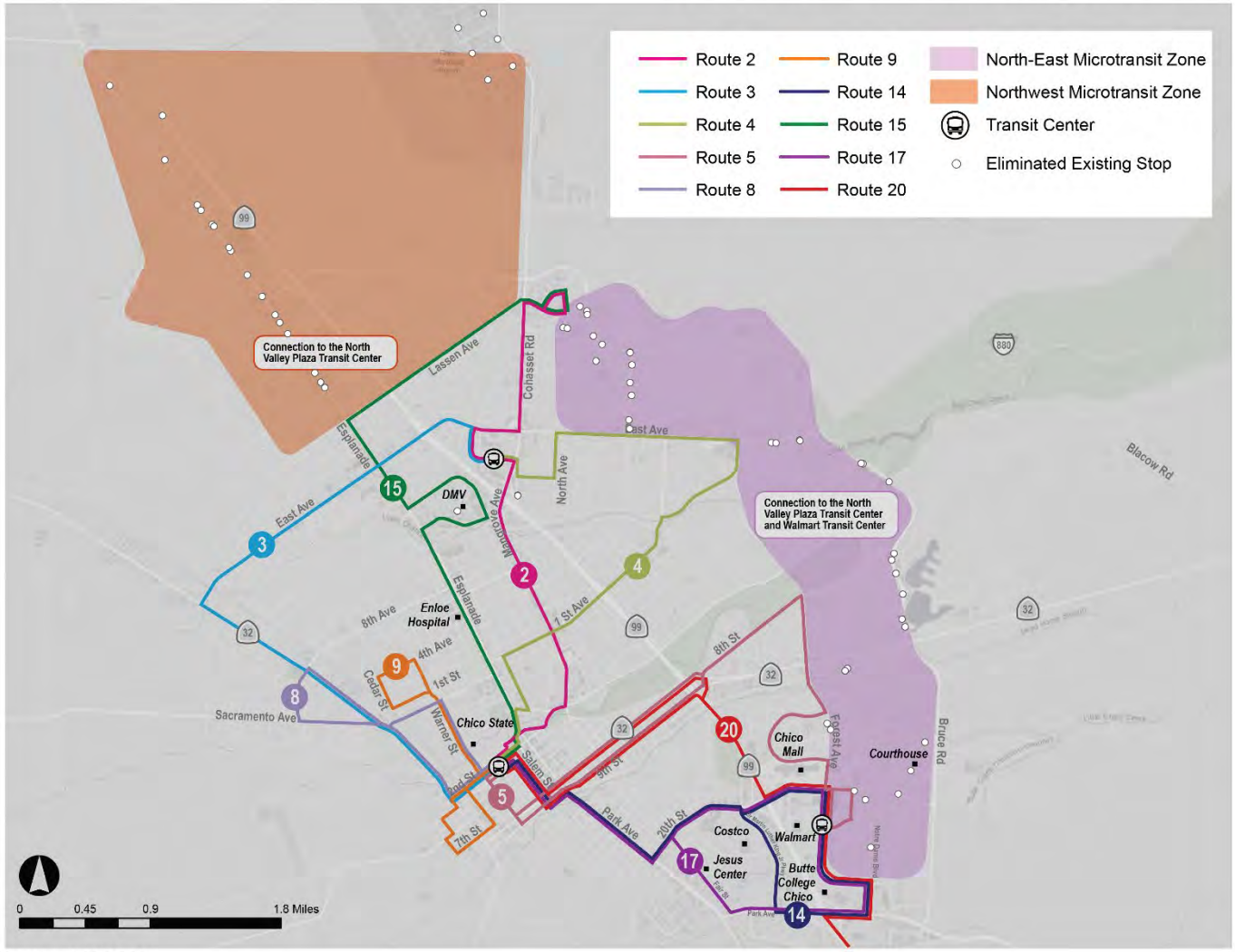
The recommended plan includes a combined route that takes over portions of Routes 40 and 41. The service plan does not add any new stops but replaces stops in northern Magalia and along Clark Road and Pearson Road in Paradise with microtransit service as shown in Figure 33.

Figure 29:
Proposed Added Stops in Chico



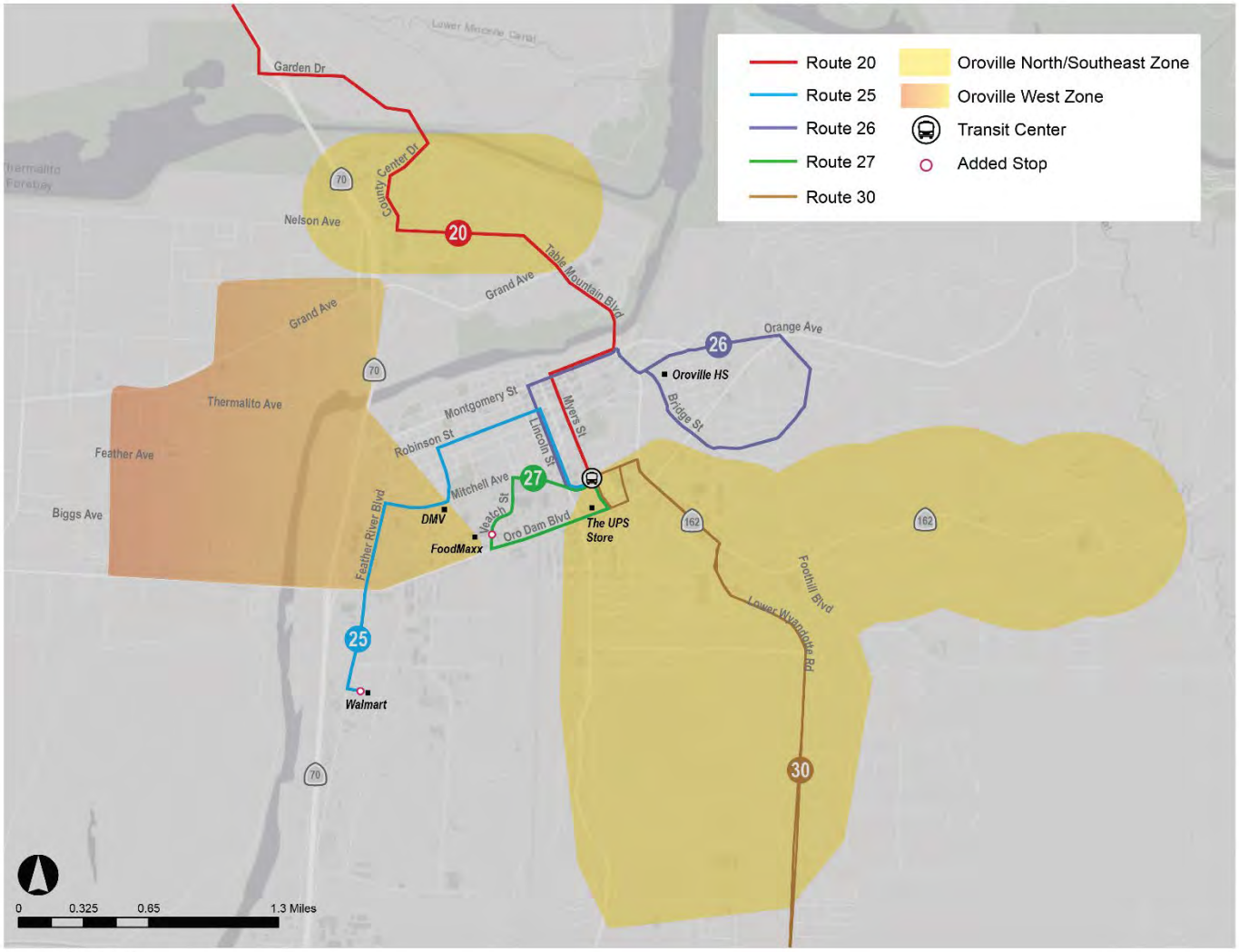
Souce: AECOM

Figure 30
Proposed Eliminated Stops in Chico



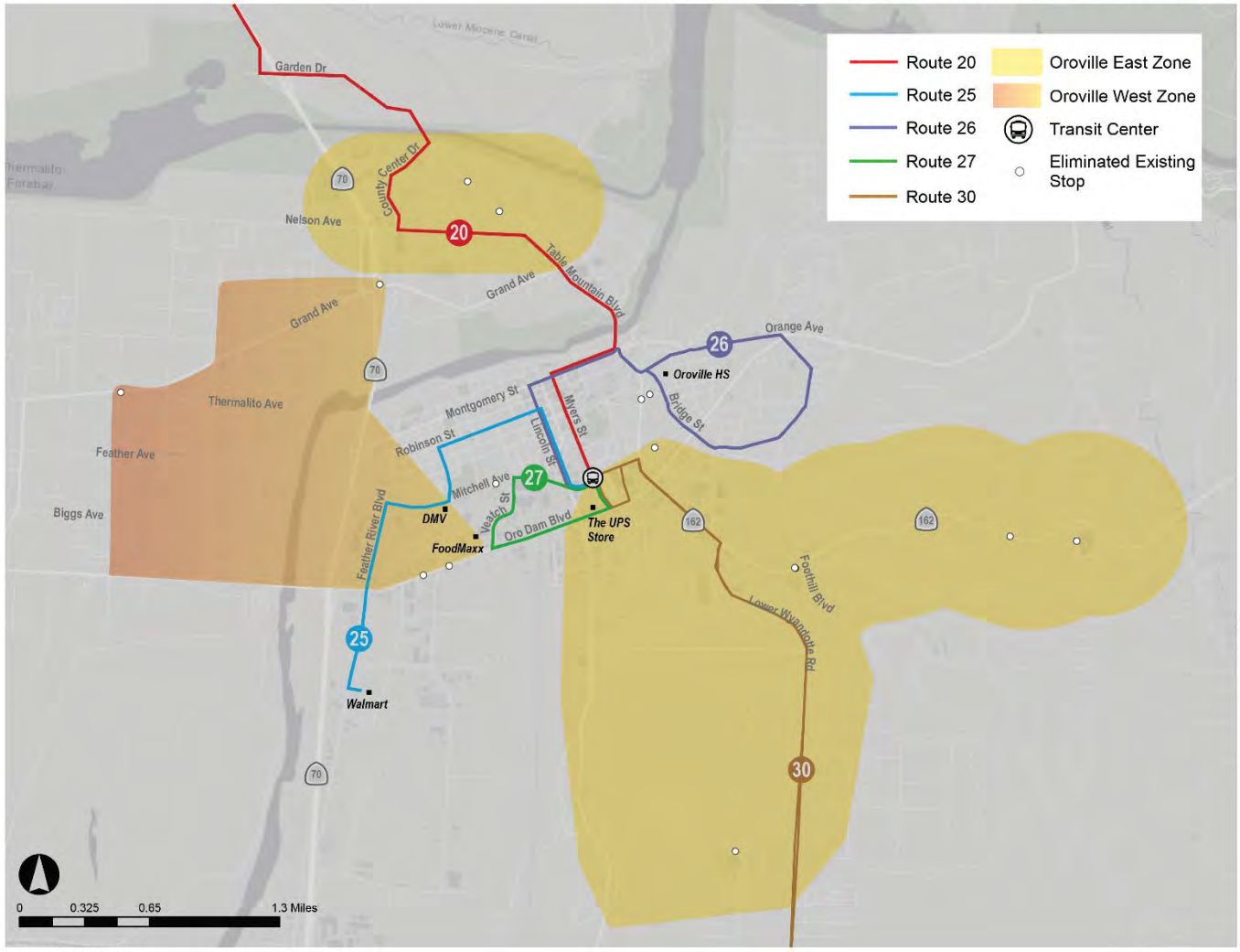
Souce: AECOM

Figure 31:
Proposed Added Stops in Orovillle



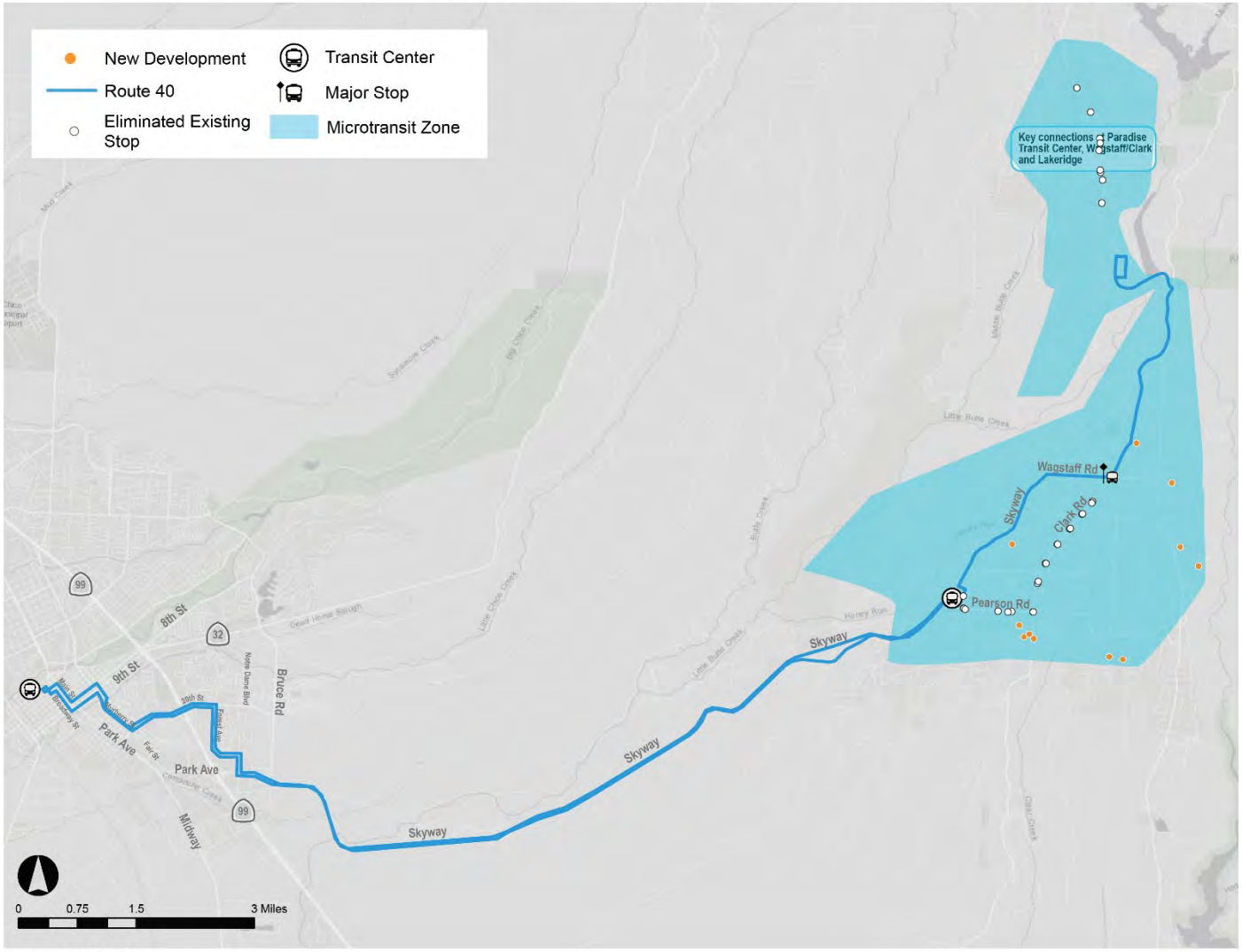
Souce: AECOM

Figure 32:
Proposed Eliminated Stops in the Oroville



Souce: AECOM

Figure 33:
Proposed Eliminated Stops in the Paradise/Magalia Area



Souce: AECOM

Table 37 presents a summary of the number of stops to be added and removed. As shown, a total of 112 stops would be removed and 6 new stops would be added. The following stops would be provided with shelters:

- E. Lassen Avenue / Ridgewood Drive in Chico
- Chico Train Station
- FoodMaxx in Oroville
- Wal Mart in Oroville

This table also provides an estimate of the total costs of stop modifications. As indicated, an estimated $16,200 would be needed for new stops (assuming new pads would be required for relocated shelters) and $47,200 for removal of existing stops, for a total of $63,400.

Table 37: Bus Stop Modification Costs

Community	Total # of Stops	# of Stops by Amenity: Shelter	Bench Only	Sign	Total
New Stops					
Chico	4	2	0	2	
Oroville	2	2	0	0	
Paradise/Magalia	0	0	0	0	
Total	6	4	0	2	
Removal of Existing Stops					
Chico	65	10	1	60	
Oroville	16	2	0	15	
Paradise/Magalia	31	11	2	31	
Total	112	23	3	106	
Unit Costs					
New Stops (1)		$4,000	--	$108	
Removal of Existing Stops		$1,000	$1,000	$108	
Total Cost					
New Stops		$16,000	0	$200	$16,200
Removal of Existing Stops		$23,000	3000	$21,200	$47,200
Total		$39,000	$3,000	$21,400	$63,400

Note 1: Assumes no right-of-way costs (improvements on existing right-of-way) and no permitting costs. Assumes relocation of existing shelter on new pad.

Fleet Requirements

The Paratransit service currently requires up to 13 vehicles at peak times (8 in urban service and 5 in rural service). Including a minimum of 3 vehicles as spares (a 20 percent spare ratio), 16 vans are needed for the daily operation of the service. As shown in Appendix C, the B-Line fleet currently includes 22 14-passenger Ford E-450 vans (with wheelchair accessibility, indicating the availability of six vans. The microtransit services would require a total of five vans in operation (2 in Paradise/Magalia, 1 in Oroville, 1 in East Chico and 1 in North Chico) and an additional spare, for a

total of six. The current fleet therefore has the capacity to accommodate the microtransit program. It is worth noting, however, that 11 of these vans are 2013 models and will warrant replacement in the near future. The Microtransit Scenario would also reduce the number of fixed route buses by four (elimination of Routes 7, 16 and 52, and reduction in Oroville buses by one). The Fixed Route Scenario would result in a net increase of one fixed-route bus in peak operation (two local fixed route buses in Paradise/Magalia minus the Route 52 bus).

The change in fleet requirements can be used to calculate the impact on capital costs requirements. While actual capital costs depend on the specific fleet purchases in each year, over the long term a valid way to assess capital need impacts is the annualized vehicle cost. Table 38 presents these calculations, assuming current typical unit costs for battery-electric vehicles. While the Near-Term Microtransit Scenario would require replacement of 6 vans over the long term, it would also reduce the need for fixed route buses by four. Reflecting the higher unit costs of buses, the net impact is a reduction in annual capital needs of $69,600. In comparison, the Near-Term Fixed Route Scenario would increase annualized capital costs by $107,200. Typically, Federal Transit Administration funding sources are available to fund 80 percent of vehicle purchase costs. The impact on local capital funding requirements, therefore, would be an annual reduction of $33,920 for the Microtransit Scenario and an increase of $21,440 for the Fixed Route Scenario.

Table 38: Impact of Service Scenarios on Annualized Vehicle Costs

INPUT VALUES	Bus	Van
Unit Costs (Battery Electric Vehicles)	$950,000	$250,000
Useful Life (Years)	12	7

	Near Term: With Microtransit Scenario	Near Term: All Fixed Route Scenario	Mid-Term: Incremental Over Near Term
Change in Required Vehicles			
Buses	-4	1	4
Vans	6	0	0
Annualized Vehicle Purchase Cost (1)			
Buses	-$428,800	$107,200	$428,800
Vans	$259,200	$0	$0
Total	-$169,600	$107,200	$428,800
Annualized Local Match Requirement at 20 Percent			
Total	-$33,920	$21,440	$85,760

Note 1: At assumed 3 percent interest rate.

The Mid Term Scenario would require a total of four additional buses to operate the 15-minute headway service, over and above the Near-Term Scenarios requirements. This would require an annualized cost of $428,800, and an annualized local match requirement (at 20 percent local match) of $85,760.

App Software System

Microtransit services use specific software programs and apps, designed to receive ride requests, schedule drivers, track services and generate reports. There are a variety of software providers with varying prices, capabilities and levels of customer support, that are offered on a subscription basis. One firm offering a microtransit app currently quotes a base cost on the order of $25,000 per year, plus a technology fee for on-vehicle services of $4,500 per active vehicle. If all four microtransit zones discussed above are implemented, B-Line would operate 5 vehicles at a time. Total annual costs would therefore equal approximately $25,000 + 5 X $4,500 = $47,500 per year.

Transit Signal Priority

Transit Signal Priority (TSP) systems consist of modifications to traffic signals (including signal timing controllers and potentially changes in signal heads) that are automatically actuated by the approach of an oncoming bus. TSP typically does not always provide an automatic green indication for the bus, depending on the time in the overall signal cycle and traffic conditions. Instead, it may extend a green indication to allow passage of a bus ("extended green") or a revision in the phasing sequence to increase the chance for a green indication or a reduction in the signal delay for buses. Many studies have found that a significant increase in bus travel speeds can be accomplished (a reduction in signal delay on the order of 20 to 30 percent) with only a small (2 percent) increase in overall general traffic delay. TSP may also be combined with transit "jump queue" lanes or right turn lanes with through movements allowed for buses only.

As discussed above, the near-term scenarios include the implementation of TSP on approximately 5 intersections along Route 3 (such as Nord Avenue/West Sacramento Avenue, Nord Avenue/West 8th Avenue, East Avenue/Esplanade, and East Avenue/SR 89 Southbound Ramps and East Avenue/SR 9 Northbound Ramps. As part of the mid-range scenario, approximately 10 additional TSP locations could be implemented along Route 14, focusing on the major intersections along Broadway, Main Street, Park Avenue, 20th Street, Forest Avenue and Skyway. A specific traffic engineering study would be needed to identify specific locations.

The costs of TSP programs vary significantly depending on the existing signal controller and actuation equipment as well as the specific movements provided with prioritization. A typical conservative average cost is $30,000 per intersection, plus $2,000 for equipment per bus. While not the entire B-Line fixed route fleet would need to be provided with the on-bus equipment, it is beneficial to have a high degree of flexibility on specific bus assignments to routes. Assuming TSP equipment is installed in 20 buses (and including $50,000 for a detailed design analysis) the overall cost of the near-term TSP project would be $240,000, while the additional costs for the mid-term intersections would add $300,000. TSP implementation is a capital project that is conducted in coordination with the jurisdictions owning the signal.

This page intentionally left blank.

Chapter 10
FARE ALTERNATIVES

INTRODUCTION

This chapter presents alternatives regarding B-Line fare policies. First, the potential for eliminating transit fares is discussed. This is followed by a discussion of discount fare policy. Finally, the use of the various fare media is reviewed, and recommendations made regarding simplifying the fare structure.

ZERO FARE TRANSIT

B-Line currently has a relatively complicated fare structure. Base one-way cash fare for general public is $1.75 on local fixed route services and $2.40 on regional fixed route services, with an ADA paratransit fare (for advanced reservations) of $3.50 per ride. A 50 percent discount is provided for seniors (age 65 and above), persons with disabilities and Medicare card holders. Youth ages 6 to 18 are provided with roughly a 30 percent discount, and those under age 6 ride for free with a fare-paying adult. Of note, roughly 37 percent of the boardings during the school term and 19 percent of the boardings during the summer consist of passengers using the University Card (paid through CSUC).

Over the last several years, many transit systems have implemented free fare systems to encourage ridership, simplify passenger boarding, and remove financial barriers to frequent use. As discussed in detail below, free fares can have very positive results for local transit systems. However, there are challenges to implementation, maintenance, and security that must also be addressed. A basic overview of free fare systems is presented below, followed by an overview of three peer transit systems to B-Line, their experiences in implementing free fare systems, and how they've managed challenges associated with free fares.

Major concerns related to free fare systems include cost-effectiveness, ridership impacts, and effects on service quality, security, and customer satisfaction. While costs of operation typically rise with the elimination of fares, the Transportation Research Board notes that often times transit systems don't consider the costs associated with the actual collection of fares including fare collection technology, enforcement, and transit pass materials and distribution. According to Implementation and Outcomes of Fare-Free Transit Systems (2012) by the Transit Cooperative Research Program (TCRP), ridership typically increases significantly after the implementation of free fare service. Lastly, in consideration of safety and security, the study concluded that while their surveyed transit systems did experience an increase in inappropriate passenger behavior initially, many systems implemented solutions that have since resolved most conflicts. These strategies included video surveillance, driver training, destination requirements, a local police liaison, and reserving the right to refuse service to disruptive passengers.

Free Fare System Overview

The following three transit systems have also implemented free fare service over the past five years. A brief overview of their service, and its success, is described below, followed by challenges related to community support and safety.

- Mountain Line – Missoula, Montana: Mountain Line enacted zero-fare service as a three-year demonstration starting in 2015. With increases to ridership, benefits to transit efficiency, and improved quality of life, the program was made permanent in 2018. With a service population of about 70,000 people, Mountain Line now serves 1.5 million rides annually (a 70 percent increase in ridership over previous years). In a recent survey, 48 percent of riders confirmed that they ride the bus more frequently since the implementation of free fare. The city staff has noticed a decrease in congestion and parking demand as a result as well. Missoula is home to the University of Montana.
- Corvallis Transit System – Corvallis, Oregon: Corvallis Transit System (which serves Oregon State University) went fare free in 2011 due to the implementation of a Transportation Operations Fee (TOF) that increases as fuel costs rise. In its first year, CTS ridership increased by 38 percent. The TOF replaced the portion of the City's General Fund (property taxes) previously dedicated to Transit, making those funds available for other uses such as the Library, Parks and Recreation, and the Police and Fire Departments. Today it provides a stable source of local funding for matching State and federal funds.
- Tahoe Truckee Area Regional Transportation (TART) -- Town of Truckee/Lake Tahoe, California: TART began phasing in free fare in 2019. In the limited period of time between the elimination of fares on TART and the beginning of the pandemic in mid-March 2020 provides some insight into the ridership impacts of free fares on TART. From January 1 to March 15 of 2020, total TART ridership increased by 33 percent over the same period in 2019. This consisted of a 25 percent increase in the daytime service ridership and a 99 percent increase in the evening ridership (that tends to have a relatively high proportion of visitors). Changes in transit services typically take several years before the full ridership potential is reached. In light of this, a 40 percent increase in overall TART ridership associated with free fares is conservatively estimated over the long term.

Implementation Process Example

The details of Mountain Line's zero fare implementation process were discussed through a brief interview with their Marketing Specialist. Their program began with a three-year pilot that was funded through partnerships with local organizations such as hospitals, the local university, radio stations, the tourism association, and the downtown association. This was to address the public's initial concern of funding public transit through local tax revenue. Mountain Line then focused on spreading a positive, forward-thinking message to the public through strong outreach and marketing efforts in the community. Once the pilot period was over, they were able to keep the zero-fare system with overwhelming support from the public. The program now uses operation funds derived from local property tax revenue and has grown to be a point of pride for the community.

Safety and Security

All three of the peer transit systems have implemented ways in which to keep their transit systems clean, safe, and secure for all passengers. In the case of Mountain Line, they have leaned into supporting trained drivers through a detailed passenger code of conduct. Some of exampled from their code of conduct includes the following:

- Cooperate with requests from Mountain Line personnel.
- Disembark after one round trip.
- Refrain from behavior that intrudes on the welfare of others, including but not limited to:
  - Interfering with the safe operation of any Mountain Line vehicle.
  - Endangering, threatening, harassing, or intimidating others.
  - Sleeping on the bus is prohibited.

Mountain Line staff indicated that they have not had any major altercations or issues of safety since having implemented zero fares. They maintain training of their drivers and have a good relationship with local police. While they are not currently having any issues of security along their service, they are exploring opportunities to roll out a crime-reporting and/or complaint phone application in partnership with the City of Missoula.

Almost all of the free fare transit services surveyed in TCRP 101 replied that security was not an issue. These transit providers went on to describe many strategies that have been implemented since transitioning to free fare. Of those mentioned in the report, the following were deemed most effective:

- Adoption of local ordinances that support and allow zero tolerance passenger ejection and no loitering or roundtripping policies.
- Drivers are trained to ask passengers where their destination is to discourage joyriding.
- The installation and known presence of video surveillance on all buses.
- Strong partnership with local police and the establishment of a liaison that specifically handles transit matters.
- Suspension of disruptive riders and a signed agreement to reinstate passenger.

In the case of a particularly disruptive passenger, transit services have trained their bus drivers to issue two verbal warnings. If the passenger does not comply, they are asked to disembark at the following stop. One transit service replied that "*Local riders, particularly the low-income job access commuters, often help the driver because they know the bus will be stopped until a supervisor or police officer arrives. They will use peer pressure to persuade the passenger to stop because they do not want to be late for work*." Most agencies have indicated that these security measures have been successful and that their number of incidents are fairly low (less than 5 per year).

Impacts of Free Fare on B-Line

In assessing how elimination of fares would impact B-Line, the following bears consideration:

- Much of the existing ridership boards using the University Pass. While this proportion varies depending on whether classes are in session, over the course of the year approximately 32 percent of boardings are made using this pass. Eliminating fares would not impact this

substantial proportion of existing B-Line riders. At present, B-Line is reimbursed based on a rate of $1.75 per local rider and $2.40 per regional rider. Whether CSUC and Butte College would be willing to maintain current reimbursement rates if fares are eliminated would need to be discussed.

- Beyond students, the majority of B-Line riders have limited access to the private auto as an alternative mode, as evidenced by the 70 percent of the onboard survey respondents indicating that they did not have a car available for their trip. For many other area residents, the relatively low level of traffic congestion (in comparison with larger urban areas) and the low level of need to pay for parking makes the private auto a convenient mode choice in Butte County. This in turn indicates a relatively low ridership increase associated with elimination of fares. A 35 percent increase in non-University Pass ridership is conservatively assumed.
- The drop in ridership associated with the pandemic has left substantial unused capacity on the fixed route buses. With the exception of Routes 8 and 9 (which would not see a significant increase in ridership anyway, as the large majority are University Pass users), there is sufficient empty seating on the B-Line buses to accommodate a 35 percent increase in ridership without adding additional service.
- Elimination of fares could significantly increase the costs associated with the B-Line paratransit program. The Americans with Disabilities Act requires that paratransit fares be no more than twice the fixed-route fare – indicating a zero fare for paratransit service if fixed-route fares are eliminated. . A study conducted by the University of Illinois in 2012 (*Cost Estimation of Fare-Free ADA Complementary Paratransit Service in Illinois*) indicates that eliminating fares could result in a large increase in demand for paratransit service … a doubling or more. While some increase in demand could be accommodated through increased utilization of existing service-hours, most would translate into an increase in the level of service to be provided. This in turn could require roughly an additional 10,000 vehicle-hours of service per year, increasing annual operating costs on the order of $900,000.
- B-Line services currently bring in approximately $780,000 in passenger revenues generated by the fixed routes services and $185,000 for paratransit services, for a total of $965,000 in total fares. Of the fixed route revenues, on the order of $375,000 are University Pass reimbursements.
- There are also other factors that may impact B-Line finances. The existing costs of printing passes, managing pass distribution, fare handling and fare revenue accounting would be eliminated. Whether all of the personnel costs associated with these tasks can actually be eliminated depends on the degree to which individual positions are shared with other activities, but a reasonable estimate would be a savings of at least $50,000 per year.
- In addition, the elimination of fixed route fares for persons currently using Paratransit Service could yield a modest reduction in long-term paratransit service costs; to be conservative and due to the uncertainty of this factor, no additional cost savings is assumed.

The overall impact of elimination of fares on B-Line ridership would be approximately 126,000 passenger-trips per year (or a 23 percent increase), consisting of 109,000 fixed route passengers plus 17,000 paratransit passengers. Elimination of fares would reduce B-Line revenues by approximately

$590,000 (assuming the University Pass agreements stay in place). Paratransit service costs would be increase by $900,000, while fare handling costs would be decreased by $50,000. The total net impact on B-Line subsidy needs would be an increase of $1,440,000 per year.

Dividing the increase in passenger by the increase in costs yields an overall cost of $11.43 per passenger-trip, which is 40 percent less than the current B-Line fixed route system average. This indicates that elimination of fares would make overall service substantially more cost effective. The large overall price tag, however, indicates that new funding sources would be needed to make this option viable.

INCREASING ELIGIBILITY FOR DISCOUNT OR FREE FARE

Short of the expensive step of eliminating fares, a more modest change that can benefit persons most impacted by the cost of transit ridership is to expand the categories of persons eligible for free or reduced fares. One group in particular that transit systems are increasingly providing reduced fares are Veterans. Examples of systems that provide half-fares on fixed route service for Veterans are StanRTA (serving Stanislaus County, California), Washoe County (Nevada) RTC, and Monterey Salinas Transit (the latter of which also extends the discount to spouses or caregivers of Veterans). Petaluma Transit provides rides to Veterans at no fare.

The revenue impact to B-Line would depend on the number of Veterans currently using the service that are not already getting a discount as a result of age, disability or Medicare status. While this figure is not known, it is probably quite small, particularly compared with the large changes in fare revenues over recent years. The overall impact on B-Line finances would therefore be insignificant.

SIMPLIFYING THE B-LINE FARE STRUCTURE

At present, the B-line fixed route service offers a total of 28 individual fare types, including cash, 2-ride passes, an All Day pass, 10 ride passes, 30 day passes, Token Transit, downtown employee pass, the University Card, and an annual pass. Many of these fare instruments also have differing costs by passenger category. Each one of these categories must be specifically handled by the drivers, tracked through the farebox system, and addressed in the accounting system. In particular, these various fares add to the stress of the driver's workload and can create undue conflicts with boarding passengers.

Table 39 shows the level of use of the various fare instruments, for both a month in the school year and a month in summer. One fare instrument that has relatively low usage is the 2-ride pass, that is used by only 1.6 to 2.7 percent of all passengers. While 2-ride passes are convenient to social service provides (that can hand the pass to a client rather than handing cash for fares), this constitutes a total of 7 individual fare categories. It could potentially be eliminated, and passengers (and social service agencies) encouraged to instead use the Day Pass. A discount day pass could also be offered at half-price ($2,50), with eligibility for the discount pass expanded to include youth.

Table 39: B-Line Boardings by Fare Type

			Boardings - February 2020		Boardings - August 2021	
			#	%	#	%
Cash Boardings	**All**	All	17,964	21.1%	15,570	41.4%
1-Ride Regional Regular	**All**	All	830	1.0%	329	0.9%
2-Ride Pass	**Local**	Regular	1,791	2.1%	200	0.5%
		Discount	444	0.5%	77	0.2%
		Youth	277	0.3%	122	0.3%
	Regional	Regular	246	0.3%	62	0.2%
		Discount	146	0.2%	103	0.3%
		Youth	53	0.1%	14	0.0%
All Day Pass	**All**	All	890	1.0%	658	1.8%
10-Ride Pass	**Local**	Regular	954	1.1%	265	0.7%
		Discount	1,268	1.5%	550	1.5%
		Youth	411	0.5%	277	0.7%
	Regional	Regular	547	0.6%	137	0.4%
		Discount	373	0.4%	148	0.4%
		Youth	107	0.1%	10	0.0%
30-Day Pass	**Local**	Regular	2,074	2.4%	962	2.6%
		Discount	10,001	11.8%	4,451	11.8%
		Youth	2,822	3.3%	446	1.2%
	Regional	Regular	1,441	1.7%	620	1.6%
		Discount	3,486	4.1%	1,775	4.7%
		Youth	590	0.7%	197	0.5%
Smart Card	**All**	All	--	--	418	1.1%
Stored Value Card	**All**	All	220	0.3%	92	0.2%
University Card[4]	**All**	All	31,239	36.7%	7,242	19.3%
365 Day Employee	**All**	All	1,356	1.6%	415	1.1%
365 Day Soc. Service	**All**	All	5,501	6.5%	2,447	6.5%
Paratransit (2-Ride)	**All**	All	10	0.01%	7	0.02%
TOTAL	**All**	All	85,041	100.0%	37,594	100.0%

Note 1: Seniors (65+), Disabled, and Medicare card holders are all eligible for discounted fares with supplemental verfication

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

Note 4: California State University Chico and Butte College provide access to B-Line services to students and staff

Chapter 11

B-LINE ROUTING PLAN

INTRODUCTION

This chapter presents the recommended comprehensive Routing Plan for the B-Line transit system. This discussion builds upon the detailed evaluation of alternatives presented in previous chapters; the reader is encouraged to refer to these previous chapters for additional detail on the service elements.

An important basis of this plan is the public input provided in the course of this study. Key public input opportunities to date consist of the following:

- A virtual community workshop on July 14th with 16 participants. A summary of the workshops is provided in Appendix G.
- A second virtual community workshop on October 22, 2022, also with 16 participants.
- An onboard survey, which provided input from 280 participants.
- Development of a project webpage throughout the study process.

In addition, a third Public Workshop will be held along with community pop-up events to gain input on this Draft Plan.

NEAR-TERM PLAN

The Near-Term Routing Plan is designed to improve the near-term effectiveness of the overall transit program within financial constraints and shift services to better meet current demands and needs.

Chico Service Modifications

The existing route network in general is serving the transit needs of Chico well. The system provides good coverage of the urban area and the route structure provides good service to downtown Chico and the college campus, with transfers in downtown Chico as well at secondary transfer points at the North Valley Plaza and Forest Avenue in the south. There are some areas (notably in the eastern and northern portions of the service area) with low ridership that merit revisions. In addition, there is the need to revise routes to improve on-time performance. This plan has been developed to address those issues and improve the system overall. The guiding principles to redesign the services in Chico include:

- Retain key services in downtown Chico
- Reflect community unmet needs
- Address on-time performance issues on existing Chico routes
- Replace low performing routes with microtransit service
- Add direct service in the southeast of the City and to new destinations such as the Jesus Center
- Emphasize North Valley Plaza as the secondary transit center

Figure 34 presents the recommended Routing Plan for the Chico service area. As shown, two microtransit service areas are planned. These will consist of an app-based service (similar to Uber or Lyft) by which passengers can request immediate rides either through the app or by phone, and are provided with a curb-to-curb ride anywhere within the individual zones or to nearby fixed route hubs. Additional detail on microtransit can be found in Chapter 7, above.

The following describes the recommended changes for each route.

Route 2 Mangrove

Route 2 will continue to operate from downtown Chico to northeast Chico primarily by the Mangrove Avenue and Cohasset Road corridors. There are two changes to Route 2 under this plan. First, the route will no longer serve the DMV loop on Rio Lindo Avenue and Parmac Road. The change will allow for faster travel times and more reliable service. In addition, the north end of the route is revised to better serve the Social Security office and shorten the travel time. The route will no longer operate on Ceres Avenue and Eaton Road south of Lassen Avenue. The new routing will travel north on Ridgewood Drive, south on Ceres Avenue and west on Lassen Avenue. The overall revised route is 9.0 miles in length compared with the current 11.1 miles in length. This reduction in length will significantly improve the ability for this route to stay on schedule.

Route 3 Nord/East

There are no service changes proposed for Route 3. It is recommended to implement a transit signal priority (TSP) program to improve the travel time and reliability of the service. Potential locations for TSP could include Nord Avenue and West Sacramento Avenue, Nord Avenue and West 8th Avenue, East Avenue and Esplanade, and East Avenue at the SR 99 interchange.

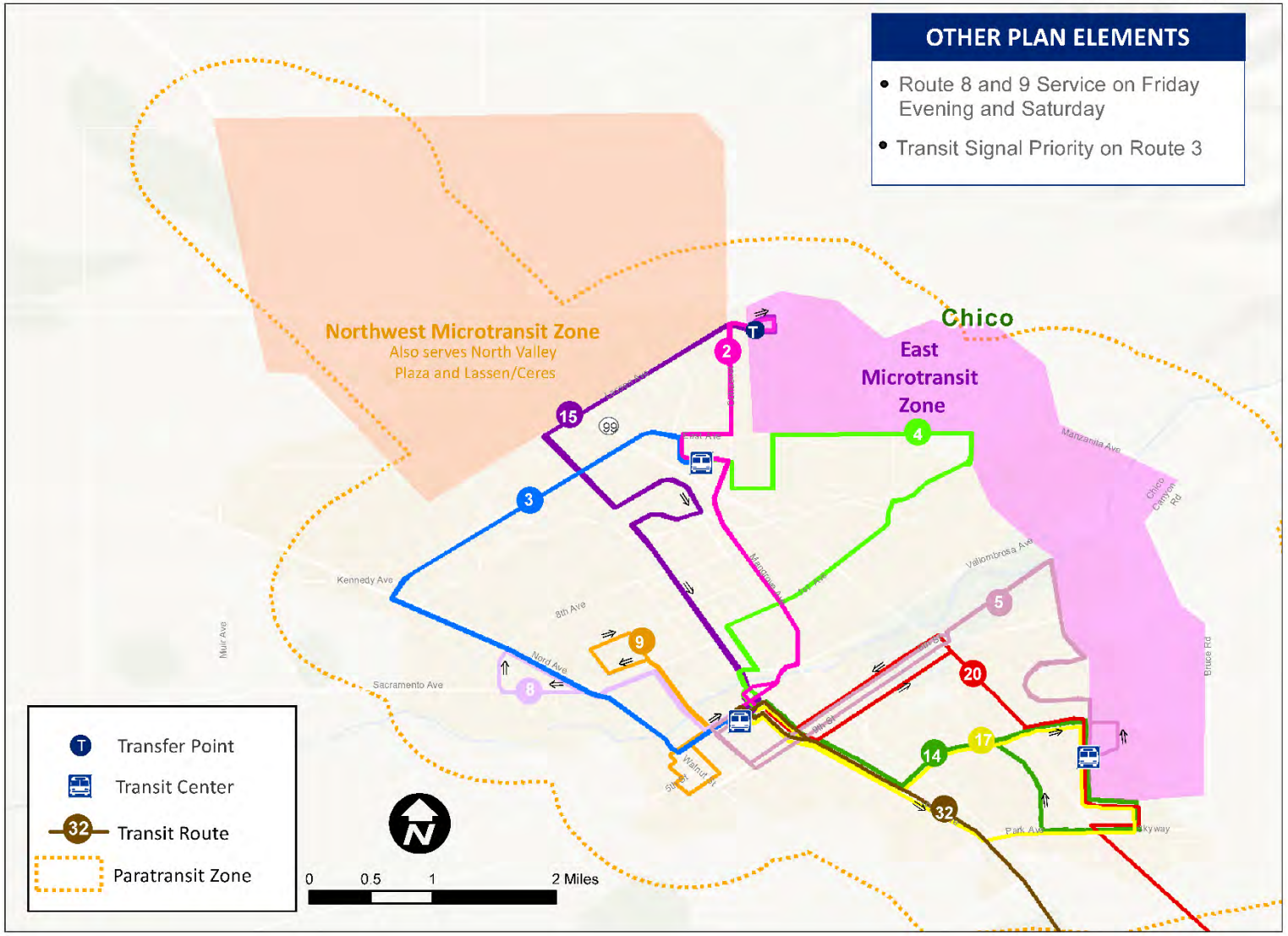
Route 4 First/East

No changes are proposed for Route 4.

Route 5 East 8th Street

Under this plan there are two proposed changes to the route. First, the Springfield Drive loop will be operated in both the inbound and outbound directions, rather than the current route which only travels on the loop in the inbound direction. This will provide more convenient service to the Chico Marketplace Mall and Kohl's, as well as the residential neighborhoods. The second change is to shorten the southern terminus loop to operate south on Forest Avenue, east on Parkway Village Drive and north on Huntington Drive. This new routing shortens the travel time while still making the connection to Walmart and to other routes at the Forest Avenue Transit Center. The Notre Dame Boulevard loop will be discontinued on Route 5 but will be served by a new microtransit zone, as discussed below. The revised route will be 11.2 miles in length, 0.3 miles less than at present. This will reduce running time by several minutes, improving on-time performance.

Figure 34:
Chico Routing Plan



Route 8 Nord

No routing changes are proposed for Route 8. However, it is recommended that service times be expanded to include Friday evening service until 9:34 PM as well as providing service on Saturdays from 8:20 AM to 9:34 PM, when CSUC is in session. This will enhance service to the busy neighborhood northwest of the CSUC campus, which generates strong ridership.

Route 9 Orange/Warner/Cedar

Route 9 will continue to operate the existing route in the CSUC area, with two modifications. First, the southern loop will be shifted to Orange Street instead of Oak Street to provide additional coverage in the neighborhood and to serve the Amtrak station. Only one existing stop (on Oak Street just north of West Seventh Street) will need to be moved. Secondly, service will be extended during the CSUC sessions to provide Friday evening service until 10:01 PM, as well as Saturday service from 8:14 AM to 10:01 PM. This will replace the existing 9C service on Friday evenings and Saturdays during the CSUC sessions.

Route 14 Park/Forest/MLK

No changes are proposed for Route 14.

Route 15 Esplanade/Lassen

Route 15 will continue to provide service from downtown Chico to north Chico via the Esplanade corridor. Under this plan, Route 15 will take over the Rio Lindo Avenue / Cohasset Road loop to serve the DMV. In addition, the northern terminus routing will shift north to Ridgewood Drive to better serve the Social Security office and to offset some of the additional running time needed to serve the Rio Linda / Cohasset Road loop.

Route 16 Esplanade/ Hwy 99

Route 16 will be eliminated under this plan. This addresses the inefficient overlap between Routes 15 and 16 on Esplanade south of Lassen Boulevard (with Route 15 continuing to provide service). North of Lassen Avenue, service will be provided by the North Microtransit service, as discussed below.

Route 17 Park/Fair/Forest

Route 17 provides service from the Downtown Transit Center to the Walmart and Butte College Chico Campus on Forest Avenue. The route will be revised to shift the service from MLK Jr. Parkway to Fair Street in the outbound direction to provide direct service to the Jesus Center and Fairgrounds. Stops along MLK Jr. Parkway will continue to be served by Route 14.

Route 52 Chico Airport Express

Route 52 operates limited express service to the airport (five runs per weekday). This service will be discontinued and replaced by the North Microtransit.

North Microtransit Zone

The zone is designed to replace the low-performing Routes 16 and 52 that are currently serving the community in northwest Chico. It consists of the area north of Lassen Avenue as far west as Alamo Avenue and as far east as Cohasset Road, extending as far north as the airport terminal on the northeast and the SR 99 / Wilson Landing Road intersection on the northwest. The microtransit van will also serve the key stops at North Valley Plaza and at the Social Security office on Lassen Avenue to connect the on-demand service with the fixed route system.

The Northwest Zone will utilize the revenue hours from the existing Route 16 to operate weekdays and Saturdays. One vehicle will be sufficient to provide service in the zone. Fares will be identical with the fixed route fares (for all microtransit zones).

East Microtransit Zone

The East Zone is designed to replace the existing poorly performing Route 7. It will serve the areas on the east side of Chico between Forest Avenue and Bruce Road/Manzanita Avenue, as well as the area north of East Avenue and east of Cohasset Road. Route 7 currently has the lowest ridership in the system. The area is made up of lower density land uses that can be better served by microtransit than fixed route. The vehicle will also serve transfer points at North Valley Plaza, Social Security office and Forest Avenue Transfer Point to provide connections with fixed routes and will also serve the existing bus stops at Pleasant Valley High School.

The zone will utilize the revenue hours from the existing Routes 7 and 52 to operate weekday service. One vehicle will be sufficient to provide service in the zone.

Plan Benefits

Overall, this plan has the following benefits in the Chico Area:

- Travel times are reduced on Routes 2 and 5, improving the on-time performance.
- Lower performing routes have been replaced with microtransit to better align the service with the market it serves and to expand the effective transit service area.
- Transit coverage is extended with microtransit in the east and north areas, with continued connection points at Downtown Chico, North Valley Plaza and Forest Avenue.
- Direct fixed route local service is provided on Fair Street to the Jesus Center.
- Friday evening service and Saturday service is provided on Routes 8 and 9 when CSUC is in session.

Oroville Service

The existing service in Oroville operates four routes at 60-minute headways using two buses. This plan reallocates the service hours to improve on-time performance and coverage in the area. The service plan introduces three microtransit zones and three fixed routes to expand the service to more areas. The key components of the services in Oroville include:

- Retain high ridership route segment
- Replace low ridership segments with microtransit

- Commingle paratransit and general public demand response extend coverage

Figure 35 presents the near-term routing plan for the Oroville service area. The following provides an overview of the recommended changes for each route.

Route 25 Feather River Boulevard

Route 25 provides service from the Oroville Transit Center to Walmart and the retail area along Feather River Boulevard in the southwest part of the city. Under this plan, the route will operate in a bi-directional manner along the existing service on Feather River, Mitchell Avenue to the DMV, north on 5th Avenue to Robinson Street and Lincoln Street to the Transit Center. The route will follow the same routing in the outbound direction back to Feather River and Walmart. The route will no longer serve the Oro Dam corridor (which will be served by Route 27). Table 40 provides an example schedule for Routes 25, 26 and 27, indicating how one bus operates the three routes over the course of each hour.

Route 26 Orange Avenue

The revised Route 26 extends the existing loop along Orange Avenue, Canyon Highlands Drive, and Bridge Street to service the Oroville High School, as well as the retail and residential in that area. The route connects to other routes at the transit center. It is interlined with the Route 25 and 27.

Route 27 Oro Dam/Veatch

Route 27 will serve the segment of Oro Dam Boulevard between the Transit Center and Veatch Street, including FoodMaxx and Las Plumas Plaza. The route will travel in a small loop to provide service along Oro Dam and connect back to the Transit Center for connections to other routes. The route will be interlined with Routes 25 and 26.

West Microtransit Zone

The existing Route 24 which serves the Thermalito area has very low ridership and productivity. Under this plan a West Zone encompassing the Thermalito area will be operated as a combined paratransit and general public demand response service. The service in the zone will connect riders from Thermalito to areas in central Oroville for transfer opportunities to other routes and zones. Fares for all microtransit zones will be consistent with the fixed route fares.

Southeast Microtransit Zone

The Southeast Zone provides service to the areas along Olive Highway (as far east as Gold Country Casino) and along Lincoln Street and Lower Wyandotte Road as far south as Monte Vista Avenue, serving the areas currently served by Route 27 and Route 26 (that will no longer operate on Olive Highway). The zone will also cover Las Plumas High School, Gold Country Casino and connect to the Transit Center for transfer opportunities. Passengers will also be able to travel to/from the Oroville Transit center to connect with fixed routes or other microtransit zones. Route 30 will also continue to serve the southern portion of this zone.

Figure 35:
Oroville Routing Plan

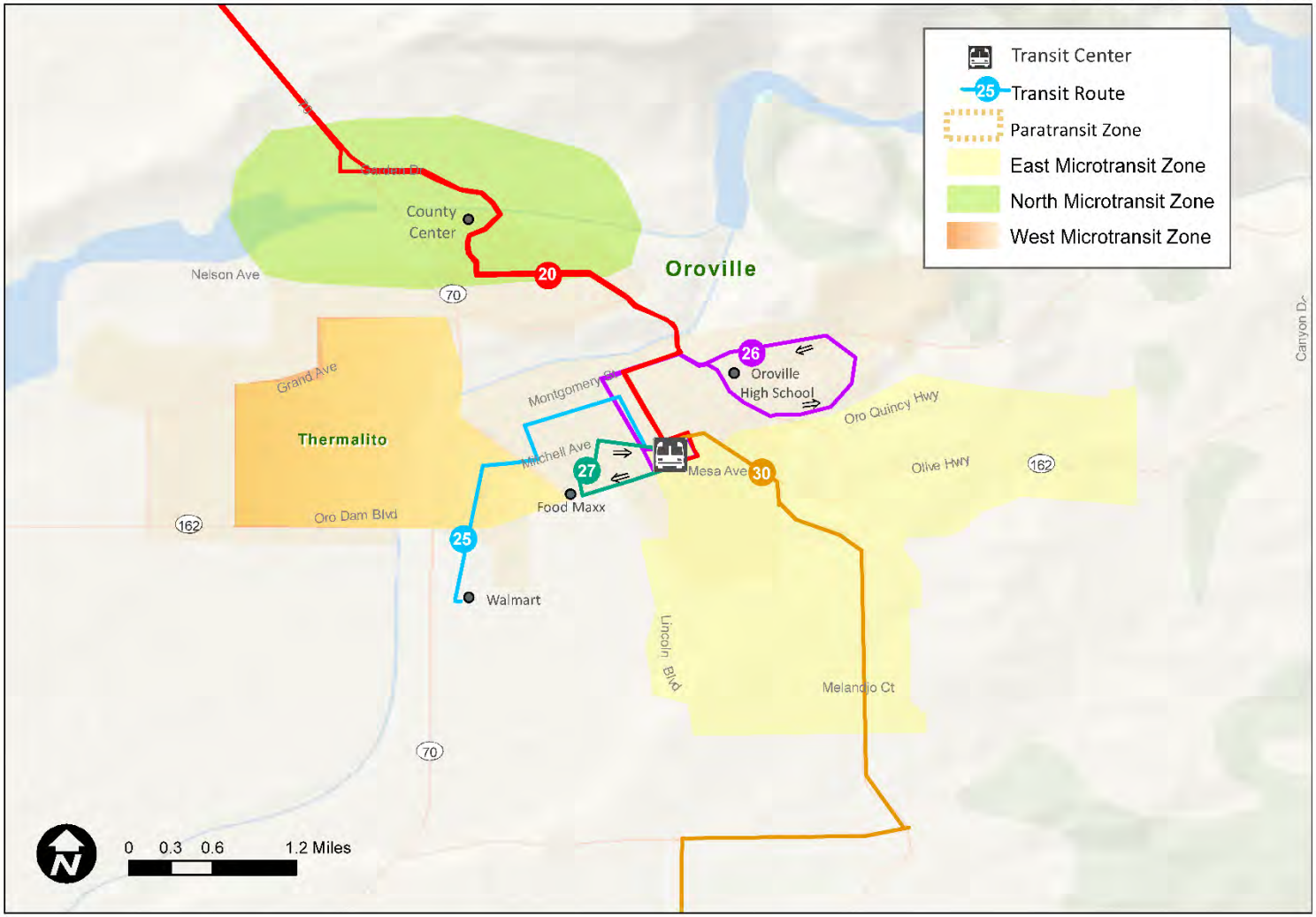


Table 40: Example Schedule - Oroville Fixed Routes

Route 25		Route 26			Route 27		
Transit Center	Feather River Cinema	Transit Center	Bridge & Acacia	Orange & Acacia	Transit Center	Food Maxx	Transit Center
6:10 AM	6:21 AM	6:31 AM	6:39 AM	6:42 AM	6:50 AM	6:54 AM	7:00 AM
7:10 AM	7:21 AM	7:31 AM	7:39 AM	7:42 AM	7:50 AM	7:54 AM	8:00 AM
8:10 AM	8:21 AM	8:31 AM	8:39 AM	8:42 AM	8:50 AM	8:54 AM	9:00 AM
9:10 AM	9:21 AM	9:31 AM	9:39 AM	9:42 AM	9:50 AM	9:54 AM	10:00 AM
10:10 AM	10:21 AM	10:31 AM	10:39 AM	10:42 AM	10:50 AM	10:54 AM	11:00 AM
11:10 AM	11:21 AM	11:31 AM	11:39 AM	11:42 AM	11:50 AM	11:54 AM	12:00 PM
12:10 PM	12:21 PM	12:31 PM	12:39 PM	12:42 PM	12:50 PM	12:54 PM	1:00 PM
1:10 PM	1:21 PM	1:31 PM	1:39 PM	1:42 PM	1:50 PM	1:54 PM	2:00 PM
2:10 PM	2:21 PM	2:31 PM	2:39 PM	2:42 PM	2:50 PM	2:54 PM	3:00 PM
3:10 PM	3:21 PM	3:31 PM	3:39 PM	3:42 PM	3:50 PM	3:54 PM	4:00 PM
4:10 PM	4:21 PM	4:31 PM	4:39 PM	4:42 PM	4:50 PM	4:54 PM	5:00 PM
5:10 PM	5:21 PM	5:31 PM	5:39 PM	5:42 PM	5:50 PM	5:54 PM	6:00 PM

North Microtransit Zone

The North Microtransit Zone will share a vehicle with the Southeast Microtransit Zone. The zone will provide microtransit service to County Center Road and Grand Avenue area. This will take over for the discontinued portion of the existing Route 24. Trips to and from the Oroville Transit Center will also be accommodated to allow transfers to the fixed routes. Note that Route 20 will continue to serve this area on a more direct route (as discussed below).

Benefits of Plan in Oroville

This plan will have the following benefits in Oroville:

- Improved on-time performance for fixed routes
- Lower performing routes have been replaced with microtransit to better align the service with the market it serves. This has the potential to expand ridership in the future.
- Extended transit coverage with microtransit in the southeast and north areas
- No additional revenue hours

Paradise/Magalia Service

Route 40

The plan will combine Routes 40 and 41 and provide a consistent and more direct service connecting Magalia, Paradise and Chico. As shown in Figure 36, the route operates along most of the segment of the existing Route 40 to Wagstaff Road / Clark Road and continues north on Clark Road to the Lakeridge loop in Magalia. The Paradise Transit Center will be served in both directions. Note that the existing Route 41 service along Fair Street in Chico will be eliminated (all service will be along the

existing Route 40 in Chico), but the revisions to Route 17 will replace and expand service along Fair Street. Reflecting current ridership levels, the number of runs on weekdays will be five in the westbound direction and four in the eastbound direction, with three runs in each direction on Saturdays. As shown in Table 41, these runs are scheduled to allow commuting in both directions on weekdays, as well as mid-day services to allow a variety of trip lengths for other purposes. Note that if demand increases in the future, additional runs (particularly on weekdays) could be added.

Paradise/Magalia Microtransit

Outlying areas of Paradise and Magalia will be served by a microtransit zone. This will replace the various low-ridership loops operated currently by Route 41 and also substantially expand the transit service area to encompass new developments in Paradise that are part of rebuilding the community. (These new development sites are also shown in Figure 36.) To provide connections with the fixed route, service will operate from 6:30 AM – 6:00 PM on weekdays and 9:30 AM – 5:30 PM on Saturdays. This service should initially be operated using a single van. If ridership grows to the point where average wait times consistently exceed 30 minutes, a second van could be added during peak times. Fares will be consistent with the local fixed route fares.

Benefits of Plan in Paradise/Magalia

This plan will have the following benefits in Paradise and Magalia:

- Improved on-time performance for fixed route.
- Lower performing route segments have been replaced with microtransit to better align the service with the market it serves.
- Microtransit significantly expands the portions of the Ridge communities that have transit service. Importantly, this includes scattered multifamily residential developments that cannot be efficiently served by fixed routes. Overall, it provides service that better fits the development pattern as the area continues to recover from the Camp Fire. It also provides service for trips within the local area at the lower local fare rate rather than the current regional fare rate.

Other Intercity Services

Beyond the Paradise/Magalia service, the intercity routes will be revised as discussed below and shown in Figure 37.

Route 20

Route 20 is currently providing critical connections between the most populous areas within Butte County – Chico and Oroville. In this plan most of the routing of Route 20 will remain the same. The proposed rerouting will be focused on the County public service complex in Oroville as illustrated in Figure 24. The proposed new Route 20 will be bidirectional along SR 70, Garden Dr, Table Mountain Blvd, County Center Dr, Nelson Ave, and back to Table Mountain Blvd. This will reduce running time by 1 to 2 minutes and improve on-time performance.

Figure 36:
Paradise/Magalia Routing Plan

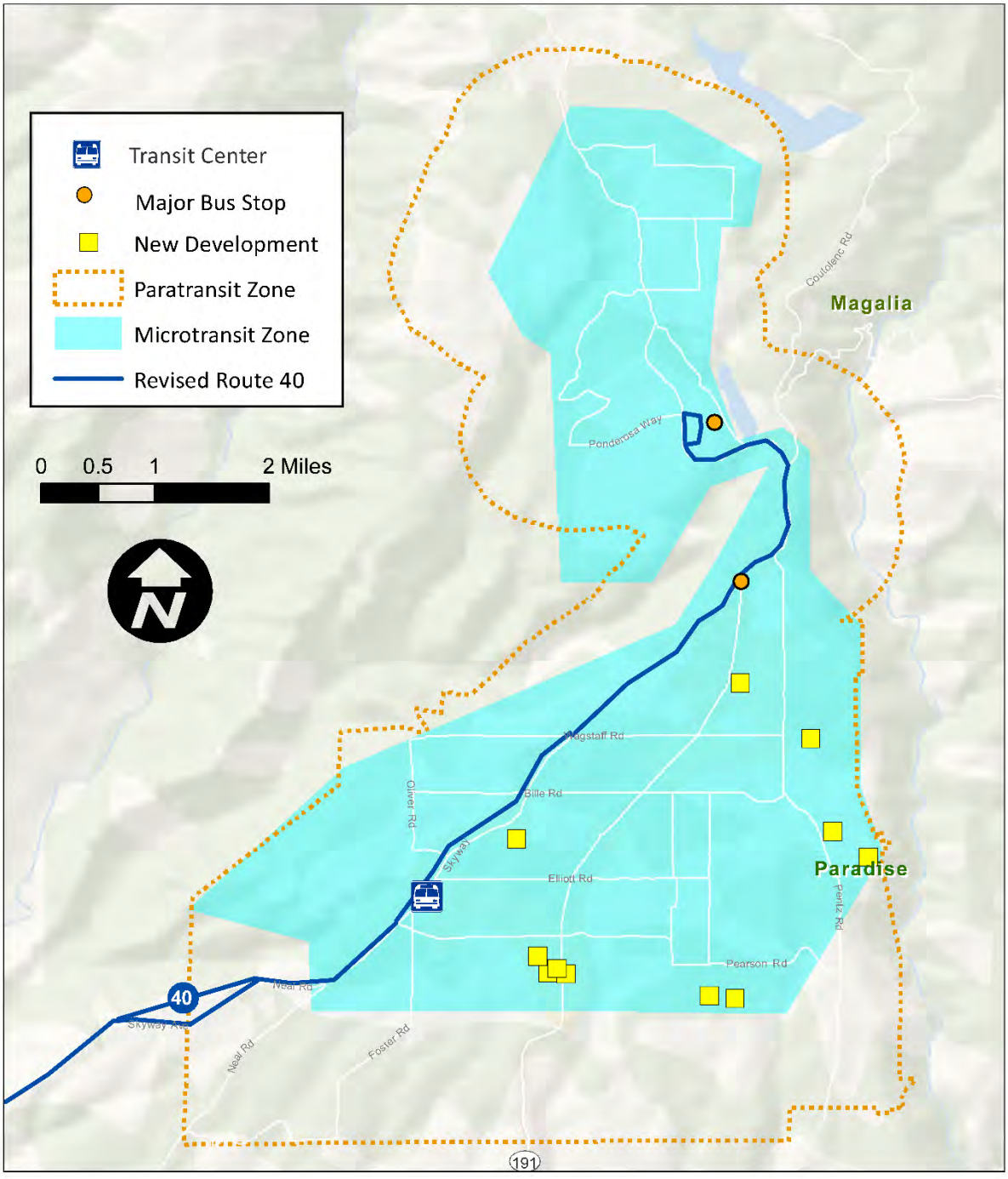


Table 41: Revised Route 40 Schedule

Eastbound Weekday

Chico		Paradise		Magalia	
Chico Transit Center	Forest Xfer (Walmart)	Paradise Transit Center	Skyway & Wagstaff	Lakeridge (Sav Mor Mkt)	*Continues On To*
7:20 AM	7:32 AM	7:54 AM	8:01 AM	8:13 AM	*40 West*
10:50 AM	11:02 AM	11:24 AM	11:31 AM	11:43 AM	*40 West*
12:50 PM	1:02 PM	1:24 PM	1:31 PM	*1:43 PM*	*40 West*
4:50 PM	5:02 PM	5:24 PM	5:31 PM	5:43 PM	*40 West*

Westbound Weekday

Magalia	Paradise		Chico		
Lakeridge (Sav Mor Mkt)	Skyway & Wagstaff	Paradise Transit Center	Forest Xfer (Walmart)	Chico Transit Center	*Continues On To*
6:45 AM	6:58 AM	7:05 AM	7:27 AM	7:40 AM	
8:15 AM	8:28 AM	8:35 AM	8:57 AM	9:10 AM	
11:45 AM	11:58 AM	12:05 PM	12:27 PM	12:40 PM	*40 East*
1:45 PM	1:58 PM	2:05 PM	2:27 PM	2:40 PM	
5:45 PM	5:58 PM	6:05 PM	6:27 PM	6:40 PM	

Eastbound Saturday

Chico		Paradise		Magalia	
Chico Transit Center	Forest Xfer (Walmart)	Paradise Transit Center	Skyway & Wagstaff	Lakeridge (Sav Mor Mkt)	*Continues On To*
9:50 AM	10:02 AM	10:24 AM	10:31 AM	10:43 AM	*40 West*
12:50 PM	1:02 PM	1:24 PM	1:31 PM	1:43 PM	*40 West*
4:10 PM	4:22 PM	4:44 PM	4:51 PM	5:03 PM	*40 West*

Westbound Saturday

Magalia	Paradise		Chico		
Lakeridge (Sav Mor Mkt)	Skyway & Wagstaff	Paradise Transit Center	Forest Xfer (Walmart)	Chico Transit Center	*Continues On To*
10:45 AM	10:58 AM	11:05 AM	11:27 AM	11:40 AM	
1:45 PM	1:58 PM	2:05 PM	2:27 PM	2:40 PM	
5:05 PM	5:18 PM	5:25 PM	5:47 PM	6:00 PM	

Route 30

No changes are planned for Route 30.

Route 32

No changes are considered for Route 32. While ridership is low, it is an important lifeline service, and serves disadvantaged communities.

Route 31

Prior to the Camp Fire, Route 31 provided service between Paradise and Oroville. Even before the pandemic and fire, ridership on this route was very low. Given that the bulk of the need for a transit connection to Paradise/Magalia is to/from Chico, available transit resources are better used in expanding that service (as discussed above) and reinstatement of Route 31 is not part of this plan.

Figure 37:
Intercity Routing Plan
Excluding Paradise/Magalia Routes

Benefits to Intercity Services

- Improved on-time performance for intercity routes
- Maintain key service areas of the intercity routes
- Improve regional service efficiency

Paratransit Services

Under this plan, fixed routes will be reduced. As the minimum paratransit service area required under the Americans with Disabilities Act is a ¾ mile distance from a fixed route, this provides the potential to reduce paratransit service areas. However, no reductions in existing paratransit services are proposed.

Also, as detailed in Chapter 8, expansion of paratransit services is not warranted under current ridership demands. Instead, B-Line should focus on continuing to provide a high quality of paratransit service.

Total Systemwide Operations Impacts

This plan will require 76,572 annual vehicle-hours of revenue service to operate the B-Line System, as shown in Table 42. This is 408 or 1 percent more than the total services under the existing service plan for FY 2021-22 As shown in this table, this reflects a slight increase in services for Paradise/Magalia, a slight increase in Chico service, and no change in other services. This plan will result in a 13 percent decrease in vehicle-hours of revenue service compared to FY 2022-23.

Ridership Impacts

Table 43 presents the ridership forecast for the near-term Routing Plan. Overall, systemwide ridership is forecast to increase by 9 percent, or 43,900 boardings per year. (Note that this does not reflect any changes from external factors such as the continued rebound from the impacts of the pandemic.) By service area, this consists of the following:

Chico: 10 percent increase
Oroville: 2 percent increase
Paradise/Magalia: 16 percent increase
Other Intercity: 3 percent increase

Fixed route ridership estimates were calculated using an elasticity of demand model which measures the demand shift based on demographic and operational changes. Microtransit ridership was calculated based on the total population and jobs in each zone, as well as the microtransit ridership rates per person/job seen in other similar area providing microtransit service. As a new service to the region, however, the ridership estimates for the microtransit services have a relatively high level of uncertainty. These should be considered to have a possible error range of + or – 50 percent. Of note, under this Routing Plan overall ridership is forecast to increase by 9 percent while service levels will increase by 1 percent. This indicates that the Plan as a whole will improve the effectiveness of the B-Line services.

Table 42: Near Term Routing Plan Impact on Service Revenue Hours

Route/Service	Vehicle Revenue-Hours of Service			
	Weekday	Saturday	Sunday	Total Annual
2	15.5	11.0	0	4,556
3	15.8	10.0	0	4,581
4	17.8	10.0	0	5,082
5	14.3	11.0	0	4,252
East Chico Microtransit	11.8	10.0	0	3,540
8	14.4	0.0	0	3,711
9	15.1	13.8	0	4,594
14	23.0	11.0	0	6,483
15	22.5	11.0	0	6,355
North Chico Microtransit	11.5	10.0	0	3,476
17	10.5	9.5	0	3,193
25	6.3	0.0	0	1,606
26	6.0	0.0	0	1,542
27	6.0	0.0	0	1,542
Southeast Microtransit	3.0	0.0	0	868
North Microtransit	3.0	0.0	0	868
Thermalito Microtransit[1]	0.0	0.0	0	0
40	8.1	5.4	0	2,366
Paradise/Magalia Microtransit	11.5	8.0	0	3,367
20	24.9	9.8	9.84	7,405
30	5.4	5.6	0	1,671
32	2.0	0.0	0	516

Summary by Service Area

	Annual Vehicle Revenue-Hours of Service			
	Existing	Plan	Change	% Change
Chico	49,605	49,821	216	0%
Oroville	6,426	6,426	0	0%
Paradise/Magalia	5,541	5,733	192	3%
Other Intercity	9,592	9,592	0	0%
Total Systemwide	**71,164**	**71,572**	**408**	**1%**

Note 1: Served by existing paratransit vans.

Table 43: Ridership Impacts of Near-Term Routing Plan

Route		Annual Ridership: Existing - Factored 2022 Estimated	Annual Ridership: Factored 2022 Estimated With Plan	Change	% Change
Chico Area					
2	Mangrove	34,200	36,500	2,300	7%
3	North/East	58,400	61,400	3,000	5%
4	First/East	37,900	37,900	0	0%
5	East 8th St	27,000	30,400	3,400	13%
7	Bruce/Manzanita	6,700	0	-6,700	-100%
8	Nord	30,400	35,300	4,900	0%
9	Warner/Oak	47,800	55,500	7,700	0%
14	Park/Forest/MLK CW	29,600	29,600	0	0%
15	Esplanade/Lassen	44,000	64,900	20,900	48%
16	Espanade/99	25,900	0	-25,900	-100%
17	Park/Fair/Forest CCW	14,100	23,000	8,900	63%
52	Chico Airport Express	1,800	0	-1,800	-100%
	Chico East Microtransit Zone	0	9,800	9,800	--
	Chico North Microtransit Zone	0	7,500	7,500	--
	Subtotal: Chico Area	*357,800*	*391,800*	*34,000*	*10%*
Oroville					
24	Thermalito	5,300	0	-5,300	-100%
25	Feather River	4,400	4,700	300	7%
26	Orange/Bridge St	3,800	3,100	-700	-18%
27	Oro Dam/Foodmaxx	4,300	1,700	-2,600	0%
	Oroville Microtransit Zones	--	8,600	8,580	--
	Subtotal: Oroville	*17,800*	*18,100*	*280*	*2%*
Paradise/Magalia					
40	Paradise/Magalia-Chico	26,600	41,600	15,000	56%
41	Magalia-Chico	19,300	0	-19,300	-100%
	Paradise/Magalia Microtransit Zone	0	11,700	11,700	--
	Subtotal: Paradise/Magalia	*45,900*	*53,300*	*7,400*	*16%*
Intercity (Excluding Paradise/Magalia)					
20	Chico-Oroville	57,900	60,100	2,200	4%
30	Oroville-Biggs	5,700	5,700	0	0%
32	Gridley-Chico	1,500	1,500	0	0%
	Subtotal: Intercity	*65,100*	*67,300*	*2,200*	*3%*
TOTAL SYSTEMWIDE		**486,600**	**530,500**	**43,900**	**9%**

MID-TERM SERVICE PLAN

An additional service plan was developed for possible implementation in the mid-term (5 to 10 years) planning horizon. This assumes that future ridership warrants expansion. A potentially viable means of enhancing transit quality and generating increased ridership is to provide high frequency (every 15 minutes) on high ridership potential corridors connecting key activity centers. As shown in Figure 38, this consists of 15-minute weekday service on Routes 3 and 14 from approximately 6:30 AM to 6:00 PM. By providing high-frequency service along the key corridors connecting the commercial and Butte College (Chico) campus area on the south with downtown/CSUC and the North Valley Plaza, this will improve connections and reduce overall travel times throughout the city. It will also increase the potential for development along the high-frequency corridors that take advantage of the improved accessibility.

In addition, Transit Signal Priority should be installed at approximately 10 key signals along Route 14 (in addition to the TSP installations along Route 3 under the near-term plan). While specific locations will require a detailed traffic engineering analysis, a preliminary list is as follows:

- Broadway/8th
- Park/20th
- 20th/Martin Luther King, Jr.
- 20th/ SR 99 Southbound
- 20th/ SR 99 Northbound
- 20th / Forest
- Skyway / Notre Dame
- Skyway / SR 89 NB Off Ramp
- Skyway / SR SB Off Ramp
- Park / Martin Luther King, J

Over the course of a year, this service improvement will increase revenue vehicle-hours by 13,244. At current rates, this will increase annual operating costs by $1.18 Million. Ridership is estimated to increase by approximately 56,000 boardings per year, or a 62 percent increase over the near-term plan ridership on the two key routes. Note that this ridership estimate does not assume any "background" increase in ridership (due to rebound from pandemic ridership patterns, for example) nor does it reflect ridership generated by any new development along the high frequency corridor.

CAPITAL PLAN

As detailed in Chapter 9, the implementation of this Routing Plan will require some capital investments, as follows:

- The service modifications (and in particular the replacement of existing fixed routes with microtransit service) will allow a total of 112 existing stops to be removed (60 in Chico, 31 in Paradise/Magalia and 15 in Oroville). Of these, 23 currently have shelters. In addition, a total of 6 new stops will need to be installed, of which 4 will warrant shelters. Overall, bus stop modifications are forecast to cost a total of $63,400.

Figure 38:
Mid-Term Routing Plan Enhancements

- The Near-Term service modifications would reduce the peak number of buses required in fixed route operation by two. Including one spare, a total of six vehicles would be required for microtransit service. The current B-Line van fleet consists of 22 vans that could be used for paratransit or microtransit service. As 16 vans are required for peak paratransit service (including 3 for spares), there are six vans currently available, sufficient to support the microtransit service. It is worth noting, however, that 12 of these vans are 2013 models and may well warrant replacement in the near future, and that any growth in paratransit demand may necessitate additional vehicle purchases.
- The Mid Term service would require four additional buses to provide 15-minute headway service.
- Microtransit services use specific software programs and apps, designed to receive ride requests, schedule drivers, track services and generate reports. There are a variety of software providers with varying prices, capabilities and levels of customer support, that are offered on a subscription basis. At typical current prices, the software needed to support the four microtransit zones would cost approximately $47,500 per year.
- The Transit Signal Priority (TSP) systems recommended for Route 3 (in the near-term) and for Route 14 (in the mid-term) would cost on the order of $540,000 to implement. This includes $50,000 for detailed system design and implementation, $450,000 for signal modifications, and approximately $40,000 for on-bus equipment. $240,000 would be needed for the near-term improvements, and an additional $300,000 for the mid-term.

FARE PLAN

The following modifications to the existing fare policies are recommended, as discussed in Chapter 10:

- The 2-ride fare categories should be eliminated, in order to reduce the administrative costs and time required to handle fares on the buses and in recognition of the very low use of these fares. Instead, a new half-fare Day Pass should be implemented, and customers encouraged to make use of the Day Pass.
- Microtransit service should be provided at the Local Fare rates. This increases the equity of the general public transit services by making no difference in fares between areas close to fixed routes and those in other portions of the microtransit zones. Note that this will effectively reduce the fare rates in the Paradise/Magalia area.
- The types of passengers eligible for discounted fares should be expanded to include Veterans.

Chapter 12

MARKETING THE ROUTING STUDY

INTRODUCTION

A key element in successfully implementing this Routing Study is to educate the public on the changes in services and prepare the transit riders for the new services. This is of particular importance given that the study introduces the new concept of microtransit to the service area. To ensure success of the service, this marketing plan develops a multifaceted approach educating existing riders about the new B-Line services while also aiming to reach new passengers as well.

The following Marketing Plan (Plan) was created based on goals and objectives, outlining the strategies and techniques necessary to meet these goals. Note that if the Routing Study modifications are implemented in an incremental fashion (such as in one community at a different time than another community), these marketing efforts would pertain to the specific elements being implemented.

GOALS AND OBJECTIVES

The B-Line Routing Study introduces various changes to existing services, as well as an entire new service with the introduction of microtransit. The major goals and objectives driving the Marketing Plan include:

- Raising Awareness/Education – Creating awareness and improving local knowledge of the transit services B-Line provides.
- Shifting Image/Perception – Cultivating a positive and inclusive image around transit.
- Increasing Ridership – Encouraging ridership amongst new and existing riders.
- Building Relationships – Coordinating collaborative partnerships amongst various groups within the community.

OVERVIEW OF STRATEGIES

The Plan offers major strategies when considering large-scale marketing efforts. The following strategies are described in further detail below followed by a proposed schedule for implementation.

- **Target Audiences:** In preparation for BCAG to develop marketing materials, radio ads, and/or TV commercials, we discuss the target audience and general messaging for such marketing materials and commercials.
- **Community Gatekeepers:** Building on the list of stakeholders and community members used during the Routing Study, a list of key gatekeepers will be identified, as well as appropriate means and timing for contacting them. These gatekeepers include educators, social service managers, housing advocates, cultural center directors, senior center leadership, large employers, government agencies, and other major community leaders.

- **Sample Marketing Materials:** Illustrative marketing materials have been developed for all forms of community outreach. These items are meant to serve as templates in which B-Line can use for rolling out its new services. The following materials will be included in English, Spanish, and Hmong.
    - Sample press releases
    - Sample flyers (in English, Spanish and Hmong)
    - Sample News Media Print and Web Ads (in standard sizing)
    - Sample social media posts
    - Sample email blast designs
- **Website Updates:** The B-Line website should be updated with clear information regarding each changed service, additional new services, and multiple ways to access more information. It should be the one-stop location for all Routing Study information (Promotion Events, Flyers, Social Media links, etc.)
- **Suggestions for Promotional Events:** Promotional events will be key to reaching both existing riders and potential new passengers. The marketing plan includes suggestions for such events, and ways in which to target both groups. In particular, there is a discussion on how to reach disadvantaged and/or multilingual communities.
- **Sample Marketing Timeline:** Chapter 12 concludes with a schedule in which to roll out the marketing outreach plan.

RAISING COMMUNITY AWARENESS

Community engagement is the core emphasis in the rolling out of new transit services that impact a region. Identifying who needs to be notified of new services and improvements to existing routes is essential in creating an outreach effort that is effective and all-encompassing. The following section provides guidance on the first two strategies of narrowing in B-Line's target audiences and determining community gatekeepers that are necessary in distributing information and being allies to the marketing effort overall.

Target Audience

As mentioned in the previous section, the target audience includes current and potential B-Line riders who either need or desire transit services. The needs that riders and potential riders have for transit generally fall into three major categories: Ongoing, Temporary, or Discretionary.[1] In these terms, the ongoing transit rider typically has limited travel options and includes workers, students, people living below the poverty line, older adults, and people living with a disability.

[1] https://www.nationalrtap.org/Toolkits/Marketing-Toolkit/How-To-Guide-For-Marketing-Transit/Marketing-in-the-Transit-Environment

For the purpose of this Marketing Plan, a large focus will be placed on educating existing and potential riders that meet these demographics with clear information as to what B-Line routes have changed and how these changes affect travel choices. Temporary riders include visitors, tourists, and people who may need to use B Line under extenuating, and temporary, circumstances. While Butte County has a modest tourist economy, less effort should be placed on this group as they are not the core transit rider. Commuters make up large proportion of B Line's discretionary rider population. Additional motivations for this group might be the ability to work as they commute while also providing benefits to the environment by reducing their commuting carbon footprint.

Here are some examples as to how marketing materials, such as flyers, social media posts, and email blasts should differ depending on which target audience you're aiming to reach:

- *"Ongoing" Riders* – Language of materials should speak to this audience as if they are already familiar with the various routes and services B-Line provides. The materials should depict images of popular transit destinations and familiar drivers and/or B-Line staff. The content of materials should emphasize what has changed about existing routes and use well known community destinations to illustrate new routes and changes to service.
- *"New" or "Temporary" Riders* – Content of materials are very informational and written in a way to introduce B-Line's transit services. Times of service and even how to ride information can also be included as this is considered to be a new demographic that hasn't ridden B-Line before.
- *"Discretionary" Riders* – Marketing materials should emphasize the convenience and affordability of traveling longer distances by transit. Popular longer distance travel destinations should be represented visually and information about service times and how to ride can also be included as this group can often encompass both existing and new riders. This rider type is particularly important in attracting government agency and employees working at larger companies in the region.

Within these broad audience groups, we can focus on particular subgroups of potential riders within each community. These people may include students (both university and grade school), seniors, disabled persons, commuters, etc. Each marketing campaign should either aim to speak to a broad group or a very specific sub-group. For example, materials aimed to reach elderly passengers should use copy that encourages independence and the ability to run errands and make appointments. Another flyer could feature popular destinations that B-Line serves and copy that attracts new riders with an overview of places you can take B-Line to. Lastly, another campaign could feature general information on how transit routes and services have changed recently and where to learn more about these changes.

These different types of surveys aim to speak to various audiences within Butte County. Types of marketing materials to attract specific audiences are further discussed in the Sample Marketing Materials section below and included under Appendix H.

Community Gatekeepers

Another essential part of reaching these specific subgroups of riders is the coordination and inclusion of community gatekeepers throughout implementation of new services. BCAG should have two approaches when marketing new routes and services to the public: 1) sharing information when the public seeks it and 2) going to the public to share information. For the first approach, this will include updating all current means of providing information (rider guides, maps, website, etc.) For the second strategy, identifying and engaging community gatekeepers who have access to existing and potential passengers will be critical.

A list of gatekeepers was established for the most recent Routing Study and should be used as a basis to further educate and inform the public regarding changes to service, outreach events, social media campaigns, etcetera. This list is provided in Appendix I, with some key suggestions presented below about keeping them informed. It includes over 300 identified organizations and representatives from groups such as religious community leaders, social service providers, medical entities, city and county representatives, college community members, school districts, and other types of cultural group leaders. A coordinated effort in keeping these contacts aware of upcoming outreach events, changes to services, and updated marketing materials should continue to go on before, during, and after routing changes and new transit services have been implemented.

MARKETING STRATEGIES

The following section deals with the other four marketing strategies: marketing materials, website updates, promotional events, and marketing timelines. Sample marketing materials are presented in Appendix H and described below. Three options for the overall graphic design are presented. These materials are meant to be illustrative and as discussed in the previous chapter, each marketing campaign should be tailored to reach specific audiences while maintaining B-Line's branding colors and design. In addition to the roll out of these various marketing materials, possible events and outreach opportunities are discussed below for consideration next Spring and Summer 2024. This section concludes with a sample schedule for rolling out the new services campaign.

Marketing Materials

Photography

It is important to have a library of high-resolution photography for use in press releases, print and web ads, and social media posts to help guide perception of transit services. In the early stages of large marketing efforts, a photographer should be hired for a photoshoot of existing buses, drivers, passengers, and anything else that makes B-Line unique. Having a library of high-resolution photography lends itself to having better marketing materials across all types of media.

Print Advertising

Printed materials include flyers, posters, billboards, and newspaper print ads. They should appear related in general look and feel, however their content may differ slightly depending on the specific type of audience under consideration and where the content will be posted. They may feature either website links or QR codes for people to be directed to the website for the most up to date information.

Online Advertising

Similar to print advertising, online ads may include very simple content that engages the audience to click on the ad to learn more about recent service changes. Ads may be various sizes depending on the online news media outlet that they are to be featured on. Ads will be clickable and direct viewers to the B-Line website to learn more. Online ads will be placed on local news media websites as well as Facebook.

Social Media

Social media post samples are also included under Appendix H. Similar to other marketing materials, each post should be customized to attract and engage a particular audience. Featuring specific photography and language style that speaks to your primary rider demographics aids in pulling each individual into the post. An effort should be made to include several types of demographic populations in the photoshoot. As shown in the appendix, a scrolling "carousal" type post is helpful in getting more information articulated in a single post.

Website Updates

The most important online material will include updates to the B-Line website. The schedule of services should be easy for someone to find when visiting the site. In addition, changes to service should be clear and concise with a schedule that is easily understood. For the new microtransit services, a brief informational animated video introducing the service should be featured on the B-Line website along with the microtransit schedule, its services areas, and instructions on how to use the service. A video of this type has already been created by AIM and can be shared with B-Line for use with credit to AIM as the creators. Other online materials may include online ads on news websites and Facebook.

Promotional Events

While the distribution of marketing materials in both print and digital formats is paramount in launching new services county-wide, hosting a series of in-person events complements the effort and allows time to engage with the public on a personal level. The following is a list of potential events and activities aimed to spread the word regarding B-Line's new services:

- Downtown Chico's Thursday Night Market
- Farmer's Markets in Chico and Oroville
- Local concert series over the summer in Chico and Paradise
- CARD's Movie in the Park nights
- University events, such as job fairs and local informational days
- Feather Fiesta Days, Pioneer Days, and similar community events

To support these various events, B-Line could hold a contest or raffle drawing to further pique interest in new services. This context or raffle should be advertised as a part of the other outreach efforts. It may include tickets to a local event (that one may take transit to), free bus passes, B-Line branded promotional items, or anything else that compliments public transit.

MARKETING TIMELINE

The timing of marketing activities is crucial. All in-person events and supporting materials should be planned far enough in advance to allow people to plan to attend, but close enough to an impending change that the public will maintain focus and enthusiasm for the change. The following is a sample schedule for rolling out new services, assuming a launch in July 2024.

March (4 months to launch)

- Set a target services launch date.
- Engage with graphic design and marketing consultant.
- Create a plan of deliverables.
- Engage with stakeholders to announce that change is coming to B Line.
- Hire photographer to capture transit ridership, staff, and buses for marketing materials.

April (3 months to launch)

- Graphics designer to create posters, flyers, print and web ads, and any other visual marketing materials for launch events.
- Plan to attend Chico University events before summer break.
- Plan to attend other community events (farmers markets, concerts, cultural celebrations, etc.)
- Receive edited photography and share with graphic design consultant for marketing materials.

May (8 weeks to launch)

- Attend planned community events in each major area (Chico, Oroville, Paradise/Magalia, Biggs/Gridley)
- Send follow up emails to stakeholders to inform them of the changes coming to B-Line with directions on how they may help spread the word to fellow employees, clients, and their communities. Ensure that B-Line is featured on their websites and materials if applicable.
- Schedule radio, web, and print ads announcing the new service coming soon.
- Print and produce all large format billboard/poster banners for distribution at various bus stops.

June (4 weeks to launch)

- Run ads, follow up with stakeholders, and attend any other community events.
- Post print announcements
- Draft Press Release
- Begin posting to social media channels throughout each community.

July (launch month)

- Announce services have changed
- Update website and schedule to reflect changes
- Email stakeholders of implemented changes
- Send Press Release to all local news outlets
- Hold media events in communities targeted for service changes, such as a ribbon cutting
- Post social media ads targeting specific communities in the region

August and Onwards

- Maintain website information
- Monitor passenger comments and complaints to identify particular issues or areas of concern, and modify public information (website, posters) as appropriate.
- Follow up with stakeholders to receive any feedback and make sure that communities and clients have been made aware of service changes.

As outlined above, the outreach plan for rolling out new transit services should begin at least four months ahead of new service implementation. The marketing effort begins with hiring a photographer for a photoshoot. At this time, BCAG should coordinate with a graphic designer for all print and web materials, contacting news media, conducting stakeholder outreach, and planning promotional events. The process also includes posting large scale marketing materials such as bus stop boards or bus wraps, and planning social media posts leading up to the launch, as well as after.

Lastly, once the new transit services have been launched and the schedules and websites have been updated, a post effort that focuses on receiving additional input should be initiated. During this time outreach to stakeholders should be held to better understand how changes have been received and what can be done to make the changes clearer to the public.