Corridor Enhancement Plan

FINAL

September 2018

Yuba-Sutter Transit

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Corridor Enhancement Plan

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FUNDED BY:

The Yuba-Sutter Transit Corridor Enhancement Plan was funded by the California Department of Transportation (Caltrans) through the Sustainable Community Planning Grant Program.

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Acronyms and Abbreviations

ADA	Americans with Disabilities Act
amps	ampere
AASHTO	American Association of State Highway and Transportation Officials
ADT	average daily traffic
AVL	automated vehicle location
BEBs	battery electric buses
Board	Yuba-Sutter Transit Board of Directors
Caltrans	California Department of Transportation
DAR	Dial-A-Ride
DMV	Department of Motor Vehicles
E-Paper	electronic paper
EV	electric vehicle
EVSE	Electric Vehicle Supply Equipment
FRAQMD	Feather River Air Quality Management District
GPS	Global Positioning System
GTFS	General Transit Feed Specification
HHS	Health and Human Services
JSON	JavaScript Object Notation
kVA	Kilovolt-amps
kW	kilowatt
LCD	liquid crystal display
LSC	LSC Transportation Consultants, Inc..
LED	light emitting diode
MHz	megahertz
mph	miles per hour
PG&E	Pacific Gas & Electric
Plan	Corridor Enhancement Plan
RTS	real-time signs
UV	ultraviolet
SR	State Route
XML	Extensible Markup Language

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Executive Summary

Yuba-Sutter Transit

Corridor Enhancement Plan Executive Summary

Route 1

Route 1 is the key transit route that links all other routes in the system, carries 34 percent of the total Local Fixed Route ridership and includes five transfer centers.

The Plan

The Corridor Enhancement Plan provides analysis and conceptual site designs, focused on supporting capital improvements to the route's five key transit centers and other bus facilities along Route 1.

View the Plan by visiting: www.yubasuttertransit.com

Key Recommendations

- Chapter 4 recommends improvements at the five key transfer centers and the other Route 1 bus stops.
  - Section 4.2 recommends replacing the Alturas & Shasta bus stop with a new transit center and includes site options, a site plan and a cost estimate.
- Chapter 5 recommends incremental conversion of the bus fleet to battery electric buses to meet California Air Resource Board's direction to change all bus transit fleets to zero emission vehicles by 2040.
  - Section 5.4 recommends coordinating with PG&E regarding the FleetReady Vehicle Charging Infrastructure Program that is launching in 2019, and in the longer-term identifying a larger site to accommodate Yuba-Sutter Transit operations, bus fleet and battery electric bus infrastructure.

Chapter 1 | Introduction

1.1 Plan Overview

Yuba-Sutter Transit has been awarded a California Department of Transportation (Caltrans) Sustainable Transportation Planning Grant to develop a Corridor Enhancement Plan for Route 1—the eight-mile-long key transit route that links all other routes in the system, and carries 34 percent of the total Local Fixed Route ridership. The Corridor Enhancement Plan (Plan) provides analysis and conceptual site designs, focused on supporting capital improvements to the route's five key transit centers and other bus facilities along Route 1. The five key transit centers include:

- Walton Terminal
- Alturas & Shasta Terminal
- Yuba County Government Center
- North Beale Transit Center
- Yuba College Transit Center

1.1.1 Plan Organization

The Plan is comprised of the following five chapters:

- Chapter 1 – Introduction
  - Provides an overview of the Plan and the community outreach activities.
- Chapter 2 – Existing Conditions
  - Presents the existing bus routes, ridership and the 53 bus stops along Route 1. A detailed description is included for each of the five key transit centers, including passenger amenities and operational conditions. Related plans and projects in the City of Yuba City, City of Marysville and Yuba County are also discussed.
- Chapter 3 – Design Parameters
  - Summarizes design parameters to be applied to the Plan for bus stop and transit center improvements, including sidewalks, bicycle facilities, bus pull-outs, passenger facilities and bus turning path requirements.

- Chapter 4 – Route 1 Transit Center and Bus Stops Program and Design Options
    - Presents the recommended transit center program and improvements; preferred options for a future Alturas & Shasta transit center including site plans and illustrative conceptual views; recommended improvements for Route 1 bus stops; explores the feasibility of installing a real-time transit arrival information system; and discusses the impact of the 5th Street bridge improvements on Route 1 operations.
- Chapter 5 – Battery Electric Bus Feasibility
    - Outlines the infrastructure and spatial requirements for conversion of Yuba-Sutter Transit's bus fleet to battery electric buses to meet the California Air Resources Board's direction to transition to zero emission vehicles.

1.2 Community Outreach

Community input is a critical component of the Corridor Enhancement Plan. Yuba-Sutter Transit invited riders, local jurisdictions, Caltrans, property owners, the Yuba-Sutter Transit Board of Directors (Board) and other stakeholders to participate in the planning process. In an effort to engage the community early in the planning process, Yuba-Sutter Transit held a community open house and bus tour on September 20, 2017 and conducted a public survey between August 29 and September 30, 2017. A second community workshop and presentation to the Board was held on February 15, 2018 to receive input on preliminary findings. The draft Corridor Enhancement Plan will be presented to the Board on September 20, 2018.

1.2.1 Community Workshops

Community Workshop #1, September 20, 2017.

Community Workshop # 1

Yuba-Sutter Transit held a community open house on Wednesday, September 20 at the Yuba County Board of Supervisors Chambers. The community was encouraged to drop-by anytime between 9:00 a.m. and 10:30 a.m. to learn more about the Corridor Enhancement Plan and to provide input on physical improvements to Route 1 key transit centers and bus stops. Workshop participants were also invited to participate in bus a tour of Route 1 key transit centers from 10:30 a.m. to 12:30 p.m. At each site, participants were given the opportunity to analyze existing amenities and recommend future improvements.

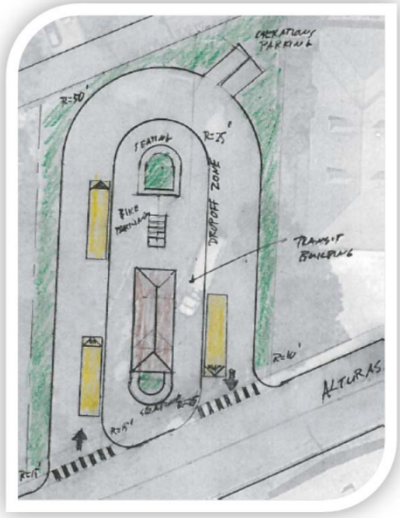
Yuba-Sutter Transit

Route 1 Corridor Enhancement Plan – Community Workshop #2

Yuba-Sutter Transit has been awarded a California Department of Transportation Sustainable Transportation Planning Grant to develop a Corridor Enhancement Plan for Route 1—the eight-mile-long key transit route that links all other routes in Yuba and Sutter counties. The Corridor Enhancement Plan will provide in-depth analysis and conceptual design for capital improvements to the five key transit centers and other facilities along Route 1.

Community Workshop #2

Please join us at a community workshop to provide input on future improvements:



When: Thursday, February 15th from 3:00 – 4:00 p.m. prior to Yuba-Sutter Transit Board of Directors meeting.

Where: Yuba County Board of Supervisors Chambers.

Why: Gather public input to guide future improvement to key Route 1 transit centers.

The agenda for the community workshop includes:

3:00 – 3:15: View the Corridor Enhancement Plan Exhibit Boards

3:15 – 3:40: Presentation

- Summary of Community Input Received
- Review Conceptual Site Options for the **Alturas & Shasta Transit Center**
- Review Intelligent Technology Infrastructure Options for Transit Centers

3:40 – 3:55: Public Feedback / Question and Answer Session

4:00 – 4:45: Board of Directors Meeting with Corridor Enhancement Plan discussion by the Board

Everyone is Welcome to attend!

For more information, call 634-6880 or visit www.YubaSutterTransit.com

Community Workshop #2, February 15, 2018

Community Workshop # 2

The second community workshop was held on February 15, 2018 during the Yuba-Sutter Transit Board of Directors meeting. The focus of this workshop was to provide a summary of community input received to-date from the first community workshop and public survey; present preliminary transit center design options and improvements that were developed for the Alturas & Shasta Terminal and receive input on preferred site options; and provide information and examples of real-time sign display systems at the Route 1 transit centers.

1.2.2 Public Survey

Yuba-Sutter Transit also conducted a public survey to gain input on priorities for physical improvements to Route 1 key transit centers and other Route 1 bus stops. The survey was conducted between August 29th and September 30th, 2017. The survey was available at Yuba-Sutter Transit's website and could be completed in-person during the September 20th open house. Over the course of the month, 27 surveys were completed. The survey results helped inform the recommend improvements described in the Route 1 Corridor Enhancement Plan. A detailed summary of the survey results are attached as Appendix B.

Chapter 2 | Existing Conditions

2.1 Introduction

The Yuba-Sutter Transit Authority, operating as Yuba-Sutter Transit, provides a crucial mobility service for the residents of Yuba and Sutter Counties. The organization provides commuter services to the Sacramento area, rural services to outlying communities, as well as local fixed route and demand-response services in the Yuba City / Marysville / Olivehurst / Linda area. Yuba-Sutter Transit has had a remarkable history of growth in services and ridership, reaching just under 1.3 million boardings per year in total and just over 1.0 million boardings per year on the local fixed route service.

This local fixed route service consists of a total of six routes. Of these, the key route that links all other routes is Route 1, which travels in an east-west corridor between western Yuba City on the west and Yuba College (in Linda) on the east. This route, which carries 34 percent of the total local fixed route ridership, is the only route that crosses the Feather River (via the 10th Street Bridge). West of the Feather River within Yuba City, the Route 1 corridor is also served by portions of Routes 2 and 5, while to the east of the Feather River in Marysville and Linda, the corridor is served by portions of Routes 3, 4 and 6. Because of this route structure, the ability to make convenient timed transfers is key – 15 percent of all passengers transfer as part of their individual trip overall, with the greatest proportion on Route 4 (26 percent). This corridor is also key in that it encompasses all of the local fixed route key transit centers.

Due both to the structure of the local route network and the ridership levels, conditions along the Route 1 corridor are crucial to the operational effectiveness and ridership potential of the entire local route system. To guide improvements along this corridor, Yuba-Sutter Transit Authority was awarded a Sustainable Transportation Planning Grant by the California Department of Transportation to study potential enhancements. As a first step, this document presents information regarding existing conditions along the corridor. Chapter 2.2 presents a summary of existing services. Chapter 2.3 documents existing ridership characteristics. Finally, Chapter 2.4 summarizes the existing conditions at the key transit centers. This information will be used as the basis for future study tasks that develop and evaluate potential corridor enhancements.

2.2 Existing Corridor Transit Services

2.2.1 Existing Services

Yuba-Sutter Transit provides public transit service in Yuba and Sutter Counties (as well as commuter service to Sacramento) under a joint powers agreement between Sutter and Yuba Counties and the Cities of Marysville and Yuba City. Yuba-Sutter Transit operates six local fixed routes, service to Sacramento, Dial-A-Ride (DAR) and rural lifeline routes. Figure 2.1 graphically presents Yuba-Sutter Transit services system-wide. The following describes each of Yuba-Sutter Transit services in detail. Yuba-Sutter Transit is a participating agency of the Connect Transit Card, which launched in 2017. The Connect Transit Card is the Sacramento region's new transit smart card fare collection system that uses a plastic smart card that can store cash value, passes and discount fares.

Local Fixed Routes

Local fixed route service is offered from 6:30 AM to 6:30 PM Monday through Friday and 8:30 AM to 5:30 PM on Saturday. No service is available on Sundays. The one-way general public fare is $1.00 with a 50 percent discount available to seniors age 65 and over, youth age 5 to 12 years old and disabled persons. Children under the age of 5 may ride for free. Monthly passes are available to the general public for $30.00 and $5.00 until December 31st. Funding from Feather River Air Quality Management District (FRAQMD) may be renewed to continue the discount program, but that is unknown at this time. Riders may also purchase a $10.00 ticket sheet for those not wishing to transfer to Connect Transit Card. However, the Connect Card provides a daily cap after three paid fares each day. When local routes end after 6:00 PM, the public can use the Dial-A-Ride service. Local fixed routes are displayed in Figure 2 and described below:

- **Route 1 – Yuba City / Yuba College** – This route begins in Yuba City at the Walton Terminal at Sam's Club where there are timed transfers with Route 2 and 5, then travels by the Yuba Sutter Mall, stops at the Alturas & Shasta Terminal, then crosses into Marysville with stops at the Government Center, North Beale Transit Center and terminates at Yuba College at a timed transfer with Routes 3 and 6. The route operates on half-hourly headways using two buses in each direction.
- **Route 2 – Yuba City Loop** – This route begins and ends at the Walton Terminal in Yuba City. Stops along the way include: Yuba Sutter Mental Health, Alturas & Shasta Terminal, and Yuba City High School. Two buses operate the loop in a clockwise direction and two buses operate in a counter clockwise direction with half hourly headways Monday through Friday. On Saturday, there are one hour headways. Timed transfers to Route 1 and 5 are possible at the Walton Terminal.
- **Route 3 – Olivehurst to Yuba College** – Using two buses, half-hourly service is provided between Evelyn & Johnson Park in Olivehurst and Yuba College in Linda. Transfers are possible to Routes 1 and 6 at Yuba College and Route 4 Marysville Loop in the counter clockwise direction at N. Beale Transit Center.

Figure 2.1: Yuba-Sutter Transit Routes

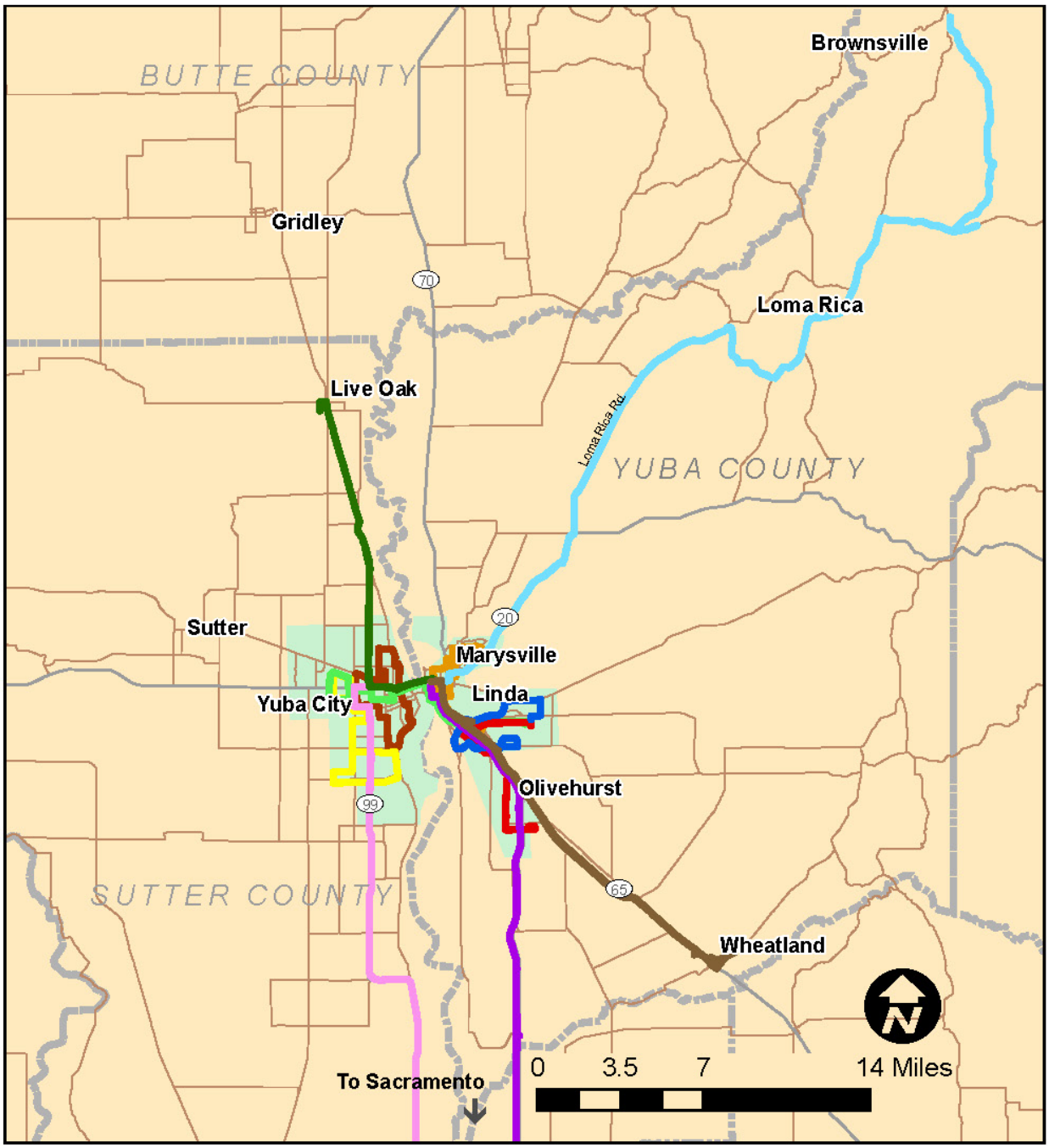
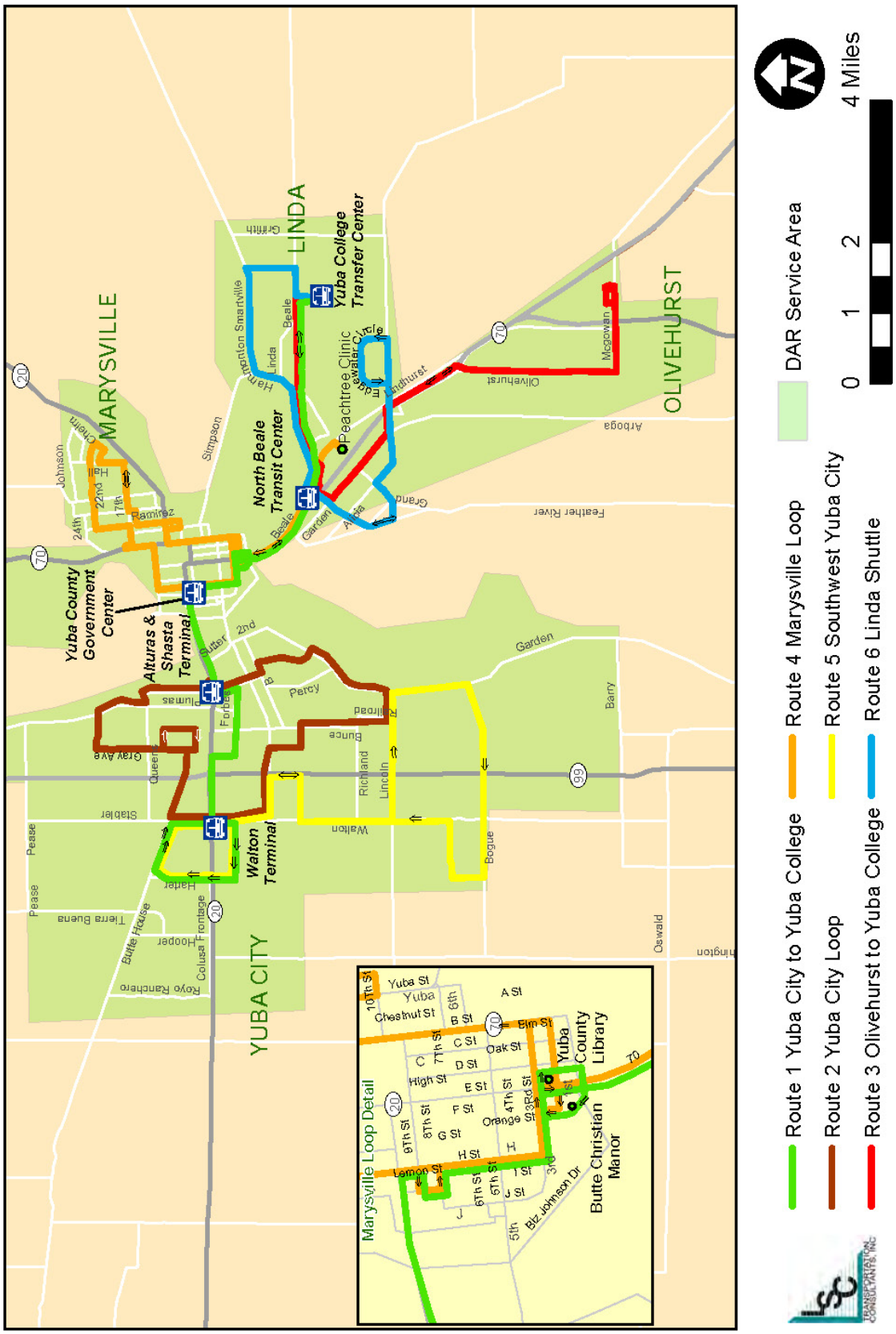


Figure 2.2: Yuba-Sutter Local Routes



- **Route 4 – Marysville Loop** – Hourly service in each direction is provided using a total of two buses, beginning and ending at the Peach Tree Clinic. Stops include the Yuba County Government Center and Marysville High School. The key transfer opportunity is at the North Beale Transit Center, where passengers can transfer to Routes 1, 3 and 6. Transfers between Routes 4 and 1 are also available in Marysville at D & 2nd as well as the Yuba County Government Center.
- **Route 5 – South Yuba City to North Yuba City** – Hourly service is provided between southwest Yuba City and the Walton Terminal in northwest Yuba City using one bus. Timed transfers to Route 1 and 2 are possible at the Walton Terminal.
- **Route 6 – Linda Shuttle** – This route serves Yuba College and the North Beale Transit Center at Walmart on hourly headways with one bus. Timed transfers to Route 1 and 3 are possible at Yuba College.

Table 2.1 presents a summary of the existing local route service. As shown, up to 14 buses are in operation at peak times on weekdays, and 12 buses on Saturdays.

Table 2.1: Summary of Existing Yuba Sutter Transit Local Routes

	Route								
	1	2A	2B	3	4A	4B	5	6	Total
Weekday									
Service Start Time	6:24 AM	6:17 AM	6:21 AM	6:09 AM	6:33 AM	6:39 AM	6:18 AM	6:20 AM	
Service End Time	6:45 PM	6:17 PM	6:21 PM	6:05 PM	6:26 PM	6:16 PM	6:22 PM	6:13 PM	
Service Frequency	30 Min.	30 Min.	30 Min.	30 Min.	1 Hr.	1 Hr.	1 Hr.	1 Hr.	
Peak Buses in Service	4	2	2	2	1	1	1	1	14
Saturday									
Service Start Time	8:19 AM	8:17 AM	8:21 AM	8:39 AM	8:33 AM	8:39 AM	8:08 AM	8:13 AM	
Service End Time	5:45 PM	5:17 PM	5:21 PM	5:25 PM	5:26 PM	5:09 PM	5:22 PM	5:13 PM	
Service Frequency	30 Min.	1 Hr.	1 Hr.	30 Min.	1 Hr.	1 Hr.	1 Hr.	1 Hr.	
Peak Buses in Service	4	1	1	2	1	1	1	1	12

Source: YubaSutterTransit.com

Dial-A-Ride

Yuba-Sutter Transit provides Dial-A-Ride curb to curb demand response service within the general Yuba City, Marysville, Linda, and Olivehurst area from 6:30 AM to 9:30 PM on weekdays and from 8:30 AM to 5:30 PM on Saturdays.

Service is also available to the general public, in a defined area encompassing Yuba City, Marysville, Linda and Olivehurst after 6:30 PM on weekdays. Seniors (age 65 and above) and persons with disabilities pay a $2.00 prior to 6 PM and $1.50 after 6 PM, while children age 4 and under ride free. The fare to the general public for evening service is $3.00.

Rural Routes

Yuba-Sutter Transit provides lifeline transit service to outlying communities:

- **Foothill Route –** The Foothill Route connects the communities of Brownsville, Oregon House, Willow Glen and Loma Rica to Marysville, twice a day every Tuesday, Wednesday and Thursday. Passengers can connect with other Yuba-Sutter Transit services at the Yuba County Government Center.
- **Live Oak Route –** The Live Oak Route travels between Live Oak and Marysville/Yuba City three times a day on all weekdays. Passengers can connect to other Yuba-Sutter Transit services at the Alturas & Shasta Terminal and the Yuba County Government Center.
- **Wheatland Route –** This rural route connects Wheatland to Linda and Marysville each weekday. Connections to other Yuba-Sutter Transit services are possible at the North Beale Transit Center and Yuba County Government Center.

Sacramento Routes

Yuba-Sutter Transit provides both peak hour commuter service and mid-day transit service to Sacramento via both State Route (SR) 99 and 70. Commuter service consists of nine morning runs (six via SR 99 and three via SR 70) to Sacramento and ten afternoon runs from Sacramento (via SR 99 and three via SR 70) Monday through Friday. The morning runs begin at either the Yuba County Government Center in Marysville at 5:15 AM or Walton Terminal in Yuba City as early as 5:30 AM. The SR 99 route picks up passengers in Marysville and Yuba City while the SR 70 route picks up passengers in Marysville, Olivehurst and Plumas Lake. Afternoon commute trips leave Sacramento between 3:45 PM and 6:35 PM. The Mid-Day Express consists of three round trips that depart Yuba City/ Marysville at: 7:55 AM via SR 70, 11:00 AM via SR 99 and 1:15 PM via SR 70.

2.2.2 Corridor Transit Activity by Roadway Link

Transit volumes generated by the local routes along the corridor on weekdays is summarized in Table 2.2. As shown, the greatest level of transit activity is in the eastern portion of the corridor on North Beale Road between the North Beale Transit Center and the Hammonton-Smartville Road intersection, where Routes 1, 3 and 6 combine to result in 121 one-way transit trips per day, of which 10 (5 in each direction) occur per hour.

Table 2.2: Weekday Transit Activity by Corridor Segment

			Eastbound							Westbound							Total 2-Way
Segment	Between	And	Rt 1	Rt 2	Rt 3	Rt 4	Rt 5	Rt 6	Total	Rt 1	Rt 2	Rt 3	Rt 4	Rt 5	Rt 6	Total	
Hourly In-Service Bus Trips																	
Walton Ave	Butte House Rd	Lassen Blvd	--	2	--	--	--	--	2	2	2	--	--	1	--	5	7
Lassen Blvd, Harter Rd	Walton Terminal	Harter at Walmart	2	--	--	--	1	--	3	--	--	--	--	--	--	0	3
Harter Rd, Butte House Rd	Harter at Walmart	Walton Ave	2	--	--	--	1	--	3	2	--	--	--	--	--	2	5
Butte House Rd	Walton Ave	Gray Ave	2	2	--	--	--	--	4	2	2	--	--	--	--	4	8
Gray Ave, Forbes Ave	Butte House	Plumas	2	--	--	--	--	--	2	2	--	--	--	--	--	2	4
Plumas St	Forbes	Alturas/Shasta	2	2	--	--	--	--	4	2	2	--	--	--	--	4	8
10th St	Alturas/Shasta	Yuba Co Govt Center	2	--	--	--	--	--	2	2	--	--	--	--	--	2	4
H St, 3rd St	Yuba Co Govt Center	3rd & D	2	--	--	1	--	--	3	2	--	--	1	--	--	3	6
H St, 3rd St, N. Beale Rd	3rd & D	N. Beale Transit Center	2	--	--	2	--	--	4	2	--	--	2	--	--	4	8
N Beale Rd	N. Beale Transit Center	Hammonton/Smartville Rd	2	--	2	--	--	1	5	2	--	2	--	--	1	5	10
N Beale Rd	Hammonton/Smartville Rd	Yuba College	2	--	2	--	--	--	4	2	--	2	--	--	--	4	8
Total Daily In-Service Bus Trips																	
Walton Ave	Butte House Rd	Lassen Blvd	--	23	--	--	--	--	23	24	23	--	--	12	--	59	82
Lassen Blvd, Harter Rd	Walton Terminal	Harter at Walmart	23	--	--	--	12	--	35	--	--	--	--	--	--	0	35
Harter Rd, Butte House Rd	Harter at Walmart	Walton Ave	24	--	--	--	12	--	36	24	--	--	--	--	--	24	60
Butte House Rd	Walton Ave	Gray Ave	24	23	--	--	--	--	47	24	23	--	--	--	--	47	94
Gray Ave, Forbes Ave	Butte House	Plumas	24	--	--	--	--	--	24	24	--	--	--	--	--	24	48
Plumas St	Forbes	Alturas/Shasta	24	23	--	--	--	--	47	24	25	--	--	--	--	49	96
10th St	Alturas/Shasta	Yuba Co Govt Center	24	--	--	--	--	--	24	25	--	--	--	--	--	25	49
H St, 3rd St	Yuba Co Govt Center	3rd & D	25	--	--	12	--	--	37	24	--	--	12	--	--	36	73
H St, 3rd St, N. Beale Rd	3rd & D	N. Beale Transit Center	25	--	--	24	--	--	49	24	--	--	24	--	--	48	97
N Beale Rd	N. Beale Transit Center	Hammonton/Smartville Rd	25	--	24	--	--	12	61	24	--	24	--	--	12	60	121
N Beale Rd	Hammonton/Smartville Rd	Yuba College	25	--	24	--	--	--	49	24	--	24	--	--	--	48	97

Note: Excludes Commuter, Rural and Dial-A-Ride runs

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High levels of transit activity also occur east of the Hammonton-Smartville Road and over the Yuba River Bridge (97 buses per day, 8 per hour), along Plumas Street in Yuba City (96 buses per day, 8 per hour) and along Butte House Road between Walton Avenue and Gray Avenue (94 buses per day, 8 per hour).

2.2.3 Transit Activity at Transit Centers over a Day

Bus activity can also be considered at each of the key transit transfer points. As shown in Table 2.3, the greatest overall bus activity on weekdays occurs at the North Beale Transit Center, with 170 buses per day and 15 per hour. The remaining transfer points by level of activity are the Yuba County Government Center (111 per day, 13 per hour), Alturas & Shasta (103 per day, 9 per hour), Walton Terminal (92 per day, 9 per hour), and Yuba College (86 per day, 8 per hour). Transit activity at the North Beale Transit Center is split virtually evenly between the south side and the north side (Walmart side) of North Beale Road.

2.2.4 Transit Activity at Transit Centers over an Hour

A key factor in evaluating existing or future designs for a transfer center is the number of buses on-site at peak times. The existing schedules were reviewed to identify when buses on the various routes will be at each of the transfer centers on a minute-by-minute basis over the course of a typical weekday hour. The results are show in Table 2.4 for the western transit centers, and Table 2.5 for the eastern transit centers. Reviewing this information for the individual centers indicates the following:

- **Walton Terminal** is a layover/recovery point for Routes 1, 2 and 3. This results in a total of up to four buses onsite at peak times (three on the west side of Walton Road, and the Route 2A bus on the east side).
- By the schedule, only one bus at a time would be at **Alturas & Shasta**. However, it only requires a bus to be 4 minutes off schedule for two buses to be on-site, and a 9 minute deviation from schedule results in 3 buses on site.
- Similarly, the **Yuba County Government Center** would only have a single bus on site at any one time per the schedule, but common variations in running time can result in up to three buses at a time.
- The south side of the **North Beale Transit Center** has two buses scheduled at the peak time. However, only a 3 minute delay on Route 3 can result in three buses at a time. On the north side of the street, only one bus is scheduled to be on site at a time, but small delays can result in two buses and infrequently three buses can be on site.
- The **Yuba College Transit Center** is a layover/recovery point for Routes 1, 3 and 6, resulting in up to three buses at a time.

TABLE 2.3: Summary of Weekday Bus Activity at Key Transfer Points

Number of Buses per Hour on Weekdays

		Hour Beginning														
		5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	Total Daily
Walton Terminal (Sams Club)	Rt 1	0	2	2	2	2	2	2	2	2	2	2	2	2	2	**26**
	Rt 2A	0	1	2	2	2	2	2	2	2	2	2	2	2	0	**23**
	Rt 2B	0	1	2	2	2	2	2	2	2	2	2	2	2	0	**23**
	Rt 5	0	1	1	1	1	1	1	1	1	1	1	1	1	0	**12**
	Commuter	2	4	0	0	0	0	1	0	0	0	1	0	0	0	**8**
	Total	**2**	**9**	**7**	**7**	**7**	**7**	**8**	**7**	**7**	**7**	**8**	**7**	**7**	**2**	**92**
Alturas & Shasta	Rt 1	0	3	4	4	4	4	4	4	4	4	4	4	4	2	**49**
	Rt 2A	0	2	2	2	2	2	2	2	2	2	2	2	2	1	**25**
	Rt 2B	0	2	2	2	2	2	2	2	2	2	2	2	2	1	**25**
	Live Oak	0	0	1	0	0	0	1	1	0	0	0	0	1	0	**4**
	Total	**0**	**7**	**9**	**8**	**8**	**8**	**9**	**9**	**8**	**8**	**8**	**8**	**9**	**4**	**103**
Yuba County Government Center	Rt 1	0	4	4	4	4	4	4	4	4	4	4	4	4	2	**50**
	Rt 4A	0	0	1	1	1	1	1	1	1	1	1	1	1	1	**12**
	Rt 4B	0	0	1	1	1	1	1	1	1	1	1	1	1	1	**12**
	Foothill [1]	0	0	1	0	0	0	1	0	1	0	0	0	1	0	**4**
	Live Oak	0	0	1	0	0	0	1	1	0	0	0	0	1	0	**4**
	Wheatland	0	0	0	0	0	1	0	0	0	0	0	1	0	0	**2**
	Commuter	4	3	1	2	0	1	1	0	2	1	1	2	5	4	**27**
	Total	**4**	**7**	**9**	**8**	**6**	**8**	**9**	**7**	**9**	**7**	**7**	**9**	**13**	**8**	**111**
North Beale Transit Center – South Side	Rt 1	0	1	2	2	2	2	2	2	2	2	2	2	2	2	**25**
	Rt 3	0	2	2	2	2	2	2	2	2	2	2	2	2	0	**24**
	Rt 4A	0	1	1	1	1	1	1	1	1	1	1	1	1	0	**12**
	Rt 4B	0	0	1	1	1	1	1	1	1	1	1	1	1	0	**11**
	Rt 6	0	1	1	1	1	1	1	1	1	1	1	1	1	0	**12**
	Wheatland	0	0	0	0	0	1	0	0	0	0	0	0	0	0	**1**
	Subtotal	0	5	7	7	7	8	7	7	7	7	7	7	7	2	**85**
North Beale Transit Center – Walmart Side	Rt 1	0	1	2	2	2	2	2	2	2	2	2	2	2	1	**24**
	Rt 3	0	1	2	2	2	2	2	2	2	2	2	2	2	1	**24**
	Rt 4A	0	0	1	1	1	1	1	1	1	1	1	1	1	1	**12**
	Rt 4B	0	1	1	1	1	1	1	1	1	1	1	1	1	0	**12**
	Rt 6	0	0	1	1	1	1	1	1	1	1	1	1	1	1	**12**
	Wheatland	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
	Subtotal	0	3	7	7	7	7	7	7	7	7	7	8	7	4	**85**
	Total	**0**	**8**	**14**	**14**	**14**	**15**	**14**	**14**	**14**	**14**	**14**	**15**	**14**	**6**	**170**
Yuba College	Rt 1	0	1	3	2	2	2	2	2	2	2	2	2	2	2	**26**
	Rt 3	0	2	4	4	4	4	4	4	4	4	4	4	4	2	**48**
	Rt 6	0	1	1	1	1	1	1	1	1	1	1	1	1	0	**12**
	Total	**0**	**4**	**8**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**7**	**4**	**86**

Source: YubaSutterTransit.com

Note 1: Tue, Wed and Thur only.

Table 2.4: Existing Weekday Hourly Local Route Service Schedule at Western Transfer Points

Shading Indicates Bus at Transfer Point

Minutes Past the Hour	Walton Terminal					Alturas & Shasta				Yuba Co Government Center			
	Rt 1	Rt 2A	Rt 2B	Rt 5	Buses Onsite	Rt 1	Rt 2A	Rt 2B	Buses Onsite	Rt 1	Rt 4A	Rt 4B	Buses Onsite
0:00					0				0				0
0:01					0				0				0
0:02					0				0				0
0:03					0				0				0
0:04					0				0				0
0:05					0				0				0
0:06					0				0				0
0:07					0				0				0
0:08					0				0				0
0:09					0				0				0
0:10					0				0				0
0:11					0				0				0
0:12					0				0				0
0:13					0	EB			1				0
0:14					0				0				0
0:15					3				0				0
0:16					3				0				1
0:17					3				1				0
0:18					3				0				0
0:19					3				0	EB			1
0:20					3				0				0
0:21					2				1				0
0:22					2				0	WB			1
0:23					2				0				0
0:24					0				0				0
0:25					0				0				0
0:26					0				0				1
0:27					0				0				0
0:28					0				0				0
0:29					0	WB			1				0
0:30					0				0				0
0:31					0				0				0
0:32					0				0				0
0:33					0				0				0
0:34					0				0				0
0:35					0				0				0
0:36					0				0				0
0:37					0				0				0
0:38					0				0				0
0:39					0				0				0
0:40					0				0				0
0:41					0				0				0
0:42					0				0				0
0:43					0	EB			1				0
0:44					0				0				0
0:45					4				0				0
0:46					4				0				0
0:47					4				1				0
0:48					4				0				0
0:49					4				0	EB			1
0:50					4				0				0
0:51					3				1				0
0:52					3				0	WB			1
0:53					3				0				0
0:54					0				0				0
0:55					0				0				0
0:56					0				0				0
0:57					0				0				0
0:58					0				0				0
0:59					0	WB			1				0
Max					4				1				1

Table 2.5: Existing Weekday Hourly Local Route Service Schedule at Eastern Transfer Points

Shading Indicates Bus at Transfer Point

	N Beale Transit Center													Yuba College			
	South Side						Walmart Side										
Minutes Past the Hour	Rt 1	Rt 3	Rt 4A	Rt 4B	Rt 6	Buses Onsite	Rt 1	Rt 3	Rt 4A	Rt 4B	Rt 6	Buses Onsite	Total Onsite	Rt 1	Rt 3	Rt 6	Buses Onsite
0:00						0					WB	1	1				1
0:01						0						0	0				0
0:02						0						0	0				0
0:03						0						0	0				0
0:04						0						0	0				0
0:05	EB					1						0	1				1
0:06						0						0	0				1
0:07						0	WB					1	1				1
0:08						0						0	0				1
0:09						0						0	0				1
0:10						0						0	0				1
0:11						0						0	0				1
0:12						0						0	0				1
0:13						0			NB			1	1				1
0:14						0						0	0				1
0:15						0						0	0				2
0:16						0						0	0				1
0:17						0						0	0				1
0:18						0						0	0				1
0:19						0						0	0				1
0:20						0						0	0				1
0:21						0						0	0				1
0:22						0		WB				1	1				1
0:23						0						0	0				1
0:24						0						0	0				1
0:25		EB				1						0	1				1
0:26						0						0	0				1
0:27						0						0	0				1
0:28				SB	EB	2						0	2				1
0:29						0						0	0				1
0:30						0						0	0				1
0:31						0						0	0				0
0:32						0						0	0				0
0:33						0						0	0				0
0:34						0						0	0				0
0:35	EB					1						0	1				1
0:36						0						0	0				1
0:37						0	WB					1	1				1
0:38						0						0	0				1
0:39						0						0	0				1
0:40						0						0	0				2
0:41						0						0	0				2
0:42						0						0	0				2
0:43						0				NB		1	1				2
0:44						0						0	0				2
0:45						0						0	0				3
0:46						0						0	0				2
0:47						0						0	0				2
0:48						0						0	0				2
0:49						0						0	0				2
0:50						0						0	0				2
0:51						0						0	0				1
0:52						0		WB				1	1				1
0:53						0						0	0				1
0:54						0						0	0				1
0:55		EB				1						0	1				1
0:56						0						0	0				1
0:57						0						0	0				1
0:58			SB			1						0	1				1
0:59						0						0	0				1
Max						2						1	2				3

2.3 Existing Ridership Characteristics

2.3.1 Existing Ridership Activity

Annual and Monthly Ridership

Annual and monthly ridership for the various Yuba-Sutter Transit route services over 2016 is presented in Table 2.6. In addition, local route ridership by month is depicted in Figure 2.3. As indicated, the local fixed routes comprise the bulk (87 percent) of the overall fixed route annual ridership. Route 1 is the busiest of the local routes, equal to 37 percent of all local route ridership (or 32 percent of total route ridership).

Local route ridership is highest in the spring and fall months, with lower ridership in December, January and July. Reflecting in part the start of the Yuba College academic year, Route 1 ridership is highest in August. Compared with ridership on the other routes, Route 1 ridership is relatively consistent over the year.

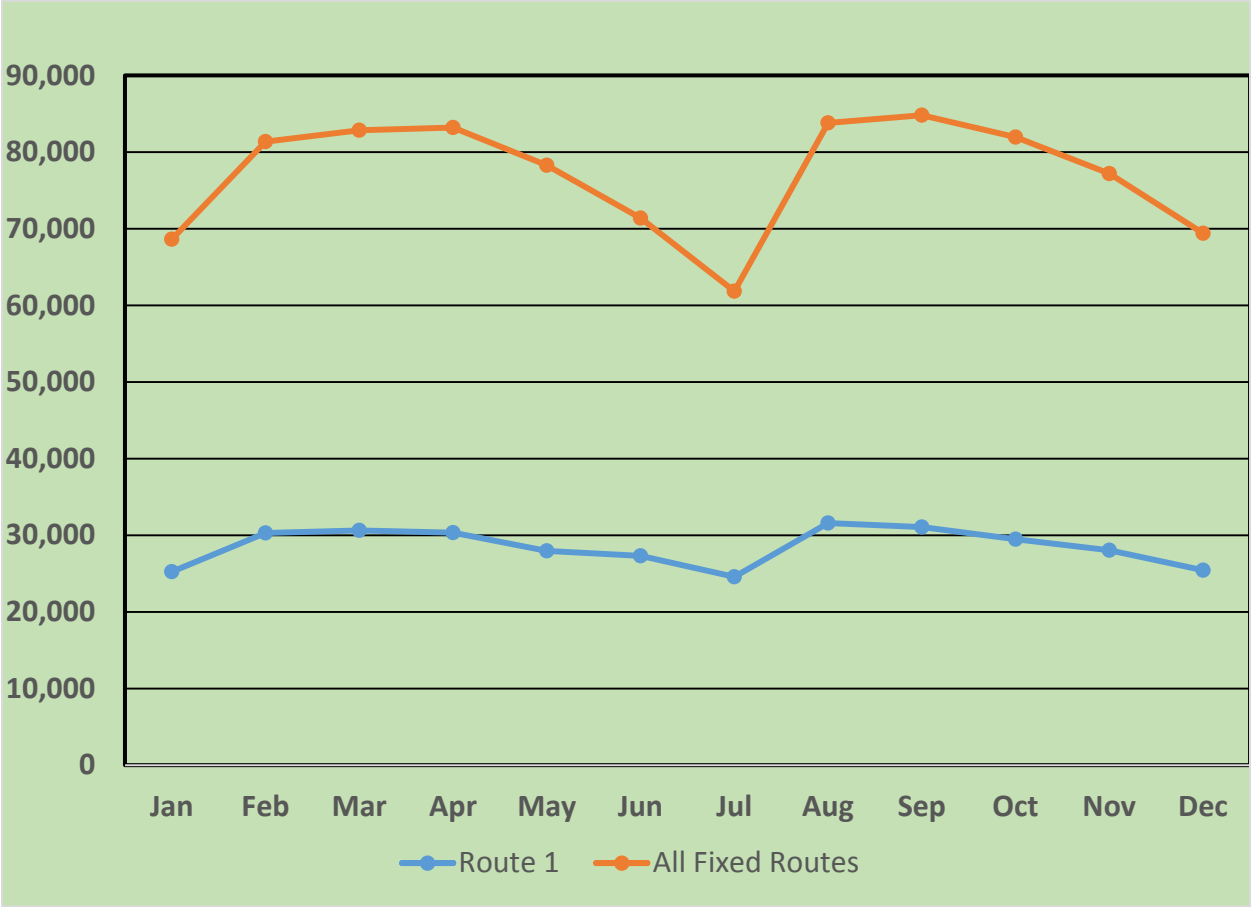
Table 2.6: 2016 Transit Ridership by Route and by Month

Route	Jan	Feb	Mar	Apr	May	Jun	Jul
Fixed Routes							
1	25,252	30,307	30,642	30,333	27,965	27,304	24,589
2	13,855	15,470	16,283	15,618	15,550	14,394	12,153
3	13,076	16,176	15,941	16,660	15,075	12,255	10,184
4	8,871	10,257	10,316	10,740	10,097	8,330	6,997
5	3,766	4,242	4,646	5,159	5,116	4,965	4,004
6	3,810	4,907	5,011	4,682	4,479	4,141	3,909
Subtotal	68,630	81,359	82,839	83,192	78,282	71,389	61,836
Regional Routes							
Foothill	131	136	156	152	137	132	117
Live Oak	168	233	323	319	403	371	308
Wheatland	56	76	66	50	65	67	40
Subtotal	355	445	545	521	605	570	465
Commuter	10,959	11,887	12,684	11,942	11,599	11,278	10,010
TOTAL	79,944	93,691	96,068	95,655	90,486	83,237	72,311

Table 2-6: 2016 Transit Ridership by Route and by Month (Continued)

Route	Aug	Sep	Oct	Nov	Dec	Total
Fixed Routes						
1	31,585	31,062	29,489	28,053	25,442	342,024
2	17,265	17,107	16,710	15,871	13,579	183,857
3	14,202	15,554	15,130	14,539	12,794	171,589
4	10,178	10,599	10,438	9,168	8,330	114,325
5	5,511	5,611	5,340	4,646	4,468	57,479
6	5,073	4,886	4,836	4,905	4,783	55,428
Subtotal	83,814	84,819	81,943	77,182	69,396	924,681
Regional Routes						
Foothill	159	188	101	160	144	1,713
Live Oak	411	355	316	369	261	3,646
Wheatland	88	89	51	44	26	986
Subtotal	658	632	468	573	431	6,345
Commuter	12,009	11,542	11,564	10,188	10,233	135,895
TOTAL	96,481	96,993	93,975	87,943	80,060	1,066,921

Figure 2.3: 2016 Local Route Ridership by Month



Ridership by Day of Week

Ridership data for a typical month without major holidays (October 2016) was reviewed to identify the variation in ridership by day of week. As shown in Table 2.7, overall local route ridership is highest on Wednesdays (at 106 percent of weekday average), though Route 1 ridership is slightly the highest on Mondays (106 percent of weekday average, compared with 105 percent on Wednesdays). Friday is the weekday with lowest ridership on all routes. Saturday ridership is 44 percent of weekday average for the Local Routes as a whole, and 52 percent of the weekday average on Route 1. The relatively low proportion of Saturday ridership on Route 2 (29 percent) reflects the fact that Route 2 is the only route with lower service frequency on Saturday than on weekdays (hourly rather than half-hourly).

Route 1 Ridership by Run

Average weekday ridership by run on weekdays is presented in Table 2.8 and depicted in Figure 2.4. As indicated, boardings per run are highest in the mid-afternoon, with a peak boarding of 59.3 passengers on the eastbound run departing at 3:20 PM and 44.3 passengers boarding on the westbound run departing at 3:00 PM. Overall, westbound boardings exceed eastbound boardings in the morning, with the opposite pattern in the afternoon.

Route 1 Passenger Activity by Stop and Route Segment

Table 2.7: Local Route Ridership Variation by Day of Week

October, 2016

	Route						
	1	2	3	4	5	6	Total
Average Daily Ridership by Day of Week							
MON	1,317	842	642	450	232	204	3,687
TUES	1,284	747	651	468	212	221	3,583
WED	1,304	765	686	508	246	215	3,723
THU	1,271	725	713	469	243	201	3,622
FRI	1,060	619	570	407	193	161	3,009
SAT	646	216	289	156	121	125	1,553
Percent of Average Weekday							
MON	106%	114%	98%	98%	103%	102%	105%
TUES	103%	101%	100%	102%	94%	110%	102%
WED	105%	103%	105%	110%	109%	107%	106%
THU	102%	98%	109%	102%	108%	100%	103%
FRI	85%	84%	87%	88%	86%	80%	85%
SAT	52%	29%	44%	34%	54%	63%	44%

Ridership boarding and alighting data for the most recent two onboard counts (Tuesday, October 4, 2016 and Thursday, March 2, 2017) were analyzed to identify the average daily boarding and alighting by stop along Route 1. Table 2.9 presents a summary of this data over the total day, while detailed tables of activity by stop and run are presented in Appendix A. As shown, the busiest overall stop is the North Beale Transit Center, with a total of 368 daily boardings and alightings. Of these, the higher proportion (232.5) occur on the northern (Walmart) side, and 135.5 on the south side. Alturas & Shasta is the second-busiest with 264.5 boardings or alightings per day, while the Yuba College, D & 2nd and Yuba County Government Center all have very similar activity totaling between 232.5 and 239.0.

Beyond the key transfer points, passenger activity is fairly well distributed over the various stops. There are only five stops with less than 8 total boardings and alightings per day: in the eastbound direction at Buttehouse/Harter, Buttehouse/Tharp, H/7th and 3rd/F, and in the westbound direction at F/2nd.

Table 2.8: Route 1 Average Weekday Ridership by Run

Eastbound		Westbound	
Run Start Time	Average Boardings	Run Start Time	Average Boardings
6:40 AM	4.7	6:30 AM	6.0
6:24 AM	9.0	6:30 AM	28.7
6:50 AM	22.0	7:00 AM	31.0
7:20 AM	22.7	7:30 AM	29.3
7:50 AM	22.3	8:00 AM	26.3
8:20 AM	22.7	8:30 AM	30.0
8:50 AM	23.3	9:00 AM	28.7
9:20 AM	23.0	9:30 AM	41.7
9:50 AM	28.3	10:00 AM	40.7
10:20 AM	35.0	10:30 AM	36.3
10:50 AM	32.0	11:00 AM	40.3
11:20 AM	28.7	11:30 AM	34.3
11:50 AM	50.3	12:00 PM	33.0
12:20 PM	37.3	12:30 PM	42.0
12:50 PM	43.0	1:00 PM	40.0
1:20 PM	41.0	1:30 PM	27.0
1:50 PM	37.0	2:00 PM	38.3
2:20 PM	39.3	2:30 PM	29.0
2:50 PM	42.0	3:00 PM	44.3
3:20 PM	59.3	3:30 PM	23.7
3:50 PM	36.3	4:00 PM	39.0
4:20 PM	23.3	4:30 PM	20.7
4:50 PM	19.7	5:00 PM	20.3
5:20 PM	18.7	5:30 PM	12.0
5:50 PM	11.0	6:00 PM	6.3

Average of March 1, 2016, October 4, 2016 and March 2, 2017

Figure 2.4: Route 1 Average Weekday Boarding per Run

Table 2.9 also presents the average and peak observed onboard passenger load after each stop along Route 1. The segment with the highest average passenger load in the westbound direction is between the North Beale Transit Center and the Yuba County Government Center, with 14.1 to 15.1 passengers on the average bus. In the eastbound direction average loads are relatively consistent (between 10.1 and 12.5) between Harter at Walmart and D/2nd. Peak passenger loads over the two days were observed as high as 35.5 in the eastbound direction (near Buttehouse/Harter) and 31.5 in the westbound direction (over the Yuba River Bridge).

Total Passenger Boardings at Transfer Points

The boarding activity counts were also used to total the boardings by time of day at each of the key transfer points, as shown in Table 2.10. This data is also depicted in Figure 2.5. As indicated, total

Table 2.9: Average Daily Route 1 Boarding, Alighting and Passenger Load by Stop

Tuesday, October 4, 2016 and Thursday, March 2, 2017

	Eastbound						Westbound				
Stop	Boarding	Alighting	Total Boarding & Alighting	Average Onboard After Stop	Peak Onboard After Stop	Stop	Boarding	Alighting	Total Boarding & Alighting	Average Onboard After Stop	Peak Onboard After Stop
Walton Terminal (Sam's Club)	87.5	0.0	87.5	7.2	20	**Yuba College**	137.5	0.0	137.5	6.1	15.0
Lassen & Walton	8.5	3.0	11.5	8.0	20.5	North Beale & Woodland	32.5	1.5	34.0	7.4	17.0
Lassen & Tharp	6.0	2.0	8.0	8.3	25.5	North Beale & Albrecht	14.0	6.0	20.0	7.8	21.0
Lasson & Klamath	11.5	8.0	19.5	8.8	25.5	North Beale & Alpine	20.0	1.5	21.5	8.5	21.5
Harter & Spirit Way (River Valley High)	18.5	22.0	40.5	9.8	32	North Beale & Lowe	41.5	3.5	45.0	10.1	23.5
Harter at Walmart	63.0	67.5	130.5	11.5	35.5	**No. Beale Transit Ctr. (Wal-Mart)**	173.0	59.5	232.5	14.8	31.5
Buttehouse & Harter	1.5	0.5	2.0	11.6	35.5	North Beale & Royal Motel	7.0	5.0	12.0	14.9	31.5
Buttehouse & Tharp	1.0	1.0	2.0	11.4	34	**D & 2nd (Habitat for Humanity)**	58.5	69.0	127.5	14.5	29.5
Buttehouse & Stabler (Rite Aid)	31.0	26.0	57.0	11.6	30.5	F & 2nd	2.0	4.5	6.5	14.4	29.0
Buttehouse & Civic Center	6.0	4.5	10.5	11.6	29	H & 4th (Ride out Loading Zone)	25.5	18.5	44.0	14.7	27.0
Buttehouse & YC Mall	29.0	21.5	50.5	11.3	27.5	H & 7th	3.5	17.5	21.0	14.1	28.5
Gray & Ainsley	32.5	13.5	46.0	12.3	30	**Yuba Co. Govt. Center (I & 9th)**	69.5	29.5	99.0	15.1	30.5
Gray & Louise (Kmart)	27.0	14.5	41.5	11.3	23	**Alturas & Shasta**	25.5	95.0	120.5	12.3	22.0
Forbes & Gray	21.5	2.5	24.0	11.8	23.5	Plumas & Church	16.0	34.0	50.0	12.1	22.5
Forbes & Clark (Library)	31.0	18.5	49.5	11.8	21	Forbes & Almond	5.5	5.5	11.0	12.1	22.0
Forbes & Orange	4.0	5.5	9.5	11.4	21	Forbes & Orange	1.0	15.0	16.0	11.5	22.0
Forbes & Almond	2.0	6.5	8.5	11.2	21.5	Forbes & Clark	12.0	25.0	37.0	11.0	21.0
Plumas & Church	26.5	16.0	42.5	10.9	21.5	**Forbes & Gray**	4.5	21.5	26.0	10.3	21.5
Alturas & Shasta	119.0	25.0	144.0	12.5	22	Gray & Louise (Palisades Motel)	15.0	37.5	52.5	9.3	21.0
Yuba Co. Govt. Center (I & 9th)	54.5	79.0	133.5	10.9	22.5	Gray & Ainsley	5.5	27.5	33.0	8.4	21.0
H & 7th	0.5	3.5	4.0	10.7	20	Buttehouse & Target	16.0	29.0	45.0	7.9	15.0
H & 4th	12.5	17.5	30.0	10.4	20.5	Buttehouse & El Dorado	5.5	11.0	16.5	7.6	16.0
3rd & F	4.0	2.5	6.5	10.1	20	Stabler & Buttehouse (BelAir)	15.0	31.0	46.0	7.0	14.5
D & 2nd (Habitat for Humanity)	67.5	41.5	109.0	10.6	20.5	Stabler & Starr	1.5	7.5	9.0	6.7	15.0
No. Beale & Feather River Blvd.	2.5	67.0	69.5	7.8	18.5	**Walton Terminal (Sam's Club)**	0.0	67.0	67.0	3.9	13.0
No. Beale Transit Center (South Side)	31.0	104.5	135.5	4.6	13.5						
No. Beale Rd. & Lowe	2.5	28.5	31.0	4.1	13.5	**Total 2-Way Activity at Transfer Points**					
North Beale Rd & Park	1.5	22.0	23.5	3.8	13.5	Walton Terminal (Sam's Club)	87.5	67.0	154.5		
North Beale & Hammonton-Smartville	2.0	18.5	20.5	3.6	13.5	Alturas & Shasta	144.5	120.0	264.5		
North Beale & Albrecht	2.0	10.5	12.5	3.3	13.5	Yuba Co. Govt. Center (I & 9th)	124.0	108.5	232.5		
North Beale & Woodland	0.5	19.0	19.5	2.9	13.5	D & 2nd (Habitat for Humanity)	126.0	110.5	236.5		
Yuba College	0.0	101.5	101.5	0.7	9.5	No. Beale Transit Center (South Side)	204.0	164.0	368.0		
						Yuba College	137.5	101.5	239.0		

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Table 2.10: Total Boarding by Time at Route 1 Transfer Centers

Wednesday, March 1 or Thursday, March 2, 2017

	Half-Hourly Period Start Time																													
	5:01 AM	5:31 AM	6:01 AM	6:31 AM	7:01 AM	7:31 AM	8:01 AM	8:31 AM	9:01 AM	9:31 AM	10:01 AM	10:31 AM	11:01 AM	11:31 AM	12:01 PM	12:31 PM	1:01 PM	1:31 PM	2:01 PM	2:31 PM	3:01 PM	3:31 PM	4:01 PM	4:31 PM	5:01 PM	5:31 PM	6:01 PM	Total	Percent by Route
Walton Terminal																													
Rt 1	0	0	0	3	3	8	7	6	2	3	8	2	2	9	5	3	1	2	1	4	0	1	2	0	3	2	0	77	34%
Rt 2A	0	0	0	0	0	3	0	0	0	1	1	1	1	0	0	1	1	1	0	1	0	1	0	1	0	5	0	18	8%
Rt 2B	0	0	0	0	1	2	0	0	1	1	1	1	0	2	2	5	3	0	2	1	2	3	6	6	2	0	0	41	18%
Rt 5	0	0	0	0	0	1	0	2	0	4	0	2	0	5	0	5	0	3	0	5	0	3	0	2	0	1	0	33	15%
Hwy 99 Commuter	6	14	21	8																	0	0	0	0	0			49	22%
Midday Commuter						5						3					0											8	4%
Total	6	14	21	11	4	19	7	8	3	9	10	9	3	16	7	14	5	6	3	11	2	8	8	9	5	8	0	226	100%
Alturas/Shasta																													
Rt 1	0	0	2	3	5	7	5	6	3	2	1	8	4	13	2	7	9	5	12	9	4	4	4	7	1	1	0	124	63%
Rt 2A	0	0	0	1	1	1	0	2	1	1	3	0	1	2	2	2	0	0	3	1	4	1	1	0	0	0	0	27	14%
Rt 2B	0	0	2	4	1	3	3	2	3	4	2	1	1	1	2	4	2	5	0	1	0	1	5	0	0	0	0	47	24%
Total	0	0	4	8	7	11	8	10	7	7	6	9	6	16	6	13	11	10	15	11	8	6	10	7	1	1	0	198	100%
Yuba County Govt Center																													
Rt 1	0	0	0	11	7	3	3	2	4	7	7	7	2	4	2	9	4	5	2	17	5	2	13	11	2	0	0	129	60%
Rt 4A	0	0	0	0	6	0	3	0	2	0	2	0	2	0	1	0	5	0	1	0	2	0	1	0	8	0	1	34	16%
Rt 4B	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2	0	5	0	2	0	0	0	2	0	0	0	12	6%
Hwy 99 Commuter	2	1	10	0																	2	0	0	0	2			17	8%
Midday Commuter						2						7					0											9	4%
Hwy 70 Commuter	5	5	0	3																			0	0	0			13	6%
Total	7	6	10	14	13	5	6	2	6	7	9	15	4	4	3	11	9	10	3	19	9	2	14	13	12	0	1	214	100%
N. Beale Transit Center																													
South Side																													
Rt 1	0	0	2	1	2	0	0	0	0	2	3	4	1	0	0	3	0	0	2	0	1	2	0	0	0	2	0	25	5%
Rt 3	0	0	0	1	0	0	0	6	6	4	0	2	0	0	5	2	4	1	1	1	5	3	5	2	4	3	0	55	11%
Rt 4A	0	0	0	2	1	0	0	0	0	0	0	0	1	0	1	0	2	0	2	0	0	0	0	0	0	0	0	9	2%
Rt 4B	0	0	0	2	0	3	0	0	0	2	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	11	2%
Rt 6	0	0	1	1	0	2	0	0	0	6	0	1	0	2	0	10	0	1	0	11	0	3	0	3	0	0	0	41	8%
Subtotal	0	0	3	7	3	5	0	6	6	14	3	7	2	2	6	16	6	2	5	15	6	8	5	5	4	5	0	141	28%
Walmart Side																													
Rt 1	0	0	5	5	9	5	9	6	14	8	8	9	7	3	7	7	7	8	7	10	2	0	3	4	3	0	0	146	29%
Rt 3	0	0	0	0	0	1	1	2	2	1	2	3	6	1	1	10	9	0	7	9	7	14	11	6	2	1	5	101	20%
Rt 4A	0	0	0	0	12	0	2	0	8	0	0	0	1	0	6	0	2	0	6	0	0	0	3	0	0	0	0	40	8%
Rt 4B	0	0	0	9	0	4	0	2	0	3	0	3	0	3	0	0	0	4	0	3	0	10	0	2	0	0	0	43	8%
Rt 6	0	0	0	0	0	1	0	2	0	3	0	1	0	2	0	4	0	6	0	2	0	3	0	8	0	4	0	36	7%
Subtotal	0	0	5	14	21	11	12	12	24	15	10	16	14	9	14	21	18	18	20	24	9	27	17	20	5	5	5	366	72%
Total	0	0	8	21	24	16	12	18	30	29	13	23	16	11	20	37	24	20	25	39	15	35	22	25	9	10	5	507	100%
Yuba College																													
Rt 1	0	0	1	3	4	0	0	0	6	8	4	9	2	9	9	6	2	13	8	13	8	13	4	5	2	1	0	130	70%
Rt 3	0	0	0	0	0	3	0	0	2	0	1	2	1	2	6	8	1	1	6	4	0	4	1	0	2	4	0	48	26%
Rt 6	0	0	0	0	0	1	0	2	0	0	0	0	0	1	0	1	0	1	0	3	0	0	0	0	0	0	0	9	5%
Total	0	0	1	3	4	4	0	2	8	8	5	11	3	12	15	15	3	15	14	20	8	17	5	5	4	5	0	187	100%

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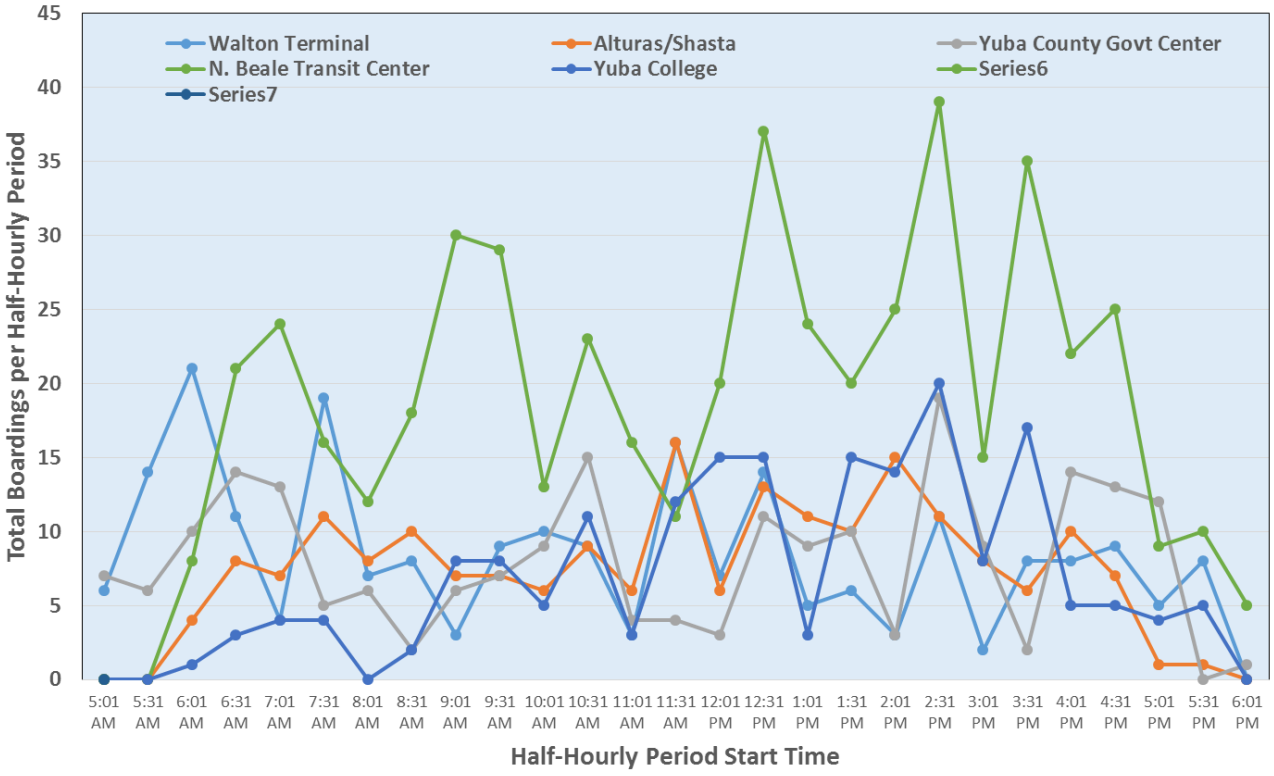
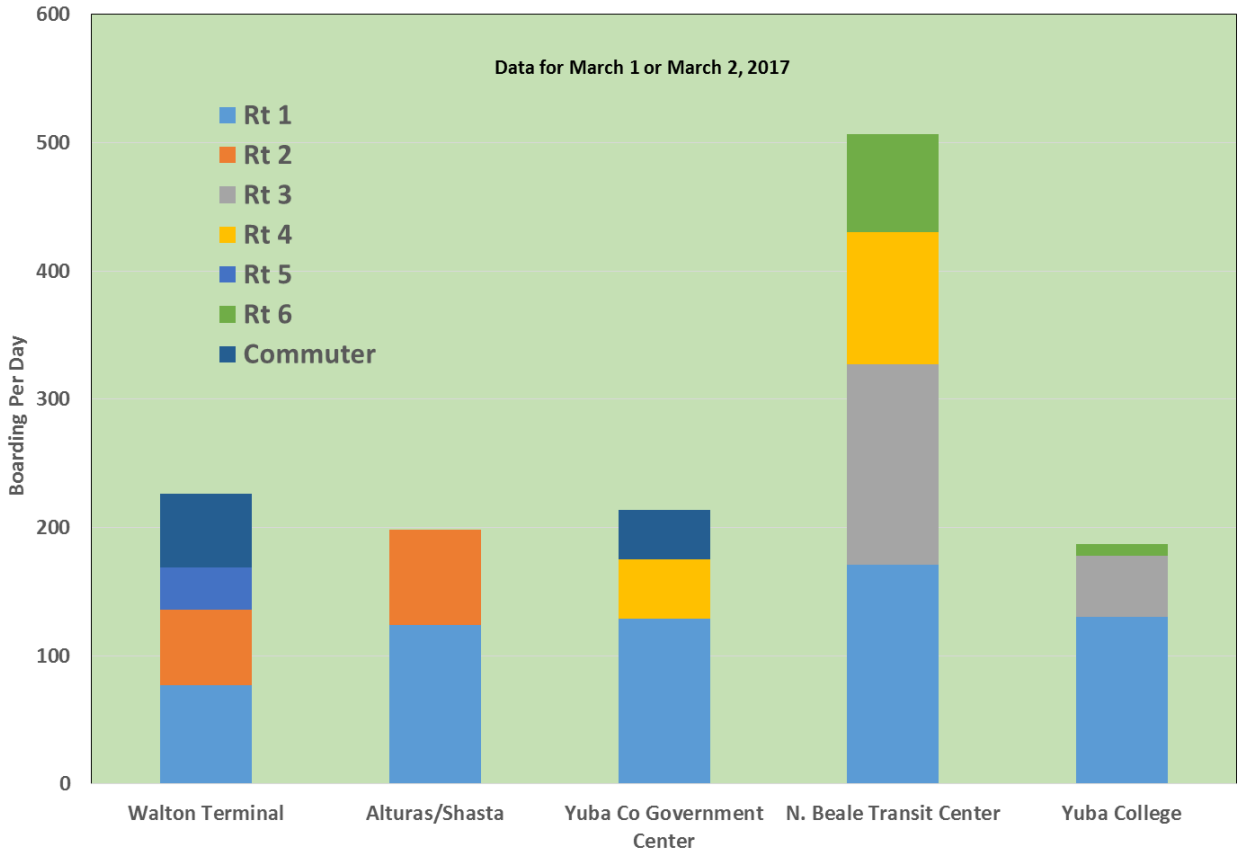
passenger boardings over all routes is highest at the North Beale Transit Center, with 507 boardings (366 on the Walmart side and 141 on the south side), followed by Walton Terminal (226), Yuba County Government Center (214) Alturas & Shasta (198), and Yuba College (187). Figure 2.5 indicates that activity is generally highest in the afternoon, though there are also busy periods in the morning at the North Beale Transit Center and Walton Terminal. Figure 2.6 depicts the passenger activity generated by each route at the individual transit centers.

Figure 2.5: Weekday Boardings at Transfer Center by Half-Hourly Period



Data for March 1 or March 2, 2017

Figure 2.6: Daily Boardings by Route at Transfer Centers



2.3.2 Existing Corridor Ridership Characteristics

A very useful source of information regarding existing passenger characteristics and travel patterns along the Route 1 corridor is the onboard survey conducted over the week of September 8 to 12th, 2014. Written surveys were distributed on all runs of all routes over the course of a weekday (though not all on the same day), with both Spanish and English versions available. A total of 1,075 were collected on all local routes, of which 371 valid responses were collected on Route 1. Based on this survey, Route 1 passenger characteristics can be summarized as follows:

- The most prevalent trip purpose was for travel to or from school or college. Fully 50 percent of passengers indicated they were coming from or going to school or college. This was followed by 20 percent traveling for personal business, 19 percent traveling for work, 16 percent going shopping, 10 percent traveling for medical reasons, and 6 percent traveling for recreational/social purposes.
- Fully 73 percent of Route 1 passengers indicated they walked to their boarding stop, followed by 17 percent that transferred from another route, 5 percent that bicycled, 2 percent that drove, and 3 percent "other." Once alighting from their bus, 53 percent will walk to their destination, 33 percent will transfer to another bus, 4 percent will bicycle, 3 percent will be picked up and ride with someone else, 2 percent will transfer to Dial-A-Ride, 1 percent will drive, and 3 percent indicated "other". This data indicates the importance of sidewalks and bicycling conditions to and from the stops, as well as the key role that transferring takes in the local route network.

- The majority of respondents were regular riders, with 53 percent indicating that they ride the bus daily and 36 percent ride 2 to 4 days per week.
- Just under one-third of Route 1 passengers have a driver's license, though only 18 percent had access to a car for their trip.
- Five percent of respondents indicated they needed the wheelchair lift/ramp to board or exit the bus.
- The largest proportion (44 percent) of Route 1 passengers are 25 to 61 years of age, with 24 percent apiece falling in the 13-18 and the 19-24 age ranges. Persons older than 61 comprised 7 percent of the total.
- Yuba College students comprised 31 percent of all Route 1 passengers.
- Route 1 riders were asked their opinion of various service characteristics on a scale of 1(very poor) to 5 (very good). As shown in Figure 2.7, the best scores were reported for system safety and the printed information materials, both of which had a total of more than 80 percent indicating Good or Very Good. At the other extreme, 58 percent ranked on-time performance as Average, Poor or Very Poor, followed by 43 percent indicating these lower opinions regarding the bus stops and shelters. Overall, passengers had a positive opinion of the service, with 73 percent indicating Good or Very Good and only 4 percent indicating Poor or Very Poor.
- When asked what service or customer improvements you would like to see, Route 1 respondents indicated the following (multiple responses were allowed):
    - Sunday service – 65 percent
    - Later weekday service – 47 percent
    - Increased service frequency – 43 percent
    - Later Saturday service – 37 percent
    - New or extended routes – 35 percent
    - Bus stop improvements – 26 percent
    - Earlier Saturday service – 24 percent
    - Earlier weekday service – 21 percent
- Focusing on specific bus stop improvement suggestions, Table 2.11 presents the written suggestions in response to the question "Would you like to see bus stop improvements – if so, what and where?" A review of this table indicates a high desire for more shelters and seating, as well as improved bus stop cleanliness.

Figure 2.7: 2014 Route 1 Ridership Opinion by Service Characteristic

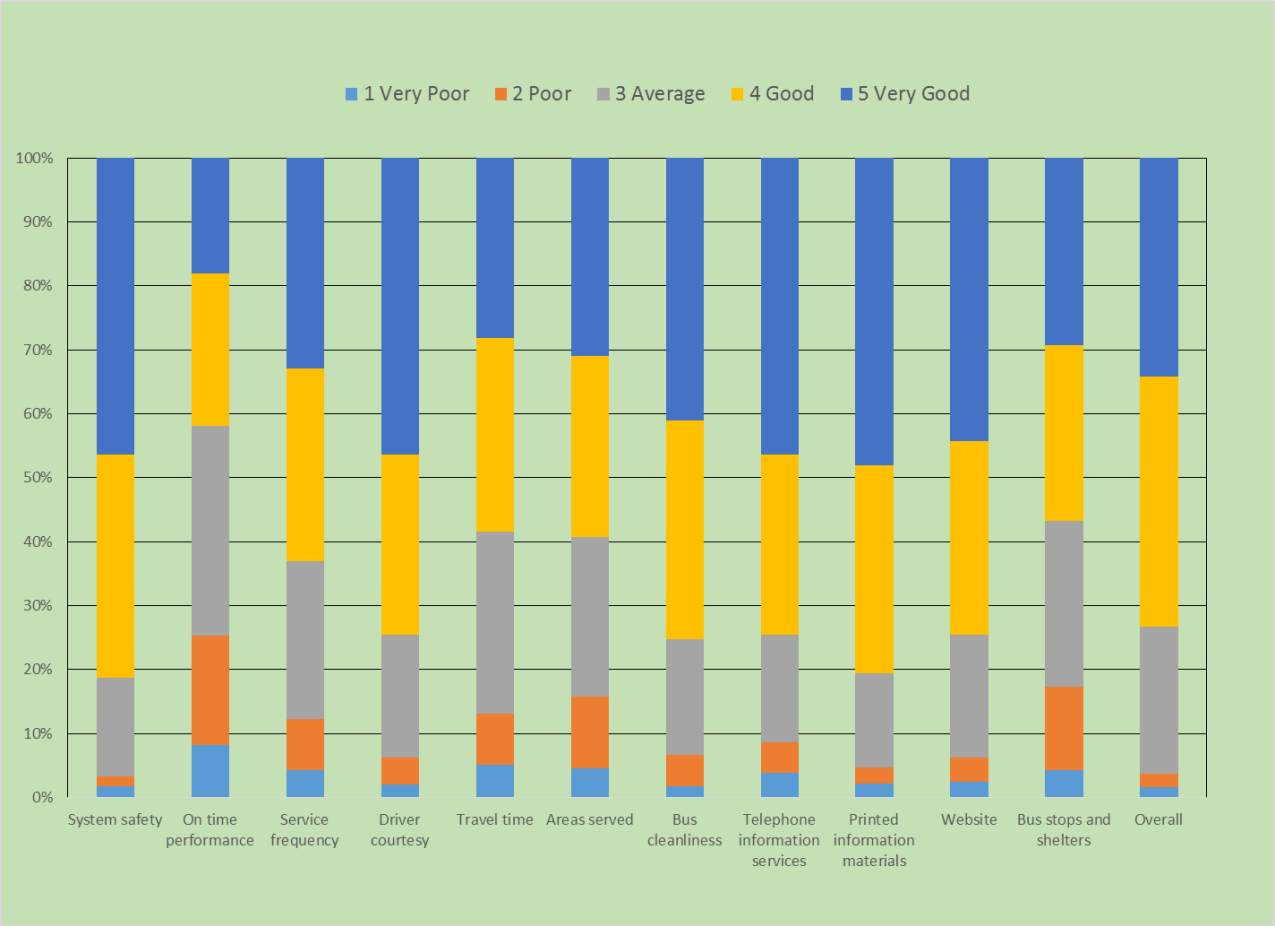


Table 2.11: Route 1 Rider Suggestions for Bus Stop Improvements

A bench at Alicia and Grand.	More covers. Better covers.
Add stops. Shelter.	More seated bus stops.
Better bus shelters.	More seating places.
Bus bench Arboga 5300? or 5500? block	More shade (2 responses)
Bus stop improvements – if so, what	More shelters
Clean	More shelters.
Clean D & 2nd / Walmart stops	More stops on Smartville Rd.
Clean D and 2nd	More stops.
Cleaner	N Beale Rt 3
Cleaner bus stops	N. Beale/Smrvl Rd
Cleaner stops/shelters	Need more shelters over open bus stops.
D and 2nd St	No shelter at Alberta and N. Beale
Forbes and Cooper	No smoking signs
Hammonten Rd from College to Walmart	Olivehurst
Hammonton Rd. College to Walmart-no good wheelchair stop.	Olivehurst bus stop needs shade.
Have shady shelter at evey stop.	Rain Protection
Improvements at all stops	Rainy day coverage/shelter.
In Gridley, Ca at some times of day.	Regency Park
Later Hours	Route 6 Stops.
Linda	Seats
Linda Walmart stop always dirty.	Seats and shelters at all stops.
Linda, N. Beale Rd, Park Ave	Shade at all stops
Linda. Cleanliness of area.	Shelter for Alberta
Make all stops cleaner	Shelter on N. Beale
More benches (3 responses	Shelters and seats at all stops.
More benches and covered stops everywhere.	Shelters and seats at all stops.
More benches just about eveywhere.	Stop for Route 4 before and after Gov Center before main intersection
More covered stops everywhere.	Stop in front of Lincoln Apt on Mcgowen Parkway.
More covering + seating	

In addition, the onboard surveys (for all Local Routes) can be used to quantify the overall transfer patterns. While it is not possible from the surveys to identify where these transfers take place, the overall Local Route pattern means that virtually all transfers take place along the study corridor. As shown in Table 2.12, overall 46.1 percent of Local Route passengers indicated that they transfer as part of their overall one-way trip. Factoring the average weekday ridership by the survey responses, it is estimated that there are a total of 754 riders transferring each weekday between the Local Routes. Of these, the highest number (547) transfer to or from Route 1, while between 204 and 287 per day transfer to or from Routes 2, 3 and 4. Considering the individual route pairs, the greatest transfer activity is between Routes 1 and 2 (152 passenger-trips per day), followed by 142 between Routes 1 and 4, and 140 between Routes 1and 3. None of the other route pairs exceed 62 passenger-trips per day.

Table 2.12: Current Local Route Transfer Activity

2014 Local Routes Survey

	Percent of Valid Response								Total All Routes
	Route 1	Route 2A	Route 2B	Route 3	Route 4A	Route 4B	Route 5	Route 6	
Q3. How did you get to this bus?									
Walked	73.4%	78.9%	83.5%	88.1%	70.2%	64.4%	83.3%	89.1%	78.2%
Bicycled	4.6%	1.1%	2.4%	2.5%	0.0%	6.7%	4.8%	2.2%	3.3%
Drove alone	1.6%	1.1%	0.0%	0.6%	0.0%	0.0%	2.4%	0.0%	1.0%
Transferred from Route	17.3%	15.8%	12.9%	7.5%	26.3%	26.7%	7.1%	6.5%	15.0%
Other	3.0%	3.2%	1.2%	1.3%	3.5%	2.2%	2.4%	2.2%	2.4%
Transferred from Route									
1	1.8%	35.7%	75.0%	72.7%	42.9%	44.4%	50.0%	66.7%	28.0%
2	8.8%	7.1%	0.0%	0.0%	0.0%	11.1%	0.0%	0.0%	5.9%
2A	14.0%	0.0%	0.0%	0.0%	21.4%	0.0%	0.0%	0.0%	9.3%
2B	10.5%	7.1%	0.0%	0.0%	14.3%	0.0%	50.0%	0.0%	8.5%
3	12.3%	0.0%	0.0%	18.2%	0.0%	22.2%	0.0%	0.0%	9.3%
4	1.8%	0.0%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	1.7%
4A	14.0%	28.6%	0.0%	0.0%	7.1%	0.0%	0.0%	0.0%	11.0%
4B	10.5%	21.4%	0.0%	9.1%	7.1%	0.0%	0.0%	33.3%	10.2%
5	7.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%	5.1%
6	19.3%	0.0%	0.0%	0.0%	0.0%	22.2%	0.0%	0.0%	11.0%
Q4. After you get off this route, how will you complete your trip?									
Transfer to another bus	33.2%	30.9%	33.3%	23.9%	33.3%	20.0%	31.0%	43.5%	31.1%
Ride Dial-A-Ride	2.0%	0.0%	3.6%	1.9%	0.0%	2.2%	2.4%	0.0%	1.7%
Walk	53.1%	57.4%	57.1%	67.1%	64.9%	73.3%	64.3%	47.8%	58.5%
Bicycle	3.9%	0.0%	2.4%	2.6%	0.0%	2.2%	0.0%	2.2%	2.5%
Drive alone	1.1%	1.1%	1.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.7%
Ride with someone	3.4%	7.4%	1.2%	1.9%	0.0%	0.0%	2.4%	2.2%	2.8%
Other (explain)	3.4%	3.2%	1.2%	2.6%	1.8%	2.2%	0.0%	4.3%	2.7%
Transfer to another bus									
1	10.4%	33.3%	60.0%	65.4%	54.5%	25.0%	54.5%	53.3%	35.2%
2	10.4%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%	4.9%
2A	9.1%	5.6%	10.0%	0.0%	9.1%	25.0%	36.4%	0.0%	8.8%
2B	7.8%	5.6%	0.0%	0.0%	9.1%	0.0%	0.0%	0.0%	4.4%
3	14.3%	0.0%	5.0%	11.5%	0.0%	0.0%	0.0%	13.3%	9.3%
4	6.5%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	2.7%
4A	9.1%	22.2%	20.0%	3.8%	9.1%	0.0%	0.0%	0.0%	9.3%
4B	15.6%	5.6%	0.0%	15.4%	18.2%	0.0%	0.0%	26.7%	12.6%
5	10.4%	27.8%	5.0%	0.0%	0.0%	0.0%	9.1%	0.0%	8.2%
6	6.5%	0.0%	0.0%	3.8%	0.0%	25.0%	0.0%	6.7%	4.4%

Total Weekday Daily Transfers -- Total of Both Directions

Between Route	And Route 2	3	4	5	6	Total by Route
1	152	140	142	62	51	547
2		11	61	49	13	287
3			31	16	6	204
4				17	2	253
5					0	144
6						72
Total Transfers		754				

2.4 Existing Corridor Transit Facilities

2.4.1 Bus Stops

An inventory of existing amenities at each bus stop along the study corridor is presented in Table 2.13. There are a total of 53 individual bus stops along the corridor. These have the following improvements:

- A total of 27 shelters with benches, garbage cans and schedule holders are installed, at a total of 23 individual stop locations. The majority of these shelters (19) are provided and maintained as part of an advertising contract.
- Benches only are provided at 17 of the stops (a total of 24 benches). Slightly less than half of these benches are provided as part of the advertising contract.
- 14 of the stops have one or two schedule holders mounted to the bus stop sign.
- A facility for a bike is only provided at a single location: an experimental lockable "bike lid" is installed at the Yuba County Government Center.
- Garbage cans are provided at 19 of the stops.

Each bus stop was inventoried by LSC Transportation Consultants, Inc. (LSC) staff with regards to the condition of the amenities, the presence of street lighting, the presence of a pullout, and the presence of a curb. This information is shown in Table 2-14. A review of this information indicates the following:

- Signs are posted at all stops. While the majority of signs and poles are in good conditions, there are a few that warrant minor maintenance, such as the removal of vegetation obscuring the sign or repair to the sign or pole.
- The condition of benches and shelters are largely good, though two shelters have broken glass panels and one has been "tagged."
- Of the total of 27 shelters along the corridor, 7 are provided with interior lighting (though one of these lights is currently broken). Nearby streetlights were observed to identify if there was adequate lighting for waiting passengers to be aware of other persons nearby: this was found to be adequate at 24 of the 53 stops.
- Formal bus bays are present at 11 of the stops, while at the majority of the locations the bus stops are in the travel lane. This is not necessarily an issue; as a standard practice, it is considered acceptable to block the travel lane at stops with (1) low or moderate passenger activity (2) posted speeds less than 45 miles per hour, and (3) where the traffic volume in the lane blocked does not exceed 4,000 vehicles per day (i.e., 8,000 vehicles per day for a 2-lane roadway and 16,000 vehicles per day for a 4-lane roadway).
- Curbs benefit transit stops in that they help define a specific stop location and aid in the deployment of wheelchair ramps/lifts. Curbs are present at all stops except for five stops along North Beale Road. An active transportation project will be constructed during the summer of 2017 that will add curb, gutter, and sidewalk to four stops between Avondale Ave to Hammonton Smartville Road.

Table 2.13: Route 1 Corridor Bus Stop Amenities

		May, 2017			Bench		Shelter				
	ID	Street	Cross Street	Corner	Ad	Non-Ad	Ad	Non-Ad	Schedule Holder	Bike Locker	Garbage Can
	1	Walton Ave.	Sam's Club Entrance**	SW		2	2		1		
	2	Lassen Boulevard	Walton Avenue	NW					2		
	3	Lassen Boulevard	Tharp Rd.	NW							
	4	Lassen Boulevard	Klamath	NW	1						1
	5	Harter Road	Spirit Way	NE			1				
	6	Harter Road	Yuba City Marketplace**	NE			1				1
	7	Butte House Rd.	Harter Road	SW			1				1
	8	Butte House Rd.	Tharp Rd.	SE							
	9	Stabler Ln.	Butte House Rd.	SW			1				1
	10	Butte House Rd.	Stabler Ln. (Rite-Aid)	SE			1				
	11	Stabler Ln.	Starr Drive	SW							
	12	Butte House Rd.	Civic Center Blvd.	SE			1				
	13	Butte House Rd.	El Dorado Lane	NW	1						
	14	Butte House Rd.	Yuba City Mall Signal Ent.	SE			1		1		
	15	Butte House Rd.	Target Entrance	NW			1				1
	16	Gray Ave.	Ainsley Ave.	NE	1				1		
	17	Gray Ave.	Ainsley Ave. (Yuba Sutter Mall)	SW				1	1		1
	18	Gray Ave.	Louise Ave. (Old K-Mart)	SW			1				1
	19	Gray Ave.	Louise Ave. (Paradise Motel)	NE			1				1
	20	Forbes Ave.	Gray Ave.	SE	1				1		
	21	Forbes Ave.	Gray Ave.	NE	1				1		
	22	Forbes Ave.	Clark Ave. (Library)	SE	1				1		
	23	Forbes Ave.	Clark Ave.	NE							
	24	Forbes Ave.	Orange St.	NW							
	25	Forbes Ave.	Orange St.	SE							
	26	Forbes Ave.	Almond St.	SE							
	27	Forbes Ave.	Almond St.	NW							
	28	Plumas St.	Church St.	NE		2					1
	29	Plumas St.	Church St.	SW		2					1
	30	Alturas St.*	Shasta St.**	SW				1			2
	31	Yuba Co. Govt Center*	1 & 9th Streets**	SW				1	1	1 (Bike Lid)	1
	32	H Street	7th Street	SW							
	33	H Street	7th Street	NE							
	34	H Street	4th Street	NW	1				2		
	35	H Street	Northbound Between 3rd & 4th	Midblock			1		1		1
	36	Third Street	Rideout Hospital Emergency	Midblock				1			1
	37	Third Street	F Street	SW	1						
	38	D Street	Second Street (Old Mervyn's)**	----				1	1		1
	39	F Street	Second Street (Buttes Manor)	NE			1				
	40	North Beale Road	Rio Rancho Motel	SE							
	41	North Beale Road	Feather River Blvd.	NW	1						
	42	North Beale Road	Wal-Mart**	NW		2	2		2		2
	43	North Beale Road	SouthSide**	SW		2	3		2		1
	44	North Beale Road	Lowe Avenue	SE							
	45	North Beale Road	Lowe Avenue**	NE				1			1
	46	North Beale Road	Park Avenue	SE							
	47	North Beale Road	between Alpine and Park	NW							
	48	North Beale Road	Albrecht Avenue	SE							
	49	North Beale Road	Albrecht Avenue	NW							
	50	North Beale Road	Woodland Drive	SE	1						
	51	North Beale Road	Woodland Drive	NE	1						
	52	Yuba College Terminal*	East Parking Lot**	----		3		2			1
	53	North Beale Road	Hammonton-Smartville Road	SE							
			Total Bus Stops	**53**	**11**	**13**	**19**	**8**	**18**	**1**	**21**

Note: Updated as of May 2017

*The shelters at these locations have solar panels and low level lighting **These locations have large garbage cans, ownership of which is not specified

Table 2.14: Route 1 Corridor Bus Stop Condition

May, 2017

			Pole/Sign			Lighting		Bus Bay/Pullout				Curb	
ID	STREET	CROSS STREET	Condition	Need Replaced	Condition of Bench/Shelter	At Shelter	Streetlight	Bus Bay Clear of Travel Lane?	Material?	Bay?	Bay Length (ft)	Yes?	Size
1	Walton Ave.	Sam's Club Entrance	Good	No	Good	No	Yes	Yes	Asphalt	No		Yes?	6"
2	Lassen Boulevard	Walton Avenue	Good	No	N/A	No	Yes	No	Asphalt	No		Yes	6"
3	Lassen Boulevard	Tharp Rd.	Good	No	N/A	No	No	No	Asphalt	No		Yes	6"
4	Lassen Boulevard	Klamath	Good	No	Good	No	Yes	No	Asphalt	No		Yes	6"
5	Harter Road	Spirit Way	Good	No	Good	No	No	Yes	Concrete	Yes	175	Yes	6"
6	Harter Road	Yuba City Marketplace	Good	No	Good	No	Yes	Yes	Concrete	Yes	160	Yes	6"
7	Butte House Rd.	Harter Road	Good	No	Good	No	Yes	Yes	Concrete	Yes	120	Yes	6"
8	Butte House Rd.	Tharp Rd.	Good	No	N/A	No	Yes	Yes	Asphalt	No		Yes	6"
9	Stabler Ln.	Butte House Rd.	Good	No	Good	No	Yes	No	Asphalt	No		Yes	6"
10	Butte House Rd.	Stabler Ln. (Rite-Aid)	Good	No	Good	No	Yes	No	Asphalt	No		Yes	6"
11	Stabler Ln.	Starr Drive	Good	No	N/A	No	No	No	Asphalt	No		Yes	6"
12	Butte House Rd.	Civic Center Blvd.	Good	No	Good	No	No	Yes	Asphalt	No		Yes	6"
13	Butte House Rd.	El Dorado Lane	Good	No	Good	No	No	Yes	Asphalt	No		Yes	6"
14	Butte House Rd.	Yuba City Mall SigN/Al Ent.	Good	No	Good	No	Yes	No	Asphalt	No		Yes	6"
15	Butte House Rd.	Target Entrance	Good	No	Good	No	No	No	Asphalt	No		Yes	6"
16	Gray Ave.	Ainsley Ave.	Good	No	Good	No	Yes	No	Asphalt	No		Yes	6"
17	Gray Ave.	Ainsley Ave. (Yuba Sutter Mall)	Good	No	Good	No	Yes	No	Asphalt	No		Yes	6"
18	Gray Ave.	Louise Ave. (Old K-Mart)	Rusted	Yes	Good	No	Yes	No	Asphalt	No		Yes	6"
19	Gray Ave.	Louise Ave. (Paradise Motel)	Good	No	Good	No	Yes	Yes	Asphalt	No		Yes	6"
20	Forbes Ave.	Gray Ave.	Good	No	Good	No	No	No	Asphalt	No		Yes	6"
21	Forbes Ave.	Gray Ave.	Poor	No	Good	No	Yes	No	Asphalt	No		Yes	6"
22	Forbes Ave.	Clark Ave. (Library)	Good	No	Good	No	No	Yes	Asphalt	No		Yes	6"
23	Forbes Ave.	Clark Ave.	Good	No	N/A	No	No	Yes	Asphalt	No		Yes	6"
24	Forbes Ave.	Orange St.	Good	No	N/A	No	No	Yes	Asphalt	No		Yes	6"
25	Forbes Ave.	Orange St.	Good	No	N/A	No	Yes	Yes	Asphalt	No		Yes	6"
26	Forbes Ave.	Almond St.	Good	No	N/A	No	No	Yes	Asphalt	No		Yes	6"
27	Forbes Ave.	Almond St.	Good	No	N/A	No	No	Yes	Asphalt	No		Yes	6"
28	Plumas St.	Church St.	Good	No	Good	Yes	No	Yes	Concrete	Yes	45	Yes	6"
29	Plumas St.	Church St.	Good	No	Good	Yes	No	Yes	Concrete	Yes	45	Yes	6"
30	Alturas St.	Shasta St.	Good	No	Good	Yes	Yes	No	Asphalt	No		Yes	6"
31	Yuba Co. Govt Center	I & 9th Streets	Peeling #s	No	Good	Yes-Broken	Yes	Yes	Concrete	Yes	120	Yes	6"
32	H Street	7th Street	Good	No	N/A	No	No	No	Asphalt	No		Yes	6"
33	H Street	7th Street	Needs to be turned 90°	No	N/A	No	No	No	Asphalt	No		Yes	6"
34	H Street	4th Street	Good	No	Graffiti on bench	No	No	No	Asphalt	No		Yes	6"
35	H Street	Northbound Between 3rd & 4th	Good	No	Good	No	No	Yes in parking	Asphalt	Yes in parking		Yes	6"
36	Third Street	Rideout Hospital Emergency	Good	No	Good	Yes	No	Yes	Pavers	fire lane	140	Yes	6"
37	Third Street	F Street	Good	No	N/A	No	No	No, partially in lane	Asphalt	No		Yes	6"
38	D Street	Second Street (Old Mervyn's)	Good	No	Good	No	Yes	Yes	Concrete	Yes	50	Yes	6"
39	F Street	Second Street (Buttes MaNor)	Good	No	Good	No	No	Yes	Asphalt	No		Yes	6"
40	North Beale Road	Rio Rancho Motel	Good	No	N/A	No	No	Yes	Asphalt	No		Yes	6"
41	North Beale Road	Feather River Blvd.	Good	No	Bad, broken glass	No	Yes	No	Asphalt	No		Yes	6"
42	North Beale Road	Wal-Mart	Good	No	Good	Yes	Yes	Yes	Concrete	Yes	160	Yes	6"
43	North Beale Road	SouthSide	Good	No	Good	No	Yes	Yes	Concrete	Yes	170	Yes	6"
44	North Beale Road	Lowe Avenue	Remove Veg.	No	N/A	No	No	Yes	Asphalt	No		No	n/a
45	North Beale Road	Lowe Avenue	Good	No	Bad, broken glass	No	No	Yes	Asphalt/dirt	No		No	n/a
46	North Beale Road	Park Avenue	Good	No	N/A	No	Yes	No	Asphalt/dirt	No		Yes	6"
47	North Beale Road	Between Alpine and Park	Good	No	N/A	No	No	Yes	Asphalt/dirt	No		No	n/a
48	North Beale Road	Albrecht Avenue	Remove Veg.	No	N/A	No	Yes	No	Asphalt	No		Yes	6"
49	North Beale Road	Albrecht Avenue	Good	No	N/A	No	No	Yes	Asphalt/dirt	No		No	n/a
50	North Beale Road	Woodland Drive	Good	No	Good	No	Yes	Yes	Asphalt	No		Yes	6"
51	North Beale Road	Woodland Drive	Good	No	Good	No	No	No	Asphalt	No		Yes	6"
52	Yuba College Terminal	East Parking Lot	Good	No	Good	Yes	Yes	Yes	Concrete	Yes	120	Yes	6"
53	North Beale Road	Hammonton-Smartville Road	Good	No	N/A	No	No	Yes	Asphalt	No		No	n/a

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Table 2.15: Route 1 Corridor Bus Stop Sidewalks and Safety

	May, 2017		Sidewalk		Roadway					Sight Distance		
ID	**STREET**	**CROSS STREET**	Yes	Connects to?	# of lanes	Speed limit	Nearby trip generators	Trip generator require ped crossing?	Marked Crosswalk?	Pulling Out	Stopping	Potential Hazards/Issues
1	Walton Ave.	Sam's Club Entrance	Yes	Sam's Club	5	45	Sam's Club	No	N/A	Good	Good	Ped crossing from bus stop across Walton (signal)
2	Lassen Boulevard	Walton Avenue	Yes	Back Of Sam's Club	5	35	Sam's Club	No	N/A	OK	Poor	SB right turning drivers cannot see bus at stop
3	Lassen Boulevard	Tharp Rd.	Yes	Bank	5	35	Credit Union	No	N/A	Good	Good	
4	Lassen Boulevard	Klamath	Yes	Many	5	35	School, Offices	Yes	Yes	Good	Good	
5	Harter Road	Spirit Way	Yes	Auto Dealer	4	35	Auto Dealers	Yes	Yes	Good	Good	
6	Harter Road	Yuba City Marketplace	Yes	Walmart	4	35	Walmart	No	N/A	Good	Good	
7	Butte House Rd.	Harter Road	Yes	Credit Union	4	40	Credit Union	No	N/A	Good	Good	
8	Butte House Rd.	Tharp Rd.	Yes	Field	4	40	Strip Mall	No	N/A	Good	Good	
9	Stabler Ln.	Butte House Rd.	Yes	Starbucks	5	40	Starbucks	No	N/A	Good	Good	
10	Butte House Rd.	Stabler Ln. (Rite-Aid)	Yes	Rite Aid	5	40	Rite Aid	No	N/A	Good	Good	
11	Stabler Ln.	Starr Drive	Yes	Storage Unit Complex	5	40	Valley Truck	Yes	Yes	Good	Good	No pullout/high speed traffic
12	Butte House Rd.	Civic Center Blvd.	Yes	Church	5	40	Church	No	N/A	Good	Good	
13	Butte House Rd.	El Dorado Lane	Yes	Real Estate Offices	6	40	Real Estate Offices	No	N/A	Good	Good	
14	Butte House Rd.	Yuba City Mall SigN/Al Ent.	Yes	Saphora	5	35	Target	Yes	Yes	Good	Good	
15	Butte House Rd.	Target Entrance	Yes	Target	5	35	Target	No	N/A	Good	Good	
16	Gray Ave.	Ainsley Ave.	Yes	Laundromat	5	35	Yuba Sutter Mall	Yes	Yes	Good	Good	
17	Gray Ave.	Ainsley Ave. (Yuba Sutter Mall)	Yes	Yuba Sutter Mall	5	35	Yuba Sutter Mall	No	N/A	Good	Good	
18	Gray Ave.	Louise Ave. (Old K-Mart)	Yes	Old Kmart	5	35	Factory2u	No	N/A	Good	Good	
19	Gray Ave.	Louise Ave. (Paradise Motel)	Yes	Travelodge	4	35	Strip Mall	No	N/A	Good	Good	
20	Forbes Ave.	Gray Ave.	Yes	Orthodontic Office	2	25	Strip Mall	No	N/A	Good	Good	
21	Forbes Ave.	Gray Ave.	Yes	Strip Mall	2	25	Dominos	No	N/A	Good	Good	
22	Forbes Ave.	Clark Ave. (Library)	Yes	Library	2	25	School	Yes	Yes	Good	Good	Cars parked in bus lane. Bus cannot fully get out of travel lane. Need No parking and red paint
23	Forbes Ave.	Clark Ave.	Yes	School	2	25	Library	Yes	Yes	Good	Good	
24	Forbes Ave.	Orange St.	Yes	Residential	2	25	Residential	Yes	No	Good	Good	Located in front of a garage in the middle of a driveway.
25	Forbes Ave.	Orange St.	Yes	Residential	2	25	Residential	Yes	No	Good	Good	
26	Forbes Ave.	Almond St.	Yes	Residential	2	25	Residential	Yes	No	Good	Good	
27	Forbes Ave.	Almond St.	Yes	Residential	2	25	Residential	Yes	No	Good	Good	
28	Plumas St.	Church St.	Yes	Post Office	2	25	Shops	Yes	Yes	Good	Good	Located at driveway, that bus will block at times.
29	Plumas St.	Church St.	Yes	Shops	2	25	Shops	Yes	Yes	OK	OK	Stop is at intersection. Though open and OK sight distance drivers not always aware of bus movements.
30	Alturas St.	Shasta St.	Yes	Residential	2	25	Restaurant	No	No	Good	Good	Traffic Hazard. Bus in lane so cars are going around in the opposite lane. No lane lines. Drivers coming around the corner cannot see car around the bus.
31	Yuba Co. Govt Center	I & 9th Streets	Yes	Residential	2	25	Residential	Yes	Yes	Good	Good	
32	H Street	7th Street	Yes	Residential	2	25	Residential	Yes	No	Good	Good	
33	H Street	7th Street	Yes	Residential	2	25	Residential	Yes	No	Good	Good	
34	H Street	4th Street	Yes	Hospital	2	25	Hospital	Yes	Yes	Good	Good	
35	H Street	Northbound Between 3rd & 4th	Yes	Hospital	2	25	Hospital	Yes	Yes	Good	Good	
36	Third Street	Rideout Hospital Emergency	Yes	Hospital	4	35	Hospital Stores	Yes	Yes	Good	Good	
37	Third Street	F Street	Yes	Store	4	35	Hospital	Yes	Yes	Good	Good	Bus stop directly across from hospital without x-walk. Must walk to intersection for cross walk
38	D Street	Second Street (Old Mervyn's)	Yes	Stores	2	25	Stores	Yes	Yes	Good	Good	
39	F Street	Second Street (Buttes Manor)	Yes	Apartments	2	25	Businesses	Yes	No	Good	Good	
40	North Beale Road	Rio Rancho Motel	Yes	Hotel	2	35	Hotel	No	No	Good	Good	
41	North Beale Road	Feather River Blvd.	Yes	Peach Tree Restaurant, Taco Bell Comfort Inn	4	35	Burger King	Yes	Yes	Good	Good	
42	North Beale Road	Wal-Mart	Yes	Walmart	5	35	Walmart	No	N/A	Good	Good	
43	North Beale Road	SouthSide	Yes	Tire Store	5	35	Walmart	Yes	Yes	Good	Good	
44	North Beale Road	Lowe Avenue	No	N/A	5	35	Residential	Yes	Yes	Good	Good	
45	North Beale Road	Lowe Avenue	No	N/A	5	35	Residential	Yes	Yes	Good	Good	
46	North Beale Road	Park Avenue	Yes	Shopping Center	5	35	Residential	Yes	Yes	Good	Good	
47	North Beale Road	between Alpine and Park	No	N/A	5	35	Shopping Center	Yes	Yes	Good	Good	
48	North Beale Road	Albrecht Avenue	Yes	Nothing	5	35	Restaurant	Yes	Yes	Good	Good	
49	North Beale Road	Albrecht Avenue	No	N/A	5	35	Residential	Yes	Yes	Good	Good	
50	North Beale Road	Woodland Drive	Yes	Shopping Center	5	35	Shopping Center	Yes	Yes	Good	Good	
51	North Beale Road	Woodland Drive	Yes	Gas Station	5	35	Shopping Center	Yes	Yes	Good	Good	
52	Yuba College Terminal	East Parking Lot	Yes	College	1	N/A	College	Yes	Yes	Good	Good	
53	North Beale Road	Hammonton-Smartville Road	No	N/A	5	35	Gas Station, Food	Yes	Yes	Good	Good	Broken pavement

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Sidewalks and pedestrian/traffic safety conditions are presented in Table 2.15, which can be summarized as follows:

- The bus stops are well-served by existing sidewalks, with the exception of some stops along North Beale Road.
- Posted speed limits range from a high of 45 miles per hour on Walton Avenue to 25 mph on local streets such as Forbes Avenue. Butte House Road also has a relatively high speed limit, at 40 mph.
- Marked crosswalks are present at all stops where pedestrian travel requires crossing the major street to access a significant trip generator.
- Driver sight distance was considered from the perspective of the transit driver pulling into the travel lane from a stop and needing to judge an adequate gap in traffic approaching from the rear. Good conditions were found at almost all stops. At two stops (on Lassen Boulevard just west of Walton Avenue and on Plumas Street just south of Church Street) the bus stop is adjacent and just past a cross-street with substantial turning traffic. Bus drivers cannot see drivers making the right turn behind the bus, which can cause some short stops or evasion maneuvers.
- Driver sight distance was also considered from the perspective of a driver approaching the bus stop, and needing adequate time to perceive and react to a bus pulling into the travel lane in order to safely make a stop. This stopping sight distance was found to be adequate at all locations. At the two locations mentioned above regarding bus driver sight distance, drivers making a right turn around the rear of the bus may need to react to the bus departing the stop, but as they are making a slow-speed turn this is not a matter of sight distance.
- The other location with a potential traffic hazard is the Alturas & Shasta transfer point. As buses stop in the travel lane close to the intersection, other drivers commonly use the oncoming (westbound) lane on Alturas Street to bypass the bus.

These eastbound drivers can conflict with an oncoming driver turning off of Shasta Street onto Alturas Street.

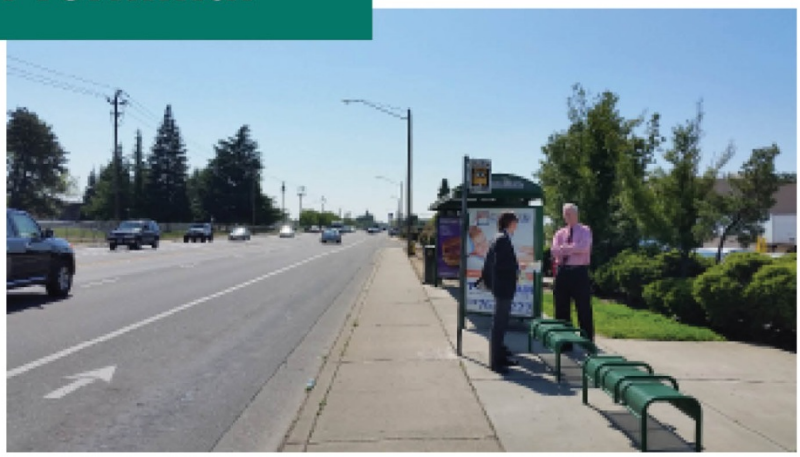
2.4.2 Transfer Centers

Each of the key transfer centers were observed by LSC staff for at least 90 minutes, in order to gain an understanding about passenger access, passenger waiting conditions, and traffic/transit operational conditions. Observations were made over a weekday in May 2017, including periods in mid-day as well as after dark (to observe the level of lighting).

Walton Terminal

Walton Terminal is located on Walton Avenue midblock between the intersection of Colusa Highway and Lassen Boulevard, as shown in Figure 2.8. Figure 2.8 also shows the right-of-way and parcel boundaries and the location of utilities. It is immediately south of the signalized intersection of Walton Ave and the eastern Sam's Club Driveway access. The east side of Walton Ave borders the Sunsweet plant. Walton Ave at this location has four through lanes with a northbound left turn lane, giving it a 5-lane cross section. Two large bike lanes also exist at this location for a total pavement width of approximately 80 feet. The speed limit on Walton Ave at this location is 45 mph.

Walton Terminal



Walton Terminal is located on Walton Ave midblock between the intersection of Colusa Highway and Lassen Boulevard. It is immediately south of the signalized intersection of Walton Ave and the eastern Sam's Club Driveway access.

Waiting Area
- Two ad shelters
- Two covered 3-seat bench and two uncovered 3-seat benches
- Trash bins
- Posted bus schedule

Lighting
- Street lights and parking lights in near proximity

Parking
- Free parking available at Sam's Club

Access
- Buses park within the bike lane
- Protected pedestrian crossing at signal

Yuba-Sutter Transit

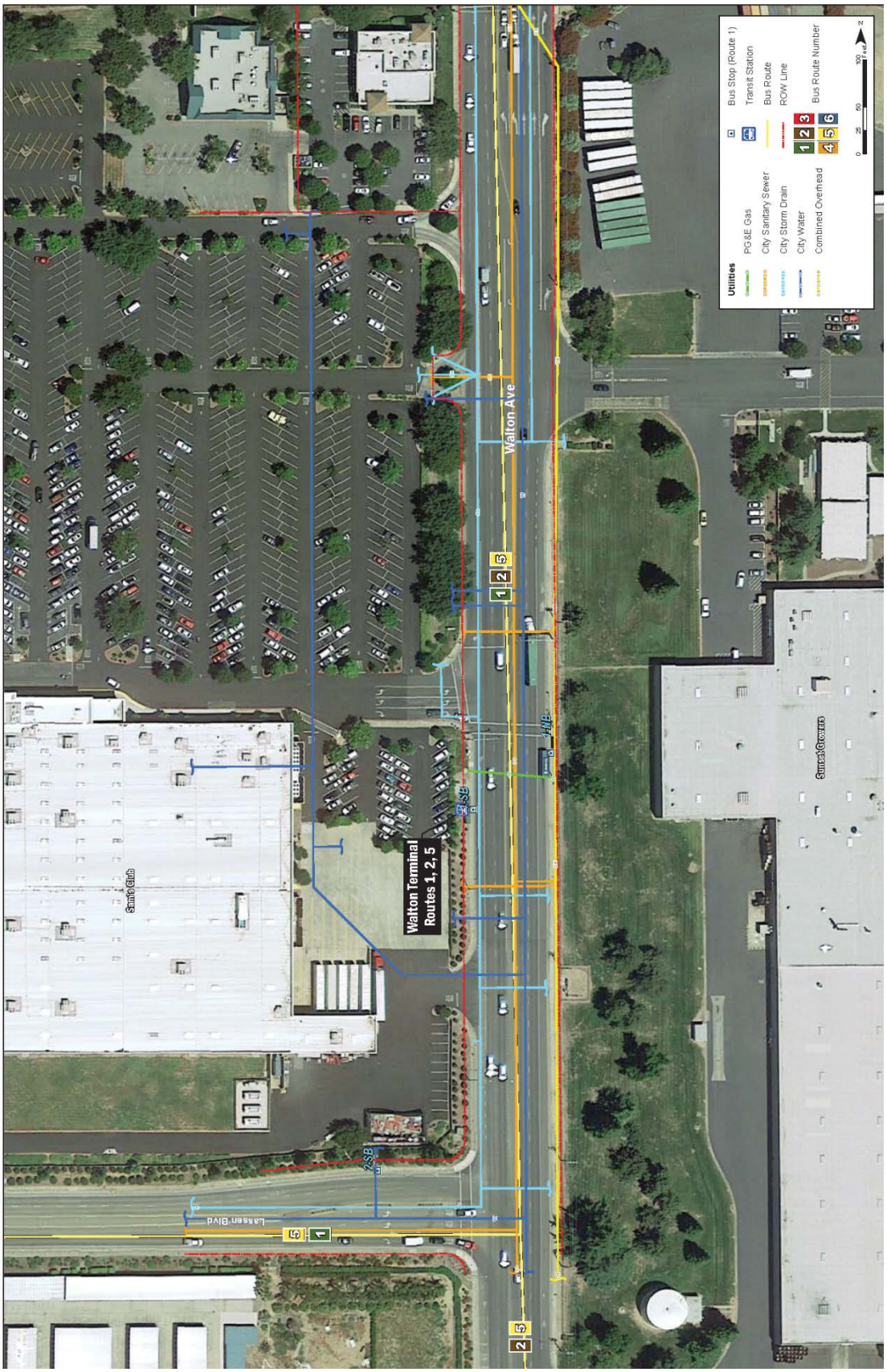


Figure 2.8: Walton Terminal Project Site

Source: AECOM, 2017

The terminal is furnished with two ad shelters with angled ad boards. Each shelter contains one 3-seat bench. Two additional 3-seat benches are located to the north of the ad shelters. The ad shelters are constructed with perforated metal. The rear of the shelters has been modified with plexiglass panels to protect transit riders from wind and rain. A small trash receptacle is affixed to each ad shelter. A large free standing trash bin has been supplied by Yuba-Sutter Transit at this location. Behind the shelters is a large concrete pad which once housed bicycle lockers. These were damaged by vandals and have been removed.

There are no plans for future bike parking facilities. No lighting is provided by the shelters, however street lights are in near proximity. The buses parked at this location do so within the bike lane, however the side view mirrors can sometimes protrude into the travel lane.

Though the shelter provides very little shade, several small trees are nearby. A northbound stop is located on the opposite side of the street, which is serviced by Route 2A, as well as commuter buses returning from Sacramento. Though there is a protected crossing at the signal crosswalk, passengers have reportedly jaywalked directly between buses, a potential hazard.

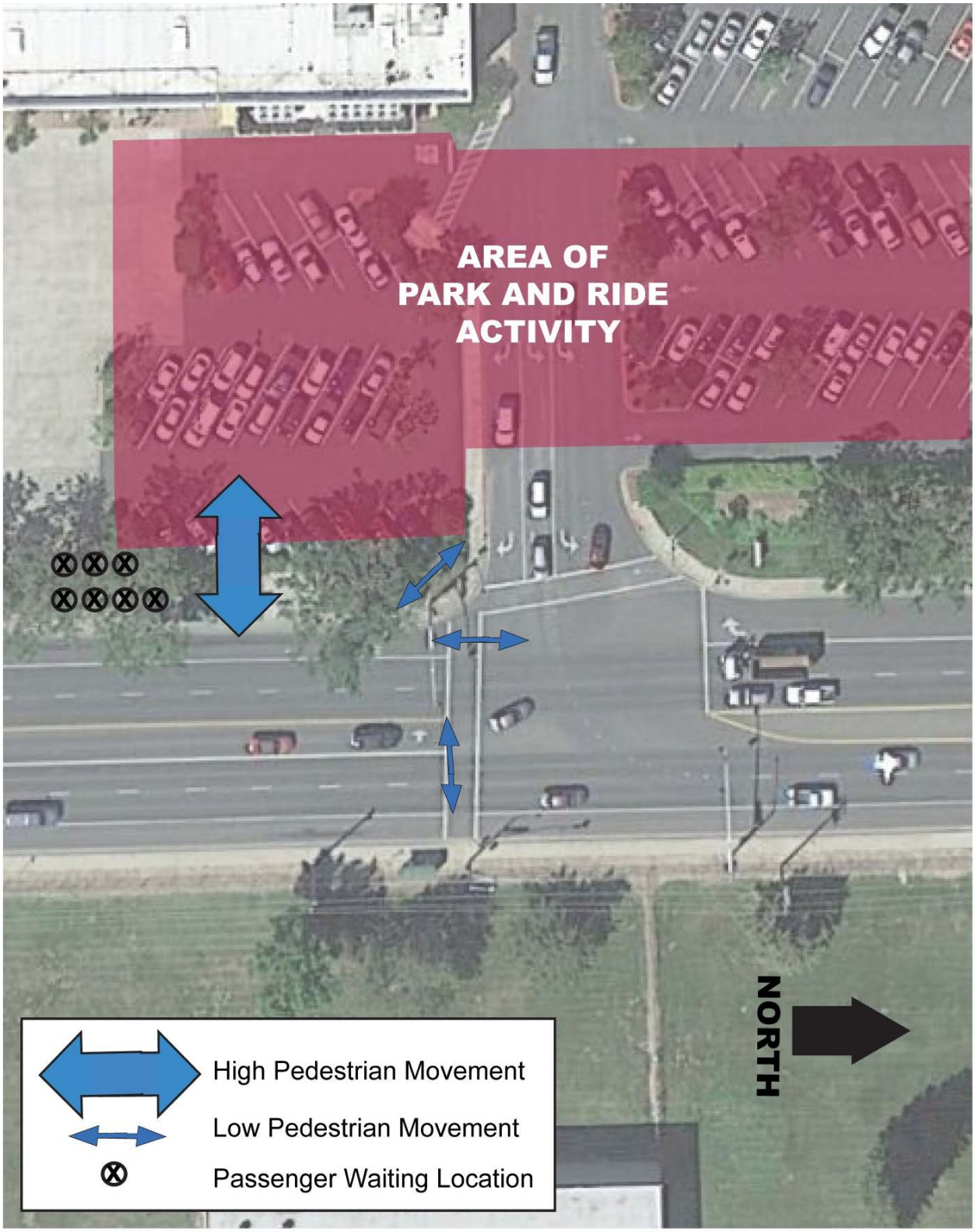
Passenger Use Pattern

A summary of passenger movement and activity at the Walton Terminal is illustrated in Figure 2.9. Passengers waiting at the terminal generally did so at the shelter or in the dirt area behind the shelter. As observations at this stop were done so in the afternoon, the majority of the passengers that deboarded the bus were commuters that went to their parked cars (60%). Most did so by walking through the hedges planted at the edge of the parking area. Several passengers were seen walking to and from Sam's Club (15%). The remainder of the passengers transferred to/from other bus routes (25%). No passengers were observed crossing the street to transfer to/from the bus stop located across the street.

Lighting Condition

No lights are provided by the shelter itself. The light emitting diode (LED) street lights nearby provide very little light. The Sam's Club parking light has bright conventional vapor bulb lights that provide the terminal with light. The high traffic volume along Walton Ave makes this terminal feel relatively safe at night.

Figure 2.9: Walton Avenue Transit Center Access



Source: LSC Transportation Consultants, Inc., 2017

Alturas & Shasta Terminal

The Alturas & Shasta Terminal is located immediately west of the intersection of Alturas Street and Shasta Street. As shown in Figures 2.10 and 2.11, it is situated at the back corner of the Los Charros Taqueria (425 Colusa Ave, Yuba City) parking lot. Figure 2.10 also shows the right-of-way and parcel boundaries and the location of utilities.

A single large Yuba-Sutter Transit owned glass enclosed shelter is provided on the south side of the street. The bus shelter itself resides on the private property of the Taqueria. The shelter has low level solar lighting, benches, and two free standing trash receptacles nearby. A large tree provides adequate shade. The pavement in front of the bus stop consist of, asphalt paving and a concrete gutter. The gutter has sustained damage from the buses. Both eastbound and westbound bus stop activity occurs at this stop. Alturas Street is approximately 38 feet in width, with parallel parking on the north side and the bus loading area on the south. Allocating 8 feet for the parking area and 12 feet for the bus loading area, only 18 feet of pavement is available for two-way traffic movements. Eastbound vehicles approaching the parked bus often drive around the bus encroaching into the opposing (westbound) travel path. A northbound left turning vehicle was observed narrowly avoiding colliding with an eastbound vehicle that was pulling around the bus. Due to the position of the parked bus the northbound left turning driver was not able to see the advancing hazard.

The sidewalk adjacent to the bus loading area is only approximately 5 feet in width, which is not sufficient to deploy and access a wheelchair lift or ramp. As a result, passengers often use a portion of the adjacent paved parking lot to access the lift or ramp.

Due to the variation in route travel times, there are frequently two buses (and sometimes three) present at this location. It is difficult for the third bus to fully pull parallel to the curb (thereby creating a potential tripping hazard), and the third bus can block the adjacent parking lot driveway.

Passenger Use Patterns

A summary of passenger movement and activity at the Alturas & Shasta Terminal is illustrated in Figure 2.11. The volume of transit riders often overwhelms the shelter resulting in riders waiting under the nearby tree or within the restaurant parking lot. No transit passengers were observed to sit on any of the cars parked within the Taqueria's lot. Generally, passengers sat on the benches within the shelter or leaned on the outside shelter. One passenger was observed sitting on the curb across the street and ran over when the bus approached. The majority of the passengers were transfers (80%). Approximately 10% walked to the terminal from the nearby residential neighborhood. The remaining 10% were either picked up or dropped off.

Lighting Conditions

The low level shelter lights provide little to no useful light. Between the nearby street light and flood light provided by the restaurant, the terminal has an adequate lighting level. However, the shelter faces north towards an empty (in the evening) parking lot. If not for the activity at the rear of the restaurant this terminal location would feel very unsafe during low light conditions.

Alturas & Shasta Terminal

The Alturas and Shasta terminal is located immediate west of the intersection of Alturas Street and Shasta Street. It is situated at the back corner of the Los Charros Taqueria parking lot.

Waiting Area
- One shelter with benches
- Trash bins

Lighting
- Shelter provides low-level solar lighting
- Street light and restaurant flood light in near proximity

Parking
- No dedicated parking for passengers

Access
- Narrow sidewalk adjacent to bus loading area
- No protected pedestrian crossing across Alturas Street

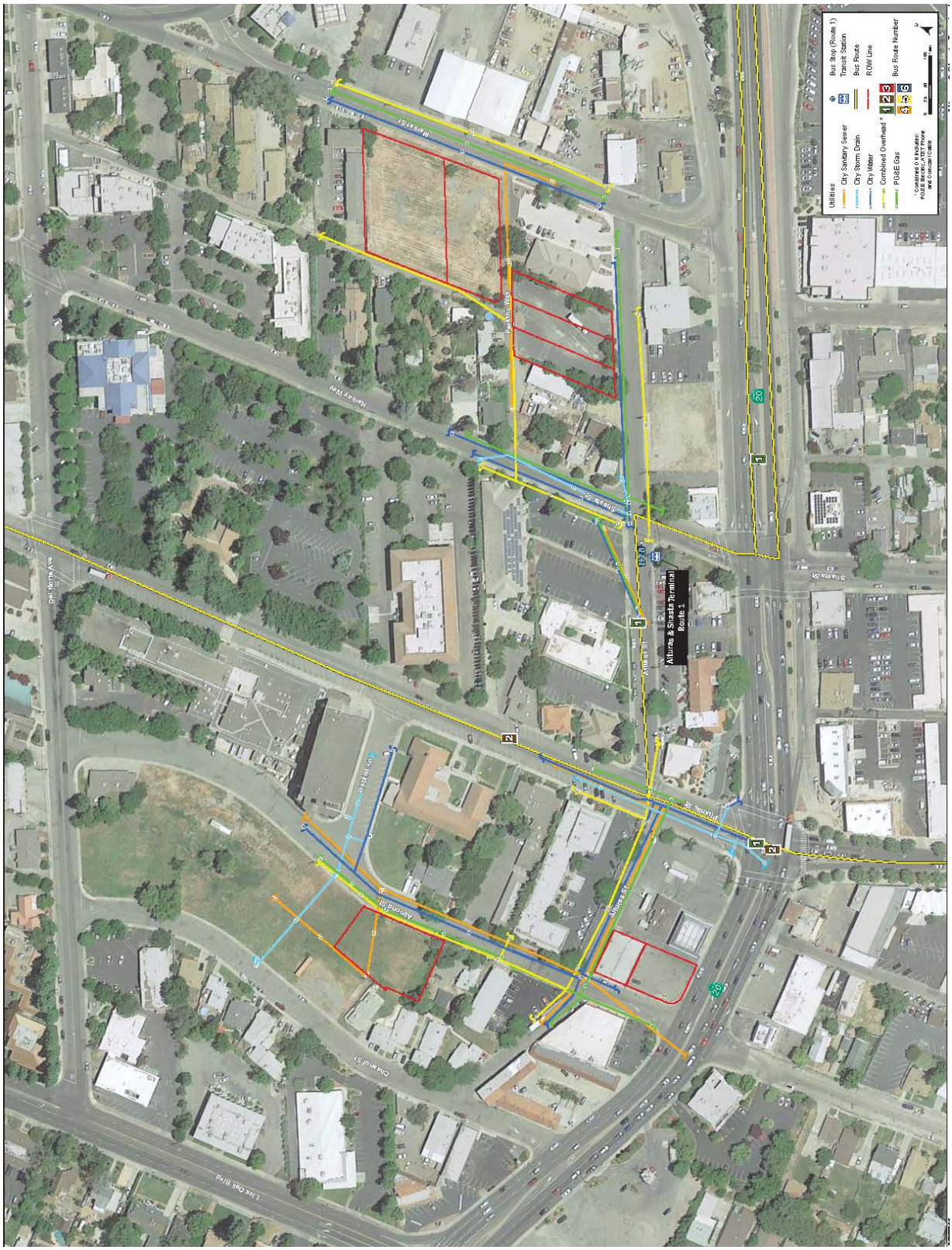


Figure 2.10: Alturas & Shasta Terminal Project Site

Source: AECOM, 2017

Figure 2.11: Alturas & Shasta Terminal Access

Source: LSC Transportation Consultants, Inc., 2017

Yuba County Government Center

The Government Center Terminal is located on the east side of the Yuba County Government Center on the west side of I Street, as shown in Figure 2.12. The terminal has one large shelter, a city garbage can and a bus schedule display. The enclosed media display case, which presents the bus schedule does not seal tight and various advertisements have been slipped into the case partially obscuring the schedule. Some light graffiti has been scratched into the ceiling of the shelter. The terminal has a large concrete bus pad which allows the bus to be completely out of the travel lane as it picks up and drops off passengers. The shelter has low level solar lighting, which currently do not work. Nearby street and parking lot lighting provides additional lighting. A single "bike lid" (covered bike locker) is present on site, with additional units planned. The bike lid was not in use at the time of observation. The terminal is located in a mixed-use residential/commercial/government neighborhood. This is a busy transfer center with a lot of bus activity. In addition to Yuba-Sutter Transit buses Amtrak Thruway buses use this transfer center.

Passenger Use Patterns

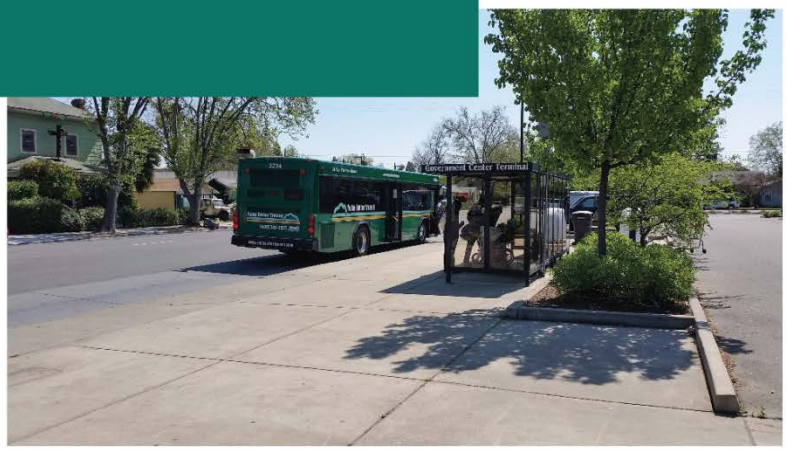
A summary of passenger movement and activity at the Government Center Terminal is illustrated in Figure 2.13. The majority of the observed transit users, either used the terminal as a park and ride or were picked up/dropped off. The remainder of the riders, either walked up from the surrounding neighborhood or were transfers. More so than any other of the transfer stations, the on board bike racks of incoming and departing buses at this location were full or close to capacity. No one was observed to be turned away due to full bike racks. One homeless man was seen sleeping at the transfer terminal along the back curb.

Lighting Conditions

The Government center transfer terminal has an adequate amount of lighting despite the shelter lights not being operational. This is due to the bright parking lot lights located nearby. During the evening period, when low light conditions were observed, very little to no activity occurs at or near this transfer center.

I Street is a low volume roadway, and no pedestrian activity was observed. Some activity was seen at the Save Mart Shopping Center; however at over 500 feet away it has little influence on the safety at the transfer center. The several homes that front the transfer terminal all had their blinds drawn or their lights out. This terminal provides the poorest level of perceived personal safety of the various transfer centers.

Yuba County Government Center



The Government Center Terminal is located on the east side of the Yuba County Government Center on the west side of I Street.

Waiting Area
- One shelter with benches
- Trash bins
- Posted bus schedule

Lighting
- Street lights and parking lights in near proximity

Parking
- Free parking available at the Yuba County Government Center
- One covered bike locker

Access
- Narrow sidewalk adjacent to bus loading area
- Two protected pedestrian crossings across I Street

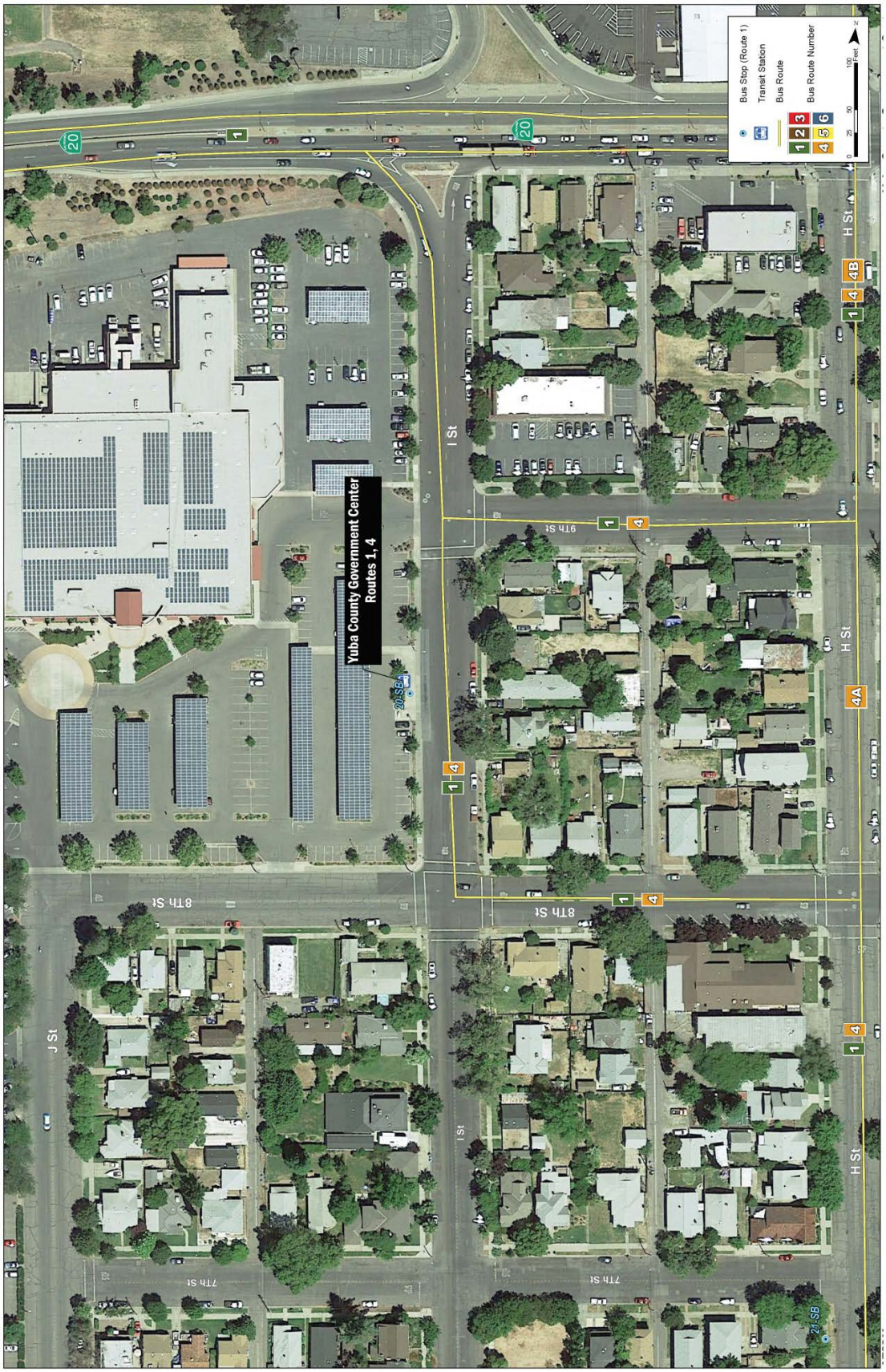


Figure 2.12: Yuba County Government Center Project Site

Source: AECOM, 2017

Figure 2.13: Yuba County Government Center Access

Source: LSC Transportation Consultants, Inc., 2017

North Beale Road Transit Center

As shown in Figures 2.14 and 2.15, the North Beale terminal is actually two separate bus stops located on each side of the North Beale Road just north of the intersection with Lindhurst Avenue. Figure 2.14 also shows the right-of-way and parcel boundaries and the location of utilities. The southern stop is located in front of a mall that is largely unoccupied, while the northern stop is located along the Walmart parking lot. The southern stop has three ad shelters with two additional benches outside. No lights are provided at the southern stop but two street lights are located near the site. The northern terminal has two new large ad shelters with additional benches outside. The shelters have new solar lights which provide enough light to read with, but not much more. Both stops have garbage cans and posted bus schedules. Both stops have concrete bus bays that can accommodate two buses.

Passenger Use Pattern

A summary of passenger movement and activity at the southern and northern stops of the North Beale Road Transit Center is illustrated in Figure 2.15.

Southern Stop:

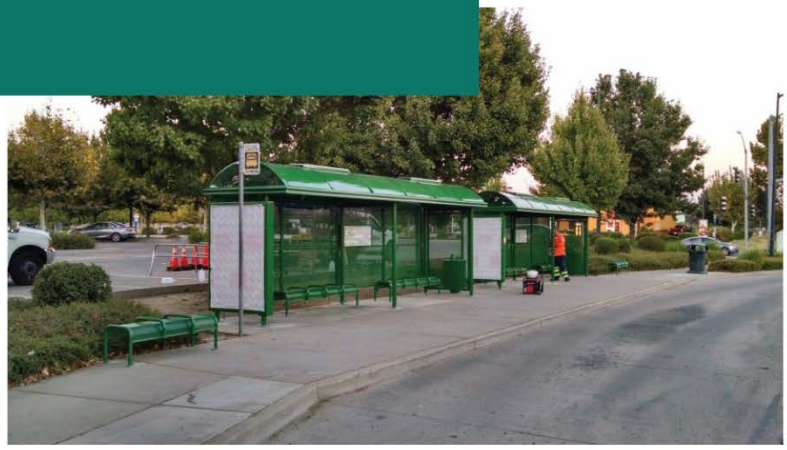
75% percent of those getting on and off at this location proceeded to the signalized intersection and crossed the street. No jaywalking was observed. Approximately 25% of those alighting waited at the terminal for transfers. Two separate riders were picked up within the abandoned mall parking lot. The abandoned mall parking lot was in use by venders selling mobile phones and fruit (near the transit center). A mobile clinic (Class A motorhome) was also parked 25yards south of the terminal. Transit passengers waiting for the bus generally did so at the shelters or benches either within or just outside.

Northern Stop:

A large portion of those using this transit center (both sides) use the Walmart parking lot of the northern stop as a park and ride. Approximately ½ of the passengers were observed crossing North Beale Road and 25% of the transit riders using the northern stop had a car parked at the southern portion of the Walmart lot. Interestingly, no one was observed using the Feather River Center's parking lot as a park and ride lot (presumably for safety concerns). Approximately half of the passengers crossing North Beale and 25% of the passengers using the northern transfer stop were either visiting Walmart or the fast food restaurant on the corner. A small percentage of transit users walked (or rode bikes/skateboards) to the terminal along North Beale Road. The remainder of transit users were transfers.

Approximately half of the passengers waiting for the bus did so at the shelter/benches, the other half did so in the Walmart parking lot. A shopping cart return corral is located immediately north of the terminal. A number of passengers used the cross bars of the corral as seating or to lean against. Others would sit along the curb separating the parking lot and the landscaping. Some chose shopping carts to rest on.

North Beale Transit Center



The North Beale Transit Center is actually two separate bus stops located on each side of the North Beale Road just north of the intersection with Lindhurst Avenue. The southern stop is located in front of a mall that is largely unoccupied, while the northern stop (see photo) is located along the Walmart parking lot.

Southern Bus Stop

Waiting Area
- Two shelters with multiple benches
- Trash bins
- Posted bus schedule

Lighting
- Low-level street lights in proximity

Parking
- Free parking available at the Feather River Center

Access
- Protected pedestrian crossings across North Beale Road

Northern Bus Stop

Waiting Area
- Two large shelters with multiple benches
- Trash bins
- Posted bus schedule

Lighting
- Shelters provides low-level solar lighting

Parking
- Free parking available at Walmart

Access
- Protected pedestrian crossings across North Beale Road

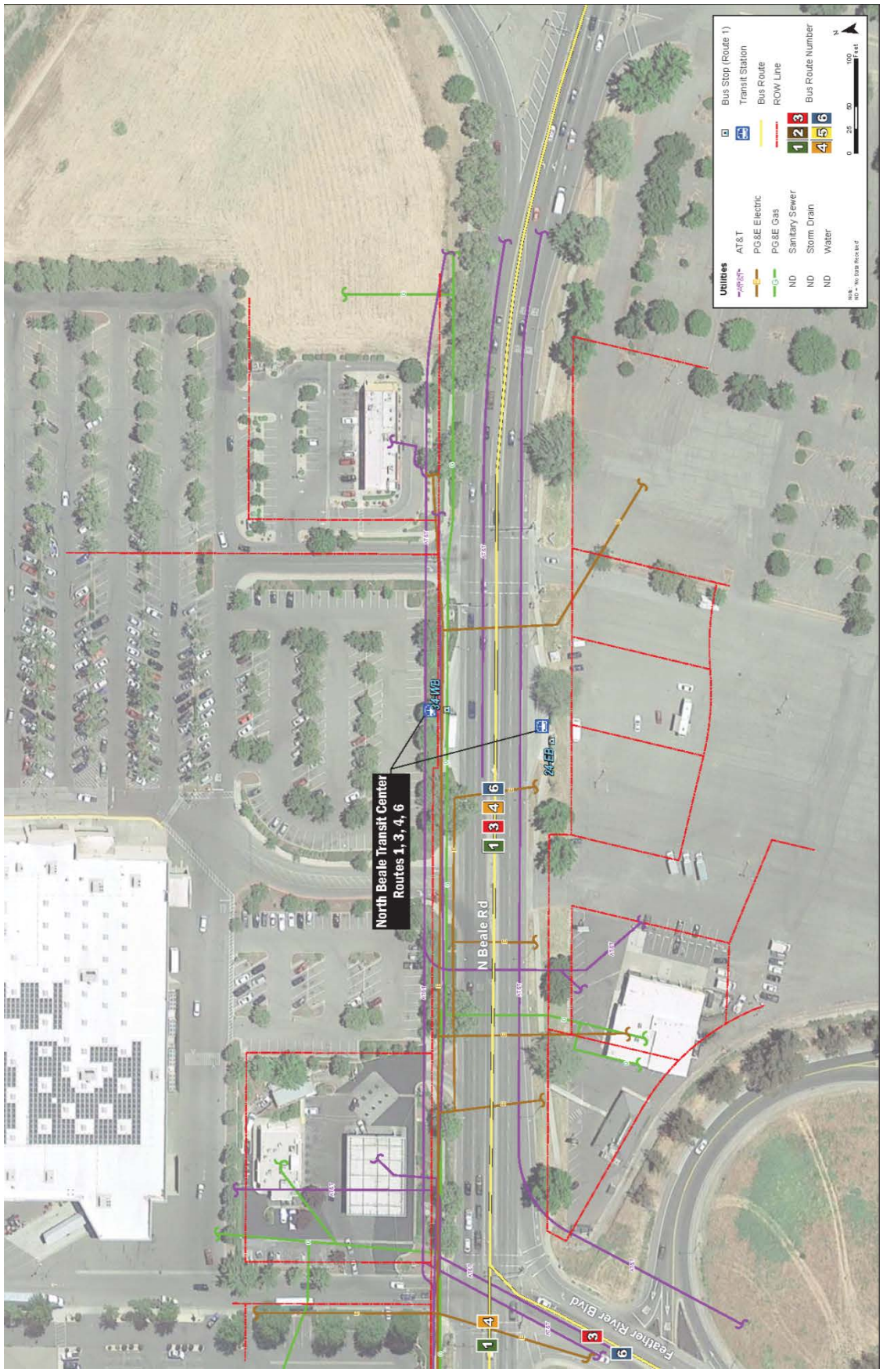


Figure 2.14: North Beale Transit Center Project Site

Source: AECOM, 2017

Figure 2.15: North Beale Transit Center Access

Source: LSC Transportation Consultants, Inc., 2017

Lighting Conditions

The southern terminal of the North Beale Transit Center is dark. There are no lights at the shelter, and the two adjacent street lights are blocked by trees. The northern terminals in shelter lights are the brightest of any of the shelter lights; however, it still only produces an ambient glow rather than providing any security benefit. Due to the high volume of traffic on North Beale Road, the transfer center feels safe, though the abandoned Feather River Center Mall has an eerie presence.

Yuba College

The Yuba College terminal is located off of North Beale Road within the college campus. As shown in Figures 2.16 and 2.17, a transit-only lane allows the buses to reach the terminal with no conflicts with public vehicle traffic adjacent to the stop. The stop has two large non-ad shelters with additional benches outside of the shelters. The shelters have posted schedules along with low level solar lights within.

A large garbage can with recycling is provided. Two street lamps are present at the stop location along with an emergency call button. The transit stop is located just south of a grassy park like area and west of the campus police station. It was observed that the bus drivers commonly use this stop to take breaks and leave the buses (bus empty, door locked). One car was observed using the bus lane to cut through to the eastern portion of campus.

Passenger Use Patterns

A summary of passenger movement and activity at the Yuba College Transit Center is illustrated in Figure 2.17. The majority of the bus riders at this location were observed walking to and from the western portion of campus. A party of two waited for their bus on the grass within the park and walked over to the transit center when their bus arrived. The wood chipped area behind the shelters was littered with cigarette butts; an indication that this area is used by waiting transit riders. Though a cigarette butt disposal receptacle would be used, school policy forbids the use of tobacco products on campus. A sign stating the no tobacco policy is posted at the stop.

Lighting Condition

The low level shelter lights are very dim. The two additional street lights at the bus stop provide sufficient lighting for the transit center. The surrounding areas of the campus are well lit. There is very little activity at this stop at night. Do to the lighting, nearby campus police, and the emergency call box, the transit stop feels safe.

Yuba College Transit Center

The Yuba College Transit Center is located off of North Beale Road within the college campus.

Waiting Area
- Two large shelters with multiple benches
- Trash bins
- Posted bus schedule

Lighting
- Shelters provides low-level solar lighting
- Two street lamps are present at the stop location along with an emergency call button

Parking
- Paid parking available at Yuba College

Access
- A transit-only lane allows the buses to reach the terminal with no conflicts with public vehicle traffic adjacent to the stop
- Protected pedestrian crossing across the transit-only lane

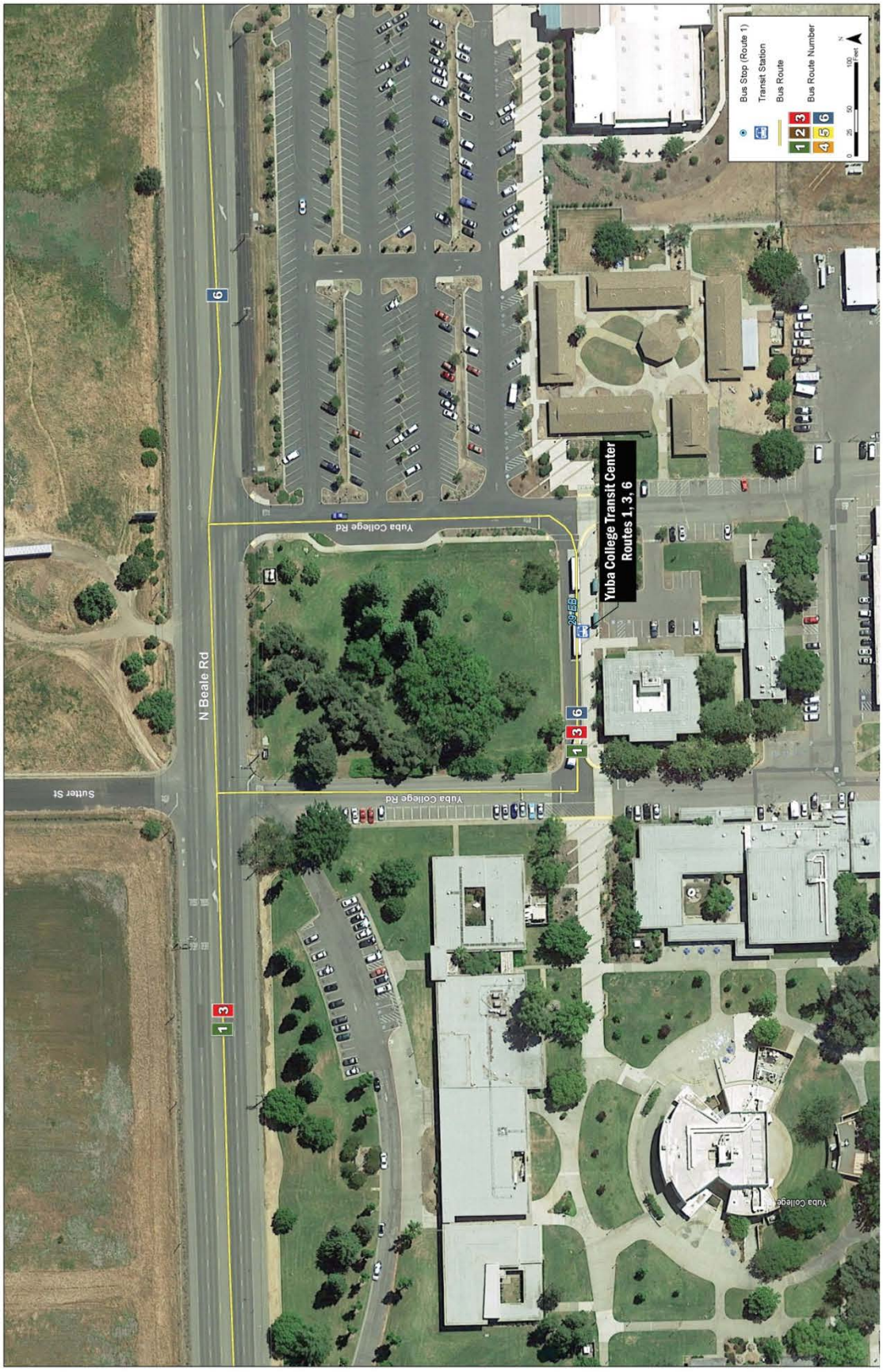


Figure 2.16: Yuba College Transit Center Project Site

Source: AECOM, 2017

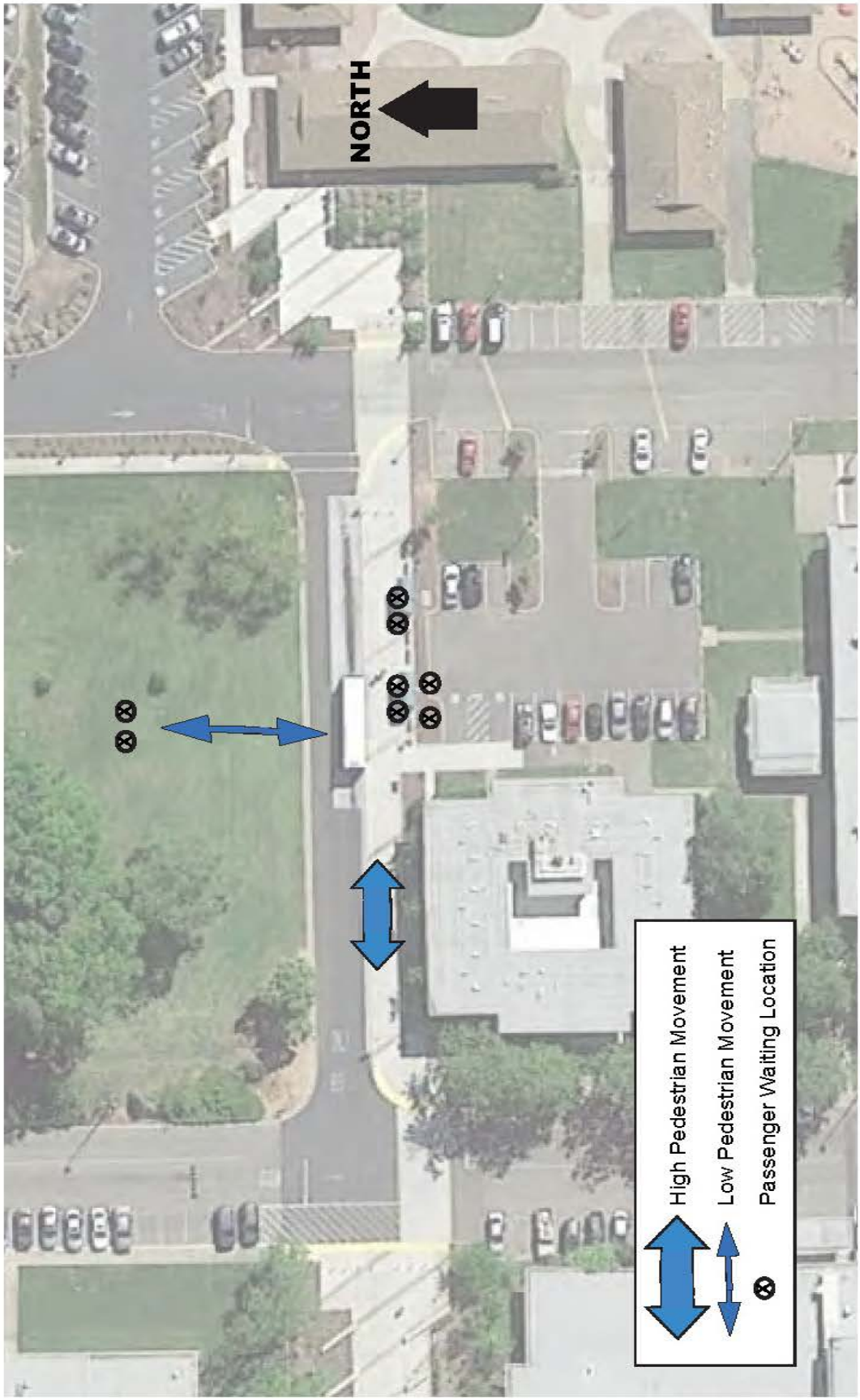


Figure 2.17: Yuba College Transit Center Site Access

Source: LSC Transportation Consultants, Inc., 2017

2.5 Other Plans and Projects

The Community Development and Public Works Departments of Yuba City, Marysville and Yuba County were contacted to discuss existing roadway and development plans that impact the study corridor. The identified plans are summarized below.

2.5.1 5th Street Bridge Replacement Project

The City of Yuba City is currently serving as the lead agency in the $70 million replacement project for the 5th Street Bridge over the Feather River. Two travel lanes will be provided in each direction (rather than the existing single lanes) along with a bicycle/pedestrian path along the north side.

A key improvement on the Yuba City end of the bridge will be that eastbound travel along 5th Street will become a simple through movement, no longer requiring an eastbound left turn from Bridge Street onto the eastbound onramp. Eastbound access to Bridge Street will be provided by an off-ramp at the western end of the project. It will include new traffic signals on 2nd Street at the intersections with Bridge Street, and with Webb Street/westbound ramps. 2nd Street will be improved, including provision of a raised median and extension of the left turn lane from 2nd Street onto westbound Bridge Street. In Marysville, the first connection to the local street grid will remain at J Street. The traffic analysis conducted for the project indicated that it would improve traffic conditions, reducing the number of intersections along the Bridge Street Corridor that do not attain Level of Service standards from six to two. The two failing intersections (Bridge/Clark and Bridge/Cooper) identified in the traffic study are west of the project site. The additional capacity over the 5th Street Bridge will also benefit the 10th Street Bridge corridor by diverting traffic. Construction is planned to commence in July 2017 and be completed in 2018.

2.5.2 Yuba City ADA Self-Evaluation and Transition Plan for the Public Right-of-Way

This plan, prepared in 2012 for Yuba City, details existing conditions and plans for improvements to address the requirements of the Americans with Disabilities Act (ADA). Individual projects are prioritized on a scale of 1 to 5. Curb ramp improvements along the Route 1 corridor consist of the following:

Priority 1

- Stabler Lane at Poole Boulevard and Starr Drive, Forbes Avenue at Clark Avenue

Priority 2

- Butte House Road at Tharp Road, Forbes Avenue at Gray Avenue

Priority 3

- Stabler Lane at Colusa Avenue, Walton Avenue at Sam's Club and Lassen Boulevard, Butte House Road at Harter Parkway, Gray Avenue at Colusa Avenue, Plumas Street at Alturas Street and Church Street

All of these curb improvements have been implemented.

This plan also identifies and prioritizes ADA-related improvements at bus stops (sidewalks or loading areas) along Route 1 in Yuba City, as follows:

Priority 2[1]

- Alturas Street/Shasta Street

Priority 3

- Stops along Forbes Avenue at Almond Street, Orange Street, Clark Avenue and Gray Avenue
- Gray Avenue/Louise Avenue
- Stops along Lassen Boulevard at Walton Avenue, Tharp Road and Harter Parkway
- Stops Along Butte House Road at Harter Parkway, Tharp Road and Stabler Lane
- Stabler Lake/Starr Drive

As of June 2014, the key stops needing ADA improvements in order to accommodate wheelchair loading/unloading are the stops (in both directions) along Forbes Avenue at Almond Street and Orange Street. In addition, the northwest corner of Alturas & Shasta does not have ADA ramps.

2.5.3 North Beale Corridor Complete Streets and Revitalization Plan

This detailed plan, adopted by Yuba County in 2009, addresses improvements to North Beale Road from Lindhurst Avenue on the west to Linda Avenue on the east. Key elements of the plan are:

- Construction of continuous sidewalks on both sides of the roadway from Avondale Avenue to Griffith Avenue, including widened sidewalks at bus stops.
- Improvements to crossing locations, including rapid flashing beacons, medians islands, improved street lighting and colored pavement.
- Intersection improvements, including roundabouts at Lindhurst Avenue, Hammonton-Smartville Road, and Linda Avenue.
- Potential reduction of travel lanes east of Hammonton-Smartville Road from 4 to 2 lanes.

Yuba County has been using this document to guide improvements along the corridor. Median and roadway improvements have been implemented, continuous sidewalks, and crossing improvements were constructed in 2018. The next phase of the project will continue these improvements along the corridor.

[1] No Priority 1 improvements are identified within the corridor study area.

2.5.4 East Linda Reinvestment Plan

This plan, completed in 2012, addresses the portion of Linda between SR 70 on the west and Griffith Avenue on the east. It focuses on three "opportunity sites": the old Peach Tree Mall, a mixed use center across North Beale Road from the western portion of the Yuba College campus, and the Goldfield Village Center just to the east of Yuba College. This plan calls for expansion of Yuba-Sutter Transit service into new residential areas of Linda as they develop east and southeast of Yuba College. This plan incorporates the circulation elements of the North Beale Road Complete Streets and Revitalization Plan, including comprehensive sidewalks along both sides of North Beale Road and roundabouts at Lindhurst Avenue, Hammonton-Smartville Road, and Linda Avenue. As a planning document, no specific projects have been programmed or implemented from this plan.

2.5.5 Yuba County Bicycle Master Plan

This plan, completed in 2012, identifies the following improvements along the study corridor:

- Class 1 bike path over the Yuba River along SR 70. *Yet to be implemented*
- Proposed Class 1 bike path along the south and west side of Yuba College, making a connection between North Beale Road and Erle Road. *Section south of Yuba College is complete, but without connection to the College*
- Class 2 bike path on N Beale from Lindhurst Avenue to Griffith Avenue. *Completed*

2.5.6 Yuba City Bicycle Master Plan 2011

This 2011 plan includes the following Class 2 Bike Lanes (some of which have already been implemented):

- Butte House Road -- Township Road to Gray Ave. *Completed Madison Road to Gray Avenue*
- Gray Ave -- Franklin Ave to Pease Road. *Complete except for southbound lane from Kimball Street to Bridge Street*
- Harter Parkway -- Butte House Road to Lassen Blvd. *Lassen Blvd. to Spirit Way, and short portion south of Butte House Road complete*
- Lassen Blvd -- Harter Pkwy to Walton Avenue. *Complete*
- Stabler Lane -- SR 20 to Jamie Drive. *Complete except for SR 20 to Starr Drive*
- Tharp Road -- Butte House Rd to Bridge Street. *Northbound from Poole Boulevard to Butte House Road complete*
- Walton Avenue -- SR 20 to Bogue Road. *Sam's Club driveway to Hazel Avenue complete*

2.5.7 Sutter County HHS Center

The Sutter County Health and Human Services (HHS) Department is in the process of consolidating its staff that are currently located in seven different buildings into one location at 850 Gray Avenue—a former Kmart. It is anticipated that approximately 400 employees will work at this 84,179 square foot building beginning in 2018/2019. The consolidated HHS Department will be served by two Route 1 bus stops (Gray Avenue/Louise Avenue and Forbes Avenue/Gray Avenue). The Gray Avenue/Louise Avenue bus stops on either side of Gray Avenue have shelters with advertisements. Both of the Forbes Avenue/Gray Avenue bus stops include benches with advertisements. In addition to Sutter County employees, Route 1 will also serve clients of the HHS Department, and is expected to be a substantial generator of transit ridership.

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Chapter 3 | Design Parameters

This chapter presents design parameters to be applied in the Yuba-Sutter Transit Corridor Enhancement Plan, regarding the design of bus stop and transfer center improvements. Sidewalk and bicycle facilities are first discussed, followed by a discussion of bus pull-out design, passenger facility design, and bus turning path requirements.

3.1 Minimum Sidewalk and Bicycle Facility Parameters

3.1.1 Sidewalks

American with Disabilities Act Standards

All facilities will conform to the standards required by the Americans with Disabilities Act (ADA) as well as the associated *Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way* published by the United States Access Board.

ADA sidewalk widths require a minimum of 4 feet of width. Where sidewalks are less than 5 feet in width, a passing area at least 5' long and 5' wide is required at least every 200 feet.

Any drop greater than one-half inch and any surface steeper than 1:20 (5 percent) requires a ramp.

Obstacles that protrude into the access path might restrict wheelchair movements.

Obstacles that are higher than 27 inches or lower than 80 inches may cause problems for a person with a vision impairment, who may not be able to detect an obstacle with a cane.

Local Standards

Yuba County standards call for a minimum sidewalk width of 4 feet along an urban residential (local) road, 6 feet along an urban collector or industrial/commercial road, and 8 feet along an urban arterial road. If detached, the landscaping strip shall be 8 feet in width.

Yuba City sidewalk standards call for a minimum width of 4 feet along residential streets, 5 feet along collector streets and 6 feet along arterial streets. No specific requirement for the width of the landscaping strip is identified.

The City of Marysville Municipal Code defers to Caltrans standards regarding sidewalk width requirements.

State Standards

The Caltrans Highway Design Manual (Sept 22, 2016 revision) indicates the following regarding sidewalk width (Section 105.2) "The minimum width of a sidewalk should be 8 feet between a curb and a building when in urban and rural main street place types. For all other locations the minimum width of sidewalk should be 6 feet when contiguous to a curb or 5 feet when separated by a planting strip."

Caltrans has also adopted standards to implement the ADA requirements, as documented in Design Information Bulletin 82-05: Pedestrian Accessibility Guidelines for Highway Projects. These parameters are consistent with those of the ADA.

3.1.2 Bicycle Facilities

Bicycle lane (Class II) width is governed by the California Highway Design Manual (12/16/16), for all public streets, which states (Section 301.3) that the minimum Class II bike lane width shall be 4 feet, except where:

- Adjacent to on-street parking, the minimum bike lane should be 5 feet.
- Posted speeds are greater than 40 miles per hour, the minimum bike lane should be 6 feet, or
- On highways with concrete curb and gutter, a minimum width of 3 feet measured from the bike lane stripe to the joint between the shoulder pavement and the gutter shall be provided.

3.2 Bus Pullout Design Parameters

3.2.1 Requirement for a Bus Pullout

A bus pullout is a specially constructed area off the normal roadway section provided for bus loading and unloading. Typically at stops located on low-speed, low-volume roadways without unusually high passenger activity, it is appropriate for transit buses to stop in the travel lane. This condition applies to many of the Yuba-Sutter Transit Local Route stops located off of the state highways or urban arterial roadways. A bus pullout is necessary at locations where it may be hazardous to stop the bus in the travel lane and no shoulder or parking lane is available. Based on design guidelines in similar areas throughout the country, bus stops along roadways with a speed limit of 35 miles per hour (MPH) or higher and a peak-hour volume of 250 or higher in the lane of travel warrants a bus pullout[1]. Assuming a typical traffic pattern in which 10 percent of daily traffic occurs in the peak hour and daily volumes are balanced between the two directions, this corresponds to a daily two-way traffic volume of 5,000 vehicles for a two lane roadway and 10,000 for a four-lane roadway.

Pullouts are also appropriate in the following circumstances:

- Where the potential for conflicts between transit and passenger vehicles warrants separation of the two. For example, a bus stop located in a travel lane just beyond a signalized intersection often requires a pullout to prevent the stopped bus from causing traffic to queue through the intersection.
- Under conditions with high or increasing bus or passenger volumes or on high speed roads.

[1] The Oregon Department of Transportation, Design Guidelines for Public Transportation, Section 12, 12-6.

- At locations where it may be hazardous to stop the bus in the travel lane and no shoulder or parking lane is available, such as where objects or the roadway geometry unduly obstructs sight distances for oncoming drivers.

3.2.2 Bus Pullout Design Specifications

The City of Marysville and Yuba County do not have any standards regarding bus pullout design. The City of Yuba City's Standard Details does include requirements for a bus pullout, indicating a minimum of 60' in length with 45' tapers on either side and a minimum width of 9' 9.5" between the face of curb and the roadway section. A concrete surface is required.

The Caltrans Highway Design Manual defers to the American Association of State Highway and Transportation Officials (AASHTO) guidelines. These guidelines are presented in the Guide for Geometric Design of Transit Facilities on Highways and Streets, published in July 2014. They call for a minimum pullout width of 12 feet, with length dimensions as shown in Table 3.1.

Table 3.1: AASHTO Bus Bay Dimensions

	Lengths in Feet					
Thru Speed (MPH)	Entrance Taper	Decel. Lane	Stopping Area	Accel. Lane	Exit Taper	Total
30	5:1 Min	None	50	None	3:1 Max	130 Min
35	170	185	50	250	170	825
40	190	265	50	400	190	1095
45	210	360	50	700	210	1530

Source: *Guide for Geometric Design of Transit Facilities on Highways and Streets, AASHTO, July 2014*

The Caltrans Highway Design Manual (December 16, 2016 revision) Section 626.4 indicates that concrete bus pads shall be a minimum of 4 feet wider than the width of the bus, and a minimum of 20 feet longer than the length of the bus. If the bus pad extends into the travel way, it should extend to the full width of the travel lane. The Highway Design Manual also refers the reader to the Guide for Geometric Design of Transit Facilities on Highways and Streets (American Association of State Highway and Transportation Officials, July 2014).

Other design specifications regarding the bus loading area are as follows:

- Curb heights should be no less than 4 inches and no more than 8 inches to minimize passenger falls when boarding or alighting from a bus.
- A minimum horizontal clearance of 2 feet should be provided between the curb and any obstruction (such as a bus stop sign).

- Trees should be trimmed at least 11.5 feet above the roadway pavement for the length of the bus stop.

3.3 Passenger Facility Design Parameters

Americans with Disabilities Act Standards for Bus Stops and Passenger Facilities

The ADA and associated regulations require that wheelchair loading pads be a minimum of 5' (parallel to roadway) by 8' (perpendicular to roadway). The grade perpendicular to the roadway cannot be more than 2 percent, while the grade parallel to the roadway should match the roadway grade. The surface shall be "firm, stable and slip resistant".

Bus shelters must provide a clear space within the shelter for wheelchair users, with minimum dimensions of 2.5 feet by 4.0 feet (separate from other passenger seating and circulation areas). The opening to a shelter must be a minimum of 3 feet in width, and the minimum vertical dimension within a bus shelter is 6 feet 8 inches. The wheelchair pad and shelter must be connected with an accessible path.

A key design parameter for bus stops is to ensure that the ADA wheelchair loading areas align with the location of ramps or lifts on the vehicles. In the Yuba-Sutter Transit fleet, the wheelchair loading locations are as follows:

- The commuter buses load wheelchairs in the middle of the bus.
- All other buses 27 feet and longer load wheelchairs in the front.
- The smaller Dial-A-Ride and Rural Route vehicles load wheelchairs at the rear door.

Given this variation in loading locations, adequate clearance (8' from the face of curb) is needed from the front of the bus to a point 25 feet from the front of the bus.

Local Standards

While the City of Marysville and Yuba County do not have any standards regarding bus stop design, the City of Yuba City's Standard Details indicates that stops should include a concrete bus shelter pad 6 feet in depth and 16 feet in length.

Criteria for Stop Furnishings

There are various methods that can be used to determine when a bench or shelter should be installed at a given location. The most commonly used criteria, the number of passenger boardings, is the criteria recommended to determine which Yuba-Sutter Transit stops warrant installation of a bench or shelter. The following recommended minimum boardings represent a composite of prevailing practices:

- Bench: 5 to 9 boardings per day
- Shelter: 10 or more boardings per day

For shelters or facilities at busier bus stops, it is important to size the enclosed waiting area to comfortably accommodate the peak number of waiting passengers. A typical transit standard is to provide a minimum of 10 square feet per person.

3.4 Bus Turning Path Design Specifications

3.4.1 Design Vehicle

The largest vehicle used on Local Routes is the 35-foot-long Gillig buses. They have a width of 8 feet 6 inches (without mirrors) and a height of 9 feet 8 inches. As there are no plans for larger buses (such as articulated buses) on the Local Routes in the future, this vehicle should be used as the design vehicle for the majority of stops along the corridor.

Two stops, however, are also served as part of the commuter service, which uses MCI D4500 buses. These buses have a total length of 45 feet 5 inches, a width of 8 feet six inches (without mirrors) and a height of 11 feet 5 inches. In addition to the current stops (Walton Terminal and Yuba County Government Center), there is the potential that the North Beale Transit Center would be a Commuter Service stop in the future. For these three locations, therefore, this larger vehicle should be used as the design vehicle.

3.4.2 Turning Path Design

In low speed operation, the minimum roadway design requirements is governed by the turning radius and "swept path" when the steering wheel is locked at the maximum extent. For the Local Route design vehicle, the radius of the outside front wheel is 42 feet. However, including the "overhang" of the front bumper and a 3-position front bicycle rack, the total swept path at low speed requires a clearance of 50 feet in radius. The inside radius of the swept path, defined by the track of the rear inside tire, is 25 feet. For the Commuter Service design vehicle, an outside swept path radius of 52 feet is required, with an inside radius of 25 feet.

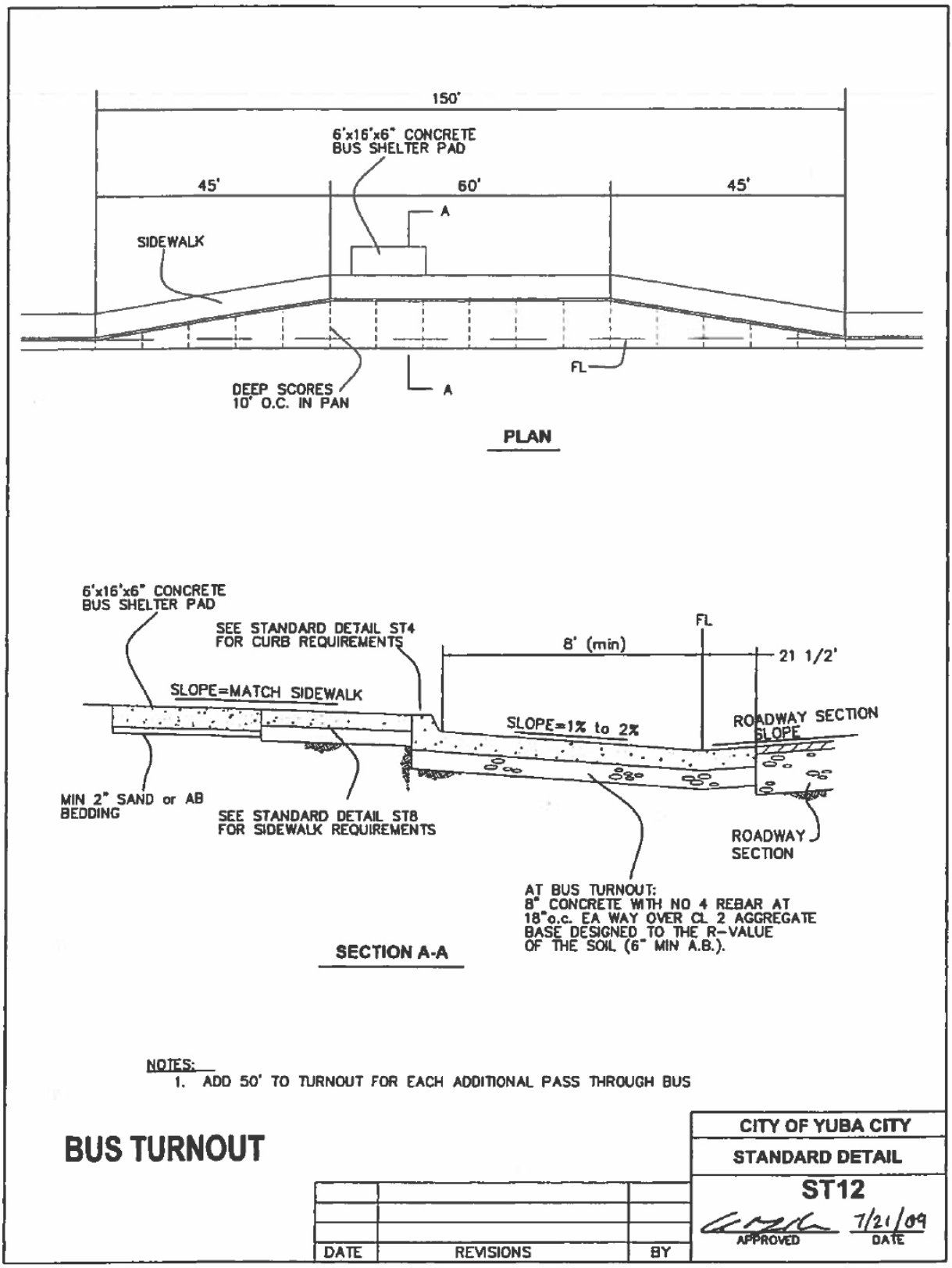
3.5 Recommended Yuba-Sutter Transit Design Parameters

Summarizing the discussion above, the following design parameters are recommended as standard for improvements to Yuba-Sutter Transit stops throughout the transit system. With prior approval from Yuba-Sutter Transit, these standards can be modified based on specific site conditions or to fit within existing right-of-way, as long as minimum ADA and local design standards are met:

- **Bus Pullouts** – At locations where at least 10 feet of paved shoulder width is not available beyond the edge of traveled way[2], pullouts should be provided for stops along two-lane roadways with ADT exceeding 5,000 and along four-lane roadways with average daily traffic (ADT) exceeding 10,000 (or as needed to address the other factors listed on page 3). Dimensions should be a minimum of 60' in length with 45' tapers on either side and a minimum width of 9' 9.5" between the face of curb and the nearest edge of the traveled way(to be consistent with the Yuba City Standard Details, as shown in Figure 3.1), with a concrete surface.[3]

[2] Traveled way includes vehicular and bike lanes, and is typically the inside edge of the gutter pan on an urban roadway and the outside edge of the pavement marking fog line on a rural roadway without a bike lane.
[3] Except along state highways, where Caltrans standards should be applied.

Figure 3.1: Yuba City Standard Bus Turnout



- **Bus Loading Area** -- At a minimum, all new construction should include a concrete wheelchair pad 5' (parallel to curb) by 8' (perpendicular to curb) located to align with the lift/ramp location of all transit vehicles serving the stop. Slope parallel to the roadway shall match that of the roadway, while cross-slope shall not exceed a maximum of 2 percent. A passenger bench should be provided at locations with 5 or more boardings per day, and a shelter at locations with 10 or more boardings per day. A minimum horizontal clearance of 2 feet should be provided between the curb (if provided) or edge of pavement (if curb not provided) and any obstruction (such as a bus stop sign). Trees should be trimmed at least 12 feet above the roadway pavement for the length of the bus stop.
- **Curb and Sidewalk** -- Curb or curb and sidewalk shall be constructed as part of the bus stop improvements along roadways with existing or planned curb/sidewalk. Curb heights should be no less than 4 inches and no more than 8 inches. Sidewalk width shall be determined by the individual jurisdiction.
- **Shelter Pad** -- If a shelter is warranted, a shelter pad at least 16' (parallel to the travel lane) by 6' (perpendicular to the travel lane) should be provided, in order to accommodate the standard shelter shown in Figure 3.2. In most cases, the combination of the pad and sidewalk in front of the shelter/bench will be sufficient for the required 5' by 8' ADA loading area. If not, the pad will need to be extended in depth or length to accommodate the 5' by 8' ADA loading area in front or at the end of the shelter. A minimum distance of 5' between the front edge of the shelter/bench and the front edge of the curb should be provided. Shelter should be placed on the pad so that trash receptacles mounted on the end wall are accessible. If separate, an accessible path of travel (with a minimum width of 36 inches and adequate slope and surface) shall be provided connecting the wheelchair pad and shelter pad.
- **Bench Pad** -- If a bench is warranted, a pad at least 8' (parallel to the travel lane) by 3' (perpendicular to the travel lane) should be provided, in order to accommodate the standard bus bench shown in Figure 3.3. In most cases, the combination of the pad and sidewalk in front of the bench will be sufficient for the required 5' by 8' ADA loading area. If not, the pad will need to be extended in depth or length to accommodate the 5' by 8' ADA loading area in front or at the end of the bench.
- **Design Vehicle** -- A 40' transit bus should be used as the design vehicle for all stops along the Local Routes, except that a 45'5" commuter transit bus should be the design vehicle for stops currently served by the commuter routes, and for the North Beale Road location.

Local or Caltrans standards should be applied with regards to the design of sidewalks and bicycle facilities.

Figure 3.2: Yuba-Sutter Transit Standard Bus Shelter

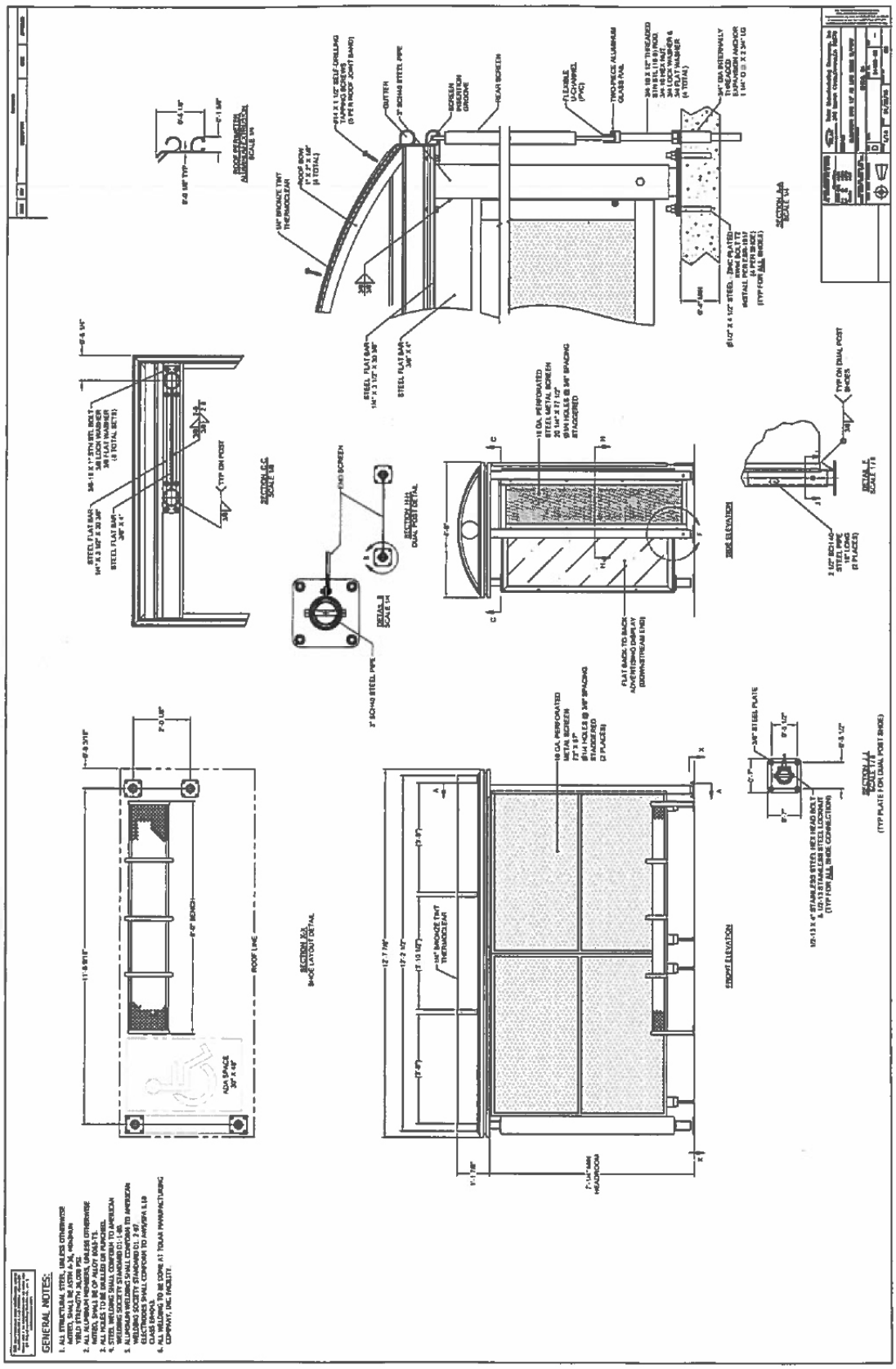
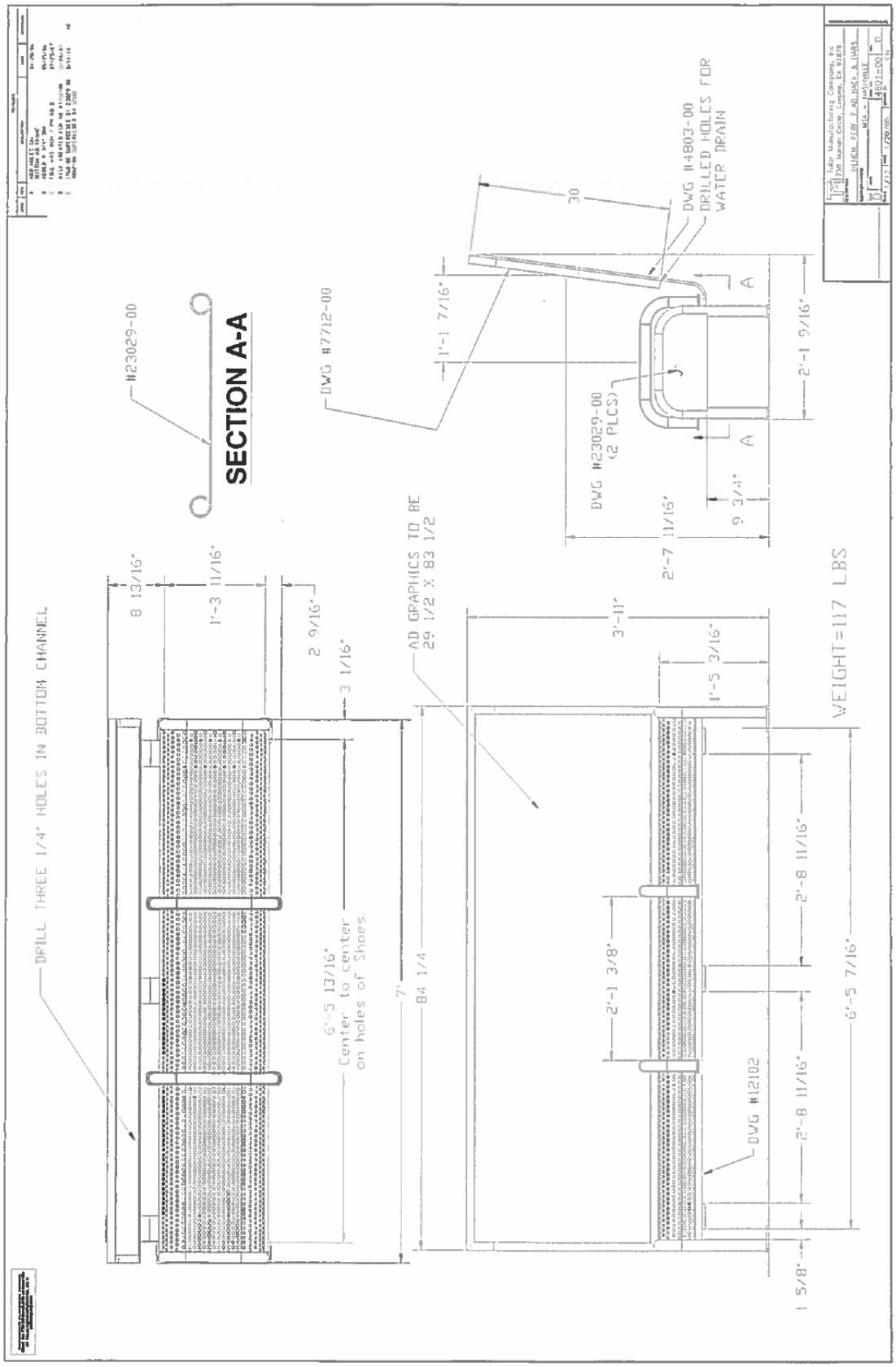


Figure 3.3: Yuba-Sutter Transit Standard Bus Bench



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Chapter 4 | Route 1 Transit Center and Bus Stops Program and Design Options

This chapter addresses the programming and conceptual site options for a new Alturas & Shasta Terminal transit center, as well as improvements at other Route 1 transit centers and bus stop locations. The other four key transit centers / transfer points along Route 1 do not require significant physical design improvements, to enhance operations. A summary of proposed improvements at each of these transit centers and at other bus stops along the Route 1 corridor is summarized in Sections 4.3 and 4.4. The feasibility and options to incorporate intelligent technology systems infrastructure at the major transit centers was also evaluated and is described in Section 4.5. Finally, Section 4.6 of this chapter evaluates the impact of the 5th Street Bridge improvement project on Yuba-Sutter Transit's service.

4.1 Alturas & Shasta Transit Center Program and Site Options

The Alturas & Shasta stop is the single transfer location that warrants a substantial physical improvement. This section evaluates site and design options for a new transit center at Alturas & Shasta. First, the recommended program for the facility is presented, followed by an evaluation of four potential sites and their associated concept designs.

4.1.1 Recommended Transit Center Program

Based on the existing and future uses and the design criteria presented in Chapter 3, the following program is recommended for a new Alturas & Shasta transit center facility:

- Space for a minimum of three buses at a time;
- Drop-off curb space for 2–3 vehicles;
- Sheltered waiting area for up to 30 passengers at a time;
- Outdoor waiting area with similar seating capacity;
- Single driver restroom;
- Custodial space;
- Bike lockers / lids;
- Lighting; and
- Good lines of sight for security purposes.

Since there is no additional land available at the current site, it is clear that a new site will be needed to accommodate this program. Based upon site visits and discussions with Yuba-Sutter Transit staff, four potential replacement sites have been identified. Figure 4.1provides an overview map showing these four locations, as well as the existing transfer point site. The feasibility and advantages and disadvantages of each site option are summarized in the sections that follow.

4.1.2 Site Options

Aquarium Store Site

This site is located on the east side of Almond Street, from Colusa Avenue to Alturas Street and was previously the site of an aquarium supply store. The site is actually two parcels: a southern parcel adjacent to Colusa Avenue approximately 100 feet in depth and a northern parcel adjacent to Alturas Street, 60' in depth. Both are approximately 80 feet in width. The site is immediately west of a Chevron gas station, with which it shares an existing access driveway on Colusa Avenue.

Providing a separate access point for buses entering the site on Colusa Avenue would not be feasible, and closing the existing shared access would have too great of an impact on the gas station operations. Having buses enter at this existing shared access, however, would create conflicts with autos waiting to exit the site. It therefore would not be feasible for buses to enter the site directly from Colusa Avenue. However, the shared access could be used by autos dropping off/picking up passengers or Yuba Sutter Transit operational vehicles (such as supervisors).

A potential site plan is shown in Figure 4.2. The site's north-south dimension along Almond Street is not sufficient to accommodate three buses at a time. It would therefore, be necessary to make a separate bus lane to accommodate two buses (bays 1 and 2), with a third bay parallel to Almond Street. As there is not sufficient space for the buses in the separate bays to swing back to Almond Street, these buses would need to exit eastbound on Alturas Street. In order to avoid left turns from eastbound Alturas Street onto northbound Plumas Street, Bays 1 and 2 would be used by Route 1 and southbound Route 2 buses; while Bay 3 would be used by northbound Route 2 buses. Due to site constraints, it would not be possible to provide the necessary width for Bay 2 to pass a bus stopped in Bay 1.

A transit building would serve passengers waiting for buses using Bays 1 and 2 as well as accommodating the driver bathroom and custodial locker, while a separate standard shelter would be adjacent to Bay 3. In addition, the site could accommodate bike parking, outdoor seating areas and a modest amount of landscaping.

Alturas Street between Almond Street and Plumas Street is only 24 feet in width. With angled parking along the roadway on the private parcel to the north, the street functions as a low-volume alley. While not strictly necessary to accommodate buses, conversion to one-way eastbound along this block would reduce the potential for conflicts or delays, and would have little impact on overall circulation.

Figure 4.1: Potential New Alturas & Shasta Transit Center Sites

Source: LSC Transportation, Inc. modified by AECOM

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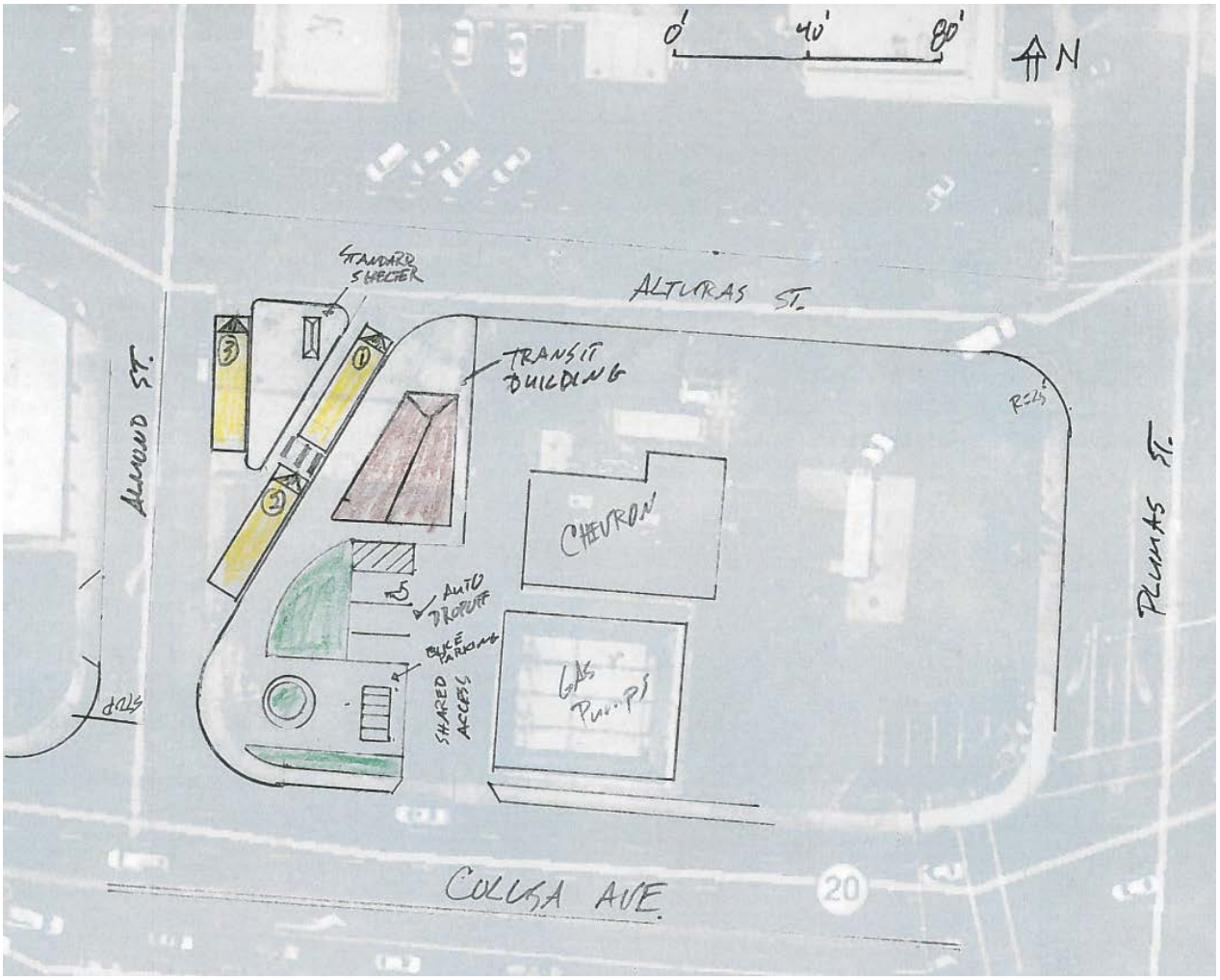
Figure 4.2: Aquarium Store Site



Bus Routing

From the existing routes, this site would be served as follows:

- **Route 1 Eastbound** -- From northbound Plumas Street, the route would turn west on Colusa Avenue, north on Almond Street, through the transfer center, east on Alturas Street, south on Plumas Street and east on Colusa Avenue. At times when the southbound queue on Plumas Street generated by the Colusa Avenue signal backs up past Alturas Street, the driver would need to wait for the signal to clear the queue before turning right onto southbound Plumas Street.
- **Route 1 Westbound** -- From westbound Colusa Avenue, the route would proceed west through the Plumas Street intersection, then north on Almond Street, through the transfer center, east on Alturas Street, and south on Plumas Street. Again, the driver would need to wait at times for the Colusa/Plumas signal to clear the southbound queue on Plumas Street.
- **Route 2A Clockwise** -- As it would not be possible to access any of the bus bays from southbound Almond Street, this route would need to proceed south on Plumas Street to Colusa Avenue, turning right and making a clockwise circuit of the Colusa/Almond/Alturas/Plumas block. Again, the driver would need to wait at times for the Colusa/Plumas signal to clear the southbound queue on Plumas Street.
- **Route 2B Counterclockwise** -- From northbound Plumas Street, the route would turn west on Colusa Avenue, north on Almond Street, stop at the transfer center Bay 1, then proceed north on Almond Street, east on Baptist Lane and north on Plumas Street.

Table 4.1 presents a comparison of the impacts of each site option on route length and estimated running times. As shown in Table 4.1, the Aquarium Store site would require an increase in the route length for eastbound Route 1, but decreases in the other routes and directions. Overall, considering the 24 to 25 daily number of runs on each route, the current site adds 20 miles of bus travel to serve the existing site, and a virtually equal mileage (18) to serve the Aquarium Store site. The impact on running time is estimated based upon the typical delays at the signals for various movements, as well as the change in roadway travel time (at an estimated average of 15 miles per hour, excluding delays at the signals).

As also indicated in Table 4.1, the running time on Route 2B would be reduced by an estimated 1.4 minutes (benefitted from reducing the number of signals by two) and Route 1 westbound would be reduced by 0.6 minutes, but Route 1eastbound would be increased by an estimate 1.4 minutes[1]. Over the day, total travel time associated with deviations from the base route to serve the transfer point would be reduced from the current 164 minutes to 148 minutes (a 10 percent reduction).

[1] As the on-time performance data presented in the 2015 Short Range Transit Plan indicates that Route 2A has the highest proportion of runs operating late out of the four routes/directions, this shift in travel times would be an overall benefit.

Aquarium Store Site Advantages and Disadvantages

Performance Metrics	Advantages	Disadvantages
Travel Performance-Impact on Route Length and Running Time	• Reduces overall travel distance and travel time from the current site.	• The impact on Route 1 eastbound travel time would need to be addressed through revisions to the schedule.
Transit Program and Operations	• Dedicated bus bays that are separated from vehicular travel. • Site could accommodate a fourth bus. • High visibility along busy Colusa Avenue provides greater awareness of the transit system in the community.	• Due to space constraints, buses parked in Bay 2 could not pass a bus stopped in Bay 1 • Narrow width of Alturas Street and the southbound queues on Plumas Street could lead to operational issues at times.
Visibility/Security	• Location next to a busy gas station and along a busy roadway provides more "eyes on the site" to aid security and increases the ability for law enforcement to patrol the site.	
Land Use/Neighborhood Compatibility	• Compatible with surrounding uses.	• Due to the visible location on Alturas Street the site may be more appropriate for a commercial use that activates the site.

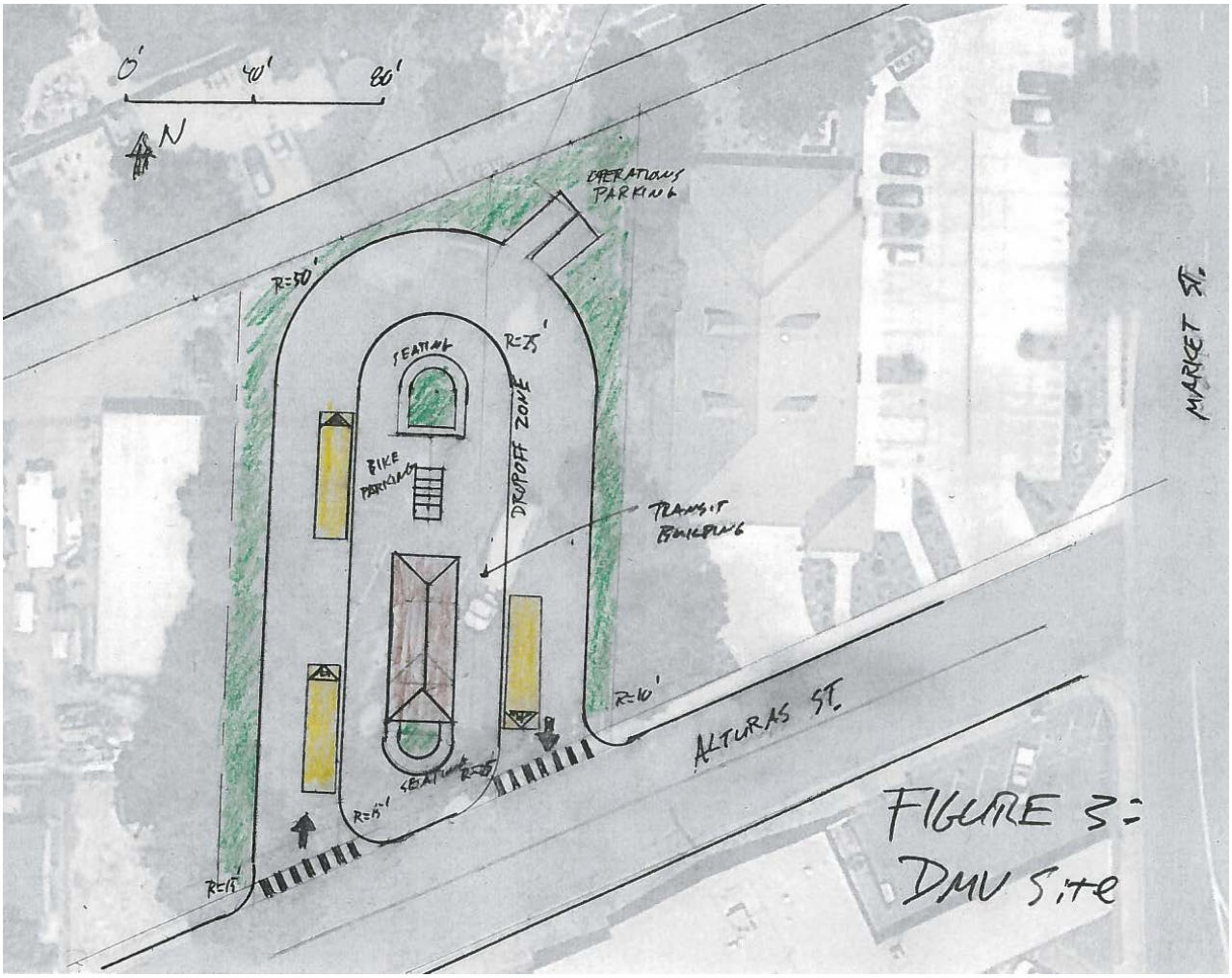
DMV Site

This site is on the north side of Alturas Street between Shasta Street and Market Street, a half-block east of the current transfer site. It consists of three individual trapezoidal parcels that are each approximately 178 feet in the north-south direction and approximately 40 feet in the east-west direction, for a total east-west dimension of roughly 120 feet. The site has been used recently as a truck inspection facility by the Department of Motor Vehicles (DMV). Adjacent land uses consist of a medical office building to the east, Caltrans office to the south, a workshop/storage yard to the west and residential uses to the north.

Using all three parcels, this site has sufficient space to accommodate a full off-street transit loop, as shown in Figure 4.3. Buses would enter the loop from Alturas Street on the west side, and travel clockwise around the loop to serve the three individual bus bays before exiting back onto Alturas Street. Auto traffic, consisting of transit operational vehicles and drivers picking up or dropping off a passenger, would also use this loop.[2] The center island area would be more than sufficient to accommodate a large custom shelter, outdoor seating and landscaping areas, and bicycle parking.

[2] Given the low level of auto traffic and the fact that the configuration will not allow high speeds, occasional use of the drive by auto traffic is not a significant safety hazard.

Figure 4.3: DMV Site



Bus Routing

Routing revisions to serve this site would as follows:

- **Route 1 Eastbound** -- From northbound Plumas Street, the route would turn east on Alturas Street, enter the transfer center, exit back onto Alturas Street westbound, then turn south on Shasta Street and east on Colusa Avenue.
- **Route 1 Westbound** -- From westbound Colusa Avenue, the route would turn north on Shasta Street and east on Alturas Street to access the center. Departing, the bus would travel west on Alturas Street and south on Plumas Street before turning right to retain Colusa Avenue westbound.
- **Route 2A Clockwise** -- From southbound Plumas Street, the route would turn onto eastbound Alturas Street to the transfer center. Departing the center, the route would parallel the Route 1 westbound routing via Alturas Street westbound, Shasta Street southbound, and Colusa Avenue westbound.

- **Route 2B Counterclockwise** -- From northbound Plumas Street, the route would turn east on Alturas Street to the transfer center, then return west on Alturas Street before turning north on Plumas Street.

As shown in Table 4.1, overall route lengths would be increased by this site (particularly for Route 1 eastbound), adding 31 vehicle-miles over the course of a weekday. However, the number of signals needed to be negotiated would be reduced for both Route 1 westbound and Route 2A. Total travel time would be increased by roughly 0.5 minutes for Route 1 eastbound and Route 2A, but reduced by almost a full minute for Route 1 westbound and 0. 6 minutes for Route 2B. Overall travel time would be reduced slightly (6 percent) from the current conditions.

DMV Site Advantages and Disadvantages

Performance Metrics	Advantages	Disadvantages
Travel Performance-Impact on Route Length and Running Time	• Reduces overall travel time from the current site.	• Increases overall travel length from the current site.
Transit Program and Operations	• Dedicated transit facility, with adequate space for buses to pass each other and to comfortably accommodate the transit program. • Site could accommodate a fourth bus.	
Visibility/Security		• As more of the transit activity is further from a public street, the site is less visible to passing drivers and more difficult to secure.
Land Use/Neighborhood Compatibility		• While the site plan avoids using Perkins Way, reducing the impact to nearby residences, the nearest bus bay would still be relatively close (approximately 150') from the nearest residence.

Market Street Site

This consists of two parcels on the northwest corner of Market Street and Perkins Way Street. Together these parcels total approximately 250 feet in the north-south direction and 220 feet parallel with Perkins Way (a total of 1.2 acres). Up until approximately 2013 the site was used as a construction materials storage yard. Adjacent land uses consist of a new medical office building to the south, single family residences to the west, an apartment building to the north, and light industrial uses to the east.

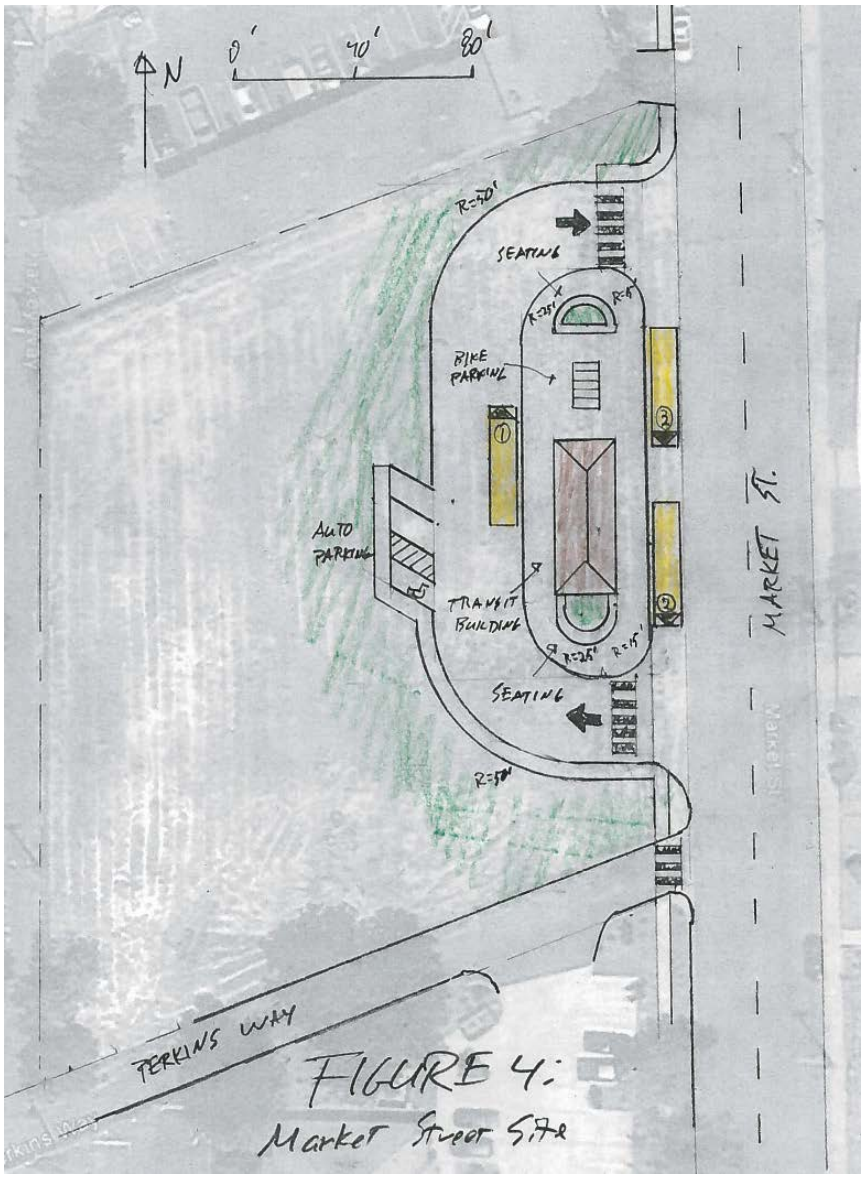


Figure 4.4: Market Street Site

Access to the parcel would be provided from Market Street. As shown in Figure 4.4, an efficient configuration would be to provide a one way (clockwise) loop entering the site at the south end and exiting back onto Market Street on the north end. The plaza area formed by this loop would provide straight curb space for one bus on the west side (with some flexibility for future expansion) and two buses on the east (Market Street) side. This plaza area would provide space for the transit building, bike parking and outside seating areas. Auto parking would be provided along the west side of the one-way loop.

Bus Routing

Routing revisions to serve this site would be as follows:

- **Route 1 Eastbound** -- From northbound Plumas Street, the route would turn east on Alturas Street, left on Market Street and enter the transfer center. It would probably be fastest to exit southbound onto Market Street and make the left turn onto the Frontage Road, turn onto southbound Sutter Street, pass under Colusa Avenue and turn right onto the eastbound Colusa Avenue on ramp.

- **Route 1 Westbound** -- Exiting the 10th Street Bridge, the route would use the Sutter Street off ramp, turn right onto northbound Sutter Street, left onto southbound Market Street and serve the stop on the east side of the transit building. Departing, the route would travel south on Market Street and right on the Colusa Avenue frontage road, where the driver would have two blocks to shift over to the westbound left turn lane at Plumas Street.
- **Route 2A Clockwise** -- From southbound Plumas Street, the route would turn onto eastbound Alturas Street and north on Market Street to the transfer center. Departing the center, the route would turn south on Market Street and east on the Colusa Avenue Frontage Road.
- **Route 2B Counterclockwise** -- From northbound Plumas Street, the route would turn east on Alturas Street, north on Market Street to enter the transfer center, then turn right onto southbound Market Street and return west on Alturas Street before turning north on Plumas Street.[3]

Table 4.1 indicates that overall route lengths would be increased by use of this site for Route 1 in the eastbound direction and Route 2 in both directions, though Route 1 would be slightly shorter in the westbound direction. Total operating miles would be increased by a net of 22 per weekday. Considering signal and other intersection delay, the total travel time would be increased by roughly 2 minutes on eastbound Route 1, partially offset by a reduction of roughly 1 minute in the westbound direction. Overall, running time would be increased by approximately 21 minute per weekday.

Market Street Site Advantages and Disadvantages

Performance Metrics	Advantages	Disadvantages
Travel Performance-Impact on Route Length and Running Time		• Increases overall route running distance and travel time the greatest amount among the four site options.
Transit Program and Operations	• Dedicated transit facility, with adequate space for buses to pass each other and to comfortably accommodate the transit program. • Site could accommodate a fourth bus.	
Visibility/Security	• Site configuration makes the site easy to patrol, enhancing its security.	
Land Use/Neighborhood Compatibility	• Based on the current assessed valuation, this is probably the least costly site in terms of land acquisition.	• Leaves a remnant area of approximately 0.6 acres west of the transit center. • Nearby residences could raise concerns about noise & lighting.

[3] While it would be shorter and faster to exit northbound on Market Street and west on Del Norte Avenue, this would miss the Fremont Hospital stop.

As an aside, another potential site option would be to use only the northern existing parcel (approximately 150 feet in width) rather than both parcels. A site plan similar to that shown for the DMV site option (turned approximately 80 degrees, with all access via a single driveway on Market Street) would be possible. While this would probably reduce the land acquisition cost, it would increase transit delays (all buses would need to circulate around the bus loop), put more bus activity close to the existing apartment building, and reduce the security of the site by placing more activity further from passing traffic (and police patrols) on Market Street.

Almond/Baptist Site

This site is along the west side of Almond Street, south of and adjacent to Baptist Lane. Two bus bays would be provided along the west side of Almond Street. Similar to the Market Street site layout, a one-way transit drive would loop northbound around the west side of a transit plaza, exiting as a fourth (west) leg of the Almond/Baptist intersection. As shown in Figure 4.5, this would provide space for two buses on the west side of the transit plaza and one bus on the east side.

This site is a portion of a larger parcel (extending as far north as Del Norte Avenue) formed from older individual parcels as part of a previous plan to expand the Fremont Hospital. The overall site used for the transit center is approximately 120 feet in the east-west dimension and 210 feet in the north-south dimension (a total of approximately 0.6 acres).

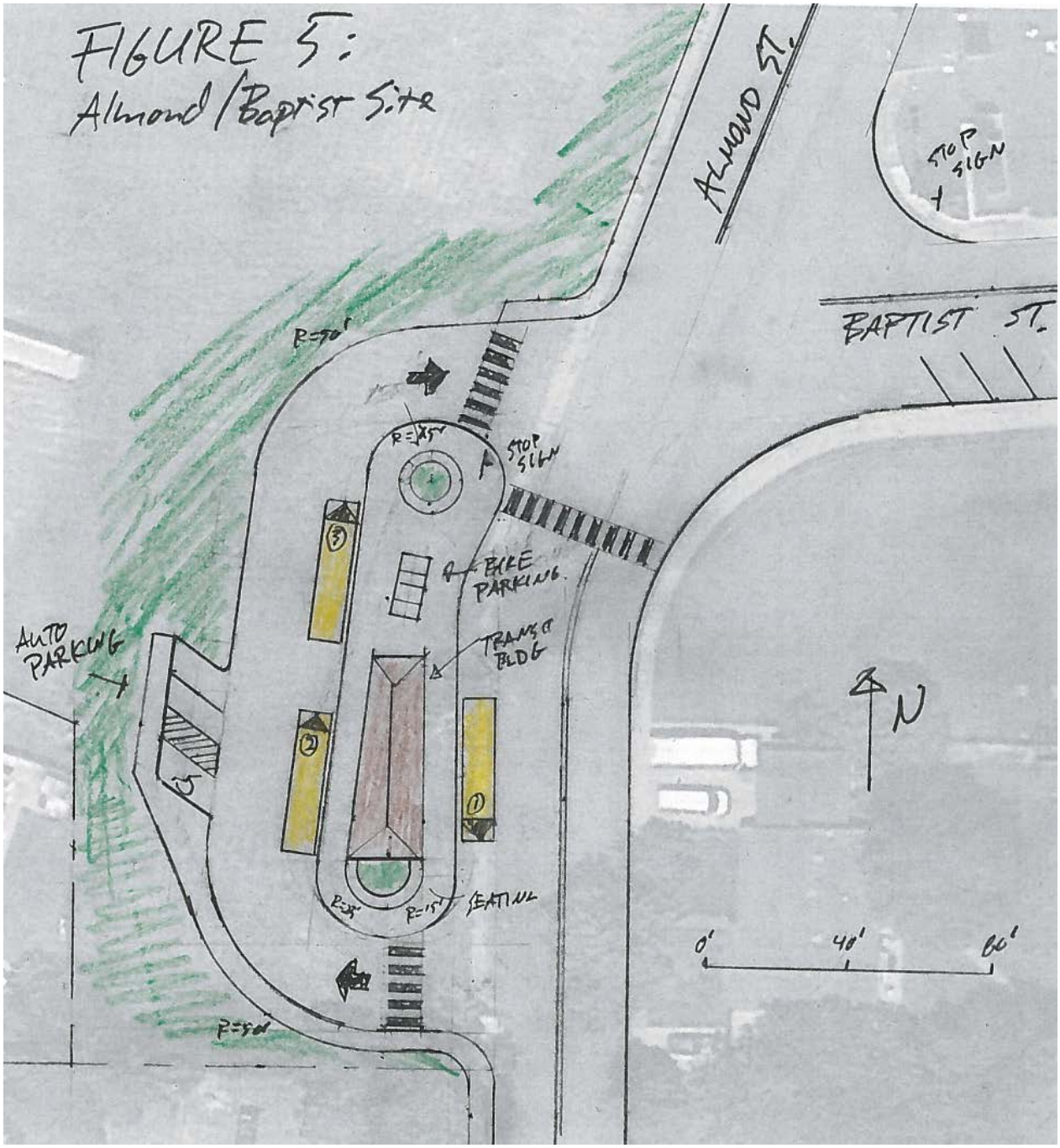
There are residential uses to the west, south and east, while the area to the north is currently undeveloped.

Bus Routing

Routing revisions to serve this site would be as follows:

- **Route 1 Eastbound** -- From northbound Plumas Street, the route would turn west on Colusa Avenue, north on Almond Street, through the transfer center, east on Baptist Street, south on Plumas Street and east on Colusa Avenue.
- **Route 1 Westbound** -- From westbound Colusa Avenue, the route would proceed west through the Plumas Street intersection, then north on Almond Street, through the transfer center, east on Baptist Street, and south on Plumas Street.
- **Route 2A Clockwise** -- The route would turn right onto Baptist Street and left onto southbound Almond Street to stop at the bus bay along the west side of Almond Street. Departing the stop, the bus would loop through the transit center drive and head east on Baptist Street and south on Plumas Street.
- **Route 2B Counterclockwise** -- From northbound Plumas Street, the route would turn west on Colusa Avenue, north on Almond Street, stop at the transfer center, then exit east on Baptist Lane and north on Plumas Street.

Figure 4.5: Almond/Baptist Site



As shown in Table 4.1, overall route lengths would be increased by this site for Route 1 in both directions and a reduction in Route 2 in both directions. Total operating miles would be increased by a net of 9 per weekday. Considering signal and other intersection delay, the total travel time would be increased by roughly 1.7 minutes on eastbound Route 1, partially offset by a reduction of roughly 1.3 minutes on Route 2B. Overall, running time would be reduced by approximately 16 minute per weekday.

Almond/Baptist Site Advantages and Disadvantages

Performance Metrics	Advantages	Disadvantages
Travel Performance-Impact on Route Length and Running Time	• This site provides the most benefit in terms of reduction in route running time of the four site options.	
Transit Program and Operations	• As access to and from Plumas Street is further from the Plumas/Colusa signal, traffic queues and delays are better at this site than at the Aquarium Site. • Site could accommodate a fourth bus.	
Visibility/Security	• The configuration makes this site relatively easy to patrol, enhancing its security.	
Land Use/Neighborhood Compatibility	• Provides a transit stop more convenient to residential areas to the west than the current stop.	• Would require splitting an existing parcel (for purchase) or negotiation of a long-term lease of a portion of the existing parcel. • Nearby residences could raise concerns about noise and lighting.

Table 4.1, below, presents a comparison of the impacts of each site option on route length and estimated running times.

Table 4.1: Alternative Alturas & Shasta Transfer Center Site Options

Performance Criteria	Existing	Aquarium Store	DMV	Market St.	Almond/Baptist
Impact on Route Length (Miles per Trip)					
Route 1 EB	0.08	0.2	0.27	0.45	0.4
Route 1 WB	0.25	0.2	0.27	0.18	0.4
Route 2A Clockwise	0.21	0.2	0.35	0.54	0.2
Route 2B Counterclockwise	0.25	0.12	0.35	0.54	0.16
Total Additional Miles per Weekday	20	18	31	42	29
Impact on Route Running Time (Minutes per Trip)					
Route 1 EB	0.8	2.2	1.4	2.7	2.5
Route 1 WB	2.3	1.7	1.4	1.4	2.3
Route 2A Clockwise	1.7	1.7	2.2	2.3	0.7
Route 2B Counterclockwise	1.8	0.4	1.2	1.8	0.5
Total Additional Minutes per Weekday	164	148	154	202	148
Acreage		0.29	0.6	1.2	2.44 (1)
Street Address		529 Colusa Avenue	363 Alturas St.	894 Market St.	961 Almond St.
Existing Assessment		$373,103	Not Available	$73,942	$778,858
Use Type		Retail Sales / Vacant	State Government	Vacant	Vacant

Note 1: Acreage and assessment figures for total parcel. Approximately 0.6 acres would be required for the transfer center.
Proportional assessment for 0.6 acres is $191,522.

4.2 Alturas & Shasta Transit Center Preferred Options

The four site options were evaluated based on the performance criteria identified in Sections 4.1.2. Yuba-Sutter Transit coordinated with the property owners of the potential site options and with the City of Yuba City to obtain input and understand the planning requirements that may be required to develop a new transit center at these locations.

These site options were then presented to stakeholders and the Yuba-Sutter Transit Board of Directors at the second community workshop held on February 15, 2018. Based on the feedback received at this meeting, it was determined that the Aquarium Store site was not an ideal location for a future Alturas & Shasta transit center location and was therefore not carried forward in the planning process as a potential preferred option.

Table 4.2 provides a preliminary indication of the suitability of the three preferred site options based on the key performance criteria identified by the bus transit center program and route operations in Table 4.1, including:

- Travel efficiencies, measured by overall route length and running times;
- Accommodation of program elements, including:
  - Adequate queuing and spaces for buses;
  - Adequate sheltered and outdoor waiting areas;
  - Adequate site access and a place for bikes;
  - Restroom and custodial spaces;
  - Convenient passenger drop-off space; and
- Site visibility for security;
- Impact of bus operations on surrounding land uses.

Table 4.2: Site Suitability Based on Performance Metrics

Performance Metrics	Sites Suitability* by Metric		
	DMV	Market	Almond/ Baptist
Route Length (miles)	3	4	2
Route Running Time (minutes)	2	3	1
Bus Operations	2	1	1
Site Sized for Program	2	1	1
Visibility/Security	4	2	3
Land Use Compatibility	4	3	2
Average Score	2.8	2.3	1.7

Note:
* Rankings are in order from 1 to 4, with 1 being the highest ranked for performance.

Table 4.2 suggests that the Almond/Baptist site performs best in travel performance, including impacts on overall route length and running time and in terms of accommodating the transit program and bus and transit center operational demands. The Almond/Baptist, Market and DMV site all provide adequate space and a design configuration that will allow buses to pass each other and avoid queuing. The Almond/Baptist and Market sites are comparable in the areas of land use compatibility and site visibility and security.

The selection of a new Alturas & Shasta transit center will be contingent on the availability of funding and the ability to successfully negotiate a sale or long-term lease with the property owner. As a note, the Almond/Baptist and Market parcels are likely larger than would be required for a future Alturas & Shasta transit center and therefore the parcel may need to be sub-divided and sold or leased for another use.

4.2.1 Preferred Site Plan and Illustrative Conceptual View

Figure 4.6 shows the preferred site plan for the each of the three preferred site options for the future Alturas & Shasta transit center. The illustrative conceptual view as shown in Figure 4.7 can be accommodated on the three preferred sites (i.e., DMV, Market, or Almond/Baptist). Appendix C includes five different views of the illustrative concept for the future Alturas & Shasta transit center.

Figure 4.6: Alturas & Shasta Transit Center Preferred Site Plan

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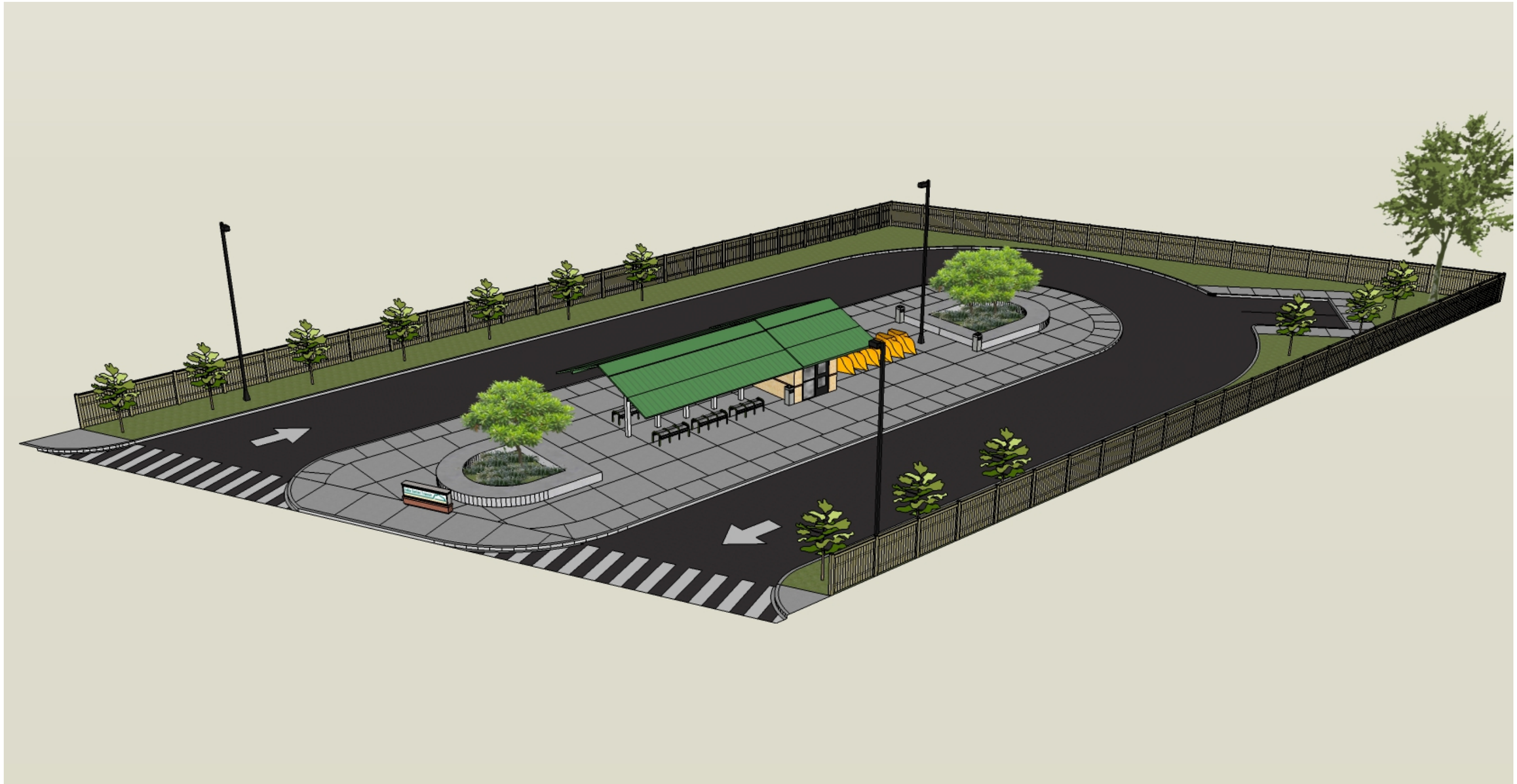
Figure 4.7: Alturas & Shasta Transit Center Conceptual View 1



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4.2.2 Conceptual Cost Estimate

A conceptual cost estimate has been developed to construct the new Alturas & Shasta transit center as shown above in Figures 4.6 and 4.7. It is anticipated that the total project cost including contingency, will be approximately $1,160,000. Please see Table 4.3, for the detailed conceptual cost estimate for a future Alturas & Shasta transit center.

Table 4.3 Conceptual Cost Estimate

Conceptual Cost Estimate
11-Jun-18

ITEM	UNIT	QUANTITY	UNIT PRICE	COST
General				
Mobilization	LS	1	$100,000	$100,000
Construction Project Information Sign	EA	1	$600	$600
Prepare Water Pollution Control Program	LS	1	$2,500	$2,500
Water Pollution Control	LS	1	$5,000	$5,000
Traffic Control System	LS	1	$5,000	$5,000
Demolition / Site Preparation				
Clearing & Grubbing	LS	1	$3,000	$3,000
Earthwork / Site Grading	CY	950	$40	$38,016
AC and Base Removal	SF	21,921	$2.50	$54,803
Sidewalk / Concrete Removal	SF	828	$3.50	$2,898
Curb / Curb and Gutter Removal	LF	753	$5	$3,765
Fence Removal	LF	300	$8	$2,400
Utilities				
Electric Service	LS	1	$10,000	$10,000
Water Service Connection (Irrigation)	LS	1	$6,500	$6,500
Water Service Connection (Building)	LS	1	$7,500	$7,500
Sewer Service Connection (Building)	LS	1	$10,000	$10,000
Drainage	LS	1	$25,000	$25,000
Lighting	LS	1	$40,000	$40,000
Facilities				
PCC Paving w/AB (Bus)	SF	10,539	$20	$210,780
PCC Paving w/AB (Sidewalk)	SF	6,979	$8	$55,832
Full Depth AC Paving (Street)	SF	306	$20	$6,120
Curb / Curb and Gutter w/AB	LF	892	$25	$22,300
Landscaping and Irrigation	SF	8,098	$12	$97,176
Planter Seat Wall	LF	158	$200	$31,600
Bus Shelters with Support Building	LS	1	$75,000	$75,000
Site Furniture	LS	1	$15,000	$15,000
Bike Lockers	EA	6	$2,000	$12,000
Signing and Striping	LS	1	$5,000	$5,000
Site Monument / Identifier	EA	1	$5,000	$5,000
Perimeter Fence	LF	527	$75	$39,525
			SUBTOTAL -	$892,315
			CONTINGENCY (30%) -	$267,694
			TOTAL PROJECT CONSTRUCTION COST -	**$1,160,009**

4.3 Recommended Improvements at Other Transit Centers

The Corridor Enhancement Plan team observed the key transfer centers and conducted a detailed review of the existing improvements and passenger activity in order to gain an understanding about passenger access, passenger waiting conditions, and operational conditions to formulate recommendations for near- and longer-term improvements. As described in Chapter 1 – Introduction, the input received through the public survey and at the two public workshops also helped inform the recommended improvements. Section 2.4.2 of Chapter 2 – Existing Conditions, provides a detailed description of the existing passenger amenities at each of the key transfer centers. The following improvements are recommended for the key transfer centers:

Transfer Center	Near-Term Improvements	Longer-Term Improvements
Walton Terminal	Western Bus Stop • Replace two existing small shelters with larger shelter with solar lighting to accommodate peak passenger boardings with shade and rain cover.	Eastern Bus Stop • Replace existing shelter with larger shelter to accommodate additional passengers.
North Beale Transit Center	• No near-term improvements recommended.	Southern Bus Stop • Replace existing shelters with larger ad shelters with solar lighting to match the shelters that were recently installed at the northern bus stop. • Enhance landscaping.
Yuba County Government Center	• Install between two and three benches outside of the shelter for additional passenger seating.	• Replace existing shelter with larger shelter to accommodate local fixed route, Sacramento route and Amtrak Thruway Bus passengers.
Yuba College Transit Center	• No near-term improvements recommended.	• No longer-term improvements recommended.

4.4 Improvements at Other Bus Stops along the Corridor

While the focus of the Corridor Enhancement Plan is on the five major transfer centers, there are another 47 bus stops along the study corridor that also need to be considered. A review was conducted of existing improvements and passenger activity at each stop, and compared against the criteria identified in Chapter 3 – Design Parameters (benches at stops with 5 or more boardings per day, and shelters at stops with 10 or more boardings per day). In addition, each bus stop was visited by the planning team to review access and traffic safety conditions. Based upon this evaluation, the recommendations shown in Table 4.4 were identified.

Other specific recommendations are as follows:

- No Parking zones should be signed and red curbs denoting no parking areas should be painted at the eastbound Forbes Avenue stop in front of the Library near Clark Street (particularly important given the potential for wheelchair users at this stop) and at the two bus pullouts along both sides of Plumas Street at Church Street.

- The existing bus stop sign at the stop on Lassen Boulevard just west of Walton Avenue should be moved at least 100 feet to the west, in order to give transit drivers pulling out of the stop a better opportunity to identify gaps in traffic turning onto Lassen Boulevard from Walton Avenue.

- Two existing diagonal parking spaces should be eliminated on either side of the D Street/2nd Street (old Mervyn's) stop, in order to allow the bus to pull up against the curb. The current situation requires passengers (including wheelchair users) to enter the street to board or deboard the bus. It appears that parking needs in the area can be well accommodated with the loss of these four spaces.

- The traffic volumes on Stabler Lane (approximately 12,100 vehicles per day, on a four-lane roadway) and the passenger activity at the stop just to the south of Butte House Road (serving the Feather Down shopping area) warrant a bus pullout to avoid stopping in the curb lane. At the stop to the south on Stabler Lane at Starr lane, a pullout is not recommended given the low ridership activity (9 total boardings/alightings per day) and the lack of available right-of-way.

- The Yuba City Marketplace stop along Harter Road has been observed to have up to 13 passengers waiting for a specific run. A larger or second shelter is warranted.

In addition, there are two locations where boarding levels do not warrant existing shelters (at Butte House Road/Harter Road and at F Street/2nd Street). However, both of these are ad shelters and in high visibility locations.

A total of ten additional shelters are warranted, along with five additional benches. At average unit prices (installed) of $600 per bench and $20,000 per shelter, the estimated cost of these improvements is $203,000. The cost of the bus pullout on the west side of Stabler Lane south of Butte House Road will depend on the location of utilities and necessary drainage modifications; a typical cost for a pullout is approximately $120,000. Including this figure, the overall costs of improvements at the stops other than the transfer locations is an estimated $323,000.

Table 4.4: Recommended Improvements at Other Route 1 Bus Stops

Transfer Stops (Addressed Elsewhere) Shown Shaded

					Existing			Warranted Improvements		
ID	Street	Cross Street	Corner	Dir	Bench	Shelter	Daily Boardings	Bench	Shelter	Other Recommendations
1	Walton Ave.	Sam's Club Entrance	SW	EB			87.5			
2	Lassen Boulevard	Walton Avenue	NW	EB	☐	☐	8.5	☑	☐	Consider Moving Stop to the West
3	Lassen Boulevard	Tharp Rd.	NW	EB	☐	☐	6	☑	☐	
4	Lassen Boulevard	Klamath	NW	EB	☑	☐	11.5	☐	☑	
5	Harter Road	Spirit Way	NE	EB	☐	☑	18.5	☐	☐	
6	Harter Road	Yuba City Marketplace	NE	EB	☐	☑	63	☐	☑	Larger or Second Shelter
7	Butte House Rd.	Harter Road	SE	EB	☐	☑	1.5	☐	☐	Existing Shelter Not Warranted
8	Butte House Rd.	Tharp Rd.	SE	EB	☐	☐	1	☐	☐	
9	Stabler Ln.	Butte House Rd.	SW	WB	☐	☑	15	☐	☐	Pullout
10	Butte House Rd.	Stabler Ln. (Rite-Aid)	SE	EB	☐	☑	31	☐	☐	
11	Stabler Ln.	Starr Drive	SW	WB	☐	☐	1.5	☐	☐	
12	Butte House Rd.	Civic Center Blvd.	SE	EB	☐	☑	6	☐	☐	
13	Butte House Rd.	El Dorado Lane	NW	WB	☑	☐	5.5	☐	☐	
14	Butte House Rd.	Yuba City Mall Signal Ent.	SE	EB	☐	☑	29	☐	☐	
15	Butte House Rd.	Target Entrance	NW	WB	☐	☑	16	☐	☐	
16	Gray Ave.	Ainsley Ave.	NE	WB	☑	☐	5.5	☐	☐	
17	Gray Ave.	Ainsley Ave. (Yuba Sutter M	SW	EB	☐	☑	32.5	☐	☐	
18	Gray Ave.	Louise Ave. (Old K-Mart)	SW	EB	☐	☑	27	☐	☐	
19	Gray Ave.	Louise Ave. (Palisade Mote	NE	WB	☐	☑	15	☐	☐	
20	Forbes Ave.	Gray Ave.	SE	EB	☑	☐	21.5	☐	☑	
21	Forbes Ave.	Gray Ave.	NE	WB	☑	☐	4.5	☐	☐	
22	Forbes Ave.	Clark Ave. (Library)	SE	EB	☑	☐	31	☐	☑	Paint Red Curb
23	Forbes Ave.	Clark Ave.	NE	WB	☐	☐	12	☑	☐	
24	Forbes Ave.	Orange St.	NW	WB	☐	☐	1	☐	☐	
25	Forbes Ave.	Orange St.	SE	EB	☐	☐	4	☐	☐	
26	Forbes Ave.	Almond St.	SE	EB	☐	☐	2	☐	☐	
27	Forbes Ave.	Almond St.	NW	WB	☐	☐	5.5	☑	☐	
28	Plumas St.	Church St.	NE	WB	☑	☐	16	☐	☑	Paint Red Curb
29	Plumas St.	Church St.	SW	EB	☑	☐	26.5	☐	☑	Paint Red Curb
30	Alturas St.	Shasta St.	SW	Both			144.5			
31	Yuba Co. Govt Center*	I & 9th Streets	SW	WB			124			
32	H Street	7th Street	SW	EB	☐	☐	0.5	☐	☐	
33	H Street	7th Street	NE	WB	☐	☐	3.5	☐	☐	
34	H Street	4th Street	NW	EB	☑	☐	12.5	☐	☑	
36	Third Street	Rideout Hosp. Emergency	Midblock	WB	☐	☑	New Stop	☐	☐	
37	Third Street	F Street	SW	EB	☑	☐	4	☐	☐	
38	D Street	2nd Street (Old Mervyn's)	----	EB	☐	☑	126	☐	☐	Eliminate 4 Angled Parking Spaces
39	F Street	2nd Street (Buttes Manor)	NE	WB	☐	☑	2	☐	☐	Existing Shelter Not Warranted
40	North Beale Road	Rio Rancho Motel	SE	WB	☐	☐	7	☑	☐	
41	North Beale Road	Feather River Blvd.	NW	EB	☑	☐	2.5	☐	☐	
42	North Beale Road	Wal-Mart	NW	WB			**173**			
43	North Beale Road	SouthSide	SW	EB			**31**			
44	North Beale Road	Lowe Avenue	SE	EB	☐	☐	2.5	☐	☐	
45	North Beale Road	Lowe Avenue	NE	WB	☐	☑	41.5	☐	☐	
46	North Beale Road	Park Avenue	SE	EB	☐	☐	1.5	☐	☐	
47	North Beale Road	Between Alpine and Park	NW	WB	☐	☐	20	☐	☑	
53	North Beale Road	Hammtn-Smtvl Road	SE	EB	☐	☐	2	☐	☐	
48	North Beale Road	Albrecht Avenue	SE	EB	☐	☐	2	☐	☐	
49	North Beale Road	Albrecht Avenue	NW	WB	☐	☐	14	☐	☑	
50	North Beale Road	Woodland Drive	SE	EB	☑	☐	0.5	☐	☐	
51	North Beale Road	Woodland Drive	NE	WB	☑	☐	32.5	☐	☑	
52	Yuba College Terminal	East Parking Lot	----	Both			137.5			
							TOTAL	5	10	

4.5 Feasibility and Assessment of Real Time Information Systems

This section presents options and considerations for incorporating real-time signs (RTS) and web-based technologies in implementing a real-time transit arrival information system at the five transit centers on the Route 1 corridor. Real-time technology enables passengers to track buses and receive real-time information on arrivals through the web, or with electronic display signs installed on bus signs or shelters. In assessing the technology options and requirements, several vendors were contacted for information on their products, approach, and estimated costs.

A key component of real-time technology is an Automated Vehicle Locator (AVL). AVL uses a Global Positioning System (GPS) to track the location of buses via the Internet. Prior to procuring an AVL system, Yuba-Sutter Transit should consider the following technical requirements.

1. Choice of sign technology options – E-Paper or LED Display Signs.

LED display is a flat panel display, which uses an array of light-emitting diodes as pixels for video display. In contrast to the backlit LED displays, electronic paper (E-Paper) displays reflect light like paper, to mimic the appearance of ordinary ink on paper. E-Paper display presents information on electronic tablets, using solar power. E-Paper display has become widely deployed in recent years, due to its lower power draw than the more traditional LED or liquid crystal display (LCD) type of real-time signs (RTS) display. Some vendors provide a solar power panel built in with the E-Paper display, while others draw power from on-site solar panel already present at the shelter location. Use of existing solar panels over electrical sources can reduce the overall cost of RTS at transit center locations.

To take advantage of cost savings of using solar power panels, it is recommended that the operational status of existing or future installation of solar power panels be assessed for the transit center locations.

Technology Considerations

- Format for exporting data from the AVL system to real-time signs
- Procuring RTS from the AVL vendor
- Solar power for RTS displays
- E-Paper or LED displays
- Use of cellular or radio-based communications

Solar Powered LED Displays
Vendor: WaySine

Solar Powered
E-Paper Displays
Vendor: GDS

2. Choice of GTFS or JSON Feed Technology for Exporting Data from the AVL System

All of the RTS vendors interviewed noted the importance of having an AVL vendor make real-time transit information available from a central server through either General Transit Feed Specification (GTFS)-Realtime specification, developed by Google in 2006, or as data exported through a JavaScript Object Notation (JSON) or Extensible Markup Language (XML) feed from the AVL system to the real-time transit information sign.

GTFS-Realtime reads data reported from an agency's AVL system, to communicate the location and estimated arrivals at specific bus stops, at frequent intervals that are pre-defined by the agency (i.e., once every 15 or 30 seconds). This specification is published under the Apache 2.0 license. Some AVL vendors choose to export their data via a JSON or XML feed, made available to the transit agency. Use of either feeds enables real-time transit information on a transit agency's vehicle fleet to be exchanged from an AVL server to another server communicating with the real-time sign. The

JSON/XML is similar to the approach of the GTFS-Realtime, but may inhibit third-party application developers from working with the transit data.

Thus, in implementing RTS technology, it is recommended to request that the AVL Vendor make real-time transit vehicle location data available either through a GTFS-Realtime specification, or through a JSON or XML for the purposes of presenting real-time transit information on future real-time signs at transit center locations.

3. Choice of Cellular or Radio-Based Communications

There is the option of using cellular or radio-based communications for communicating real-time transit arrival information. Cellular communications are more widespread among transit agencies with RTS, but require a monthly cost for communications, per location, which is either managed by the RTS vendor or transit agency. Radio-based communications is an option with one of the RTS manufacturers interviewed, Connexionz, using a 450 megahertz (MHz) radio band for communications from a central location to the RTS installed at transit center locations. While this option would require an investment upfront for the infrastructure required to support radio communications (i.e., radio towers to relay information from a central office to sign locations), there would not be any monthly cellular costs required for transmitting data to the RTS.

An assessment should be made whether to invest in radio-based communications to support the communication of real-time transit arrival data to the RTS.

4. Procuring Real-Time Signs from the AVL System

As part of the future AVL system procurement process conducted by Yuba-Sutter Transit, the agency could also request optional bid items for the installation of a specific quantity of RTS at transit centers in the transit service area. These bid items could be acted upon by Yuba-Sutter Transit at the time of the AVL system installation or in the future as part of the contract entered into with the AVL system vendor.

Procuring real-time signs from the same provider of a transit agency's AVL system can reduce the processing time of exporting data to another server location (through GTFS Realtime or JSON/XML, noted above) from the AVL system, using cellular or radio-based communication. This length of time for the data transfer, or perceived latency in terms of "real-time" transit data, could range from 30 seconds to 2 minutes or more, based on the points in time when data is exported by the AVL system and then received by the RTS manufacturer and sent to the RTS in the field. This delay could be perceived by riders that the RTS is not entirely accurate or reliable.

To reduce the delay in the transfer of data, it is recommended that optional bids be requested as part of the future AVL system procurement to either purchase RTS at the same time as the AVL system or in the future from an AVL vendor.

The cost ranges for the various types of RTS are presented in Table 4.5, below, for consideration in the planning and procurement of RTS. Generally, vendors have noted purchasing larger quantities of signs will result in lower per sign costs.

Table 4.5: Real-Time Sign Cost Estimates

Real Time Sign by Communication Type	Per Sign Estimate	Notes
E-Paper Signs		
Cellular	$10,000 to $15,000	Cellular communications approach; assumes 10-inch or 13-inch E-Ink display at the shelters. Plus monthly cellular service costs.
Radio-based	$3,000 to $5,000	Would require radio-based infrastructure in place to support sign-to-server communications. Recommended for higher quantity of real-time signs (approximately 40).
LED Signs		
Cellular	$10,000 to $20,000	Cost range is for 2-line sign/4-line signs with either 16 or 24 characters per line. Wide range in cost reflects differences in how vendors incorporate solar power into the sign and text-to-speech annunciators are provided with the sign. Cost may be lower if either existing solar power or existing AC power is used on-site. Plus monthly cellular service costs.
Radio-based	$5,000 to $10,000	Would require radio infrastructure in place to support sign-to-server communications. Also recommended for higher quantity of real-time signs.

4.6 Impact of the 5th Street Bridge Improvements

There is currently a single Yuba Sutter Transit route crossing the Feather River, which uses the 10th Street (SR 20) Bridge. An improvement project is currently underway that will replace the existing 2-lane 5th Street Bridge (roughly a third of a mile south of the 10th Street Bridge) with a new four-lane structure. This will also improve connections to the Yuba City street grid, providing a direct connection to Bridge Street to the west. Given this substantial improvement, it is worth considering whether the improved bridge makes sense as part of the Yuba Sutter Transit route network.

In uncongested conditions, the travel time between the Alturas & Shasta transit stop in Yuba City and the 3rd St./E St. intersection in Marysville are very similar, providing little benefit in terms of travel time or on-time performance. The expanded 5th Street Bridge may reduce travel times on the Bridge Street/5th Street corridor during congestion periods, but will also divert a substantial amount of traffic (up to 30,000 cars per day at buildout) from the 10th Street Bridge, thereby reducing travel times on the existing route.

One benefit of shifting to the 5th Street Bridge would be that it would allow provision of transit service along Sutter Street between the 10th Street and 5th Street bridges. Currently, the closest stop to this area is roughly 0.5 miles away at Plumas Street/Church Street. However, the majority of the land uses in this area are light industrial (such as building supply stores), indicating that the transit ridership generated by this area would be modest.

The key consideration is the importance to continue to serve a stop at the Yuba County Government Center, which is the 4th busiest stop in the system. In addition to serving nearby trip destinations, this stop is the key transfer point between Routes 1 and 4, and also serves as a transfer point to regional services. While serving this stop using the 10th Street Bridge requires little out-of-direction travel, adding this stop to Route 1 using the 5th Street Bridge requires the buses to travel 4 blocks out of direction, adding 0.76 miles and approximately 4 minutes of running time to the route in each direction. Given the existing on-time performance problems on Route 1 (with 31 percent of runs operating more than 5 minutes behind schedule), providing this additional running time is not feasible with the current 4-bus Route 1 service plan. Two additional buses would need to be operated under a revised schedule, with a significant accompanying cost impact.

Overall, Route 1 should remain on the 10th Street Bridge. The 5th Street Bridge replacement project, however, will substantially benefit this route (and the system as a whole) by reducing traffic delays on 10th Street/Colusa Avenue and allowing route on-time performance to improve.

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Chapter 5 | Battery Electric Bus Feasibility

5.1 Introduction

Yuba-Sutter Transit is faced with an important decision for the future direction of their transit operating and maintenance facility. With the State of California Air Resources Board's proposed direction to change all bus transit fleets in the state to zero emission vehicles by 2040 beginning with purchase mandates as early as 2023, planning for this transition must begin now. Yuba-Sutter Transit is beginning this transition with the anticipated purchase of up to four 35' battery electric buses (BEBs) from Gillig LLC to be put into operation by the end of 2020. The questions which this BEB Memorandum must answer are:

1. What is the maximum number of BEBs that can be effectively operated from the existing facility given the existing space limitations? How can the initial implementation phase for new BEBs be charged on the current site with the existing space limitations?
2. Can the current facility accommodate a transition to 51 bus BEB deployment or is a new facility recommended? What are the PG&E electrical power requirements to charge the first group of BEBs and the whole fleet of 51 buses?
3. How much electrical power through the PG&E FleetReady Program can reasonably be brought into this facility before becoming cost prohibitive?
4. What is the estimated cost per installed charging unit for Gillig BEB and ChargePoint chargers?

5.1.1 Current Site Electrical Service

Preliminary contact was initiated with representatives from PG&E, including Cal Silcox, (Electric Vehicle Expert Analyst), Dean Kunesh (Strategic Account Manager), and Josh Deadmore (Yuba-Sutter Transit's Local Service Coordinator). The existing facility has two separate electric utility services. Each service is 600 amps at 240 volt, 3-phase. The proposed ChargePoint system requires 480 volt, 3-phase, and represents a load of 156 kW (188 amps @ 480 volts). *It is not practical to convert existing 240 volt services to 480 volts for the following reasons*:

- The existing 240 volt panels would still need to be re-fed, which will require an onsite transformer to step down from 480 volt to 240 volt. This will cost more than bringing in new 480 service and will take up more space.
- The size of the existing service would need to be increased substantially to provide enough additional capacity to provide sufficient power for the new ChargePoint systems.

5.1.2 Equipment Requirements for the First Charge Stations:

The proposed ChargePoint system is comprised of a power block that serves two charging dispensers. Each power block is 156 kW and can therefore charge up to four buses simultaneously. For the initial phase of four BEBs, there will be two power blocks. The total load for this phase is 312 kW, or approximately 375 amps at 480 volt, 3-phase power.

A new 480 volt 3-phase service will need to be brought to the site for the new charging equipment. The existing 240 volt services would be left intact to serve the maintenance and site loads that already exist. As a conservative assumption for the initial rollout of BEBs, this 480 volt service would be proposed at 1000 kVA. This will support the initial four (4) buses and will allow for the future support of an additional eight (8) buses over the coming years. As Yuba-Sutter Transit continues their conversion to BEBs, additional services would be brought to the site. Initial discussions with PG&E indicate that this new service will require minor modifications to their infrastructure and will not pose any roadblocks to proceeding with this initial BEB deployment. The required modifications will be determined by PG&E distribution engineers, and cannot be determined until project specifics are known.

- Equipment required includes a; 480V, 1000 kVA transformer and site mounted switchboard which together requires approximately 12'W x 25'L of space which includes California Electrical Code required free space around the transformer and switchboard
- The service will feed two ChargePoint Express Plus power blocks 6'-3" H x 2'-11"W x 5' x 9" D
- Each charge station will charge two buses simultaneously with the size of each at 7'-4" H x 2'-4"W x 1'-4"D

5.1.3 Full Conversion of Fleet to BEBs

An important initial step in assessing the feasibility of full conversion of the fleet to BEBs at the current facility is for Yuba-Sutter Transit to develop a procurement schedule for replacing the entire bus fleet with BEBs, including any anticipated growth to the fleet. It is anticipated that the charging infrastructure can be engineered to fit on the site for the existing fleet of 51 buses. However, it would be extremely difficult to add any BEBs to the fleet considering parking limitations and the necessity to charge buses during night time hours. The possibility of future growth would be severely limited. Assuming the full conversion of today's fleet to BEBs, the required number of ChargePoint power blocks would be 26. The total electrical load for 26 power blocks is approximately 4MW. Following the initial 1000 kVA electric service, serving the first twelve buses, there would likely be two subsequent increases in service brought in when needed to accommodate procurement of additional BEBs beyond the first twelve. These service increases would be 1500–2000 kVA each, and they would be added together to provide the cumulative 4MW capacity that is ultimately required. Initial discussions with PG&E have indicated that a large load study will be required if total customer load exceeds 2000 kVA, and would certainly have significant impacts to the PG&E distribution system. Preliminary discussions with PG&E indicated that such quantity of power may even require service from a transmission level voltage, which could incur significant expense to PG&E and possibly negatively influence their financial participation in the project. On the other hand, assuming the procurement schedule will be phased over several years, the required utility services will also be phased incrementally over a similar number of years. This gradual introduction of new load over a few years may possibly provide a means to delay the need for PG&E to conduct a large load study. In any case, this analysis and determination by PG&E will need to be done before Yuba-Sutter Transit outgrows the

charging capacity of the initial twelve buses. It is concluded that the predictability of the implementation of the later electrical service upgrades is quite tenuous and represents a significant risk.

5.1.4 Space Requirements

Currently, Yuba Sutter Transit only has 47 official parking locations for the 51 vehicle fleet. Vehicles beyond the 47 spaces are parked in the shop, wash bay or squeezed into various locations on the property. It is essential that none of the existing parking locations are eliminated due to space needed for charging infrastructure. As the facility currently exists, some of a fleet of 51 BEBs would have to be rotated each day in order for each to get charged.

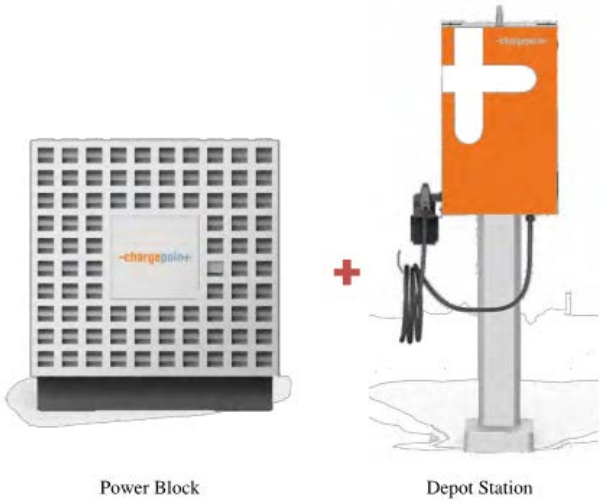
In order to determine the space required for electrical equipment, the sizes of utility transformers, electrical switchboards, power blocks and chargers must be taken into account along with California Electrical Code requirements for working clearances.

The Site Plan shows where electrical infrastructure is recommended to be placed for charging the fleet.

Three potential options have been developed for the placement and arrangement of the charging equipment:

Design Option 1 for charge stations: Ground Mounted

Option 1 is a more traditional approach with all utilities being installed underground from new service to power blocks and to the ground mounted charge stations. Concrete pads will be required for the transformer, switchboard, power blocks and charge stations. The charge stations are to be placed at the ends of the parking spaces, along the site perimeter. This will push the parking spaces a few feet away from the yard fence, slightly reducing the drive path widths. Since the charge connection inputs on the Gillig buses are on the right rear corner, the buses will need to be backed into their parking spaces to be charged. This may require the current bus parking angle to be reversed to maintain the current site bus flow. Otherwise, the entry/exit points and circulation patterns may need to be reversed which could be problematic during peak pull-in periods as queued buses could block the driveway from B Street.



ChargePoint Ground Mounted Equipment

(Utilized in Option 1)

Design Option 2 for charge stations: Gantry Structure

Option 2 will require installing underground power to a long-span overhead gantry structure. The gantry structure will be built over the rear of bus parking spaces, allowing bus orientation to remain unchanged as the charging receptacles on Gilligs are located at the rear of the bus. Power blocks will be supported on shelves designed on the gantry vertical supports and the chargers will be mounted overhead to further reduce the footprint of the system. It is anticipated that ChargePoint's planned compact equipment and gantry system will be commercially available by 2020. Charging cables will run from the power blocks to overhead chargers and cable reels mounted on the gantry to charge the vehicles below.

Overhead Gantry Structure

(Similar to Option 2)

Power Cable Reel

(Utilized in Option 2A)

Design Option 2A for charge stations: Solar Canopy Structure

Option 2A will require an overhead canopy to be built over the parked buses with power blocks supported on shelves designed on the canopy vertical supports. Charging cables will run from the power blocks to overhead charging station reels to charge the vehicles below. The canopy will also be designed to support high efficiency solar panels to help offset PG&E power required for charging the vehicles. These solar panels will send energy off-site to the PG&E grid during daylight hours in order to reduce nighttime charging costs by receiving credit for the daytime generated power. On-site battery power storage can be installed as an additional option to provide power during the day time if emergency charging is needed while avoiding peak hour pricing.

Column Mounted Equipment

(Utilized on Options 2 & 2A)

PV Solar Canopy

(Similar to Option 2A)

To help save ground space and prevent restriction of bus movement, the solar canopies can be designed to place the support columns at the head of the parking slots, near the perimeter fence, and cantilever the structure over the bus. The non-solar gantries can also be designed to cantilever in order to keep columns out of the parking spaces. In the photo below, the cantilever frames can either have the charging cable reels suspended at the end of the arm (Option 2) and/or have solar panels mounted on top (Option 2A).

Cantilevered Gantry/Canopy Structure

(Potentially Utilized on Options 2 and 2A)

Under all options, ground space can also be saved by mounting power blocks on accessible roof spaces such as the fueling lane canopy, which was designed to accept additional weight (solar panel system).

Advantages of Option 1

- Initial cost is cheaper
- Construction only done as needed

Advantages of Option 2

- Provides better locations for power blocks off the ground
- Provides quicker construction for future charging stations
- Provides less chance to damage charging stations than ground mounted stations
- Structure, cables and charging equipment can potentially be moved to a new site if a new transit center is constructed

Advantages of Option 2A

Includes all of the advantages of Option 2, but in addition:

- Provides a structure for solar panels
- Provides shade to keep the buses cooler and minimize UV heat gain for energy conservation during operation

- Provides a life-cycle cost advantage to help offset costs for charging equipment, canopy and electrical fuel for the buses with power generation from the solar panels

5.2 Summary

With the above discussion in mind, the questions posed by Yuba-Sutter Transit are addressed below:

What is the maximum number of BEBs that can be effectively operated from the existing facility given the existing space limitations? How can the initial implementation phase for new BEBs be charged on the current site with the existing space limitations?

Yuba-Sutter Transit can install charging related infrastructure within a layout similar to the current 47 bus parking configuration. Slight adjustments to striping will create adequate room for the gantries, columns, and charging equipment. However, this leaves no room for future growth to the existing facility or bus fleet. Some shuffling of buses may be needed to ensure all buses in the fleet are fully charged and ready for service each day. Charging infrastructure options are outlined above.

Can the current facility accommodate a transition to 51 bus BEB deployment or is a new facility recommended? What are the PG&E electrical power requirements to charge the first group of BEBs and the whole fleet of 51 buses?

As mentioned above, the current fleet of 51 buses can be converted to BEBs, but without any room for additional buses. To charge the first four Gillig BEBs, new electrical service equipment will be required, including a 480V, 1000 kVA transformer with a site mounted switchboard. This type of utility service is typical for a commercial site and should have little impact to PG&E infrastructure.

The current Yuba-Sutter Transit site is already space constrained with minimal room for the fleet to grow. A new facility will provide more space for better bus circulation and parking while providing better separation of employee vehicles, transit vehicles and support vehicles. It will also provide a chance to better separate employee pedestrian flow from vehicular flow on site. With a well-designed facility with solar panels, LED lighting, water conserving plumbing and equipment, Yuba-Sutter Transit stands to greatly reduce operational costs at a new site. However, much of the savings will be dependent upon energy rates set forth in the PG&E FleetReady Program.

How much electrical power through the PG&E FleetReady Program can reasonably be brought into this facility before becoming cost prohibitive?

In May 2018, the California Public Utility Commission approved Senate Bill 350, which authorized funding for electric vehicle charging infrastructure for medium and heavy duty fleet vehicles through PG&E's FleetReady program. This program has just been approved by regulators, but has not yet been officially launched. Expected launch date is early 2019. Under this program, PG&E will install and maintain the electric vehicle (EV) service connection and electrical infrastructure to support fleet vehicles. PG&E plans to allocate certain percentages of funding to various types of electrified fleet vehicles. The current plan authorizes $236 million for PG&E to provide infrastructure improvements. Of this total, 15% is slated to serve transit agencies. PG&E may

advise customers on the types of charging equipment available for their vehicles and may offer charger rebates to customers. PG&E has provided a website for early applications (https://www.pge.com/en_US/business/solar-and-vehicles/your-options/clean-vehicles/charging-stations/fleetready.page). Yuba-Sutter Transit has completed and submitted an early application to PG&E through the website. However, until the program is officially launched, no PG&E funding is available. The current information available for the FleetReady program does not indicate that applications will be limited to either new or existing sites.

What is the estimated cost per installed charging unit for Gillig BEB and ChargePoint chargers?

See the attached cost estimate covering the new equipment to be installed. As indicated in the estimate, the cost for the first four (4) BEBs is: $878,464 / 2 = $439,232 per charging unit.

5.3 Risk Factors to the Project

A risk to Yuba-Sutter Transit moving forward with a program to purchase and deploy BEBs beyond the first four (4) buses is the unknown specifics related to PG&E assistance through the FleetReady program. These issues include:

- The percentage of new on-site electrical and charging costs that PG&E is willing to fund for each phase of new BEB deployment
- PG&E's timely completion of a large load study, quantifying the scale of electrical infrastructure needed to support Yuba-Sutter Transit's BEB deployment program
- The total amount of off-site infrastructure that PG&E deems feasible and is willing to construct in order to support a facility with up to 51 BEBs
- An inefficient use of Yuba-Sutter Transit and PG&E funds by over improving the electrical service on the current site, in the future event Yuba-Sutter Transit relocates to a new site to accommodate growth
- Participants in the FleetReady Vehicle Charging Infrastructure Programs must maintain and operate their purchased Electric Vehicle Supply Equipment (EVSE) for at least 10 years. PG&E must require site hosts to provide the utility with data for at least five years after the EVSE is installed. [1]

Not having this critical information about PG&E's participation in the funding and logistics of this BEB conversion project may delay Yuba-Sutter Transit's ability to make critical decisions to move the project forward.

5.4 Recommendations

It is strongly recommended that Yuba-Sutter Transit coordinate with PG&E at the earliest date possible to determine PG&E's ability to provide the infrastructure needed to support the planned procurement of

[1] State of California, Public Utilities Commission on Decision on the *Transportation Electrification Standard Review Projects. Application of San Diego Gas & Electric Company (U 902E) for Approval of SB 350 Transportation Electrification Proposals.* Application numbers: 17-01-020, 17-01-021, and 17-01-022. Decision 18-05-040 May 31, 2018. Date of Issuance June 6, 2018. (Ordering Paragraph 42 (pg. 161). Sacramento, CA, 2018.

new BEBs. With this information, Yuba-Sutter Transit can make proper decisions on BEB procurement to enable them to move forward with plans for this project.

As stated above, the current site is space constrained. In light of this fact, the current site is not feasible for full electrification because it provides limited space for future fleet growth. As with transit agencies throughout California, ridership is expected to increase in the coming years. Many in the industry would agree that anticipating zero growth of the fleet is not a viable policy. It is recommended that Yuba-Sutter Transit develop a plan to find a new site and build a new facility well before converting beyond twelve (12) battery electric buses.

For the initial deployment from up to four (4) to as many as twelve (12) BEBs, Option 1 (Ground Mounted Charge Stations) is recommended at the angled parking spots in the southern half of the yard (at transformer #1 on the attached site plan). The triangular space created at the head of each angled parking space should provide adequate area to install power blocks and depot stations, providing the most economical short term investment.

If deployment beyond the first twelve (12) BEBs becomes necessary, Option 2 (Gantry Structure Charge Stations) or 2A (Solar Canopy Structure Charge Stations) is recommended to minimize congestion at the ground level. Any newly installed structures and charging system can be designed to be relocated to a new site if the decision is made to move. The solar panels in Option 2A can also be moved and reinstalled at the new site at the optimum orientation to provide optimum efficiency.

ChargePoint equipment installed at the current site can be relocated if Yuba-Sutter Transit moves to a new site, but the electrical service equipment from PG&E may not be as mobile. Yuba-Sutter Transit should coordinate with PG&E to determine the level of investment that should be made to the electrical service equipment at the current site within the context that Yuba-Sutter Transit may relocate to a larger site in the future to accommodate both the conversion of the full fleet to BEB operation and anticipated growth to the bus fleet.

Figure 5-1: Site Plan

LEGEND

- PROPOSED NEW TRANSFORMER, PANEL & METER LOCATION
- GROUND MOUNTED CHARGE STATIONS (OPTION 1)
- PROPOSED CHARGER GANTRY LOCATION (OPTION 2)
- PROPOSED PV SOLAR CHARGING CANOPY (OPTION 2A)

NORTH

SITE PLAN

NOT TO SCALE

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Table 5-1. Cost Estimate

ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	SUB-TOTAL
Initial 4-Bus Installation					
1	PG&E DESIGN	LS	1	$50,000	$50,000
2	PG&E 1000 kVA TRANSFORMER & PAD	EA	1	$30,000	$30,000
3	1200A, 480/277V 3Ø, 4W SWITCHBOARD, WITH PG&E METER AND MAIN, DISTRIBUTION SECTION AND NEMA 3R ENCLOSURE, WITH CONCRETE PAD	EA	1	$270,000	$270,000
4	POWER DISTRIBUTION DUCTBANK	FT	75	$1,350	$101,250
5	CONCRETE CHARGING ISLAND	CY	10	$1,500	$15,000
6	CHARGING STATION INSTALLED & TESTED	EA	2	$40,000	$80,000
7	BOLLARDS	EA	8	$2,156	$17,248
8	PAVEMENT REMOVAL (6" NOMINAL)	CY	22	$350	$7,700
9	PAVEMENT REPLACEMENT (HMA TYPE A)	TN	10	$750	$7,500
10	MOBILIZATION @ 10%	LS	1	$57,870	$57,870
	TOTAL ESTIMATED CONSTRUCTION COST				**$636,568**
	ESTIMATED DESIGN FEE (18%)				**$114,582**
	CONTINGENCY (20%)				**$127,314**
	TOTAL ESTIMATED PROJECT COST				**$878,464**
Option 1 - 51 Bus Installation					
1	PG&E DESIGN	LS	1	$150,000	$150,000
2	PG&E 1000 kVA TRANSFORMER & PAD	EA	5	$30,000	$150,000
3	1200A, 480/277V 3Ø, 4W SWITCHBOARD, WITH PG&E METER AND MAIN, DISTRIBUTION SECTION AND NEMA 3R ENCLOSURE, WITH CONCRETE PAD	EA	5	$270,000	$1,350,000
4	POWER DISTRIBUTION DUCTBANK	FT	540	$1,350	$729,000
5	CONCRETE CHARGING ISLAND	CY	62	$1,500	$93,000
6	CHARGING STATION INSTALLED & TESTED	EA	26	$40,000	$1,040,000
7	BOLLARDS	EA	102	$2,156	$219,912
8	PAVEMENT REMOVAL (6" NOMINAL)	CY	120	$350	$42,000
9	PAVEMENT REPLACEMENT (HMA TYPE A)	TN	72	$750	$54,000
10	MOBILIZATION @ 10%	LS	1	$382,791	$382,791
	TOTAL ESTIMATED CONSTRUCTION COST				**$4,210,703**
	ESTIMATED DESIGN FEE (18%)				**$757,927**
	CONTINGENCY (20%)				**$842,141**
	TOTAL ESTIMATED PROJECT COST				**$5,810,770**
Option 2 - 51 Bus Installation With Overhead Gantry					
1	PG&E DESIGN	LS	1	$150,000	$150,000
2	PG&E 1000 kVA TRANSFORMER & PAD	EA	5	$30,000	$150,000
3	1200A, 480/277V 3Ø, 4W SWITCHBOARD, WITH PG&E METER AND MAIN, DISTRIBUTION SECTION AND NEMA 3R ENCLOSURE, WITH CONCRETE PAD	EA	5	$270,000	$1,350,000
4	POWER DISTRIBUTION DUCTBANK	FT	540	$1,350	$729,000
5	CONCRETE CHARGING ISLAND	CY	62	$1,500	$93,000

Table 5-1. Cost Estimate

ITEM NUMBER	DESCRIPTION	UNIT	ESTIMATED QUANTITY	UNIT PRICE	SUB-TOTAL
6	CHARGING STATION INSTALLED & TESTED	EA	26	$40,000	$1,040,000
7	BOLLARDS	EA	102	$2,156	$219,912
8	PAVEMENT REMOVAL (6" NOMINAL)	CY	120	$350	$42,000
9	PAVEMENT REPLACEMENT (HMA TYPE A)	TN	72	$750	$54,000
10	OVERHEAD GANTRY	EA	4	$61,000	$244,000
11	MOBILIZATION @ 10%	LS	1	$407,191	$407,191
	TOTAL ESTIMATED CONSTRUCTION COST				**$4,479,103**
	ESTIMATED DESIGN FEE (18%)				**$806,239**
	CONTINGENCY (20%)				**$895,821**
	TOTAL ESTIMATED PROJECT COST				**$6,181,162**
Option 2A - 51 Bus Installation With Canopy & Solar Panels					
1	PG&E DESIGN	LS	1	$150,000	$150,000
2	PG&E 1000 kVA TRANSFORMER & PAD	EA	5	$30,000	$150,000
3	1200A, 480/277V 3Ø, 4W SWITCHBOARD, WITH PG&E METER AND MAIN, DISTRIBUTION SECTION AND NEMA 3R ENCLOSURE, WITH CONCRETE PAD	EA	5	$270,000	$1,350,000
4	POWER DISTRIBUTION DUCTBANK	FT	540	$1,350	$729,000
5	CONCRETE CHARGING ISLAND	CY	62	$1,500	$93,000
6	CHARGING STATION INSTALLED & TESTED	EA	26	$40,000	$1,040,000
7	BOLLARDS	EA	102	$2,156	$219,912
8	PAVEMENT REMOVAL (6" NOMINAL)	CY	120	$350	$42,000
9	PAVEMENT REPLACEMENT (HMA TYPE A)	TN	72	$750	$54,000
10	CANOPY INCLUDES FOUNDATION	EA	4	$137,500	$550,000
11	SOLAR INSTALLED & TESTED	KW	1,000	$3,500	$3,500,000
12	MOBILIZATION @ 10%	LS	1	$787,791	$787,791
	TOTAL ESTIMATED CONSTRUCTION COST				**$8,665,703**
	ESTIMATED DESIGN FEE (18%)				**$1,559,827**
	CONTINGENCY (20%)				**$1,733,141**
	TOTAL ESTIMATED PROJECT COST				**$11,958,670**

Notes to Estimate
1. PG&E equipment may be discounted based on the PG&E distribution rate schedule used for the project.
2. Solar demand assumes 1000KW with utility power providing the balance plus full back-up in the event solar capacity is inadequate.
3. PG&E rates and discounts are based on anticipated usage. Failure to use expected demand may result in forfeiture of any discounts and alter rate schedule.
4. This estimate represents the probable cost of the installation for each option. It does not represent the life-cycle costs associated with each option.

Chapter 6 | Resources and References

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Appendix A |Route 1 Boarding, Alighting, and Passenger Load Data

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Table A-1: Route 1 Eastbound Boardings by Stop

Thursday, March 2, 2017

Boardings	Run Start Time																									
	6:40	6:24	6:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:50	16:20	16:50	17:20	17:50	Total
From previous run	0	0	4	8	7	5	5	5	1	2	2	0	0	3	4	6	6	2	4	2	3	2	4	1	2	
Sams Club (Walton Terminal)			3	3	8	7	6	2	3	8	2	2	9	5	3	1	2	1	4	0	1	2	0	3	2	77
Lassen & Walton			0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	2
Lassen & Tharp			0	0	0	0	0	0	1	0	0	0	0	0	1	1	0	0	0	7	0	0	0	0	0	10
Lasson & Klamath			0	0	0	0	0	0	0	0	1	1	2	1	0	0	0	0	0	10	0	0	0	0	0	15
Harter & Spirit Way (River Valley High)			0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0	0	1	1	0	14
Harter at Walmart		1	1	2	0	2	1	1	1	0	3	5	0	5	2	13	0	2	3	3	5	2	1	0	0	53
Buttehouse & Harter		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Buttehouse & Tharp		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Buttehouse & Stabler (Rite Aid)		1	2	1	1	0	2	0	1	1	0	0	5	2	1	2	2	0	2	2	1	2	0	0	0	26
Buttehouse & Civic Center		0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	5
Buttehouse & YC Mall		1	0	0	0	0	0	0	0	0	0	0	1	1	0	0	2	0	2	9	0	0	2	3	0	21
Gray & Ainsley		0	0	0	0	0	0	1	0	0	2	3	3	3	0	0	0	2	4	2	4	0	1	2	2	29
Gray & Louise (Kmart)		0	0	0	1	0	0	1	1	1	0	2	2	1	1	0	2	0	1	4	4	1	0	4	0	26
Forbes & Gray		3	0	0	0	0	0	0	0	0	0	1	1	1	0	7	0	0	0	0	0	2	0	2	0	17
Forbes & Clark (Library)		0	1	2	1	0	2	2	3	2	0	2	3	0	0	0	5	0	3	1	2	2	1	0	0	32
Forbes & Orange		0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3
Forbes & Almond		0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Plumas & Church		0	0	3	2	0	0	0	0	2	1	1	7	0	1	2	1	0	4	0	1	0	1	0	0	26
Alturas & Shasta		1	1	5	3	4	6	3	1	1	7	4	13	2	7	9	3	8	8	4	3	3	6	1	1	104
Yuba Co. Govt. Center (I & 9th)	1	0	2	1	1	3	1	1	2	3	1	1	2	2	6	0	5	2	7	3	0	2	9	2	0	57
H & 7th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
H & 4th	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	1	0	1	2	3	0	1	0	0	0	13
3rd & F	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	4
D & 2nd (Habitat for Humanity)	1	0	0	0	1	3	1	6	1	0	5	0	9	3	11	2	6	1	8	0	2	0	1	5	0	66
No. Beale & Feather River Blvd.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
No. Beale Transit Center (South Side)	1	2	0	2	0	0	0	0	2	3	4	1	0	0	3	0	0	2	0	1	2	0	0	0	2	25
No. Beale Rd. & Lowe	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
North Beale Rd & Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Beale & Hammonton-Smartville	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Beale & Albrecht	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
North Beale & Woodland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Yuba College																										
Totals	4	9	16	19	19	21	25	17	17	22	27	24	57	26	37	39	29	19	49	62	26	18	24	23	8	637

Table A-2: Route 1 Westbound Boardings by Stop

Thursday, March 2, 2017

	Run Start Time																									
Boardings	C 6:30	B 6:30	D 7:00	A 7:30	C 8:00	B 8:30	D 9:00	A 9:30	C 10:00	B 10:30	D 11:00	A 11:30	C 12:00	B 12:30	D 13:00	A 13:30	C 14:00	B 14:30	D 15:00	A 15:30	C 16:00	B 16:30	D 17:00	A 17:30	C 18:00	Total
from previous run	0	0	1	0	1	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	1	0	0	0	1	
Yuba College		1	3	4	0	0	0	6	8	4	9	2	9	5	6	2	13	8	13	8	13	4	5	2	1	130
North Beale & Woodland		3	2	0	1	1	0	1	1	0	0	0	0	5	0	2	1	3	2	1	1	1	0	0	0	25
North Beale & Albrecht		1	1	0	0	1	0	1	3	1	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0	18
North Beale & Alpine		3	3	1	0	2	1	0	0	4	0	1	0	0	4	1	0		0	1	0	0	0	0	0	21
North Beale & Lowe		0	0	1	0	4	2	1	1	5	7	2	2	2	3	4	5	1	1	0	0	0	0	0	4	45
No. Beale Transit Ctr. (Wal-Mart)		5	5	9	5	9	6	14	8	8	9	7	3	7	7	7	8	7	10	2	0	3	4	3	0	146
North Beale & Royal Motel		0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4
D & 2nd (Habitat for Humanity)		1	2	1	7	1	3	1	2	2	1	0	3	4	3	0	6	0	3	4	3	1	2	0	1	51
F & 2nd		0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
3rd & H Street (Rideout Hospital)		0	1	2	1	2	0	0	0	0	1	0	0	0	1	2	0	0	1	2	1	0	1	1	0	16
H & 7th		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
Yuba Co. Govt. Center (I & 9th)	0	0	8	6	2	0	1	3	5	4	6	1	2	0	3	4	0	0	10	2	2	11	2	0	0	72
Alturas & Shasta	1	0	2	0	4	1	0	0	1	0	1	0	0	0	0	0	2	4	1	0	1	1	1	0		20
Plumas & Church	0	1	0	2	0	0	0	2	0	1	2	0	0	0	4	0	3	0	0	0	5	0	0	0		20
Forbes & Almond	0	0	1	0	0	1	0	0	0	0	0	0	0	1	0	2	0	0	0	0	0	0	0	0		5
Forbes & Orange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Forbes & Clark	0	2	2	1	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0		8
Forbes & Gray	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2	0	0	0	0	0	0		4
Gray & Louise (Palisades Motel)	0	0	0	0	0	1	1	0	0	0	0	3	1	0	0	1	3	1	5	0	1	0	0	0		17
Gray & Ainsley	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0		3
Buttehouse & Target	0	0	1	0	1	1	0	0	0	0	0	0	0	2	0	1	0	0	0	1	0	1	5	0		13
Buttehouse & El Dorado	0	1	0	0	0	1	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	0	0		5
Stabler & Buttehouse (BelAir)	2	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1	0	2	0	0	0	0	1	0		9
Stabler & Starr	1	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0		3
Walton Terminal (Sam's Club)																										
Total	4	18	31	30	22	26	15	29	31	31	40	17	21	32	33	28	41	29	56	21	28	23	21	6	6	639

Table A-3: Route 1 Eastbound Alightings by Stop

Thursday, March 2, 2017

Alightings	Run Start Time																								Total	Total Boarding + Alighting
	6:40	6:24	6:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:50	16:20	16:50	17:20	17:50		
Sams Club (Walton Terminal)																											77
Lassen & Walton			0	0	0	0	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	5	7
Lassen & Tharp			0	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	3	13
Lasson & Klamath			0	0	1	2	3	2	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	11	26
Harter & Spirit Way (River Valley High)			2	10	8	3	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	26	40
Harter at Walmart	0	0	1	1	4	0	2	3	3	3	0	5	5	0	6	5	1	4	4	2	1	2	1	1		54	107
Buttehouse & Harter	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Buttehouse & Tharp	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Buttehouse & Stabler (Rite Aid)	0	0	0	0	0	0	0	0	0	0	3	0	2	3	11	0	0	0	10	0	2	0	0	0	0	31	59
Buttehouse & Civic Center	0	0	0	0	0	0	0	0	0	2	1	0	0	0	0	1	0	0	0	1	0	0	0	0	0	5	10
Buttehouse & YC Mall	0	0	0	0	1	0	0	1	3	0	2	2	1	0	0	0	0	0	3	1	0	1	0	1	0	16	37
Gray & Ainsley	0	2	0	0	0	0	0	0	1	0	0	1	3	0	0	0	0	0	1	2	0	0	0	0	0	10	39
Gray & Louise (Kmart)	0	1	0	1	0	0	1	0	2	0	0	0	1	1	1	1	0	1	1	0	0	0	4	0	0	15	41
Forbes & Gray	0	1	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3	20
Forbes & Clark (Library)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	6	0	0	0	0	0	0	8	40
Forbes & Orange	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1	0	0	2	3	0	0	1	0	0	0	9	12
Forbes & Almond	0	0	0	0	0	2	0	1	0	0	0	0	0	1	0	0	0	0	1	0	0	1	0	0	0	6	7
Plumas & Church	0	0	0	0	0	0	0	0	0	0	1	3	0	2	0	1	1	0	2	0	2	0	0	0	0	12	38
Alturas & Shasta	0	0	0	1	1	0	2	0	0	0	0	0	2	0	4	1	0	0	3	0	0	0	0	0	0	14	118
Yuba Co. Govt. Center (I & 9th)	0	1	3	2	0	3	0	2	1	0	2	4	8	2	3	5	3	3	6	2	3	4	4	1	4	66	123
H & 7th	0	0	0	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	4	5
H & 4th	0	0	0	2	0	0	0	2	0	0	2	0	2	0	1	3	1	1	0	1	0	0	0	0	0	15	28
3rd & F	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	4	8
D & 2nd (Habitat for Humanity)	0	1	0	2	3	0	3	0	1	2	1	3	5	3	1	1	6	1	4	1	2	0	0	0	0	40	106
No. Beale & Feather River Blvd.	2	0	0	0	0	2	3	2	1	2	0	1	6	0	5	4	2	1	0	5	4	4	4	5	1	54	55
No. Beale Transit Center (South Side)	1	0	0	0	2	2	3	3	2	4	6	3	10	0	9	3	5	8	16	5	3	3	3	3	0	94	119
No. Beale Rd. & Lowe	1	0	0	1	0	1	1	1	0	2	1	2	0	0	4	0	0	2	8	1	1	2	1	0	1	29	31
North Beale Rd & Park	0	0	0	0	0	1	1	1	0	2	0	0	2	0	2	0	6	0	4	2	0	0	2	2	1	26	26
North Beale & Hammonton-Smartville	0	1	2	0	0	1	0	0	1	0	2	0	1	0	1	3	0	1	1	1	0	0	0	6	0	21	21
North Beale & Albrecht	0	0	0	0	0	0	0	0	1	0	0	1	2	0	2	0	0	0	1	0	0	0	0	0	1	8	12
North Beale & Woodland	0	1	4	0	0	0	0	0	0	0	0	1	0	0	1	0	2	1	2	1	2	0	0	0	0	15	15
Yuba College		5	4	5	9	5	11	3	1	4	6	1	9	0	2	2	1	0	3	6	6	0	8	2		93	93
Totals	3	9	19	26	26	26	28	22	16	24	28	24	57	26	41	45	35	21	53	62	29	18	27	24	10	699	

Table A-4: Route 1 Westbound Alightings by Stop

Thursday, March 2, 2017

Alightings	Run Start Time 6:30	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	Total	Total Boarding +
Yuba College																											130
North Beale & Woodland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
North Beale & Albrecht	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	6	24
North Beale & Alpine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21
North Beale & Lowe	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	47
No. Beale Transit Ctr. (Wal-Mart)	3	8	2	0	3	0	4	0	2	2	0	0	6	2	4	3	2	6	2	0	0	0	0	2		49	195
North Beale & Royal Motel	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	6
D & 2nd (Habitat for Humanity)	2	1	0	1	3	1	3	3	2	9	3	2	6	3	5	2	4	5	0	2	2	1	0	0		60	111
F & 2nd	0	0	0	1	0	[redacted]	1	0	2	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	7	9
3rd & H Street (Rideout Hospital)	0	0	4	1	3	0	0	0	0	1	0	0	4	1	0	3	0	2	0	0	0	0	0	0		19	35
H & 7th	0	0	8	0	0	0	0	0	5	3	0	0	0	2	1	1	0	1	1	0	1	0	0	2		25	26
Yuba Co. Govt. Center (I & 9th)	0	2	0	1	1	5	1	3	0	0	1	0	0	0	0	0	1	4	0	3	3	0	2	3		30	102
Alturas & Shasta	0	5	2	3	1	3	2	4	3	4	3	9	1	4	4	8	5	14	3	0	5	2	0	0		85	105
Plumas & Church	0	2	0	0	0	0	3	2	3	1	1	2	0	6	4	1	1	0	0	1	0	4	0			31	51
Forbes & Almond	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	2	1	0	1	0			6	11
Forbes & Orange	0	1	0	2	0	0	0	5	4	0	0	0	0	0	0	0	0	3	0	1	0	3	0			19	19
Forbes & Clark	0	1	0	2	1	1	0	3	0	0	1	0	0	0	0	0	2	3	1	0	0	0	0			15	23
Forbes & Gray	0	1	6	1	1	1	0	0	1	3	2	0	0	0	0	1	2	0	1	2	1	2	0	1		26	30
Gray & Louise (Palisades Motel)	0	1	0	4	6	1	3	1	0	0	3	1	0	0	2	2	5	0	5	1	2	0	1	0		35	52
Gray & Ainsley	0	1	0	0	1	1	0	0	6	0	2	3	0	0	3	0	0	1	1	3	0	6	0	1		29	32
Buttehouse & Target	0	0	0	0	0	2	0	0	0	0	1	0	0	1	1	0	6	0	3	0	5	0	1	0		20	33
Buttehouse & El Dorado	0	0	0	0	0	1	1	0	1	0	0	1	3	0	0	2	1	0	0	0	0	0	0	0		10	16
Stabler & Buttehouse (BelAir)	0	0	0	2	0	0	0	7	2	1	1	1	0	2	0	0	0	4	1	0	3	1	1	0		26	35
Stabler & Starr	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0		5	8
Walton Terminal (Sam's Club)	0	1	2	0	2	4	1	2	0	3	9	1	4	2	0	2	2	4	3	3	5	2	6	2		60	60
Total	0	10	25	25	21	22	14	27	29	31	38	15	20	26	24	27	37	27	53	19	25	22	19	6	7	567	1206

Table A-5: Route 1 Eastbound Passenger Load

Thursday, March 2, 2017

	Run Start Time																								Average	Peak
	6:40	6:24	6:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:50	16:20	16:50	17:20	17:50	
Sams Club (Walton Terminal)			7	11	15	12	11	7	4	10	4	2	9	8	7	7	8	3	8	2	4	4	4	4	4	6.7	15
Lassen & Walton			7	11	15	12	11	7	4	10	4	2	9	3	7	8	9	3	8	2	4	4	4	4	4	6.6	15
Lassen & Tharp			7	11	15	12	11	6	5	10	4	2	9	3	7	9	9	3	8	9	3	4	4	4	4	6.9	15
Lasson & Klamath			7	11	14	10	8	4	5	10	5	3	11	3	7	9	9	3	7	19	2	4	4	4	4	7.1	19
Harter & Spirit Way (River Valley High)			5	1	6	8	8	4	5	10	5	3	10	3	6	9	9	3	7	29	2	4	5	5	4	6.6	29
Harter at Walmart		1	6	2	5	6	9	3	3	7	5	8	5	3	8	16	4	4	6	28	5	5	4	4	3	6.3	28
Buttehouse & Harter		1	6	2	5	6	9	3	2	7	5	8	5	3	9	16	4	4	6	28	5	5	4	4	3	6.3	28
Buttehouse & Tharp		1	6	2	5	6	9	3	2	7	4	8	5	3	9	16	4	4	6	28	5	5	4	4	3	6.2	28
Buttehouse & Stabler (Rite Aid)		2	8	3	6	6	11	3	3	8	4	5	10	3	7	7	6	4	8	20	6	5	4	4	3	6.1	20
Buttehouse & Civic Center		2	9	3	6	6	12	3	3	9	2	4	10	3	7	7	5	4	8	20	6	5	5	4	3	6.1	20
Buttehouse & YC Mall		3	9	3	6	5	12	3	2	6	2	2	9	3	7	7	7	4	10	26	5	5	6	7	2	6.3	26
Gray & Ainsley		3	7	3	6	5	12	4	1	6	4	5	11	3	7	7	7	6	14	27	7	5	7	9	4	7.1	27
Gray & Louise (Kmart)		3	6	3	6	5	12	4	2	5	4	7	13	3	7	6	8	6	14	30	11	6	7	9	4	7.5	30
Forbes & Gray		6	5	2	6	5	12	4	2	5	4	8	14	3	7	13	8	6	14	30	11	8	7	11	4	8.1	30
Forbes & Clark (Library)		6	6	4	7	5	14	6	5	7	3	10	17	3	7	12	13	6	17	25	13	10	8	11	4	9.1	25
Forbes & Orange		6	7	4	7	6	14	6	5	7	3	9	17	3	6	11	13	6	15	23	13	10	7	11	4	8.9	23
Forbes & Almond		6	7	4	7	6	12	6	5	7	3	9	17	3	5	11	13	6	15	22	13	10	6	11	4	8.7	22
Church & Plumas		6	7	7	9	6	12	6	5	9	4	9	21	3	4	13	13	5	19	20	14	8	7	11	4	9.3	21
Alturas & Shasta		7	8	12	11	9	18	7	6	10	11	13	34	3	11	18	15	13	27	21	17	11	13	12	5	13.0	34
Yuba Co. Govt. Center (I & 9th)	1	6	7	11	12	9	19	6	7	13	10	10	28	3	14	13	17	12	28	22	14	9	18	13	1	12.1	28
H & 7th	1	6	7	9	12	9	18	6	7	13	10	10	28	3	14	13	17	12	28	21	14	9	18	13	2	12.0	28
H & 4th	1	6	7	7	12	9	23	4	7	13	8	10	26	3	13	11	16	12	30	23	14	10	18	13	2	11.9	30
3rd & F	2	6	7	7	13	9	23	4	6	13	7	10	26	3	13	11	16	11	31	22	14	11	18	13	2	11.9	31
D & 2nd (Habitat for Humanity)	3	5	7	5	11	12	21	10	6	11	11	7	30	3	23	12	16	11	35	21	14	11	19	16	2	13.0	35
No. Beale & Feather River Blvd.	1	5	7	5	11	10	18	8	5	9	11	6	24	3	18	8	14	10	35	17	10	7	15	13	1	10.8	35
No. Beale Transit Center (South Side)	1	7	7	7	9	8	15	5	5	8	9	4	14	3	12	5	9	4	19	13	9	4	12	10	3	8.1	19
No. Beale Rd. & Lowe	1	7	7	6	9	7	14	4	5	6	9	3	14	3	8	5	9	2	11	12	8	2	11	10	2	7.0	14
North Beale Rd & Park	1	7	7	6	9	6	13	3	5	4	9	3	12	3	6	5	3	2	7	10	8	2	9	8	1	6.0	13
North Beale & Hammonton-Smartville	1	6	5	6	9	5	13	3	4	4	7	3	11	3	5	2	3	1	6	9	8	2	9	2	1	5.1	13
North Beale & Albrecht	1	6	9	6	9	5	13	3	3	4	7	2	9	3	3	2	3	1	5	9	8	2	9	2	0	5.0	13
North Beale & Woodland	1	5	5	6	9	5	13	3	3	4	7	1	9	3	2	2	1	0	3	8	6	2	9	2	0	4.4	13
Yuba College	1	0	1	1	0	0	2	0	2	0	1	0	0	3	0	0	0	0	0	2	0	2	1	0	0	0.6	3
Average on Board Per Hour:	1.2	4.6	6.7	5.7	8.8	7.2	13.2	4.6	4.2	7.9	5.8	5.8	14.6	3.2	8.3	9.1	9.0	5.3	14.2	18.7	8.5	6.0	8.6	7.8	2.7		

Average on Board For the Entire Day: 7.8 **Maximum Passengers On Board at One Time:** 35

Table A-6: Route 1 Westbound Passenger Load

Thursday, March 2, 2017

	Run Start Time																										
On Board	**6:30**	**6:30**	**7:00**	**7:30**	**8:00**	**8:30**	**9:00**	**9:30**	**10:00**	**10:30**	**11:00**	**11:30**	**12:00**	**12:30**	**13:00**	**13:30**	**14:00**	**14:30**	**15:00**	**15:30**	**16:00**	**16:30**	**17:00**	**17:30**	**18:00**	**Average**	**Peak**
Yuba College		1	4	4	1	1	0	6	8	4	9	2	10	9	6	3	13	8	13	8	14	4	5	2	2	6	14
North Beale & Woodland		4	6	4	2	2	0	7	9	4	9	2	10	14	8	5	14	11	15	9	15	5	5	2	2	7	15
North Beale & Albrecht		5	7	4	1	3	0	8	12	5	9	2	10	12	6	5	14	8	25	9	15	5	5	2	2	7	25
North Beale & Alpine		8	10	5	1	5	1	8	12	9	9	3	10	12	10	6	14	8	25	10	15	5	5	2	2	8	25
North Beale & Lowe		8	10	6	1	9	3	9	13	13	16	5	12	14	13	9	19	9	26	10	15	5	5	2	6	10	26
No. Beale Transit Ctr. (Wal-Mart)		10	9	13	6	15	9	19	21	19	23	12	15	15	18	12	24	14	30	10	15	8	9	5	4	14	30
North Beale & Royal Motel		10	9	16	7	15	9	19	20	18	23	12	15	15	18	12	24	14	30	10	15	8	9	5	4	14	30
D & 2nd (Habitat for Humanity)		9	10	17	13	13	11	17	19	18	15	9	16	13	18	7	28	10	28	14	16	7	10	5	5	14	28
F & 2nd		9	10	17	12	13	11	16	20	16	15	9	16	13	19	7	28	10	27	13	15	7	10	5	5	13	28
3rd & H Street (Rideout Hospital)		9	11	15	12	12	11	16	20	16	15	9	16	9	19	9	25	10	26	15	16	7	11	6	5	13	26
H & 7th		9	11	7	12	12	11	16	20	11	12	9	16	9	17	8	24	10	25	14	16	7	11	6	3	12	25
Yuba Co. Govt. Center (I & 9th)	0	9	17	13	13	11	7	18	22	15	18	9	18	9	20	12	24	9	31	16	15	15	13	4	0	14	31
Alturas & Shasta	1	9	14	11	14	11	4	16	19	12	15	6	9	8	16	8	18	8	18	13	16	11	12	4	0	11	19
Plumas & Church	1	10	12	13	14	11	4	15	17	10	16	5	7	8	14	4	20	7	18	13	20	11	8	4		11	20
Forbes & Almond	1	10	13	13	14	12	4	15	17	9	16	5	7	8	14	6	19	7	18	11	19	11	8	4		11	19
Forbes & Orange	1	10	12	13	12	12	4	15	12	5	16	5	7	8	14	6	19	7	15	11	18	11	5	4		10	19
Forbes & Clark	1	11	14	12	11	12	4	12	12	5	15	5	7	8	15	6	19	5	12	10	19	11	5	4		10	19
Forbes & Gray	1	10	8	11	10	11	4	12	11	2	14	5	8	8	15	5	17	7	11	8	18	9	5	3		9	18
Gray & Louise (Palisades Motel)	1	9	8	7	4	11	2	11	11	2	14	7	9	8	13	4	15	8	11	7	17	9	4	3		8	17
Gray & Ainsley	1	8	8	7	3	10	2	11	5	2	13	5	9	8	10	5	15	7	10	4	17	3	4	2		7	17
Buttehouse & Target	1	8	9	7	4	9	2	11	5	2	12	5	9	9	9	6	9	7	7	5	12	4	8	2		7	12
Buttehouse & El Dorado	1	9	9	7	4	9	2	11	4	3	13	4	6	9	9	4	8	8	7	5	12	4	8	2		7	13
Stabler & Buttehouse (BelAir)	3	9	9	5	4	9	2	4	3	3	12	3	6	8	9	5	8	6	6	5	9	3	8	2		6	12
Stabler & Starr	4	9	9	5	4	9	2	4	2	3	13	3	6	8	9	4	6	6	6	5	9	3	8	2		6	13
Walton Terminal (Sam's Club)	4	8	7	5	2	5	1	2	2	0	4	2	2	6	9	2	4	2	3	2	4	1	2	0		3	9
Average on Board Per Hour:	2	8	10	9	7	10	4	12	13	8	14	6	10	10	13	6	17	8	18	9	15	7	7	3	3		

Average on Board For the Entire Day: 9

Maximum Passengers On Board at Or 31

Table A-7: Route 1 Eastbound Boardings by Stop

Tuesday, October 4, 2016

	Run Start Time																									
Boardings	6:40	6:24	6:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:50	16:20	16:50	17:20	17:50	Total
from previous run	0	8	3	17	3	4	5	7	3	6	6	5	2	6	4	8	4	5	3	2	2	1	3	0	3	
Sams Club (Walton Terminal)			6	9	6	4	10	4	6	7	4	4	7	4	2	0	1	4	2	2	8	4	1	2	1	98
Lassen & Walton			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	1	0	0	0	0	15
Lassen & Tharp			0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2
Lassen & Klamath			0	0	0	0	1	1	1	0	0	0	0	0	1	0	1	0	0	0	1	0	2	0	0	8
Harter & Spirit Way (River Valley High)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	20	1	0	0	0	0	23
Harter at Walmart		2	1	1	2	1	0	1	2	6	5	1	6	8	2	2	4	3	1	6	7	8	3	0	1	73
Buttehouse & Harter		0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2
Buttehouse & Tharp		0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	2
Buttehouse & Stabler (Rite Aid)	1	6	0	1	1	3	0	1	2	0	0	1	4	1	1	1	2	5	1	1	0	0	1	1		34
Buttehouse & Civic Center		0	0	2	0	0	0	2	0	2	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	7
Buttehouse & YC Mall		0	2	0	0	0	0	0	1	4	6	1	4	2	2	0	1	0	5	5	4	0	0	0	0	37
Gray & Ainsley	2	0	0	1	0	0	1	2	0	0	8	0	4	2	2	1	2	2	0	2	1	0	2	4		36
Gray & Louise (Kmart)		0	2	0	0	0	0	1	2	1	1	2	1	2	1	3	4	2	2	0	1	0	1	2	0	28
Forbes & Gray		0	0	0	0	1	0	2	2	0	1	0	0	0	5	8	5	0	0	0	1	0	0	1	0	26
Forbes & Clark (Library)		0	2	2	3	0	0	0	1	0	0	5	4	2	3	1	2	2	0	2	0	1	0	0	0	30
Forbes & Orange		0	1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	0	0	0	0	0	5
Forbes & Almond		0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	3
Plumas & Church		0	0	1	0	0	1	0	3	0	7	4	1	0	0	2	0	1	1	1	2	0	0	1	2	27
Alturas & Shasta		8	6	2	8	3	2	3	8	9	11	6	5	13	11	6	2	13	5	7	2	1	5	4	2	134
Yuba Co. Govt. Center (I & 9th)	0	0	2	1	0	4	1	3	1	3	0	0	6	2	1	2	2	0	4	4	6	2	6	1	1	52
H & 7th	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H & 4th	0	0	0	0	0	0	0	2	0	2	0	1	3	0	0	1	0	2	0	0	0	0	0	1	0	12
3rd & F	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	4
D & 2nd (Habitat for Humanity)	0	3	1	1	0	0	3	2	0	0	4	0	2	11	9	1	9	8	7	1	0	0	2	2	3	69
No. Beale & Feather River Blvd.	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4
No. Beale Transit Center (South Side)	0	0	0	1	1	1	1	0	6	5	0	0	0	3	5	0	0	4	4	0	1	0	1	0	4	37
No. Beale Rd. & Lowe	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	3
North Beale Rd & Park	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	1	0	3
North Beale & Hammonton-Smartville	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	0	4
North Beale & Albrecht	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
North Beale & Woodland	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Yuba College																										
Totals	2	8	29	19	25	17	23	20	38	40	43	32	40	59	48	32	35	49	39	66	40	17	21	18	19	779

Table A-8: Route 1 Westbound Boardings by Stop

Tuesday, October 4, 2016

	Run Start Time																									
Boardings	C 6:30	B 6:30	D 7:00	A 7:30	C 8:00	B 8:30	D 9:00	A 9:30	C 10:00	B 10:30	D 11:00	A 11:30	C 12:00	B 12:30	D 13:00	A 13:30	C 14:00	B 14:30	D 15:00	A 15:30	C 16:00	B 16:30	D 17:00	A 17:30	C 18:00	Total
from previous run	0	0	1	0	0	0	1	0	0	0	0	0	1	0	3	0	1	0	0	2	0	3	0	0	0	
Yuba College		4	1	5	4	0	2	6	10	1	11	8	10	10	11	4	10	6	8	7	16	0	6	2	3	145
North Beale & Woodland		2	3	2	1	3	6	1	3	0	0	1	0	9	0	0	0	6	1	0	0	1	1	0	0	40
North Beale & Albrecht		4	0	0	0	1	0	0	0	0	2	0	0	0	0	1	0	0	0	1	0	1	0	0	0	10
North Beale & Alpine		3	1	0	0	2	0	2	0	0	0	1	2	2	0	0	1	1	0	0	0	0	2	0	2	19
North Beale & Lowe		0	1	1	2	4	2	1	2	2	2	3	0	1	7	1	1	3	2	0	1	0	0	2	0	38
No. Beale Transit Ctr. (Wal-Mart)		9	6	6	4	13	6	12	15	9	7	13	11	13	15	4	5	5	12	3	10	8	9	0	5	200
North Beale & Royal Motel		0	0	0	2	0	0	3	1	0	0	0	1	0	0	0	1	0	0	0	1	0	0	1	0	10
D & 2nd (Habitat for Humanity)		2	0	1	2	0	1	2	8	7	0	3	4	5	4	0	7	3	4	3	5	0	5	0	0	66
F & 2nd		0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	2
H & 4th (Ride out Loading Zone)		0	3	2	2	3	1	2	1	6	0	1	1	3	2	0	0	1	0	2	2	1	0	2	0	35
H & 7th		0	0	0	1	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	6
Yuba Co. Govt. Center (I & 9th)	4	2	10	2	0	2	5	3	2	3	5	5	5	0	1	1	0	1	6	1	6	0	2	1	0	67
Alturas & Shasta	0	1	4	0	4	0	2	14	0	0	0	1	2	1	0	1	0	0	0	1	0	0	0	0		31
Plumas & Church	0	1	0	0	2	0	0	1	2	0	0	1	2	1	0	0	1	0	0	0	0	1	0	0		12
Forbes & Almond	0	3	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	2	0	0	0	0	0	0		6
Forbes & Orange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0		2
Forbes & Clark	0	4	1	0	0	0	1	0	2	0	0	0	0	3	0	0	0	0	2	0	2	0	0	1		16
Forbes & Gray	0	0	0	0	0	1	0	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0	0	0		5
Gray & Louise (Palisades Motel)	0	0	0	0	0	2	0	3	0	1	0	0	1	0	1	2	1	0	0	0	0	2	0	0		13
Gray & Ainsley	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	2	0	0	3	0		8
Buttehouse & Target	0	0	1	0	0	0	1	0	2	0	2	0	5	0	0	3	0	0	3	0	0	0	0	2		19
Buttehouse & El Dorado	0	2	0	0	0	1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0		5
Stabler & Buttehouse (BelAir)	2	0	4	2	1	0	0	0	1	2	1	3	0	0	0	2	1	0	0	0	2	0	0	0		21
Stabler & Starr	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Walton Terminal (Sam's Club)																										
Total	6	37	35	21	25	33	28	50	50	31	30	41	44	51	48	20	28	29	40	20	46	14	28	11	10	776

Table A-9: Route 1 Eastbound Alightings by Stop

Tuesday, October 4, 2016

Alightings	Run Start Time																								Total	Total Boarding + Alighting
	6:40	8:24	8:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:50	16:20	16:50	17:20	17:50		
Sams Club (Walton Terminal)																											98
Lassen & Walton			0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	16
Lassen & Tharp			0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3
Lasson & Klamath			0	0	1	1	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	5	13
Harter & Spirit Way (River Valley High)			1	2	3	4	2	1	1	0	0	0	1	1	0	2	0	0	0	0	0	0	0	0	0	18	41
Harter at Walmart	0		1	3	0	1	5	6	6	6	5	7	2	6	4	5	2	5	1	3	5	1	3	1	3	81	154
Buttehouse & Harter	0		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Buttehouse & Tharp	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	3
Buttehouse & Stabler (Rite Aid)	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	2	0	0	0	8	1	7	0	0	0	21	55
Buttehouse & Civic Center	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	1	1	0	0	0	0	0	4	11
Buttehouse & YC Mall	0	0	0	0	0	0	0	1	5	2	1	2	1	1	1	0	2	0	7	3	0	1	0	0	0	27	64
Gray & Ainsley	0	2	0	0	0	3	0	0	3	1	0	2	2	0	0	0	0	0	1	1	0	2	0	0	0	17	53
Gray & Louise (Kmart)	0	0	0	1	1	0	[redacted]	0	2	1	1	0	2	3	0	[redacted]	0	1	2	0	0	0	0	0	0	14	42
Forbes & Gray	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	28
Forbes & Clark (Library)	0	0	1	2	0	0	0	2	0	1	1	4	3	1	0	2	2	0	7	2	1	0	0	0	0	29	59
Forbes & Orange	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	7
Forbes & Almond	0	0	0	0	0	2	1	0	0	0	0	0	0	1	0	0	0	0	2	1	0	0	0	0	0	7	10
Plumas & Church	0	0	0	0	0	0	0	1	2	1	2	1	2	1	1	4	3	0	0	2	0	0	0	0	0	20	47
Alturas & Shasta	0	1	0	1	0	0	1	3	0	6	4	3	4	4	3	1	0	1	2	2	0	0	0	0	0	36	170
Yuba Co. Govt. Center (I & 9th)	0	0	10	0	1	4	1	1	5	3	8	2	2	6	7	5	2	8	5	3	8	3	2	1	5	92	144
H & 7th	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	3
H & 4th	0	2	0	1	3	0	0	0	0	3	0	3	0	1	0	0	1	2	2	0	1	0	1	0	0	20	32
3rd & F	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	5
D & 2nd (Habitat for Humanity)	0	0	0	2	2	0	1	4	2	4	7	3	1	2	1	1	4	1	2	0	1	0	2	3		43	112
No. Beale & Feather River Blvd.	1	0	1	0	4	1	1	1	0	4	4	0	0	13	3	1	3	12	5	2	7	1	11	5	0	80	84
No. Beale Transit Center (South Side)	0	2	2	2	2	1	1	2	2	4	7	4	10	11	11	9	12	4	12	8	2	2	0	3	2	115	152
No. Beale Rd. & Lowe	0	0	0	0	0	1	0	3	4	1	0	0	3	3	1	0	4	3	2	1	1	0	1	0	0	28	31
North Beale Rd & Park	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	3	0	2	2	5	1	0	1	0	0	18	21
North Beale & Hammonton-Smartville	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	4	0	1	0	5	0	0	1	0	3	16	20
North Beale & Albrecht	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	1	3	0	1	1	0	0	0	2	3	13	13
North Beale & Woodland	0	0	0	0	0	0	0	0	5	2	2	1	0	3	3	0	0	2	1	2	0	1	0	1	0	23	24
Yuba College	0	4	11	8	6	4	12	7	4	6	5	4	4	2	7	2	2	2	7	2	4	1	0	2	2	110	110
Totals	1	8	32	17	27	21	29	26	41	44	48	37	39	65	51	40	39	53	42	65	42	18	24	18	21	848	848

Table A-10: Route 1 Westbound Alightings by Stop

Tuesday, October 4, 2016

Alightings	Run Start Time 6:30	6:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00	Total	Total Boarding + Alighting
Yuba College																											145
North Beale & Woodland	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	3	43
North Beale & Albrecht	0	0	0	1	0	0	0	0	0	0	0	0	0	2	0	0	0	3	0	0	0	0	0	0	0	6	16
North Beale & Alpine	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	3	22
North Beale & Lowe	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	1	0	0	1	0	0	0	0	5	43
No. Beale Transit Ctr. (Wal-Mart)	7	4	2	0	7	3	3	3	0	1	3	2	6	3	2	2	2	3	4	4	3	3	1	2	70	270
North Beale & Royal Motel	0	0	1	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	3	0	0	8	18
D & 2nd (Habitat for Humanity)	5	2	2	0	1	5	6	4	1	3	3	7	3	11	5	1	6	2	0	6	1	2	0	2	78	144
F & 2nd	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	4
H & 4th (Rideout Loading Zone)	0	0	0	0	3	2	1	3	1	0	1	0	1	0	1	1	2	0	1	0	0	0	1	0	18	53
H & 7th	0	0	2	2	0	0	2	0	0	0	0	0	0	0	0	1	1	2	0	0	0	0	0	0	10	16
Yuba Co. Govt. Center (I & 9th)	0	0	2	2	4	0	1	2	1	3	1	1	0	3	0	1	0	1	0	4	0	0	1	2	29	96
Alturas & Shasta	1	3	4	4	0	3	3	8	8	6	7	6	5	4	8	0	0	4	11	2	7	3	3	1	4	105	136
Plumas & Church	1	0	1	1	1	1	0	1	7	2	0	0	2	2	5	1	1	1	1	3	3	0	2	1		37	49
Forbes & Almond	0	0	0	0	0	0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	0	1	0		5	11
Forbes & Orange	0	0	4	0	0	0	0	0	2	0	0	3	0	0	0	0	1	0	1	0	0	0	0	0		11	13
Forbes & Clark	0	0	1	0	1	2	1	2	3	2	0	7	3	0	0	2	1	2	1	2	1	2	2	0		35	51
Forbes & Gray	0	2	4	0	0	0	1	0	0	0	1	0	0	0	0	0	2	0	2	1	1	3	0	0		17	22
Gray & Louise (Palisades Motel)	0	1	5	0	2	0	4	1	2	2	0	4	2	6	0	0	1	0	3	4	1	2	0	0		40	53
Gray & Ainsley	0	0	0	0	3	0	1	0	2	0	0	2	5	1	2	0	0	2	1	0	1	0	6	0		26	34
Buttehouse & Target	0	0	0	1	0	0	3	12	1	5	3	0	4	0	0	3	3	0	0	2	1	0	0	0		38	57
Buttehouse & El Dorado	0	0	0	1	0	0	0	1	1	0	0	0	1	1	1	0	0	0	2	0	4	0	0	0		12	17
Stabler & Buttehouse (BelAir)	1	2	2	1	0	1	2	1	3	1	3	4	0	3	1	0	1	2	0	0	6	1	0	1		36	57
Stabler & Starr	0	0	0	0	0	3	0	2	0	0	0	0	1	1	0	0	0	0	0	1	0	0	0	2		10	10
Walton Terminal (Sam's Club)	0	0	6	0	4	1	1	3	4	3	3	1	8	7	14	1	2	0	8	1	2	1	3	1		74	74
Total	3	20	33	17	16	26	25	44	47	28	28	35	43	44	48	15	19	26	38	21	44	17	25	9	10	678	

Table A-11: Route 1 Eastbound Passenger Load

Tuesday, October 4, 2016

	Run Start Time																									
	6:40	6:24	6:50	7:20	7:50	8:20	8:50	9:20	9:50	10:20	10:50	11:20	11:50	12:20	12:50	13:20	13:50	14:20	14:50	15:20	15:50	16:20	16:50	17:20	17:50	Average	Peak
Sams Club (Walton Terminal)			9	26	9	8	16	11	9	13	10	9	9	10	6	8	5	9	5	4	10	5	4	2	4	8.7	26
Lassen & Walton			9	26	9	8	16	11	9	13	10	9	9	9	6	8	5	9	5	18	11	5	4	2	4	9.3	26
Lassen & Tharp			9	26	9	9	16	10	9	13	10	9	9	9	6	9	5	9	5	18	11	5	4	2	4	9.4	26
Lasson & Klamath			9	26	8	8	16	11	10	12	10	9	8	9	7	9	6	9	5	18	12	5	6	2	4	9.5	26
Harter & Spirit Way (River Valley High)			8	24	5	4	14	10	9	12	10	9	7	8	7	7	8	9	5	38	13	5	6	2	4	9.7	38
Harter at Walmart		2	8	22	7	4	9	5	5	12	10	3	11	10	5	4	10	7	5	41	15	12	6	1	2	9.0	41
Buttehouse & Harter		2	8	22	7	4	10	5	5	12	10	3	11	10	6	4	10	7	5	41	15	12	6	1	2	9.1	41
Buttehouse & Tharp		2	8	22	7	4	10	5	5	12	10	3	11	10	7	4	10	7	5	40	16	12	6	1	2	9.1	40
Buttehouse & Stabler (Rite Aid)		3	14	22	8	5	13	5	5	14	10	3	11	14	8	4	9	9	10	33	16	5	6	2	3	9.7	33
Buttehouse & Civic Center		3	14	22	10	5	13	5	7	14	12	3	11	12	8	4	9	10	9	32	16	5	6	2	3	9.8	32
Buttehouse & YC Mall		3	16	22	10	5	13	5	7	13	16	3	13	13	9	3	10	8	14	30	17	5	5	2	3	10.2	30
Gray & Ainsley		5	14	22	11	5	10	6	9	10	15	11	11	15	11	5	11	10	16	29	18	6	3	4	7	11.0	29
Gray & Louise (Kmart)		5	16	22	10	4	10	7	11	9	15	12	12	15	9	8	15	12	17	27	19	6	4	6	7	11.6	27
Forbes & Gray		5	15	22	9	5	10	9	13	9	16	12	12	15	14	16	20	12	17	27	20	6	4	7	7	12.6	27
Forbes & Clark (Library)		5	17	23	10	5	10	9	12	9	15	16	12	14	16	17	20	12	17	22	18	6	4	7	7	12.6	23
Forbes & Orange		5	18	23	10	5	10	9	12	9	15	16	12	14	16	18	20	14	17	23	17	6	3	7	7	12.8	23
Forbes & Almond		5	18	24	10	5	8	8	12	10	15	16	12	14	16	17	20	14	18	21	16	6	3	7	7	12.6	24
Church & Plumas		5	18	25	10	5	9	8	14	8	21	18	12	12	15	18	16	12	19	22	16	6	3	8	9	12.9	25
Alturas & Shasta		5	23	27	17	8	11	10	19	17	26	20	14	21	22	21	17	25	23	27	16	7	8	12	11	17.0	27
Yuba Co. Govt. Center (I & 9th)	0	5	15	28	16	8	11	12	15	17	18	18	18	17	16	18	17	17	22	28	14	6	12	12	7	14.7	28
H & 7th	0	5	15	28	16	8	11	11	15	17	17	18	18	17	16	18	17	16	22	28	14	6	12	12	7	14.6	28
H & 4th	0	3	15	27	13	8	11	13	15	16	17	16	21	16	16	19	16	16	20	28	13	6	11	13	7	14.2	28
3rd & F	1	3	15	27	14	9	11	13	15	16	17	16	21	16	16	19	16	17	20	28	13	6	11	12	7	14.4	28
D & 2nd (Habitat for Humanity)	1	6	16	28	12	7	14	14	11	14	17	9	20	26	23	19	24	21	26	27	13	5	13	12	7	15.4	28
No. Beale & Feather River Blvd.	0	6	15	28	8	6	13	13	11	10	13	9	20	17	20	18	21	9	21	25	6	4	2	7	7	12.4	28
No. Beale Transit Center (South Side)	0	4	13	27	7	6	13	11	15	11	6	5	10	9	14	9	9	9	13	17	5	2	3	4	9	9.2	27
No. Beale Rd. & Lowe	0	4	13	27	7	5	13	8	11	10	8	5	7	6	13	9	5	6	11	16	5	2	2	4	9	8.2	27
North Beale Rd & Park	0	4	13	27	7	5	13	8	11	10	8	5	7	5	10	6	5	4	9	13	4	2	1	5	9	7.6	27
North Beale & Hammonton-Smartville	0	4	13	27	7	4	13	8	10	10	8	5	7	5	11	3	5	5	9	8	4	2	0	5	6	7.2	27
North Beale & Albrecht	0	4	13	27	7	4	12	8	9	10	8	5	7	5	11	2	2	5	8	7	4	2	0	3	3	6.6	27
North Beale & Woodland	1	4	13	27	7	4	12	8	4	8	6	4	7	2	8	2	2	3	7	5	4	1	0	2	3	5.8	27
Yuba College	1	0	0	19	1	0	0	1	0	2	1	0	3	0	1	0	0	1	0	3	0	0	0	0	1	1.4	19
Average on Board Per Hour:	0	4	13	25	9	6	12	9	10	12	13	9	12	12	12	10	11	10	13	23	12	5	5	5	6		

Average on Board For the Entire Day: 11

Maximum Passengers On Board at One Time: 41

Table A-12: Route 1 Westbound Passenger Load

Tuesday, October 4, 2016

On Board	Run Start Time																									Average	Peak
	6:30	8:30	7:00	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	13:00	13:30	14:00	14:30	15:00	15:30	16:00	16:30	17:00	17:30	18:00		
Yuba College		4	2	5	4	0	3	6	10	1	11	8	11	10	14	4	11	6	8	9	16	3	6	2	3	7	16
North Beale & Woodland		6	5	7	5	3	9	7	12	1	11	9	11	19	14	4	11	12	9	9	14	4	7	2	3	8	19
North Beale & Albrecht		10	5	7	4	4	9	7	12	1	13	9	11	17	14	5	11	9	9	10	14	5	7	2	3	8	17
North Beale & Alpine		13	6	7	4	6	9	9	12	1	12	10	13	18	14	5	11	10	9	10	14	5	9	2	5	9	18
North Beale & Lowe		13	7	8	6	10	11	10	14	3	14	13	13	16	21	6	12	12	11	10	14	5	9	4	5	10	21
No. Beale Transit Ctr. (Wal-Mart)		15	9	12	10	16	14	19	26	12	20	23	22	23	33	8	15	15	20	9	20	10	15	3	8	16	33
North Beale & Royal Motel		15	9	11	12	16	14	22	27	11	20	23	22	22	33	8	16	15	20	9	21	9	12	4	8	16	33
D & 2nd (Habitat for Humanity)		12	7	10	14	15	10	18	31	17	17	23	19	24	26	3	22	12	22	12	20	8	15	4	6	15	31
F & 2nd		12	7	10	14	15	11	18	30	17	17	23	19	23	26	3	22	12	22	12	21	8	15	4	6	15	30
H & 4th (Ride out Loading Zone)		12	10	12	16	15	10	19	28	22	17	23	20	25	28	2	21	11	22	13	23	9	15	5	6	16	28
H & 7th		12	10	10	15	15	10	17	28	22	17	23	20	25	32	2	20	11	20	13	23	9	15	5	6	16	32
Yuba Co. Govt. Center (I & 9th)	4	14	20	10	13	13	15	19	28	24	19	27	24	25	30	3	19	12	25	14	25	9	17	5	4	17	30
Alturas & Shasta	3	12	20	8	17	10	14	25	20	18	12	22	21	22	22	4	19	8	14	13	18	6	14	4	0	14	25
Plumas & Church	2	13	19	5	18	9	14	25	15	16	12	23	21	21	17	3	19	7	13	10	15	7	12	3		13	25
Forbes & Almond	2	16	19	5	18	9	14	25	15	15	11	24	20	20	17	3	19	9	13	10	15	7	11	3		13	25
Forbes & Orange	2	16	15	5	18	9	14	25	13	15	11	21	20	20	17	3	18	9	14	10	15	7	11	3		13	25
Forbes & Clark	2	20	15	5	17	7	14	23	12	13	11	14	17	23	17	1	17	7	15	8	16	5	9	4		12	23
Forbes & Gray	2	18	11	5	17	8	13	23	12	13	10	14	17	25	19	1	15	7	13	7	15	2	9	4		12	25
Gray & Louise (Palisades Motel)	2	17	8	5	15	10	9	25	10	12	10	10	16	19	20	3	15	7	10	3	14	2	9	4		11	25
Gray & Ainsley	2	17	8	5	12	11	8	25	9	12	10	8	11	18	18	4	15	5	9	5	13	2	6	4		10	25
Buttehouse & Target	2	17	7	4	12	11	6	13	10	7	9	8	12	18	18	4	12	5	12	3	12	2	6	6		9	18
Buttehouse & El Dorado	2	19	7	3	12	12	6	12	9	7	9	8	11	18	18	4	12	5	10	3	8	2	6	6		9	19
Stabler & Buttehouse (BetAir)	3	17	9	4	13	11	4	11	7	8	7	7	11	15	17	6	12	3	10	3	4	1	6	5		8	17
Stabler & Starr	3	17	9	4	13	8	4	9	7	8	7	7	10	14	17	6	12	3	10	2	4	1	6	3		8	17
Walton Terminal (Sam's Club)	3	17	3	4	9	7	3	6	3	5	4	6	2	7	3	5	10	3	2	1	2	0	3	2		5	17
Average on Board	2	14	10	7	12	10	10	17	16	11	12	15	16	19	20	4	15	9	14	8	15	5	10	4	5		

Average on Board For the Entire Day: 12

Maximum Passengers On Board at One Time: 33

Appendix B | Public Survey Results

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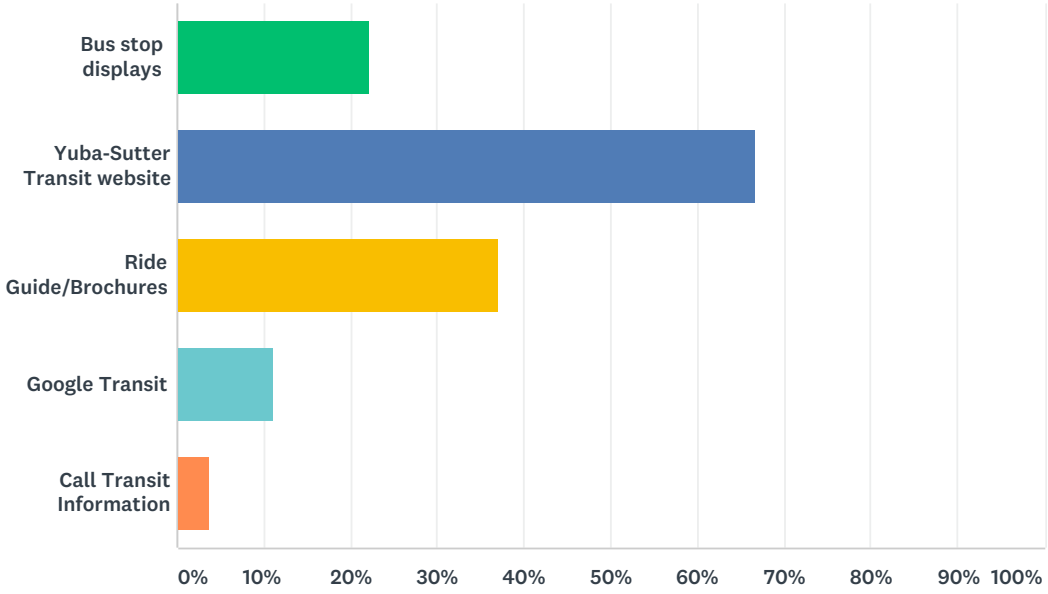
Q1 How do you typically obtain route and schedule information?

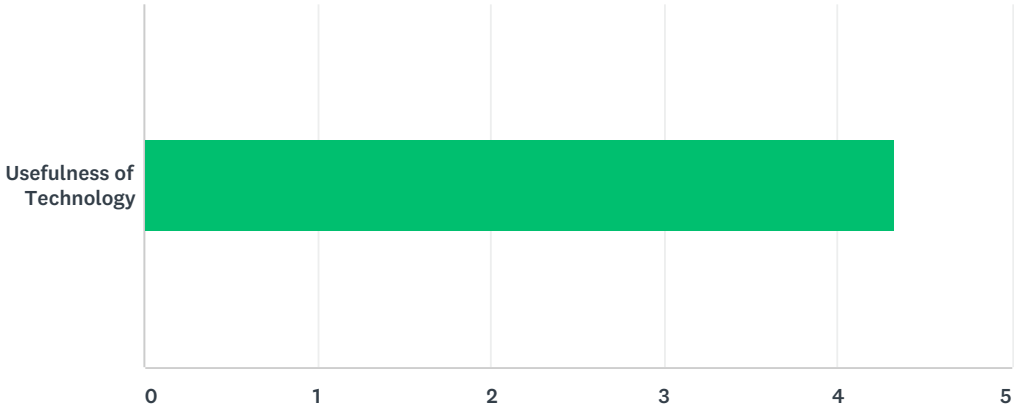
Answered: 27 Skipped: 0



ANSWER CHOICES	RESPONSES	
Bus stop displays	22.22%	6
Yuba-Sutter Transit website	66.67%	18
Ride Guide/Brochures	37.04%	10
Google Transit	11.11%	3
Call Transit Information	3.70%	1
Total Respondents: 27		

Q2 On a scale of 1-5, how useful would technology improvements, such as a real-time transit notification sign at a transit center or an online application which show current bus location and arrival time of next bus, be for you?

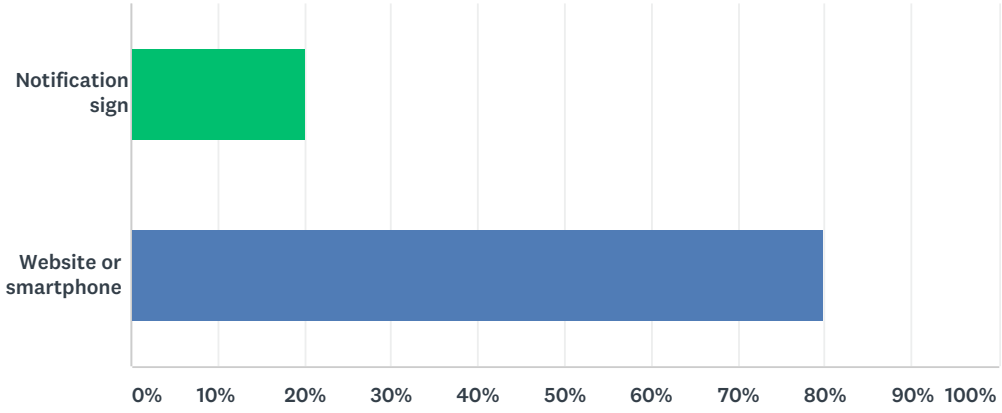
Answered: 27 Skipped: 0



	1 - NOT USEFUL	2	3	4	5 - VERY USEFUL	TOTAL	WEIGHTED AVERAGE
Usefulness of Technology	3.70% 1	0.00% 0	18.52% 5	14.81% 4	62.96% 17	27	4.33

Q3 Which type of real time transit notification would you prefer?

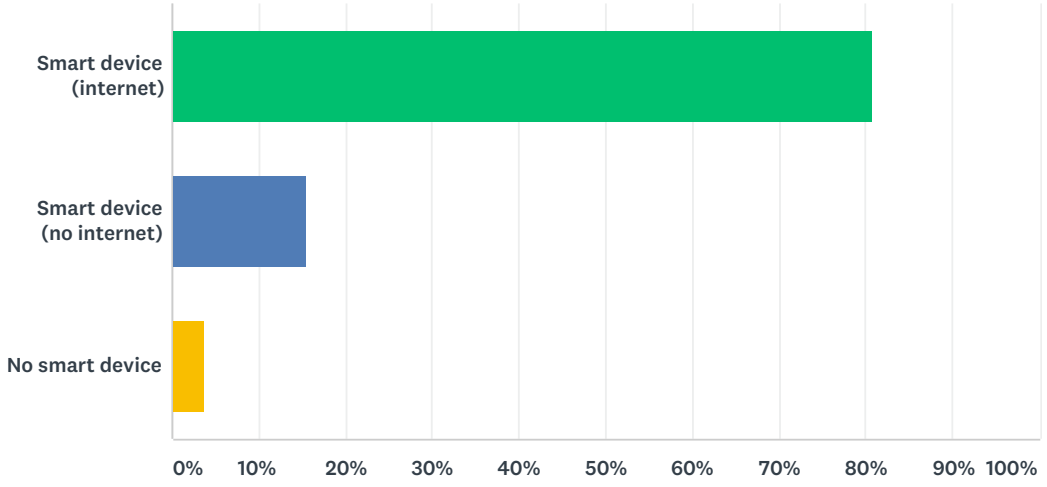
Answered: 25 Skipped: 2



ANSWER CHOICES	RESPONSES	
Notification sign	20.00%	5
Website or smartphone	80.00%	20
TOTAL		25

Q4 Do you have access to the following?

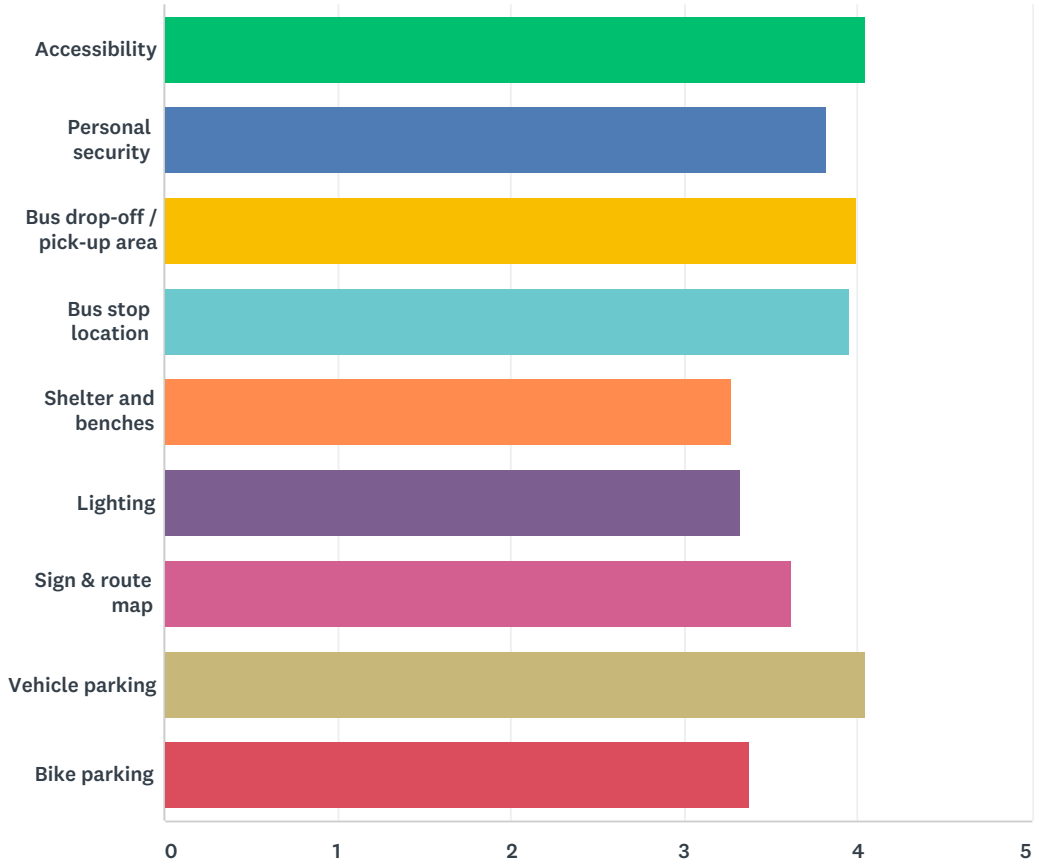
Answered: 26 Skipped: 1



ANSWER CHOICES	RESPONSES	
Smart device (internet)	80.77%	21
Smart device (no internet)	15.38%	4
No smart device	3.85%	1
TOTAL		26

Q5 On a scale from 1 to 5, with 1 being not satisfied at all and 5 being extremely satisfied, how satisfied are you with the following existing conditions for the Walton Terminal? If you have no opinion, simply leave blank.

Answered: 22 Skipped: 5



	1 - NOT SATISFIED AT ALL	2 - HARDLY SATISFIED	3 - SOMEWHAT SATISFIED	4 - SATISFIED	5 - EXTREMELY SATISFIED	TOTAL	WEIGHTED AVERAGE
Accessibility	0.00% 0	4.55% 1	18.18% 4	45.45% 10	31.82% 7	22	4.05
Personal security	0.00% 0	9.09% 2	27.27% 6	36.36% 8	27.27% 6	22	3.82
Bus drop-off / pick-up area	0.00% 0	0.00% 0	22.73% 5	54.55% 12	22.73% 5	22	4.00
Bus stop location	0.00% 0	0.00% 0	27.27% 6	50.00% 11	22.73% 5	22	3.95
Shelter and benches	4.55% 1	18.18% 4	31.82% 7	36.36% 8	9.09% 2	22	3.27
Lighting	0.00% 0	28.57% 6	19.05% 4	42.86% 9	9.52% 2	21	3.33

Sign & route map	0.00% 0	9.52% 2	33.33% 7	42.86% 9	14.29% 3	21	3.62
Vehicle parking	0.00% 0	4.55% 1	22.73% 5	36.36% 8	36.36% 8	22	4.05
Bike parking	9.52% 2	9.52% 2	28.57% 6	38.10% 8	14.29% 3	21	3.38

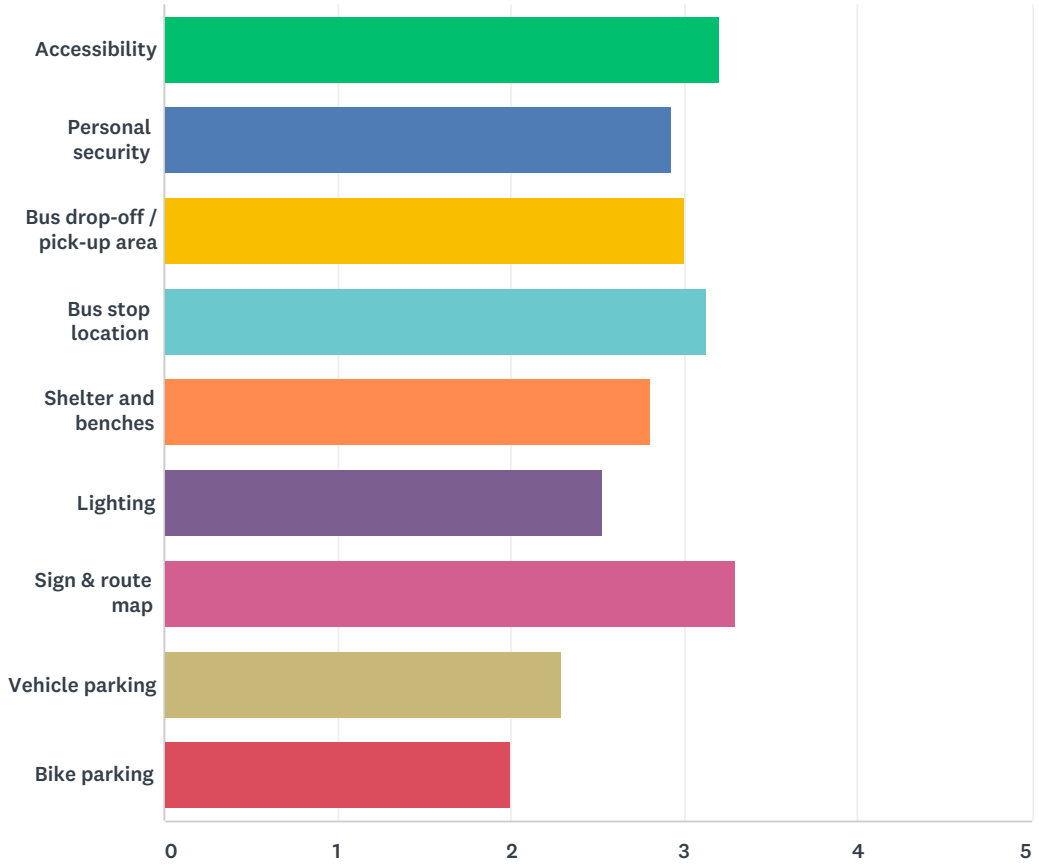
Q6 In order of priority, list any specific improvements you recommend for the Walton Terminal.

Answered: 9 Skipped: 18

#	RESPONSES	DATE
1	Bike rack and larger shelter to protect passengers from the weather.	10/2/2017 8:49 AM
2	I would like restrooms	9/28/2017 6:04 PM
3	An additional shelter on the east side of the street.	9/26/2017 8:04 PM
4	Some type of bug spray due to the mosquitos.	9/26/2017 7:28 AM
5	Shelter/benches	9/26/2017 7:16 AM
6	Better benches	9/26/2017 6:25 AM
7	Trees were cut down. Put some more trees in. It gets hot in summer	9/25/2017 7:40 PM
8	Add bike parking	9/18/2017 11:06 AM
9	shelter and benches	8/31/2017 10:38 AM

Q7 On a scale from 1 to 5, with 1 being not satisfied at all and 5 being extremely satisfied, how satisfied are you with the following existing conditions for the Alturas & Shasta Terminal? If you have no opinion, simply leave blank.

Answered: 15 Skipped: 12



	1 - NOT SATISFIED AT ALL	2 - HARDLY SATISFIED	3 - SOMEWHAT SATISFIED	4 - SATISFIED	5 - EXTREMELY SATISFIED	TOTAL	WEIGHTED AVERAGE
Accessibility	6.67% 1	13.33% 2	33.33% 5	46.67% 7	0.00% 0	15	3.20
Personal security	20.00% 3	0.00% 0	53.33% 8	20.00% 3	6.67% 1	15	2.93
Bus drop-off / pick-up area	13.33% 2	6.67% 1	46.67% 7	33.33% 5	0.00% 0	15	3.00
Bus stop location	13.33% 2	6.67% 1	33.33% 5	46.67% 7	0.00% 0	15	3.13
Shelter and benches	13.33% 2	20.00% 3	40.00% 6	26.67% 4	0.00% 0	15	2.80
Lighting	20.00% 3	26.67% 4	40.00% 6	6.67% 1	6.67% 1	15	2.53

Sign & route map	7.14% 1	14.29% 2	28.57% 4	42.86% 6	7.14% 1	14	3.29
Vehicle parking	28.57% 4	28.57% 4	35.71% 5	0.00% 0	7.14% 1	14	2.29
Bike parking	30.77% 4	38.46% 5	30.77% 4	0.00% 0	0.00% 0	13	2.00

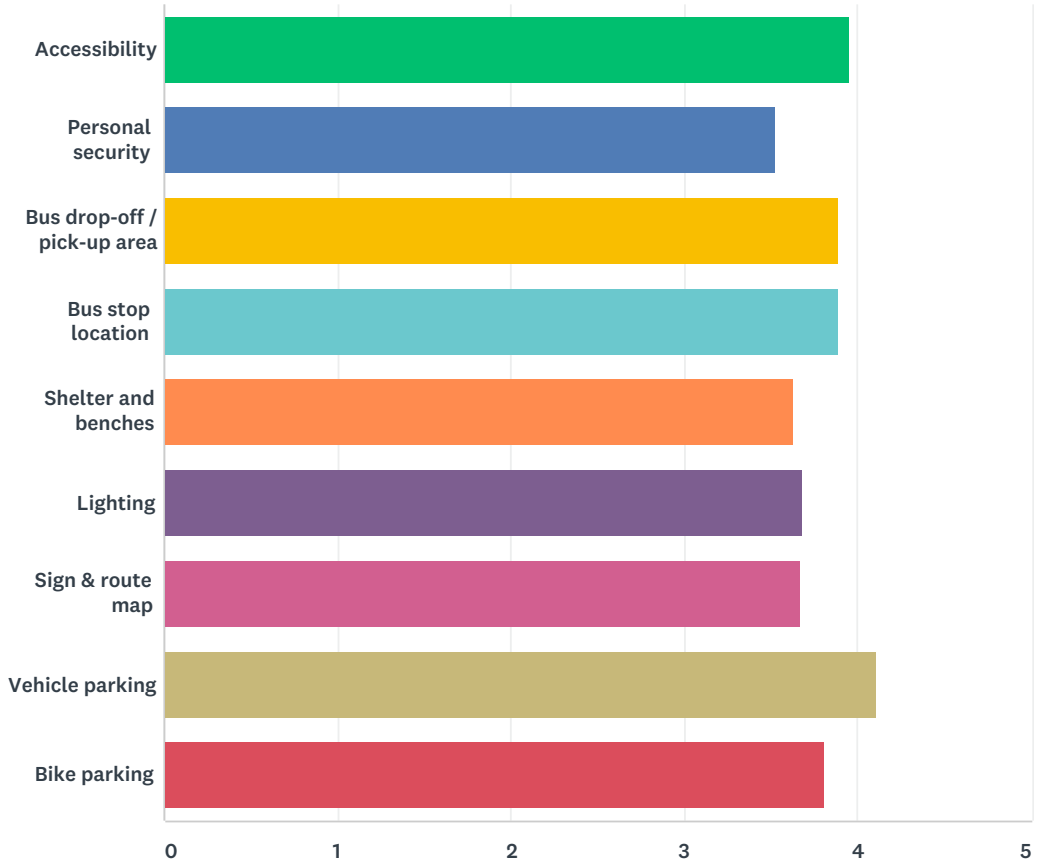
Q8 In order of priority, list any specific improvements you recommend for the Alturas & Shasta Terminal.

Answered: 7 Skipped: 20

#	RESPONSES	DATE
1	Additional sidewalk and concrete to enlarge the waiting area would be nice as the sprinklers often make the site muddy.	10/2/2017 8:51 AM
2	Need to have better lighting rather than by the stores near by. Better use of parking depending on the type of neighborhood.	9/29/2017 3:09 PM
3	More shelter and a rest room	9/28/2017 6:05 PM
4	I don't use this stop but I would think dedicated parking would be nice for passengers.	9/26/2017 8:06 PM
5	I do not go to this location.	9/26/2017 7:29 AM
6	Lighting	9/25/2017 7:42 PM
7	shelter and benches	8/31/2017 10:39 AM

Q9 On a scale from 1 to 5, with 1 being not satisfied at all and 5 being extremely satisfied, how satisfied are you with the following existing conditions for the Yuba County Government Center? If you have no opinion, simply leave blank.

Answered: 19 Skipped: 8



	1 - NOT SATISFIED AT ALL	2 - HARDLY SATISFIED	3 - SOMEWHAT SATISFIED	4 - SATISFIED	5 - EXTREMELY SATISFIED	TOTAL	WEIGHTED AVERAGE
Accessibility	5.26% 1	0.00% 0	10.53% 2	63.16% 12	21.05% 4	19	3.95
Personal security	5.26% 1	15.79% 3	15.79% 3	47.37% 9	15.79% 3	19	3.53
Bus drop-off / pick-up area	5.26% 1	0.00% 0	15.79% 3	57.89% 11	21.05% 4	19	3.89
Bus stop location	5.26% 1	0.00% 0	15.79% 3	57.89% 11	21.05% 4	19	3.89
Shelter and benches	5.26% 1	5.26% 1	21.05% 4	57.89% 11	10.53% 2	19	3.63
Lighting	5.26% 1	5.26% 1	21.05% 4	52.63% 10	15.79% 3	19	3.68

Sign & route map	5.56% 1	5.56% 1	22.22% 4	50.00% 9	16.67% 3	18	3.67
Vehicle parking	5.56% 1	0.00% 0	11.11% 2	44.44% 8	38.89% 7	18	4.11
Bike parking	6.25% 1	0.00% 0	31.25% 5	31.25% 5	31.25% 5	16	3.81

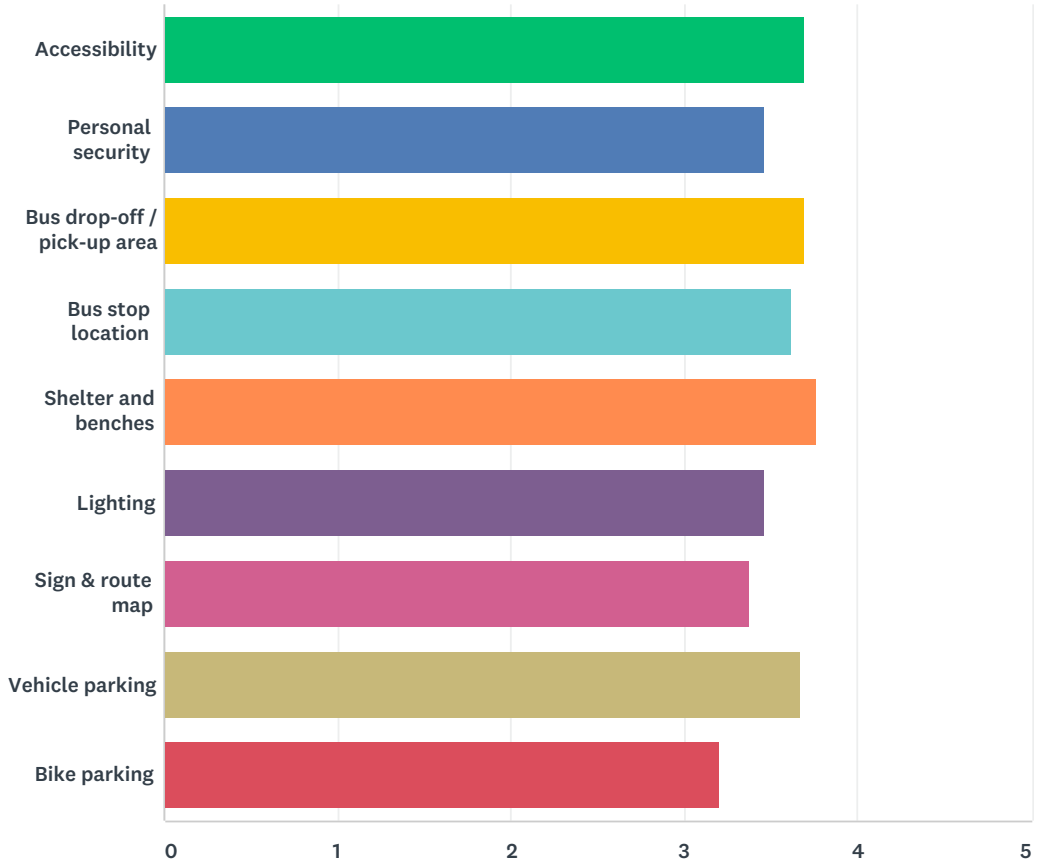
Q10 In order of priority, list any specific improvements you recommend for the Yuba County Government Center.

Answered: 6 Skipped: 21

#	RESPONSES	DATE
1	More clear information on buses that stop here since buses go in both directions.	10/2/2017 8:55 AM
2	restrooms	9/28/2017 6:07 PM
3	Bus can stop closer in the parking lot of SaveMart where it is less isolated	9/26/2017 5:41 AM
4	Not used that much	9/25/2017 7:43 PM
5	Additional seating would be nice	9/25/2017 5:08 PM
6	shelter and benches	8/31/2017 10:41 AM

Q11 On a scale from 1 to 5, with 1 being not satisfied at all and 5 being extremely satisfied, how satisfied are you with the following existing conditions for the North Beale Transit Center? If you have no opinion, simply leave blank.

Answered: 13 Skipped: 14



	1 - NOT SATISFIED AT ALL	2 - HARDLY SATISFIED	3 - SOMEWHAT SATISFIED	4 - SATISFIED	5 - EXTREMELY SATISFIED	TOTAL	WEIGHTED AVERAGE
Accessibility	0.00% 0	7.69% 1	38.46% 5	30.77% 4	23.08% 3	13	3.69
Personal security	7.69% 1	0.00% 0	46.15% 6	30.77% 4	15.38% 2	13	3.46
Bus drop-off / pick-up area	7.69% 1	0.00% 0	30.77% 4	38.46% 5	23.08% 3	13	3.69
Bus stop location	7.69% 1	0.00% 0	38.46% 5	30.77% 4	23.08% 3	13	3.62
Shelter and benches	7.69% 1	0.00% 0	23.08% 3	46.15% 6	23.08% 3	13	3.77
Lighting	7.69% 1	7.69% 1	38.46% 5	23.08% 3	23.08% 3	13	3.46

Sign & route map	7.69% 1	7.69% 1	30.77% 4	46.15% 6	7.69% 1	13	3.38
Vehicle parking	8.33% 1	8.33% 1	16.67% 2	41.67% 5	25.00% 3	12	3.67
Bike parking	10.00% 1	10.00% 1	40.00% 4	30.00% 3	10.00% 1	10	3.20

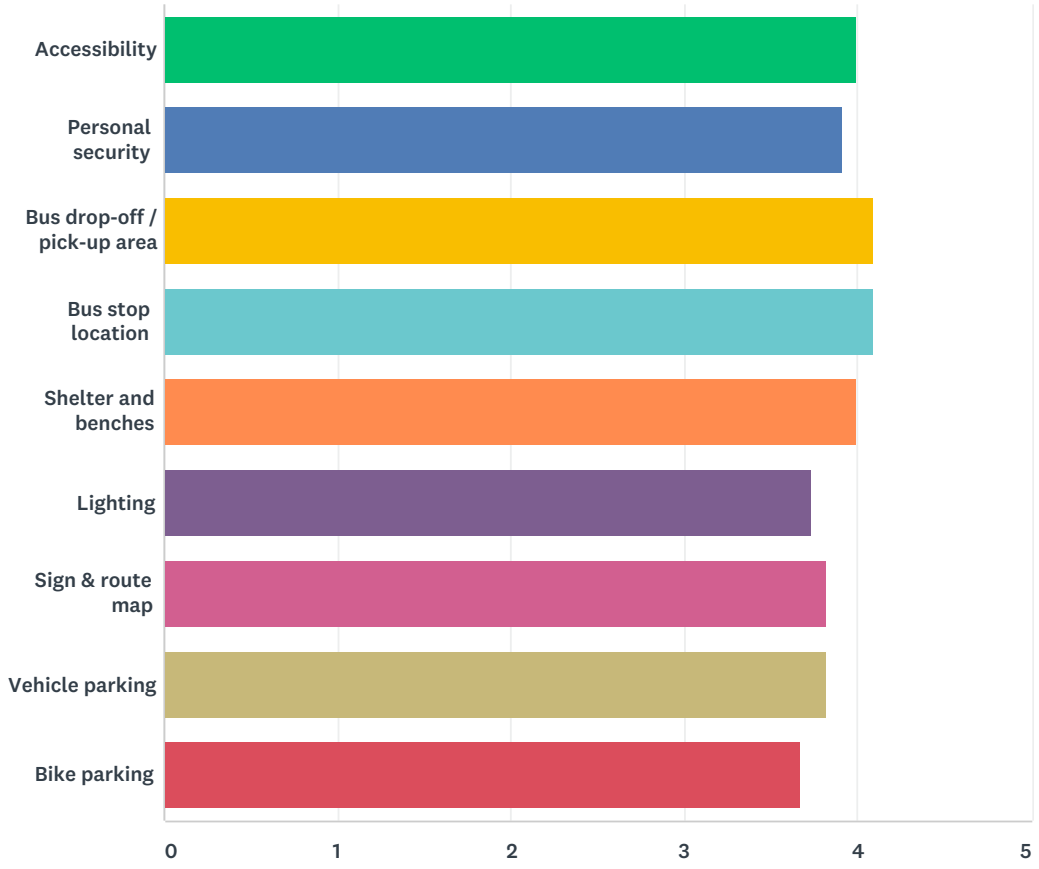
Q12 In order of priority, list any specific improvements you recommend for the North Beale Transit Center.

Answered: 4 Skipped: 23

#	RESPONSES	DATE
1	Could use a bike rack.	10/2/2017 8:56 AM
2	Bigger smoking signs	9/29/2017 3:13 PM
3	not used, am YC traveler	9/25/2017 7:44 PM
4	lighting	8/31/2017 10:43 AM

Q13 On a scale from 1 to 5, with 1 being not satisfied at all and 5 being extremely satisfied, how satisfied are you with the following existing conditions for the Yuba College Transit Center? If you have no opinion, simply leave blank.

Answered: 11 Skipped: 16



	1 - NOT SATISFIED AT ALL	2 - HARDLY SATISFIED	3 - SOMEWHAT SATISFIED	4 - SATISFIED	5 - EXTREMELY SATISFIED	TOTAL	WEIGHTED AVERAGE
Accessibility	0.00% 0	0.00% 0	27.27% 3	45.45% 5	27.27% 3	11	4.00
Personal security	0.00% 0	9.09% 1	18.18% 2	45.45% 5	27.27% 3	11	3.91
Bus drop-off / pick-up area	0.00% 0	0.00% 0	27.27% 3	36.36% 4	36.36% 4	11	4.09
Bus stop location	0.00% 0	0.00% 0	27.27% 3	36.36% 4	36.36% 4	11	4.09
Shelter and benches	0.00% 0	0.00% 0	27.27% 3	45.45% 5	27.27% 3	11	4.00
Lighting	0.00% 0	9.09% 1	36.36% 4	27.27% 3	27.27% 3	11	3.73

Sign & route map	0.00% 0	9.09% 1	18.18% 2	54.55% 6	18.18% 2	11	3.82
Vehicle parking	0.00% 0	9.09% 1	27.27% 3	36.36% 4	27.27% 3	11	3.82
Bike parking	0.00% 0	11.11% 1	33.33% 3	33.33% 3	22.22% 2	9	3.67

Q14 In order of priority, list any specific improvements you recommend for the Yuba College Transit Center.

Answered: 4 Skipped: 23

#	RESPONSES	DATE
1	n/a	9/29/2017 3:14 PM
2	where do we pee	9/28/2017 6:08 PM
3	I do not use this location.	9/26/2017 7:31 AM
4	LIghting	8/31/2017 10:43 AM

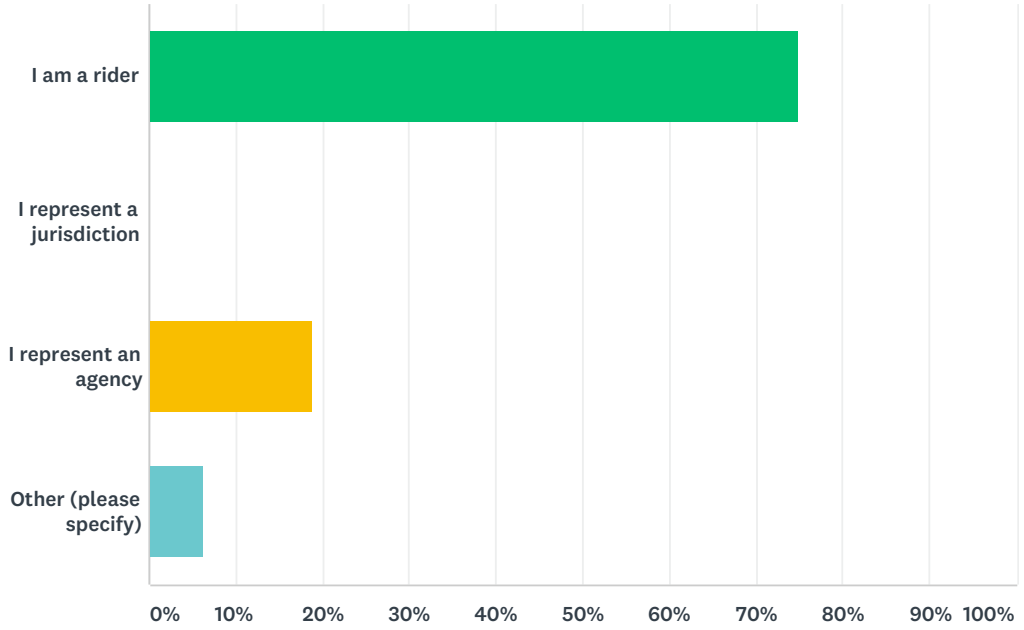
Q15 In addition to the five key transit centers, are there other improvements that should be considered for other Route 1 bus stops?

Answered: 7 Skipped: 20

#	RESPONSES	DATE
1	More shelters if possible.	10/2/2017 8:58 AM
2	Bus stops down feather river blvd need to be added. Where I live, I have to walk for over a mile just to get to the closest bus stop. It's crazy that the bus doesn't go farther down feather river.	10/1/2017 4:22 PM
3	Larger smoking signs! Awning to block the sun!	9/29/2017 3:14 PM
4	I would like to see bathrooms and ticket outlets onsite where we can get tickets. some day i wish we could have Sunday bus service. will there ever be Sunday?	9/28/2017 6:10 PM
5	I don't use Route 1	9/28/2017 7:53 AM
6	Nothing I can think of.	9/26/2017 8:09 PM
7	personally time changes, add one bus therefore 20 min between buses. If route 1 scheduled for Walton tenminal is running late. Have had to wait an hour for rouite 5. Have missed by less than a minute on occasion.	9/25/2017 7:48 PM

Q16 Please identify the main reason you are interested in improvements to Route 1:

Answered: 16 Skipped: 11



ANSWER CHOICES	RESPONSES	
I am a rider	75.00%	12
I represent a jurisdiction	0.00%	0
I represent an agency	18.75%	3
Other (please specify)	6.25%	1
TOTAL		16

#	OTHER (PLEASE SPECIFY)	DATE
1	decline to state	8/30/2017 8:15 AM

Appendix C |Alturas & Shasta Transit Center
Illustrative Conceptual Views

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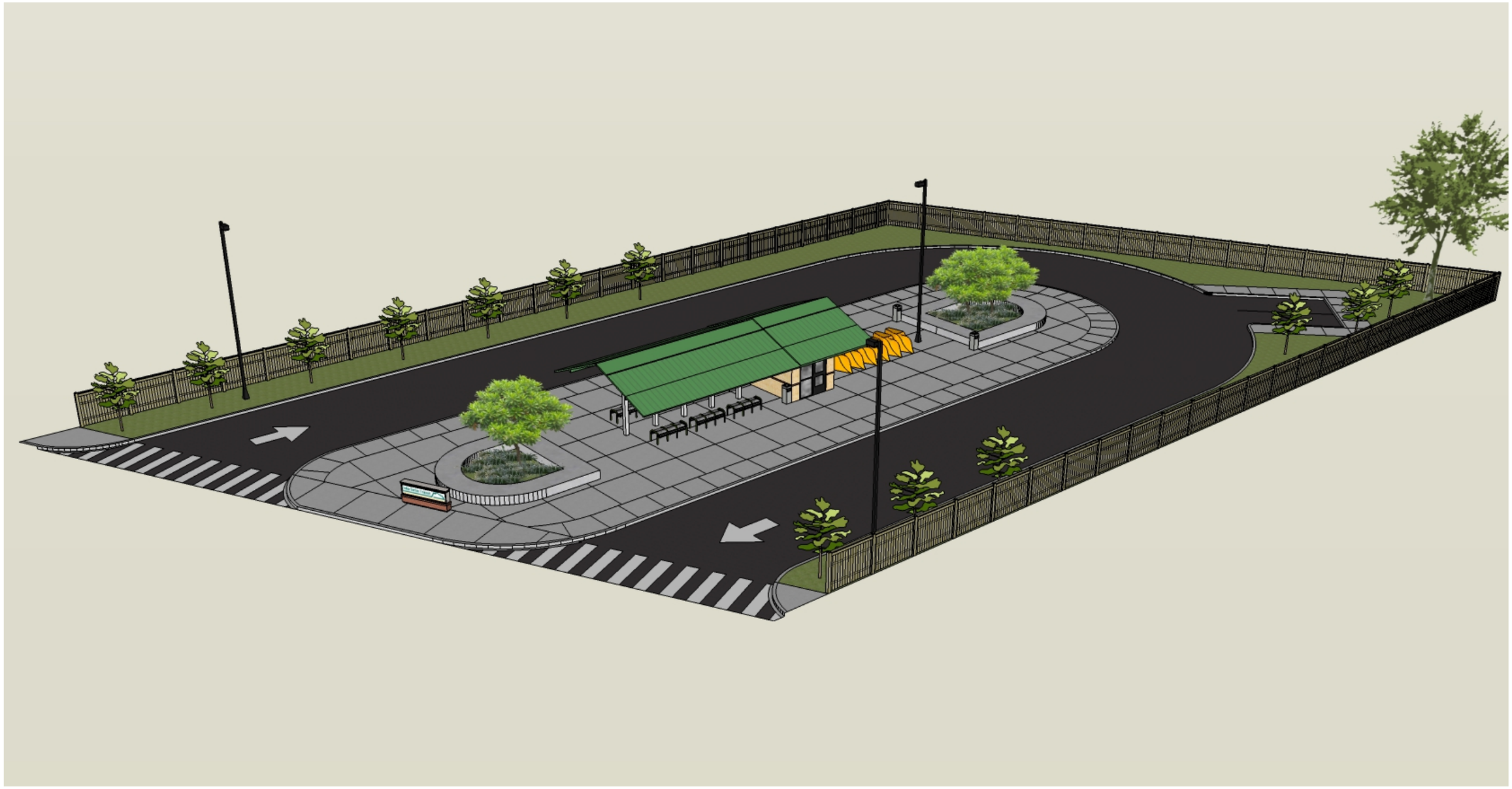

View 1

View 2

View 3

View 4

View 5

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