



High Capacity Bus Service Study

Task 3.5 - Final Report

May 2021



**Regional
Transit**

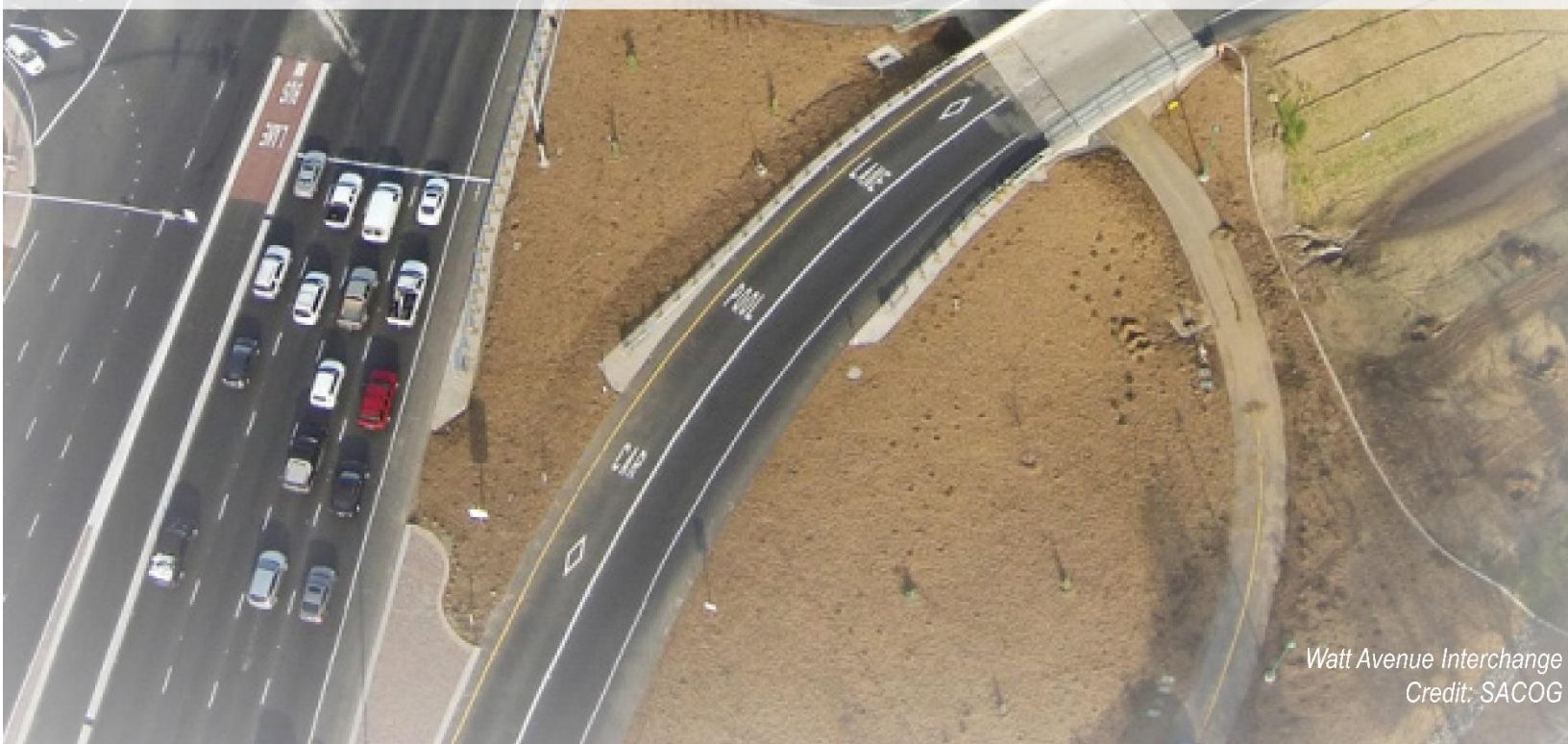
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INTRODUCTION



Watt Avenue Interchange
Credit: SACOG

INTRODUCTION

Sacramento Regional Transit (SacRT) has been investing in initiatives to promote and improve transit throughout its service area. In 2018, Caltrans awarded SacRT with funding from the Sustainable Transportation Planning Grant Program to develop, prioritize and conceptually plan for an effective high capacity bus system in the Sacramento Region. Work funded through this award will be completed through the SacRT High Capacity Bus Service Study.

High capacity transit is characterized by fixed routes, higher frequency, faster speeds, limited stops, efficient operations, traffic signal prioritization, and branding infrastructure. When compared to light rail, high capacity transit is less infrastructure intensive, provides more flexibility and has lower capital and operating costs.

“Hi-Bus” and “Bus Rapid Transit” networks were prominently featured in SacRT’s 2009 Transit Action Plan, and in Sacramento Area Council of Government’s (SACOG) 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS). In 2018, SacRT undertook a comprehensive look at the

existing transit system, which resulted in the SacRT Forward Network Plan and began implementation of recommendations in September 2019. This High Capacity Bus Service Study builds off existing policies, regulations, and findings from previous studies.

The following corridors have been identified for further examination in this study:

- Sunrise Boulevard
- Watt Avenue
- Florin Road
- Arden Way
- Stockton Boulevard¹

Which Corridors in the SacRT Service Area are Best Suited for High Capacity Bus Service?

Over the past decade, the Sacramento Region has developed a transit vision that includes enhanced bus service, as seen in the **2009 SacRT Transit Action Plan** and the **SACOG 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS)**. Both plans contain a network of

¹ Stockton Boulevard, since it is part of a broader effort with the City of Sacramento Corridor Project, was taken out of this study and was analyzed through a separate review process in collaboration with the City of Sacramento.

corridors that are potential candidates for high frequency service and complementary capital investments to improve speed, reliability, and customer experience. There are **eleven corridors** that both the SacRT Transit Action Plan and the SACOG MTP/SCS identify as candidates for high-capacity improvements.

Screening Criteria

The eleven corridors were screened based on the following criteria:



Transit Supportive Land Uses:

Located in an area that can support high capacity transit – with higher residential or employment density, potential for future development,



Transportation Network

Connectivity: Potential for connection with existing high capacity transit (e.g. light-rail) or links to an existing transit center.



Existing SacRT Service: Corridor already supports 15-minute service or has existing transit service.



Geographic Distribution: Potential to serve different markets in SacRT service area. For example, the list of corridors should include a mix of north-south and east-west corridors and represent a mix of locations in the SacRT service area.

Table 1: Screening of the Corridors

					
	Orientation	Transit Supportive Land Use	Transportation Network Connectivity	Existing SacRT Service	Geographic Distribution
★ Watt Avenue	North-South	✓	✓	✓	✓
★ Sunrise Boulevard	North-South	✓	✓	✓	✓
★ Arden Way	East-West	✓	✓	✓	✓
Bradshaw Road	North-South		✓		
Elk Grove Boulevard	East-West				
Laguna Boulevard	North-South				
★ Stockton Boulevard [1]	East-West	✓	✓	✓	✓
★ El Camino Avenue [2]	East-West	✓		✓	
Calvine Road	East-West		✓		
Fair Oaks Boulevard	East-West				
★ Florin Road	East-West	✓	✓	✓	✓

[1] Stockton Boulevard is being studied as part of a separate effort, and thus is not included in this report.

[2] El Camino Avenue was included as part of the study because it is close and parallel to Arden Way, even though it only has two check marks.



Figure 1: Corridors Identified for Screening and Selected as part of the Study

Key Findings

This study takes the high capacity bus corridors identified in the regional planning documents to the next step by identifying spot improvements, defining a long-term vision for High Capacity Bus Service (HCBS) in the corridors, and identifying potential partners for implementation.

Watt Avenue and **Arden Way** warrant improvements to existing service and spot improvements to increase transit speed and reliability in the short term. These two corridors could be good candidates for HCBS in the future as each corridor develops. Watt Avenue would be a particularly good candidate, as an increased number of projects and political support has been accelerating development along the corridor. **Florin Road** has bus service that would support HCBS but struggles to get political buy-in to move improvements forward. **Sunrise Boulevard** is a candidate for mid- and long-term investments in service and capital improvements, which would lay the foundation for HCBS. **El Camino Avenue** is well-positioned for spot treatments to improve speed and reliability but would not support HCBS. Therefore, it was not carried forward into the recommendation stage of the study.

Report Organization

This report is separated into six sections:

- **Corridor Review:** This section gives an overview of the five corridors that were selected through the screening process. It highlights key opportunities and challenges for each corridor. This section

summarizes *Technical Report 1: Existing Conditions*.

- **Stakeholder Engagement:** This section presents the key outreach activities that took place during the project. They include stakeholder interviews, on-board surveys, online surveys, and a virtual public workshop. This section summarizes *Technical Report 2: Outreach*.
- **Corridor Evaluation:** This section reviews the key elements that were evaluated to determine which corridors would support HCBS. This section summarizes *Technical Report 3.1: Corridor Prioritization*.
- **Phasing and Improvements:** This section recommends incremental improvements along each corridor to build faster, more direct, and more reliable service in order to prepare the corridor for HCBS. It also suggests multimodal improvements to make the corridor more accessible for pedestrians and cyclists. Finally, this section includes a long-term vision for each corridor, including potential transfer points, terminal points, and phasing for the future HCBS service. This section summarizes *Technical Report 3.2: Development of Routes*.
- **Implementation Strategies:** This section reviews capital and operating costs, potential funding sources, and partnership strategies.
- **Next Steps:** This section highlights actionable items that SacRT can do to implement the strategies and improvements recommended in this report.



CORRIDOR REVIEW

CORRIDOR REVIEW

This section presents an overview of the corridors. For more information, please refer to *Technical Report Task 3.1: Existing Conditions* in the appendix. Each overview includes a summary of the corridor and a review of existing transit services. It also includes demographic data for employment² and housing³. A summary table of opportunities and challenges is also presented at the end of each corridor section. The five corridors reviewed include:

- Arden Way
- El Camino Avenue
- Florin Road
- Sunrise Boulevard
- Watt Avenue



Figure 2: Sunrise Boulevard



Figure 3: Arden Way at Arden Fair

² US Census Bureau – Workplace characteristics in Longitudinal Employment Household Dynamics Program 2017

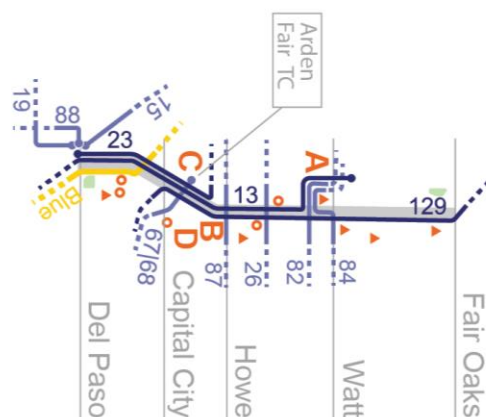
³ U.S. Census Bureau, 2013-2017 American Community Survey 5-Year Estimates, Table B-01003

Arden Way

Overview

Length: 6.3 miles

Boundaries: Del Paso Road to Fair Oaks Boulevard



Destinations

- Kaiser Permanente Sacramento Medical Center and Medical Offices (A)
- Howe Bout Arden Shopping Center Arden Fair Mall (B)
- Arden Fair Transit Center (C)
- Cal Expo - Fairgrounds (D)
- Blue Line Arden/Del Paso Station



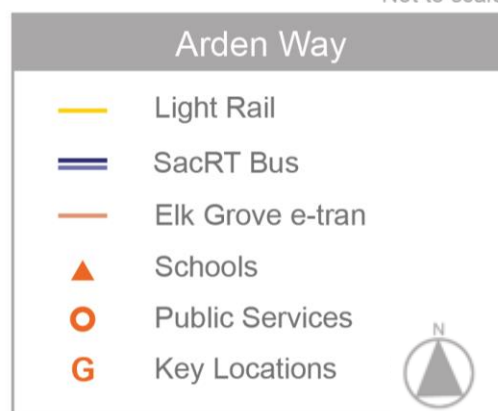
Transit Connections

- Bus 22, 23, 29, 67, 68, 13, 15, 19, 22, 23, 88, 129
- Blue Line

Community Characteristics:

	Corridor Total
Total Number of Jobs	48,131
Total Number of Residents	50,407

Not to scale



Note: El Camino Avenue and Arden Way serve similar markets since they are parallel corridors located one mile apart. This analysis will determine which one has the greatest potential of success.

Disadvantaged Communities 	Opportunity Zones 	Low-Income Communities 	Commercial Corridors  <i>From Ethan Way to Watt Avenue</i>	Smart Growth Street 	Transit Priority Area 
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Existing Transit

	Weekdays	Saturdays	Sundays & Holidays
13	Every 45 minutes between 5:53 AM and 9:21 PM	Every 45 minutes between 8:01 AM and 8:55 PM	Every 45 minutes between 9:01 AM and 7:40 PM
23	Every 30 minutes between 5:12 AM and 11:15 PM	Every 30 minutes between 6:27 AM and 7:37 PM	Every 45 minutes between 8:43 AM and 8:08 PM
129	Every 30 minutes during peak hours	No Service	No Service



Boardings

Route 13 267 weekday	Route 23 1,568 weekday 1,145 Saturday 674 Sundays	Route 129 Too new for data
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Arden Way is an east-west roadway with high traffic flow (with an AADT of over 25,000) and transit volume.

Arden Fair Transit Center, located near the intersection of Arden Way and Heritage Lane, serves as a bus stop or terminal to Routes 22, 23, 29, 67, and 68. In addition, the Blue Line Arden/Del Paso Station serves as a transit hub, connecting Routes 13, 15, 19, 22, 23, 88, and the Blue Line. Within the study corridor, Arden Way is served by Routes 13 and 129, with a smaller portion also covered by Route 23.

SacRT Forward improvements rerouted a portion of Route 13, changing its path from North Market Boulevard to San Juan Road. A commuter route (Route 129) was introduced

during peak hours to provide service between Arden Arcade Area and Downtown Sacramento.

As for employment density, the portion between Del Paso Boulevard and Watt Avenue shows moderate to high employment density and the area east of Watt Avenue shows low employment density. It should be noted that Arden Way between Howe Avenue and Watt Avenue has a significantly higher concentration of commercial uses compared to adjacent east-west corridors.

Table 2: Arden Way Corridor Opportunities and Challenges

	Opportunities	Challenges
Existing Transit Service	• High level of combined frequency on Lines 13 and 23 • Express bus to Downtown Sacramento with stops on Arden Way	• Overlapping bus routes serving different parts of the corridor • Most productive route (23-El Camino) does not travel the entire corridor • Continuous route (13-Natomas/Arden) is infrequent and has low productivity
Network Connectivity	• Connections to the Gold Line • Connections to north-south bus lines	
Land Use	• Significant employment along corridor • High employment density around Arden Fair Mall	• Low residential density east of Watt Avenue • Large parking lots between street and front of buildings
Pedestrian and Bicycle Environment	• Pedestrian amenities (shelters and benches) for transit riders at Del Paso/Arden Station	• Gaps in sidewalks and bike lanes along the corridor
Street Configuration	• Wide street with median and turn lanes could increase feasibility of transit priority lanes (business access transit, queue jump or bus-only lanes)	• Large intersections for pedestrian crossings
Equity	• High incidence of zero-car households	
Stakeholder Support		• Not mentioned in stakeholder interviews
Project Development	• High traffic levels means that spot treatments such as traffic signal priority would be valuable time-savers	• SACOG does not specify Arden Way projects that would allow HCBS in their 2020 MTP/SCS, showing a lack of political support for HCBS in this corridor

El Camino Avenue

Overview

Length: 4.7 miles

Boundaries: Howe Avenue to Fair Oaks Boulevard



Destinations

- Country Club Plaza (A)

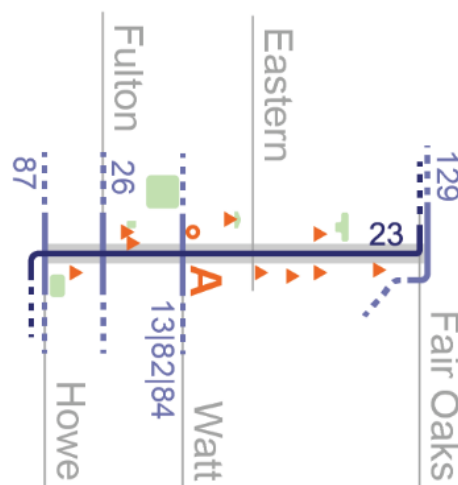


Transit Connections

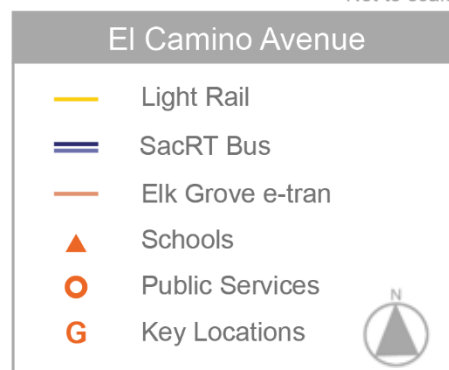
- Bus 87, 26, 13, 82, 84, 129

Community Characteristics:

	Corridor Total
Total Number of Jobs	10,756
Total Number of Residents	40,356



Not to scale



Note: El Camino Avenue and Arden Way serve similar markets since they are parallel corridors located one mile apart. This analysis will determine which one has the greatest potential of success.

Disadvantaged Communities	Opportunity Zones	Low-Income Communities	Commercial Corridors	Smart Growth Street	Transit Priority Area
✓	✓	✓	✓ From Ethan Way to Watt Avenue		✓

Existing Transit

	<i>Route 13</i>
<i>Weekdays</i>	Every 45 minutes between 5:53 AM and 9:21 PM
<i>Saturdays</i>	Every 45 minutes between 8:01 AM and 8:55 PM
<i>Sundays & Holidays</i>	Every 45 minutes between 9:01 AM and 7:40 PM



Boardings

- 1,568 weekday
- 1,145 Saturday
- 674 Sunday

El Camino Avenue provides an east-west connection for the region, intersecting with major roads such as Watt Avenue and Howe Avenue. However, it does not connect to any light rail stations. Route 23 serves El Camino Avenue for its entire length. Route 23 can offer important connections between the

Sunrise Transit Center and the Arden/Del Paso Blue Line Station.

Small schedule improvements were made to Route 23 as part of the SacRT Forward Network changes.

Table 3: El Camino Avenue Opportunities and Challenges

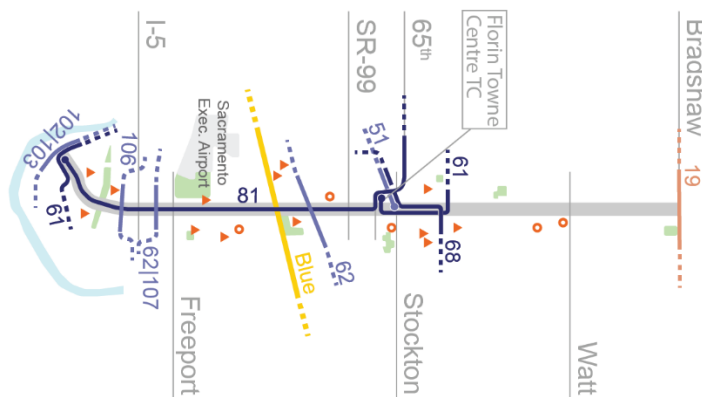
	Opportunities	Challenges
Existing Transit Service	- Relatively productive route with 30-minute midday service - Opportunity to improve frequency on Route 23 travels along El Camino between Ethan and Fair Oaks	Below average on-time performance of Route 23
Network Connectivity	Connects with several north-south routes	No direct connection to light rail via El Camino Avenue; Route 23 connects with light rail at Arden Way
Land Use	Mixed use land uses with commercial nodes at major intersections	- Low density residential land use - Auto-oriented uses west of Ethan Way
Pedestrian and Bicycle Environment	Bike lanes and sidewalks along parts of El Camino	Gaps in sidewalks and bike lanes along the corridor
Street Configuration	Center turn lane and frontage road could increase feasibility of transit priority treatments	No on-street parking limits, opportunity for transit facilities (e.g., bus lanes, bulb-outs)
Equity	High incidence of low-income residents and zero-car households	
Stakeholder Support	Stakeholders suggested that El Camino would likely be a better alignment than Arden due to its 15-minute service.	
Project Development		SACOG does not specify El Camino Avenue projects that would allow HCBS in their 2020 MTP/SCS, showing a lack of political support for HCBS in this corridor

Florin Road

Overview

Length: 11.7 miles

Boundaries: Riverside Boulevard to Bradshaw Road through Meadowview, Parkway, Florin, I-5 and SR-99



Destinations

- Florin Towne Centre
- Riverfront
- Luther Burbank High School



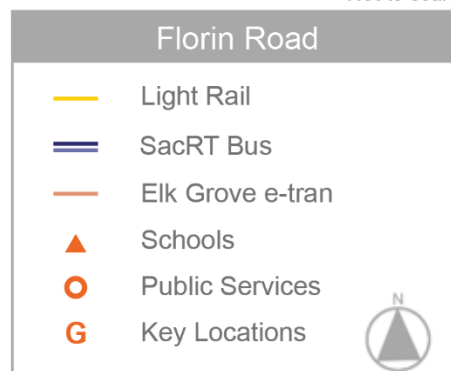
Transit Connections

- Florin Towne Centre Transit Center
- Bus: 51, 61, 68, 81
- Blue Line

Community Characteristics:

	Corridor Total
Total Number of Jobs	20,417
Total Number of Residents	106,447

Not to scale



Disadvantaged Communities	Opportunity Zones	Low-Income Communities	Commercial Corridors	Smart Growth Street	Transit Priority Area
✓	✓	✓	✓ <i>Between Franklin and Stockton Boulevard</i>	✓	✓

Existing Transit

	<i>Route 81</i>
<i>Weekdays</i>	Every 15 minutes between 5:19 AM and 11:00 PM
<i>Saturdays</i>	Every 30 minutes between 6:18 AM and 8:48 PM
<i>Sundays & Holidays</i>	Every 30 minutes between 8:18 AM and 6:18 PM



Boardings

- 2,466 weekday
- 1,087 Saturday
- 593 Sunday

Route 81 was the fourth most productive route in the SacRT system, and the third for 15-minute headways. Florin Towne Centre Transit Center located at the intersection of Florin Road and Stockton Boulevard serves as a bus stop for routes 51, 61, 68, and 81.

The land use along Florin Road varies from low-density residential to commercial and heavy-industrial to agricultural uses. Most parcels adjacent to the corridor are zoned for commercial and mixed-use uses east of 24th Street to the Florin Towne Centre.

Table 4: Florin Corridor Opportunities and Challenges

	Opportunities	Challenges
Existing Transit Service	- Continuous route (81-Florin) travels on Florin Road - Existing high-frequency(15-minute) and high-ridership (over 25 BR/VH) service	Weekday on-time performance is below system average and SacRT's goal
Network Connectivity	Connection to the Blue Line LRT and to other bus lines, including frequent service on Route 51-Stockton	
Land Use	Medium to high density planned east of Stockton Boulevard	- Mostly low-density residential or commercial west of Stockton Boulevard - Parking lots between buildings and the street
Pedestrian and Bicycle Environment	- Continuous sidewalk west of Stockton Boulevard - Safety improvement for pedestrians and bicyclists planned by Sacramento County between Franklin Boulevard and Power Inn Road	- Non-continuous bicycle facilities - Non-continuous sidewalk east of Stockton Boulevard - Considered a “high-injury corridor” in Sacramento’s Vision Zero Plan
Street Configuration	On-street parking gives the opportunity for transit facilities (e.g., bus lanes, bulb-outs) west of I-5	
Stakeholder Support	Multiple Disadvantaged Communities and a high minority population	Sense of a lack of safety and lack of amenities at stops due to homeless population along the route
Project Development	Corridor crosses one jurisdiction (City of Sacramento)	- City of Sacramento’s focus is on implementing improvements on Stockton Boulevard, which is in the same vicinity - Lack of political support

Sunrise Boulevard

Overview

Length: 18.7 miles

Boundaries: Douglas Boulevard in the City of Roseville to Grant Line Road in unincorporated Sacramento County through the cities of Citrus Heights and Rancho Cordova, and the community of Fair Oaks



Destinations

- Sunrise Mall Transit Center
- Oakridge Healthcare Center
- B. MED7 Urgent Care Center & Planned Parenthood – Roseville Health Center
- C. Sun Oak Senior Living
- Tempo Park
- Marketplace at Birdcage
- American River Trail Recreation Area



Transit Connections

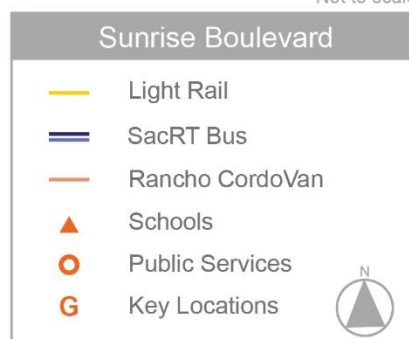
- Louis Orlando Transit Center
- Bus: 25, 93, 193, 1, 23, 175, 177
- Gold Line

Community Characteristics:

	Corridor Total
Total Number of Jobs	52,327
Total Number of Residents	93,042



Not to scale



Disadvantaged Communities	Opportunity Zones	Low-Income Communities	Commercial Corridors	Smart Growth Street	Transit Priority Area
		✓	✓ <i>Near Folsom Boulevard and Fair Oaks Boulevard</i>	✓ <i>Complete Street Project in the City of Citrus Heights</i>	✓

Existing Transit

	Weekdays	Saturdays	Sundays & Holidays
21	Every 30 minutes <i>between 5:52 AM and 10:48 PM</i>	Every 45 minutes <i>between 8:57 AM and 7:48 PM</i>	Hourly Service <i>between 6:58 AM and 9:52 PM</i>
175*	Hourly Service	No Service	No Service
176*	Hourly Service	No Service	No Service

* Operated by Rancho CordoVan Shuttle Service



Boardings (Route 21 only)

- 1,000 weekday
- 495 Saturday
- 302 Sundays

Route 21 is one of the least productive routes in the SacRT system for routes with 30-minute headways. The number of boardings per vehicle hour is lower than other bus routes with the same or higher frequency. However, Route 21 boardings are still significantly higher than other routes with 60-minute headways or lower frequencies⁴.

In September 2019, SacRT implemented systemwide changes based on findings from

the SacRT Forward Network Plan. The changes to Route 21 consist of:

- Operate all trips the full length of the route from Mather/Mills station to Louis Orlando transit center.
- Discontinue weekday trips beginning at Sunrise Mall at 4:41 AM, 5:11 AM, and 5:41 AM and leaving Mather station at 5:22 AM
- Operate at 45-minute frequency on Saturdays from approximately 10:00 AM to 7:30 PM and 60 minutes until approximately 10:00 PM
- Eliminate Saturday/Sunday trip beginning from Sunrise Mall at 6:12 AM

⁴ SacRT, Jarrett Walker + Associates, SacRT Forward Network Plan – Transit Choices Report, April 2018, p. 55

Table 5: Sunrise Corridor Opportunities and Challenges

	Opportunities	Challenges
Existing Transit Service	- Continuous route (21-Sunrise) travels most of the corridor - Above average on-time performance	Existing service is infrequent and has low productivity
Network Connectivity	Connections to the Gold Line LRT at Sunrise Station and Routes 1 and 23 at Sunrise Mall Transit Center	Only connecting services are at Louis and Orlando/Sunrise Mall Transit Centers and Gold Line LRT- no other east-west routes connect with Sunrise
Land Use	- Moderate to high residential density from the I-80 to the Gold Line - Large office park (trip generator) south of the Gold Line - Current plans to redevelop Sunrise Mall (100-acre property) - TOD-friendly land uses mainly at Sunrise/Folsom Boulevard - Access to the American River Park - Proposed plan to redevelop Sunrise Mall into a high-density mixed use development	Auto-oriented uses south of the Gold Line LRT (industrial, low-density residential development and large parking lot on façade) are not supportive of transit
Pedestrian and Bicycle Environment	- Existing Class I bike path parallel to Sunrise Boulevard connecting to the Sunrise LRT Station - Improvements done by the City of Citrus Heights on increasing safety on sidewalks and at bus stops	- High speeds and 3 lanes in each direction along most of the corridor create an unfriendly pedestrian and bicycle environment - Limited number of bike lanes cross the corridor - Very few buildings have frontage on Sunrise Boulevard (walls and parking lots mainly)
Street Configuration	4 to 6 lanes in most of the corridor could make transit priority lanes more feasible - Complete Street Improvements in the City of Citrus Heights	- High traffic speeds, especially south of Arcadia Drive (40-45 mph) - Possible pinch points on Twin Oaks Lane where there are only 2 lanes
Stakeholder Support	Support from the Cities of Citrus Heights, Roseville, and Rancho Cordova to improve service on Sunrise	Corridor crosses multiple jurisdictions, could be difficult to get political support from multiple cities
Project Development	- Support from SACOG to create two enhanced bus corridors in the area, including articulated buses - Redevelopment of the Sunrise Mall area, which would include higher-density and mixed-use development	Stakeholders indicated that dedicated bus-only lanes would not be politically feasible

Watt Avenue

Overview

Length: 23.2 miles

Boundaries: Baseline Road in Placer County to Bond Road in unincorporated Sacramento County through the cities of Roseville and Sacramento



Destinations

- Gibson Ranch Country Park
- Aerospace Museum of California & McClellan Conference Center
- Del Paso Regional Park
- Powerhouse Science Center
- Del Paso Country Club
- American River Bike Trail
- Camden Park
- Elk Grove Regional Park
- Kaiser Permanente Morse Medical Center

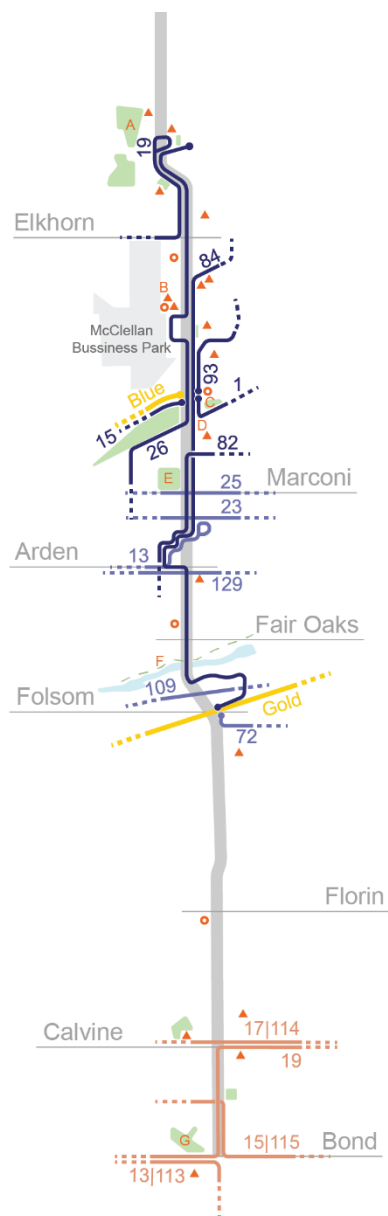


Transit Connections

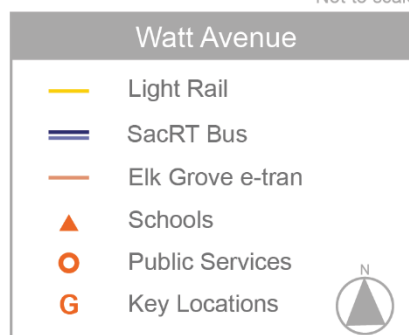
- Bus: 19, 26, 82, 84, 93, Elk Grove e-tran
- Gold Line and Blue Line

Community Characteristics:

	Corridor Total
Total Number of Jobs	39,838
Total Number of Residents	150,627



Not to scale



Disadvantaged Communities	Opportunity Zones	Low-Income Communities	Commercial Corridors	Smart Growth Street	Transit Priority Area
			 <i>Near McClellan Airfield, El Camino Avenue and Arden Way</i>		

Existing Transit

	Weekdays	Saturdays	Sundays & Holidays
26	Every 30 minutes between 5:16 AM and 8:00 PM	Every 30 minutes between 7:58 AM and 7:28 PM	Hourly Service between 7:58 AM and 9:19 PM
82	Every 30 minutes between 5:08 AM and 11:11 PM	Every 45 minutes between 8:08 AM and 7:47 PM	Every 45 minutes between 9:10 AM and 7:17 PM
84	Every 30 minutes between 5:38 AM and 8:26 PM	Every 30 minutes between 7:05 AM and 6:37 PM	Hourly Service between 7:05 AM and 9:14 PM



Boardings

- Route 26*
- 989 weekday
 - 268 Saturday
 - 183 Sundays

- Route 82*
- 1,601 weekday
 - 447 Saturday
 - 362 Sundays

- Route 84*
- 762 weekday
 - 337 Saturday

Watt Avenue, because of its central location, offers a significant number of routes and possible transfers within the SacRT system. The corridor is served by a variety of bus routes, including routes 19, 26, 82, 84, 93, as well as the Gold and Blue light rail lines. South of the Gold Line, there is a gap in service and this area is only served by the Elk Grove e-tran in the City of Elk Grove.

In September 2019, SacRT implemented systemwide changes based on findings from the SacRT Forward Network Plan, including:

- Route 84 was realigned, and service frequency was improved to 30 minutes from 6:00 A.M to 8:30 PM during the weekday. Saturday service was improved to a 30-minute headway between 7:00 AM

and 6:00 PM New Sunday service with a 60-minute frequency was added beginning in both directions at 7:00 AM, with last trips in both directions beginning around 8:00 PM

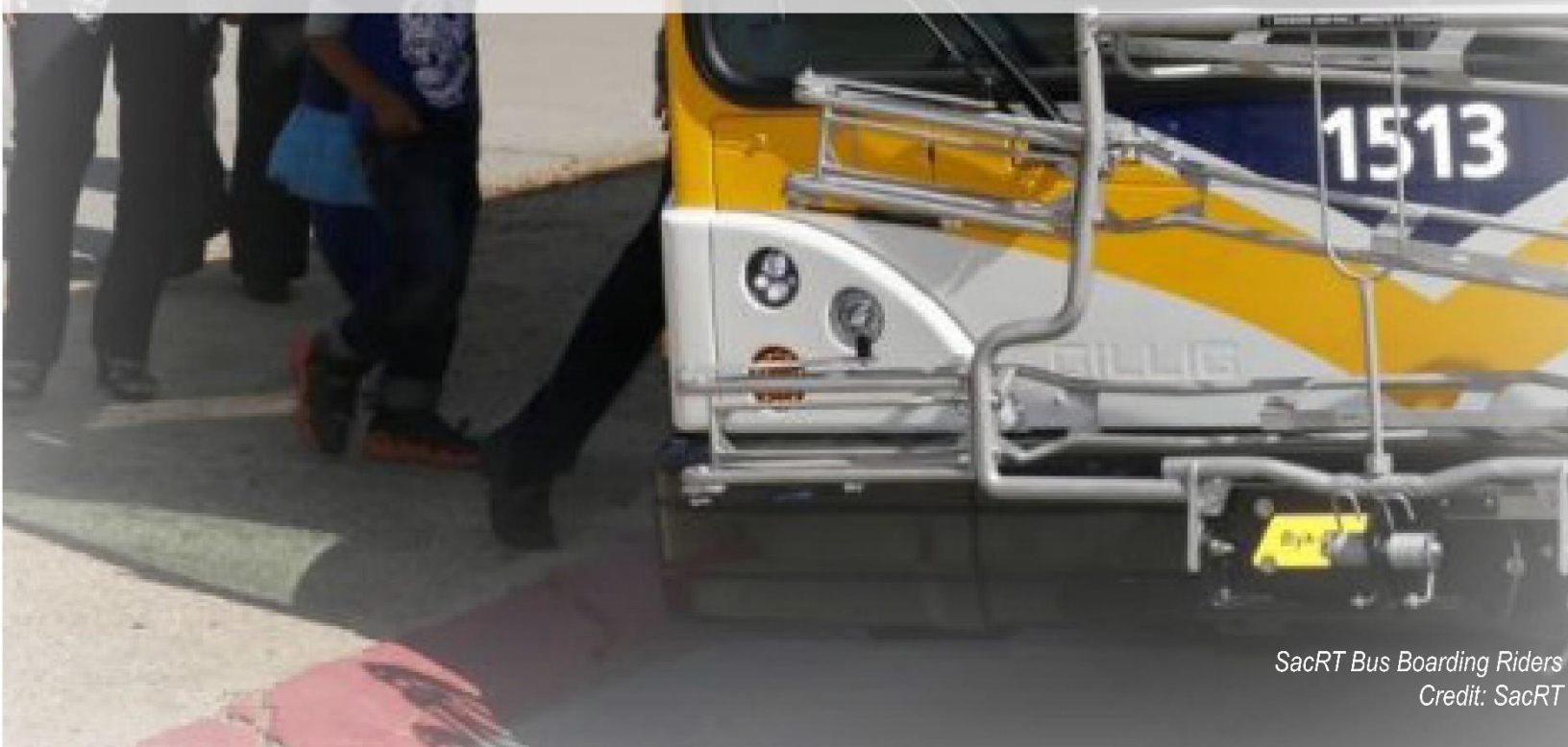
- Route 82 was rerouted and the weekend frequency was improved to 45 minutes between 9:00 AM to 7:00 PM
- Route 26 was extended north, on Watt Avenue, to Elverta Road, and the service frequency on Saturdays was improved to 30-minute headways.

Table 6: Watt Avenue Corridor Opportunities and Challenges

	Opportunities	Challenges
Existing Transit Service	- Continuous route (84-Watt) travels most of Watt Avenue - High transit mode share - Route 84 frequency was improved to every 30 minutes in September, 2019	- Below on-time performance on Route 84 - Overlapping bus routes serve different parts of the corridor - Most productive route (Route 82) only travels a short distance on Watt Avenue
Network Connectivity	- High level of service in some segments due to multiple routes - Connection to the Blue Line LRT at the Watt I-80 Station and to the Gold Line LRT at Watt/Manlove Station	
Land Use	- New development planned at the North end at Baseline Road - Access to the American River Park (Transit to Parks)	Industrial and low-density development south of Florin Road
Pedestrian and Bicycle Environment	Class II bike lanes in both directions of Watt Avenue; however, they are interrupted in some areas	- Inconsistent sidewalks - Inconsistent bike infrastructure
Street Configuration	- Existing bus only lanes south of American River 4 to 6 lanes in most of the corridor could make transit priority lanes more feasible	Possible pinch points where the road narrows from 4 to 2 lanes
Equity	Multiple Disadvantaged Communities	
Stakeholder Support	- Planning underway by other agencies for BRT on Watt Avenue - Route 84 is the second busiest route	- Corridor crosses multiple jurisdictions, could be difficult to get political support from multiple cities - Poor OTP and peak-hour traffic conditions need to be addressed, as well as faster boarding and alighting for the large number of passengers in wheelchairs
Project Development	- Support from SACOG to create a HI Bus corridor, including articulated buses; BRT/HI Bus exclusive lanes; and capital funding for a BRT system - The County recently replaced all signal Opticom GPS controllers for traffic signal priority	Equipment for buses will need to be purchased in order to benefit from County's GPS controllers



STAKEHOLDER ENGAGEMENT



STAKEHOLDER ENGAGEMENT

Between December 2019 and December 2020, SacRT completed four major outreach efforts: a series of stakeholder interviews, an on-board survey, an online survey focused on HCBS strategies, and a virtual public workshop. Community members were also invited to submit comments via email at any

point throughout the study period. Outreach efforts generally sought to engage the public in the planning process, share project information, and gather feedback on HCBS priorities and opportunities. A brief summary of each of the outreach efforts is included below.

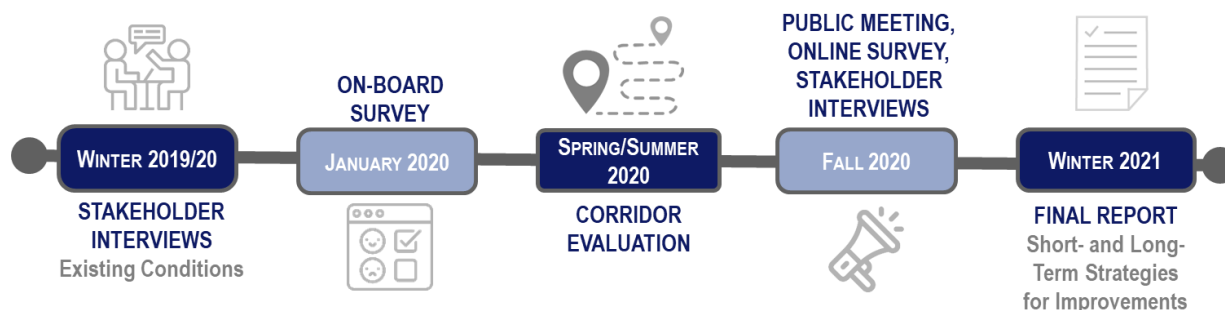


Figure 4: Stakeholder Engagement Timeline

Stakeholder Interviews

Stakeholder interviews were conducted in two rounds and targeted a variety of stakeholders located along the five study corridors (Arden Way, Florin Road, Stockton Boulevard, Sunrise Boulevard, and Watt Avenue). The questions sought to gather more detailed information on preferences, opportunities, concerns, and other considerations for HCBS. The first round of interviews was held from mid-December 2019 through March 2020 and focused on engaging neighborhood associations, business associations, and

community-based organizations. A total of eleven interviews were conducted, including two neighborhood associations, three business associations, and six community-based organizations. The second round of interviews were held during December 2020 and primarily focused on engaging additional neighborhood associations and transportation staff from school districts whose jurisdictions included a portion of at least one of the five corridors. A total of six additional interviews

were conducted, including three neighborhood associations and three school districts.

Key Takeaways

- Overall, major themes included transit reliability, system connectivity, safety, improved bus stop amenities, and accessibility for people with disabilities and older adults.
- Corridor-Specific Opportunities:
 - On **Arden Way**, major priorities included improved pedestrian and cyclist access to stops, connected sidewalk networks, and expanded transit services.
 - On **Florin Road**, major priorities included alleviating traffic congestion, bus stop maintenance and amenities, improved pedestrian and cyclist access to stops, and expanded infrastructure for microtransit.
 - On **Stockton Boulevard**, major priorities included access to fresh food and employment centers, decreased trip times, expanded evening service, and enhanced bicycle facilities.
 - On **Sunrise Boulevard**, major priorities included higher frequency bus service to alleviate congestion, improved access to fresh food, and closing first and last mile gaps.
 - On **Watt Avenue**, major priorities included improved multimodal connections (particularly bus and light rail), bus stop maintenance, and smoother bus loading and layovers.

On-Board Survey

The on-board transit survey was conducted between January 28, 2020 and February 1, 2020 aboard SacRT routes that serve the segments analyzed in this study. A total of 570 riders responded to the survey and

answers were collected from nine different bus routes.

Table 7: On-Board Surveys by Bus Route

Bus Route	Number of Answers
13	44
21	58
23	45
25	54
26	53
51	137
81	107
84	40
129	32
Total	570

The purpose of the survey was to:

- Identify travel patterns,
- Learn about riders' priorities,
- Understand customer satisfaction with current service, and
- Challenges and barriers.

Key Takeaways

- **Arden Way & El Camino Avenue:** Riders have low satisfaction with bus on-time performance, bus frequency, and hours of operation. Riders are satisfied with travel times to get to their destination.
- **Florin Road:** Riders are generally satisfied with the service on Florin Road.
- **Sunrise Boulevard:** Riders have low satisfaction with the service on Sunrise Boulevard, especially with on-time performance, bus frequency, and hours of operation.
- **Watt Avenue:** Riders are somewhat satisfied with the service on Watt Avenue but are very satisfied with the hours of operation.

Online Survey

An online survey was developed in the fall of 2020 with the goal of identifying opportunities to improve bus service along congested corridors. The survey included a series of fourteen questions focused on understanding priorities for improved bus service, existing challenges with bus routes along congested corridors, and preferences for different types of high capacity strategies. The survey was distributed through the project website, e-newsletters, and email communications to community partners along the five study corridors. In total, 120 responses were collected during the survey period, which began October 7, 2020 and ended November 20, 2020.

Key Takeaways

- Top priorities included higher frequency bus service, reliable schedules, and improving travel times while on the bus.
- Preferred types of improvements included dedicated bus lanes, traffic signal priority and short bus lanes, and route alignment/straightening.
- Additional comments included a desire for direct access to popular destinations (i.e. medical facilities, shopping, entertainment), accessibility for people with disabilities and older adults, improved service in low-income and Environmental Justice communities, and improved system connectivity.

Virtual Public Workshop

A public workshop for SacRT's High Capacity Bus Service Study was held via Zoom on Wednesday, October 21, 2020. The workshop

was intended to increase knowledge and understanding of HCBS strategies; understand current barriers for using bus service and the types of improvements that would make it more attractive; and understand priority corridors and priority segments along those corridors. In total, there were 46 participants who represented a wide range of interests, including SacRT riders, local government agencies, and community organizations.

Key Takeaways

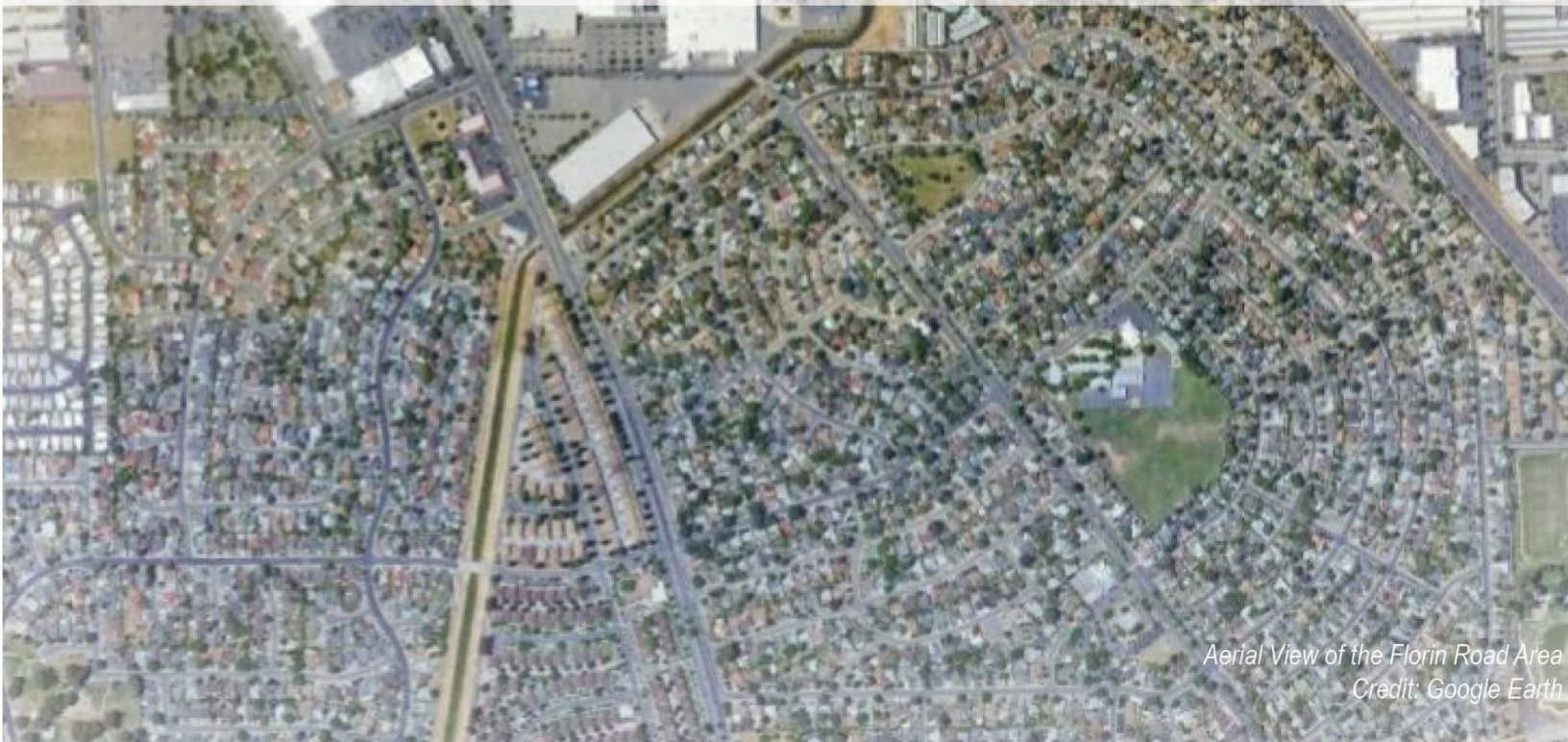
- Out of the five corridors, Watt Avenue and Stockton Boulevard received the most interest for HCBS improvements.
- Top considerations for improving bus service included frequency, reliability, and pedestrian access.
- Top priorities for improving the overall transit experience included bus shelters; separate, clearly designated HCBS stops; and accessibility, particularly for riders who have mobility disabilities or are blind or low-vision.

Email Submissions

Two community members submitted comments via email during the study period. The two comments were generally concerned with improving the study's process and methods, including consulting past studies by SacRT and conducting origin-destination survey research to improve route planning.



CORRIDOR EVALUATION



CORRIDOR EVALUATION

This section evaluates the corridors and identifies the corridors that have the highest potential for a successful HCBS based on information collected in the existing conditions task. HCBS is a form of corridor-based Bus Rapid Transit (BRT), which the Federal Transit Administration (FTA) defines as:

“Investments in a defined corridor as demonstrated by features that emulate rail including stations, traffic signals priority and short headway bidirectional services for a substantial part of weekdays.”

Key information from the existing conditions report is summarized and organized by matching service types that are the most appropriate for the corridors based on several criteria:

- Existing bus service,
- Ridership,
- Roadway characteristics,
- Customer perceptions,
- Travel markets, and
- Equity considerations.

This section also includes an analysis of the future projected land use and density along each corridor to determine which corridor's land use will best support HCBS.

This study and suggested improvements act as a prelude to a fully coordinated capital investment by SacRT and other jurisdictions in these corridors. This partnership can be a powerful tool for achieving local and regional land use, transportation plans, and multimodal transit corridors. High-frequency, high-quality transit service reduces dependence on automobiles, improves safety, increases access to opportunities, and attracts development that is aligned with active transportation modes. Investments that make transit trips faster and more reliable in these corridors will make transit a more attractive choice compared to cars. This includes not just rush hour commuter trips, but trips throughout the day and to a variety of destinations. In short, it is a way to make transit a more relevant lifestyle choice for many residents, not just commuters.

Transit use in high travel demand corridors can be increased substantially by offering service features such as:

- Consistent and reliable travel times,
- Faster travel times,
- Direct and simple routes,
- Frequent service all day, every day.

Enhancing connectivity between HCBS and other routes, as well as improving pedestrian and bicycle access to stops or stations, increases the reach of a high capacity transit

line's benefits to a wider area. An integrated network boosts the overall usefulness of transit services to the public by increasing the accessibility of origins and destinations.

This evaluation considered five corridors for near-term, multi-modal investments.

A range of transit improvements are considered in each corridor. These improvements can be divided into the following three categories:

- **Streamline existing standard and express bus routes** – Improve frequency, realign routes for continuous service on the arterial street, provide spot improvements for stops and transit prioritization
- **Enhanced transit corridors** – Improve frequency, remove route diversions, relocate stops for speed/reliability and passenger access. Implement spot and near-term transit priority treatments such as queue jumps, traffic signal priority, right-turn-except bus, and business access transit lanes.
- **High Capacity Bus Service** – Features such as raised boarding platforms at stations, transit-preferred treatments including traffic signal priority, off-board fare collection, and advanced bus technology.

Figure 5 shows the range of modes and right-of-way improvements. Streamlining existing bus services to provide more frequent and direct service, with limited improvements in the public right-of way, is relatively inexpensive and could be implemented more quickly than the other two categories. More intensive investments to achieve a HCBS are relatively more expensive and are likely to take longer to plan and implement. The

intermediate category is the Enhanced Transit Corridor concept.

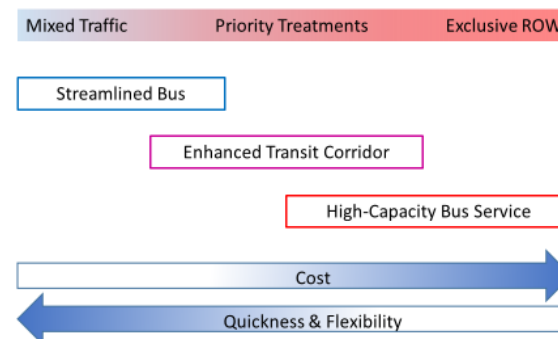


Figure 5: Improvement Levels and Modes

Evaluation Questions

This evaluation addresses eight overarching questions regarding the readiness of each corridor and segment for transit investments including:

1. How can improvements enhance the existing service?
2. How well is the corridor integrated with multimodal networks?
3. What do rider surveys and stakeholder outreach indicate about HCBS?
4. What do current projects and political support indicate about HCBS?
5. Which corridor has the physical characteristics that could facilitate HCBS implementation?
6. Which corridor best addresses equity?
7. Which corridor has the largest potential travel market and geographic value?
8. Which segment has land use that best supports HCBS?

Evaluation Summary

The following provides a summary of each segment's readiness according to the eight questions listed above.



How well does the existing service provide a foundation for HCBS?

Florin Road has the highest service level (15-minute headways for weekday service) and ridership among the five segments. **Arden Way and El Camino** have good ridership, but do not have 15-minute headways for weekday service. **Watt Avenue and Sunrise Boulevard** have relatively lower ridership and lower frequency.



How well is the segment integrated with multimodal networks?

Watt Avenue has the greatest number of connecting transit lines, including connection to two frequent LRT lines (Blue Line and Gold Line). Florin Road, Sunrise Boulevard, and Arden Way connect to one LRT line. Only the El Camino Avenue Corridor does not connect to LRT. Integration with active transportation modes varies. The Watt Avenue segment has the highest density of intersecting bike lanes. Florin Road has the best sidewalk coverage. Arden Way has the highest concentration of protected pedestrian crossings, but also the highest pedestrian collisions per mile.



What do rider surveys and stakeholder outreach indicate about HCBS?

Riders on **Watt Avenue and Florin Road** appear to be the most satisfied with current transit service based on on-board surveys on bus lines serving the segments. Stakeholder comments for each segment included: traffic safety concerns on **Arden Way and El Camino Avenue**; concerns about a lack of pedestrian and bicycle connections to transit stops on **Florin Road**; interest in increased bus service on **Sunrise Boulevard**; and concerns about personal safety, as well as need to serve affordable housing along **Watt Avenue**.

The online survey highlighted riders' demand for a higher frequency of buses, particularly during weekday rush hours; reliable schedules; and faster travel times along **Sunrise Boulevard and Arden Way**. They also indicated current challenges and barriers including wait times at stops, traffic, and congestion at stop lights and priorities for HCBS improvements to address these barriers, including dedicated bus lanes, improving pedestrian access, and signal priority at stop lights. Stakeholder interest along these corridors indicate buy-in for HCBS.

Stakeholder interviews indicated that there is development along the **Sunrise Boulevard** corridor that would be conducive to HCBS, including the Citrus Heights Sunrise Mall plan, which would increase the intensity of uses and encourage dense, mixed-use development

within the 100-acre area. Dense, transit-oriented development is crucial to increase the ridership that encourages HCBS. stakeholder interviews indicated that increased frequency from Rancho Cordova to major employment centers during peak hours was a priority and that signal prioritization and real-time monitoring would improve service. The corridor also has two projects that focus on enhanced bus corridors, which would support HCBS in the long term.



What do current projects and political support indicate about HCBS?

Watt Avenue has the greatest number of projects that would support HCBS according to the 2020 Sacramento Area Council of Governments (SACOG) Metropolitan Transportation Plan/Sustainable Communities Strategy. These include a BRT route that would serve CSUS Placer and Placer Vineyards to Watt/I-80 LRT station; exclusive BRT/Hi Bus lanes along Watt Avenue; and a 12.5-mile Hi bus corridor on Watt Avenue. This focus shows that there is political will to create HCBS for the community.



Which segment has street characteristics that could facilitate HCBS?

All five corridors have sufficient right of way – with four to six travel lanes and center turn lanes for a large portion of the corridor. Sunrise Boulevard is the corridor that crosses the highest number of jurisdictions (5 for the corridor), which can make implementation of improvements more difficult as of **El Camino Avenue** and **Arden Way** are within the limit of the City of Sacramento. However, **Sunrise Boulevard** has characteristics that would

support HCBS, including improved traffic, pedestrian, and bicycle mobility; road rehabilitation; and aesthetic continuity thanks to the Citrus Heights Sunrise Boulevard Complete Streets project.



Which segment best addresses equity?

Arden Way and **El Camino Avenue** have the largest number of zero-car households and the largest concentration of residents earning less than 200% of the federal poverty level. **Florin Road** has the largest concentration of minority residents, followed by **Arden Way**. These numbers were compared to the system average.



Which segment has the largest travel market and geographic value?

On a per mile basis, **Arden Way** has the highest weekday person-trip density and by far the highest number of jobs within a quarter mile of the corridor. **El Camino Avenue** and **Florin Road** have the largest population within a quarter mile of the corridors closely followed by **Arden Way**. Overall, **Arden Way** ranks the highest in term of travel market.

In term of geographic value, **Watt Avenue** and **Sunrise Boulevard** are the corridors that serve a more diversified geographic location within the SacRT Service Area and creating a more regional network.



Which segment has land use that best supports HCBS?

Arden Way and **Watt Avenue** have land use characteristics that best support HCBS now

and in the future. Current plans for redevelopment on **Sunrise Boulevard** may support high-capacity transit in this corridor.

Recommendations

Watt Avenue and **Arden Way** warrant improvements to existing service and spot improvements to increase transit speed and reliability in the short term. These two corridors could be candidates for HCBS in the future, as each corridor develops, particularly on Watt Avenue, where an increased number

of projects and political support is accelerating development. **Florin Road** has bus service that would support HCBS but struggles to get political buy-in to move improvements forward. **Sunrise Boulevard** is a candidate for mid- and longer-term investments in service and capital improvements, which would lay the foundation for HCBS. **El Camino Avenue** might be well-positioned for spot improvements to improve speed and reliability but not HCBS and should not be carried forward in the next phase of this analysis. Table 8 shows how each corridor fared for each of the eight questions.

Table 8: Corridor Evaluation Matrix

Evaluation Criteria	Arden Way	Florin Road	Sunrise Boulevard	Watt Avenue	El Camino Avenue
 Existing service					
 Integration with multimodal networks					
 Rider surveys and stakeholder outreach					
 Current projects and political support					
 Physical characteristics					
 Equity					
 Potential travel market and geographic value					
 Land use					

Ranking:  Low
  Medium
  High



PHASING AND IMPROVEMENTS



Arden Way
Credit: Naomi Batzer

PHASING AND IMPROVEMENTS

Based on the evaluation presented in the previous section, the following four corridors were further analyzed to identify short-term improvements and to define a long-term vision:

- Arden Way
- Florin Road
- Sunrise Boulevard
- Watt Avenue

This section is separated into two subsections:

1. **Initial Focus or Pre-HCBS improvements** – reviews potential incremental improvements for each corridor to build faster, more direct, and more reliable service; to increase ridership; and to build right-of-way and multimodal improvements to get the corridor ready for HCBS.
2. **HCBS Vision** – includes a long-term vision for each corridor including potential transfer points, terminal points and phasing for future HCBS.

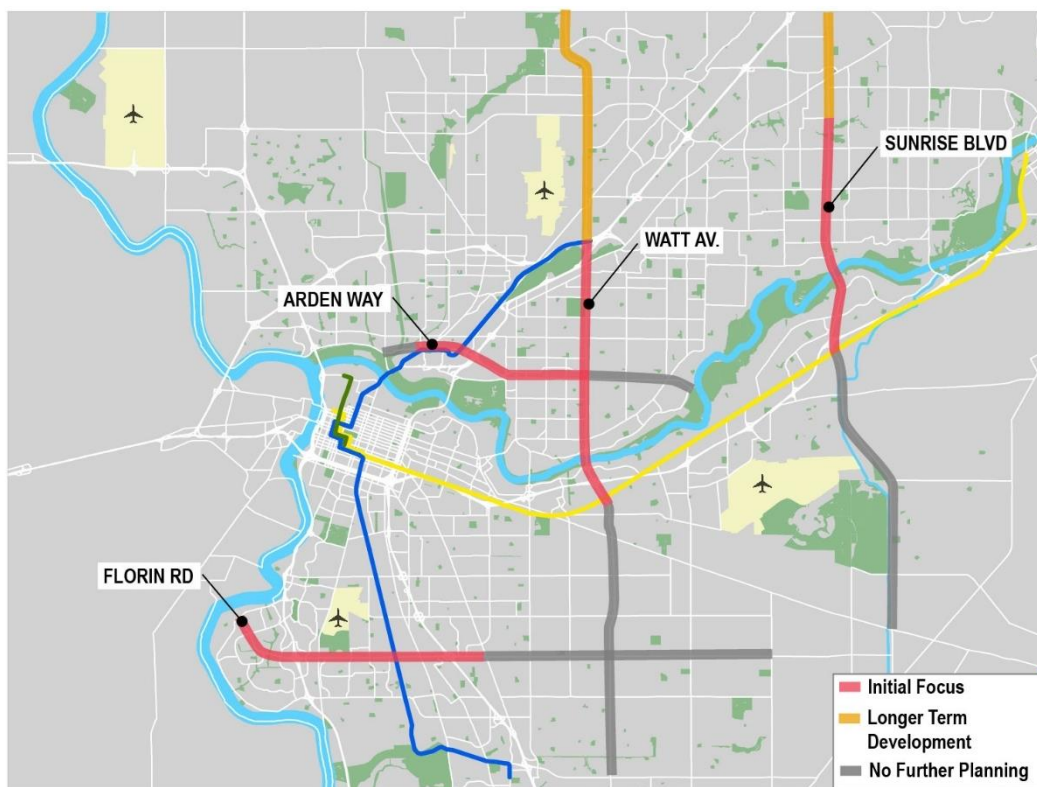


Figure 6: Recommendation and Phasing Map

Building for a Long-Term HCBS Vision

The pre-HCBS improvements to the existing service can make the service more direct, faster, and more reliable. It also includes ways to make the streets more welcoming for pedestrians and cyclists, transform the corridors into multimodal streets, and encourage more transit-oriented development. These improvements represent lower-cost, incremental steps toward the longer-term HCBS vision. These improvements can be considered along with other planning and design efforts for streets and properties along the corridor. They can be implemented in conjunction with land development and redevelopment along the corridors and as part of right-of-way improvements planned by other jurisdictions. Some of the improvements could be planned and completed within the next several years. It is also possible to develop low-cost, temporary “tactical transit” pilot projects to test and measure the impact of changes before committing funding for final design and construction. Partnerships between SacRT and jurisdictions that manage the public right-of-way can tie investments in transit service and facilities with mutually-supportive multimodal improvements in the street’s right-of-way. The objective is to provide the tools needed to strengthen the corridors in the short term in order to prepare them for HCBS in the future.

The three levels of improvements identified during the study are shown in the table below. Each level of improvement builds upon the previous level and culminates in the longer-term creation of HCBS routes. Elements can be assembled in different combinations over time, with each element incrementally adding to service quality and increasing bus speeds and reliability.

Timeframe	Potential Improvements
Pre-HCBS	• Streamline existing bus routes ○ Improve frequency ○ Realign routes for continuous service on the arterial ○ Make spot transit priority improvements (e.g., queue jumps, right-turn-except bus, traffic signal priority) ○ Relocate stops for better speed/reliability and passenger access
	• Enhanced transit corridors ○ Improve pedestrian and bicycle access ○ Provide transit priority treatments the length of the corridor (e.g., continuous bus lanes, business access transit lanes) ○ Improve pedestrian access throughout the corridor, particularly to high-ridership stops ○ Branding
HCBS	• High-Capacity Bus Service (HCBS) ○ Space stations farther apart at main intersections, key destinations ○ Provide larger shelters, boarding platforms, other amenities at stations ○ Use all-door bus boarding ○ Use advanced bus technology, larger buses

Pre-HCBS Improvements

Pre-HCBS improvements represent lower-cost, incremental steps towards a long-term vision of HCBS along the four corridors. Each corridor was analyzed using the Swiftly software⁵ to evaluate bus operations. Data was analyzed for weekdays between October 1, 2019 – February 29, 2020. Swiftly provided statistical charts and maps of bus speeds by route segment, dwell times at stops, and on time performance by stop. This information was used to identify locations for potential incremental improvements along each route as initial steps toward full HCBS.

Methodology

Each corridor was reviewed to find the locations where implementing a HCBS tool (see sidebar) could provide the most benefit in the short/mid-term and prepare the corridor to move towards a full HCBS. Each corridor analysis is presented in the following order:

1. **Speed Map:** Review of slow segments along the corridor and a map summarizing the slow segments and long dwell times at bus stops.
2. **Improvements Map and Narrative:** Divides each corridor into segments and identifies the toolkit techniques most appropriate for each segment.
3. **Time Savings:** Presents the potential time savings from the improvements.

Some of the proposed improvement concepts could be tested using tactical transit before a

final decision is made to make a permanent change. This approach uses inexpensive, temporary materials and short-term tactics to implement projects in the short-term.

Developing Tools to Implement HCBS in the SacRT Service Area

As part of the study, a **High Capacity Bus Service Toolkit** was developed to identify key categories of improvements to prepare each corridor for HCBS. The toolkit addresses individual corridor needs. The improvement categories are listed below:



Transit priority lanes provides quicker and more reliable service



Traffic control facilitates bus movements



Stop and station improvements provides better passenger amenities and a quicker service



Street design changes to enhance transit operations and the active transportation environment



Operational changes to streamline service

For each corridor, a combination of these improvements is identified to provide quicker, more reliable bus service and to improve the customer experience.

⁵Swiftly is a data analytics software package that summarizes GTFS data so it can be used to evaluate the speed, reliability, and on-time performance of bus routes.

Arden Way

The Arden Way corridor includes Route 13-Natomas/Arden between Del Paso Boulevard and Watt Avenue.

Speed Map

Figure 7 shows the weekday average speed map for Route 13. Many parts of the route have average speeds less than 15 miles per hour on weekdays. The slowest eastbound route segments are:

- Near the end of the route on Watt Avenue
- The left-hand turn from Arden Way onto Morse Avenue
- In front of the Arden Fair Mall

Westbound slow speeds include:

- In front of the Arden Fair Mall
- Along Arden Way between the Royal Oaks and Arden/Del Paso stations
- The loop going into the Arden/Del Paso Light Rail Station

The stops at the Arden Fair Mall and the Arden/Del Paso Station also see long dwell times, which could be due to the relatively large volume of passengers boarding and alighting at those locations. Both locations are timepoints; so, it is also possible that buses are holding at those locations because of early arrivals.

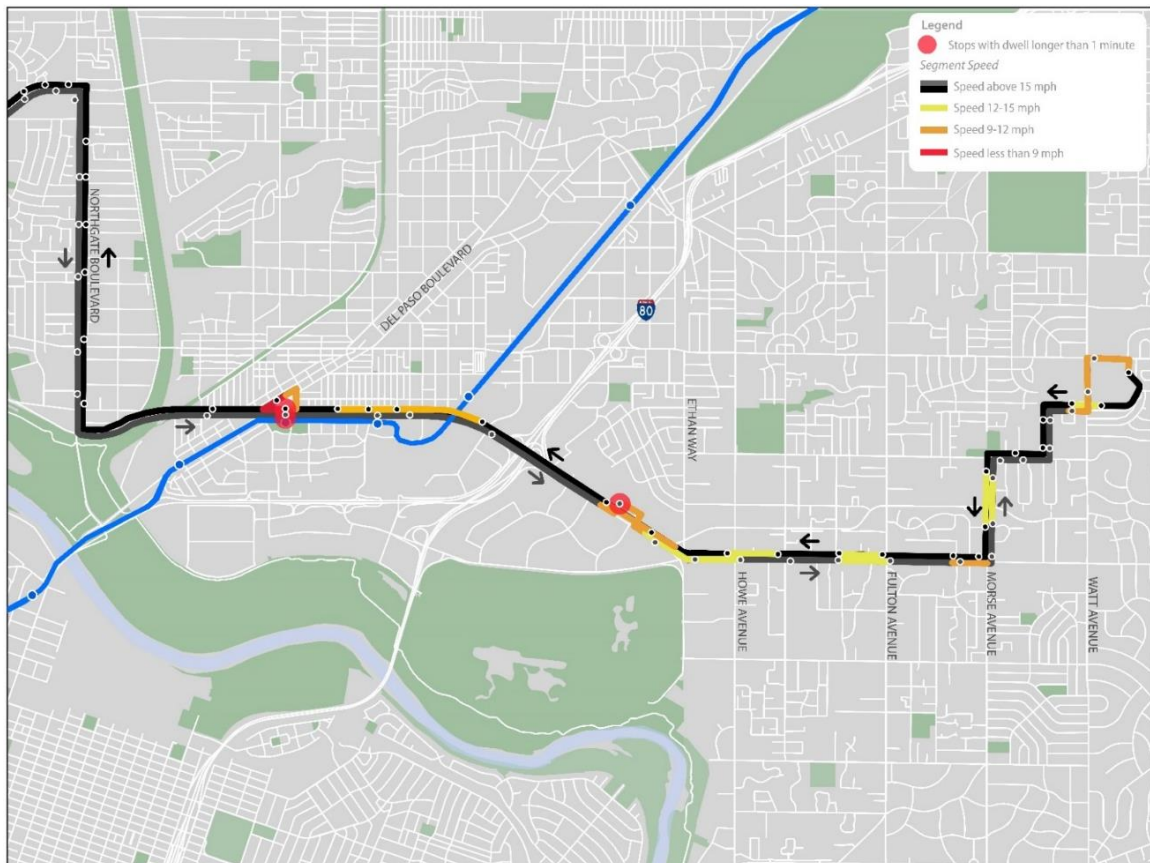


Figure 7: Arden Way Speed Map

Improvements

Suggested improvements for Arden Way are presented in Figure 8 below. The potential HCBS corridor is highlighted in yellow and the

existing Route 13 is the gray line. The route is divided into four segments and proposed applications of toolkit techniques are depicted with icons from the sidebar above for each of the four segments.

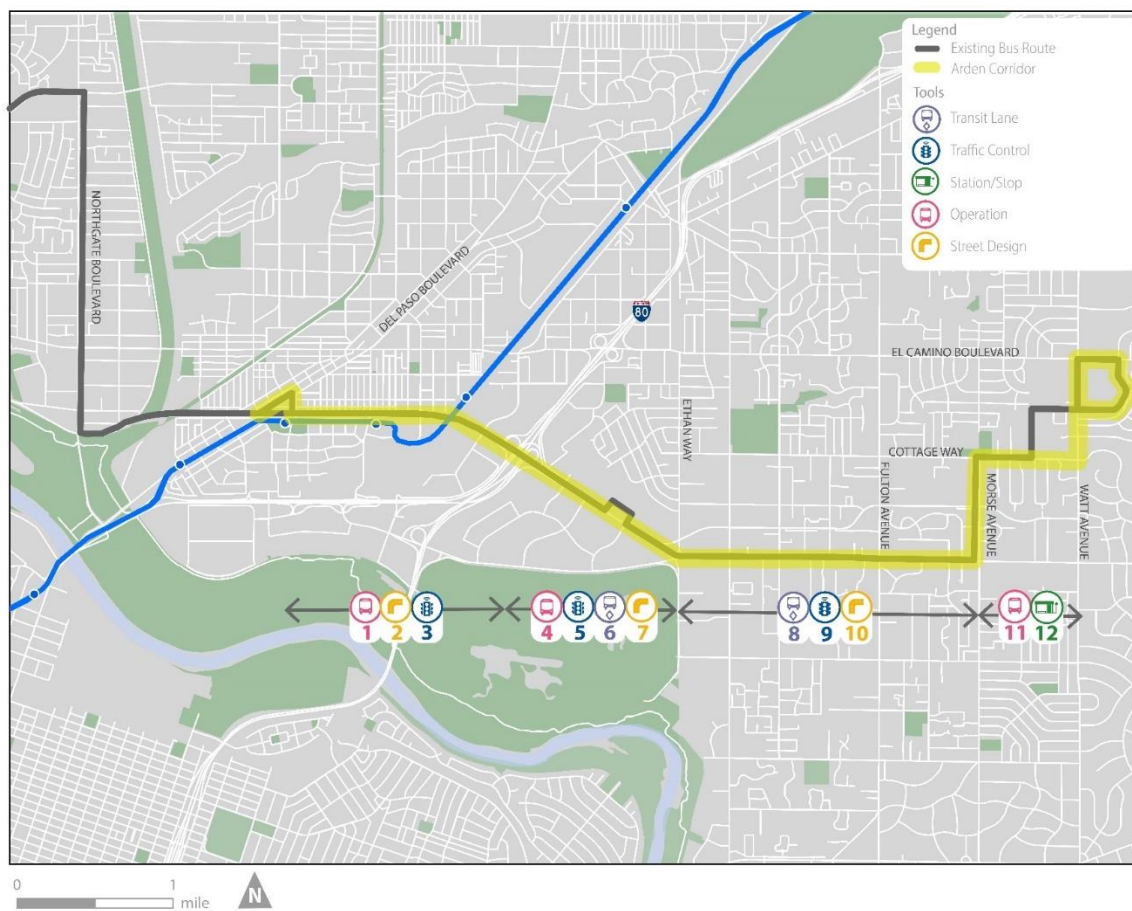


Figure 8: Arden Way Potential Improvements Map

Segment 1: Del Paso Boulevard to I-80

These improvements aim to increase safety and efficiency at the Del Paso LRT station. Route 13 currently deviates off of Arden Way and loops past the station in the eastbound direction due to a lack of a safe pedestrian crossing between the north side of Arden Way and the light rail station on the south side. The improvements will also offer a faster and more

reliable service through signalized intersections in this segment.

1. **Streamline route:** Keep through buses on Arden Way between Oxford and Del Paso.
2. **Improve pedestrian infrastructure:** Provide a crosswalk between the new bus stop and Arden/Del Paso Station between Del Paso Boulevard and Oxford Street.

- 3. Transit signal priority:** Add eastbound queue bypass lane/leading green signal at Evergreen and I-80 WB on-ramp; and build a westbound Right-Turn-Only Except Bus at Harvard Street and queue bypass lane/leading green signal at I-80 WB off-ramp.

Segment 2: I-80 to Ethan Way:

These improvements aim to reduce travel times for through passengers and to increase pedestrian access. Proposed route streamlining and infrastructure improvements will prepare the service for HCBS, reduce delays at unsignalized intersections, and increase speeds near the Arden Fair Mall.

- 4. Streamline route:** Remove loop through Arden Fair mall parking lot and keep eastbound buses on Arden Way.
- 5. Transit signal priority:** Add signal and pedestrian crossing on I-80 EB off ramp. Add bus-only lane from I-80 to off ramp and add crosswalk and traffic signal on off-ramp. Convert right-hand eastbound through lane at Ethan Way to Right-Turn-Only-Except-Bus/leading green signal for buses.
- 6. Business access transit lanes:** Add Business Access Transit (BAT) lane eastbound between Point Way West and Chase Bank driveway and westbound between Ethan Way and at the eastern mall driveway through Heritage Lane.
- 7. Pedestrian infrastructure:** Improve crosswalks around Arden Fair Mall including new crosswalk on east side of Arden Way at Challenge Way and Heritage Lane intersections.

Segment 3 Ethan Way to Morse Avenue:

These improvements will decrease travel time, by prioritizing buses in congested areas, and

thus, increase bus speeds through the seven signalized intersections along this 1.8-mile stretch. Crosswalk improvements would increase pedestrian safety and access.

- 8. BAT lanes:** Add BAT lanes between shopping center driveway and Bell Street, and between Fulton Avenue and Hilldale Road.
- 9. Transit signal priority:** Provide signal priority, queue bypass lanes, and right-turn-only-except-bus lane at signalized intersections.
- 10. Pedestrian infrastructure:** Complete all four legs of the signalized intersections at shopping center driveways, west side of Bell Street/Arden Way, and east side of Professional Drive/Arden Way.

Segment 4: Morse Avenue to Watt Avenue:

These improvements will decrease travel time while still serving the Kaiser Medical Center by eliminating a diversion. There is also an opportunity to enhance mobility within the area by linking transit, active transportation, and micromobility options.

- 11. Streamline route:** Remove eastbound turn by using Cottage Way between Butano Drive and Watt Avenue.
- 12. Enhance network connectivity:** Potential mobility hub in collaboration with the Kaiser Medical Center. This improvement also provides a tactical transit opportunity.

Time Savings

Current scheduled eastbound run times are 21 minutes (noon and 5PM) between the Arden/Del Paso Station and Kaiser Permanente Sacramento Medical Center. The

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improvements listed below could save up to 3-4 minutes running time eastbound.

Streamlining the route at Arden Fair mall to stay on Arden Way instead of looping into the mall parking lot would save 2 of the 3-4 minutes (and 0.1 mile of route distance).

Other transit priority treatments could save up to 1-2 minutes (5-10% of the running time), for the total potential savings of 3-4 minutes eastbound.

Current westbound scheduled running times are 21 minutes (noon)-23 minutes (5 PM).

Keeping westbound Route 13 buses on Arden Way at the Arden/Del Paso Station could save 3 minutes and 0.6 miles. Coupled with the other transit priority treatments, total westbound savings could be up to 4-5 minutes. Table 9 is a summary of potential travel time savings.

Table 9: Time Saving Estimation (in minutes) for Arden Way

Direction	Route Streamlining	Transit Priority Treatments	Total	Current Run Times*	Percent
Eastbound	2	1-2	3-4	21	14-19%
Westbound	3	1-2	4-5	21	19-24%
Round Trip	5	2-4	7-9	42	17-21%

*Weekday noon

Florin Road

The Florin Road corridor analysis includes a review of Route 81, which travels between Riverside Boulevard and Stockton Boulevard.

Speed Map

Figure 9 below shows the weekday speed map for Route 81 on Florin Road.

There are a few parts of the route with speeds less than 15 miles per hour. The slowest eastbound route segments are around Franklin Boulevard, Stockton Boulevard, and near the Florin LRT Station at Indian

Lane/29th Street. Slow speeds could be due to signal delays, particularly for left turns into the Florin LRT Station and off Stockton Boulevard onto 65th Street (used by trips that end at Florin Town Centre). Westbound speeds exceed 15 miles per hour everywhere except for the part of the route off Florin Road at the Florin LRT Station.

Long dwell times exist at the Florin LRT Station and at the stop at 65th and Florin. Both locations are timepoints, buses could be holding at those locations due to early arrivals.

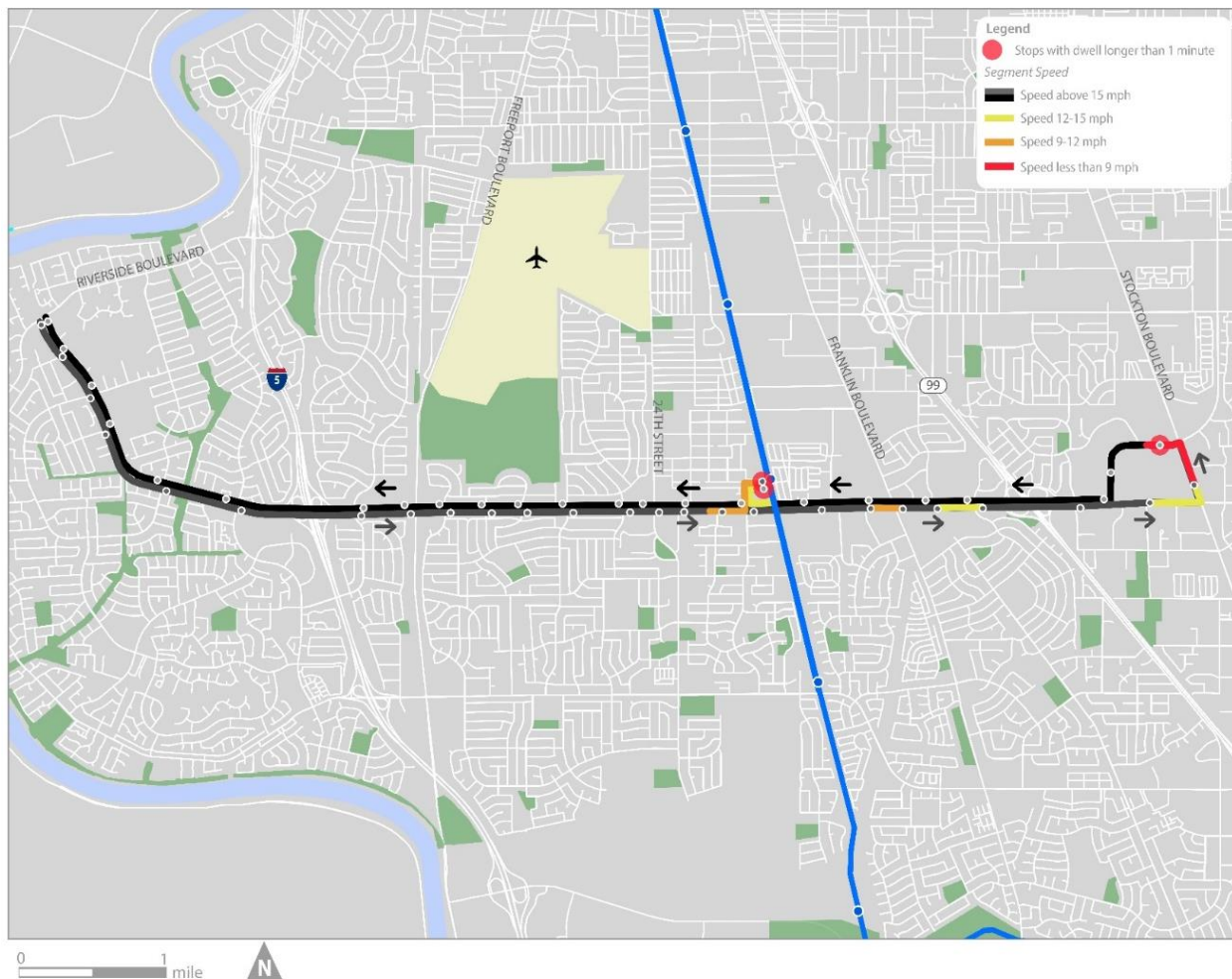


Figure 9: Florin Road Speed Map

Improvements

Figure 10 below presents key improvements for the Florin Road corridor. The potential HCBS corridor is highlighted in yellow and the

existing Route 81 is the gray line. The route is divided into three segments and proposed application of techniques from the toolkit are shown for each of the three segments.

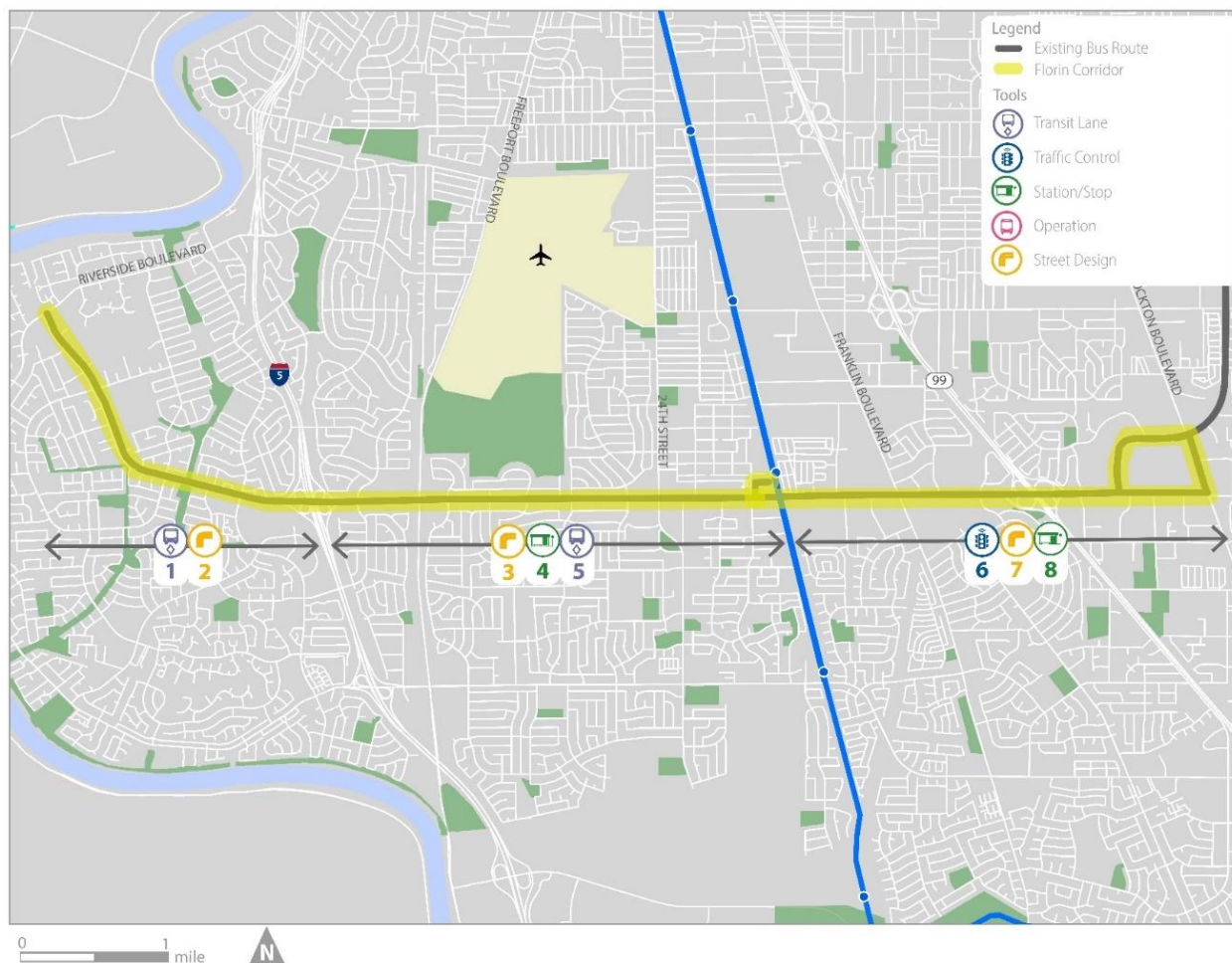


Figure 10: Florin Road Potential Improvements Map

Segment 1: Riverside Boulevard to I-5

These improvements would help reduce travel times by introducing right-turn-only-except-bus treatments at some signalized intersections and reducing queueing at lights before stops. They will also create a safe multimodal corridor by maximizing the utilization of the right-of-way for all users by filling gaps in crosswalks, sidewalks, and bicycle lanes.

- 1. Bus only turn lane:** Transit turn lane (ex.: Gloria Drive and Havenside Drive).
- 2. Pedestrian infrastructure and multimodal improvements:** Safety and multimodal improvements including new crosswalk and protected bike lanes.

Segment 2: I-5 to Florin LRT Station

These improvements would help reach the City of Sacramento's Vision Zero goals by increasing safe access to the bus network and

improving existing pedestrian and cycling infrastructure. They will also improve speeds along the corridor, particularly for eastbound buses along Indian Road, and into the LRT station.

3. **Multimodal improvements:** Close gaps in sidewalks, add new crosswalks, and ADA improvements (e.g., at Freeport Boulevard). Evaluate the possibility of using the parallel service lane between Ahmerst and Tamoshanter Way as a dedicated bike route.
4. **Pedestrian infrastructure:** In-lane bus stop to provide more space for riders at bus stops at Ahmerst Street, 17th Street, Cromwell Way, 21st Street and Tamoshanter (westbound only).
5. **Bus only turn lane:** Evaluate Transit Only Turn Lane at Indian Road to reduce delay for service at Florin Station or keep bus on Florin Road at the LRT Station with a new crosswalk at the intersection with the LRT tracks.

Segment 3: Florin LRT Station to Stockton Boulevard:

These improvements will decrease travel time, by prioritizing buses in congested areas, and increase bus speeds through the nine signalized intersections along this 1.6-mile stretch. They will also improve delays on the eastbound route for buses that short-turn at the Florin Town Centre and buses making a left-hand turn off of Florin and onto Stockton Boulevard. These improvements will also increase pedestrian safety and access by adding pedestrian crossings on both sides of the streets crossing Florin Road, and by widening sidewalks, particularly near bus stops. Finally, as longer-term plans are realized and Route 81 extends to 65th Street or stops at Florin Town Centre, this node

would be a prime location for a mobility hub – increasing connections in the area.

6. **Transit signal priority:** Signal Priority Treatments to reduce bus delays (ex.: Franklin Boulevard, Stockton Boulevard).
7. **Pedestrian infrastructure:** Safety improvements at bus stops that could include restriping, pavement, and sidewalk improvements (ex.: 65th Street) to better define the areas. Crosswalk improvements at major intersections (e.g., 65th Street, Franklin Boulevard).
8. **Enhance network connectivity:** Potential mobility hub at Florin Towne Center in collaboration with local businesses.

Time Savings

Current scheduled running times eastbound are 23 minutes (noon) and 27 minutes (5 PM) between Sault Park Lane and the Florin Towne Centre Main Terminal. The improvements listed below could save a total of 4-5 minutes running time eastbound. Streamlining the route to stay on Florin Road at the Florin Station instead of looping into the station would save 3 of the 4-5 minutes (and 0.5 mile of route distance). Other transit

priority treatments could save an additional 1-2 minutes (5-10% of the running time), for a total savings of 4-5 minutes eastbound.

Current westbound scheduled running times are 19 minutes (noon)-23 minutes (2-5 PM). Keeping westbound Route 81 buses on Florin Road at the Florin Station would save 2 minutes and 0.5 miles. Coupled with the other transit priority treatments, total westbound savings could be 3-4 minutes. Table 10 is a summary of potential travel time savings.

Table 10: Time Saving Estimation (in minutes) for Florin Road

Direction	Route Streamlining	Transit Priority Treatments	Total	Current Run Times*	Percent
Eastbound	2	1-2	3-4	21	14-19%
Westbound	3	1-2	4-5	21	19-24%
Round Trip	5	2-4	7-9	42	17-21%

Sunrise Boulevard

The Sunrise Boulevard corridor analysis includes Route 21- Sunrise (currently Louis Lane and Orlando Transit Center to the Mather Field/Mills LRT Station) between the Roseville Transit Center and the Sunrise LRT station.

Speed Map

Figure 11 shows the speed map for the north end of the corridor between the Louis Lane and Orlando Transit Center and the Sunrise Mall. There are a few parts of the route with speeds less than 15 miles per hour. Slowdowns occur due to the route diversion off of Sunrise onto Arcadia Drive/Greenback Lane, particularly in the southbound direction. Long dwell times occur along this diversion at the Arcadia and Greenback Stop at the

Sunrise Mall. The long dwell at Arcadia and Greenback could be due to operators dwelling at this timepoint to meet the scheduled run time, although it is not a timepoint.

Figure 12 shows the speed map for the south end of the corridor between the Sunrise Mall and the Mather Field/Mills Light Rail Station. There are few segments with speeds less than 15 miles per hour. Northbound slowdowns occur near Trinity River Drive due to the left-hand turn onto Sunrise Boulevard and at the beginning of the route leaving the Mather Field/Mills Light Rail Station along Mills Station Road, Mather Field Road, and Folsom Boulevard in Rancho Cordova. Long dwell times occur southbound at the Fair Oaks and Sunrise Station.

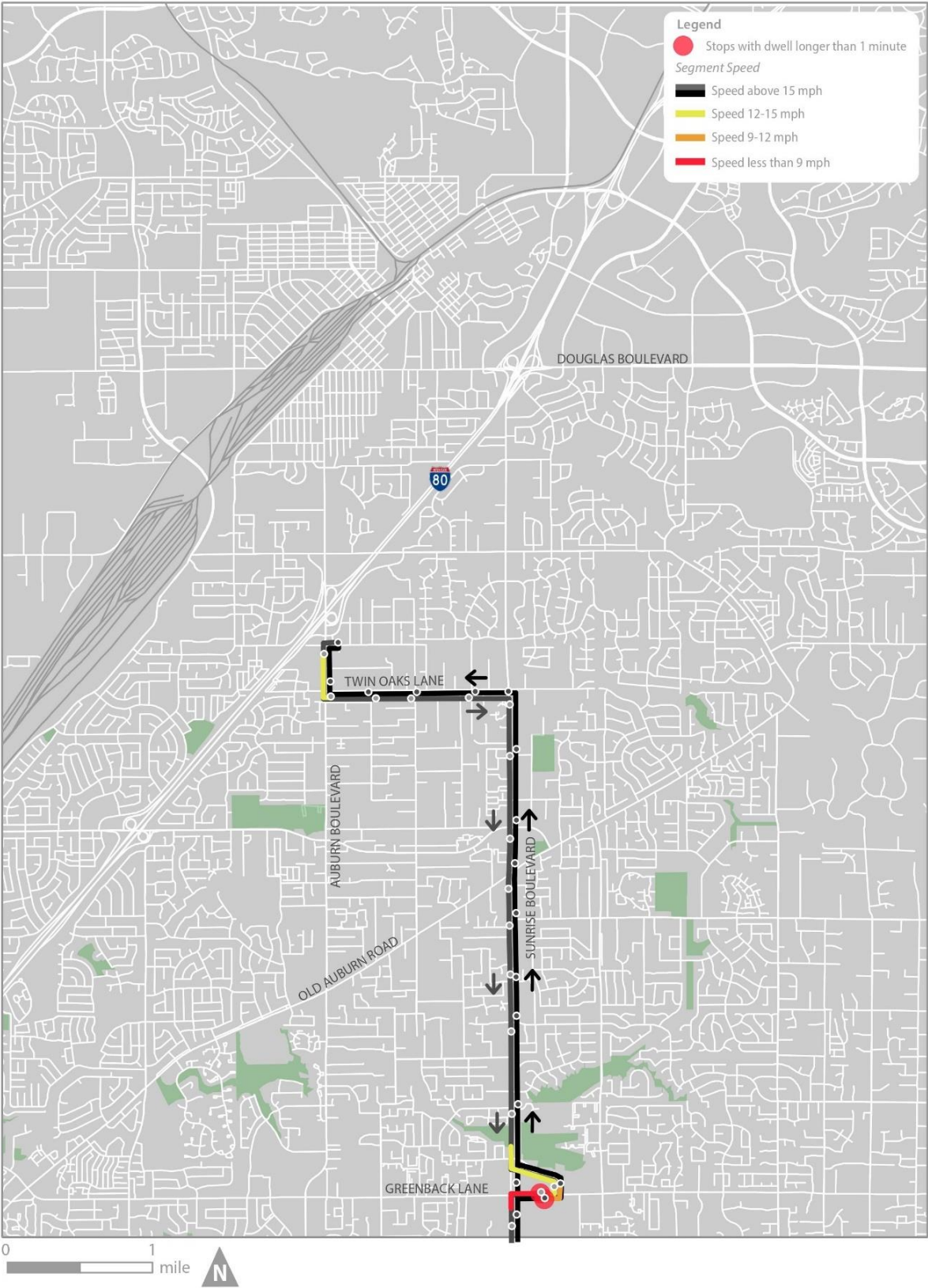


Figure 11: Sunrise Boulevard (North Section) Speed Map

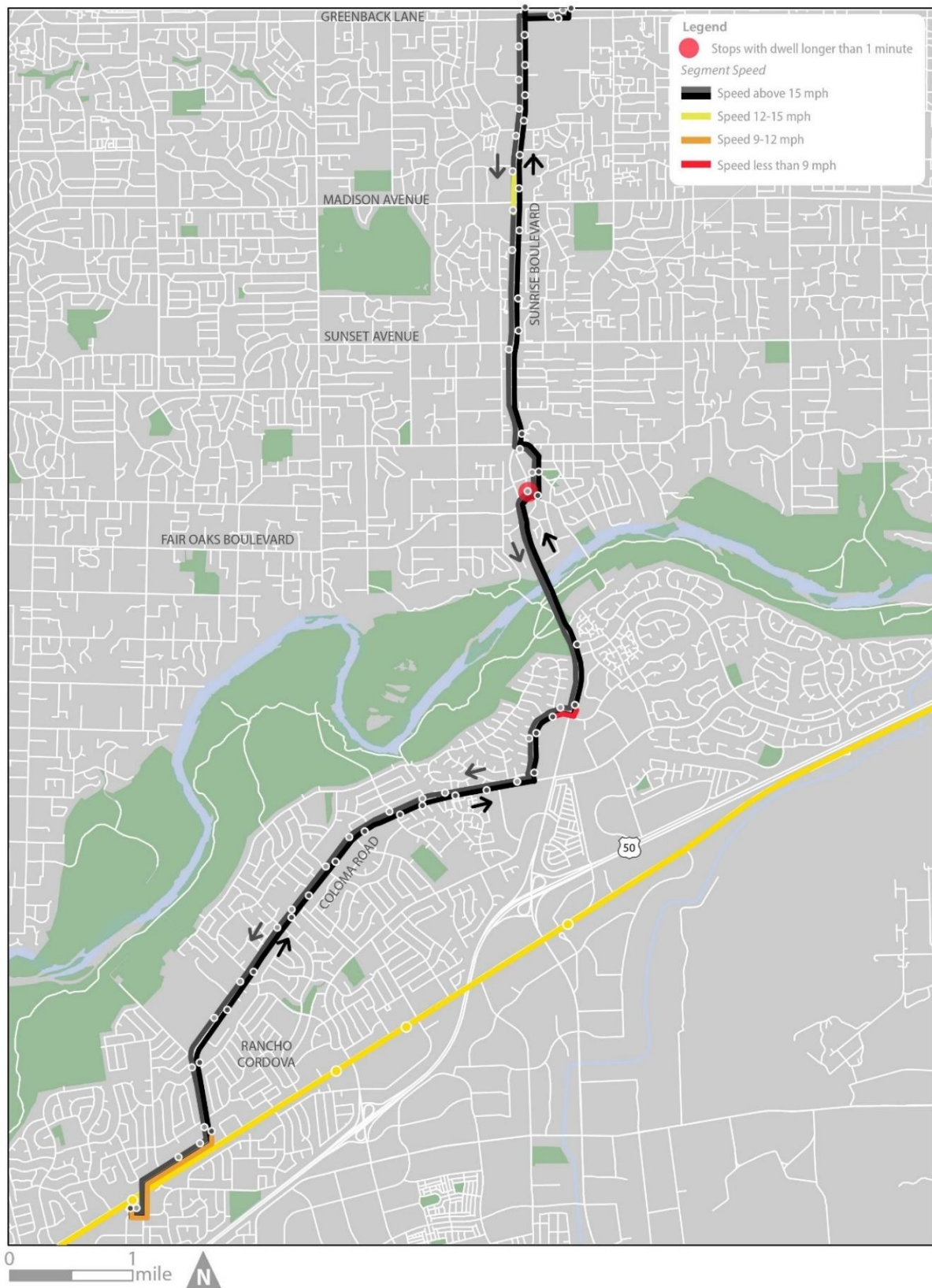


Figure 12: Sunrise Boulevard (South Section) Speed Map

Improvements

Figure 13 and Figure 14 present key improvements that are proposed for the Sunrise Boulevard corridor. The potential

HCBS corridor is highlighted in yellow and the existing Route 21 is the gray line. The route is divided into five segments and proposed application of techniques from the toolkit are shown for each of the five segments.

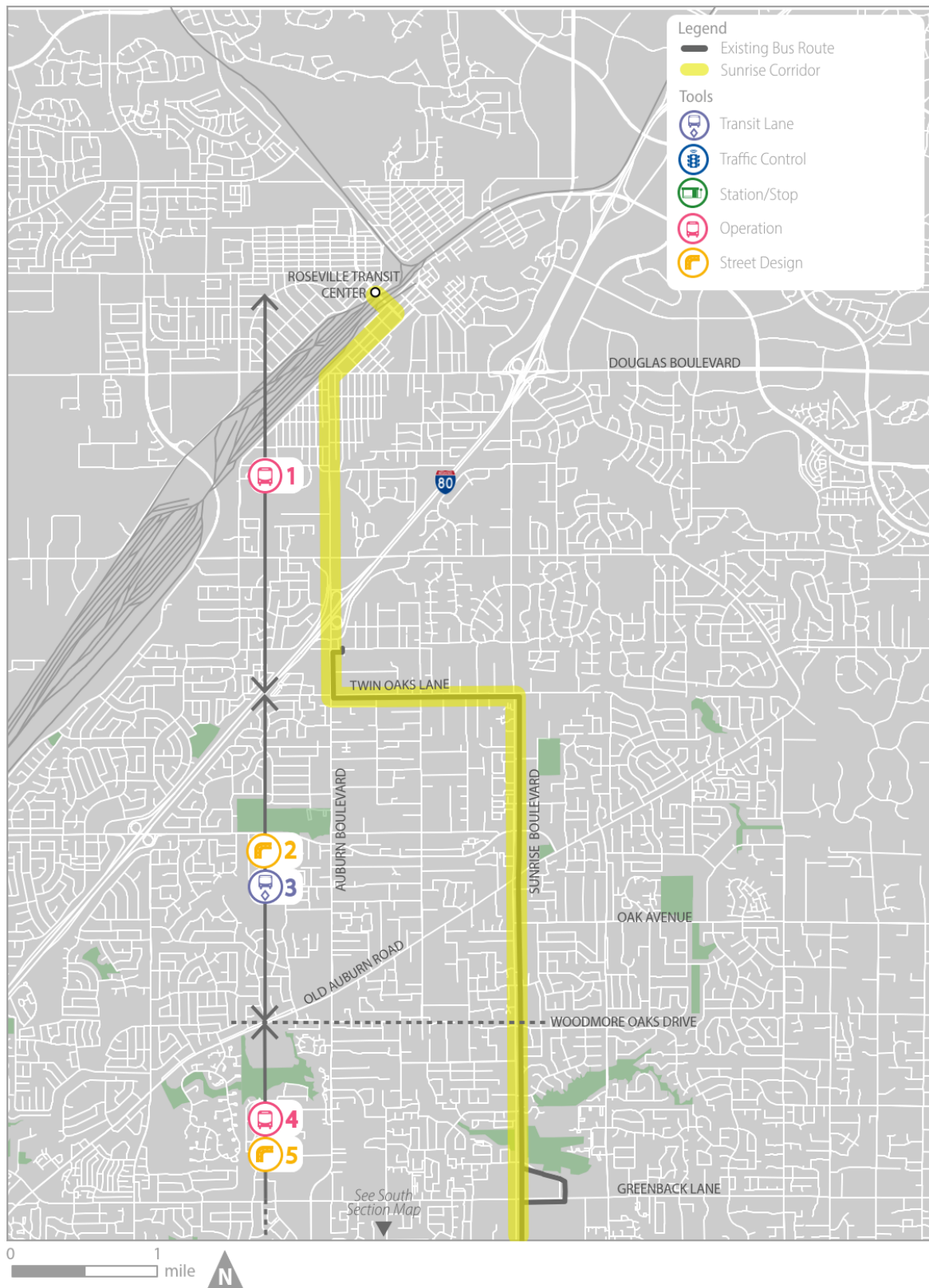


Figure 13: Sunrise Boulevard (North Section) Potential Improvements Map

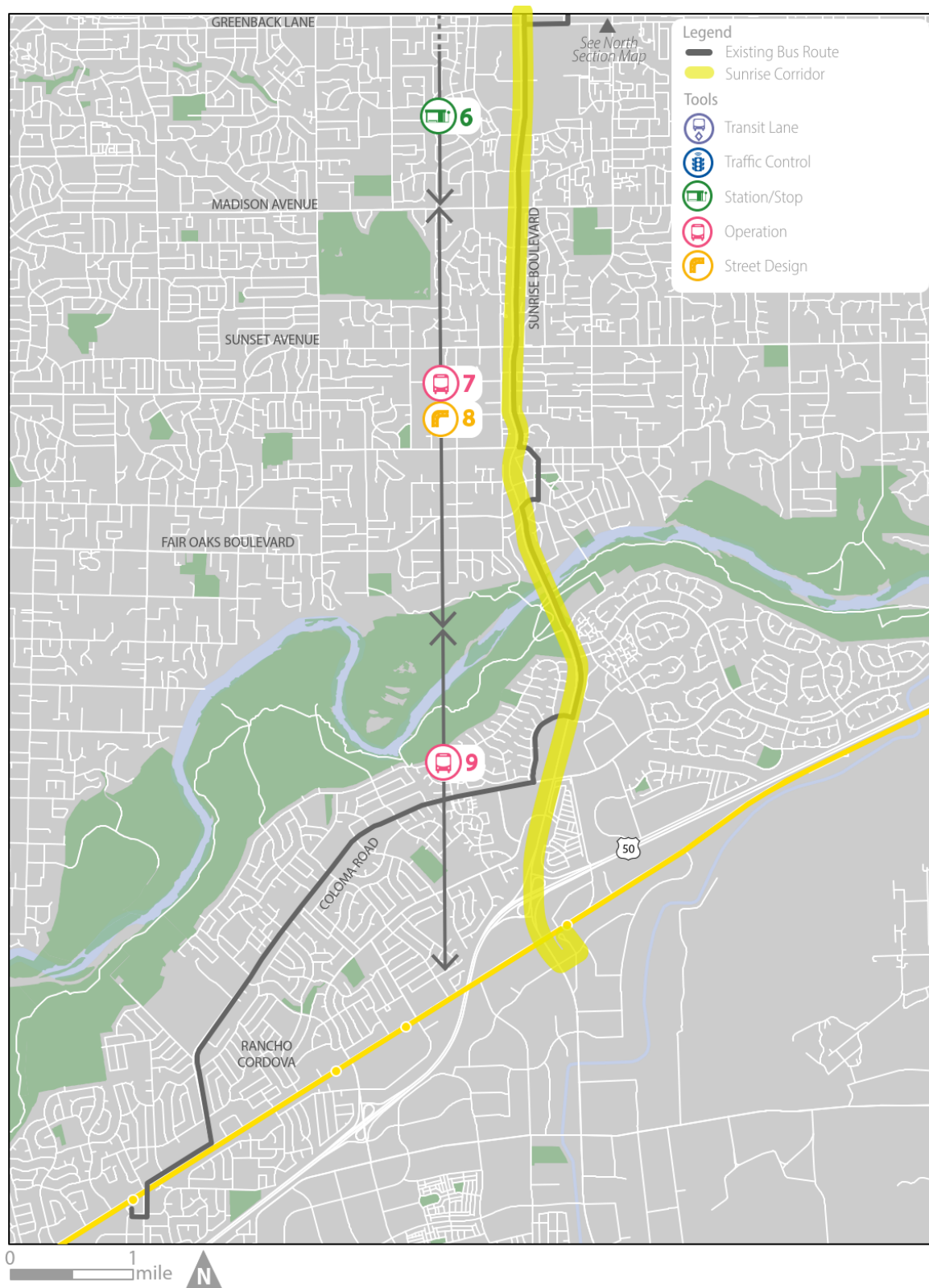


Figure 14: Sunrise Boulevard (South Section) Potential Improvements Map

Segment 1: Roseville Transit Center to Twin Oaks Avenue

These improvements would improve regional connectivity, as the Roseville Transit Center provides connections to Placer County Transit, Amtrak, and intercity bus services.

Route 21 currently runs on Twin Oaks Avenue between Sunrise and Auburn Boulevard to connect to the Louis and Orlando Transit Center. The available right-of-way of Twin Oaks Avenue is narrow with low-density developments. In the short term, service could remain on Twin Oaks Avenue. In the long term, as Route 21 move to HCBS, the limited right-of-way and existing land use could create a barrier to extend the service and might need to be re-routed. Multiple options are available, including moving service to Cirby Road to provide service to the new Kaiser Roseville Medical Center at the corner of Cirby Road and Riverside Boulevard in Roseville.

1. **Extend route:** Extend service north to the Roseville Transit Center and/or the Roseville Kaiser Medical Center.

Segment 2: Twin Oaks Avenue to Woodmore Oaks Drive

These improvements would capitalize on the work from the Sunrise Boulevard Complete Streets project in Citrus Heights by providing more continuous pedestrian access. The improvements will also reduce traffic delays by using the turn-only lane to reach stops on the far side of the intersection.

2. **Pedestrian infrastructure improvements:** Close gaps in the sidewalk between the new ADA-compliant sidewalk improvements and accessible transit spots and shelters, improve pedestrian crosswalks and pedestrian amenities at bus stops.
3. **Bus only and turn lane:** Evaluate bus only, bike, and turn lane at intersections (ex.: Oak Avenue, Sungarden Drive, and Woodmore Oaks Drive).

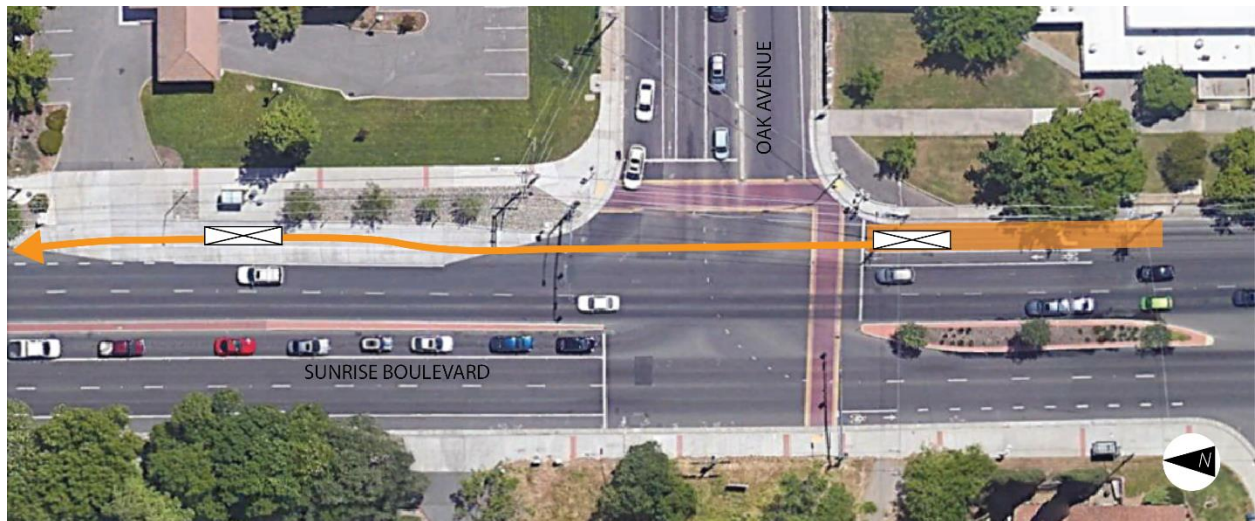


Figure 15: Example of potential Use of the Turn Lane for Quicker Access to Farside Stops

Segment 3: Woodmore Oaks Drive to Madison Avenue

These improvements would increase speeds and reduce delays by streamlining the route and removing three turns northbound along the route; create a more multimodal environment; and increase connectivity between modes.

4. **Streamline route:** Eliminate the diversion at Arcadia Drive and Greenback Lane and realign the bus route on Sunrise Boulevard. Collaborate with the City of Citrus Heights for the implementation of the transit center at the Sunrise Mall redevelopment.
5. **Multimodal improvements:** Safety improvements at major intersection such as new island to reduce length of crossing (ex.: Greenback Lane and Madison Avenue) and improve side street bicycle network to access Sunrise Boulevard (ex.: Greenback Lane, Madison Avenue). This improvement will enhance bike connectivity to adjacent neighborhoods and make the intersections between major arterials accessible for pedestrians, as these wide streets with long exposure times, multileg crossings, and large corner radii make the area unattractive for pedestrians.
6. **Enhance network connectivity:** Collaboration with the City of Citrus Height for potential mobility hub in conjunction with Sunrise Mall redevelopment to link key transportation modes, including transit, active transportation, and smart mobility.

Segment 4: Madison Avenue to the American River

These improvements would decrease travel times by eliminating two turns and streamlining the route; would enhance

pedestrian access to bus stops; and would improve safety at the intersections of Sunrise Boulevard with Winding Way, California Avenue, and Fair Oaks Boulevard.

7. **Streamline route:** Eliminate the diversion on Winding Way/Fair Oaks Boulevard and realign the bus route on Sunrise Boulevard.
8. **Improve pedestrian infrastructure:** Multimodal improvements between Winding Way and Fair Oaks Boulevard to accommodate new bus stops including better sidewalk and pedestrian crossing.

Segment 5: American River to Sunrise LRT Station

There is an opportunity to streamline service along the southern portion of Sunrise Boulevard. Current service deviates from Sunrise to serve Rancho Cordova. New service could continue on Sunrise Boulevard to connect to the Sunrise LRT Station. This would increase efficiency of the route and allow passengers to have direct access to the LRT station. A local route could serve Coloma Road through Rancho Cordova. New stops could be added along Sunrise Boulevard and SacRT could use existing stops from the discontinued Route 28 at Coloma Road and Zinfandel Drive to serve the mobile home park.

9. **Streamline route:** New terminal point at the Sunrise LRT Station with connection to local service to Rancho Cordova and new stops along Sunrise Boulevard.

For Sunrise Boulevard, cross sections showing existing and proposed lane configuration were developed to demonstrate the potential use of the right-of-way. These are presented on the following pages.

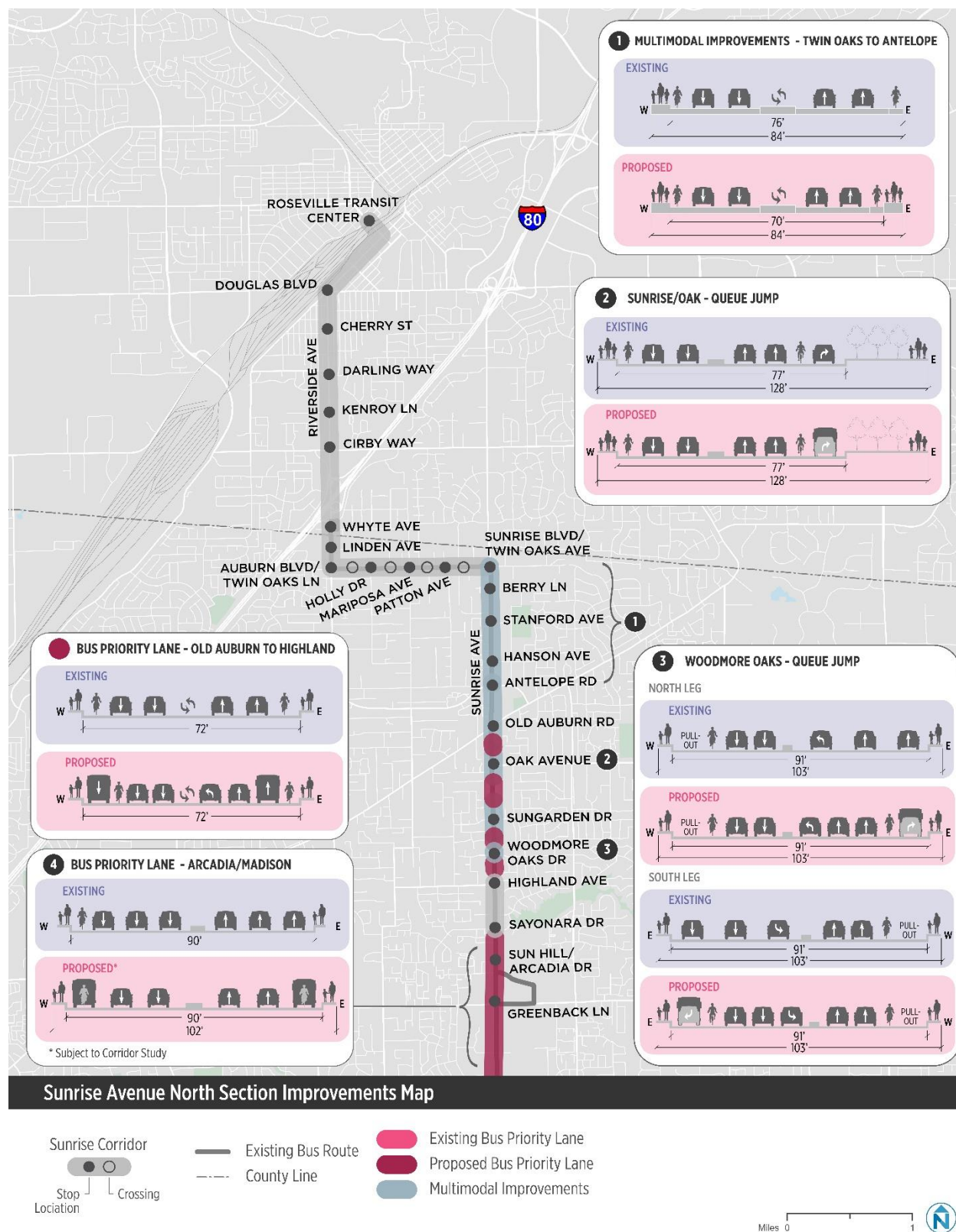


Figure 16: Sunrise Boulevard (North Section) Cross Sections Map

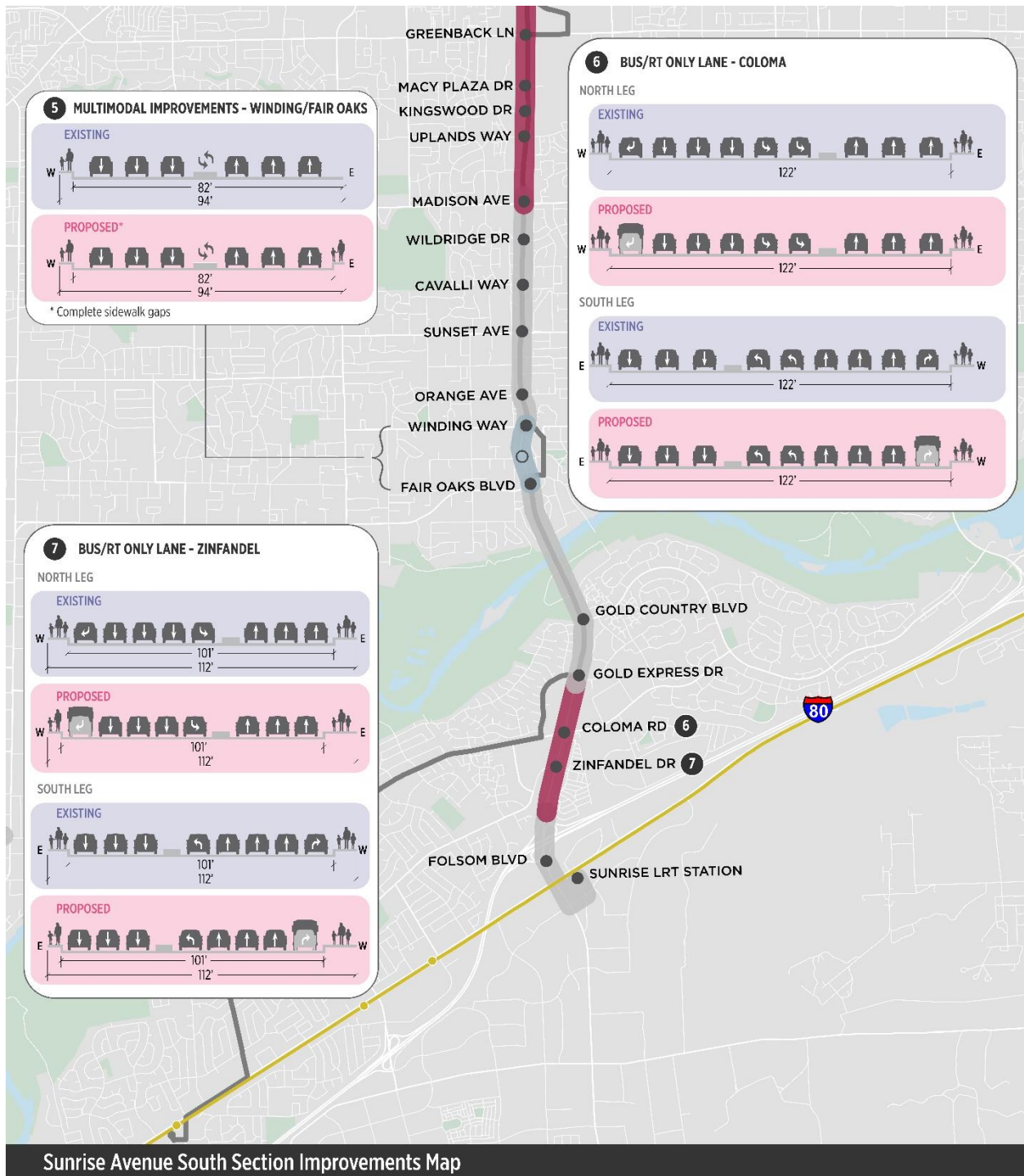


Figure 17: Sunrise Boulevard (South Section) Cross Sections Map

Time Savings

Current southbound scheduled run times between Louis and Orlando Transit Center and Mather Field/Mills Station are 49 minutes (noon)-51 minutes (5 PM). Northbound running times are 46 minutes (noon) and 49 minutes (5 PM). Keeping Route 21 buses on Sunrise Boulevard, instead of the diverting at

Arcadia and Greenback Lane, Fair Oaks Boulevard and Coloma Road would save 9 minutes and 3.4 miles northbound and 6 minutes and 2.7 miles southbound. Coupled with the other transit priority treatments, total roundtrip savings could be 19-24 minutes. Table 11 below is a summary of potential travel time savings.

Table 11: Time Saving Estimation (in minutes) for Sunrise Boulevard

Direction	Route Streamlining	Transit Priority Treatments	Total	Current Run Times*	Percent
Southbound	6	2-5	8-11	49	16-22%
Northbound	9	2-4	11-13	46	24-28%
Round Trip	15	4-9	19-24	95	20-25%

* Weekday noon between Louis & Orlando and Mather Field/Mills

Watt Avenue

The primary route in the Watt Avenue corridor is Route 84, which operates between Elverta Road and Watt/Manlove Station and includes diversions off of Watt Avenue in Antelope, Arden-Arcade, and Rosemont. Other routes along Watt include 26-Fulton between Elverta Road and James Way and between Peacekeeper Way and Auburn Boulevard. Routes 13 and 82 also serve short stretches of Watt Avenue.

Speed Map

Figure 18 shows the speed map for the north portion of the corridor between Baseline Road and the I-80/Watt LRT Station. There are only a couple of slowdowns – one after I-80 in the northbound direction and one after the Watt/I-80 Station in the southbound direction. The I-80 LRT station is the only location with average weekday dwells longer than a minute. This dwell is not scheduled and could be due to volume of passengers boarding and alighting at the light rail connection point.

Figure 19 shows the speed map for the south portion of the Watt Avenue corridor between I-80/Watt LRT Station and Watt/Manlove LRT Station. There are more slowdowns in the south portion of the corridor, compared to the north. Northbound slowdown locations include the left-hand turn onto Arden Way from Watt Avenue and the left turn from Butano Avenue onto Watt Avenue after serving the Kaiser Medical Center. Southbound slow speeds are evident in front of Kaiser Hospital on Morse Avenue. Significant delays also occur around the Watt/Manlove Station.

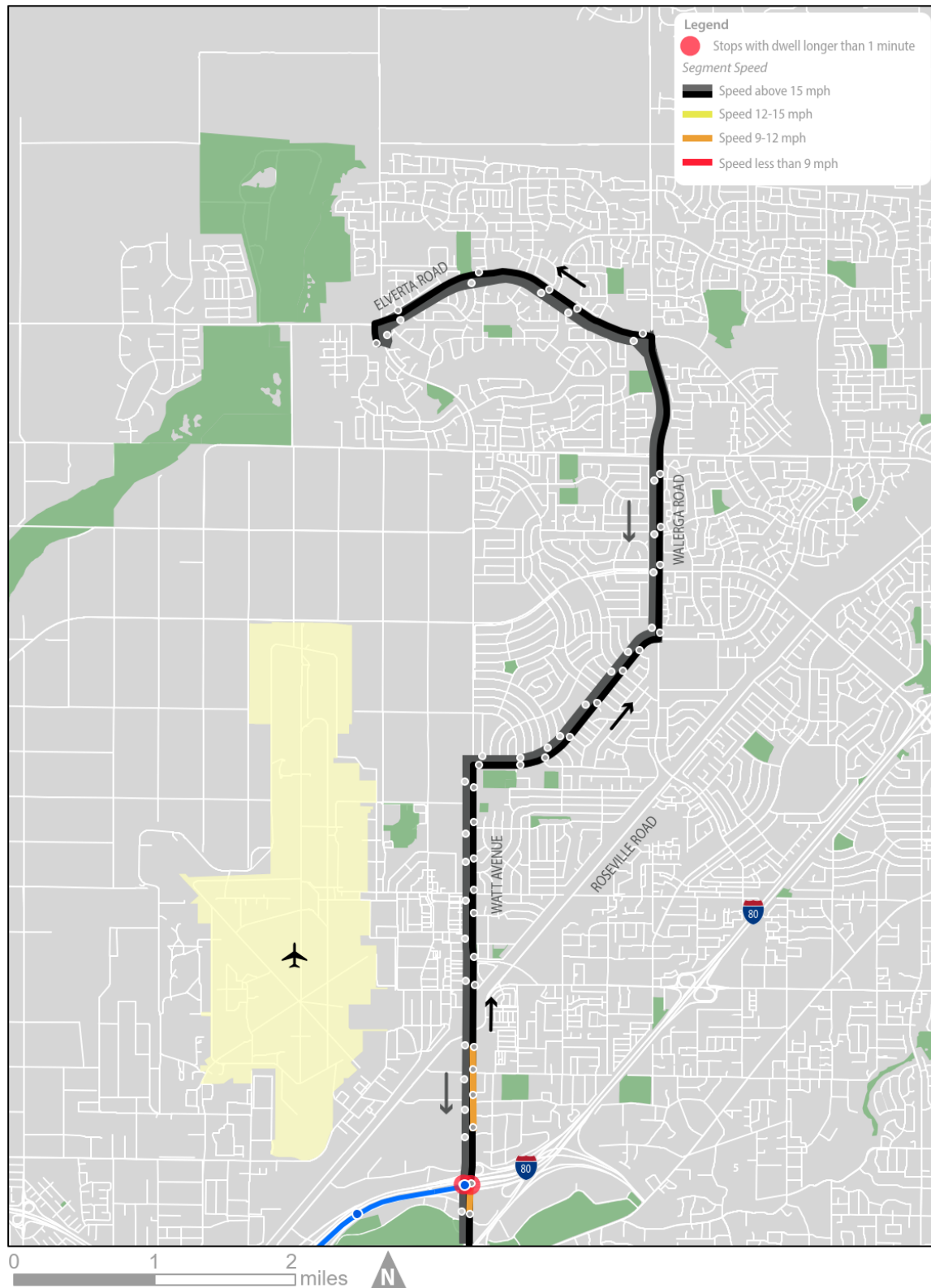


Figure 18: Watt Avenue (North Section) Speed Map

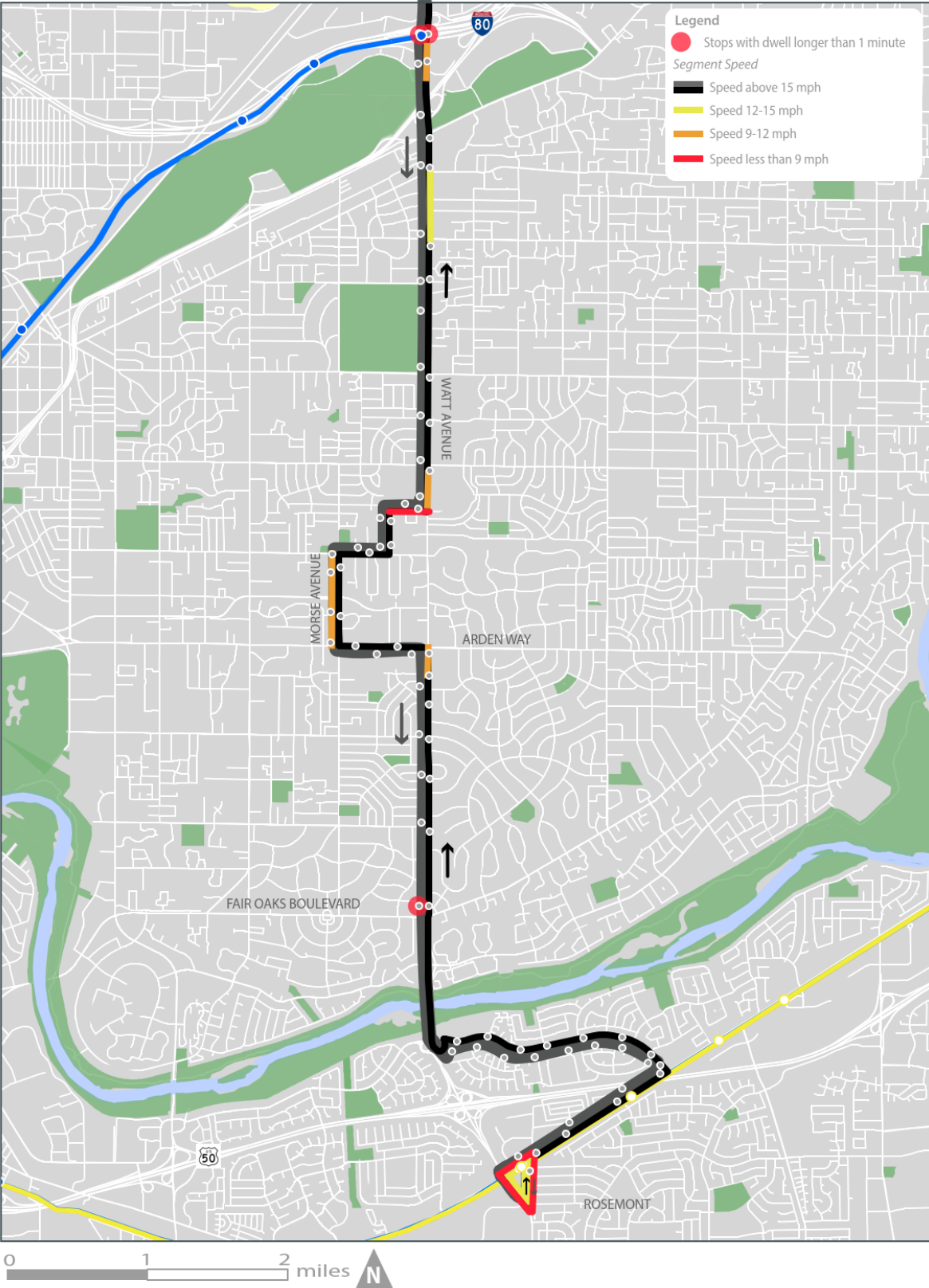


Figure 19: Watt Avenue (South Section) Speed Map

Improvements

Figure 20 and Figure 21 present key improvements that are proposed for the Watt Avenue corridor. The potential HCBS corridor

is highlighted in yellow and the existing Route 84 is the gray line. The route is divided into seven segments and proposed application of techniques from the toolkit are shown for each of the seven segments.

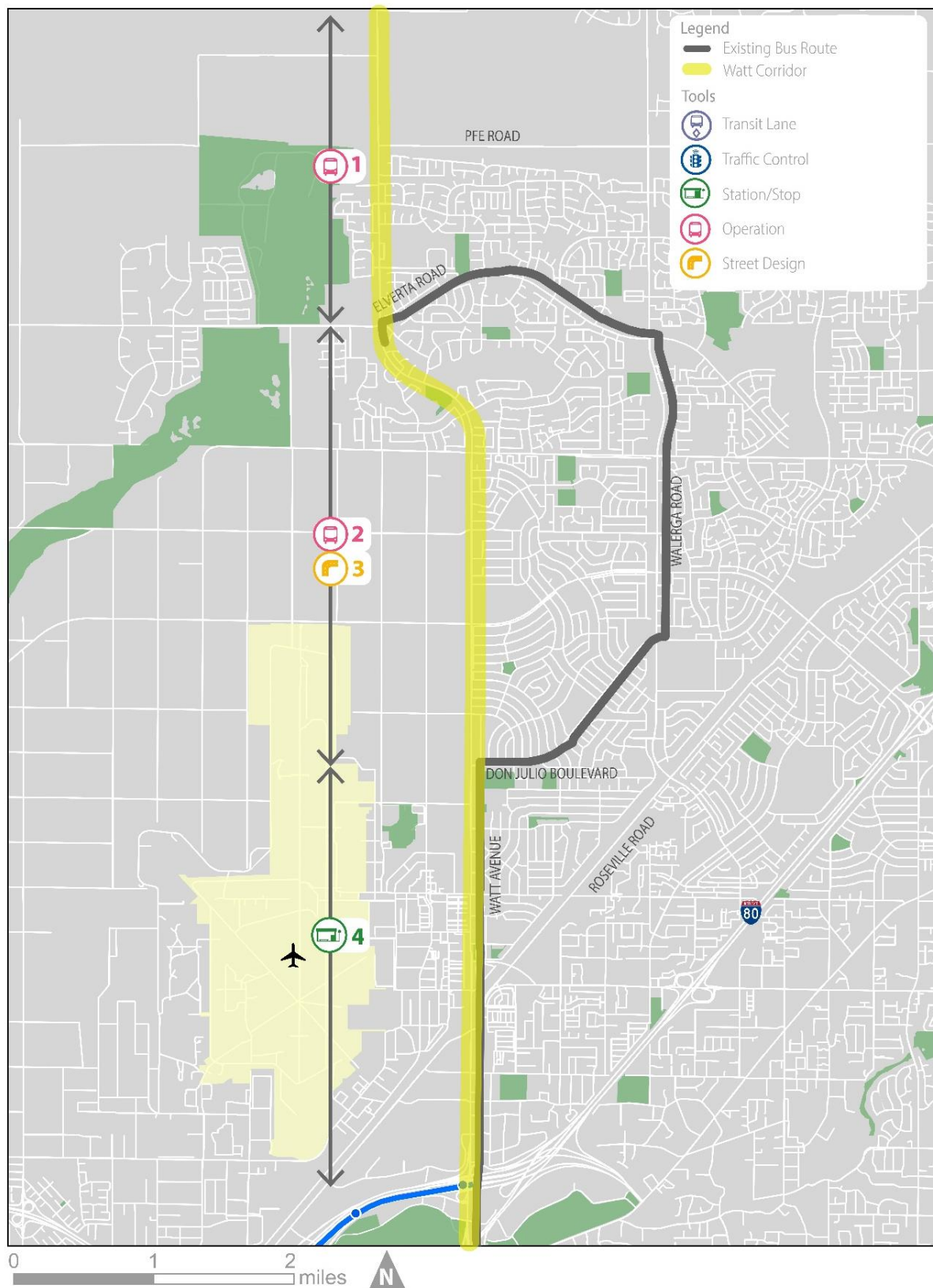


Figure 20: Watt Avenue (North Section) Potential Improvements Map

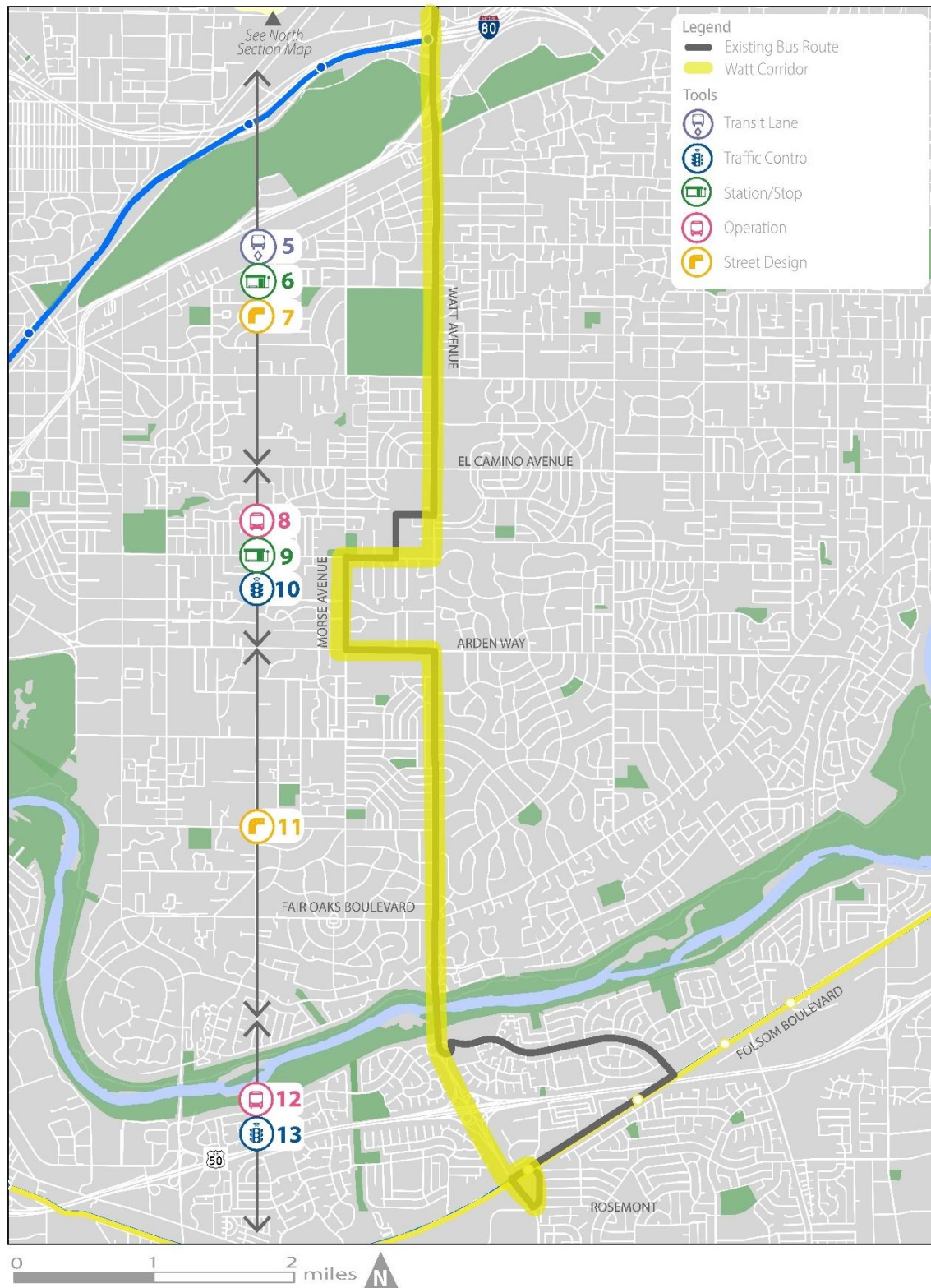


Figure 21: Watt Avenue (South Section) Potential Improvements Map

Segment 1: Baseline Road to Elverta Road

This improvement would increase regional connectivity and serve new developments in the area, including future development at Placer Vineyards on Baseline Road, and the current development between Elverta Road and PPE Road.

- 1. Extend service to Placer County:**
Provide direct connection to Placer County by extending Route 84 north.

Segment 2: Elverta Road to Don Julio Boulevard

These improvements would increase the intuitiveness of service in the Watt Avenue corridor and increase multimodal access to stops. Keeping service on Watt Avenue for Route 84, while using Route 26 to cover local service, would prepare Watt Avenue for HCBS. Providing multimodal improvements will increase access for active transportation, increase safety, and passenger amenities.

- 2. Straighten service along Watt Avenue:** provide continuous service along Watt Avenue by integrating service on Route 84 with Route 26. Route 84 would continue along Watt Avenue to Elverta Road, while Route 26 would continue to run as a local route and cover service on Don Julio Boulevard and Walgera Road.
- 3. Multimodal improvements:** Multimodal improvements including evaluating multimodal lane through restriping, closing gaps in the sidewalk, and improving pedestrian crossing; evaluate using the parallel service lane as a dedicated bike route.

Segment 3: Don Julio Boulevard to I-80 LRT Station

This improvement would reduce travel time and provide more consistent run times along the corridor by consolidating stops. SacRT could focus on the reduced number of stops and install extra amenities such as shelters and benches. Figure 22 shows an existing stop at the intersection of Myrtle Avenue and Watt Avenue without any shelter or bench.

- 4. Stop consolidation:** Consolidate stops and improve stop amenities in this segment of Watt Avenue.



Figure 22: Existing bus stops on Watt Avenue (Northbound) at the intersection with Myrtle Avenue

Segment 4: I-80 LRT Station to Cottage Way

These improvements would reduce bus delays, improve amenities for passengers, and provide better access to bus stops. Furthermore, as multiple routes travel on this segment (Route 26, 84 and 93) there is an opportunity to increase safety and comfort for riders for multiple routes. Evaluate a Complete Streets option, including multimodal lanes, enhancing sidewalks, and improving pedestrian crossings to better access bus stops. It would also create a more pleasant experience for riders and potentially attract more riders if there were more amenities at stops.

5. **Right turn only except bus:** Right turn only except bus lane at northbound at Auburn Boulevard and southbound at El Camino Avenue to reduce delays at intersections.
6. **Stop consolidation:** consolidate stops and provide better amenities at stops. This would reduce stopping and going and provide more consistent run times.
7. **Multimodal improvements:** Evaluate complete street options including a multimodal lane, enhancing sidewalks, and pedestrian crossing to better access bus stops.

Segment 5: Cottage Way to Arden Way

These improvements will speed up the service, prepare the corridor for HCBS, and make it more attractive to riders. It includes improving multimodal access and inter-modal travel, streamlining the route, evaluate potential locations for signal priority treatments, and enhance network connectivity.

Mobility hubs showcase the connections among different transportation modes by linking transit, active transportation, micromobility and other transportation services (ex.: carshare) at a specific location. They can be combined with other amenities such a community gathering place for nearby employees, residents, and visitors.

8. **Streamline route:** Remove deviation on Butano Drive and straightening the route along Cottage Way. SacRT would decrease travel time while continuing service to the Kaiser Medical Center.

9. **Enhance network connectivity:** Evaluate implementation of a mobility hub in partnership with the medical center, other local businesses and the City, including connection with the Arden Way Services to provide a more seamless transition between routes.
10. **Transit signal priority:** Evaluate signal priorities on Watt to speed up service at the diversion. Signal timing adjustments, bus detection or queue jump lanes could be used in the Arden-Arcade area to reduce the amount of time that buses wait to make left turns, further speeding up service and making it more attractive to riders.

Segment 6: Arden Way to American River

This section is characterized by residential areas, fewer traffic lanes, and slower speeds. However, it is not pedestrian friendly, as there are gaps in the sidewalks and bicycle lanes and a lack of crosswalks. The improvements aim to make the corridor safer and more inviting for passengers. Improving pedestrian access would also improve bus access. For example, some stops don't have any sidewalks, which makes the bus stop relatively unsafe and inaccessible for persons with disabilities..



Figure 23: Bus Stop at San Ysidrio Way and Watt Avenue

11. Street design: Pedestrian and multimodal improvements, including closing gaps in the sidewalk to improve access to transit and restripe to use bike and parking lane to create multimodal lanes for transit and bikes.

Segment 7: American River to Watt/Manlove LRT Station

These improvements will prepare the corridor for HCBS and reduce travel times. An express service could be provided with peak overlay service on Watt Avenue and continued service on La Riveria Drive in order to meet local service needs. Transit signal priority will address the left-turns delays into the Watt/Manlove Station from Watt Avenue. In addition, it would use the existing bus only lane to speed up time at the intersection and to create direct bus access to the light rail.

12. Streamline route: Provide Express Service to the Watt/Manlove Station by removing the Route 84 diversion onto La Riviera Drive and continue directly to the Watt/Manlove LRT Station.

13. Transit signal priority: Signal priority to access the Watt/Manlove Station using the bus only lane.

For Watt Avenue, cross sections showing existing and proposed lane configuration were developed to demonstrate the potential use of the right-of-way. These are presented on the following pages.

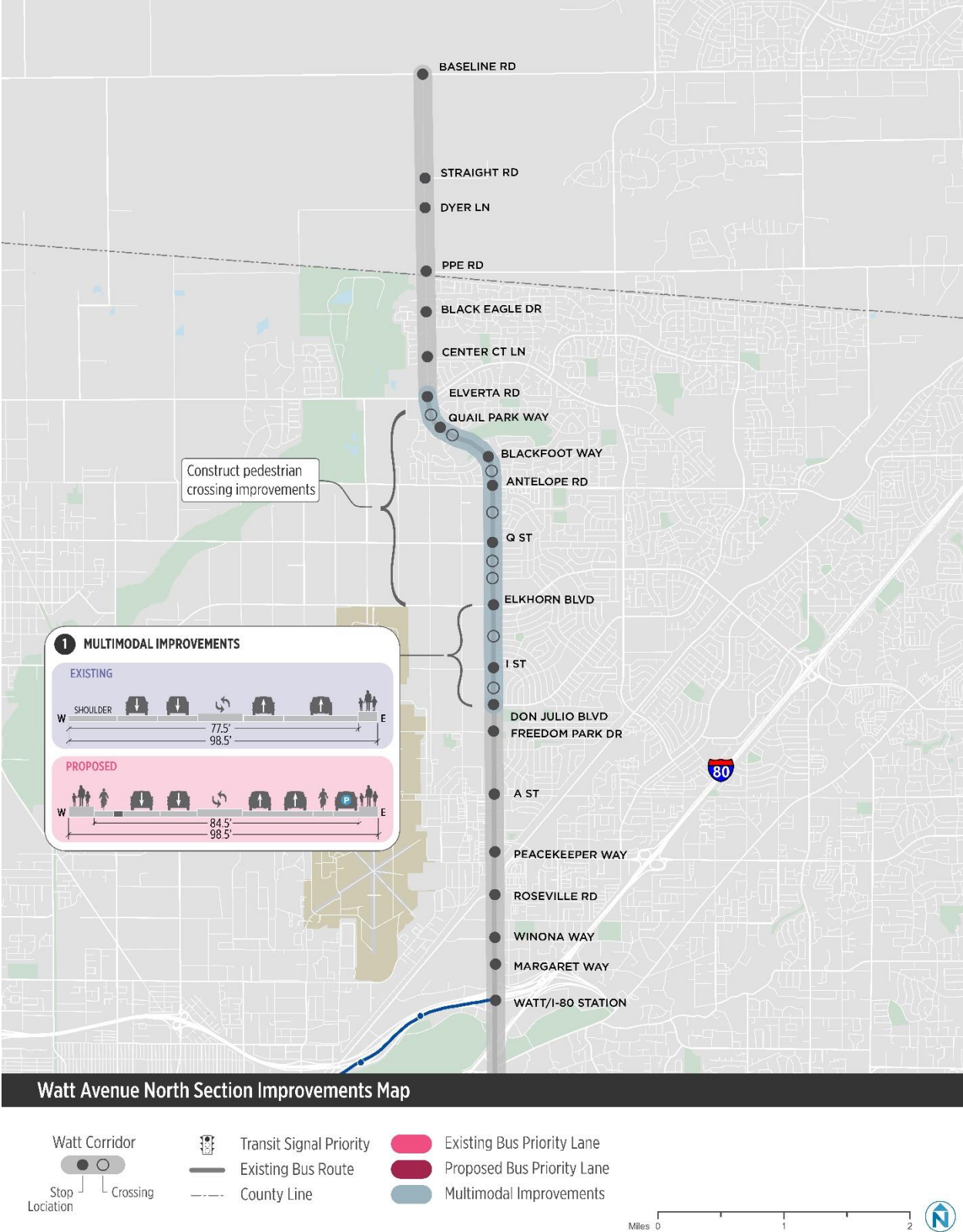


Figure 24: Watt Ave (North Section) Cross Sections Map

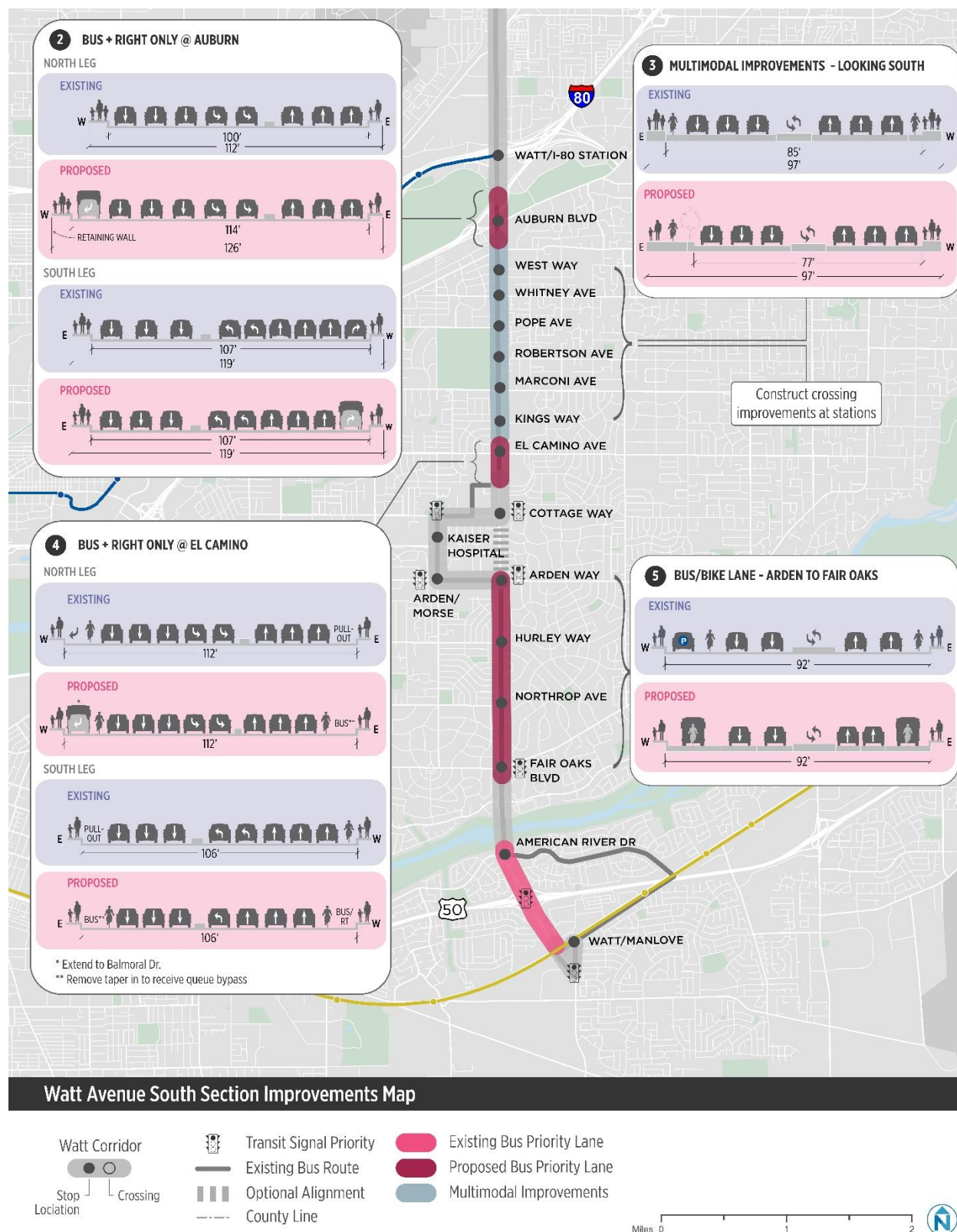


Figure 25: Watt Avenue (South Section) Cross Sections Map

Time Savings

Current southbound scheduled running times are 67 minutes (noon) – 65 minutes (5 PM). Northbound run times are 66 and 78 minutes, at noon and 5 PM Keeping northbound and southbound Route 84 buses on Watt Avenue instead of the deviations at Don Julio

Boulevard, Cottage Way and La Riviera Drive would save 17 minutes southbound and 4.8 miles. It would save 12 minutes and 4.6 miles northbound. Coupled with the other transit priority treatments, total southbound savings could be 20-23 minutes; northbound savings could be 15-19 minutes. Table 12 below shows a summary of potential travel time savings.

Table 12: Time Saving Estimation for Watt Avenue

Direction	Route Streamlining	Transit Priority Treatments	Total	Current Run Times*	Percent
Southbound	17	3-6	20-23	67	30-34%
Northbound	12	3-7	15-19	66	23-29%
Round Trip	39	6-13	35-42	133	26-32%

* Weekday noon between Watt & Elverta and Watt/Manlove

Long-Term Vision

As transit speed, reliability, and service improve in each corridor and as streets become multimodal through the incremental improvements proposed, HCBS (which involves higher capital cost improvements) will become a more viable option. Starting with baseline, incremental improvements towards HCBS will allow SacRT to seek funding through FTA Small Starts. FTA guidelines requires the following elements:

1. The route must have **defined stations** that comply with the Department of Transportation standards for buildings and facilities under the Americans with Disabilities Act, offer shelter from the weather, and provide information on schedules and routes.
2. The route must provide **faster passenger travel times** through congested intersections by using active signal priority in a separated guideway, if it exists, and either queue-jump lanes or active signal priority in a non-separated guideway.
3. The route must provide **short headways and bidirectional service for at least a fourteen-hour span of service on weekdays**. Short headway service on weekdays consists of either (a) fifteen-minute maximum headways throughout the day, or (b) ten-minute maximum headways during peak periods and twenty-minute maximum headways at all other times.
4. The provider must apply a separate and consistent **brand identity to stations and vehicles**.

In addition to the transit priority and access improvements described above, HCBS includes more widely-spaced stations,

including main intersections, transfer connections, key destinations, and other high-need locations; larger shelters, boarding platforms, other amenities at stations; all-door bus boarding; and advanced bus technology and larger buses.

Service Standards

The following service standards are based on FTA guidelines and should be the minimum service requirement for a successful HCBS:

- Bi-directional service
- 15-minute all day service (weekday)
- Minimum 14-hour span of service

Terminal Points and Stop Locations

For the four corridors, there is an opportunity to consolidate stops since most (50%+) of the ridership is concentrated among a small number of stops. By removing some of the stops along the route, the riders will get faster and more reliable travel times. SacRT could then focus on providing better amenities and access at the remaining stops.

The maps below identify the potential alignment of HCBS on the four corridors with key connection points to other services or transit centers. The maps do not show all stops along the route but stops should be located at connecting points to other transit lines, major trip generators, or in a location with high transit needs.

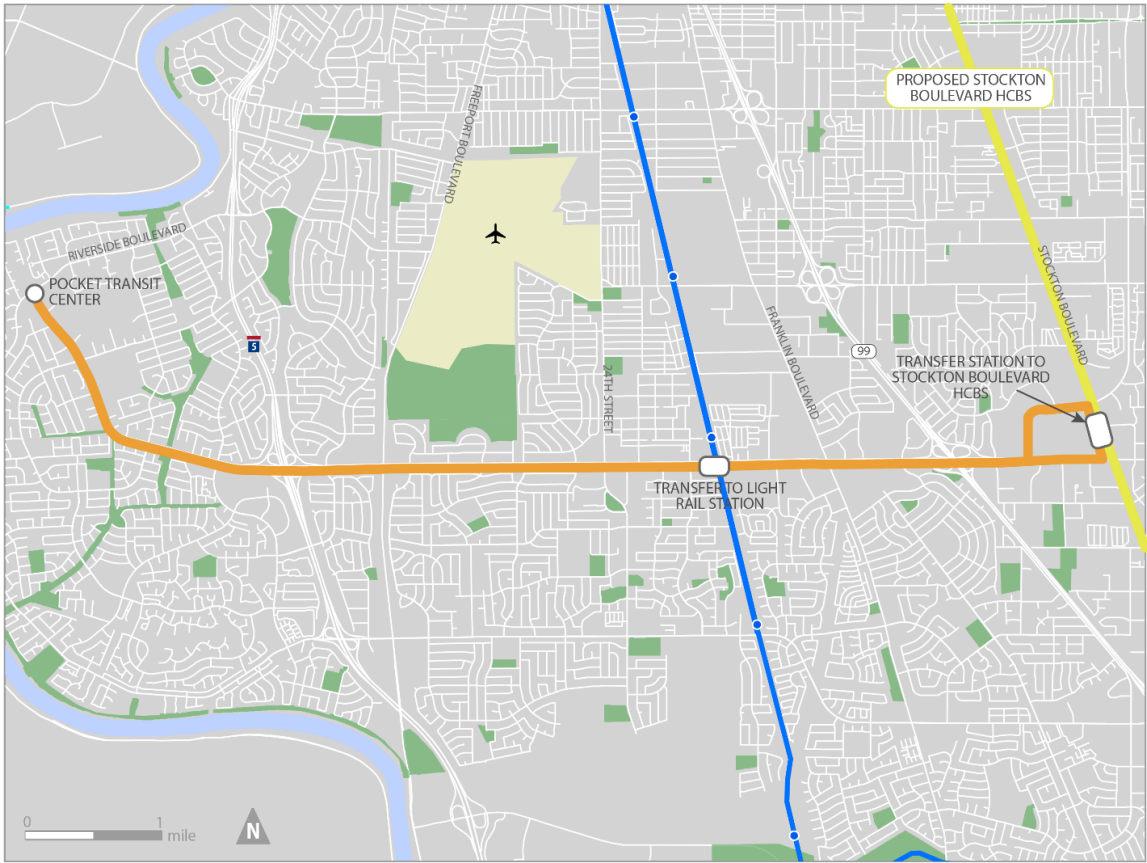


Figure 26: Proposed HCBS Alignment for Florin Road

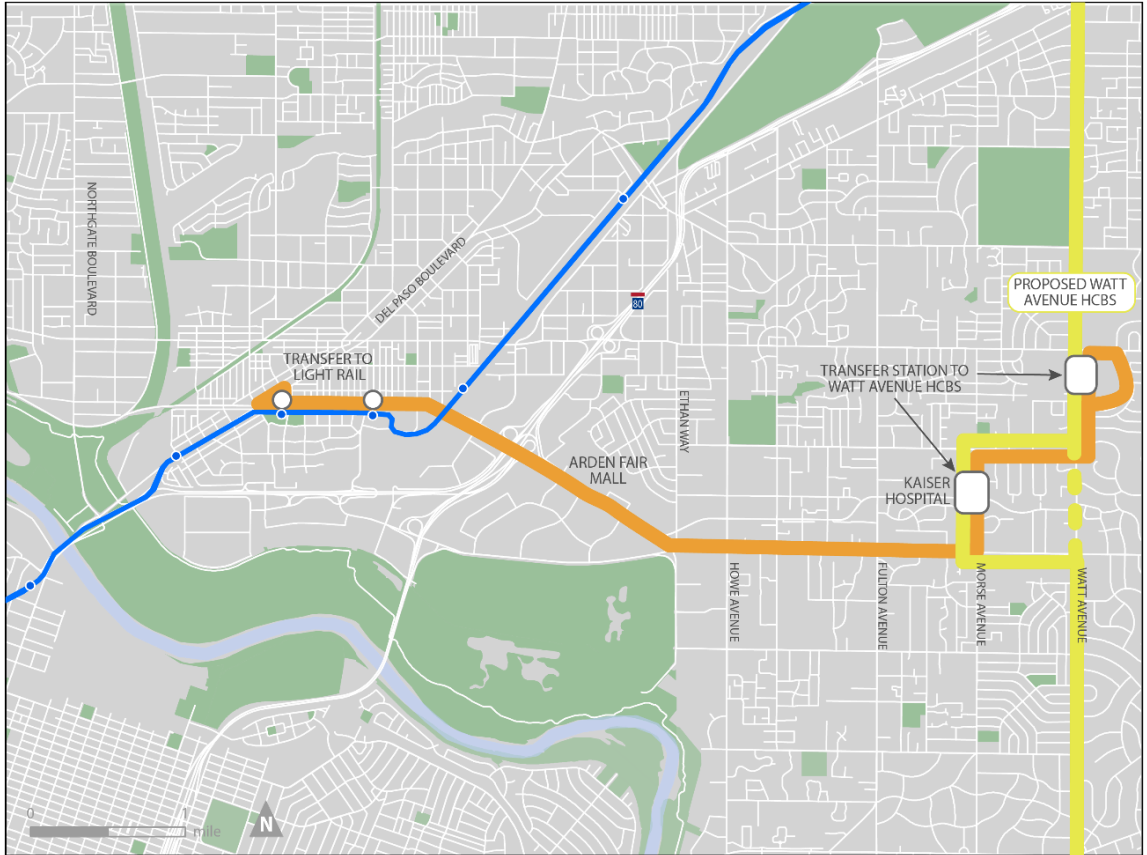


Figure 27: Proposed HCBS Alignment for Arden Way

There is an opportunity to introduce HCBS on **Sunrise Boulevard** in two distinct phases:

- **Phase 1:** Louis and Orlando Transit Center to Sunrise Light Rail Station
- **Phase 2:** Louis and Orlando Transit Center to Roseville Transit Center

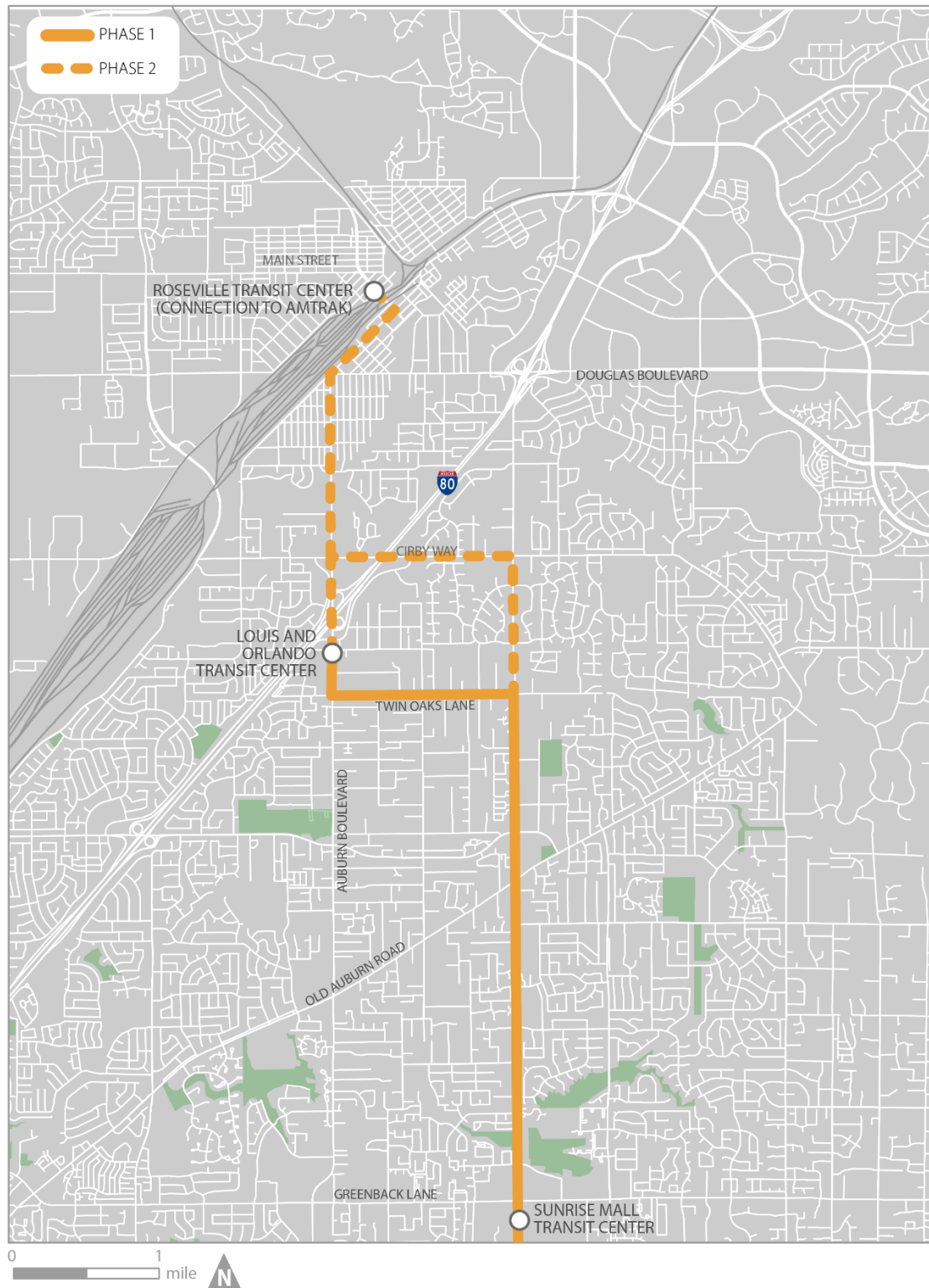


Figure 28: Proposed HCBS Alignment for Sunrise Boulevard (North Section)



Figure 29: Proposed HCBS Alignment for Sunrise Boulevard (South Section)

There is an opportunity to introduce HCBS on **Watt Avenue** in three phases:

- Phase 1: I-80/Watt Light Rail Station to Watt/Manlove Light Rail Station
- Phase 2: Elverta Road to I-80/Watt Light Rail Station
- Phase 3: Elverta Road to Baseline

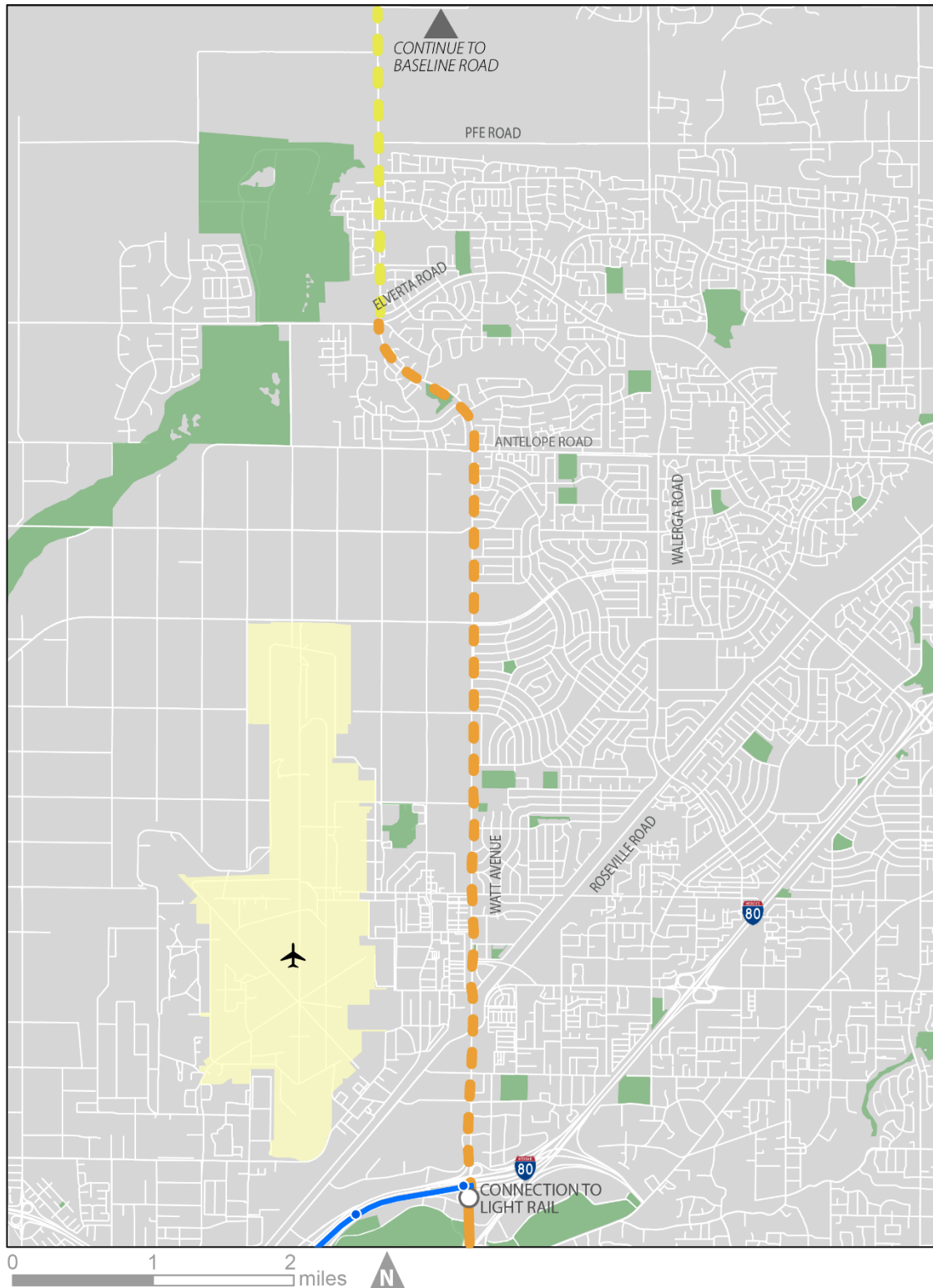


Figure 30: Proposed HCBS Alignment for Watt Avenue (North Section)

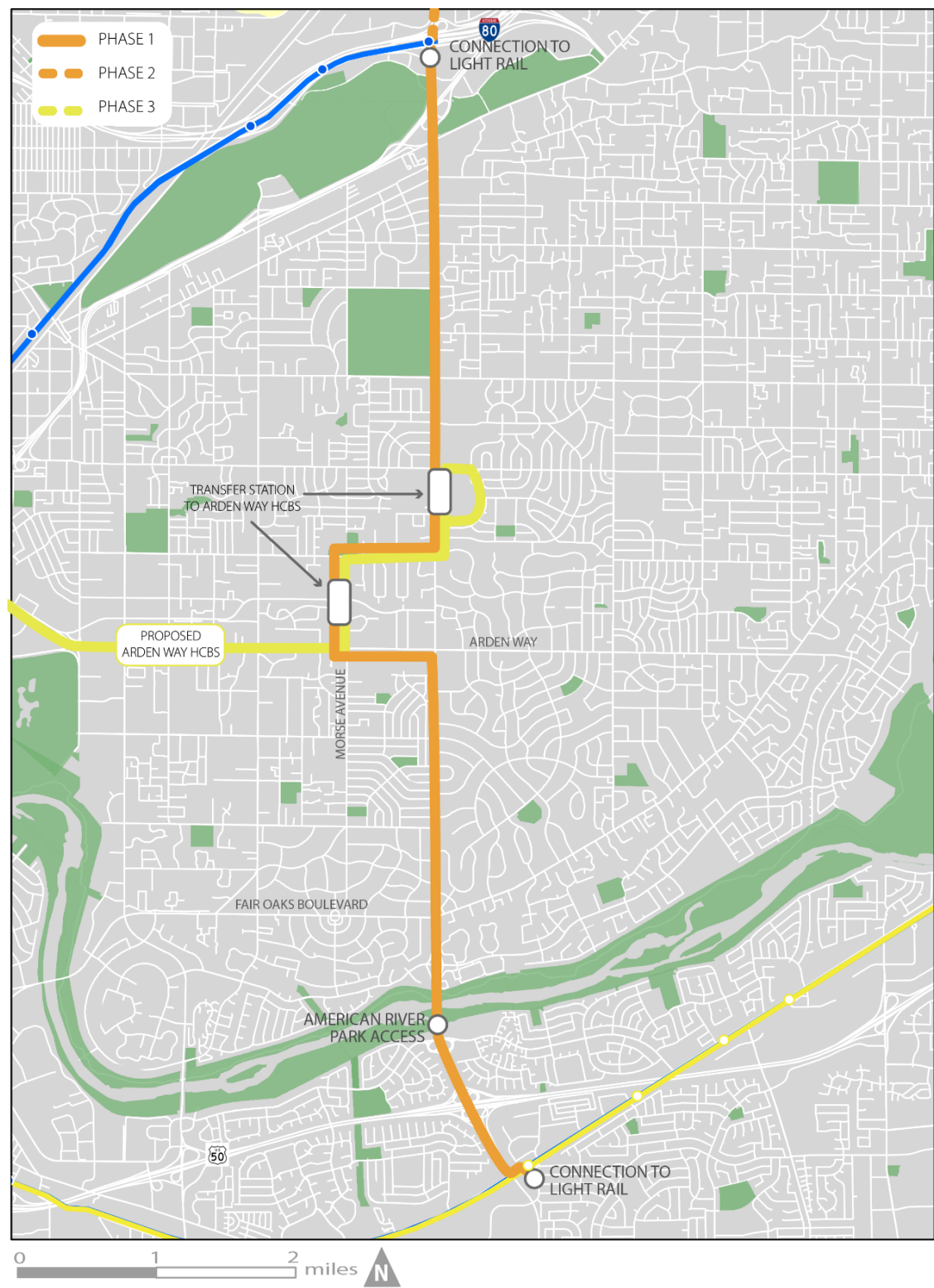


Figure 31: Proposed HCBS Alignment for Watt Avenue (South Section)



IMPLEMENTATION STRATEGIES

IMPLEMENTATION STRATEGIES

Implementing the recommendations for HCBS in the four corridors identified would require financial resources and both internal and external coordination. These requirements will vary from one corridor to another depending on the jurisdictions they traverse, on-going planning efforts, and political support. The following section estimates the operating and capital costs for implementation of HCBS in each corridor, suggests potential funding strategies, and provides sources that SacRT could use for implementation.

Operating Costs for HCBS

Operating costs for HCBS were calculated using the software Remix. The operating costs are based on the alignments presented in the previous section with the following assumptions:

- Hourly operating cost of \$155⁶,
- 15-minute headways,
- All day service between 6 AM and 10 PM (unless the previous service began earlier),
- Minimum layover set at 18 percent of one-way run time, and
- 10 percent savings in addition to the Remix run time based on the

proposed alignments of the route to account for stop spacing and various transit priority treatments.

Table 13: Annual Operating Costs for HCBS

Route	Vehicle Count	Operating Cost (\$/year)
Arden Way	4	3,309,638
Florin Road	5	4,155,098
Sunrise Boulevard Phase 1	6	5,087,035
Sunrise Boulevard Phase 2	7	6,167,373
Watt Avenue Phase 1	5	3,643,792
Watt Avenue Phase 2	7	6,104,592
Watt Avenue Phase 3	9	7,325,511

Capital Costs

An order-of-magnitude HCBS capital cost for each corridor was calculated based on the cost per mile for other bus rapid transit projects. The costs assume no land acquisition or other situations that could increase costs (e.g., contaminated soils, utility relocation). Recent BRT project costs per

⁶ Sacramento Regional Transit District, FY 2020 – Key Performance Report, September 2019, <https://sacrt.com/documents/Performance/KPR0919.pdf>

mile, which includes buses, have averaged over \$11 million per mile in 2020 dollars. Costs can vary widely depending on local situations and the extent of improvements. The proportion of total costs needed to purchase buses also varies depending on the number of buses needed and the cost of right-of-way and other improvements.

Table 14 assumes an average cost, including buses, of \$15 million per mile, about 30% higher than the \$11 million. This is appropriate at this early stage of the planning process given the wide variation in each corridor, and the uncertainty around the locations, types and levels of improvements, and the varying complexity of right-of-way. These cost estimates can be refined as planning for each corridor advances.

Table 14: High-Level Capital Cost Estimates for HCBS

Corridor	Extent	Length (in miles)	Total Cost (in millions)
Arden Way	<i>Del Paso Boulevard to Watt Avenue</i>	5.6	\$84
Florin Road	<i>Riverside Boulevard to Stockton Boulevard</i>	6.9	\$104
Sunrise Boulevard Phase 1	<i>Louis and Orlando Transit Station to Sunrise LRT Station</i>	9.7	\$146
Sunrise Boulevard Phase 2	<i>Louis and Orlando Transit Station to Roseville Transit Center</i>	2.3	\$35
Sunrise Boulevard (Total)	<i>Roseville Transit Center to Sunrise LRT Station</i>	12.0	\$180
Watt Avenue Phase 1	<i>Watt/I-80 LRT Station to Watt/Manlove LRT Station</i>	6.7	\$101
Watt Avenue Phase 2	<i>Watt/I-80 LRT Station to Elverta Road</i>	5.0	\$75
Watt Avenue Phase 3	<i>Elverta Road to Baseline Road</i>	2.5	\$38
Watt Avenue (Total)	<i>Baseline Road to Watt/Manlove LRT Station</i>	14.2	\$213

Funding Strategies

For implementation of the first phase of the long-term vision – which includes HCBS on Arden Way, Florin Road, Sunrise Boulevard (Phase 1) and Watt Avenue (Phase 1) - SacRT must identify \$433 million in grants to fund one-time capital needs and \$16.2 million in annual operations funding. The following strategies were identified to close the funding gap and are discussed in further details below:

-
1. Seek additional state and regional funding
 2. Pursue federal grant funding and financing
 3. Use farebox for operating costs
 4. Partner and coordinate with local jurisdictions through on-going projects along the corridor
 5. Implement tactical transit solutions that require low capital costs
-

1. Seek Additional State and Regional Funding

State Funding

The State of California funding programs administered by Caltrans, the California State Transportation Agency (CalSTA), or the California Transportation Commission (CTC) that could support the Project include:

California Transportation Development Act (TDA)

The TDA funds a wide variety of activities, including planning, pedestrian and bicycle facilities, community transit services, public transportation, and bus and rail projects. SacRT could rely on TDA funds to pay the

operating costs associated with express bus services once implemented.

Cap-and-Trade Program

The Transit and Intercity Rail Capital Program (TIRCP), supported by the cap-and-trade program, funds transformative capital improvements to reduce emissions of greenhouse gases by reducing congestion and vehicle miles traveled throughout California.

The Low Carbon Transit Operations Program (LCTOP), also funded by the cap-and-trade program, supports transit projects and operations that reduce GHG emissions.

Caltrans' Sustainable Transportation Planning

Caltrans' Sustainable Transportation Planning Grant includes two pathways for potential funding. The Sustainable Communities Grants are intended to advance projects that align with goals established in the Regional Transportation Plan Guidelines and can vary in focus from year to year. The Strategic Partnerships Grants are focused on statewide, interregional, or regional transportation deficiencies, and include a sub focus on transit planning projects to address multimodal transportation deficiencies. Projects funded by these sources are generally limited to planning studies and cannot include engineering design or capital infrastructure activities.

Regional Funding

The Sacramento Area Council of Governments (SACOG) is the region's Metropolitan Planning Organization (MPO)

and the Council of Governments. SACOG is an association of local governments in the six-county Sacramento region. Its members include the counties of El Dorado, Placer, Sacramento, Sutter, Yolo, Yuba and the 22 cities within the region.

SACOG provides transportation planning and funding for the region and serves as a forum for the study and resolution of regional issues.

Congestion Mitigation and Air Quality Improvement Program (CMAQ)

SACOG is responsible for sending Caltrans a “Congestion Mitigation and Air Quality Improvement Program (CMAQ) Implementation Plan,” as required by the Federal Highway Administration (FHWA). This plan documents how SACOG’s CMAQ funded projects support reaching Statewide CMAQ performance targets set by Caltrans. The CMAQ fund

2. Pursue Federal Grant Funding and Financing

FTA Mobility for All Pilot Program

This program aims to improve mobility options through the innovative coordination of transportation strategies and builds partnerships to enhance mobility and access to vital community services for older adults, individuals with disabilities, and low-income individuals.

FTA Discretionary Grant Programs

FTA also offers discretionary grant programs, such as FTA 5307 Urbanized Area Formula Grants for transit capital and operating assistance in urbanized areas and for transportation-related planning or FTA 5310 Enhanced Mobility for Seniors and Persons with Disabilities Program to improve the mobility of seniors and individuals with disabilities by removing barriers to transportation services and expanding the transportation mobility options available.

3. Use Farebox for Operating Costs

This strategy focuses on applying user fees such as transit fares as a funding source for covering operating costs of increasing services in the proposed corridors. Unfortunately, transit has significantly increased costs and has experienced revenue losses because of COVID-19. An economic analysis determined a \$23.8 billion funding shortfall through the end of 2021, in addition to the \$25 billion allocated for public transportation in the CARES Act.⁷ This is mainly due to losses of ridership caused by the statewide shelter-in-place. As economy re-opens, travel patterns might change which create opportunities for some corridors in the service area to provide shorter trips such as Sunrise and Watt.

⁷ American Public Transportation Association, “American Public Transportation Association Urges Lawmakers and Administration to Provide Additional COVID-19 Emergency Response and Recovery Funding” <https://www.apta.com/news-publications/press-releases/releases/american-public-transportation-association-urges-lawmakers-and-administration-to-provide-additional-covid-19-emergency-response-and-recovery-funding/>

4. Partner and Coordinate with Local Jurisdictions through On-Going Projects Along the Corridor

Some of the local jurisdictions have implemented improvements to their right-of-way that benefits SacRT. It is the case of the City of Citrus Heights, through its Sunrise Boulevard Complete Street Project, has implemented safety improvements at bus stops and closed gaps in the sidewalk. Other win-win partnerships include the Stockton Boulevard Corridor Study that evaluates complete street designs in Stockton.

Other opportunities for partnerships include Vision Zero efforts by the City of Sacramento on Florin Road; a proposed Complete Streets project on Watt Avenue near Roseville Road in unincorporated Sacramento County; and the Arden Way Complete Streets project programmed in the 2021 MTP.

There are also opportunities to partner with developers. An example includes the Sunrise Mall redevelopment project on Sunrise Boulevard. The redevelopment will include a new transit center for Route 21, among others. There is the opportunity to improve the right-of-way for all modes at this location by partnering with local jurisdictions.

5. Implement Tactical Transit Solutions that Require Low Capital Costs

Tactical transit projects use lower-cost, temporary materials and short-term tactics to pilot, test, or expedite projects while longer-term planning occurs. Tactical transit projects:

- Are implemented within 1 to 2 years;
- Use impermanent or low-cost materials;
- Have a smaller budget (often less than \$100,000) than a typical capital project;
- Are short-duration projects, but are part of a larger or longer-term effort; and
- Accelerate the implementation of permanent infrastructure.

Benefits from tactical transit projects include:

- **Speed & Reliability:** Faster and more reliable bus travel times
- **Access & Safety:** Improved access to stops for pedestrians, disabled individuals, and bicycles
- **Rider Experience:** Enhanced sense of place around transit stops.⁸

This funding strategy aims to test concepts within the region before dedicating more funding and allows SacRT to monitor the results of the project. It will provide quickly-realized results without doing long-term planning and seeking large amounts of funding. This allows for greater flexibility.

⁸ National Academies of Sciences, Engineering, and Medicine 2019. Fast-Tracked: A Tactical Transit Study. Washington, DC: The National Academies Press.

Monitoring Results

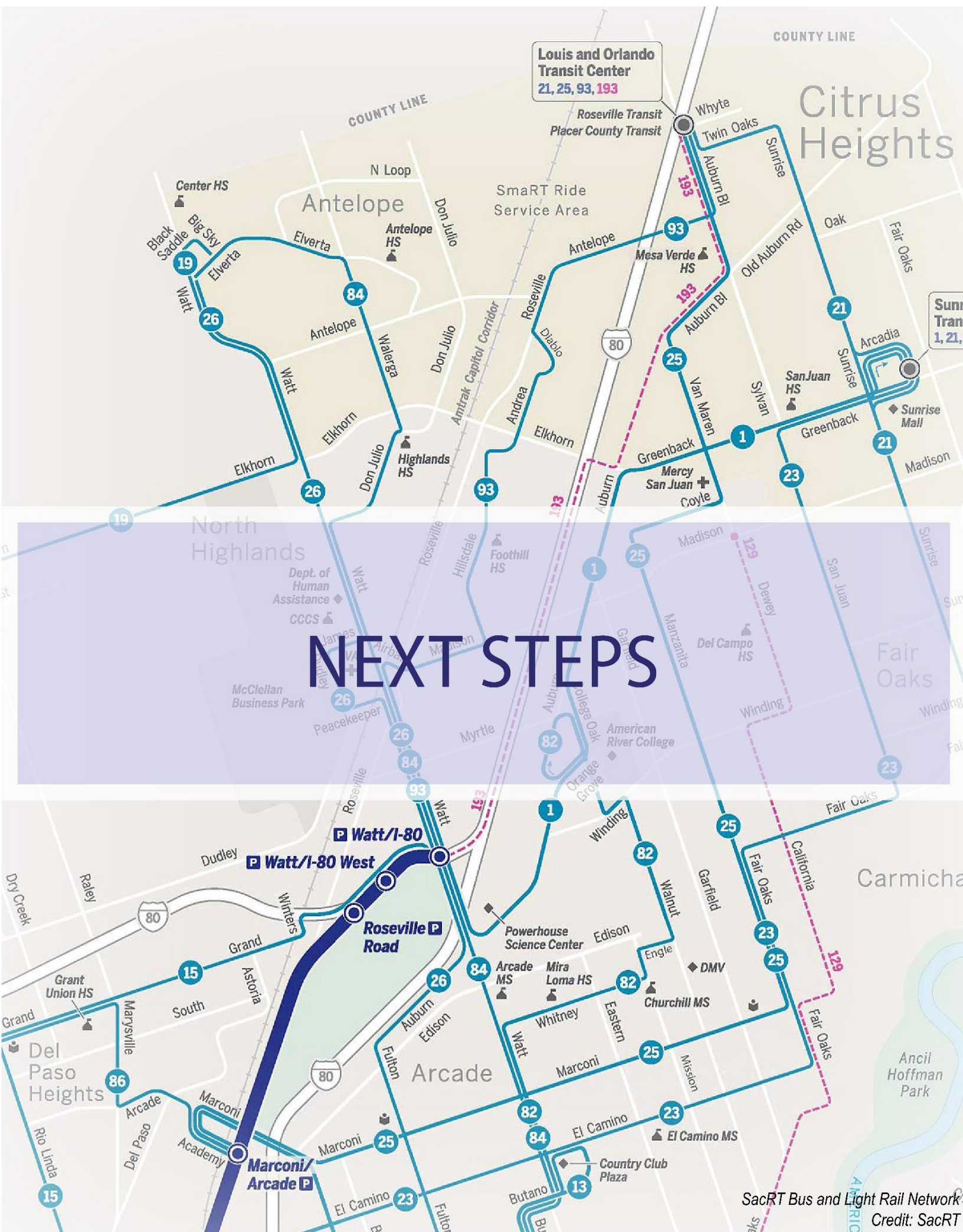
The following performance metrics are recommended for regular evaluation of the initial focus improvements. Baseline data points for each metric should be established prior to the launch of new service – post-implementation metrics will be compared to pre-service levels where data is available.

SacRT's Operations and Customer Service teams will undertake the regular evaluation of operations and productivity of the proposed new service. The following metrics will be examined on schedule defined in Table 15.

Staff will need to monitor and be prepared to scale or adjust service levels and other factors as appropriate. If improvements fail to meet desired outcomes, staff may need to consider ways to adjust the service to maintain cost effectiveness. This includes reducing service frequency, span, or adjusting other operation levels that affect the cost to run the service. SacRT should seek to stay nimble in adjusting service design and levels based on how the service performs against the stated goals of the service and against the performance metrics.

Table 15: Performance Monitoring

Metric	Success Criteria	Reporting Schedule	Source
On-Time Performance	Increased OTP	Monthly	SacRT Operations
Cost per passenger	Stable	Monthly	SacRT Operations
Farebox Recovery	Stable	Monthly	SacRT Operations
Route Ridership	Increased	Monthly	SacRT Operations
Customer Feedback	Positive customer feedback to staff, customer service	Monthly	SacRT Customer Service
	Positive customer feedback on on-board surveys	Annually	On-Board Survey



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NEXT STEPS

NEXT STEPS

This study takes the high capacity bus corridors identified in regional planning documents to the next phase by identifying focused improvements, defining a long-term vision for HCBS in the corridors, and highlighting potential partners for implementation. The following can help guide next steps:

- **Work with regional partners and agencies.** Regional support is critical for successful implementation of the long-term vision, as most of the corridors cover multiple jurisdictions. Developing synergies with other transportation authorities and transit providers in the region, such as Placer County, will be key to building support and pursuing potential grant funding for implementation.
- **Develop partnerships with local jurisdictions.** SacRT will have to connect with local jurisdictions in order to understand projects in their pipeline for these specific corridors; to identify potential common interest areas; and to develop funding strategies. For example, SacRT could leverage the City of Sacramento's Vision Zero efforts to improve bus stop amenities and pedestrian and bicycle safety on Florin Road.
- **Implement tactical urbanism solutions.** These small, low-cost spot improvements are a simple way to demonstrate efficacy of improvements to safety and transit reliability.
- **Implement spot improvements to build ridership over time.** Use incremental improvements for each corridor to build a faster, more direct, and more reliable service. These improvements will capture more riders and prepare for HCBS.
- **Launch Pilot Enhanced Bus Service on Watt Avenue between I-80 LRT and Manlove LRT station.** Watt Avenue is a key corridor to prioritize for spot improvements to reduce bus delays, increase frequency, and streamline the route to provide a more direct connection between key destinations.
- **Work with the cities and Caltrans to develop a plan for signal priorities along corridors.** Using this report, SacRT can identify slow transit segments and start having discussions with local jurisdictions and Caltrans regarding transit signal priorities at key locations.
- **Create a more detailed funding strategy.** A more detailed funding strategy for each corridor will be needed to leverage State and federal funds. General funding strategies have been identified, but they will need more detailed plans for capital and operating improvements and refined cost estimates.
- **Adjust service as needed.** As development and travel patterns change, partnerships materialize, or funding sources become available, priorities might change. Developing the HCBS network will require ongoing adjustments based on real-world experiences and changing mobility needs.

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