



A

APPENDICES

APPENDIX A
VISION WHITE PAPER

Shared Mobility Hubs

Vision White Paper

Overview

Shared Mobility Hubs are multimodal transportation nodes where a variety of shared mobility services and supporting amenities interact to create a cohesive transportation network. These nodes facilitate local and regional travel with a specific focus on shared mobility: travel modes and services in which resources are shared between different users. This includes public transit, micro-mobility (e.g., bikeshare, scooters, etc.), shared rides (e.g., vanpools, carpools, on-demand services, etc.), and technology (e.g., electric vehicle chargers, information kiosks, etc.). Shared Mobility Hubs represent one of six Innovate 680 Program projects to expand mobility options, improve traffic conditions, and enhance the travel experience in the I-680 corridor.

Shared Mobility Hubs have been deployed throughout the country and have a growing presence in the San Francisco Bay Area. This expansion—which includes the I-680 corridor—has involved both unified, planned design of specific sites, as well as gradual adoption of shared services and amenities. The Shared Mobility Hubs project, as part of the Innovate I-680 Program, is unique in its corridor-wide approach to developing a Shared Mobility Hubs network.

This white paper establishes a vision for Shared Mobility Hubs and their deployment in communities along the I-680 corridor. The vision is rooted in mobility hub best practices, existing transportation needs, Innovate 680 Program goals, and feedback from project stakeholders regarding community needs, opportunities, and priorities. The vision white paper will be utilized as a reference in identifying potential locations, services, and typologies for mobility hubs in the corridor. The white paper concludes with a set of design principles that translate the vision to specific mobility hub design guidance, which will inform concept development tasks of the Shared Mobility Hubs project.

Project Purpose

The Innovate 680 program aims to address significant traffic congestion along the I-680 corridor in Contra Costa County through an integrated approach of seven key strategies. Shared Mobility Hubs will facilitate congestion relief by integrating

strategies such as first mile/last mile connections, transportation demand management solutions, emerging technologies, and I-680 trunk line enhancements. Shared Mobility Hubs are a critical tool in achieving the goals established for the Innovate 680 program:

- Improve safety, efficiency, and reliability on I-680
- Improve air quality through shared mobility and reduced vehicle emissions along the corridor
- Develop and integrate advanced transportation technologies to prepare the corridor for the future and maximize the productivity of the transportation infrastructure
- Enhance the ability for people to shift travel modes from single-occupant vehicles (SOV) to active transportation and shared mobility options
- Improve connectivity among the suite of mobility options along the corridor to facilitate seamless travel
- Provide mobility options that are accessible, convenient, personalized, and attractive to commuters
- Promote equity and provide access to transportation services for residents who have limited or no access to vehicles through on-demand mobility and affordable transportation options

With these program goals in mind, Shared Mobility Hubs will facilitate and encourage travelers to take alternative modes of transportation through strategic and targeted improvements to mobility hub sites within communities along the I-680 corridor.

Project Scope

The project scope entails a feasibility study to examine I-680 corridor conditions and conceptualize the Shared Mobility Hubs network, including planning for specific locations, site features, and implementation priorities. The scope integrates stakeholder collaboration to develop a corridor-wide vision, as well as site-specific solutions.

The vision white paper—the first project task—is the outcome of a visioning workshop with project stakeholders that took place on June 15, 2020. Key themes and feedback from this visioning exercise were incorporated into the document to produce an inclusive and shared vision for the Shared Mobility Hubs network. This vision creates the framework for subsequent project tasks and deliverables, including:

- Existing Conditions Fact Sheets
- Mobility Hub Toolkit

- Mobility Hub Template, by Typology
- Background and Issue Identification Report
- Site Sketch Concepts
- Project List and Prioritization
- Project Implementation and Phasing
- Feasibility Study Final Report

Shared Mobility Hubs Vision

Shared Mobility Hubs will serve as primary nodes within the I-680 travel corridor and multi-modal transportation network, providing connectivity between local transportation services and regional services. These sites will feature:

1. Efficient Movement of People

Mobility hubs will facilitate the efficient movement of people.

- **Seamless travel between modes:** Facilitate convenient and intuitive transfers between travel modes through wayfinding and site configuration. Coordinate the placement of mobility services to support the efficient movement of people between modes.
- **Efficiency of space:** Leverage constrained sites to maximize the movement of people, prioritizing modes that more efficiently use the transportation network. Pricing strategies and facility design will further encourage use of sustainable transportation modes.

2. Universal Accessibility and Enhanced Safety

Mobility hubs will be accessible, convenient, and safe for all users.

- **Equitable:** Enhance the equitability of the transportation network, providing increased mobility options for disadvantaged populations. Integrate related programs and policies that focus on enhancing the economic and transportation mobility of low-income and minority populations by bringing together multiple transportation options and leveraging information and technology to overcome economic, language, mobility, and information barriers.
- **Accessible design:** Design with the mobility-impaired in mind, namely when establishing or enhancing pathways, wayfinding, trip planning services, and public spaces. Access and circulation will prioritize the needs of vulnerable users, with lower priority given to single-occupant vehicles.
- **On-site safety and comfort:** Provide a sense of personal safety by increasing on-site activity, incorporating natural surveillance, providing pedestrian-oriented lighting, and including additional safety features.

- **Mitigate conflicts between modes:** Reduce or control potential conflicts between modes through careful site configuration, wayfinding treatments, and urban design treatments.

3. Improved Access to Alternative Transportation Modes

Targeted investments and initiatives will be leveraged to overcome existing barriers to passengers' use of alternative transportation modes.

- **High quality access facilities:** Extend mobility hub improvements into the surrounding community to create a network of safe and comfortable access pathways that will encourage mobility hub access through a variety of active and shared modes.
- **Improved first/last-mile connections:** Leverage existing transportation network investments and promote new investments in first/last-mile connections to achieve direct, convenient, and safe connections to mobility hubs. Reduce connectivity barriers to further encourage the use of multiple modes within a single trip, resulting in a more efficient and faster user experience.
- **Address information barriers:** On-site and online trip planning tools will inform travelers of mobility hub services, amenities, benefits, and availability. Public education and marketing of alternative travel options, such as commuter programs, will target new and occasional users in order to achieve mode shifts from SOVs.

4. Mobility Hubs as Community Assets

Mobility hubs will serve as an asset and focal point for both mobility and community activity.

- **Neighborhood integration:** Support neighborhood integration, where consistent with the community character, through seamless pathways between mobility hubs and surrounding areas. Complement the surrounding community character through on-site activity and amenities.
- **Mobility hubs as community hubs:** Provide amenities that attract community use and activity beyond in-route trips. Programmable spaces and site amenities will draw community members for a range of purposes, activating the site and increasing community awareness.
- **Additional customer amenities:** Dedicate space for support services and amenities such as mobile retail, food services, and package delivery lockers that provide both community value and serve critical daily life needs, allowing users to better leverage mobility services.

- **High-quality design:** Incorporate context-sensitive and high-quality architecture and landscaping that complements and contributes to the character of surrounding areas.

5. Flexibility to Accommodate New Technology and Changing Transportation Conditions

Mobility hubs will be designed with the future in mind, providing flexibility to adapt to new technologies that change how mobility services are consumed.

- **Curbside management/flex zones:** Provide flexibility and adaptability of curb space to accommodate different uses at different times, as well as accommodate new uses.
- **Plan for new technology, services, and changing travel needs:** Design for adaptability to meet changing needs. This may include designing for flexibility in utility needs, providing space for shared micromobility parking and access, and designating space for flexible uses.
- **Investment:** Encourage investment and innovation in transportation by providing a platform for the implementation of new transportation technologies and services and integrating those services with legacy and active transportation options.

6. Reflect Community and Regional Aspirations

Mobility hubs will apply local and regional mobility plans for the corridor and serve as a focal point to achieve those visions.

- **Integration of local, regional, and mode-specific plans:** Incorporate and synthesize elements of local, regional, and mode-specific plans and visions to create a cohesive local and countywide vision for each gateway to the corridor's transportation network.
- **Public-private partnerships:** Establish frameworks for public-private partnerships as well as multi-agency agreements to increase investment in corridor transportation infrastructure and services. Align different stakeholder visions, capital and service planning, action plans, and investments for the corridor. Leverage partnerships and incentive programs to encourage use.
- **Linchpin for regional mobility initiatives:** Serve as a centerpiece for the testing and implementation of new and emerging trends in transportation planning, leveraging both public and private investment. Support the advancement of key regional initiatives such as Mobility-as-a-

Service and Mobility-on-Demand through the provision of specific supporting facilities, customer interfaces, and data collection.

- **GHG reductions:** Incorporate infrastructure and design solutions that support achievement of regional greenhouse gases (GHG) emission targets. Provide amenities and services that encourage mode shifts from high-emission to low-emission travel modes, including for both site access and regional travel.

Mobility and Design Principles

Modal Principles and Station Access Hierarchy

Mobility hubs bring together multiple transportation modes in a cohesive and organized facility. They facilitate transfers between modes within a compact space. As a result, there is often competition for space between modes and a need to navigate modal conflicts. Modal hierarchies identify priorities between modes and guide decision-making in the placement and space allocation of facilities within mobility hub designs.

Mobility hub concepts will follow a station access hierarchy which first prioritizes active modes (walking and bicycling), which are generally the most vulnerable and all users are pedestrians at some point in their trip. The second priority group is high-occupancy vehicle/shared mobility modes (transit and shuttles) as they are space efficient and generally most sensitive to travel time and reliability impacts. The lowest priority group are vehicular modes (pick-up/drop-off and personal vehicle parking) as they are generally the least efficient and least sensitive group.

For each mode, concept designs will conform to the following modal design principles:

Pedestrian

- Incorporate universal design elements to accommodate a range of user groups, including historically disadvantaged and mobility-impaired groups
- Provide direct routes and preserve sight lines between the mobility hub and adjacent high-activity pathways
- Help users easily navigate the facility with intuitive and standardized wayfinding, signage, and visual media consistent across the corridor network and passenger journey
- Reduce conflict with other modes and prioritize pedestrian visibility at modal conflict points
- Prioritize high pedestrian visibility through design

Bicycle/Micromobility

- Accommodate a wide range of first/last mile options, including “rideables” as appropriate to local needs and limits
- Provide designated areas and facilities for micromobility options
- Design high-quality bicycle facilities and adhere to industry best practices in facility design
- Accommodate a wide range of bicycle user comfort and experience levels through design best practices
- Provide secure and convenient bicycle parking that aligns with use characteristics
- Reduce conflict with other modes and prioritize bicycle visibility at conflict points with vehicular modes

Transit

- Provide seamless transit connections through passenger navigation information, waiting facilities, and direct paths of travel
- Preserve flexibility in bus fleet and service changes by accommodating various vehicle sizes, demand levels, etc.
- Provide flexibility in facility designs to accommodate future growth in transit service
- Provide timely information about transit schedules, routing, fares, and service options
- Provide comfortable facilities that reduce the perceived transit wait time
- Consider the need for supporting infrastructure, such as vehicle charging, managed curb assignment, and driver relief facilities

Vehicular

- Provide pick-up/drop-off facilities in a location convenient to the station entrance; facilities should be provided along desired auto paths (while still first prioritizing active modes and transit) to allow users to use the facility intuitively
- Locate parking for carpools, vanpools, and other high-occupancy modes in locations convenient to the station, prioritizing them over single-occupancy vehicles (while still first prioritizing active modes and transit)
- Encourage shared parking opportunities to make more efficient use of parking facilities
- Design parking facilities in a way that does not preclude conversion to other transportation facilities, community spaces, or development
- Provide vehicle charging facilities to promote the use of sustainable fleets

- Provide real-time information on parking (and curb, where appropriate) availability via online data portals and on-site signage to minimize circling or driver uncertainty

Mobility Hub Design Principles

The modal-specific principles, in concert with the vision, can be translated to mobility hub design principles. These are aspects that will influence the location, configuration, and amenities of specific mobility hub implementations. The design principles will be utilized in defining the mobility hub toolkit and typologies as well as sketch planning for specific mobility hub implementations.

1. Location

As a gateway to the I-680 corridor transportation network, mobility hubs must be placed strategically along the corridor to provide convenient access to shared mobility services in order to encourage greater use of alternative modes and shift travel away from single-occupant vehicles (SOVs).

- To the extent possible, mobility hubs should be integrated into existing and planned activity centers, such as employment hubs, town centers, and other major trip generators
- Placement along existing primary commute routes near the I-680 is key to intercepting potential new patrons and capturing a larger share of SOV travelers

2. Safety & Comfort

Each segment of the passenger journey should feel safe and comfortable for all travel modes and user groups, including site access, waiting, and use of amenities.

- Facility layout, on-site circulation, and access routes should reduce and mitigate potential conflicts between different modes. Modal access hierarchies should be incorporated into facility design and access
- Safe, convenient, and direct access should be prioritized for the most vulnerable users and incorporate “Complete Streets” approaches. Incorporate pedestrian and bicycle facilities at nearby and adjacent crossings to increase safety and visibility as well as support traffic calming
- Apply elements of Crime Prevention Through Environmental Design (CPTED) and BART Facilities Standards (BFS) including lighting, natural surveillance, access control, sight lines and visibility, and increased ground-level activity

- Provide amenities that offer comfort to travelers, such as overhead weather protection structures, lighting, Wi-Fi, mobile device charging stations, benches and other furniture, water fountains, and bathrooms

3. Usability

Facility usability, or ease of use, is critical to attract and retain mobility hub patrons. Site design should reduce barriers to access, while services and amenities should cater to all types of user groups. This may be achieved through:

- Universal design elements that accommodate users with different travel needs, such as non-English speakers, families and children, persons with physical limitations or disabilities, seniors, and individuals with limited technology literacy should be incorporated throughout the customer journey experience. Site design and amenities should also account for a range of traveler experience, which may range from frequent users to first-time travelers. Specific features and touchpoints that cater to diverse user groups include navigation features, access facilities, and travel information
- Site navigation, such as wayfinding and signage, are critical to facilitating the passenger journey. These features should be located on-site and off-site to orient mobility hub patrons to and from adjacent areas and points of interest

4. Neighborhood Integration

Mobility hubs should be fully integrated into the existing neighborhood fabric to strengthen their role as a transportation hub with shared mobility services as well as a community node.

- Provide high-quality access facilities, including wide pedestrian paths and cycling tracks, for highly used routes (e.g., Iron Horse Regional Trail)
- Provide open, programmable spaces for neighborhood use, such as retail, temporary uses, programming, and public art
- Locate neighborhood amenities at mobility hubs and concentrate development adjacent to mobility hubs as appropriate

5. Technology Deployment

Corridor-wide deployment of technology at mobility hubs has the potential to greatly improve mobility services and the customer travel experience.

- Deploy trip planning systems and information at mobility hubs, including public information displays, real-time arrival information, and trip

planning kiosks; include device charging and publicly available WiFi to support access to similar information from private devices

- Integrate dynamic, demand-based “Smart” systems for curbside and off-street parking management of wayfinding/motorist guidance, parking meters, reservations, enforcement, and payments
- Implement a universal transportation account for all mobility hub travel options and payments

6. Sustainability

On-site infrastructure, services, and amenities should mitigate and reduce impacts to the environment and neighboring communities. All facilities should incorporate sustainable design features and supporting infrastructure.

- Implement best management practices (BMPs) such as green treatments, bio-retention areas, impervious pavements, etc. to improve the quality of stormwater run-off.
- Incorporate sustainable energy sources for on-site power generation and charging facilities, such as solar panels.
- Achieve LEED certification for on-site buildings and implement treatments consistent with LEED solutions for site design.
- Develop site plans and incorporate design strategies that reduce noise and light pollution.

7. Parking and Curbside Management

The provision of parking and curb space should be optimized to encourage greater use of limited facilities. These spaces should also provide flexibility for future adaptation to new mobility options.

- Maximize parking efficiency through shared parking opportunities with adjacent uses
- Strategically locate parking in areas or sites with limited opportunities for other uses (e.g., parcels with irregular shapes or other site development issues)
- Prioritize space for shared mobility options, such as vanpools, carpools, and car share
- Reduce footprint of surface parking facilities through stacked parking solutions
- Provide real-time information about parking availability to allow for improved trip-planning and optimization of use
- Provide electric vehicle charging stations to encourage electric vehicle use and provide off-peak charging locations for shared and transit fleets

- Plan flexible spaces for emerging and future mobility services by retaining curb space, parking, or storage areas for future adaptation into other uses

Summary

The network of Shared Mobility Hubs will serve as the backbone of the I-680 multi-modal transportation system. Hubs will operate as a public asset to the communities they serve by converging a spectrum of transportation services, amenities, and supportive activities. They will also serve as a gateway to corridor travel as well as an opportunity to leverage new technology and transportation initiatives.

The Shared Mobility Hubs vision and associated mobility and design principles will guide the conceptual development and planning of mobility hub sites, typologies, amenities, and configurations along the I-680 corridor. These elements create an aspirational framework and design guidelines for a unified corridor-wide vision for mobility hubs along the I-680 corridor.

APPENDIX B
TRANSPORTATION HABIT SURVEY
SUMMARY OF RESULTS



INNOVATE 680

IMAGINE THE POSSIBILITIES



REACH

3 languages	English, Spanish, Chinese
survey invitations sent	50,000
surveys completed	1,533

RESPONSES

Clayton	30
Unincorporated	85
Pleasant Hill	125
Pittsburg	128
Martinez	145
Danville	155
San Ramon	224
Concord	305
Walnut Creek	336

DEMOGRAPHICS

male/female	50%/50%
disabled	11%
age 18-35	8%
age 35-44	13%
age 45-54	20%
age 55-65	26%
age 65+	33%

TRANSPORTATION HABIT SURVEY

SUMMARY OF RESULTS

From November 2020 through January 2021, CCTA conducted a survey of corridor residents about their transportation habits. This survey was specifically designed to provide helpful information to the INNOVATE 680 program and its suite of six ground-breaking projects that, when implemented, will reduce congestion and smooth traffic flow throughout the corridor.

We are now pleased to share insights into what we learned from our corridor neighbors and how that information will help shape the future of transportation along I-680.





TIME FOR CHANGE

Within Contra Costa County, the average weekday delay on I-680 reached an alarming 90 minutes in 2019. CCTA is dedicated to reducing congestion to improve the travel experience for all in the corridor. To create travel solutions that are meaningful, we need to learn more about our corridor households and our regular corridor drivers. Our travel habit survey provided helpful insights on all fronts.

70% of our corridor residents said they drive once per week or more in the corridor and **91%** of these drivers said that their preferred mode of travel is **driving alone in a personal vehicle** (also known as single occupancy vehicle or SOV).

68% of corridor drivers said they are **interested in driving less!** And **44%** of these drivers use the **corridor daily**. These drivers are our ticket to change. We are calling these daily drivers our **CHAMPIONS OF CHANGE**.



Single occupancy vehicles (SOVs) are major contributors to greenhouse gas emissions and poor air quality. A typical passenger vehicle emits about 4.6 metric tons of carbon dioxide per year.* By getting more cars off the road we will reduce congestion and improve air quality.


*epa.gov



If **CHAMPIONS OF CHANGE** were willing to reduce SOV driving by 50%, and try another mode of travel such as carpooling, telecommuting, transit, or bicycling, we could reduce the number of cars on the road by 22%! This translates to roughly

37,000[✓]
CARS OFF THE ROAD PER DAY!

Many households have approximately 2 of everything (except bikes!)

-  **2.65** people
-  **2.14** cars
-  **2.0** driver's licenses
-  **2.31** smartphones
-  **1.4** bicycles

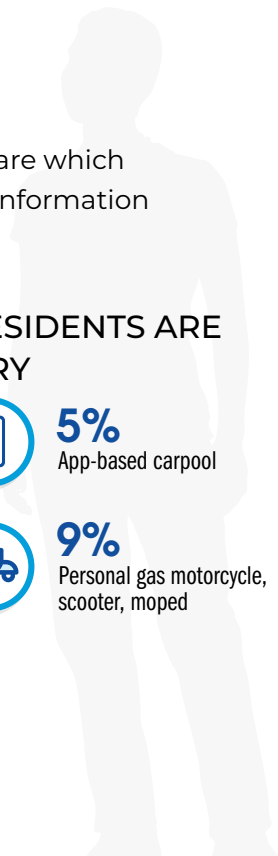


With these facts in mind, the INNOVATE program is focused on how to provide multiple travel options so that it's EASY to get to where you need to go using alternative modes. Do you want to be a **CHAMPION OF CHANGE**?

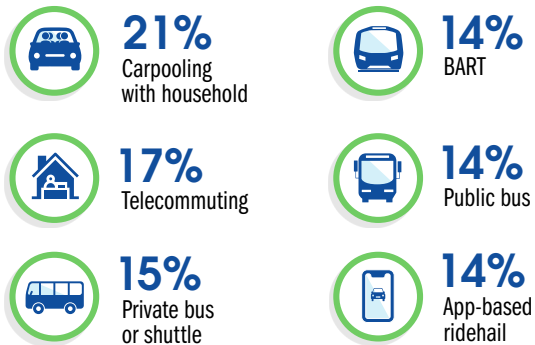


EXPLORING MODE SHIFT

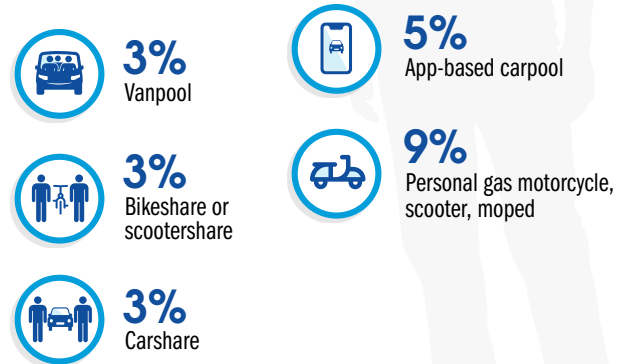
Recognizing that changing travel habits can be hard, we asked survey takers to share which modes they are most likely to try and which modes they are least likely to try. This information will help us prioritize projects that align with how residents actually want to travel.



THE MODES OUR RESIDENTS ARE MOST LIKELY TO TRY



THE MODES OUR RESIDENTS ARE LEAST LIKELY TO TRY



What Keeps Drivers from Shifting Modes

LEARNING ABOUT BARRIERS

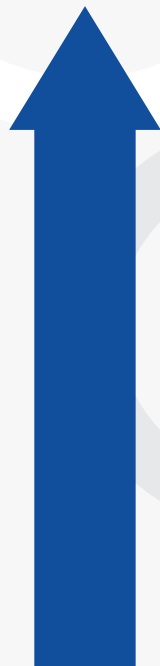
Our survey took a deep dive into what is keeping people from leaving their cars at home. We learned that availability of alternative modes and issues related to time were the most important factors, along with the quality of the travel experience. **Cost of using alternative modes was one of lowest ranked barriers, along with safety, comfort and personal circumstances.**



about

40%

of drivers see availability and travel quality as barriers



about

10%

of drivers see cost as a barrier



It takes planning ahead of time.

Not an efficient use of time

Not sure I'll find a parking spot at BART

Station was too far from my house

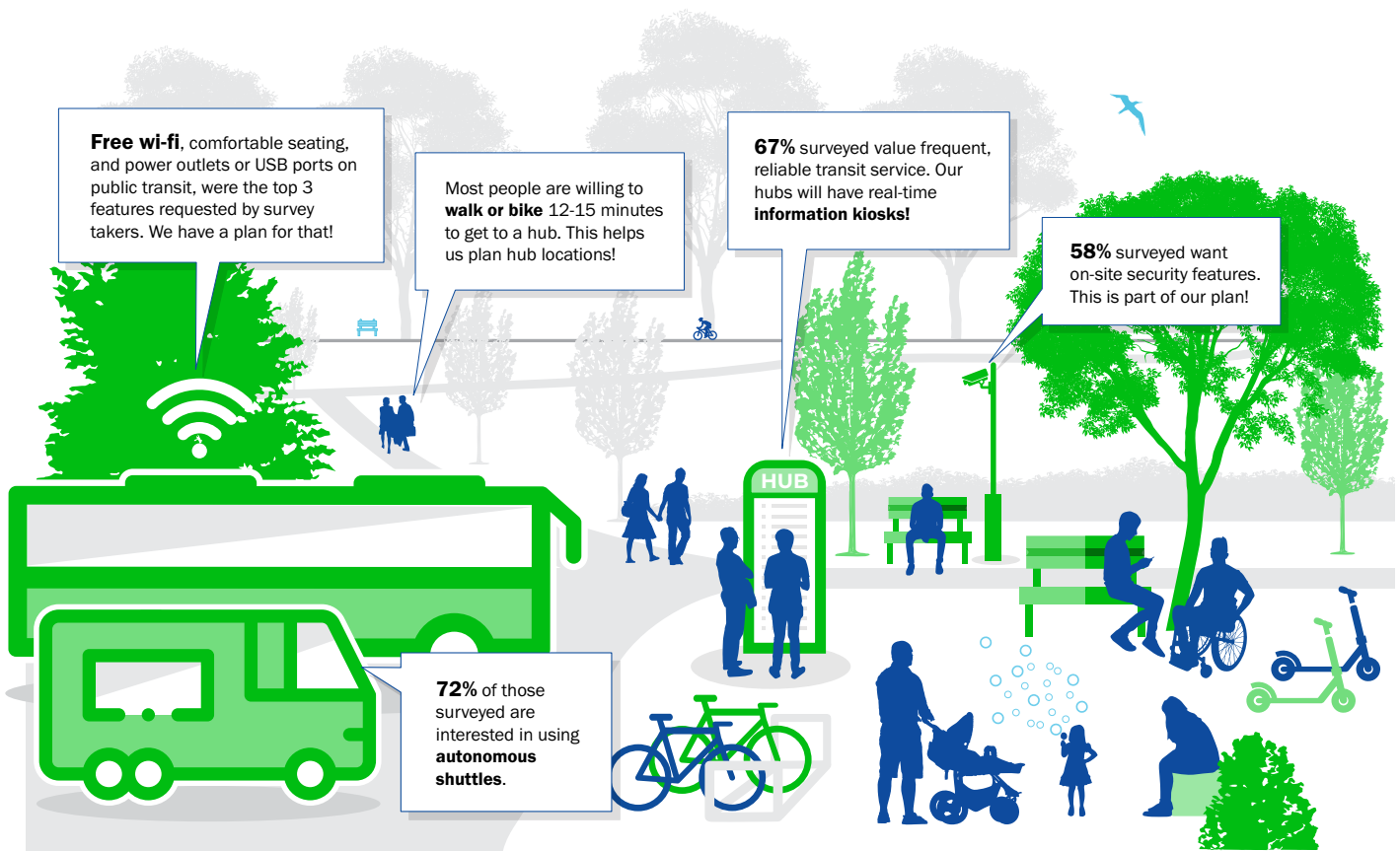


This feedback on mode shift and barriers, is helping us build better projects!



PEOPLE-CENTERED PLANNING

Shared mobility hubs are a cornerstone piece of the INNOVATE 680 program and are key to connecting neighborhoods to alternative transportation options like public transit, carpooling, biking, ride sharing, and microtransit. To make sure that the hubs meet the needs of our travelers, we asked our survey takers which features and amenities are most important. This feedback will help us plan better shared mobility hubs!



There are many ways our travel behavior research can help inform a new way to plan transportation in Contra Costa. We know that changing a travel routine can be difficult. Our goal is to make it easier, and even fun!

Go to ccta.net/INNOVATE680 to see a 3D visual simulation of a shared mobility hub, learn more about the six projects, and see a video presentation of our survey results! Please stay in touch to learn more about how INNOVATE 680 is shaping the future of transportation in your neighborhood.

APPENDIX C
SHARED MOBILITY HUB
STRATEGIES TOOLKIT

INNOVATE 680
IMAGINE THE POSSIBILITIES



SHARED MOBILITY HUB Strategies Toolkit

November 2021

Kimley»»Horn

introduction

TYPES OF SERVICES AND AMENITIES

The Shared Mobility Hubs Implementation Strategy Toolkit identifies the types of services and amenities that may be considered as a mobility solution within the access zones of a mobility hub. Features are intended to improve one or more of the following: transportation connectivity, access to a range of mobility options, user amenities, and safety. The Mobility Hub Catalog is organized by the five categories of service and amenities listed below.



Transit Amenities: features that help riders plan trips, connect between services, access stops, and comfortably wait for their transit or mobility service.



Bike Amenities: located within biking distance of the mobility hub, intended to expand the bike network, improve bike network safety and comfort, provide secure options for parking a bike, improve access to bikes, and allow connections to other modes such as transit.



Pedestrian Amenities: located within walking distance of the mobility hub, intended to improve pedestrian connections, enhance pedestrian network safety and comfort, enhance public spaces, and improve wayfinding.



Motorized Services & Amenities: features that efficiently use mobility hub space, maximize potential usage, and allow motorists to make informed mobility choices.



Support Services & Amenities: features available to mobility hub users that facilitate convenient use of other mobility strategies, assist users in making informed mobility choices, and provide amenities to enhance the comfort and convenience of alternative mobility options.

introduction

KEY VISIONS

Shared Mobility Hubs will serve as primary nodes within the I-680 travel corridor and multi-modal transportation network, providing connectivity between local transportation services and regional services. CCTA has established six key visions as guiding principles to inform the development of the mobility hubs. Each mobility hub amenity featured in the catalog is categorized by its alignment with the six distinct mobility hub goals noted below.



Efficient Movement of People:

facilitate convenient and intuitive transfers between travel

modes, maximize movement of people, and prioritize modes that efficiently use the transportation network.



Universal Accessibility and Enhanced Safety:

promote equity and enhance

accessibility for disadvantaged and mobility-impaired populations by leveraging information, technology, and design to provide safe and accessible mobility options.



Improved Access to Alternative Transportation Modes:

overcome existing barriers

for use of alternative transportation modes by providing a network of safe and comfortable pathways, promoting first/last-mile connections, and targeting new and occasional alternative transportation users to achieve mode shift from SOVs.



Mobility Hubs as Community Assets:

Support neighborhood integration by creating

seamless pathways between mobility hubs and surrounding areas, providing on-site amenities, facilities, and activity beyond in-route trips, and providing a context-sensitive and high-quality aesthetic.



Flexibility to Accommodate New Technology and Changing Transportation Conditions:

provide flexible and adaptable designs for amenities and

services in order to adapt to new technologies and changes in how mobility services are consumed.



Reflect Community and Regional Aspirations:

integrate local, regional, and mode-specific plans into

the mobility hub infrastructure design, leverage public-private partnerships to encourage innovation and use, and support the advancement of key regional initiatives.



TRANSIT AMENITIES



ENHANCED TRANSIT WAITING AREAS

DESCRIPTION

A safe and comfortable space for passengers who are waiting for transit or their mobility service. Features may include sidewalk furniture and additional travel information signage that can improve overall transit experience for passengers, encourage new riders, and increase passengers' sense of security.

FEATURES:

- Bus shelters
- Ticketing machine
- LED lighting
- Interactive kiosks
- Seating/Lean Bars
- Trash and recycle bins
- Complimentary Wi-Fi
- USB charging ports

TECHNOLOGY INTEGRATIONS:

- Internet connection for complimentary Wi-Fi services
- Electrical utilities for lighting and USB charging

TYPICAL IMPLEMENTATION SETTING:

- Strong existing or future ridership
- Access to high frequency transit services
- Major transfer point between routes
- Near schools, senior citizen housing facilities, or community recreation centers where large concentrations of the young and elderly are expected

IMPLEMENTATION CONSIDERATIONS:

- Location and configuration of the waiting areas. Minimize walking distance between transit and other mobility services, pick-up/drop-off (PU/DO) curb areas, other building entrances, and other transportation modal connections
- Regulations from the Americans with Disabilities Act (ADA) in the design of certain enhancements such as interactive kiosks, sidewalks, seating, and access between amenities
- Dedicated shelters for transit to improve transit visibility, rider comfort/safety, and operation efficiency for customer loading
- Pathways and connections between different services are clearly identified with adequate lighting and security features
- Opportunity to reflect or enhance surrounding community aesthetic and sense of place
- Ownership and maintenance responsibility to be determined in Co-Op Agreements between agencies
- Consider design and materials that are resilient, weather-appropriate, and anti-habitation

IMPLEMENTATION EXAMPLES

Big Blue Bus – Santa Monica, CA

Big Blue Bus (BBB) and City of Santa Monica (City) partnered with stakeholders to design and construct a locally inspired transit waiting area that incorporates real-time information, solar lighting, updated maps, and other desired amenities for riders. The final design, called “The Blue Spots,” is clean and unobtrusive and was designed to enhance the City’s coastal look and feel. The new bus stop structures utilize a modular system flexible enough to adapt to various sized locations and rider volumes with combinations of enhancements.



Source: Lorcan O’Herlihy Architects (LOHA)

Ventura Bus Home – Ventura, CA

The Ventura Public Works Department partnered with the City’s Public Art Program to design a public bus facility that depicts the metamorphosis of a bus stop being transformed into a home at Pacific View Mall. The waiting areas include seating, trash receptacles, and shade structures as well as visual entertainment for transit riders, pedestrians, and shoppers.



Source: Dennis Oppenheim



REAL TIME TRAVEL INFORMATION

DESCRIPTION

Real-time travel traveler information systems allow transit riders and other mobility service users to know how long they can expect to wait for a vehicle to arrive along with other information required for riders to plan trips. These real-time information systems provide passengers with the information for users to make informed travel decisions based on the availability of transit and other mobility services.

FEATURES:

- Real-time information signs connecting to an integrated MOD/MaaS system
- Station area maps with interactive displays
- Screens placed in major attractors and employment areas with information about nearby transit services

TECHNOLOGY INTEGRATIONS:

- LED screens for display
- Regional Data Hub and connectivity to signage
- Real-time Travel Mobile Application

TYPICAL IMPLEMENTATION SETTING:

- Anywhere multiple transit services are provided
- Areas where smartphone use may be lower or cellular signal is weak

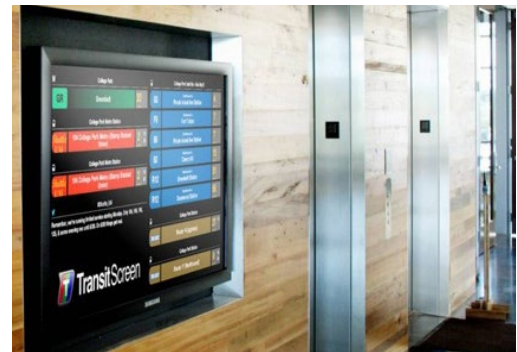
IMPLEMENTATION CONSIDERATIONS:

- Information transit users need to make their trips more efficient
- Access to other real-time traveler information via personal smartphones and what real-time information can best complement these other sources
- ADA and universal design standards and audio options for the visually impaired
- Partnerships with local employers, property managers, and other public and private entities to integrate transit information in high use areas
- Consider ridership levels and peak patronage foot-traffic when determine the number of interactive displays

IMPLEMENTATION EXAMPLES

Portland Streetcar – Portland, OR

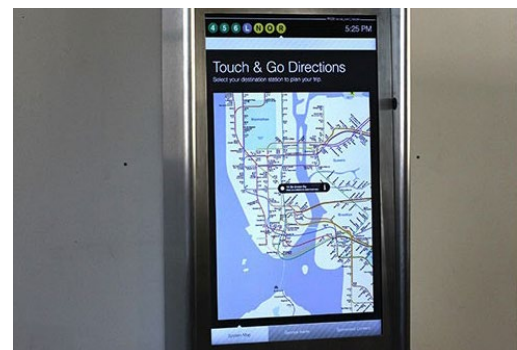
Portland Streetcar deploys TranSMART signs to provide riders with real-time arrival information via the internet, phone, and display screens at key stops. The information utilizes real-time bus locations using AVL/GPS systems along with schedule of arrival and departure times. Access to real-time travel information reduces actual and perceived wait times and increases the reliability of transit, which can encourage a mode shift.



Source: TransitScreen

Metropolitan Transit Authority (MTA) – New York City, NY

The New York City Metropolitan Transit Authority (MTA) partnered with design firm Control Group to create a system of touchscreen kiosks that feature real-time information and any help you may need to navigate the city via the subway system. The kiosk features an interactive HD display that provides simple station directions with transfers, countdowns to train arrivals, service updates, neighborhood maps, and digital content loops. Up to 90 of these kiosks will be installed at the top NYC subway stations.



Source: NYC-MTA — On the Go



FARE VENDING MACHINES

DESCRIPTION

Fare vending machines provide a quick and automated method for purchasing tickets on transit or other mobility services. Ticket purchasing should be convenient and flexible by accepting a variety of payment methods including cash, bank cards, and mobile payments. Clipper card is being used regionally by different agencies.

FEATURES:

- Plug and play vending machine with dispensers, card slots, cash slot, and display screen

TECHNOLOGY INTEGRATIONS:

- Electrical connection
- Payment system hardware and software

IMPLEMENTATION CONSIDERATIONS:

- Online management system to receive updates when machines are out of service
- Mobile payment, smart card, or chip reader
- Must not block accessible path and boarding areas or bus door zones
- Raised lettering and audible instructions to meet ADA requirements
- Shade or cover and lighting near ticket machine
- Operation and maintenance of the machines
- Explore opportunities to integrate fare vending machines with Universal Transportation Accounts to streamline MAAS and other transportation service access



DEDICATED TRANSIT LANES

DESCRIPTION

Dedicated transit lanes allow buses to operate more efficiently and reliably by allowing them to operate in a separate lane. These lanes, which may be physically separated from traffic with curbs or painted a different color to discourage driver incursion, should be prioritized in locations where either a high-frequency transit line or multiple individual lines are impacted from traffic congestion. By placing greater emphasis on transit, travelers who currently drive alone may see the benefit of switching modes, thus increasing transit ridership and overall corridor person throughout. In some cases, these lanes can be implemented as shared or managed lanes during off-peak hours when traffic congestion and its impact on transit operations are less.

FEATURES:

- Lane striping
- Signage
- Dedicated transit signal phases (if appropriate)

TECHNOLOGY INTEGRATIONS:

- None, see *Transit Signal Priority* for signal integration opportunities

TYPICAL IMPLEMENTATION SETTING:

- Where traffic congestion is affecting transit service reliability
- On corridors with frequent transit service
- Areas where ridership is high, may include areas around mobility hubs

IMPLEMENTATION CONSIDERATIONS:

- Transit service level
- Coordination and concurrence between transit operator and local jurisdiction for design and configuration of dedicated lane
- Business access for driveways along the transit lane
- Hours of use and directionality reserved for transit vehicles
- Requires design development to configure signing, striping, and any other associated improvements
- Clear signage, road markings identifying where private vehicles are prohibited, what fines shall be levied
- Provision for enforcement of dedicated transit lanes

IMPLEMENTATION EXAMPLE

Broadway Transit Lanes – Oakland, CA

The City of Oakland added dedicated bus lanes to Broadway between 11th and 20th Streets in downtown Oakland. The lanes have improved transit travel time reliability for bus service on Broadway connecting all parts of the AC Transit system. The dedicated bus lanes replaced travel lanes and maintained on-street parking and loading.



Source: Kimley-Horn and Associates, Inc.



TRANSIT SIGNAL PRIORITY (TSP)

DESCRIPTION

Transit Signal Priority (TSP) can improve reliability and travel speeds for transit vehicles by implementing a range of improvements at signalized intersections that promote transit efficiency and reliability. These improvements typically involve modifying traffic signal timing or phasing that can detect if buses are present and prioritize signal phases to allow buses to cross an intersection without stopping. TSP can be integrated with other improvements such as dedicated transit lanes, queue jumps, and bus bulbs. TSP can operate independently at the signal level, connect with multiple signals in a corridor, or be integrated in a regional traffic management control system.

FEATURES:

- Transit signal heads for dedicated transit phases
- May require signal controller upgrades
- Requires technology upgrades on buses

TECHNOLOGY INTEGRATIONS:

- May require traffic signal controller upgrades
- Traffic Signal Priority (TSP) Equipment, which may include equipment both on board the vehicle and at the signal controller

TYPICAL IMPLEMENTATION SETTING:

- Where transit efficiency and reliability are affected by signal delays
- Where there is dedicated transit lane or bus queue jumps
- Where corridor streets have long signal cycles

IMPLEMENTATION CONSIDERATIONS:

- Coordination between local jurisdictions and transit operators for implementation and operation plans
- Assess feasibility and impacts of integrating transit signal priority with existing or planned signal coordination
- Identify opportunities to also benefit emergency vehicles

IMPLEMENTATION EXAMPLE

Livermore Amador Valley Transit Authority (LAVTA) BRT Project– Pleasanton, Dublin and Livermore, CA

The Rapid TSP upgrade and expansion project installed GPS-based Transit Signal Priority equipment for 24 LAVTA-owned buses and 67 intersections served by Rapid Routes 10R and 30R in Livermore, Pleasanton, and Dublin.



Source: LAVTA Wheels



CURB EXTENSIONS (BULB-OUTS)

DESCRIPTION

Bus bulbs are curb extensions that align the bus stop with the parking lane or bike lane, allowing buses to stop and board passengers without ever leaving the travel lane. This allows buses to move faster and more reliably by decreasing the amount of time lost when pulling in and out of bus bays and merging with traffic.

FEATURES:

- Curb extension
- Other optional amenities: shelter, wayfinding maps, plantings, and trees

IMPLEMENTATION CONSIDERATIONS:

- Need to consider roadway geometry. In-lane stopping generally not preferred if there is only one travel lane
- Equipped with transit shelters and other amenities whenever possible to enhance transit user experience
- May require more significant drainage or curb improvements
- Most effective with far-side stops. If implemented near-side, would require turn restriction to avoid right-hook conflicts or queuing in the right-hand lane
- Often implemented as part of a bus island with passageway behind the island for bike lanes and cycle tracks

IMPLEMENTATION EXAMPLE

AC Transit Tempo Line – Oakland, CA

The Alameda-Contra Costa Transit District (AC Transit) implemented a 10-mile network of dedicated and bus-only lanes along the project corridor spanning from the Uptown BART Station at 19th Street in Oakland along International Boulevard and E. 14th Street to the San Leandro BART Station. There are 46 new platform stations. The stop at 12th St & Harrison NB is an example of a bus bulb-out that recently went in operation with full amenities.



Source: Google



BUS LAYOVER ZONE/ DRIVER RELIEF FACILITIES

DESCRIPTION

Designated areas at the layover point of a bus route for drivers to rest and to provide a place for schedule recovery before starting a new trip. This often requires a facility accessible to drivers only and a place to park the bus out of the way of moving traffic.

FEATURES:

- Driver break room
- Restrooms
- Bus parking area

TYPICAL IMPLEMENTATION SETTING:

- Bus charging facilities

IMPLEMENTATION CONSIDERATIONS:

- Placing layover zones to support multiple routes at regional transfer locations or transit network terminals
- Sufficient bus turning paths and the ability to easily and quickly drive between the layover zone and the route start/end
- Concrete bus pads along the layover zone to reduce roadway damage
- Access to facilities (transit staff only, all transit users, public)
- Consider implement keyed entry and limited access to bathroom to staff and operators only
- Responsibility for maintenance of the operator restroom would be determined in a maintenance or access agreement
- Determine charging infrastructure appropriate to support bus layover



BATTERY ELECTRIC BUS (BEB) CHARGING STATION

DESCRIPTION

Electric vehicle (EV) charging stations are an essential infrastructure component that supplies electricity for the recharging of battery-operated vehicles. Battery Electric Bus (BEB) charging stations allow buses that dock or park in between trips to recharge their batteries and extend their drive time, often incorporated within a layover zone or relief facility. Fast charging stations allow vehicles to charge quickly at stops along a route, which allows buses to travel longer on their routes before having to return to the yard for a full recharge.

FEATURES:

- Charging point
- Dedicated bus parking spaces

TECHNOLOGY INTEGRATIONS:

- Integrated electric bus operating system
- Safety and energy management system
- Wireless charging facility
- Power source and transformer

TYPICAL IMPLEMENTATION SETTING:

- Terminal point, layover point, or timepoint where a bus may spend several minutes

IMPLEMENTATION CONSIDERATIONS:

- Supporting infrastructure, such as connections to the power grid and transformers, in identifying optimal placement for bus charging
- Need to determine preferred zero emission bus propulsion strategy. May not be necessary if non-electric strategy is selected
- Will require coordination amongst transit operators regarding type of charging technology to implement
- For BART facilities, must implement charging infrastructure on separate utility connections, as BART is not permitted to sell or pass through power to others

IMPLEMENTATION EXAMPLE

TransLink – Vancouver, Canada

TransLink is in the process of expanding their battery-electric bus fleet to 19 vehicles. They are currently testing out new electric buses and charging equipment from different manufacturers in order to determine how to best scale up their battery-electric fleet in the coming years. They have placed fast-charging units in select locations along major transit routes to test their effectiveness.



Source: TransLink



MICROTRANSIT/AUTONOMOUS TRANSIT

DESCRIPTION

Emerging service model using small autonomous or electric shuttle to transport riders. Microtransit vehicles typically carry between 4 and 16 passengers. Microtransit or autonomous transit can reduce single-occupancy vehicles without the cost implication of a full-size fixed route transit service. This model often focuses frequent point-to-point transportation service between stations within short distance or first-mile/last-mile connectivity to major employers or commercial hubs.

FEATURES:

- May include dedicated lane, guideway, or track alignment
- Automated microtransit vehicle fleet
- Vehicle charging station(s)
- Stations and loading zones

TECHNOLOGY INTEGRATIONS:

- Real-time GPS devices and system
- Integration with mobile app
- Rideshare service contract with employers

TYPICAL IMPLEMENTATION SETTING:

- Areas with limited auto access or roadway connectivity
- Employment and commercial areas
- Areas around major transit hubs

IMPLEMENTATION CONSIDERATIONS:

- Shuttle services to complement or replace a fixed-route service
- Real-time information at stops and via mobile application
- Access existing and future demand; consider population and ridership growth
- Sufficient curb space is needed for pick-up/drop-off
- Would likely benefit from on-site charging infrastructure

IMPLEMENTATION EXAMPLE

LAVTA Shared Autonomous Vehicle (SAV) – Dublin, CA

The Livermore Amador Valley Transit Authority (LAVTA) has tested a Shared Autonomous Vehicle (SAV) as a first-mile/last-mile solution around the Dublin/Pleasanton BART station. The goal of the project is to provide a convenient and reliable first- and last-mile zero emission service to employment, retail, and residential destinations located in the Dublin/Pleasanton BART Station areas. Though autonomous, each vehicle is accompanied by an onboard operator at all times during the testing phase.



Source: First Transit - LAVTA

Via Transport On-Demand – MTS, MD

Via is an on-demand micro-transit service operating in many cities including Chicago, New York, Washington, D.C., and West Sacramento. Via's programs provide a range of operating options that differ by service area. An app is used to book a ride and passengers are matched with a vehicle traveling in the same direction within seconds. An estimate of the vehicle arrival time is provided when the road is booked, but average wait times are in the 5-minute range. Transportation benefit debit cards can be used to pay for trips.



Source: WesternCity.com



NEIGHBORHOOD ELECTRIC VEHICLES (NEVs)

DESCRIPTION

A variety of emerging or evolving transit service options focus on first-mile/last-mile connections to mobility hubs, major employment areas, or other points of interest. These may share several similar characteristics, including dynamic routing that allows for front door access and efficient routing, autonomous guidance that does not require a driver, electric propulsion, reduced vehicle emissions, and on-demand requests that reduce passenger wait times. NEV services commonly use smaller vehicles that carry between 3 and 6 passengers, and riders typically order the service through a mobile app.

FEATURES:

- Curb space/loading zones

TECHNOLOGY INTEGRATIONS:

- Integration with mobile app
- Rideshare service contract

TYPICAL IMPLEMENTATION SETTING:

- Where additional first-mile/last-mile connection is needed to connect to key destinations beyond a typical walkshed
- Where land use density does not support additional fixed route service
- Where there is a wide distribution of origins or destinations

IMPLEMENTATION CONSIDERATIONS:

- Integrate real-time information on NEV programs into universal transportation account
- Leverage funding sources such as grants, parking meter revenue, development impact fees, and private sponsorships to subsidize micro-transit services in a community
- Certain design features, such as dedicated transit lanes, may benefit an autonomous transit service
- Local road and motor vehicle code restrictions in identifying vehicle type and the feasibility of using lighter/smaller NEVs

IMPLEMENTATION EXAMPLES

Free Ride Everywhere Downtown (FRED) – San Diego, CA

The City of San Diego subsidized the free electric shuttle called the Free Ride Everywhere Downtown (FRED). FRED is operated by a Circuit Transit under a five-year contract. The company is tasked with maintaining the ride-hail app, handling day-to-day operations, and conducting marketing and advertising efforts. FRED shuttles (a type of NEV), which seat up to six passengers, have traveled over 950,000 miles and ported more than 900,000 passengers within the Downtown San Diego area. The City anticipates soliciting interest for operators to provide service beyond 2022 and serve people outside of downtown.



Source: The San Diego Union-Tribune



BICYCLE AMENITIES



BIKEWAYS

DESCRIPTION

Bikeways can encourage bicycling to, from, and within a mobility hub, offering bicyclists easier access to transit and other nearby destinations. They can provide a safe and comfortable riding experience for people of all ages and abilities as well as alert drivers to the presence of bike riders on or near the roadway. Bikeways make cycling a priority on certain routes and an important part of the local and regional travel network.

FEATURES:

- Class I bike path separated from traffic by curbs
- Class II bike lane defined with pavement markings and signage
- Class III bike boulevard located on low-speed, low-volume shared roadway with autos
- Class IV cycle track exclusively for bike use with physical barriers or buffer
- Bike signals
- Crossing enhancements, such as two-stage turn boxes, bike boxes, and Pedestrian-Hybrid beacons (PHBs), and other conflict zones with green-paint marking
- Bicycle-oriented wayfinding
- Bike channels adjacent to stairways at stations
- Signal push-buttons accessible for cyclists
- Bike detection

TYPICAL IMPLEMENTATION SETTING:

- An existing strong bicycle network
- Bicycle destinations within the bikeshed, particularly considering schools, parks, and other community facilities
- Locations with existing bike network gaps

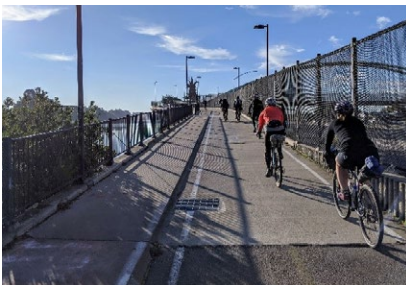
IMPLEMENTATION CONSIDERATIONS:

- Use within the bikeshed to prioritize both greater network connectivity and convenient connections to major generators
- Improve bike connection for areas that have weak links to existing bike network
- Need to evaluate opportunities to add bikeways, including narrowing lane widths, converting parking lanes, and implementing road diets
- Need to consider hills and topography of facility when identifying a desirable bicycle network
- All ages and abilities facilities
- Minimizing or controlling conflicts at intersections

TECHNOLOGY INTEGRATIONS:

- Dedicated bike signal detector and equipment
- Bike counters

IMPLEMENTATION EXAMPLES



Class I Bike Path



Class II Bike Lane / Source: City of San Jose



Class III Bike Boulevard / Source: City of Berkeley



Class IV Cycle Tracks / Source: Market & Grove, San Francisco



ELECTRIC BIKE CHARGING STATIONS

DESCRIPTION

Allow bicyclists to recharge their electric bike while storing them at a mobility hub or provide them with a quick charge to finish the last leg of their trip.

FEATURES:

- Electrical power
- Charging adapter
- E-Charging station rack
- Shelter or cover for equipment
- Secure locked space or rack

TECHNOLOGY INTEGRATIONS:

- Intelligent charging processes
- Connection to the power grid
- Universal transportation account

TYPICAL IMPLEMENTATION SETTING:

- Nearby topography supportive of electric bike use
- Locations of high electric bike use

IMPLEMENTATION CONSIDERATIONS:

- Providing a circulation zone in front of the rack to ensure easy access and loading distance for electric bikes
- Local electric bike volumes when sizing parking and charging needs
- Locating E-bike charging stations near the bicycle network and other access paths
- Universal charging system or adapter



BICYCLE PARKING

DESCRIPTION

Offering people safe, secure, and convenient places to park and lock up their bikes helps encourage bicycling as a transportation choice for short trips. This is especially true for people biking to and from transit stops. Mobility hubs can offer bicyclists a variety of bike parking options near transit, which provide transit riders with an alternative to bringing their bikes onto transit, which is particularly challenging for crowded transit systems, such as BART. Convenient bicycle parking at mobility hubs integrated with transit help supports bicycling as a first-mile/last-mile connection, which can lead to higher transit ridership and an increasing shift from driving alone.

FEATURES:

- On-demand bike lockers or secure bike racks
- Staffed facilities
- Bike valet
- Real-time information on available bike parking integrated into a universal transportation account/mobility as a service account

TYPICAL IMPLEMENTATION SETTING:

- All transit hubs

IMPLEMENTATION CONSIDERATIONS:

- Bicycle parking demand and space availability at transit stations
- BART Multimodal Access Design Guidelines at BART stations
- Bike parking pricing. Bike parking fees can be charged on a daily basis or on a longer-term subscription
- Options for low-income customers
- Integrate into other station facilities, such as transit-supportive retail or parking structures in order to increase visibility and reduce costs
- Fee integration with universal transportation/fare account
- Consider bike parking/locker design to accommodate variety of bike sizes

IMPLEMENTATION EXAMPLES

BART Station - Pleasant Hill, CA

BART is piloting a new high security smart bike rack system at the Pleasant Hill/Contra Costa Centre station. The racks provide a significantly stronger deterrent to theft compared with traditional U locks. Bike parking is available to BART riders free of charge on a first come basis but require online registration with Clipper Card.



Source: BART

Bike Station - Pleasant Hill, CA

A Bike Station was recently installed in 2018 at the Pleasant Hill/Contra Costa Centre BART Station. The Bike Station includes 2,300 square feet to provide parking for 215 bikes located in a secure facility in close proximity to the station. Access to the facility is from a BikeLink card and is provided 24 hours a day, seven days a week. The station also includes a bike retail shop and maintenance services. It was funded by Measure J and cost \$425,000.



Source: BART



SHARED MICROMOBILITY

DESCRIPTION

Shared micromobility provides convenient, affordable, on-demand access for short-term use while enhancing access to transit. Shared micromobility stations typically are located near transit stops and major commercial destinations. These shared programs can help provide enhanced first-mile/last-mile travel options and lead to an increased shift to transit. There are several shared micromobility models: station-based bikeshare, employee bikeshare program, dockless bikeshares, peer-to-peer bikeshare, and scooter share programs. Bikeshare and scootershare programs encourage people who do not currently own a bike or scooter to begin using these modes of transportation.

FEATURES:

- Curbside shared mobility station lightings
- Electrical power for electric bikeshare or scootershare stations

TECHNOLOGY INTEGRATIONS:

- Mobile app integration
- Integrate with universal transportation account.
See "Support Services and Amenities" page 41

TYPICAL IMPLEMENTATION SETTING:

- At transit facilities located in areas with higher destination activity, such as employment centers, commercial areas, campuses, or tourist areas
- Within communities, particularly those with a supportive bicycle network

IMPLEMENTATION CONSIDERATIONS:

- Careful coordination with local jurisdiction in charge of permitting to develop or reference shared micromobility parking policies and locations to make sure they are safe and convenient and also don't block the public right-of-way, path of travels at mobility hub
- Ensure shared mobility stations are well-lit and safe
- Bikeshare/scootershare programs are commonly permitted to include measures and compensation for enforcement of bicycle parking locations and management of fleet sizes and condition
- Differences in benefits between station-based, dockless, and peer-to-peer bikeshare programs
- Develop necessary property use agreement with any private shared micromobility operators and data reporting

IMPLEMENTATION EXAMPLES

Metro Bike Share – Los Angeles, CA

Los Angeles County Metropolitan Transportation Authority (L.A. Metro) partnered with the Los Angeles Department of Transportation (LADOT) to relaunch Metro Bike Share Program in 2021. The effort reinstalled 54 bike share stations and has plans to add 13 additional stations for a total of 67 in Westside communities, including Santa Monica, Venice, Mar Vista, Palms, Playa Vista, and surrounding areas. L.A. Metro stations now have Classic Metro Bikes and docking stations for Metro Bike Share members. This service provides convenient access to the beach, biking trails, and other destinations nearby.



Source: LA Metro

Bay Wheels - San Francisco Bay Area, CA

Bay Wheels is the Bay Area's regional bike share program serving Berkeley, Emeryville, Oakland, San Jose and San Francisco. Bay Wheels offers over 7,000 bicycles (both traditional bikes and hybrid electric bikes) at 550 stations across the Bay. Beside access via the Lyft mobile application and Clipper card payment, the program also offers riders with low incomes the option to pay with cash. Bay Wheels provides real-time trip information.



Source: Bay Wheels



BICYCLE REPAIR STATIONS

DESCRIPTION

Bicycle repair stands enable bicyclists to make minor repairs and fill tires, making it more convenient for users to maintain safe bicycles. Multiple tools are securely fastened to the rack, which also serves as a bike stand for performing repairs.

FEATURES:

- Flat concrete surface
- Basic repairs and maintenance stand
- Bike hanger arms

TYPICAL IMPLEMENTATION SETTING:

- Near high bicycle traffic routes and bike parking

IMPLEMENTATION CONSIDERATIONS:

- The bike repair station must be in a highly visible and well-lit area, not blocking sidewalk areas, entryways, station ticketing machine, or autos right-of-way
- Repair station to be located in close proximity to existing bike facilities and security services to prevent vandalism and theft
- Bike repair station located within bike hub requires attendant and mechanics for assistant
- Trash receptacles and public cleaning station

IMPLEMENTATION EXAMPLES

Downtown Los Angeles DOT Bike Repair Station, Los Angeles, CA

LADOT partners with small businesses and community organizations to install and maintain public Bicycle Repair Stations. Making these available to the public is an effort by the City to encourage knowledge of bicycle repair and to make it easier for people on bicycles to get around and stay on the road.



Source: LADOT Livable Streets

VCU RamBikes – Richmond, VA

Virginia Commonwealth University partnered with RamBikes as part of their Department of Parking & Transportation program to provide free bicycle service and education to students, faculty, and staff. Major transit hubs and other campus facilities include fix-it-yourself basic service stations.



Source: RamBikes VCU



PEDESTRIAN AMENITIES



PEDESTRIAN WALKWAYS

DESCRIPTION

Pedestrian access to public transit and mobility hub services should be provided via walkways that are wide, smooth, direct, and well-lit at night. Landscaping elements can also serve to improve the aesthetic appeal of a walkway and to buffer pedestrians from the noise generated by passing automobiles.

FEATURES:

- Buffer space with autos
- Landscaping
- Wayfinding
- Sidewalk public furnishings
- Sidewalks and trails

TYPICAL IMPLEMENTATION SETTING:

- All mobility hub walksheds

IMPLEMENTATION CONSIDERATIONS:

- Follow local and national design guidelines, including the BART Multimodal Access Design Guidelines for BART stations and ADA requirements
- Ensure that pathways are maintained and well lit
- The NACTO Urban Street Design Guide provides additional walkway design guidance, including descriptions of sidewalk zones
- Landscaping and walkways should be designed for security, avoiding creating easily inhabitable places



PEDESTRIAN CROSSINGS

DESCRIPTION

The greatest safety challenges for pedestrians and impact to walkability often occur at intersections. Careful consideration should be given to the design of pedestrian crossings within the walkshed of mobility hubs. A variety of features and strategies can be implemented to improve safety and comfort of pedestrians, including marked crosswalks, median crossing islands, warning signs, and pedestrian signals.

FEATURES:

- Marked crosswalks
- Median islands
- Curb extensions/Bulb-Outs
- Raised Crossings
- Reduced curb radii
- Pedestrian scramble or leading pedestrian interval
- Midblock controlled crossings
- Narrowed and reduced number of motor vehicle travel lanes
- High visibility pedestrian warning signs
- Pedestrian signals (PHB, RRFB, etc.)
- Pedestrian recall phasing

TYPICAL IMPLEMENTATION SETTING:

- All crossings within a mobility hub and along key pathways on the surrounding walkshed

IMPLEMENTATION CONSIDERATIONS:

- Upgrade existing facilities to meet ADA requirements
- Identify street segments with long gaps between crossings and assess whether there is a need for a midblock crossing. This could include demand contributors such as adjacent land uses, feeding roadway networks, and transit stops
- Identify opportunities to minimize crossings within mobility hubs, where feasible
- Provide well-lit crossings

TECHNOLOGY INTEGRATIONS:

- Pedestrian countdown signal heads
- Accessible pedestrian signals

IMPLEMENTATION EXAMPLES

Hollywood and Highland Crosswalks – Los Angeles, CA

Hollywood is home to one of LA's most notable landmarks, which has an abundant number of pedestrians and visitors each day. Los Angeles City Councilmembers, LADOT staff, and local residents and business owners dedicated a new pedestrian scramble crosswalk at the intersection of Hollywood Boulevard and Highland Avenue. A 'scramble' is a crossing system that allows everyone to cross from each corner in all directions, including diagonally, during the same pedestrian phase at the intersection.



Source: Los Angeles Walks

Pedestrian Hybrid Beacon – Albany, CA

A pedestrian hybrid beacon (PHB) was installed at the intersection of Dartmouth Avenue and San Pablo Avenue in Albany, CA to improve pedestrian crossings of San Pablo Avenue.



Source: City of Albany



PUBLIC SPACE

DESCRIPTION

Pedestrian-focused public spaces play a prominent role in shaping a walkable, accessible, and enjoyable city. They provide places for people of all ages and abilities to enjoy their communities without competing with other modes of transportation. Well-designed public spaces integrated with mobility hubs encourage people to congregate at a centralized point, creating a sense of community and social interaction while helping to support local businesses.

FEATURES:

- Landscaping features
- Furnishings
- Bollards and fencing
- Public art
- Parklets

TECHNOLOGY INTEGRATIONS:

- Public Wi-Fi
- Lighting

TYPICAL IMPLEMENTATION SETTING:

- Locations where right-of-way is available and there is community demand for an activated public space

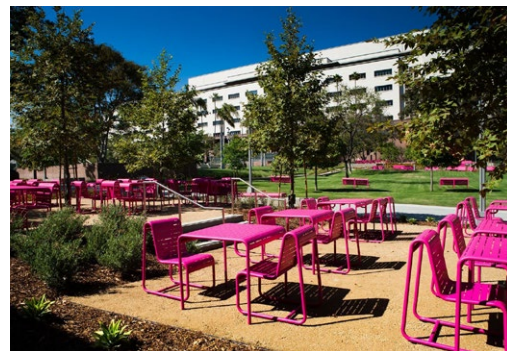
IMPLEMENTATION CONSIDERATIONS:

- Maintain a sense of openness with minimal obstructions
- Artwork, murals, water features, lighting, and landscaping to create a desirable space
- Architectural features such as overheads and awnings to provide shade for the public
- Flexibility for a variety of uses (e.g. farmers market, fairs, art, etc.)
- Size the facility to be effectively activated

IMPLEMENTATION EXAMPLE

Grand Park – Los Angeles, CA

Grand Park has four fully furnished pedestrian areas featuring the historic Arthur J. Will Memorial Fountain with a new wadeable membrane pool, a small intimate performance lawn, a community terrace planted with drought tolerant specimen plants, and a grand event lawn.



Source: LA Tourism

Del Mar Station Transit Village – Pasadena, CA

Del Mar Station is a transit-oriented development surrounding the Gold Line station, which connects Los Angeles and Pasadena. Del Mar features a significant amount of green space, and the streets are lined with a wide variety of tree types. Courtyards, paseos, and plazas cut between the buildings, adding secluded and shady areas to the complex while also increasing the ability to circulate pedestrians.



Source: Congress for New Urbanism



LIGHTING

DESCRIPTION

Outdoor lighting contributes to safety and comfort for pedestrians accessing the mobility hub. Lighting can be provided in a variety of ways depending on the context but should be oriented towards pedestrian uses and at a pedestrian scale.

FEATURES:

- Lighting on edge of path or sidewalk
- Pole and mounted lighting

TECHNOLOGY INTEGRATIONS:

- Power supply

TYPICAL IMPLEMENTATION SETTING:

- All mobility hubs
- Connecting pedestrian facilities

IMPLEMENTATION CONSIDERATIONS:

- Anti-glare luminance equipment to help pedestrians' eyes adapt quickly to the brightest object
- Automated operating systems
- Solar lighting
- Consider BART's lighting specification and requirements for pedestrian areas and parking areas.
- Consider dark-sky compliant lighting
- Consider maintenance needs in lighting design

IMPLEMENTATION EXAMPLE

Pedestrian Lighting Project – Seattle, CA

The City of Seattle developed a Pedestrian Lighting Citywide Plan to outline the needs and opportunities for pedestrian lighting citywide. The Plan specifically focuses on lighting the City's sidewalks, and it includes street design elements that improve pedestrian safety and comfortability in neighborhood and downtown areas. Lighting pole and pavement luminaires were used at transit stops in addition to roadway streetlights. 3rd Avenue in downtown Seattle is featured with pedestrian lights.



Source: City of Seattle

San Francisco Pedestrian Lighting Project – San Francisco, CA

The City of San Francisco launched three new pedestrian lighting projects in the Tenderloin area. The Public Utilities Commission is moving forward with its plan to install over 100 decorative streetlights across 25 blocks in the neighborhood. New pole will be 22 feet tall and consist of two teardrop-shaped light fixtures, matching the ones seen at Golden Gate and Taylor streets. One light will illuminate the sidewalk, while the other will focus on the street. Locations for these include the north/south blocks of Larkin, Hyde, Leavenworth and Jones Streets, and along Eddy Street.



Source: City of San Francisco



MOTORIZED SERVICES & AMENITIES



ELECTRIC VEHICLE CHARGING STATION

DESCRIPTION

EV charging stations at mobility hubs provide electric vehicle owners a way to charge their vehicle while they are at their destination. Battery-powered EVs, plug-in hybrid EVs (PEVs), and hybrid EVs are becoming more prevalent in private and public vehicle fleets. Therefore, electric vehicle charging can also be beneficial for recharging fleets such as NEVs, microtransit, vanpools, and other mobility-supportive services.

FEATURES:

- Level 1, 2, or 3 charging equipment
- Wireless charging technologies

TECHNOLOGY INTEGRATIONS:

- Electrical connections
- Power source

TYPICAL IMPLEMENTATION SETTING:

- All mobility hubs with parking

IMPLEMENTATION CONSIDERATIONS:

- Electric vehicle charging at a mobility hub fits in with the overall network of existing parking capacity and public charging stations in the region
- Charging station management, operation, monitoring, and maintenance
- Universal transportation accounts to pay for charging fees
- Future charging needs of fleet vehicles, including microtransit and NEVs
- Compliance with local and state regulations on electric vehicle charging provision for new or upgraded facilities
- Consider data sharing requirements and agreements with car share operators

IMPLEMENTATION EXAMPLES

BART EV Charging at Warm Spring Station – Fremont, CA

Warm Springs was the first BART station with EV charging stations. There are 42 Level 2 charging ports available for BART riders. The EV charging stations are part of a pilot and will be studied and monitored to assess their use and effectiveness. Warm Springs Station has a 512kW on-site solar system that powers the station and the EV chargers. The system produces enough energy to power approximately 100 homes.



Source: BART

Metro Charge Stations – Los Angeles County

Metro has installed 62 EV charge stations at 15 rail station parking lots throughout Los Angeles County. The charge stations allow users to charge their vehicles while they ride Metro. Charge stations are available for \$1 per hour with a \$3 daily max to riders who sign up for an account through Metro’s website. There is no monthly or start-up fee. An app-based system is used to initiate a charge, and a user can receive an email, text, or mobile app notification when the charging session is completed or if it’s experienced any interruptions.



Source: InsideEVs



CARSHARE

DESCRIPTION

These services use smartphone apps to provide access to fleets of cars or small, low-speed personal vehicles, such as electric mopeds. Carshare allows riders to access vehicles at designated parking spaces. Users are typically charged according to how long they use the vehicles or how far they drive. Carshare fees cover car insurance, parking, emergency roadside service, and other car-related expenses. Carsharing offers people a convenient way to make connections beyond the first mile and last mile of a public transit stop, particularly on the destination side of a trip. It also offers an alternative to owning a vehicle.

FEATURES:

- Dedicated parking spaces with signage

TECHNOLOGY INTEGRATIONS:

- Mobile app
- Universal transportation account

TYPICAL IMPLEMENTATION SETTING:

- Urban areas
- Areas with good connectivity and a density of destinations outside of the walkshed and without good transit access

IMPLEMENTATION CONSIDERATIONS:

- Integrating alternative fuel vehicles into the program, based on existing and/or planned infrastructure such as electric vehicle charging stations
- Management of carshare, including private partnerships
- Clear wayfinding between transit and carshare services to make it easier for people to find a vehicle
- Accessibility, equity, and environmental policies in how carshare vehicles are distributed in communities
- Consider data sharing requirements and agreements with car share operators

IMPLEMENTATION EXAMPLE

SFMTA Carshare Program – San Francisco, CA

SFMTA piloted an on-street carsharing program serving up to 60 different neighbors each month. The program provides on-street spaces for shared vehicles, which helps make shared vehicles attractive to use for more neighbors. Carshare providers in San Francisco include Zipcar, Getaround, Truqit, and GIG.



Source: SFMTA



TRANSPORTATION NETWORK COMPANY (TNC)

DESCRIPTION

On-demand rideshare services allow someone to request a ride in real-time using a mobile app. They link passengers with available drivers based on a trip's origin and destination, while also identifying the fastest route. Partnerships with Transportation Network Companies (TNCs) such as Lyft and Uber can provide a means for a public agency or private organization to subsidize a portion of a trip that occurs within an agreed geofence area. Restrictions can be placed on trips to define eligibility, including ride-sharing (as opposed to just ride-hailing), connections to transit, time of day, and distance.

FEATURES:

- Subsidized rides within defined geofenced areas
- Curb space for pick-up/drop-off activities (shared or flexible)
- Signage
- Parking reservation priority

TECHNOLOGY INTEGRATIONS:

- Mobile application integration
- Universal transportation account
- Integration with parking availability and parking reservation
- Integration with dynamic curb assignment

TYPICAL IMPLEMENTATION SETTING:

- Mid-to-long range trips to transit where other mobility options are not available, particularly in low density areas that cannot be effectively served by fixed-route transit

IMPLEMENTATION CONSIDERATIONS:

- On-demand rideshare models: dynamic ridesharing and ride-hailing to provide flexible and longer distance options for transit riders at the beginning or end of their trip
- Features of specific subsidized rideshare models to best serve mobility hub users
- Shared or flexible curb management techniques for mobility hub services such as micro-transit, carshare, and mobile retail to manage the curb more effectively
- Consider regional curb data standards and responsibilities guidelines (currently under development)

IMPLEMENTATION EXAMPLE

Uber/MTS Partnership – San Diego, CA

San Diego Metropolitan Transit System (MTS) and Uber partnered to offer one-time discounts of \$5 for uberPOOL riders who arrived at or departed from one of 20 selected transit centers. The promotion was designed to encourage people to leave their cars at home, ride transit, and then reverse the trip to get back home. It also provided people with an easy way to travel downtown during Comic-Con International and Major League Baseball games.



Source: MTS



PASSENGER LOADING ZONES

DESCRIPTION

An area where passenger pick-up and drop-off (PU/DO) occurs at a mobility hub, transit station, or a public street. This typically occurs at curbside spaces that are marked with clear designated signage and paint and can include space for private vehicle or shared mobility services such as shuttles, microtransit, taxis, carpools, vanpools, and on-demand ridershare services.

FEATURES:

- Dedicated curb space
- Curb painting, marking
- Signage
- Potential for dynamic curb/signage to assign flexible curb space as needed by time of day

TECHNOLOGY INTEGRATIONS:

- Development of in-app information with rideshare providers to locate loading zones for drivers and passengers
- Dynamic signage integrated with back-end systems coordinating curb space requests and assignments

TYPICAL IMPLEMENTATION SETTING:

- All mobility hubs
- Dynamic or assigned loading areas are most suitable for areas that have constrained curb space and high demand

IMPLEMENTATION CONSIDERATIONS:

- Utilization during peak times
- Signage and marking. Curb paint and signage installation must inform drivers that it is designated for passenger loading only to prohibit idling
- Dynamic curb markings and signage in constrained areas to assign curb space to user groups most in need or most prioritized
- PU/DO configuration strategies identified by BART in the Multimodal Access Design Guidelines at BART stations

IMPLEMENTATION EXAMPLE

South Lake Union Neighborhood – Seattle, WA

University of Washington partnered with the Seattle Department of Transportation, Uber, Lyft, and local businesses to pilot two load zones for rideshare vehicles in Seattle's South Lake Union neighborhood. The pilot added designated loading zones and geofencing to increase driver compliance in stopping at the curb and to reduce the average amount of loading time. Rideshare applications automatically snap people to the correct pick-up locations, improve safety for riders, and reduce congestions and confusions for drivers.



Source: KOMO News



VANPOOL/CARPOOL PRIORITY SPACES AT PARK-AND-RIDE (PNR) LOTS

DESCRIPTION

Vanpool and carpool programs are commonly provided by employers for their employees and staff to reduce driving alone and help reduce congestion and greenhouse gas emissions. Participants are grouped with people who live in their proximity, are interested in the program, and are traveling in the same direction. BART has implemented partnerships and pilots for this type of program, incentivizing shared rides to BART through provision of priority or discounted parking. All participants must register and be approved by the program before they can acquire the carpool or vanpool permit. There is a minimum number of people required for each vanpool group. To promote the use of these programs, reserved and/or priority spaces can be provided at the mobility hub.

FEATURES:

- Program eligibility and verification system
- Permit system
- Parking reservation system

TECHNOLOGY INTEGRATIONS:

- Permit validation and monitoring system

TYPICAL IMPLEMENTATION SETTING:

- Areas where mobility hub parking is in high demand or over-subscribed

IMPLEMENTATION CONSIDERATIONS:

- Identify spaces prioritized for vanpool/carpool and/or integrate into a parking reservation system
- Identify backup options for vanpool participants, such as a TNC subsidy or dynamic ride-matching
- Consider technology solutions for carpool validations

IMPLEMENTATION EXAMPLE

Scoop to BART Station Partnership – Pleasanton, CA

Bay Area Rapid Transit (BART) and the Metropolitan Transportation Commission partnered with Scoop to deliver a new option for securing available parking at the Colma, Concord, Daly City, Dublin/Pleasanton, Millbrae, Orinda, Pleasant Hill, Rockridge, San Bruno, South San Francisco, Union City, Warm Springs, and Lafayette stations. BART stations reported high parking demand with extensive waitlist for drive-alone riders across their system. Commuters who use Scoop to carpool to the station are guaranteed parking until 10 a.m. BART will allocate permit parking spaces specifically for carpools using Scoop. The app efficiently connects neighbors and co-workers and fills seats in vehicles already driving to BART stations.



Source: MTC



REAL-TIME PARKING AVAILABILITY

DESCRIPTION

Parking space management systems indicate parking availability in real-time using automated sensors by communicating availability to smartphone apps and real-time signage. This can inform drivers about parking availability at mobility hubs so they can effectively choose which mobility hub to access as well as their transportation mode. This also increases the opportunity to efficiently manage and price parking resources. Real-time parking systems create a better customer experience and lead to lower overall congestion and higher parking revenues.

FEATURES:

- Electronic data collection sensors and camera hardware
- Electronic signage
- Mobile apps
- Billing systems
- Gate-control

IMPLEMENTATION CONSIDERATIONS:

- Information on parking availability is widely available to inform user choices
- Parking lot modifications in order to effectively monitor ins/outs and/or space utilization

TECHNOLOGY INTEGRATIONS:

- Electrical wiring
- Power supply
- Integrated server
- Mobility app integration

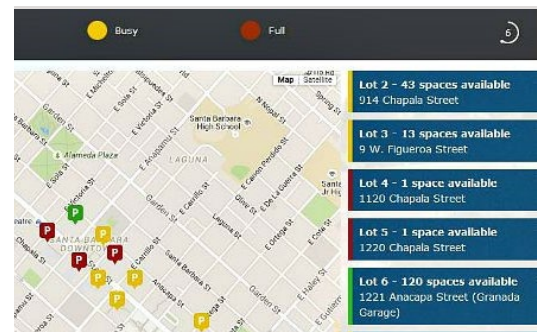
TYPICAL IMPLEMENTATION SETTING:

- Mobility hubs where parking is frequently fully utilized

IMPLEMENTATION EXAMPLE

Downtown Parking Program – City of Santa Barbara, CA

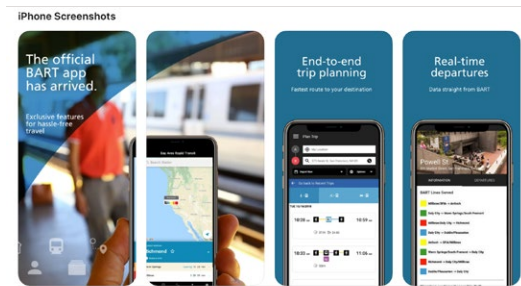
The City of Santa Barbara partners with the Downtown Community to operate a parking program that maintains nine parking lots and five parking structures with parking permits and parking availability. Real-time parking availability is available on the City website with the specific lot number, amount of space available, and the street address. The website also features a real-time map displaying color coded parking lots based on their availability.



Source: Walnut Creek BART

BART App - San Francisco Bay Area, CA

BART offers a new parking application where customers can use contactless in-app parking payment for daily, carpool, non-BART, and reserved parking purchase. Payment using a credit card, debit card, Venmo, or Paypal are available on the app. Customers have option to do single payment or creating a wallet which will deduct parking fees from balance for each use.



Source: Apple App Store Website



PARKING RESERVATION SYSTEMS

DESCRIPTION

Parking reservation systems allow customers to make parking reservations in advance and prepay for their parking. This can be an effective tool for prioritizing access to parking for areas with excess parking demand. For example, a parking reservation system allows for priority to be given to carpools or vanpools. It also can be effective at encouraging people to use a mobility hub, as they would have confidence that they will have a parking space available. Parking reservations can be an effective tool to increase parking revenues, which can be used to improve other mobility services.

FEATURES:

- Parking access management or enforcement system
- Online reservation system
- Online payment system
- Prioritization and/or permitting system

IMPLEMENTATION CONSIDERATIONS:

- Integration with a parking availability system and/or a parking access management system, such as access gates
- Enforcement depending on the access configuration

TECHNOLOGY INTEGRATIONS:

- Online reservation system
- Universal transportation account

TYPICAL IMPLEMENTATION SETTING:

- Mobility hubs where parking is frequently fully utilized

IMPLEMENTATION EXAMPLE

ParkMobile – Rancho Palos Verdes, CA

The City of Rancho Palos Verdes has launched an online parking reservation system for Del Cerro Park and the popular Portuguese Bend Reserve. Visitors use the ParkMobile app to reserve parking spaces at five different dedicated parking lots along Crenshaw Blvd, totaling 60 spaces. A reservation is \$10 for a time block of two hours and 45 minutes.



Source: City of Rancho Palos Verdes

Various BART Stations - Bay Area, CA

Most BART stations with parking have designated reserved parking that provides a guaranteed spot until 10 a.m. on weekdays. Reserved parking is purchased in advance via the BART Official mobile app. Parking reservations are available for a single day, multiple days, or on a monthly basis. Reservations are tied to a specific license plate number and are valid for the purchased duration.



Source: BART



SUPPORT SERVICES & AMENITIES



WI-FI AND DEVICE CHARGING

DESCRIPTION

Provide transit users with free high-speed internet and device charging. May reduce barriers to transit use and decrease perceived waiting time. May also benefit access to other mobility hub services, such as real-time information, and universal transportation accounts.

FEATURES:

- Wi-Fi connection
- Signage and login information
- Kiosks
- Device charging stations

IMPLEMENTATION CONSIDERATIONS:

- High-speed power charging dock and connections
- Data security system to prevent identity theft or data breaches

TECHNOLOGY INTEGRATIONS:

- Internet service provider
- Data hub
- Power supply

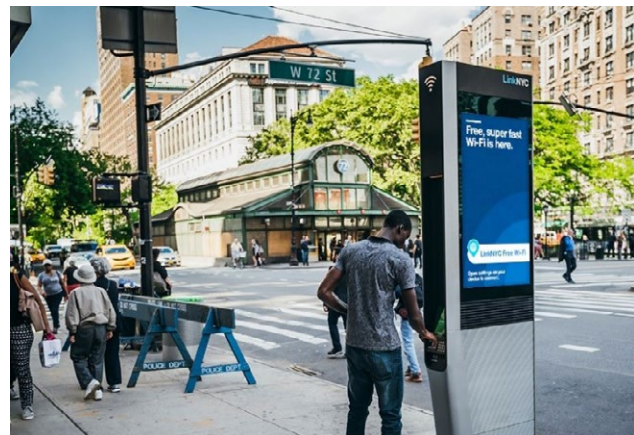
TYPICAL IMPLEMENTATION SETTING:

- Mobility hubs with multiple connecting transit services

IMPLEMENTATION EXAMPLE

LinkNYC Free Wi-Fi – New York City, NY

The City of New York and Citybridge incorporate technology, media, and connectivity to users. LinkNYC is a first-of-its-kind communications network that is replacing pay phones across the five boroughs with new structures called Links. Each Link provides super-fast, free public Wi-Fi, phone calls, device charging, and a tablet for access to city services, maps, and directions.



Source: LinkNYC



PACKAGE DELIVERY STATIONS

DESCRIPTION

Package delivery stations in the form of lockers hold packages that can be accessed 24/7 from online retailers. Placing these lockers in high volume traffic areas can save extra trips for both the delivery service and the receiver, increasing efficiency. These stations can be conveniently situated at retail spaces at mobility hubs. Offering package delivery services within a mobility hub can save people an extra trip by car to pick up a package - offering them one more reason to embrace an alternative to driving alone.

FEATURES:

- Package lockers

TECHNOLOGY INTEGRATIONS:

- Mobile application integration
- Power supply

TYPICAL IMPLEMENTATION SETTING:

- Mobility hubs in areas where front door package delivery may not be an option and other package delivery options are limited, such as near apartment complexes and college campuses

IMPLEMENTATION CONSIDERATIONS:

- Memorandum of Understanding (MOU) with package delivery companies
- Ensure delivery lockers are not impeding other movements in the area yet remain convenient for people to access them
- Security features such as cameras at package delivery lockers
- Loading curb space near the lockers for delivery vehicles to off-load packages

IMPLEMENTATION EXAMPLE

Amazon Lockers

Amazon offers customers flexibility and security when picking up their online orders from an Amazon locker, instead of relying on home or office delivery. Upon ordering, customers choose the locker location that is most convenient, and then they stop by within three days of delivery. A unique pick-up code is provided for each order. Lockers are situated at a variety of locations such as 7-Eleven stores, college campuses, and multifamily housing complexes.



Source: Amazon



WAYFINDING

DESCRIPTION

Wayfinding is the term describing all signage and guidance that allow users to find their destination. Wayfinding is used to navigate people from point to point. This is particularly useful in transportation hubs such as airports, train stations, or bus depots, where people must make time-sensitive decisions about the route they may travel in an unfamiliar environment. At mobility hubs, wayfinding is still important given the potential diversity in services and layout.

FEATURES:

- Static and dynamic signage
- Paint and other materials to identify zones
- Follow regional standards and recommendations from MTC Regional Transit Wayfinding Standards. See https://mtc.ca.gov/sites/default/files/MTC_WayfindingGuidelines_2019.pdf

TECHNOLOGY INTEGRATIONS:

- Touch screen display

TYPICAL IMPLEMENTATION SETTING:

- All mobility hubs

IMPLEMENTATION CONSIDERATIONS:

- Wayfinding points users to convenient, comfortable, and safe paths of travel to frequently used destinations and mobility connections
- Signs adhere to universal design standards and include stop identification number, ADA accessibility, routes served, agency logo, and contact information
- Audio options for visually impaired customers
- Languages typical to the region
- Interactive touch-screen maps or kiosks
- Consistent wayfinding theme may be beneficial for the entire Innovate 680 corridor, or may be distinctive by community

IMPLEMENTATION EXAMPLES

Union Station – Los Angeles, CA

LA Metro implemented a comprehensive wayfinding system for the revitalization of Los Angeles's Union Station. The design incorporated all-mounted LED signs for the arrival/departure information for both Amtrak and Metrolink lines, a large interactive pylon with four touchscreens to help travelers with trip planning as well as identity pylons around the perimeter of Union Station, signage at Patsaouras Bus Plaza, and naming for the station's different east and west entries. The system complements the station's historic architecture, reinforces it as the premier destination for transit users in Los Angeles, and establishes the foundation for the future development of Union Station.



Source: Selbert Perkins Design

Downtown San Diego Wayfinding Project – San Diego, CA

The City of San Diego launched the Downtown San Diego Wayfinding project back in 2014 to install approximately 300 new wayfinding signs throughout the Downtown Community Plan Area. The goal is to facilitate a visitor-friendly environment that encourages walking, cycling, convenient use of public transport and vehicular transport, and parking throughout Downtown. The goal of the pedestrian and vehicular oriented signs is to direct Downtown residents, visitors, and workers to popular destinations, Downtown neighborhoods, parks and open spaces, cruise ship terminals, PETCO Park, Horton Plaza, and Balboa Park.



Source: MERJE Design



INFORMATION KIOSKS

DESCRIPTION

Non-interactive or interactive kiosks display information that helps customers with decision making and are more efficient than making a phone call or reading printed schedules. Transit stations often utilize digital screens to broadcast real-time transit information, retail information, and station amenities. Information kiosks may provide access to mobility services and mobility information that would otherwise be inaccessible for users without smartphones. This includes the ability to reserve trips (such as carshare or bikeshare), find optimal routing or mobility connections, and obtain real-time information. Paid advertisements on these kiosks also provide a source of revenue for the agency operator while supporting local businesses by marketing products and services directly to transit riders. Digital signage or kiosks provide flexibility and enhanced capabilities to make real-time updates to information without substantial costs of reprinting or distributing paper information.

FEATURES:

- Mounted screen display
- Standalone digital kiosk with full HD LCD-TFT monitor with high brightness
- Real-time transit information
- Wayfinding
- Advertisement
- Digital station information and amenities
- Maintenance and operation schedule

TYPICAL IMPLEMENTATION SETTING:

- All mobility hubs, although the features will vary based on community needs and mobility services offered

IMPLEMENTATION CONSIDERATIONS:

- Multilingual information required for areas with high percentage of non-English speakers.
- Kiosks at visible locations such as entrances or pedestrian plazas, mounted at a reasonable height, in well-lit and covered areas

TECHNOLOGY INTEGRATIONS:

- Power supply

IMPLEMENTATION EXAMPLES

On the Go Kiosks – New York City, NY

LinkNYC partnered with CIVIQ Smartscaapes and MTA Capital Construction/NYC Transit teams to install upgraded kiosks at three new Second Avenue subway stations. A total of four digital MTA On the Go kiosks with eight digital screens showing transit information were installed across the city. Each display functions independently from one another and operates using its own computer. The kiosks provide better scheduled trips to and from stations, with an updated map to include the new lines and scheduled arrival, departure, and service advisory information such as detour notices.



Source: MTA

VIA Metropolitan Transit – San Antonio, TX

VIA Metropolitan Transit partnered with the City of San Antonio to install digital IKE kiosks to help improve pedestrian experience in San Antonio and provide the City and other stakeholders with a powerful platform to deliver critical information to on-the-go residents and visitors throughout San Antonio. The digital kiosks connect residents and visitors to local businesses, entertainment, and resources and also facilitate navigation around the city, providing directions, mapping, and real-time transit information for both mass and micro transit modalities.



Source: VIA Metropolitan Transit



PUBLIC RESTROOMS

DESCRIPTION

Public restrooms are sometimes provided at mobility hubs, particularly where there are a number of mobility options and large transfer volumes. It is noted that costs for maintenance and ensuring safety/security at public restrooms can be significant.

FEATURES:

- Secure bathroom stalls

TECHNOLOGY INTEGRATIONS:

- Power supply
- Plumbing system
- Water source

TYPICAL IMPLEMENTATION SETTING:

- Areas with high volumes of transfer activity, particularly locations that already have on-site staff throughout the day

IMPLEMENTATION CONSIDERATIONS:

- All bathrooms should be ADA-compliant
- Comply with state building codes and local municipal codes



MOBILE RETAIL SERVICES

DESCRIPTION

Mobile retail services are small food or retail stores that are “on wheels” or are easily towable in and out of a location. These services are easy to situate within parking areas or public plazas. These services may include groceries, salons, barbers, dry cleaning, and delivery services, among others. Providing mobile retailers at mobility hubs can encourage the use of the mobility services, simplify trip-making for users, and build a sense of community focus around the mobility hub.

FEATURES:

- Flexible space (parking lot, public plaza)
- Connections for power and water

TYPICAL IMPLEMENTATION SETTING:

- Mobility hubs with available parking or public plazas

IMPLEMENTATION CONSIDERATIONS:

- Coordinate with local government to obtain permits
- Mobile services program to provide a process for permitting, establishment of fees, and defining times and locations for access

IMPLEMENTATION EXAMPLE

Off the Grid - City of Pleasant Hill, CA

The City of Pleasant Hill partners with the Off the Grid team to create a mobile food experience every Wednesday night. The event consists of food, drink, live music, and communal Adiondack chairs. The event is located near the lake across from the Pleasant Hill City Hall. Visitors can access the location via County Connection routes, via BART, on bike, or by foot. The event encourages visitors to enjoy the designated communal areas and the use of transit or other active transportation modes.



Source: Off the Grid

Food Trucks Near Transit - Baltimore, MD

The City of Baltimore expanded its food truck program by adding ten new mobile food zones across the city. The zones are situated near transit stations and other areas with high foot traffic such as hospitals and college campuses. The zones include space for two trucks to operate every day between 9 a.m. and 3 p.m. The City plans to build a more robust food truck program such as those in Portland, Oregon and Austin, Texas.



Source: City of Baltimore



UNIVERSAL TRANSPORTATION ACCOUNT/MOBILITY AS A SERVICE (MaaS) / MOBILITY ON DEMAND (MOD)

DESCRIPTION

Universal Transportation Accounts are an integrated mobile payment and mobility access system for a variety of mobility services (e.g. transit, parking, bikeshare, EV charging, etc.). A single smartphone app can be used to find, access, and pay for mobility services. The mobile payment account also can be used to administer travel-based incentives to reward people who seek alternatives to driving alone and provide benefits to disadvantaged populations; this reduces reliance on privately-owned automobiles and enhances access to a suite of publicly- and privately-provided transportation options. Universal Transportation Accounts can be used to implement MOD/MaaS programs where users pay for access to a suite of on-demand transportation solutions, promoting frequent and cost-effective use, and reducing reliance on the personal automobile.

FEATURES:

- Fare integration system
- Mobile application
- Partnerships with mobility vendors
- Ability to compare cost and travel time of various mobility options
- Ability to making reservations for mobility services
- Discounts for using multiple mobility options
- Frequent user programs providing access to a suite of mobility services for a fixed cost

IMPLEMENTATION CONSIDERATIONS:

- Who will create and maintain a mobile payment system
- Prepare a marketing strategy to educate the public on the benefits of a mobile payment system
- Partner with credit institutions and public and private mobility partners to accept a variety of financial instruments for a wide range of mobility services

TECHNOLOGY INTEGRATIONS:

- Integration with various mobility services
- Integration with financial institutions

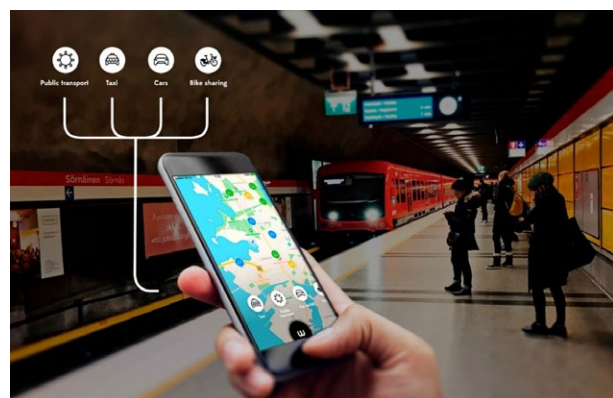
TYPICAL IMPLEMENTATION SETTING:

- Regional implementation

IMPLEMENTATION EXAMPLE

Whim

Available in the Helsinki region, the Whim app offers convenient access to a variety of shared mobility options – transit, taxi, and rental cars – with bikeshare to be added in 2018. Whim includes convenient payment options, including two monthly subscription plans for frequent users. The flexibility of Whim allows for a seamless travel experience while reducing reliance on the private automobile.



Source: TechCrunch



SOLAR PANEL CANOPY

DESCRIPTION

Solar panel canopies are an option to effectively leverage space at mobility hubs in order to reduce the energy footprint of the mobility hub itself or its mobility services. These canopies are often roof mounted steel structures topped with solar panels. Solar panels help generate green energy from large sun-exposed surfaces while providing shade and coolness for parked vehicles or other uses. Energy generated by the solar canopy can power the mobility hubs and reduce energy bills, which in turn protects from volatile utility costs, while reducing environmental impact. Excess generated energy can be stored, thus increasing the reliability for the mobility hub electrical system. Solar canopies can be integrated into existing parking lots or other facilities without impeding other spaces at the mobility hub. Solar canopies are often provided above surface parking areas, at the top level of parking garages, at bus stop shelters, and along covered walkways.

FEATURES:

- Fixed-tilt or architectural solar canopy
- Integrated power grid

TECHNOLOGY INTEGRATIONS:

- Electrical power system
- Integrated system with electrical consumption systems

TYPICAL IMPLEMENTATION SETTING:

- Commercial parking lot areas for business plazas, schools, shopping centers, factories, warehouses, office buildings, hospitals, airports, and mobility hubs
- Climate with sufficient daytime temperatures between 59°F and 95°F for solar panel peak efficiency

IMPLEMENTATION CONSIDERATIONS:

- Position of parking lot in relation to the available sunlight, tall buildings, or other obstructions that prevent sunlight from directly hitting the parking lot solar canopies
- Coordination and agreement between agencies with transportation and power district
- Need to integrate aesthetic and architectural design of mobility hub features to maintain sense of place as well as clear lines of site

IMPLEMENTATION EXAMPLE

Lafayette BART Station – Lafayette, CA

BART installed a solar project consisting of over 200 parking spaces at the Lafayette BART station. The panels produce a combined 1 megawatt of electricity and began operation in spring 2017. The project produces more power than the Lafayette BART station consumes, with the additional power going to serve other uses on the BART system.



Source: BEI Construction Inc.



AMBASSADORS

DESCRIPTION

Trained personnel or volunteers that are knowledgeable about the surrounding area, amenities, and mobility options. They can also guide users on how to use mobility hubs and ensure safety and comfort for riders.

FEATURES

- Ambassadors placed on-site at the mobility hubs

TECHNOLOGY INTEGRATIONS:

- Communication systems for ambassadors

TYPICAL IMPLEMENTATION SETTING

- Where there is a large population of seniors, student transit programs, or new transit riders
- Where monitoring and security is most needed to improve safety for riders

IMPLEMENTATION CONSIDERATIONS

- Consider placing ambassadors at high traffic mobility hubs and stations
- Ensure ambassadors have a clear description of their job duties

IMPLEMENTATION EXAMPLE

LA Metro Rail Safety Ambassador Program – Los Angeles, CA

Metro’s Community Relations Department, Metro Community Education (MCE), created the Rail Safety Ambassador (RSA) Program in 2003. In an effort to educate the public about safety when near tracks and trains and to observe and report traffic behaviors, the program started out with six RSAs on the Metro Gold Line to Pasadena. Since that time, the program has expanded but continues to support MCE’s ongoing safety education outreach efforts conducted on Metro’s street-running light rail alignments (Blue, Expo, and Gold Lines).



Source: LA Metro

BART Ambassador Program - San Francisco Bay Area, CA

BART developed a BART Police Ambassador Program to increase the presence of uniformed, unarmed, non-sworn personnel to assist customers and boost agency’s presence on trains. The program emphasizes public safety and commitment in responding to homelessness, behavioral health, and substance abuse issues observed on trains and at station areas. Ambassadors wear easily-identifiable uniforms distinct from those of Community Service Officers or Fare Inspectors. They are equipped with radios to report safety and security concerns or biohazards. The ambassadors are also trained to respond to customers’ questions, complaints or requests for service. They observe and report and call upon an officer when enforcement is needed.



Source: East Bay Times



INNOVATE 680
IMAGINE THE POSSIBILITIES



SUPPORT SERVICES & AMENITIES

ADDITIONAL INFORMATION

Additional implementation strategies, tactical approaches, management techniques, and comprehensive assistance guide for mobility hub services and amenities can be found on the [Metropolitan Transportation Commission \(MTC\) Mobility Hubs Implementation Playbook](#).



BAY AREA REGIONAL MOBILITY HUBS MOBILITY HUB IMPLEMENTATION PLAYBOOK



April 2021

Source: MTC Implementation Playbook

INNOVATE 680
IMAGINE THE POSSIBILITIES

APPENDIX D
BACKGROUND AND ISSUE
IDENTIFICATION REPORT



SHARED MOBILITY HUB

Background and Issue
Identification Report

July 2022

**INNOVATE 680
SHARED MOBILITY HUB
BACKGROUND AND ISSUE IDENTIFICATION REPORT
REVISION HISTORY**

Revision	Date	Description	Submitted by
0.0	12/16/2021	PRELIMINARY DRAFT Report for Internal Review	MI
0.1	12/17/2021	WORKING DRAFT Report for Client Review	AD
1.0	01/14/2022	WORKING DRAFT Revised per CCTA Comments	AD
2.0	05/01/2022	FINAL revised per TAC comments	AD
3.0	07/08/2022	FINAL revised per TAC comments	AD

Contents

Purpose..... 1

Shared Mobility Hubs Vision and Overview..... 3

Corridor-wide Travel Patterns and Trends..... 8

Site-Specific Opportunities and Constraints.....12

 I. Martinez Amtrak Regional Mobility Hub.....12

 II. Concord 680 Access Mobility Hub17

 III. Downtown Pleasant Hill Community Mobility Hub.....21

 IV. Mitchell Drive Community Mobility Hub 24

 V. Walnut Creek BART Regional Mobility Hub 28

 VI. Danville Sycamore Valley 680 Access Mobility Hub.....35

 VII. San Ramon Transit Center Community Mobility Hub.....39

 VIII. Bollinger Canyon 680 Access Mobility Hub.....44

Summary and Next Steps 48

Appendices..... 49

Figures

Figure 1: Mobility Hub Locations Selected for Detailed Analysis..... 2

Figure 2: Shared Mobility Hub Visions Statements 4

Figure 3. Mobility Hub Sites by Typologies..... 6

Figure 4. Pedestrian Bridge at Martinez Station.....13

Figure 5. Martinez Amtrak Mobility Hub Area Opportunities and Constraints.....15

Figure 6. Martinez Amtrak Mobility Hub Site Opportunities and Constraints.....16

Figure 7. Concord Mobility Hub Main Access..... 18

Figure 8. Concord Mobility Hub Area Opportunities and Constraints.....19

Figure 9. Concord Mobility Hub Site Opportunities and Constraints 20

Figure 10. Pleasant Hill City Hall Parking Lot22

Figure 11. Downtown Pleasant Hill Mobility Hub Area Opportunities and Constraints....23

Figure 12. Downtown Pleasant Hill Mobility Hub Site Opportunities and Constraints.... 24

Figure 13. Mitchell Drive Park and Ride 25

Figure 14. Mitchell Drive County Connection Bus Stops.....26

Figure 15. Mitchell Drive Mobility Hub Area Opportunities and Constraints27

Figure 16. Mitchell Drive Mobility Hub Site Opportunities and Constraints 28

Figure 17. Walnut Creek Transit Village Site Plan (Source: City of Walnut Creek)	30
Figure 18: Walnut Creek BART Station Bus Bays (Source: 511 Bay Area)	31
Figure 19. Walnut Creek BART Station	32
Figure 20. Walnut Creek BART Mobility Hub Area Opportunities and Constraints.....	33
Figure 21. Walnut Creek BART Mobility Hub Site Opportunities and Constraints.....	34
Figure 22. Danville Sycamore Valley Mobility Hub Bus Stop.....	36
Figure 23. Danville Sycamore Valley Mobility Hub Area Opportunities and Constraints	37
Figure 24. Danville Sycamore Valley Mobility Hub Site Opportunities and Constraints.	38
Figure 25. San Ramon Transit Center Entrance.....	40
Figure 26. San Ramon Transit Center EV Charging Stations.....	41
Figure 27. San Ramon Transit Center Mobility Hub Area Opportunities and Constraints	42
Figure 28. San Ramon Transit Center Mobility Hub Site Opportunities and Constraints	43
Figure 29. Bollinger Canyon Park and Ride	45
Figure 30. Bollinger Canyon Mobility Hub Area Opportunities and Constraints.....	46
Figure 31. Bollinger Canyon Mobility Hub Site Opportunities and Constraints	47

Tables

Table 1: Mobility Hub Typologies.....	6
Table 2: Daily Vehicle Flows from Mobility Hub Areas to Destinations.....	9
Table 3. Distribution of Vehicle Flows from Mobility Hub Areas to Destinations.....	10
Table 4: Shared Mobility Hub Land Use and Travel Characteristics (Population).....	10
Table 5. Shared Mobility Hub Land Use and Travel Characteristics (Employment)	11

Purpose

Shared Mobility Hubs are multimodal transportation nodes where a variety of shared mobility services and supporting amenities interact to create a cohesive transportation network. These nodes facilitate local and regional travel with a specific focus on shared mobility: travel modes and services in which resources are shared between different users. This includes public transit, micromobility (e.g., bikeshare, scooters, etc.), shared rides (e.g., vanpools, carpools, on-demand services, etc.), and technology (e.g., electric vehicle chargers, information kiosks, etc.). Shared Mobility Hubs represent one of six Innovate 680 Program projects to expand mobility options, improve traffic conditions, and enhance the travel experience in the I-680 corridor.

The Background and Issue Identification report provides site-specific summaries for each of the eight Shared Mobility Hub study locations that were selected for site-specific definition as part of the Innovate 680 project. These locations do not represent the final list of mobility hub sites that can be developed as part of the Innovate 680 program. They were selected because they provide a representative cross-section of site characteristics for location and sizing of specific mobility hub services and amenities. **Figure 1** shows the location of the eight mobility hubs analyzed as part of this report.

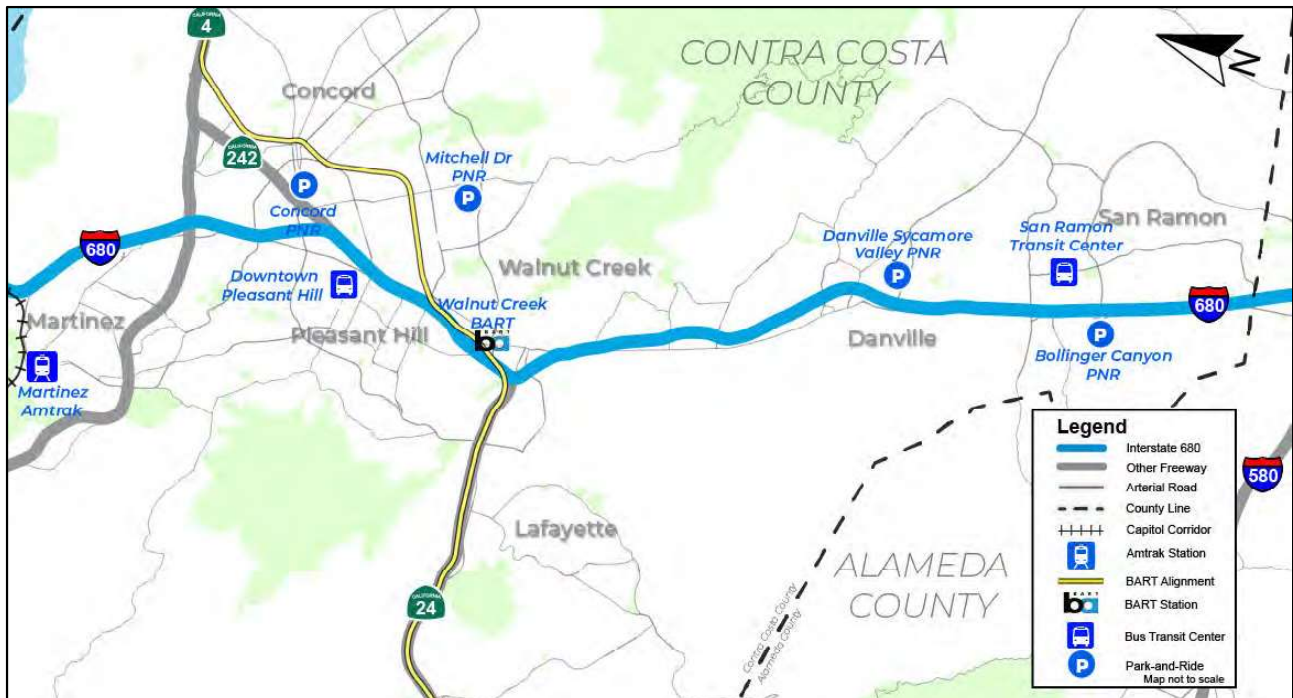


Figure 1: Mobility Hub Locations Selected for Detailed Analysis

This report provides a summary of the following:

- Overall transportation themes and opportunities for the shared mobility sites along I-680, including major corridor wide travel patterns and trends described using StreetLight data.
- Information about the existing mobility network and how people traverse that network within each of the mobility hub area, presented in the form of discussion and site-specific fact sheets. The detailed fact sheets are provided in **Appendix A**.
- Key opportunities and constraints for mobility hub solutions within each hub area. These include current and future site activities and services, physical constraints, access pathways, and planned facilities and projects.

Shared Mobility Hubs Vision and Overview

The Innovate 680 Shared Mobility Hubs' vision statements are shown in



Figure 2. These statements capture the aspirations for how Shared Mobility Hubs can improve transportation access along the I-680 corridor.



Efficient Movement of People: facilitate convenient and intuitive transfers between travel modes, maximize movement of people, and prioritize modes that efficiently use the transportation network



Universal Accessibility and Enhanced Safety: promote equitability and enhance accessibility for disadvantaged and mobility-impaired populations by leveraging information, technology, and design to provide safe and accessible mobility options



Improved Access to Alternative Transportation Modes: overcome existing barriers to use of alternative transportation modes by providing a network of safe and comfortable pathways, promoting first/last-mile connections, and target new and occasional alternative transportation users to achieve mode shift from SOVs



Mobility Hubs as Community Assets: Support neighborhood integration by creating seamless pathways between mobility hubs and surrounding areas, providing on-site amenities, facilities, and activity, and providing a context-sensitive and high-quality aesthetic



Flexibility to Accommodate New Technology and Changing Transportation Conditions: provide flexible and adaptable designs for amenities and services in order to adapt to new technologies and changes in how mobility services are consumed.



Reflect Community and Regional Aspirations: integrate local, regional, and mode-specific plans into the mobility hub infrastructure design, leverage public-private partnerships to encourage innovation and use, and support the advancement of key regional initiatives

Figure 2: Shared Mobility Hub Visions Statements

There are several key design principles for Shared Mobility Hubs:

- **Location:** Place strategically along the corridor to provide convenient access and intercept potential new users
- **Safety & Comfort:** Mitigate potential conflicts, leverage access hierarchies that emphasize active modes and high-occupancy vehicle (HOV) and shared mobility modes, prioritize vulnerable users, and apply Crime Prevention Through Environmental Design (CPTED)
- **Usability:** reduce barriers to access, cater to all type of user groups through universal design elements and consideration of a range of traveler experiences
- **Neighborhood Integration:** fully integrated into the existing neighborhood fabric including the co-location of neighborhood amenities and provision of programmable spaces
- **Technology Deployment:** deploy new technology to improve mobility services and the customer travel experience
- **Sustainability:** mitigate and reduce impacts to the environment and neighboring communities, including sustainable energy sources
- **Parking and Curbside Management:** optimize utilization to encourage greater use of limited facilities and plan for flexible spaces

The Innovate 680 Shared Mobility Hubs are categorized into three distinct “typologies”, which characterize the hub’s transportation function, physical design, and setting within the community. The three mobility hub typologies are listed below. The assignment of typologies to each of the shared mobility hub sites is shown on **Figure 3**.

- **Regional Transfer Hub:** provide breadth of amenities and services serving large catchment area with connection needs between local transit services and regional rail services. Typical features may include:
 - Station facilities with a wide range of passenger amenities, public spaces, and transportation options
 - Large scale park-and-ride (PNR) facilities for long and short-term parking and vehicle charging
 - First/last-mile mobility services providing access for residents and workers to destinations in the station area
 - Transit-oriented mixed-use development
- **680 Access Mobility Hub:** serves as gateway to the I-680 corridor transportation network and provides connections between transit services operating on I-680 and mobility hub transportation options that serve the surrounding community. Typical features may include:
 - Small to medium PNR facility for long and short-term parking and vehicle charging
 - Enhanced regional express bus facilities with transit infrastructure that serves I-680 transit routes
 - A range of convenient access options, including expanded pick-up/drop-off facilities and various forms of shared mobility
 - Transit-supportive amenities, including real-time information, for an enhanced user experience
- **Community Mobility Hub:** serves as a gateway connecting regional transit facilities to local housing and employment centers. Typical features may include:
 - Integrated facility promoting connections between transit and shared mobility services
 - Active transportation modes with connections to regional pedestrian and bicycle infrastructure
 - Placemaking features that integrate with the local community and encourage social interaction

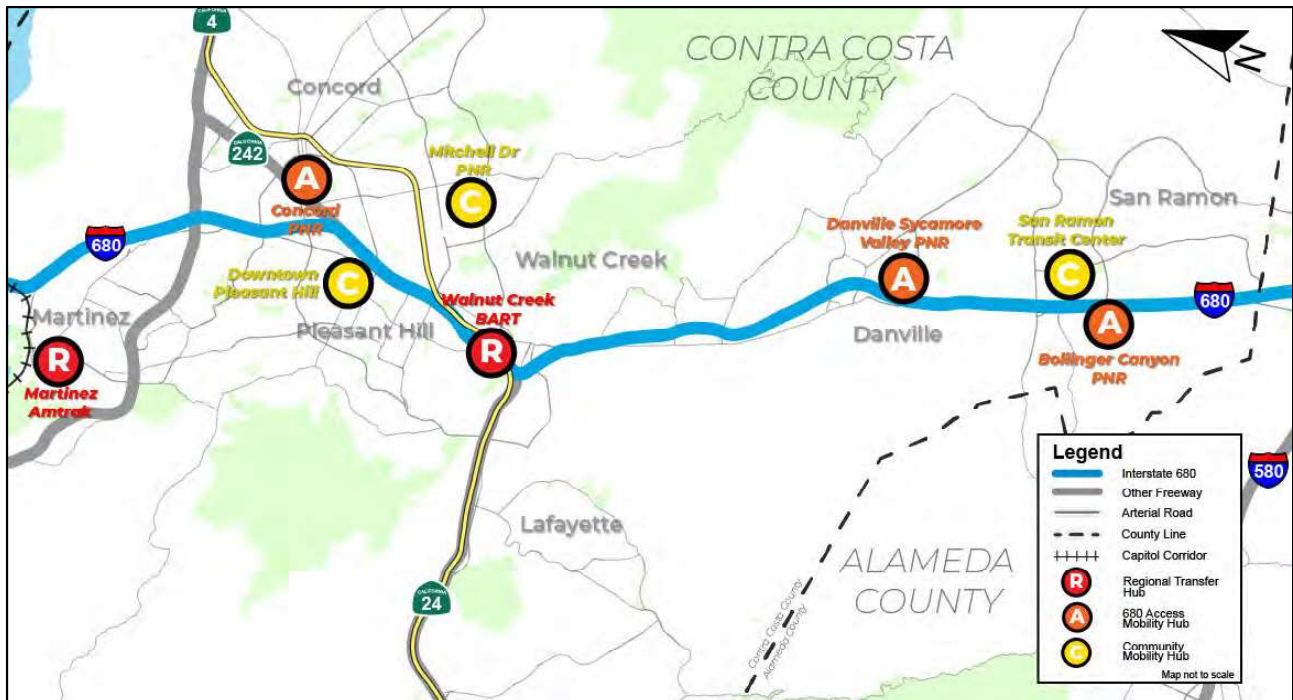


Figure 3. Mobility Hub Sites by Typologies

The mobility hub typologies are listed in **Table 1**.

Table 1: Mobility Hub Typologies

Mobility Hub Site	Mobility Hub Typology
Martinez Amtrak	Regional Transfer Hub
Concord PNR	680 Access Mobility Hub
Downtown Pleasant Hill	Community Mobility Hub
Mitchell Drive	Community Mobility Hub
Walnut Creek BART	Regional Transfer Hub
Danville Sycamore Valley	680 Access Mobility Hub
San Ramon Transit Center	Community Mobility Hub
Bollinger Canyon	680 Access Mobility Hub

New, regional express bus service is being advanced in the I-680 corridor. The service was envisioned as part of the 2018 California State Rail Plan and further assessed as part of the Tri-Valley Hub Network Integration Study (LAVTA, May 2021). The express bus route is expected to extend between the Pleasanton Altamont Corridor Express (ACE) Station and either the Martinez Amtrak Station or the Suisun Amtrak Station. It would connect three of the mobility hub sites included in this study, including Bollinger Canyon, Walnut Creek BART, and Martinez Amtrak. The bus bay needs and additional supporting infrastructure at these three mobility hub sites are incorporated into this study.

Corridor-wide Travel Patterns and Trends

This section describes regional trip patterns from the eight mobility hubs to destinations along the I-680 corridor and across the Bay Area region. The data were compiled using StreetLight Data, which derives origin-destination (O-D) flows and other transportation volume metrics from anonymized location records from smartphones and in-vehicle navigation devices in cars and trucks. The O-D flows and volume metrics are aggregated by Census geographies or user defined zones. The metrics include time-of-day, trip attributes, such as travel time and length, and traveler attributes, such as trip purpose and income.

StreetLight Data for passenger vehicle and truck O-D flows were analyzed for Census tracts and block groups in the vicinity of the mobility hub study areas and to assess trip flows from those areas to destinations along the I-680 corridor and around the Bay Area. The data highlights the concentration of vehicle trips traveling from mobility hub areas to destinations in Walnut Creek and San Ramon, with much lower trip volumes to Oakland and San Francisco. It should be emphasized that StreetLight captures all vehicle trips not just commute trips. This dataset also does not capture transit trips, which is why travel to Oakland and San Francisco is under-represented.

More detailed StreetLight Data has been analyzed at the Census block group level for a two-mile radius around each of the eight I-680 Shared Mobility Hub study locations. This allows for a more detailed analysis of trip origin and destination activity around and between each mobility hub. **Table 2** presents average weekday O-D vehicle flows from a two-mile area around each of the eight mobility hubs to the eight mobility hubs and the wider Bay Area region.

Table 2: Daily Vehicle Flows from Mobility Hub Areas to Destinations

Destination	Origin (2-mile Radius of Mobility Hub Location)							
	Martinez Amtrak	Concord	Downtown Pleasant Hill	Mitchell Canyon	Walnut Creek BART	Danville Sycamore Valley	San Ramon Transit Center	Bollinger Canyon
Concord/Pleasant Hill	1,760	67,930	29,650	6,450	3,760	300	320	310
Danville	60	430	290	210	510	21,740	6,650	2,220
Martinez	14,710	2,130	1,170	380	650	40	80	80
San Ramon	40	420	370	280	560	1,660	27,580	34,490
Walnut Creek	730	5,650	15,360	31,250	54,960	800	600	720
Lafayette	80	530	560	300	1,500	80	50	40
Western Contra Costa County	350	320	150	60	180	40	70	50
Fremont	20	70	50	60	100	30	110	160
Northern Alameda County	260	300	390	160	500	120	110	150
Oakland	220	940	1,260	520	1,560	140	240	340
Oakland International Airport	10	40	50	30	70	40	40	40
Tri-Valley	30	310	330	300	500	830	1,780	2,210
San Francisco	50	390	550	270	850	120	110	140
Other Bay Area Locations	820	4,100	1,950	2,830	2,430	2,090	2,570	3,700
Outside Bay Area	450	870	490	310	730	400	640	810
Total Destination	19,590	84,430	52,620	43,410	68,860	28,430	40,950	45,460

Source: Streetlight, 2019

Table 3 shows the same StreetLight O-D data, but the destinations have been grouped into general areas and the data is presented in terms of percent distribution of trips. These trips are shown as a percentage of all trips originating from the Mobility Hub Origin. As shown in the table, all mobility hub sites have the greatest number of trips with both origins and destinations within the City that the hub is located in. This is consistent with the corridor-wide StreetLight analysis that found a high propensity of local trips. The hub sites do vary greatly in the magnitude of trips generated, with the Concord Park-and-Ride area having the greatest number of outbound trips and the Martinez Amtrak area having the fewest number of outbound trips.

Table 3. Distribution of Vehicle Flows from Mobility Hub Areas to Destinations

I-680 Shared Mobility Hub Destination	Origin (2-mile Radius of Mobility Hub Location)							
	Martinez Amtrak	Concord	Downtown Pleasant Hill	Mitchell Canyon	Walnut Creek BART	Danville Sycamore Valley	San Ramon	Bollinger Canyon
Contra Costa County I-680 Corridor Cities	88%	91%	89%	89%	88%	86%	86%	83%
Other East Bay Locations	5%	3%	5%	3%	6%	5%	6%	7%
Other Bay Area Locations	4%	5%	5%	7%	5%	8%	7%	8%
Outside Bay Area	2%	1%	1%	1%	1%	1%	2%	2%

Source: Streetlight, 2019

Table 4 summarizes resident population capture potential for the area around each mobility hub. Population densities are greater in the walkshed than the bikeshed for all sites, indicating that the mobility hubs are well positioned to capture walking and short distance trips. Additionally, as shown in the table, providing comfortable and convenient access both within the walkshed and the larger bikeshed creates the potential for each mobility hub to serve a large number of residents.

Table 4: Shared Mobility Hub Land Use and Travel Characteristics (Population)

	Walkshed	Bikeshed	Work Commuters
	Residents within 0.5 miles of mobility hub	Residents within 2 miles of mobility hub	Work commuters within 2 miles of mobility hub
Martinez Amtrak	2,370	15,310	7,000
Concord	6,490	58,170	27,130
Downtown Pleasant Hill	4,180	48,320	23,580
Mitchell Drive	4,020	45,210	13,590
Walnut Creek BART	4,020	45,210	22,410
Danville Sycamore Valley	2,020	14,690	8,800
San Ramon Transit Center	2,470	18,210	9,700
Bollinger Canyon	3,050	22,740	13,400

Source: Census Longitudinal-Employment Housing Dynamics, 2019

Table 5 summarizes employment capture potential for the area around each mobility hub. Many of the work trips to the shared mobility hub areas are from longer distances, although it is notable to reference the shorter trips to the hub area for both Mitchell Drive and Danville Sycamore Valley, potentially associated with the retail uses located near each hub area.

Table 5. Shared Mobility Hub Land Use and Travel Characteristics (Employment)

	Jobs ¹	Vehicle trips to the Mobility Hub Census Block Group from other Areas ²		
		Internal to Block Group	0-2 miles to Block Group	2+ miles to Block Group
Martinez Amtrak	13,500	2,100	1,470	7,770
Concord	43,040	11,580	6,690	35,330
Downtown Pleasant Hill	32,950	6,700	2,260	20,290
Mitchell Drive	18,700	5,450	14,590	19,600
Walnut Creek BART	52,430	10,140	6,330	30,450
Danville Sycamore Valley	8,600	7,560	2,570	8,440
San Ramon Transit Center	37,670	4,360	3,120	20,470
Bollinger Canyon	37,900	5,790	3,700	20,820

Sources:

(1) *Census Longitudinal-Employment Housing Dynamics, 2019*

(2) *StreetLight Data, 2019*

In referencing both tables, it is apparent that the areas around each mobility hub support a large range of jobs and work commuters, emphasizing the need to utilize the mobility hubs for both trip-starting origins and trip-ending destinations.

Site-Specific Opportunities and Constraints

The following section evaluates the existing conditions of the eight mobility hub locations and identifies key mobility hub area opportunities and constraints. The identification of opportunities and constraints is based on the travel patterns analysis discussed in prior sections, review and observations of existing site and area circulation, and initial discussions with key agency stakeholders. This document is not intended to be a comprehensive listing of potential mobility hub improvements and features, as those will be further developed in subsequent project tasks.

I. Martinez Amtrak Regional Mobility Hub

Background Conditions

The Martinez Amtrak Station (Regional Mobility Hub) is located at the west end of downtown Martinez and is connected to I-680 via Marina Vista Avenue and to State Route 4 (SR 4) via Alhambra Avenue. The Martinez Amtrak Station serves as a major hub for Northern California Amtrak service, including the Capitol Corridor, Coast Starlight, California Zephyr, and San Joaquin line. Prior to the COVID pandemic, approximately 1,000 passengers boarded rail services at the station each day. Users accessed the facility via a variety of modes. While driving was the primary access mode (31% of users), it was closely followed by walk (19%), bus (17%), bicycle (10%), and Transportation Network Companies (10%).

This station is located near the Bay and thus land use is concentrated to the south of the mobility hub. Therefore, it has fewer residents and workers within the walkshed and bikeshed than the other mobility hub sites. The station is located 2 miles from the I-680 and SR-4 corridors with limited connecting roadways.

The Martinez Amtrak Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The Martinez Amtrak Station has seven bus bays that serve the following routes and destinations:

- **County Connection:** local routes to Concord and Pleasant Hill BART Stations (16, 18, 19, 28), express routes to Walnut Creek and North Concord BART Stations (98X and 99X), and weekend service to Pleasant Hill BART (316)

- **Tri Delta Transit:** service to Pittsburg (200)
- **WestCAT:** service to the Hercules Transit Center (30Z)
- **Amtrak Thruway** buses to Vallejo and Santa Rosa

The bus routes use Alhambra Avenue, Berrellesa Street, Marina Vista Avenue, and Escobar Street to travel to and from the mobility hub.

The Station currently offers a variety of amenities and services such as fare machines, real-time transit information signage, indoor and outdoor seating, a café, vending machines, public restrooms, bike racks, and bike lockers. There are two surface parking lots available for passengers – one adjacent to the station with 136 spaces, 12 ADA spaces, and motorcycle parking and a second parking lot north of the tracks with 175 overflow parking spaces. The parking is owned by the City of Martinez and is free to Amtrak and Capitol Corridor passengers. There are two EV charging spaces, 7 bike racks, and 8 bike lockers. The north parking lot and the platforms are connected by a pedestrian overcrossing that spans the tracks (see **Figure 4**).



Figure 4. Pedestrian Bridge at Martinez Station

Class II bicycle lanes are provided on Alhambra Avenue, Berrellesa Street, and portions of Marina Vista Avenue and Escobar Street to the east of the station. The Martinez Regional Shoreline Park has Class I bike paths, and there are hiking trails west of the station in the Carquinez Strait Regional Shoreline Park.

Issues and Opportunities

The Martinez Amtrak mobility hub serves as the transportation gateway to downtown Martinez. **Figure 5** identifies opportunities and constraints and key destinations around the mobility hub:

- A. The large parking lot on the north side of tracks provides a potential area to locate mobility hub services but requires crossing the rail tracks at the surface street crossings or via the pedestrian bridge.
- B. There are opportunities to provide enhanced connections to regional shoreline parks with existing and planned bicycle paths.
- C. Minimize the transit travel time to access the site by incorporating transit signal priority (TSP) at traffic signals along the primary transit routes connecting to regional highways.
- D. The track crossings outside of the pedestrian overcrossing at the Amtrak station are limited and at-grade.
- E. Contra Costa County is the largest employer in downtown Martinez, with the Superior Court and County Government office complex on Court and Pine Streets. There is an opportunity for the hub to serve commuters and visitors to these government facilities.
- F. Bicycle facilities are provided on some streets access the transit center; however, many residents live within the bikeshed but do not have a low-stress route to access the station.
- G. The station is setback from the rest of downtown and not as visible as it could be. Some of the streets such as Marina Vista Avenue and a few blocks of Castro Street are one-way, which make circulation and station access less clear.
- H. Opportunity to enhance connections from the mobility hub to downtown commercial and government destinations with improved wayfinding.

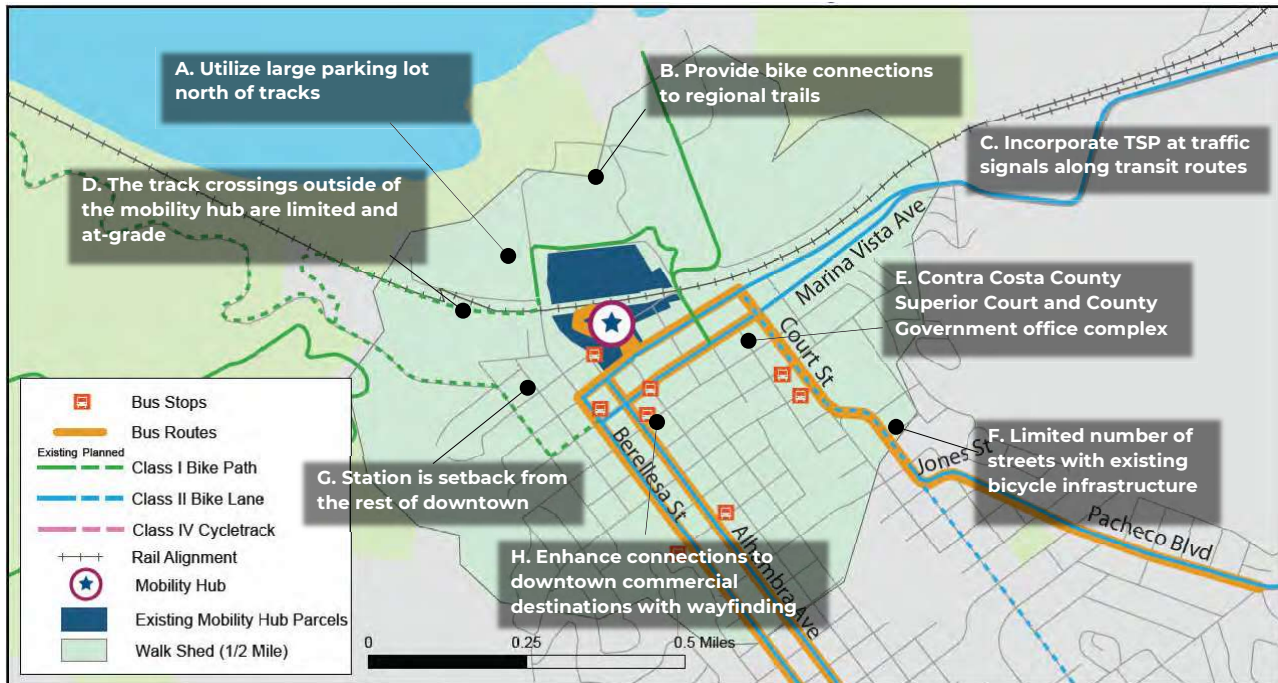


Figure 5. Martinez Amtrak Mobility Hub Area Opportunities and Constraints

Figure 6 illustrates specific issues and opportunities at the mobility hub:

- A. Utilize the new pedestrian overcrossing to access the surface parking lot on the north side of the tracks and locate mobility hub services that require more space or have lower turnover, such as carshare spaces and EV charging spaces.
- B. Enhance passenger amenities (covered walkways, seating, shelters, real-time information, lighting) along the entire length of the existing bus bays that wrap around the parking lot.
- C. Expand the pick-up/drop-off area in front of the station, relocate bike racks and lockers closer to the station building, and create additional space for amenities such as bike repair and charging stations.
- D. Prioritize transit connections by relocating County Connection bus stops from across the parking lot more proximate to the rail platforms and other bus transit services. This could include reconfiguring the parking lot to move transit closer to the station building.
- E. Improve east-west pedestrian and bicycling connectivity and visibility to/from downtown to the east.
- F. Enhance pedestrian and bicycling connectivity from the mobility hub through Sparacino Park to access Alhambra Avenue.
- G. Improve station visibility with branding and wayfinding approaching the station.

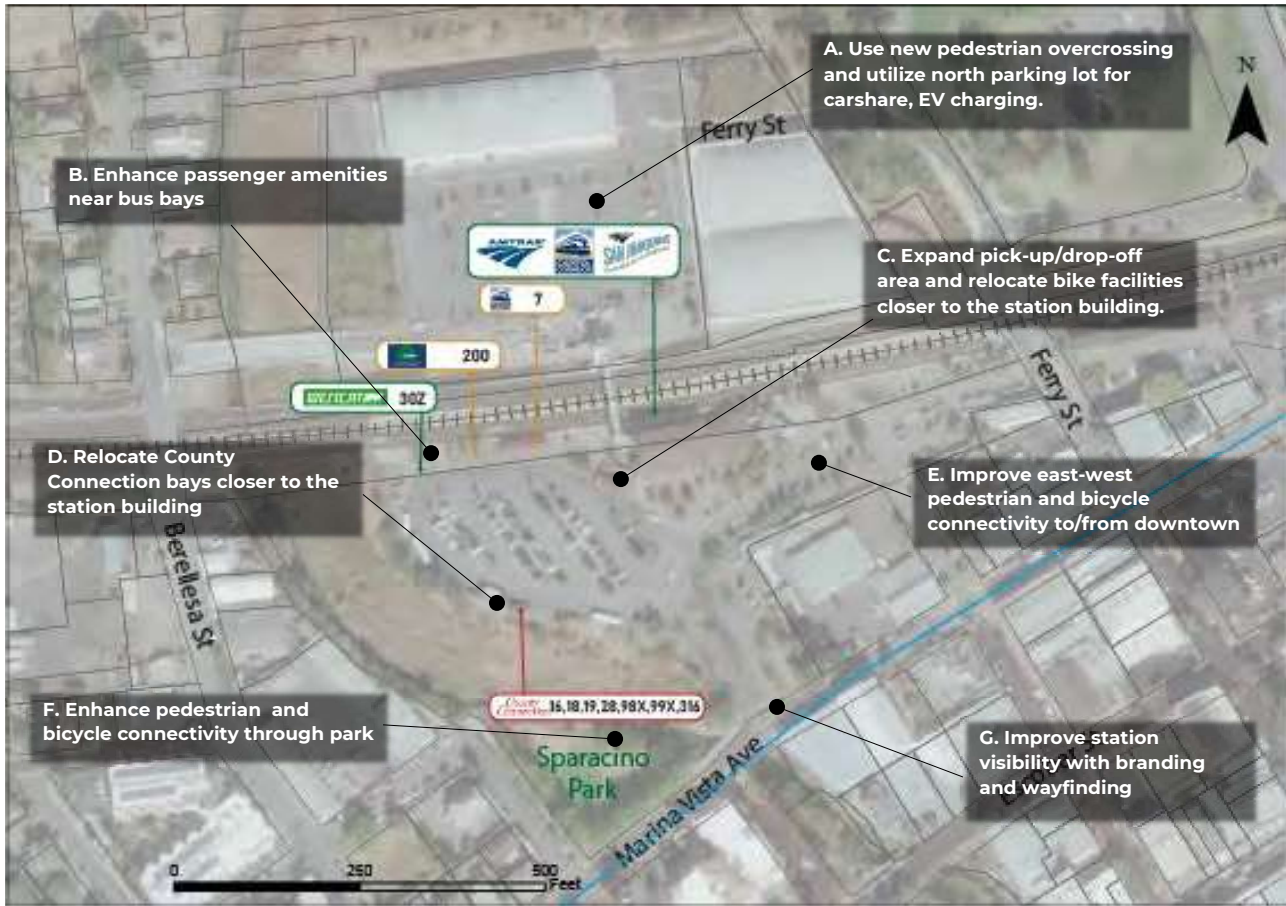


Figure 6. Martinez Amtrak Mobility Hub Site Opportunities and Constraints

II. Concord 680 Access Mobility Hub

Background Conditions

The Concord PNR (680 Access Mobility Hub) is bounded by Willow Pass Road, Market Street, and the State Route (SR) 242 / Clayton Road interchange. The site is located in the City of Concord and the PNR lot is owned and operated by Caltrans. Vehicular access to the site is provided by two right-in/right-out driveways connecting to Market Street and Willow Pass Road. Willow Pass Road provides the most direct connection to I-680, which is approximately 0.5 miles to the west of the mobility hub. Pedestrian access is provided via a sidewalk at the Market Street driveway, but no pedestrian access is provided from Willow Pass Road. The mobility hub is located close to many retail and high-density residential areas on either side of SR 242 with big box retailers, large parking lots, and longer distances between shopping, dining, or job opportunities.

The Concord mobility hub area has the most residents within the walkshed, bikeshed, and driveshed of any of the mobility hub sites, as well as the second highest number of jobs within the bikeshed, emphasizing the potential benefit in this area for mobility improvements. Notably this mobility hub area also had the highest percentage of trips staying within the I-680 corridor.

The area is currently very auto oriented, including many car dealerships directly next to the park and ride, making it more challenging to move through this area without a vehicle. However, 8 percent of households within 2 miles of the mobility hub do not have access to a vehicle, the highest percentage amongst the mobility hubs in this analysis. There are many high-density apartment buildings within walking distance of this facility, giving note to the high number of people (nearly 60,000) that live within the bikeshed of the facility. Relative to other mobility hub sites contained in this report, the Concord PNR is located in an area with substantially higher equity priority communities, with 29% of the population living below the federal poverty line and 65% of the population noted as persons of color.

The Concord Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The PNR lot has 45 public parking spaces with additional 3 ADA accessible spaces. While the mobility hub is not directly served by transit, several County Connection bus stops are located within a quarter mile. **Figure 7** shows an image of the Market Street access to the Concord park-and-ride lot.



Figure 7. Concord Mobility Hub Main Access

Issues and Opportunities

The Concord mobility hub is located close to both I-680 and SR 242. However, it is challenging to access from surrounding land uses, particularly when traveling on foot or bicycle. **Figure 8** identifies opportunities and constraints and key destinations around the mobility hub:

- A. Access to the site is limited to the two right-in/right-out driveways from Market Street and Willow Pass Road. SR 242 blocks access from the west and south.
- B. Downtown Concord is just over 0.5 miles to the east of the mobility hub. However, pedestrian and bicycle connectivity to Downtown is limited.
- C. Commercial areas to the west of SR 242 are auto oriented with limited pedestrian and bicycling infrastructure.
- D. Most of the surrounding roadway network consists of large arterials that carry heavy traffic volumes. There are limited pedestrian crossings because of long intersection spacing. While some crosswalks have enhanced pavement treatments, most intersections have large curb radii and free turning movements, promoting high vehicle speed through pedestrian conflict areas.

- E. I-680 is 0.5 miles west of the mobility hub on Willow Pass Road, which has a variety of low-density commercial uses.
- F. Connections to higher density residential areas to the southeast of the mobility hub are limited and require crossing several major streets.
- G. There is limited to no dedicated bicycle facilities in the vicinity of the mobility hub. Future bike routes are planned, and further considerations can be made to create safe and comfortable facilities that connect to the hub. In addition, multiple trails are planned along the SR 242 corridor that could connect to the hub.
- H. There are no bus stop connections within or contiguous to the site despite several routes passing nearby.

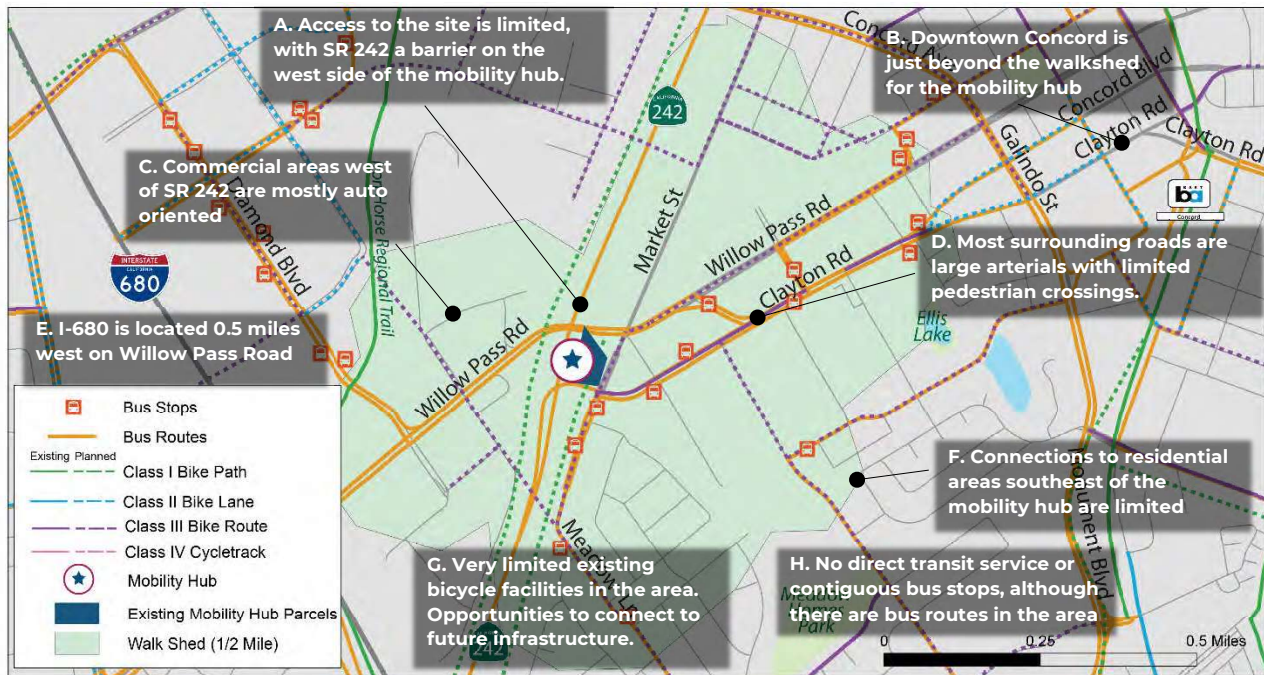


Figure 8. Concord Mobility Hub Area Opportunities and Constraints

Figure 9 highlights specific issues and opportunities at the mobility hub:

- A. Provide a pedestrian connection on the bridge connecting the park-and-ride lot to Willow Pass Road.
- B. Reconfigure and expand the existing park-and-ride lot to accommodate transit and mobility hub services.
- C. A creek/drainage channel on the north side of the parcel is an access barrier.



Figure 9. Concord Mobility Hub Site Opportunities and Constraints

- D. Improve the access point to the mobility hub from Market Street. The current driveway is narrow and could be widened to incorporate additional pedestrian and bicycle facilities.
- E. Improve lighting and add safety features
- F. Expand and enhance bicycle and pedestrian connections and wayfinding / signage to nearby County Connection transit stops. Improve pedestrian crosswalks and lighting around the mobility hub.
- G. Evaluate opportunities to leverage the adjacent ramps for in-line bus stops and new transit connections along the SR 242 corridor

III. Downtown Pleasant Hill Community Mobility Hub

Background Conditions

The Downtown Pleasant Hill hub (Community Mobility Hub) is proposed for a location near City Hall at the southeast corner of Gregory Lane and Cleaveland Road, approximately 0.5 miles from the I-680 on and off-ramps. Access to the site is from Trelany Road. The City Hall complex currently consists of Pleasant Hill City Hall, Pleasant Hill Library (temporary), two municipal parking lots, and Pleasant Hill Park. The City Hall complex is surrounded on the east and south by large retail shopping centers with ample surface parking and on the north and west by residential neighborhoods of varying density levels. A large City owned parking garage is located in the southern corner of the Downtown Pleasant Hill commercial area, east of Crescent Drive. The specific location for mobility hub features will be determined as part of subsequent tasks.

The Downtown Pleasant Hill area had the second highest number of residents within the walkshed and bikeshed. It also has the second highest proportion of residents below the federal poverty line (20%). Notably, it had among the largest proportion of residents within the bikeshed to residents within the walkshed of the sites evaluated, emphasizing the need for improved bicycle and short-distance transit mobility options in this hub area.

The Downtown Pleasant Hill Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The mobility hub area is served by County Connection bus routes that operate on Cleaveland Road and Gregory Lane. These bus routes include Routes 9 (Walnut Creek BART), 16 (Martinez Amtrak and Concord BART), 18 (Martinez Amtrak and Pleasant Hill BART), and 314 and 316 (both weekend service). EV charging, vanpool parking, and bike racks are located at City Hall and at several locations in the vicinity (the existing City Hall lot is shown in **Figure 10**).



Figure 10. Pleasant Hill City Hall Parking Lot

Issues and Opportunities

The Downtown Pleasant Hill area is centrally located to serve a range of land uses, including single and multifamily residential, office and civic uses, and retail. **Figure 11** identifies opportunities and constraints and key destinations around the mobility hub:

- A. Co-locate mobility hub services with the Pleasant Hill City Hall complex surface and structured parking areas.
- B. Improve pedestrian and bicycling connectivity between the mobility hub and regional bicycle facilities, such as the Iron Horse Trail and Contra Costa Canal Trail. The current connection to the Iron Horse Trail uses Monument Boulevard, which is a high-volume arterial without dedicated facilities.
- C. Several senior-oriented facilities are located nearby, including the Pleasant Hill Senior Center on the north side of Gregory Lane and Carlton Senior Living, located to the south along Cleveland Road
- D. Integrate mobility hub services with surrounding retail centers. This may include elements such as trip-making information, wayfinding, and shared mobility services



Figure 11. Downtown Pleasant Hill Mobility Hub Area Opportunities and Constraints

Figure 12 highlights specific issues and opportunities at the mobility hub:

- A. Improve pedestrian and bicycling access to the mobility hub from residential areas to the north and west of the site.
- B. Optimize use of existing City Hall surface parking lots, particularly during non-business hours, through integration of mobility hub services
- C. Transit service is not located at the mobility hub site but on surrounding streets (Gregory Lane and Cleveland Road). Better integrate transit with the mobility hub through improved pedestrian connections and wayfinding.
- D. Improve bike parking options at City Hall site and throughout retail area by providing additional secure parking facilities
- E. Identify locations for mobility hub services along nearby surface streets (Trelany Road) and within the structure parking along Crescent Drive.
- F. Improve connectivity and the visibility of the mobility hub to retail areas along Crescent Drive and Contra Costa Boulevard.



Figure 12. Downtown Pleasant Hill Mobility Hub Site Opportunities and Constraints

IV. Mitchell Drive Community Mobility Hub

Background Conditions

The Mitchell Drive PNR (Community Mobility Hub) is located in the Shadelands Business Park approximately 0.4 miles north of Ygnacio Valley Road and two miles east of I-680. The PNR is owned and operated by the City of Walnut Creek. **Figure 13** shows the one vehicle access point from Mitchell Drive. The mobility hub is located close to several large office buildings, the Contra Costa School of Performing Arts and Springfield Montessori School. The Orchards at Walnut Creek shopping center and the Sequoia Living Viamonte senior housing complex are both located approximately 0.4 miles to the south. The Shadelands Business Park has and continues to undergo change with new residential and recreational uses built and/or planned, including new senior housing at 2800 Mitchell Drive.



Figure 13. Mitchell Drive Park and Ride

The Mitchell Drive area notably had the second highest percentage of short distance driving trips to the hub area relative to the other sites. More trips were made within 2 miles of the hub area than from beyond 2 miles of the hub area. The reason for this is not readily apparent but may be associated with access to nearby commercial areas or may reflect that many employees and other users of the Shadelands Business Park live in the nearby area.

The Mitchell Drive Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The PNR lot has 92 public parking spaces, 4 ADA parking spots, and 3 bike racks. The PNR was well utilized prior to the COVID pandemic. There are currently no bicycle facilities on Mitchell Drive or most streets within the Shadelands Business Park. The City of Walnut Creek recently completed the Shadelands Multi-Modal Improvement Plan (adopted 2021) that identifies a number of multi-modal improvements, including new bicycle facilities, sidewalk gap closures and crossings, and EV charging facilities throughout the Shadelands area. The City is also currently working with CCTA to implement mobility hub improvements at a few bus stops in the Shadelands Business Park area.

The Contra Costa Canal Trail is located just to the north, although there is no direct connection from the PNR. County Connection bus stops are located on Mitchell Drive just to the west of the PNR and serve the following routes: 1 (Rossmoor), 7 (Pleasant Hill BART), 21 (Walnut Creek BART), 92X (ACE Express), 93X (Kirker Pass express), 95X (San Ramon / Walnut Creek BART), 321 (San Ramon / Walnut Creek BART), and 623 (Monte Vista High / Annabel). Route 7 provides a fare-free connection between the Shadelands Business Park and BART, subsidized by the Shadelands Business Park. The nearby bus stops are shown in **Figure 14**.



Figure 14. Mitchell Drive County Connection Bus Stops

Issues and Opportunities

The Mitchell Drive mobility hub is located in a very low-density business park and is surrounded primarily by large surface parking lots. **Figure 15** highlights specific issues and opportunities at the mobility hub:

- A. Improve connections to schools to the north of mobility hub, including Ygnacio Valley High School, De La Salle High School, and Carondelet High School.
- B. Oak Grove Road east of the mobility hub has bike lanes, while Mitchell Drive and most other streets in the business park do not.
- C. Improve connections to sports complexes south of the mobility hub. Many of these paths travel through large surface parking lots.
- D. Provide enhanced connections and wayfinding to the large Orchards at Walnut Creek shopping center and the Oak Park Plaza to the south of the mobility hub,

- as well as new and planned senior housing developments in the area. This could include identifying paths through parking lots and along Via Monte.
- E. Provide improved walk, bike, and transit connections to employment and medical offices throughout the Shadelands Business Park.
 - F. Locate mobility hub services in surface parking lots closer to Ygnacio Valley Road to minimize out-of-direction travel for transit and mobility hub users.

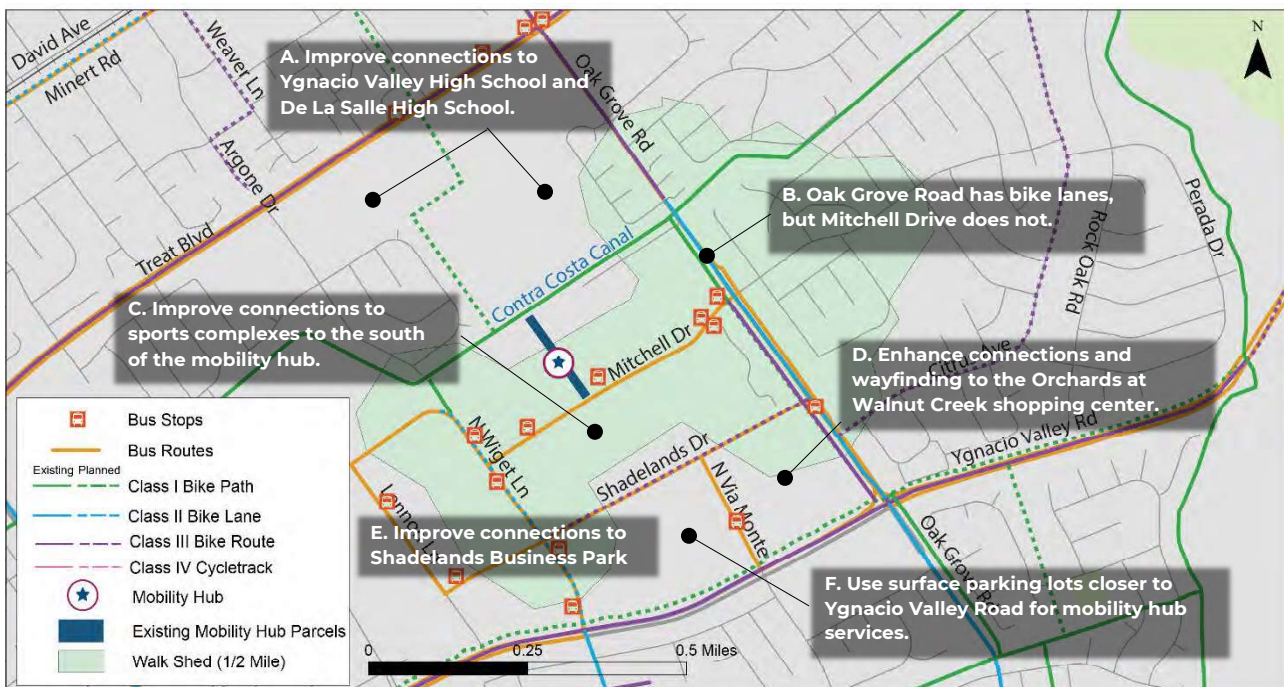


Figure 15. Mitchell Drive Mobility Hub Area Opportunities and Constraints

Figure 16 highlights specific issues and opportunities at the mobility hub:

- A. Connect the mobility hub to the Contra Costa Canal Trail to the north.
- B. Reconfigure some of the underutilized PNR lot to accommodate additional mobility hub services and passenger amenities.
- C. Lighting is currently limited at the existing facility
- D. Provide EV charging facilities at the PNR and expand EV charging facilities throughout Shadelands
- E. Provide enhanced pedestrian connectivity and wayfinding to the bus stops on Mitchell Drive.

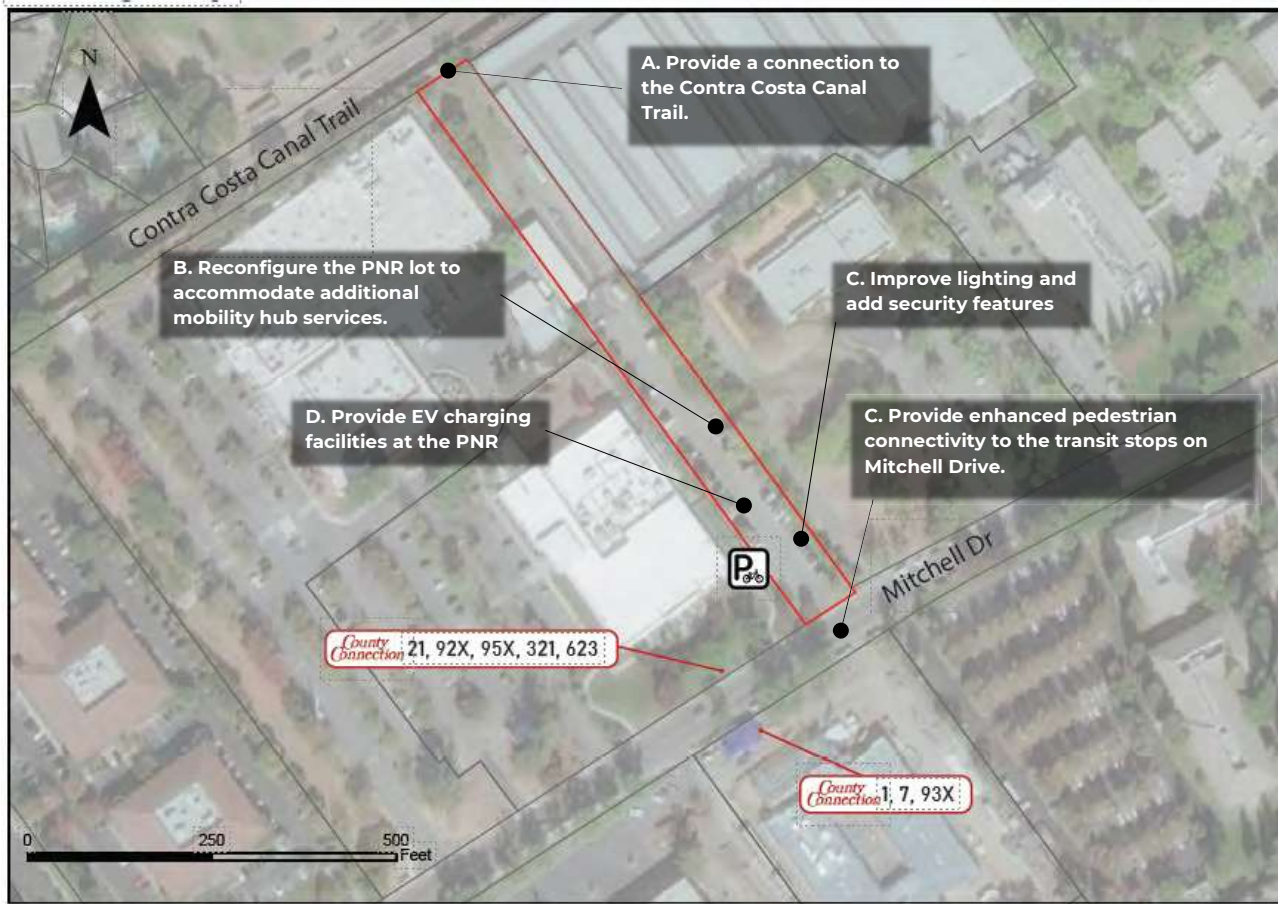


Figure 16. Mitchell Drive Mobility Hub Site Opportunities and Constraints

V. Walnut Creek BART Regional Mobility Hub

Background Conditions

The Walnut Creek BART Station (Regional Mobility Hub) is located at the northwestern edge of downtown Walnut Creek, on the block bounded by California Boulevard, Ygnacio Valley Road, Pringle Road, and I-680. The south entrance to the station from Ygnacio Valley Road is opposite the eastbound SR 24 and northbound I-680 off-ramps. Other access points to the station are located on California Boulevard on the east edge of the site and BART Way on the west edge of the site. This mobility hub area has the largest number of jobs within the bikeshed of any of the mobility hub areas. The station currently feels isolated from surrounding uses and downtown Walnut Creek given the adjacency to I-680 and the major arterials of Ygnacio Valley Road and California Boulevard.

The Walnut Creek BART Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The station is a major intermodal hub served by BART, County Connection, Solano Express, Tri Delta Transit, WestCAT, and LAVTA. The station includes the BART station facilities, two parking garages (one recently completed in 2019 and privately owned and operated), a new bus transfer center on the first floor of the new garage, and surrounding streets on the station block.

In addition to the BART station facilities, a major redevelopment of the station block is currently underway consisting of two primary elements: station modernization and the Walnut Creek Transit Village, as described below.

- **Station modernization:** The goal is to improve station access for all modes, integrate it with the new Walnut Creek Transit Village development, improve the customer experience by enhancing safety and minimizing crowding, and upgrade the station to increase capacity to support future ridership growth. Specific elements include widening platforms, shifting the ADA accessible path location, new faregates, modifications to elevator access, a new on-site bike path and a new staircase. BART is currently seeking funding to complete its station modernization program.
- **Walnut Creek Transit Village:** The Walnut Creek Transit Village is a major mixed-use development surrounding the BART station. **Figure 17** presents the project site plan and its three phases, which include:
 - Phase 1 (completed in 2019) built a new privately-owned garage on the south parcel with 900 spaces for BART patrons plus an upgraded bus facility and passenger pick-up and drop-off area
 - Phase 2 (under construction, expected to be completed in summer/fall 2022), which includes 358 residential units and 511 residential parking stalls plus 15,000 square feet of retail space
 - Phase 3 (timing unknown) will consist of 238 residential units with 335 residential parking stalls plus 12,500 square feet of retail space.



Phases of the Walnut Creek Transit Village , a Transit-Oriented Development project being constructed on both sides of the existing station.
(compiled from 2011 Transit Village Plan with overlaid annotations)

Figure 17. Walnut Creek Transit Village Site Plan (Source: City of Walnut Creek)

In addition, BART and the City of Walnut Creek have applied for grant funding for a signage plan and signage/wayfinding installations at the stations.

Figure 18 shows the configuration of the Walnut Creek BART Station bus bays in the newly constructed South Garage. Existing transit services at the station are summarized below.



Figure 18: Walnut Creek BART Station Bus Bays (Source: 511 Bay Area)

- **County Connection:** local routes (1, 4, 5, 9, 14, 21) to various destinations in Walnut Creek, Concord, Pleasant Hill, and San Ramon; express routes (93X, 95X, 96X, 98X) to Antioch, San Ramon, and Martinez, and various weekend services. Route 4 is offered fare-free between Walnut Creek BART Station and Broadway Plaza/Downtown.
- **SolTrans:** SolanoExpress Yellow route to Pittsburg
- **Livermore Amador Valley Transit Authority (Tri-Valley) Wheels:** Route 70X (currently suspended) to East Dublin/Pleasanton BART station

Bus charging facilities are provided for the County Connection Route 4. Additional charging facilities are planned to be implemented by SolTrans for its express service.

The Walnut Creek BART Station has 2,150 total parking spaces in two garages, 12 ADA accessible spaces, and over 115 bicycle racks and 72 bike lockers. The South garage has real-time parking availability. **Figure 19** shows the bicycle parking area under the BART

tracks. Prior to the COVID pandemic, lockers were well utilized, but with limited use of bike racks. All bike parking is located outside of the paid area. The Walnut Creek BART Station includes passenger amenities and services such as ticketing machines, agent booth, real-time transit information signage, vending machines, public restrooms, vanpool and carpool priority parking, and bicycle facilities.



Figure 19. Walnut Creek BART Station

Passenger pick-up/drop-off areas are located on both sides of “New Street B”, which is located between the North Garage and Phase 2 of the Transit Village. The South Garage is accessed directly from Ygnacio Valley Road and Hillside Avenue. The North Garage is accessed from BART Way or New Street B. There are existing Class II bike lanes and Class III bike boulevards on California Boulevard that connect the station area to downtown Walnut Creek.

Issues and Opportunities

The Walnut Creek BART mobility hub serves as the gateway to the I-680 corridor transportation network and to the downtown Walnut Creek community. The mobility hub is aimed to provide connections between local transportation options and regional enhancements on I-680. **Figure 20** identifies opportunities and constraints and key destinations around the mobility hub:

- A. Pedestrian and bicycle connections to the west side of I-680 are limited.

- B. There are no protected bicycle facilities in the vicinity of the station, resulting in higher stress facilities given higher speeds and traffic volumes on arterials. There is not a low-stress connection to the Iron Horse Trail to the east of the mobility hub.
- C. Provide transit signal priority at key intersections around the station to improve transit reliability and desirability.
- D. Ygnacio Valley Road to the east of the mobility hub is characterized by high traffic volumes, high vehicle speeds, and is heavily congested at various times of the day. The road is also very wide and not conducive to walking and bicycling.
- E. Convenient street network connections to downtown destinations south of the station
- F. Traffic congestion at the south edge of the site near the I-680 / SR 24 off-ramp and Ygnacio Valley Road, combined with limited ingress and egress points around the station is a constraint.



Figure 20. Walnut Creek BART Mobility Hub Area Opportunities and Constraints

Figure 21 highlights specific issues and opportunities at the mobility hub:

- A. Locate services on the first level of the BART-owned North Garage.

- B. Leverage new mixed-use development opportunities on the BART station site (Phases 2 and 3) to locate services close to residents. Mobility hub amenities could be integrated into the site to enhance the user experience.
- C. Co-locate mobility hub services in new privately-owned South Garage to connect with County Connection transit services.
- D. Site services at visible points on the site such as the California Boulevard / Ygnacio Valley Road intersection. In particular, improve wayfinding and signage at key station entry points.
- E. Identify underutilized areas around the station for mobility hub services. For example, there are small areas on the north side of the station and under the tracks where mobility hub infrastructure could help to activate the area.
- F. Incorporate transit signal priority (TSP) at traffic signals serving key access points and along regional transit access pathways.

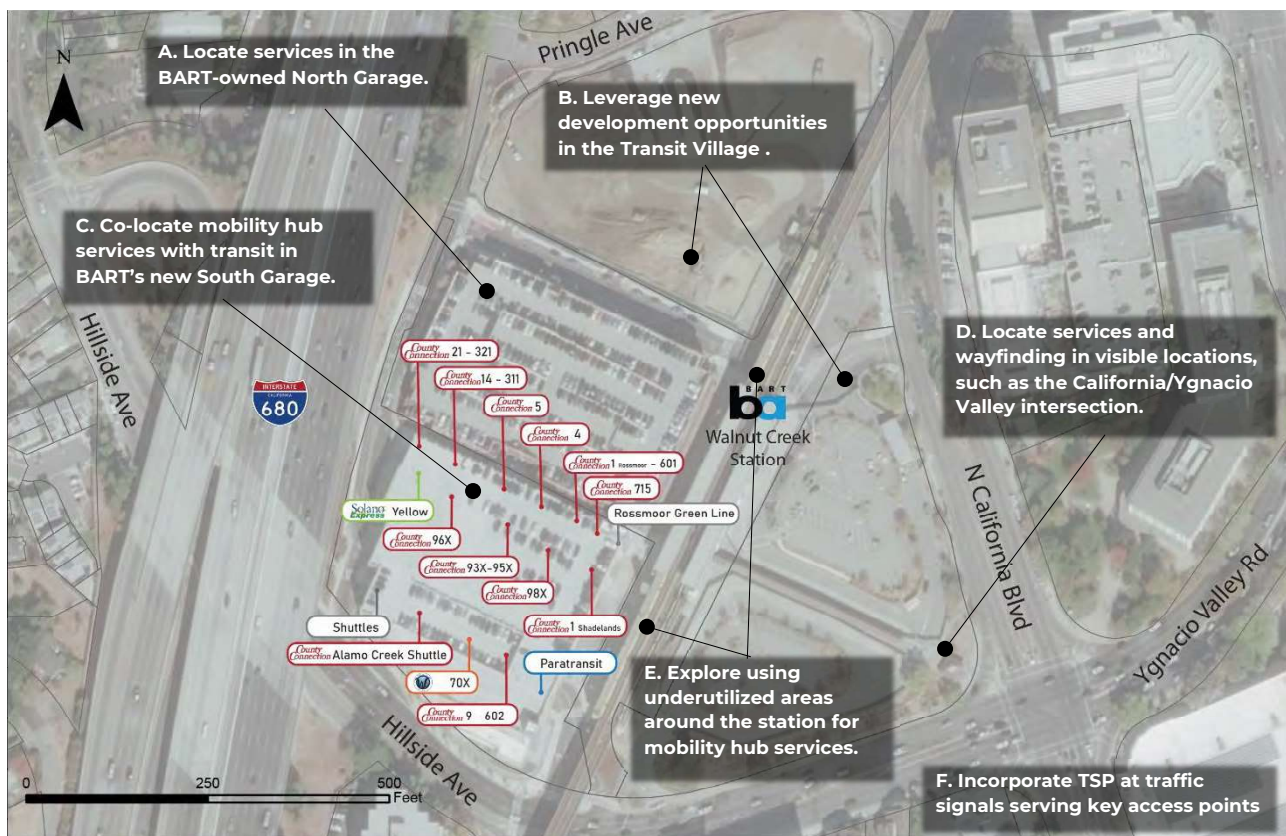


Figure 21. Walnut Creek BART Mobility Hub Site Opportunities and Constraints

VI. Danville Sycamore Valley 680 Access Mobility Hub

Background Conditions

The Danville Sycamore Valley PNR (680 Access Mobility Hub) is located in the northeast quadrant of the I-680 and Sycamore Valley Road interchange. The PNR is owned and maintained by the Town of Danville and consists of a large PNR lot, a transit stop, bike parking, and pick-up/drop-off curb. The PNR is accessed via a signalized intersection at Sycamore Valley Road / Camino Ramon.

The Danville Sycamore Valley Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The mobility hub primarily serves residential neighborhoods and local shopping centers on both sides of I-680. The PNR is also adjacent to the Iron Horse Regional Trail, although a direct connection from the PNR lot to the trail does not exist today. The commercial core of Danville is accessible via the Iron Horse Trail, approximately 0.6 miles away, across I-680. Notably, the mobility hub area had among the largest proportion of residents within the bikeshed to residents within the walkshed of the sites evaluated, emphasizing the need for improved bicycle and short-distance transit mobility options in this hub area.

The PNR lot has 240 public parking spaces, including 8 ADA accessible spaces, 24 bike racks, 12 bike lockers, and a sheltered bus stop for five County Connections routes, including the 21 (Walnut Creek BART), 92X (Pleasanton ACE Train Station), 95X (Walnut Creek BART), 321 (weekend service), and 623 (school route).

The Town of Danville has a pending project to improve the PNR with features such as electric vehicle charging, direct connections to the Iron Horse Trail, limited additional wayfinding, new bike lockers, and improved ADA spaces. It will also expand the overall capacity of the parking lot, as the lot regularly reached capacity prior to the COVID pandemic.

Other uses of the facility include a large number of employer shuttles as well as a school shuttle bus for a local private school. It was estimated that between 4 and 6 employer shuttle buses access the facility each peak period. **Figure 22** shows a school bus at the PNR bus stop.



Figure 22. Danville Sycamore Valley Mobility Hub Bus Stop

Issues and Opportunities

The Danville Sycamore Valley mobility hub is located adjacent to I-680, the Iron Horse Regional Trail and is mostly surrounded by single-family residential units. The mobility hub is currently somewhat isolated, as it has only a single point of access and is not connected with surrounding land uses. **Figure 23** identifies opportunities and constraints and key destinations around the mobility hub:

- A. Improve pedestrian and bicycle connectivity to the commercial areas on San Ramon Valley Boulevard on the west side of I-680.
- B. Provide direct connections from the mobility hub to the Iron Horse Trail, as currently planned by the Town.
- C. Large number of commuters pass by mobility hub along Sycamore Valley Road as part of their daily commute, with trip origins from areas beyond bikeshed
- D. Improve pedestrian connections to surrounding streets and to the residential neighborhoods to the east of the mobility hub.
- E. Improve connectivity to Camino Ramon and the commercial and residential neighborhoods to the south of the mobility hub.

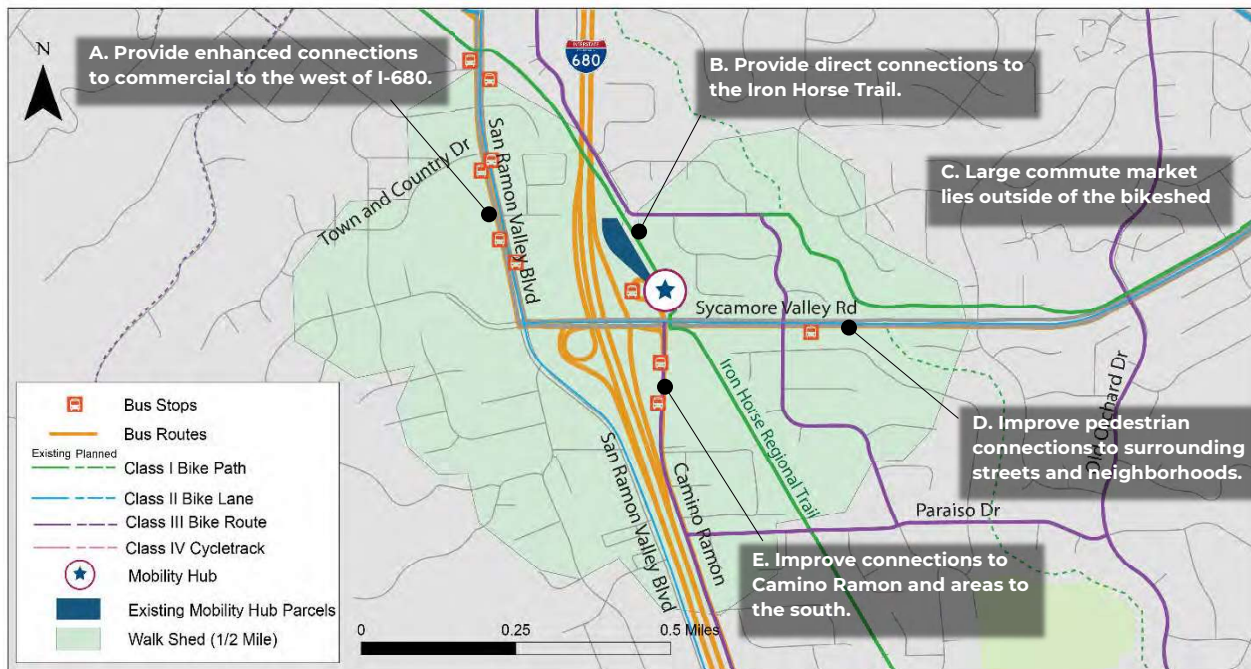


Figure 23. Danville Sycamore Valley Mobility Hub Area Opportunities and Constraints

Figure 24 highlights specific issues and opportunities at the mobility hub:

- A. Expand the boundaries of the PNR lot as planned by the Town to provide additional space for mobility hub services.
- B. Provide multiple connections to the Iron Horse Trail along the eastern edge of the parcel along with improved security and lighting.
- C. Add lighting and improve security features.
- D. Expand the existing transit facilities to include additional stops, including a separate area for private shuttles, improved shelters, and other passenger amenities.
- E. Utilize the small parking area inside the driveway / bus loop to improve bike parking and expand mobility hub services and passenger amenities.
- F. Provide transit signal priority (TSP) at the signalized access point to improve transit access/circulation
- G. Improve pedestrian sidewalks and crosswalks at the Sycamore Valley Road / Camino Ramon intersection to improve site access.

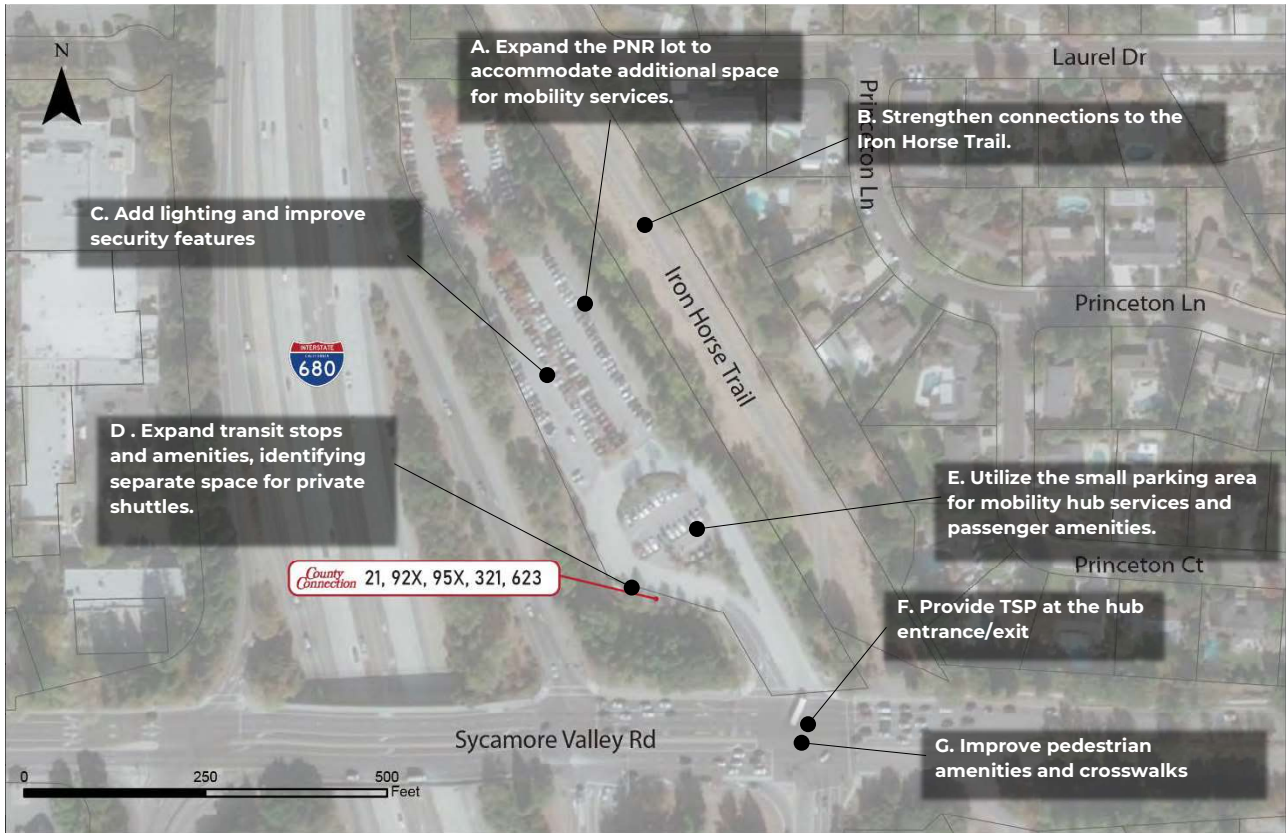


Figure 24. Danville Sycamore Valley Mobility Hub Site Opportunities and Constraints

VII. San Ramon Transit Center Community Mobility Hub

Background Conditions

The San Ramon Transit Center (Community Mobility Hub) is located at the eastern end of Executive Parkway in the Bishop Ranch business park in the City of San Ramon. The site consists of the San Ramon Intermodal Transit Facility and a small commuter parking lot. It is located near several office buildings and the Iron Horse Middle School, and immediately adjacent to a parking structure and the Iron Horse Regional Trail. Access to the site is from Executive Parkway. **Figure 25** shows the entrance to the Transit Center.

The City of San Ramon has approved the CityWalk Master Plan, includes the integration of recreational amenities, a 169-key hotel, up to an additional 170,000 square feet of retail, additional parking structures, and up to 4,500 multi-family residential units into the existing Bishop Ranch campus over the next 20-30 years. The increase in the number of residential units in the area will change the travel demands in the area, expanding the need for access to transit services that connect to employment in other areas.

The San Ramon Transit Center Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The San Ramon Transit Center is also approximately 0.5 miles north of the City Center Bishop Ranch, an upscale, open-air shopping plaza with various retail and dining options. Bishop Ranch is in the process of implementing several mobility hubs on Camino Ramon .

The City of San Ramon recently received grant funding from MTC to implement upgrades at the Transit Center. Some of these improvements include installing new electric messaging boards at each bus bay, adding bike fix-it stations, replacing bike lockers with e-lockers, and upgrading ADA accessibility and crosswalks. This work is expected to begin in 2022.



Figure 25. San Ramon Transit Center Entrance

The San Ramon Transit Center serves several County Connection bus routes: 21 (Walnut Creek BART), 35 (Dublin/East Pleasanton BART), 92X (Pleasanton ACE Station express), 96X (Walnut Creek BART), 97X (Dublin/East Pleasanton BART), 321 and 335 (weekend service), and the 623 (school route). Prior to the COVID pandemic, over 200 daily bus boardings occurred at the transit center. In addition, prior to the COVID pandemic, some employer shuttles were using the transit center. However, the transit center facility was not designed for these vehicles and they often blocked movements through the transit center while dwelling. The transit center has 52 public parking spaces, including seven EV charging spaces, bike racks and lockers, and public restrooms. Parking was fully utilized and spilled into nearby parking areas prior to the COVID pandemic. **Figure 26** shows the EV charging spaces and the restrooms at the mobility hub.



Figure 26. San Ramon Transit Center EV Charging Stations

Issues and Opportunities

The San Ramon Transit Center mobility hub serves as an important connection between a number of bus routes and the large employment centers of Bishop Ranch.

Figure 27 identifies opportunities and constraints and key destinations around the mobility hub.

- A. There is a need for enhanced bicycle facilities on Executive Parkway connecting the mobility hub with the rest of Bishop Ranch.
- B. Improve pedestrian access to the Iron Horse Middle School and residential neighborhoods to the east of the mobility hub.
- C. Provide transit priority treatments throughout Bishop Ranch to improve the desirability of transit connections. Address congestion issues at the transit center associated with Iron Horse Middle School pick-up/drop-off traffic.
- D. Improve pedestrian and bicycling infrastructure on arterials and collectors throughout Bishop Ranch, the City Center, and across I-680 to the Bollinger Park and Ride facility. Most of the office park's roadways are four-lane roadways and would benefit from wider sidewalks and bicycling infrastructure.
- E. Improve connections to large employment centers along Camino Ramon, including Kaiser and John Muir, and to the west of Camino Ramon, including SAP and other office tenants.
- F. Provide connections to City Center Bishop Ranch, approximately 0.5 miles to the south.
- G. Provide a cohesive shared mobility network in conjunction with mobility hubs currently being planned by Bishop Ranch

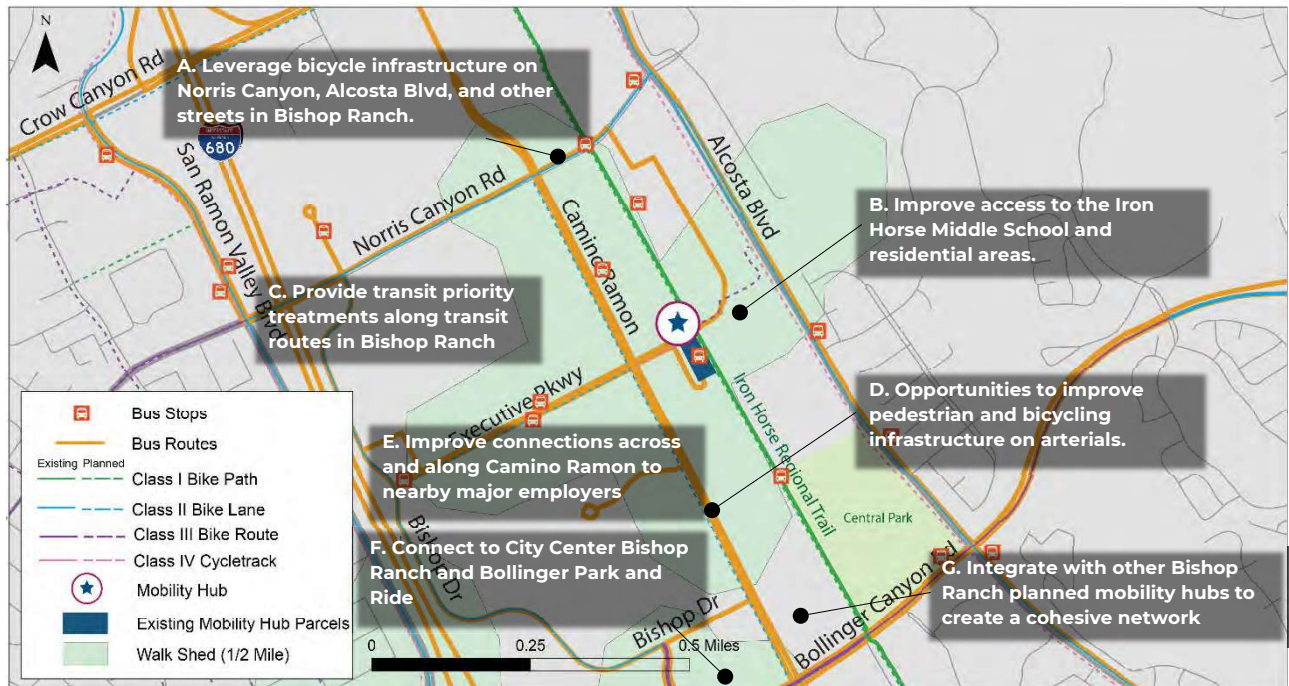


Figure 27. San Ramon Transit Center Mobility Hub Area Opportunities and Constraints

Figure 28 highlights specific issues and opportunities at the mobility hub:

- A. Improve pedestrian access, including ADA accessibility, to the mobility hub along and across Executive Parkway.
- B. Connect and integrate the mobility hub with the Iron Horse Trail.
- C. Reconfigure the commuter parking area to accommodate mobility hub services.
- D. Add wayfinding on Camino Ramon to improve the visibility of the mobility hub and help with wayfinding.
- E. Upgrade or replace the existing restroom building to include expanded passenger amenities and mobile retail services.

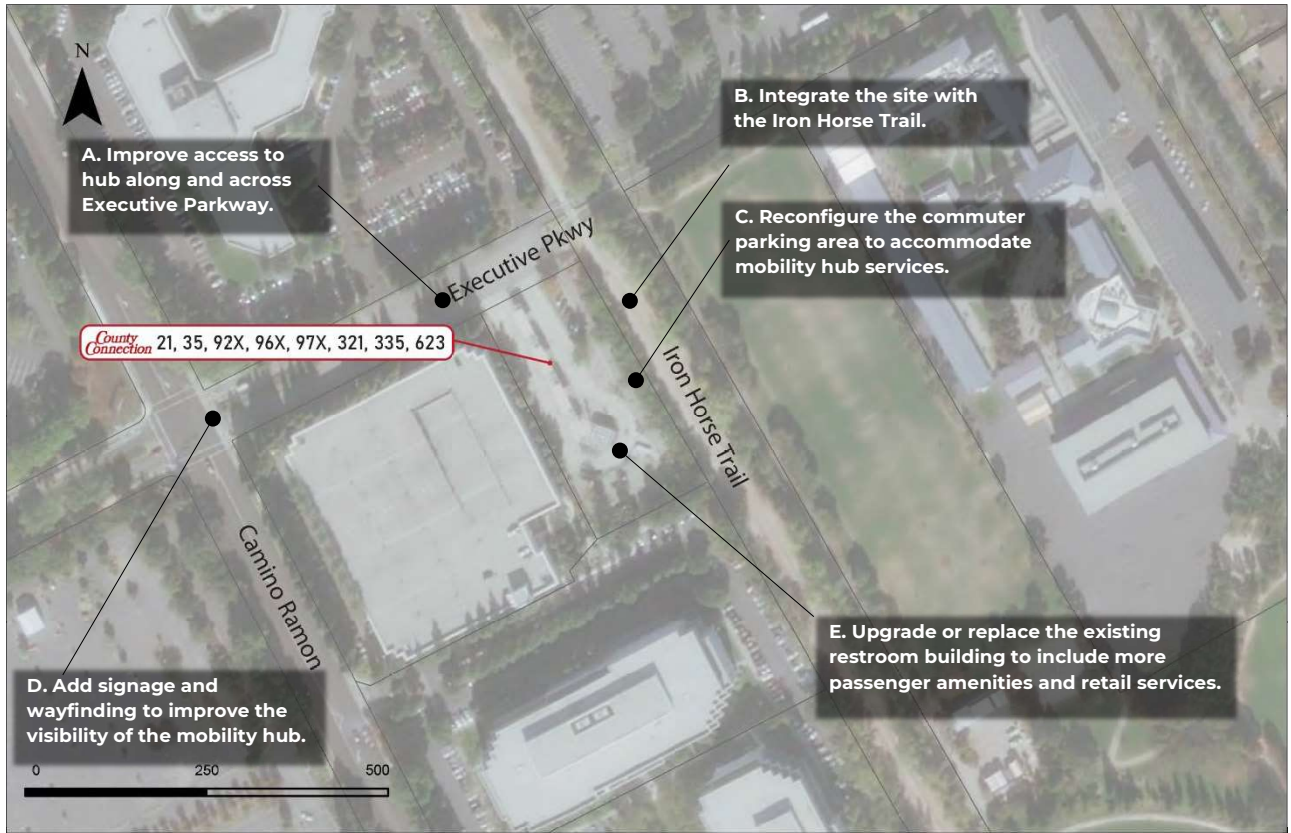


Figure 28. San Ramon Transit Center Mobility Hub Site Opportunities and Constraints

VIII. Bollinger Canyon 680 Access Mobility Hub

Background Conditions

The Bollinger Canyon PNR (680 Access Mobility Hub) is located at the southwest corner of the Bollinger Canyon Road / I-680 interchange and is owned by Caltrans and maintained by the City of San Ramon. The primary access to the PNR is via a signalized intersection with access only from eastbound Bollinger Canyon Road or southbound I-680 with a secondary access through a commercial shopping center on San Ramon Valley Boulevard. The facility sits directly adjacent to the cloverleaf of the I-680 on and off ramps, limiting access options to the facility. The mobility hub is located approximately 0.4 miles west of the City Center shopping center, Bishop Ranch and Chevron's corporate headquarters.

This mobility hub area is notable in that it has the largest population within the driveshed of any of the mobility hub areas analyzed. It also has by far the largest proportion of population within the driveshed, but not within the bikeshed, emphasizing the need for improved first-mile/last-mile transit connections to the mobility hub. In addition, the population in this area had the lowest percentage of trips remaining in the I-680 corridor, with the highest proportion of trips to both other East Bay Destinations and to other Bay Area Destinations, emphasizing the need for connecting this area via express services to the broader regional transit network.

The Bollinger Canyon Factsheet is located in the **Appendix**, and includes site-specific travel patterns, the layout of the specific sites, and the mobility network in the surrounding area.

The existing PNR lot offers commuters 109 public parking spaces with 3 ADA accessible spaces. The PNR is primarily used by casual carpoolers and as a pickup point for private employer shuttles. The PNR was fully utilized with parking spillover affecting nearby commercial areas and community park parking lots prior to the COVID pandemic. Prior to the COVID pandemic, private employer shuttles had challenges navigating through the lot and often utilized the County Connection bus stops on San Ramon Valley Boulevard. This resulted in a lot of pedestrian activity between the PNR and San Ramon Valley Boulevard.

County Connection transit stops with limited transit services are located just outside the PNR on Bollinger Canyon Road and San Ramon Valley Boulevard. Currently, only a school route serves the streets around the PNR. Prior to the COVID pandemic, Route 35 additionally provided service in this area. **Figure 29** shows the park-and-ride lot.



Figure 29. Bollinger Canyon Park and Ride

Issues and Opportunities

The Bollinger Canyon mobility hub can serve as a gateway to the I-680 corridor for the Bishop Ranch area and local residential and local employment centers. **Figure 30** identifies opportunities and constraints and key destinations around the mobility hub:

- A. Enhance connectivity from the mobility hub to City Center (0.4 miles), Bishop Ranch, and the Iron Horse Regional Trail (0.7 miles) to the east of the mobility hub. Those connections are currently constrained by limited bicycle and pedestrian connections across I-680 and high vehicle speeds through the interchange.
- B. County Connection does not serve the mobility hub directly. Bus stops (currently limited to school service only) are located on Bollinger Canyon Road and San Ramon Valley Road.
- C. Currently, there are no dedicated bicycle facilities on Bollinger Canyon Road, which is a high-volume arterial with limited crossings.
- D. Improve connectivity to Chevron's campus at Bishop Ranch, which has over 3,500 employees.
- E. Assess opportunities to provide a variety of mobility hub services to access the site to reduce pre-pandemic parking overflow challenges.
- F. Incorporate transit signal priority (TSP) at traffic signals at key access points and along regional access pathways.

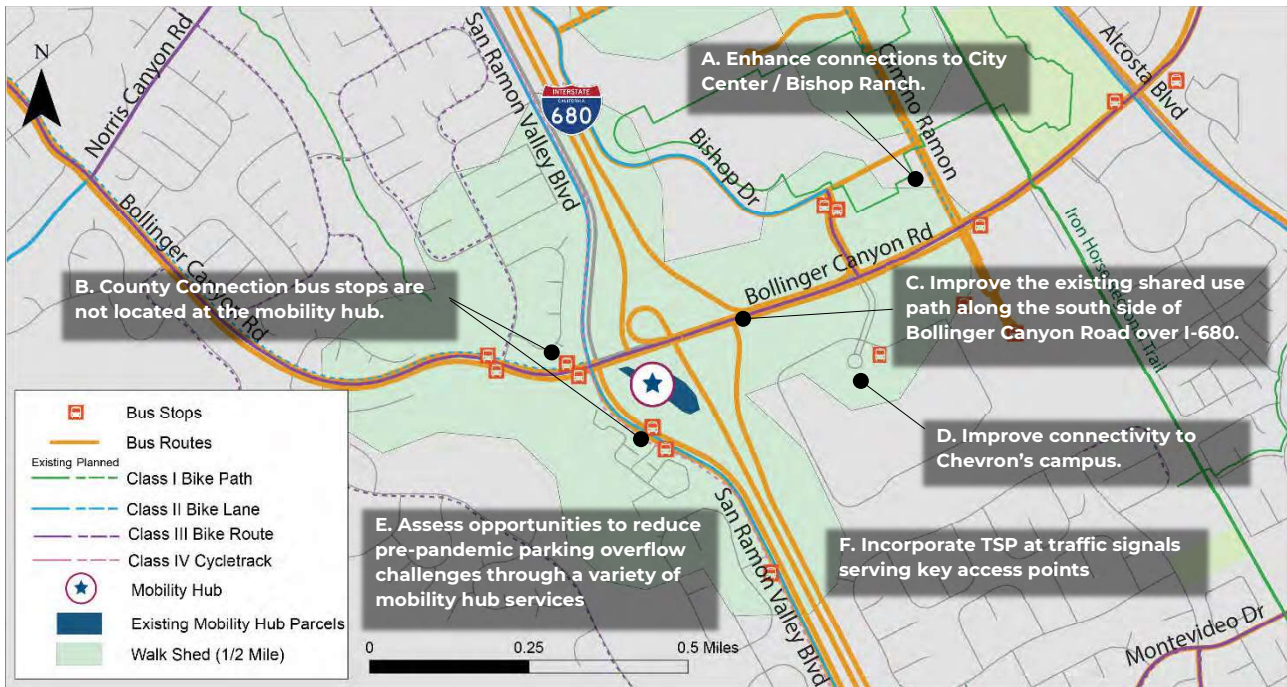


Figure 30. Bollinger Canyon Mobility Hub Area Opportunities and Constraints

Within the station area, there are opportunities to foster a more integrated suite of mobility services, see **Figure 31**.

- There is no direct access into the mobility hub from westbound Bollinger Canyon Road. This driveway is right-in/right-out only from eastbound Bollinger Canyon Road.
- Improve sidewalks, crosswalks, and pedestrian wayfinding into the mobility hub from Bollinger Canyon Road.
- Identify ways to provide enhanced pedestrian and bicycle warning treatments, such as Rectangular Rapid Flashing Beacons (RRFBs) at the north and southbound I-680 on-ramps
- Efficiently connect PNR to I-680 express bus services, such as transit signal priority and/or in-line stops.
- Add lighting and improve safety features.
- Opportunities to improve connectivity through the shopping center to the west of the site to access San Ramon Valley Road.
- Provide bike parking facilities at the mobility hub.
- Opportunities to reconfigure and/or expand the PNR lot to accommodate transit, pick-up/drop-off, and other mobility hub services.

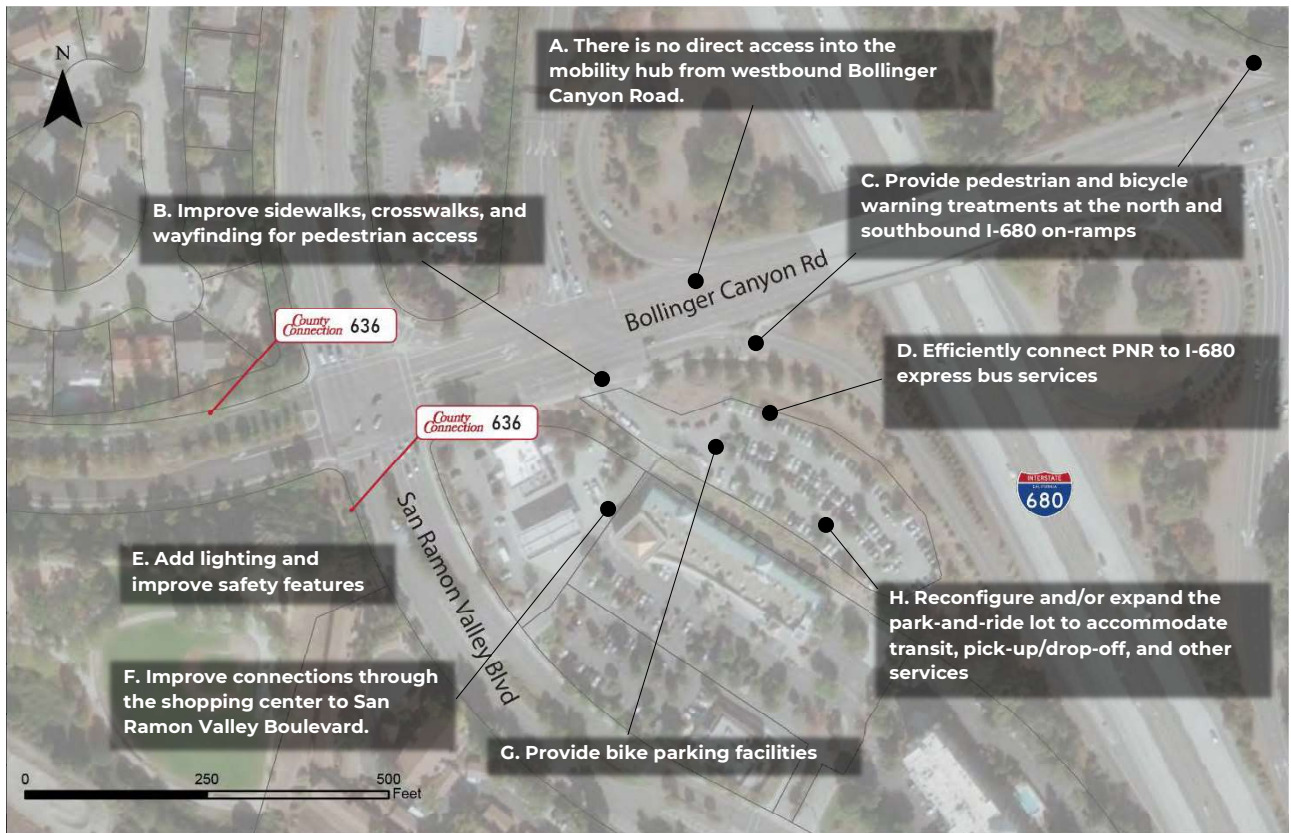


Figure 31. Bollinger Canyon Mobility Hub Site Opportunities and Constraints

Summary and Next Steps

This report summarizes the overall transportation themes and opportunities for each of the shared mobility hub sites along I-680. The shared mobility hub sites provide the potential to serve a broad spectrum of mobility needs within the I-680 corridor, with no two hub areas alike in terms of the transportation patterns, demographics, and mobility opportunities. Some mobility hub sites are located in transit-rich areas with supporting bicycle and pedestrian infrastructure, while others currently provide parking for commuters but lack other essential mobility hub amenities. Each of the sites has a range of needs to improve their accessibility, usability, and community benefit. Location-specific opportunities and constraints were identified for each of the mobility hub sites. This information will be utilized to identify specific mobility services and improvements that can be considered to upgrade the existing facilities into shared mobility hubs. The next step for this study is to develop shared mobility hub concepts at each of the identified sites, consistent with the shared mobility hub typologies.

Appendices

Mobility Hub Factsheets



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MARTINEZ AMTRAK STATION

Location Overview

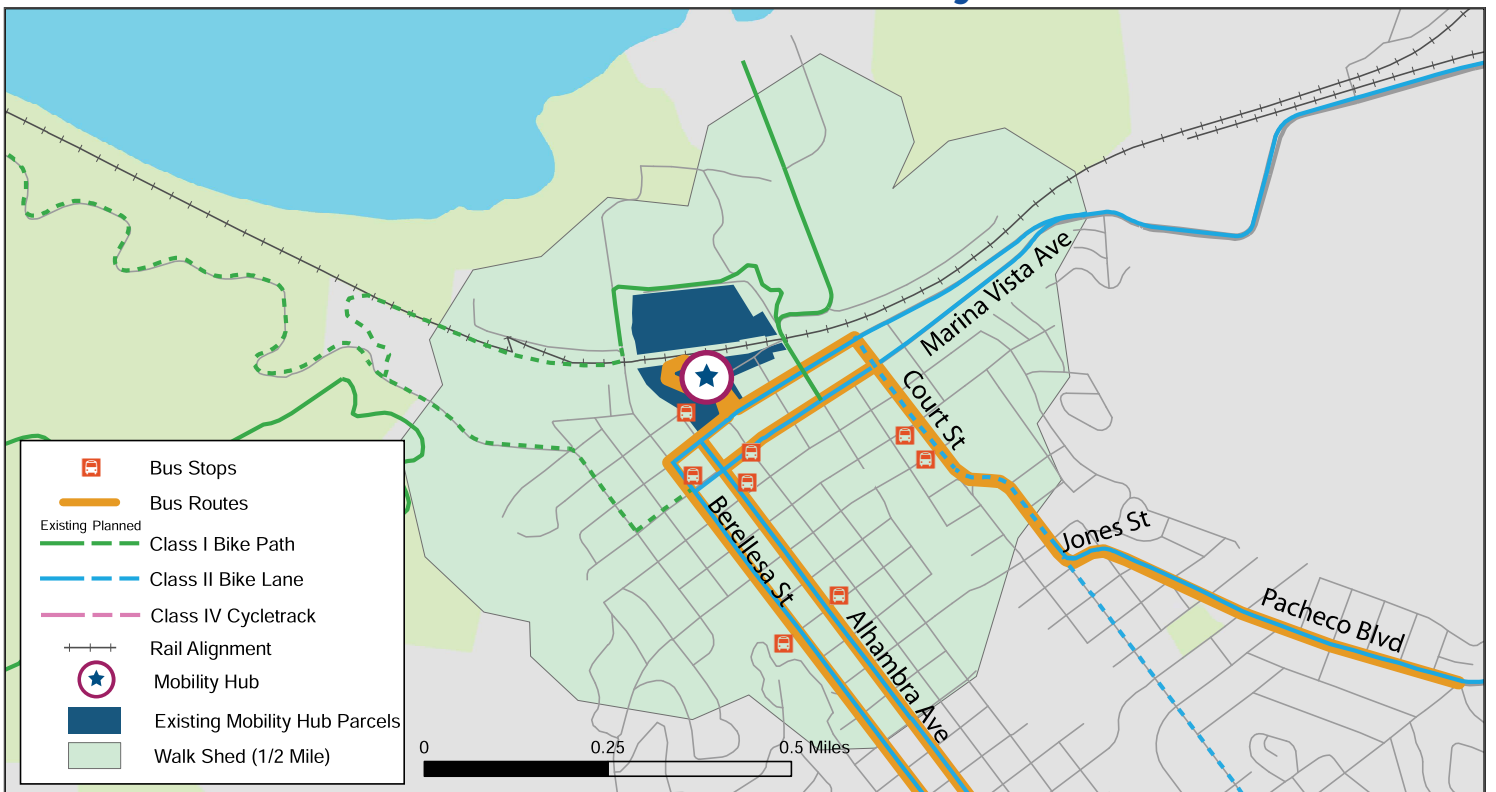
The Martinez Amtrak Station is located at the west end of downtown Martinez. The mobility hub is served by the following rail services: Capitol Corridor, Coast Starlight, California Zephyr, and San Joaquins line. The station also includes seven bus bays served by Tri Delta Transit, County Connection, and WestCAT local bus routes.

The station has two parking lots, located on each side of the station platforms, including a recent parking lot expansion for shared-parking with the land uses to the north of the rail tracks. The two lots and the platforms are connected by a recently constructed pedestrian overcrossing.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MARTINEZ AMTRAK STATION

What Are the Demographics Around the Mobility Hub?

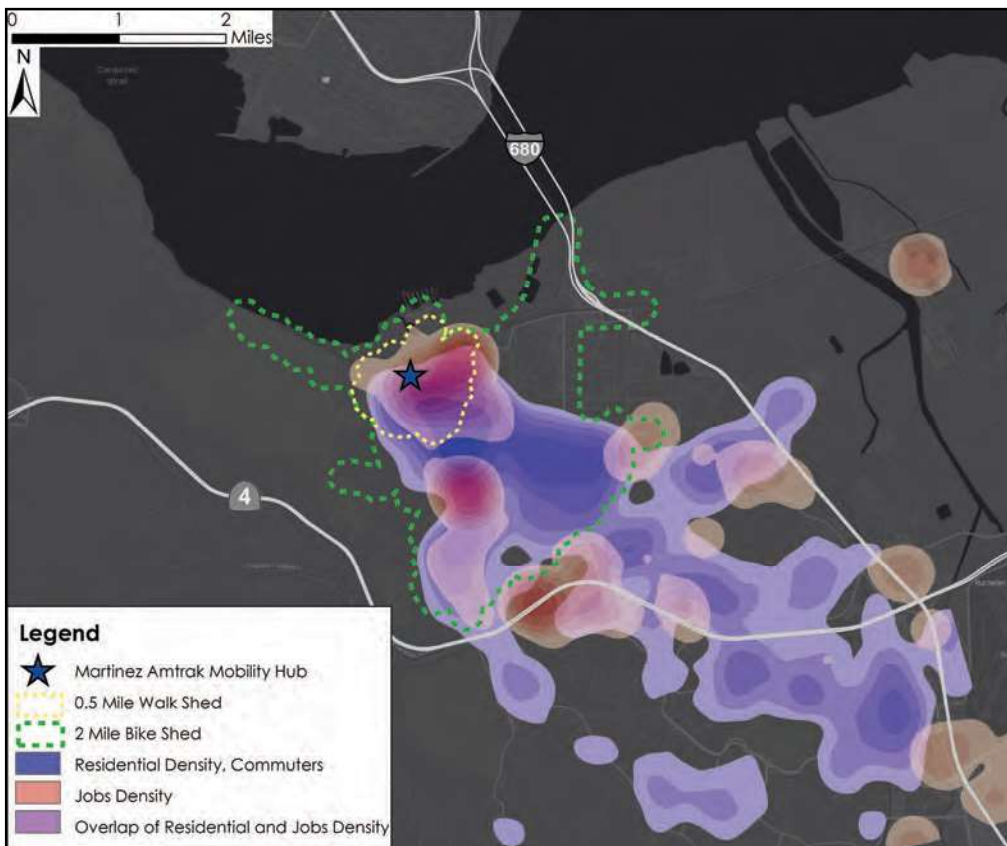
- 1,464 (10%) people below federal poverty line
- 1,767 (12%) people 65 or older
- 343 (6%) households without a vehicle
- 5,032 (33%) people of color

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	2,370	1,102
Bikeshed (2 mile)	15,314	6,163
Driveshed (Selected areas)	20,552	7,969

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



13,495
Jobs Within
2 Miles



6,968
Workplace
Commuters
Within 2 Miles

Source: LEHD, 2018





SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MARTINEZ AMTRAK STATION

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

2,095 Internal Trips to Mobility Hub Area



574 Trips Less Than a Mile to Mobility Hub Area



902 Trips 1-2 Miles to Mobility Hub Area

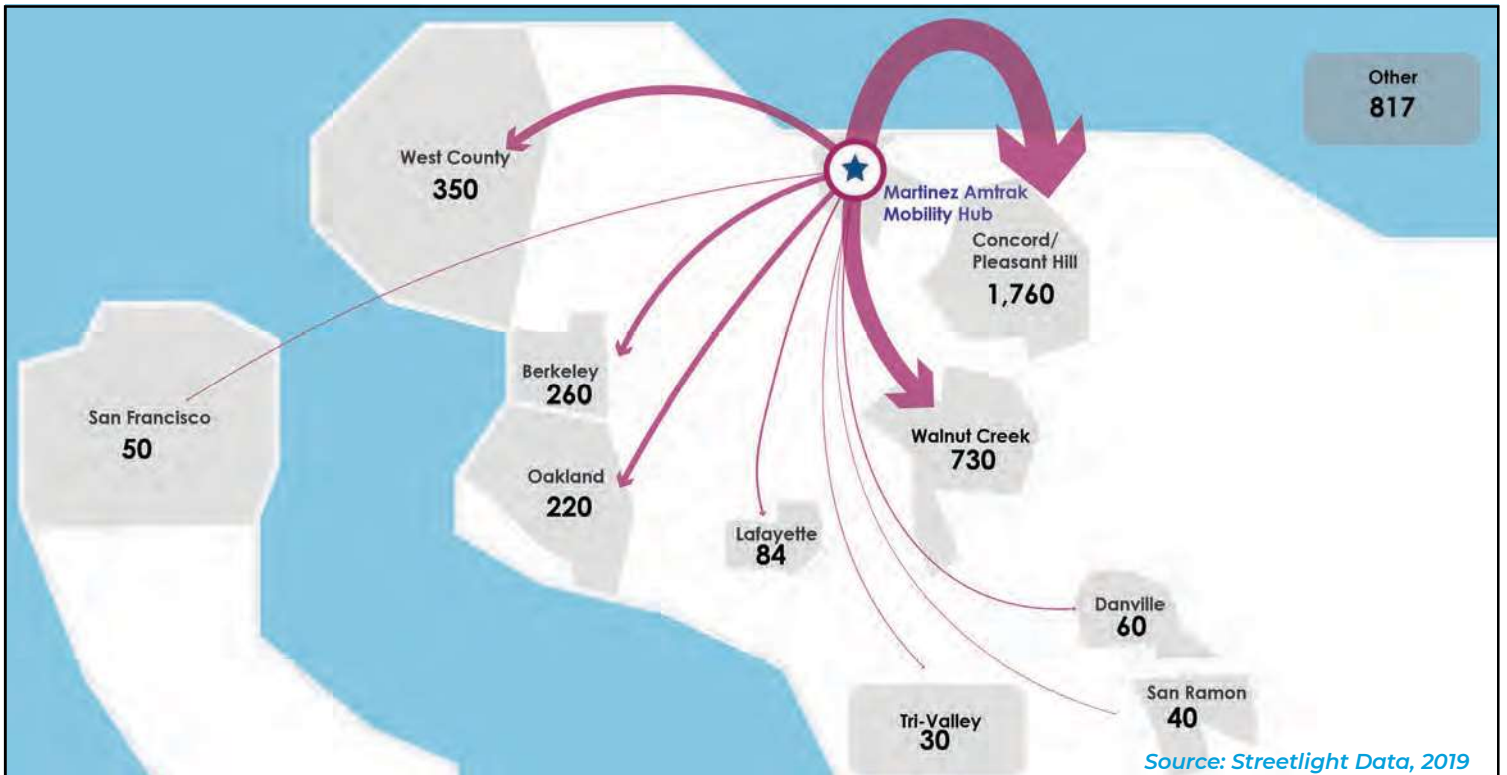


7,772 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



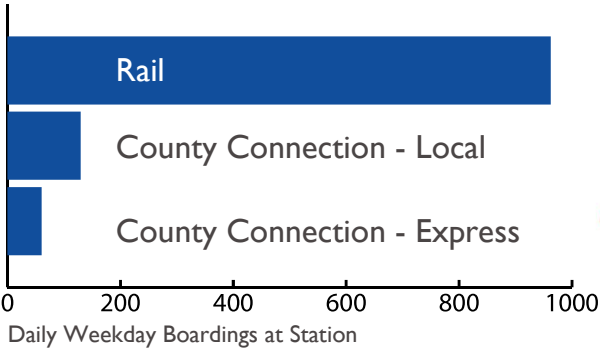
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MARTINEZ AMTRAK STATION

How Many People Are Using the Mobility Hub?



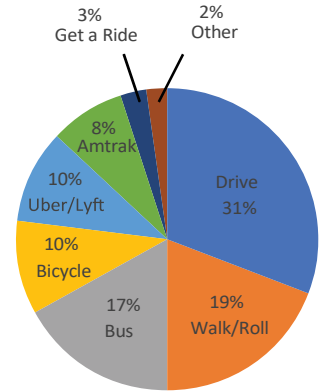
Source: County Connection, Amtrak 2019

Note: Tri-Delta and WestCAT ridership at station was not available

Transit Service Providers



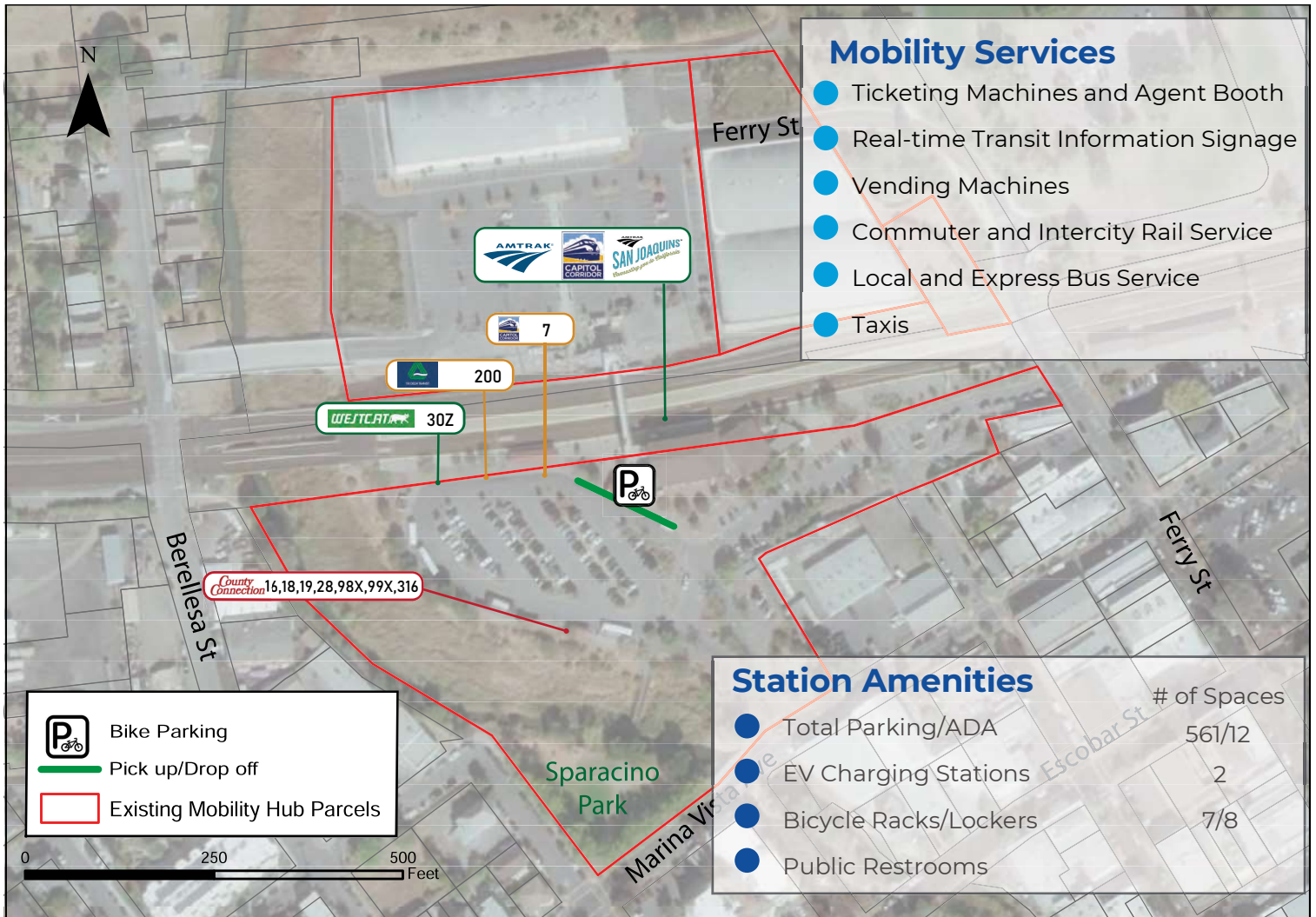
Existing Station Access



Source:

Downtown Martinez Community-Based Transportation Plan, 2019

Facility Map





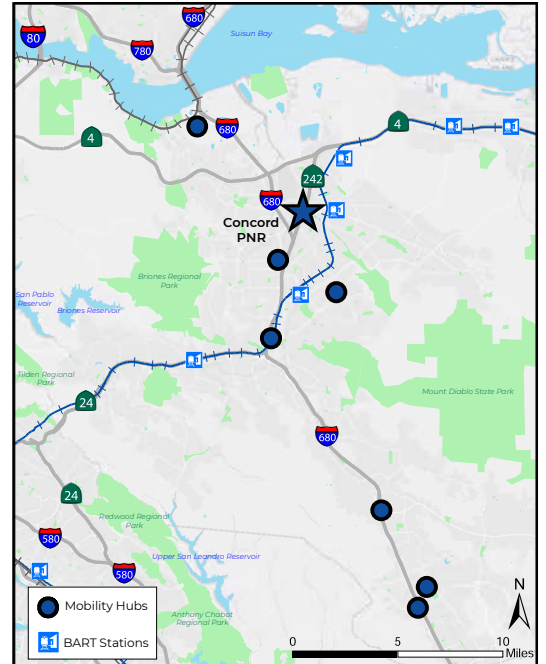
SHARED MOBILITY HUBS

HUB SITE FACT SHEET: CONCORD PARK-AND-RIDE

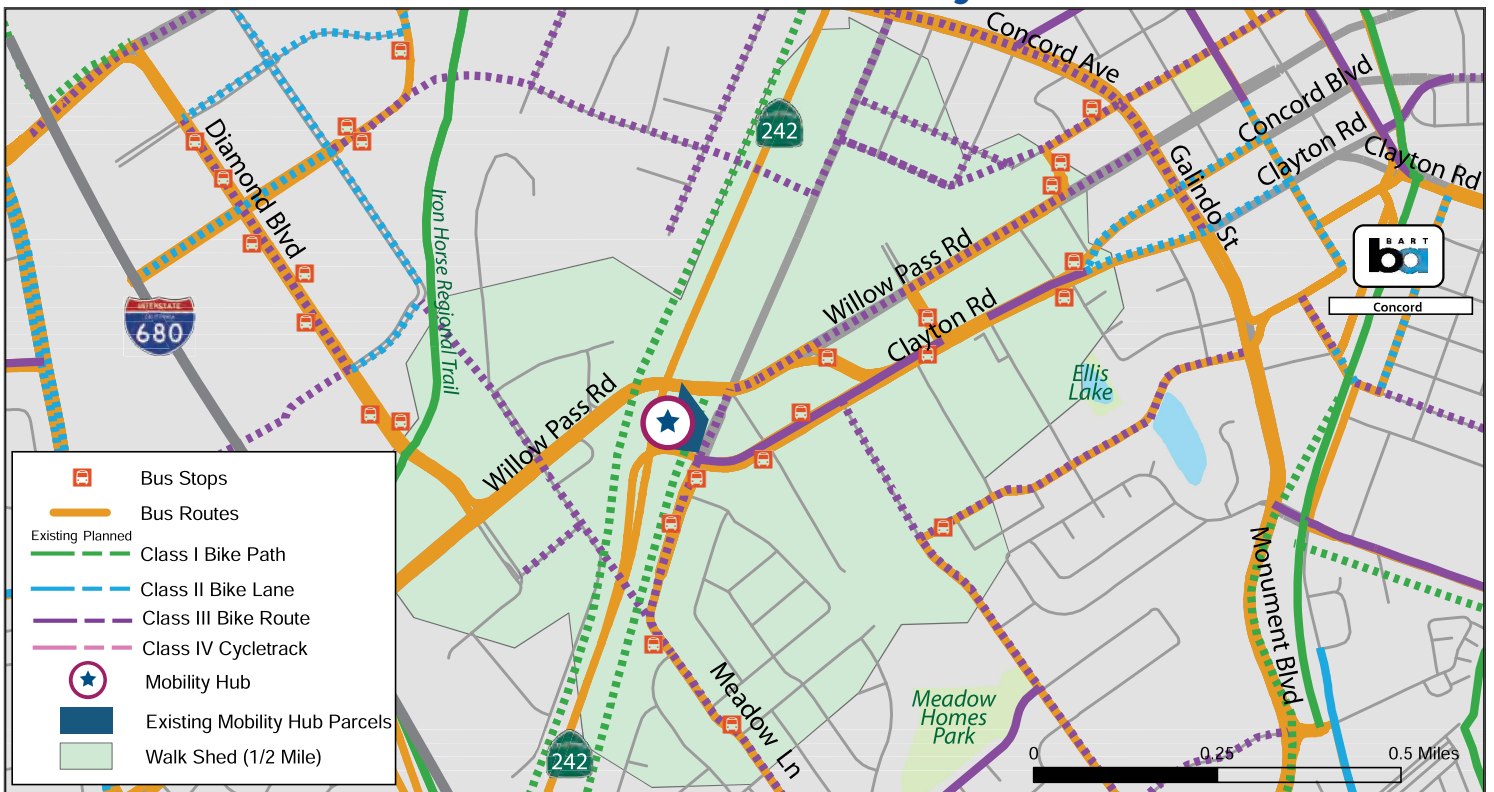
Location Overview

The Concord Park-and-Ride is bounded by Willow Pass Road, Market Street, State Route (SR) 242 and freeway ramps. It is located entirely on Caltrans property. Pedestrian access is provided to Market Street. The park-and-ride is close to many retail and residential areas on either side of SR 242. The park-and-ride has 45 public parking spaces. While it is not directly served by existing bus routes, several bus stops are located a short walk away.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection





SHARED MOBILITY HUBS

HUB SITE FACT SHEET: CONCORD PARK-AND-RIDE

What Are the Demographics Around the Mobility Hub?

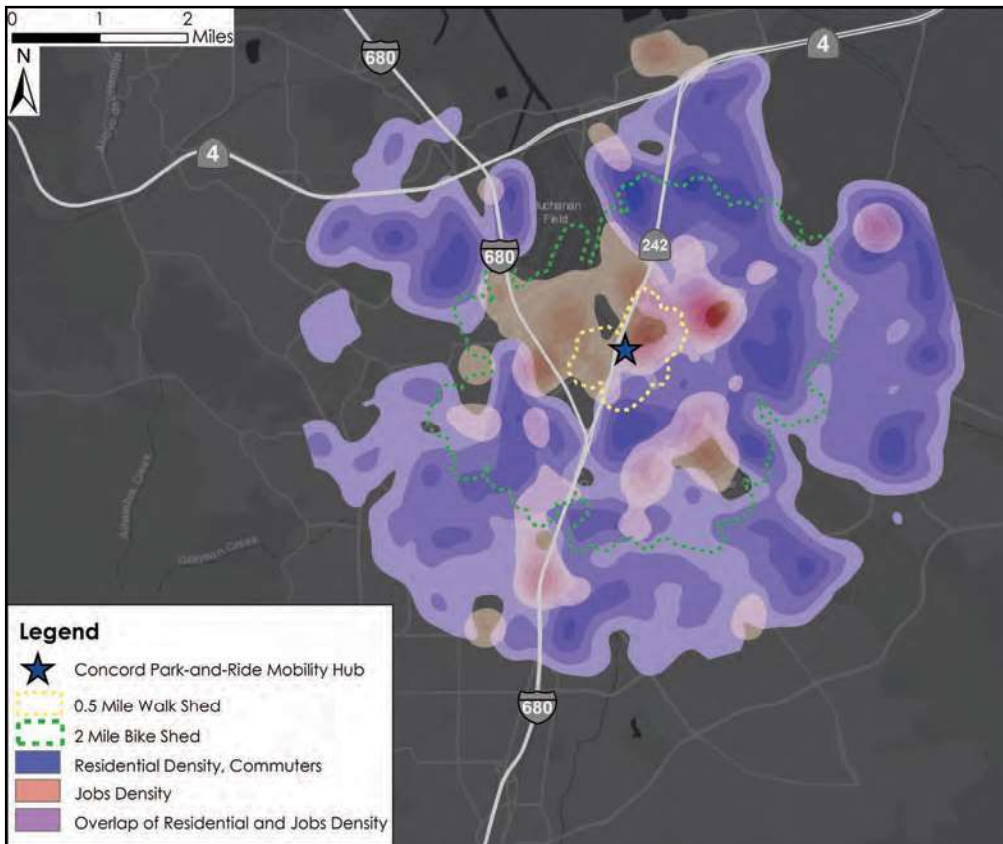
- 8,807 (29%) people below federal poverty line
- 6,768 (12%) people 65 or older
- 1,765 (8%) households without a vehicle
- 37,588 (65%) people of color

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	6,489	2,576
Bikeshed (2 mile)	58,167	21,216
Driveshed (Selected areas)	22,051	7,740

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



43,041
Jobs Within
2 Miles



27,130
Workplace
Commuters
Within 2 Miles

Source: LEHD, 2018

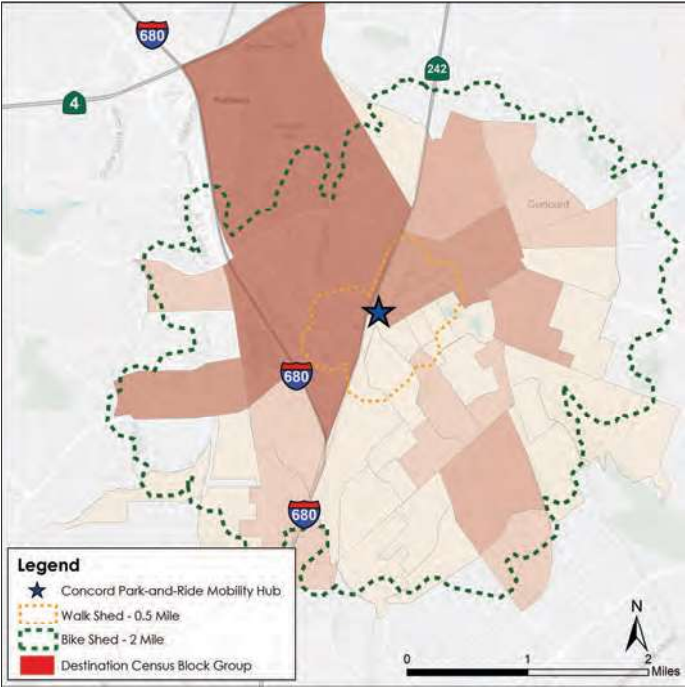




SHARED MOBILITY HUBS

HUB SITE FACT SHEET: CONCORD PARK-AND-RIDE

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

11,575 Internal Trips to Mobility Hub Area



2,586 Trips Less Than a Mile to Mobility Hub Area



4,099 Trips 1-2 Miles to Mobility Hub Area

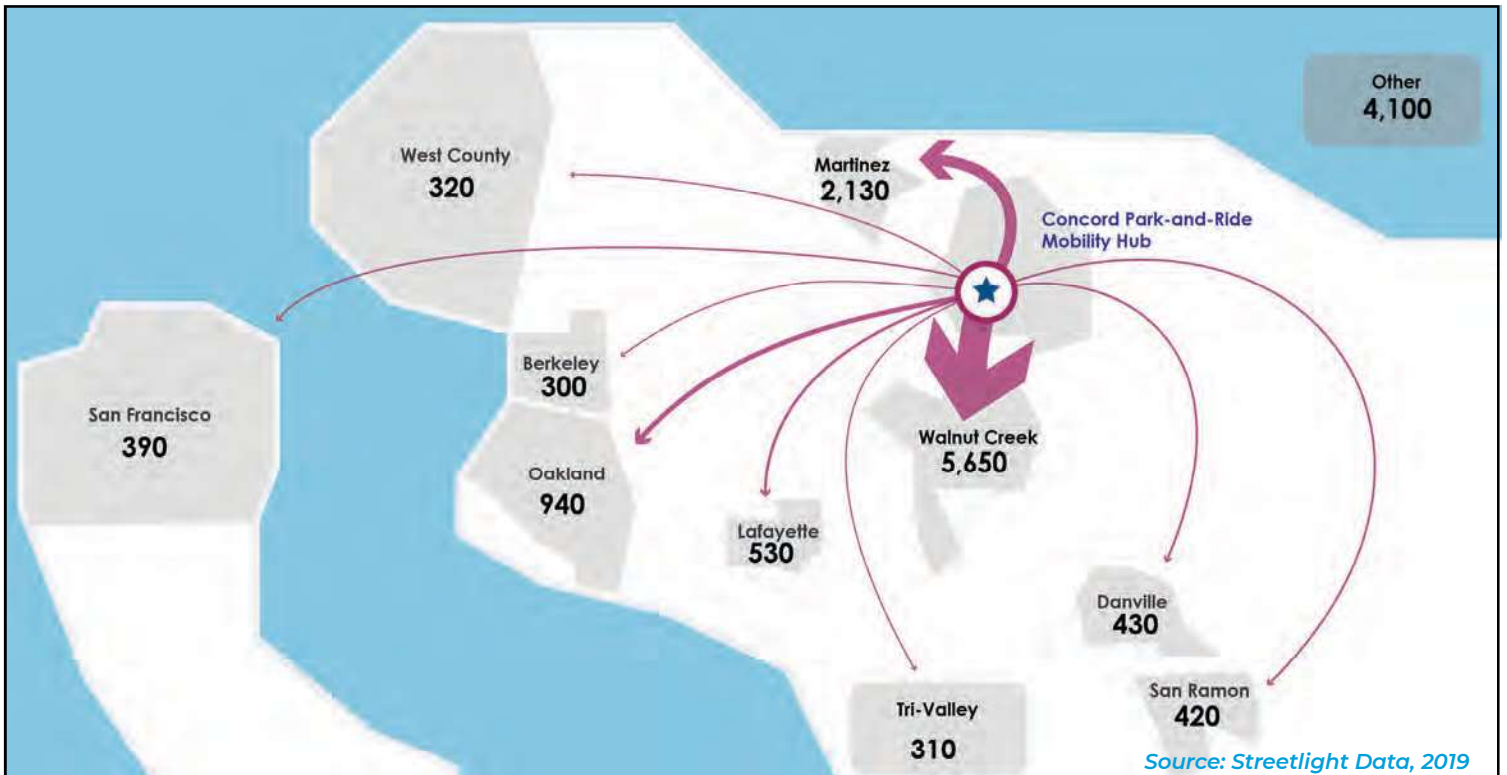


35,334 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



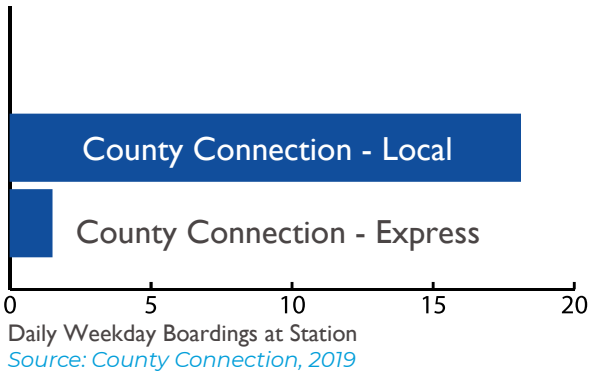
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: CONCORD PARK-AND-RIDE

How Many People Are Using Transit at the Mobility Hub?



Transit Service Providers



Facility Map





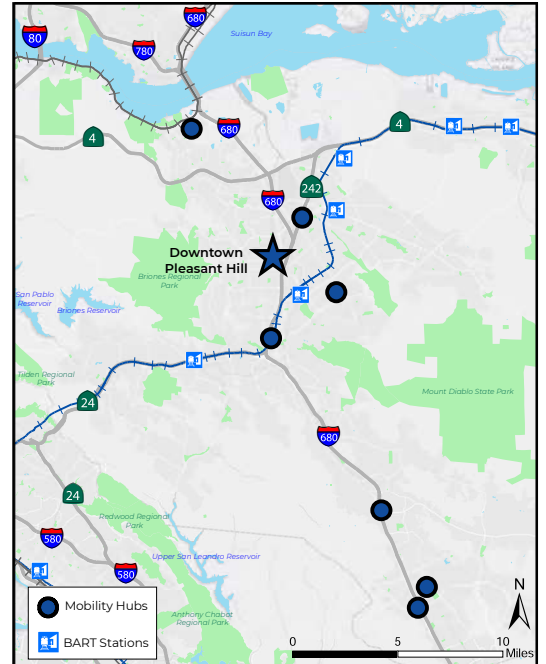
SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DOWNTOWN PLEASANT HILL

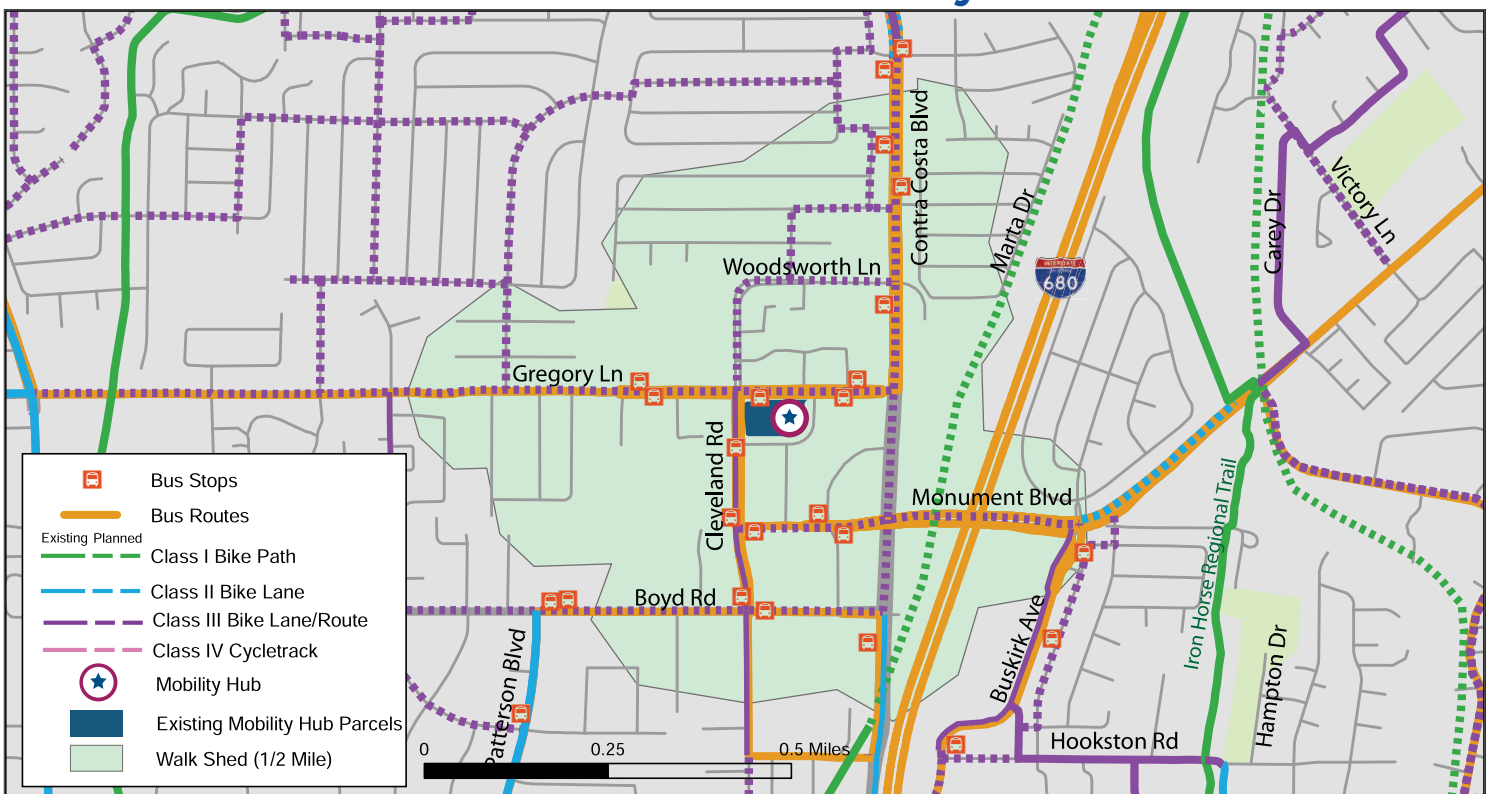
Location Overview

The Downtown Pleasant Hill Mobility Hub is proposed for a location near City Hall at the southeast corner of Gregory Lane and Cleaveland Road. The area currently consists of the City Hall building, two municipal lots, and an adjacent park. The specific location for mobility hub features will be determined as part of this study. Nearby are Pleasant Hill Park, the Downtown Pleasant Hill Shopping Mall, and surface and structured parking supporting commercial uses. The mobility hub area is served by County Connection bus routes on both Cleaveland Road and Gregory Lane. EV charging and bike racks are located at City Hall and at several locations in the vicinity.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DOWNTOWN PLEASANT HILL

What Are the Demographics Around the Mobility Hub?

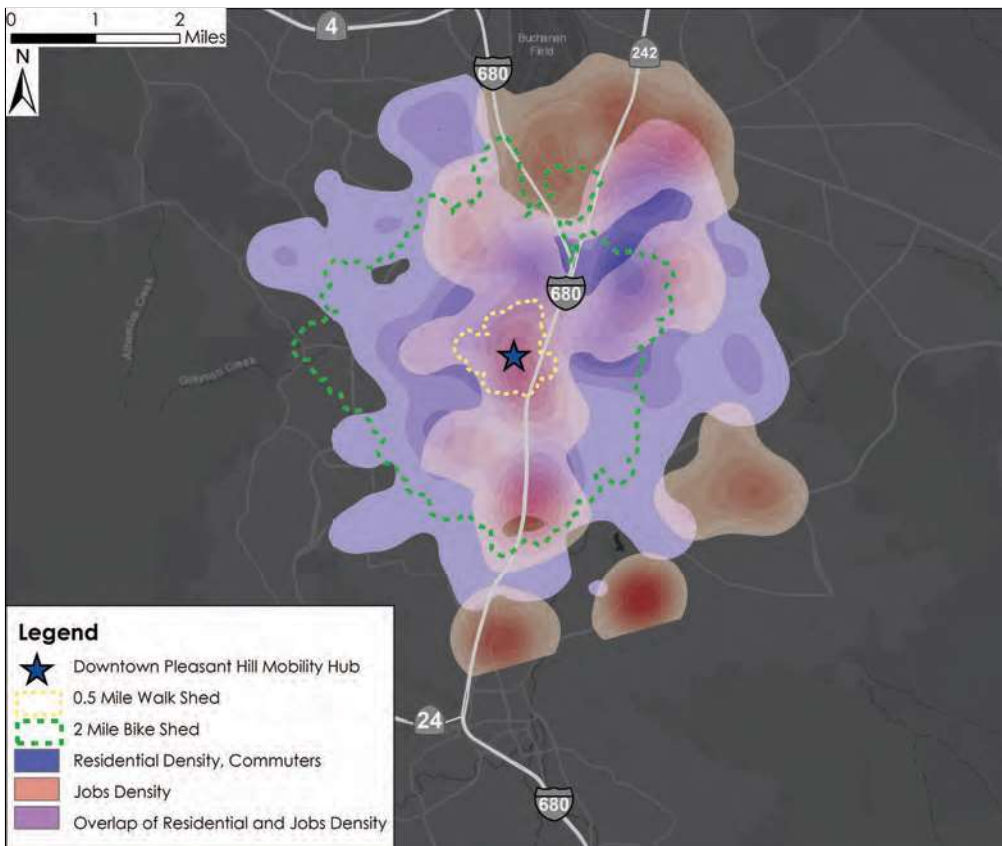
- 4,713 (20%) people below federal poverty line
- 6,062 (13%) people 65 or older
- 1,452 (8%) households without a vehicle
- 23,287 (48%) people of color

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	4,184	1,783
Bikeshed (2 mile)	48,324	19,250
Driveshed (Selected areas)	33,981	13,360

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



32,946
Jobs Within
2 Miles



23,582
Workplace
Commuters
Within 2 Miles

Source: LEHD, 2018

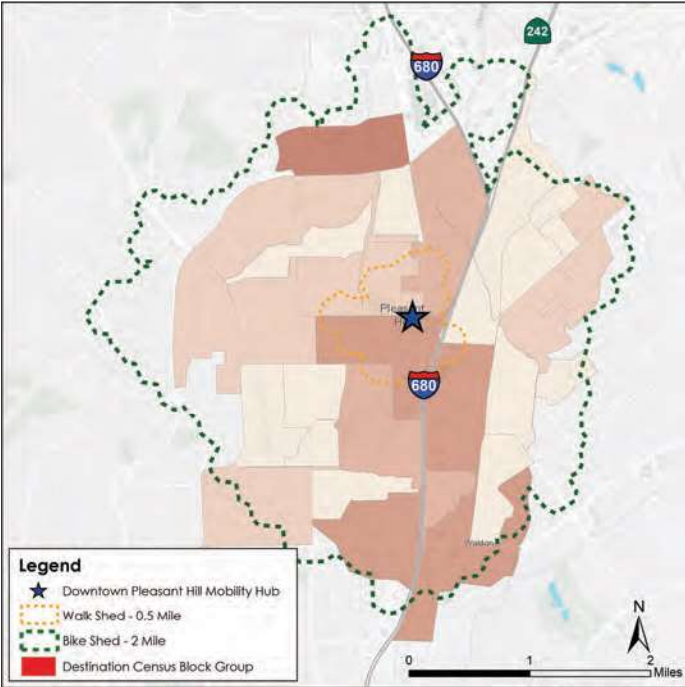




SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DOWNTOWN PLEASANT HILL

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

6,699 Internal Trips to Mobility Hub Area



773 Trips Less Than a Mile to Mobility Hub Area



1,494 Trips 1-2 Miles to Mobility Hub Area

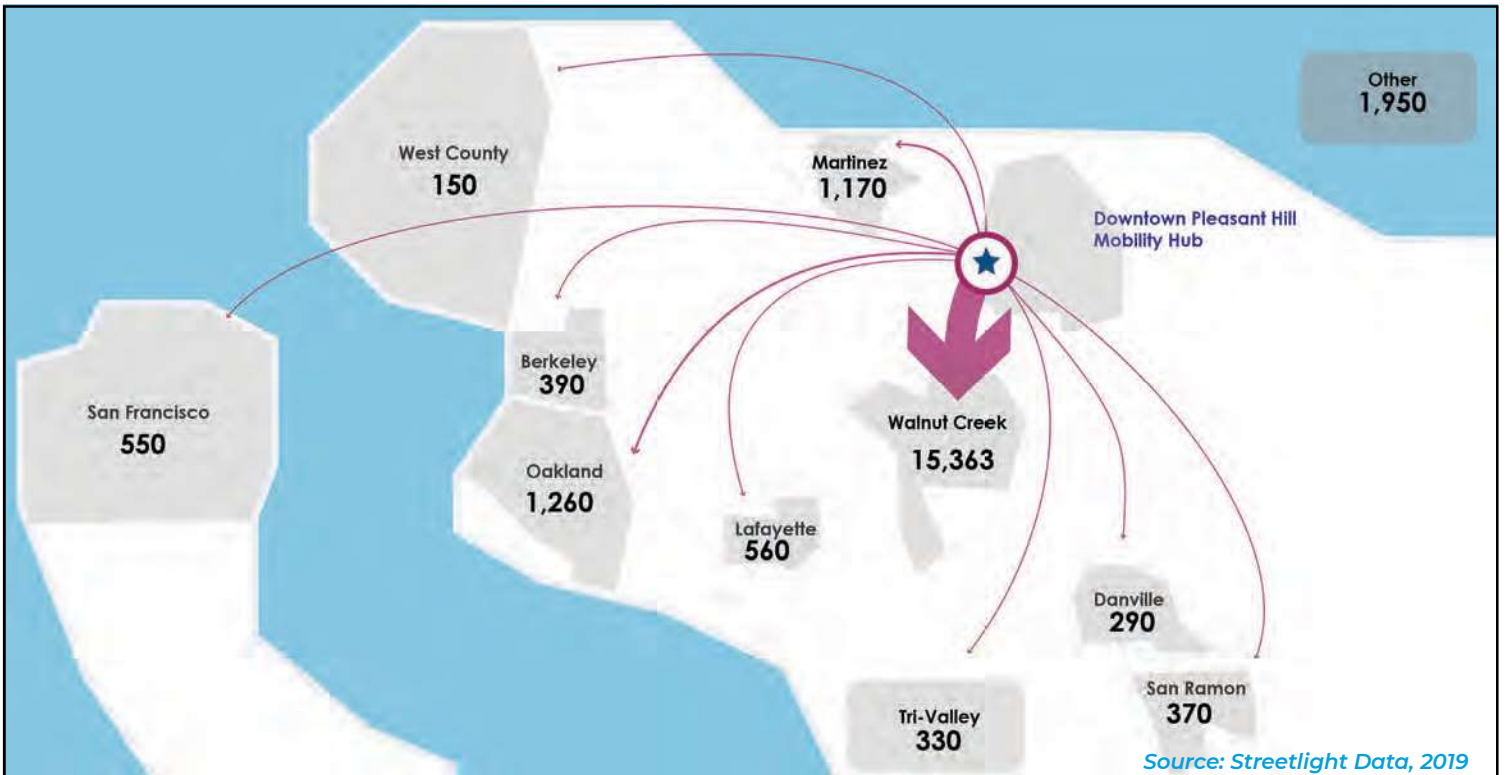


20,293 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



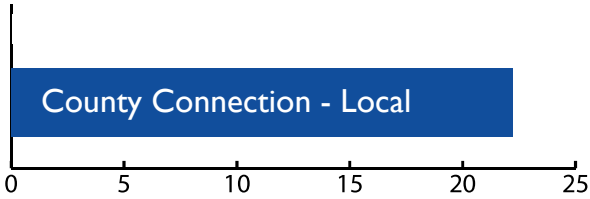
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DOWNTOWN PLEASANT HILL

How Many People Are Using Transit at the Mobility Hub?



Daily Weekday Boardings at Station

Source: County Connection, 2019

Transit Service Providers



Facility Map





SHARED MOBILITY HUBS

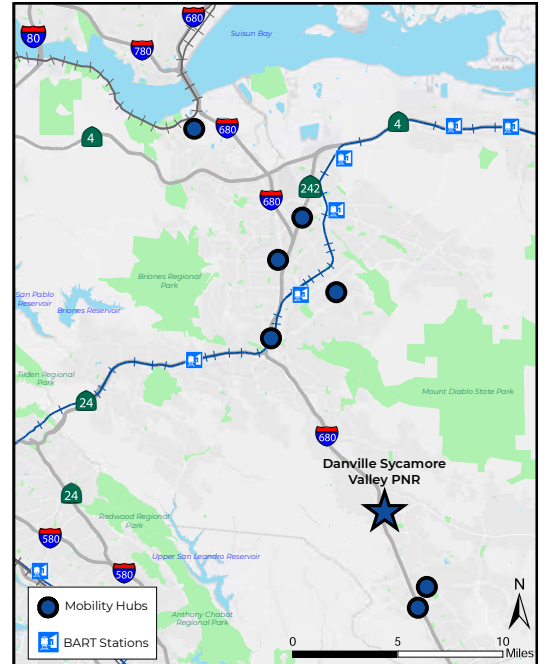
HUB SITE FACT SHEET: DANVILLE SYCAMORE VALLEY PARK-AND-RIDE

Location Overview

The Danville Sycamore Valley Park-and-Ride is located in the northeast quadrant of the I-680 and Sycamore Valley Road interchange. The lot is owned and maintained by the Town of Danville. This Mobility Hub is currently served by five County Connection routes that connect to other regional rail services such as BART, ACE Train, and County Connection routes. The Mobility Hub primarily serves residential neighborhoods and local shopping centers on both sides of I-680. The Hub is also adjacent to the Iron Horse Regional Trail.

The Park-and-Ride has 240 public parking spaces. The lot also provides bike racks and bike lockers.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DANVILLE SYCAMORE VALLEY PARK-AND-RIDE

What Are the Demographics Around the Mobility Hub?

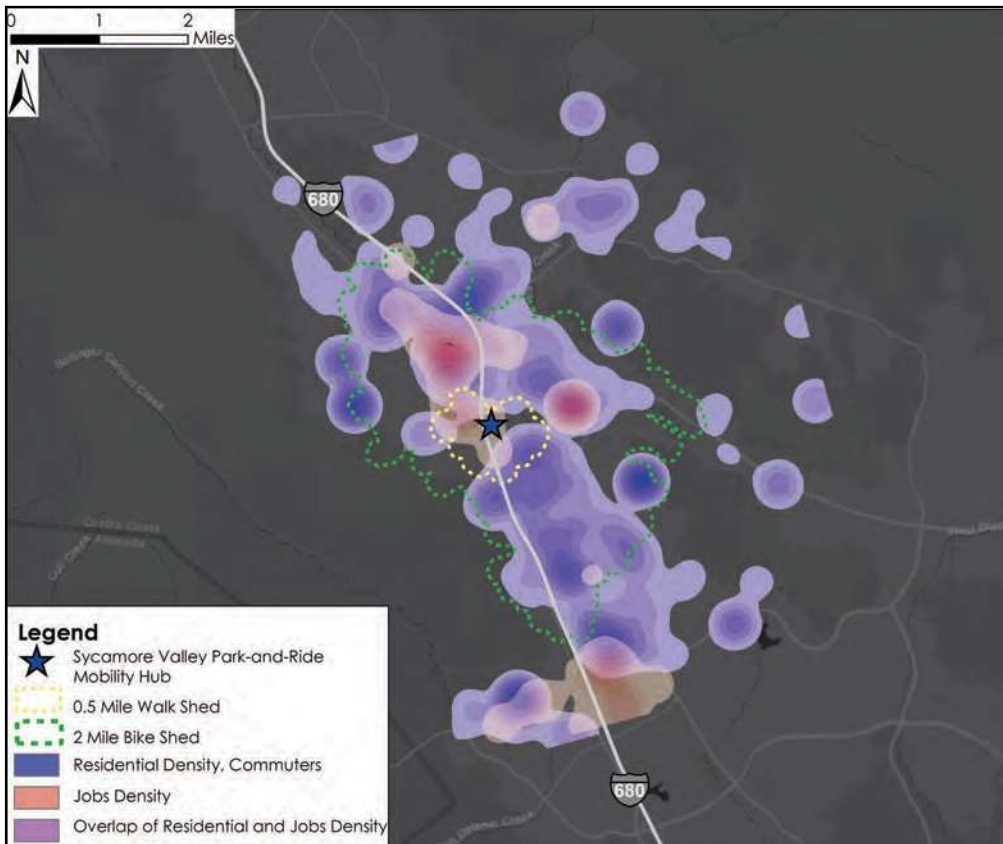
- 653 (11%) people below federal poverty line
- 2,627 (18%) people 65 or older
- 319 (6%) households without a vehicle
- 3,076 (21%) people of color

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	2,024	941
Bikeshed (2 mile)	14,689	5,407
Driveshed (Selected areas)	27,273	10,246

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



8,606
Jobs Within
2 Miles



8,801
Workplace
Commuters
Within 2 Miles

Source: LEHD, 2018

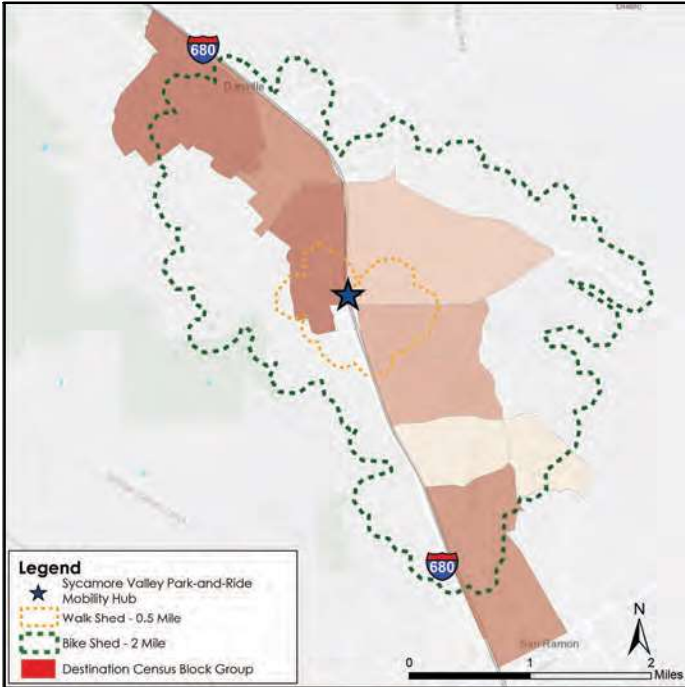




SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DANVILLE SYCAMORE VALLEY PARK-AND-RIDE

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

7,556 Internal Trips to Mobility Hub Area



989 Trips Less Than a Mile to Mobility Hub Area



1,582 Trips 1-2 Miles to Mobility Hub Area

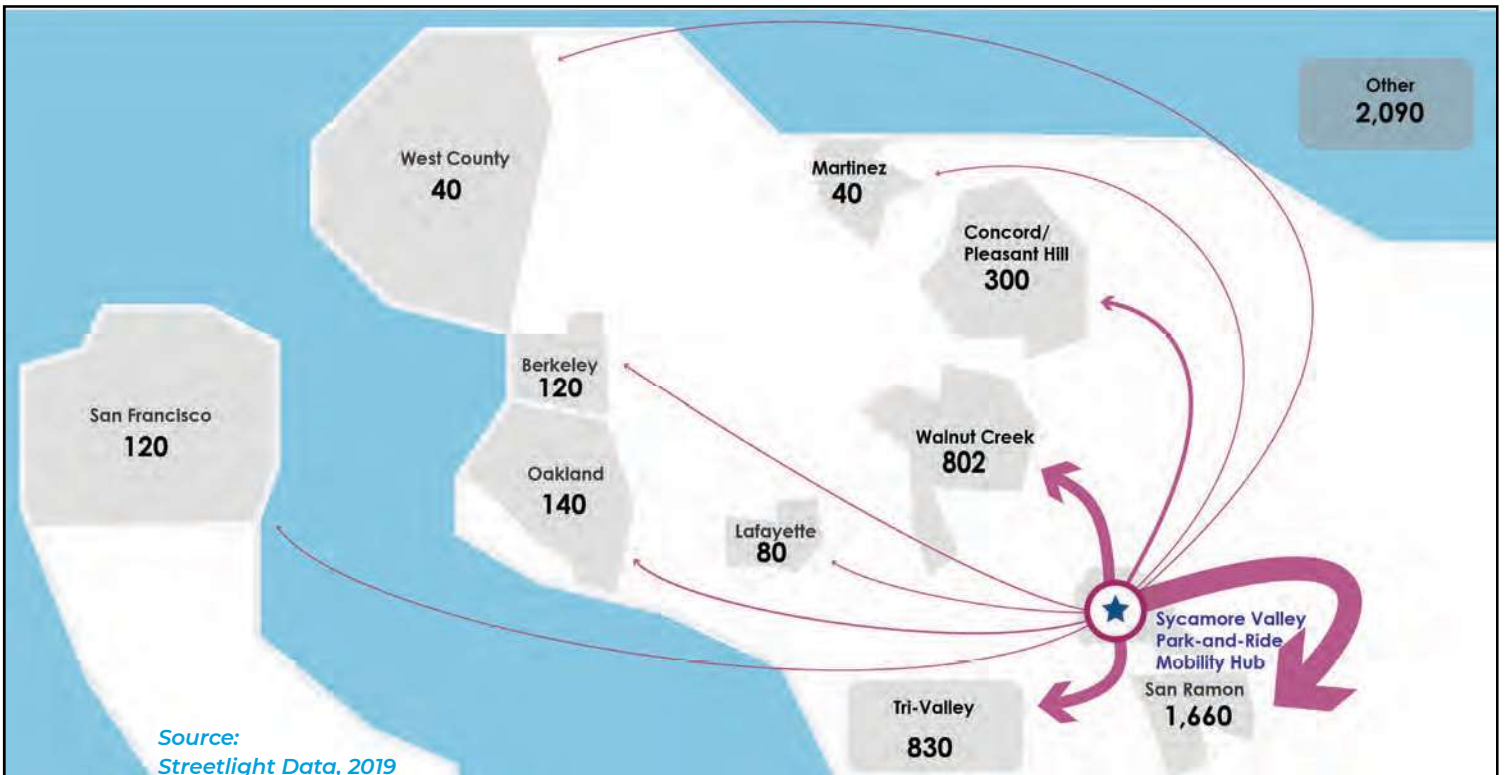


8,437 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



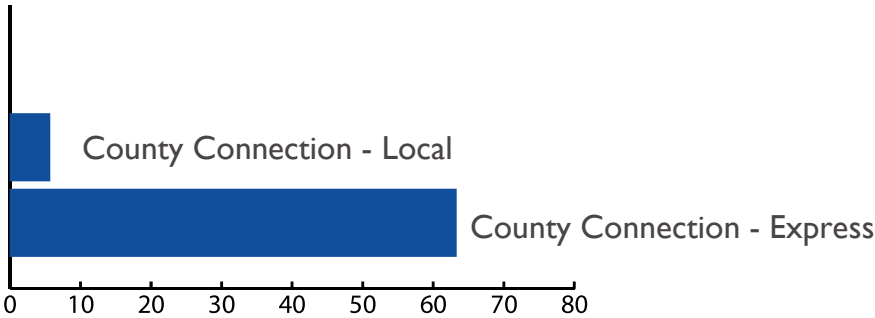
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: DANVILLE SYCAMORE VALLEY PARK-AND-RIDE

How Many People Are Using Transit at the Mobility Hub?



Daily Weekday Boardings at Station
Source: County Connection, 2019

Transit Service Providers



Facility Map





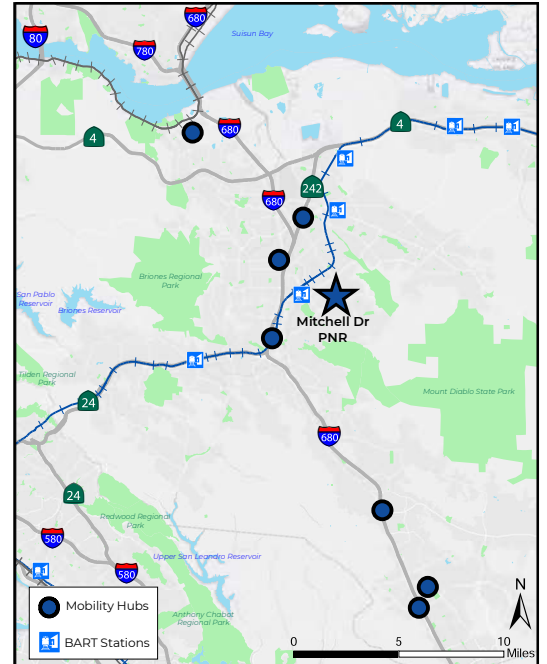
SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MITCHELL DRIVE PARK-AND-RIDE

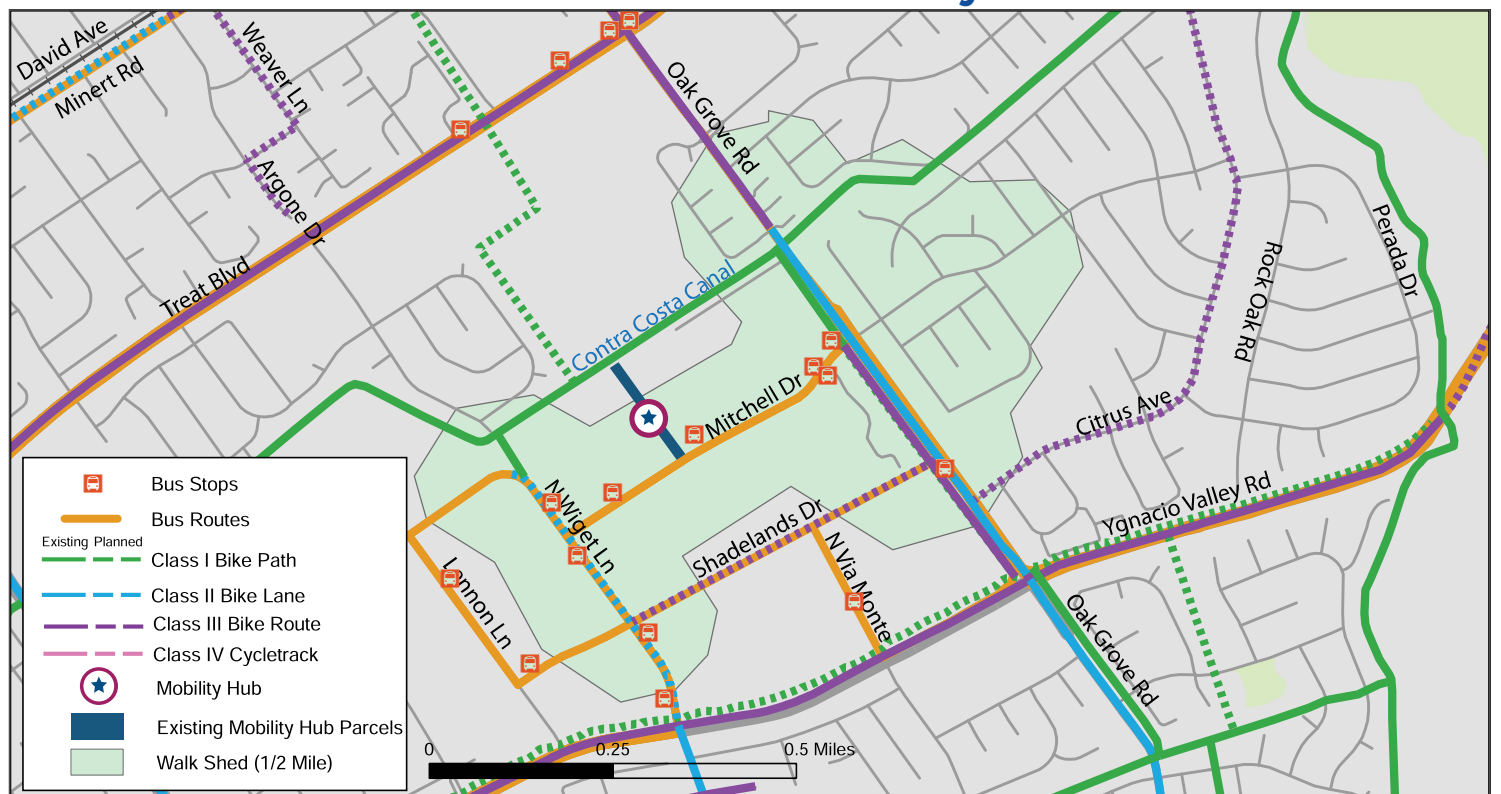
Location Overview

The Mitchell Drive Park-and-Ride is located in the Shadelands Business Park approximately 0.4 miles north of Ygnacio Valley Road and two miles east of Interstate 680. It is owned by the City of Walnut Creek. The park-and-ride is close to several large office buildings, the Contra Costa School of Performing Arts, shopping centers, senior housing, and other residential uses. Four County Connection bus routes stop on Mitchell Drive at the park-and-ride. The park-and-ride has 92 public parking spaces.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MITCHELL DRIVE PARK-AND-RIDE

What Are the Demographics Around the Mobility Hub?

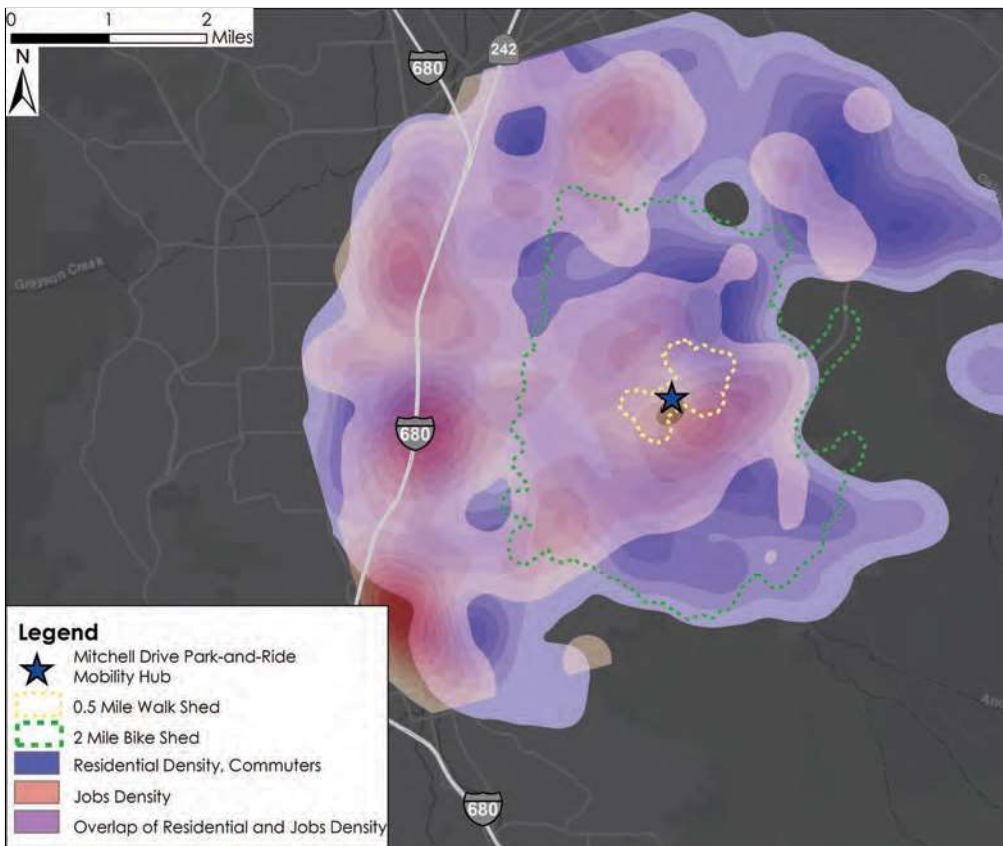
- 3,530 (15%) people below federal poverty line
- 7,210 (16%) people 65 or older
- 1,509 (7%) households without a vehicle
- 15,805 (35%) people of color

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	4,017	2,283
Bikeshed (2 mile)	45,208	20,341
Driveshed (Selected areas)	27,227	10,216

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



**18,697
Jobs Within
2 Miles**



**13,586
Workplace
Commuters
Within 2 Miles**

Source: LEHD, 2018

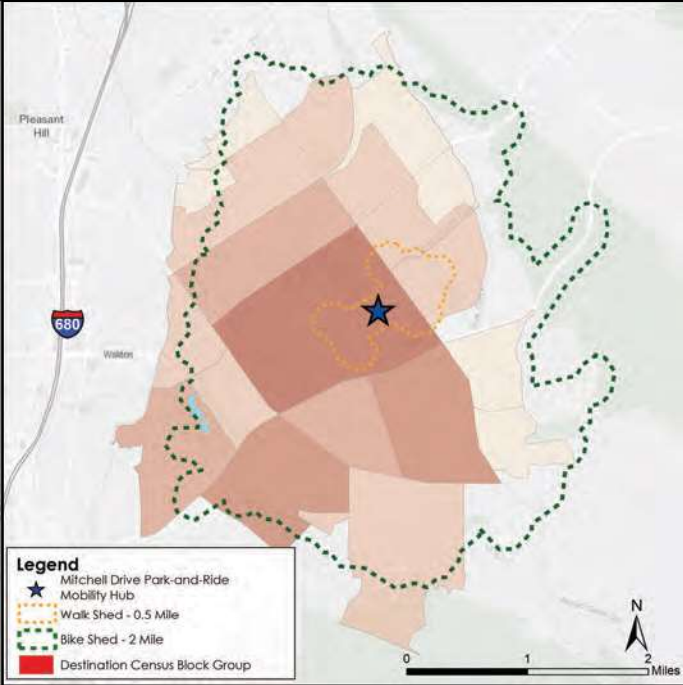




SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MITCHELL DRIVE PARK-AND-RIDE

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

5,446 Internal Trips to Mobility Hub Area



5,564 Trips Less Than a Mile to Mobility Hub Area



9,028 Trips 1-2 Miles to Mobility Hub Area

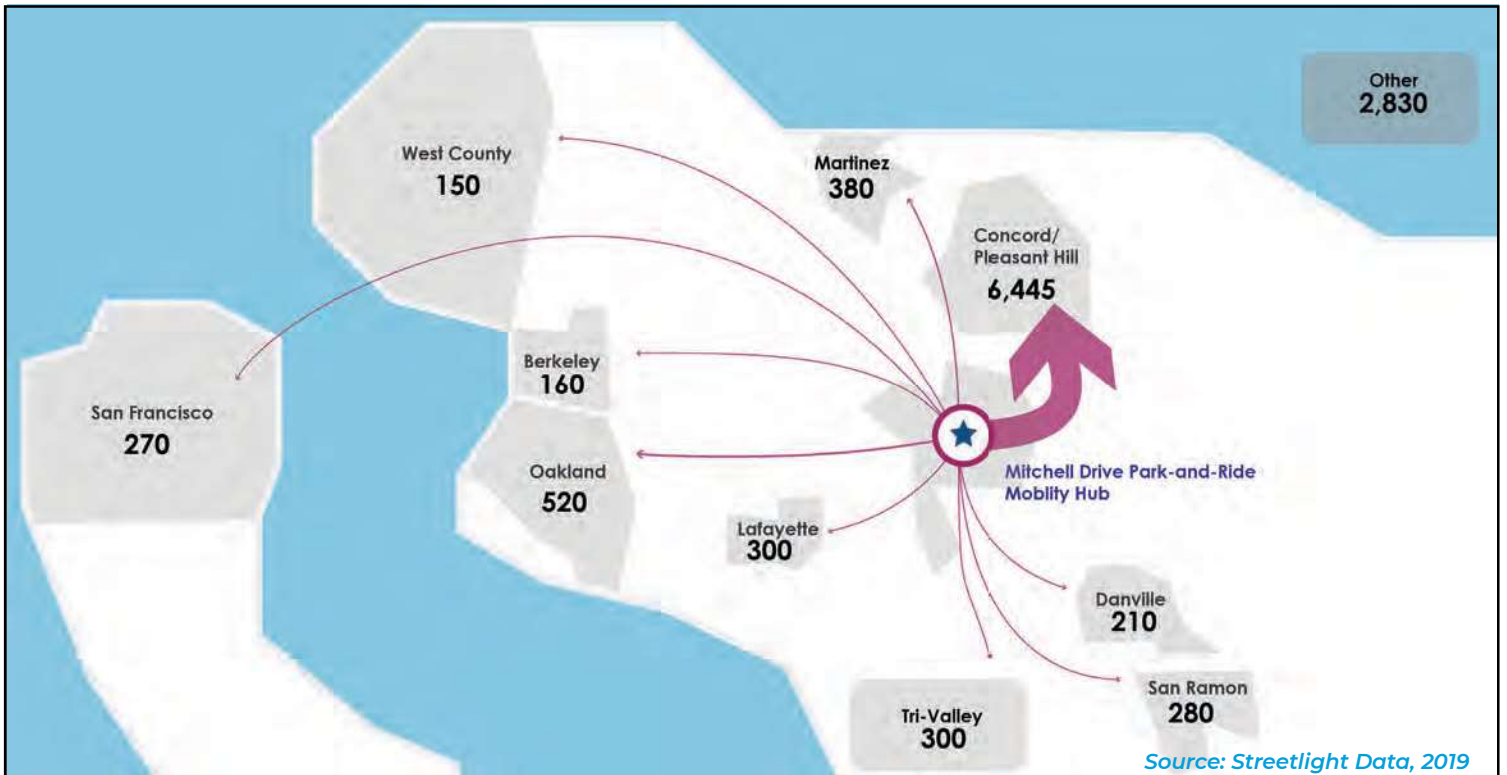


19,602 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



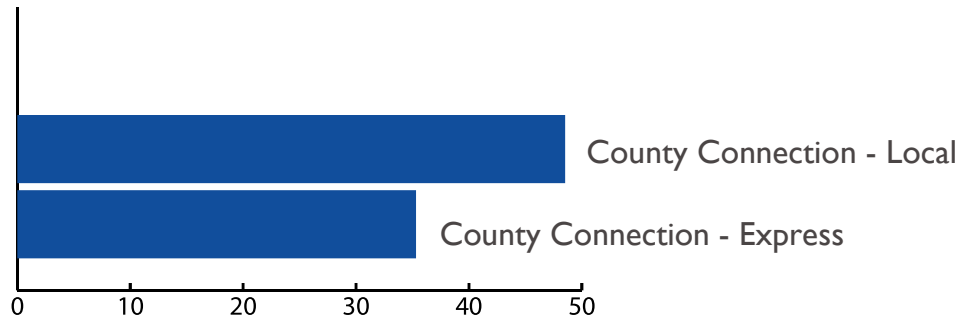
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: MITCHELL DRIVE PARK-AND-RIDE

How Many People Are Using Transit at the Mobility Hub?

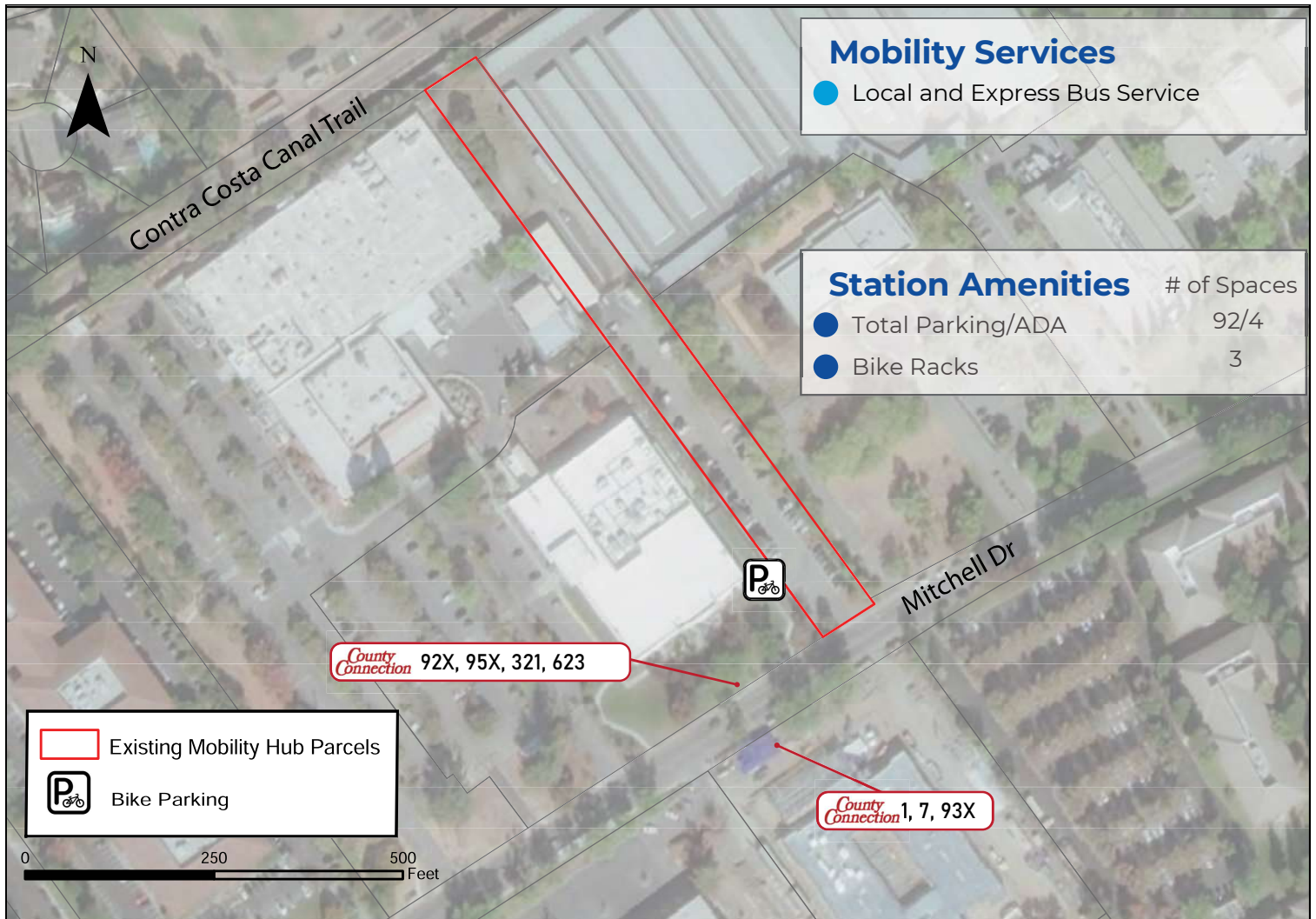


Daily Weekday Boardings at Station
Source: County Connection, 2019

Transit Service Providers



Facility Map





SHARED MOBILITY HUBS

HUB SITE FACT SHEET: WALNUT CREEK BART STATION

Location Overview

The Walnut Creek BART Station is located in northern downtown Walnut Creek, adjacent to Interstate 680. The station is currently being served by BART, County Connection, Solano Express, Tri Delta Transit, WestCAT, and LAVTA.

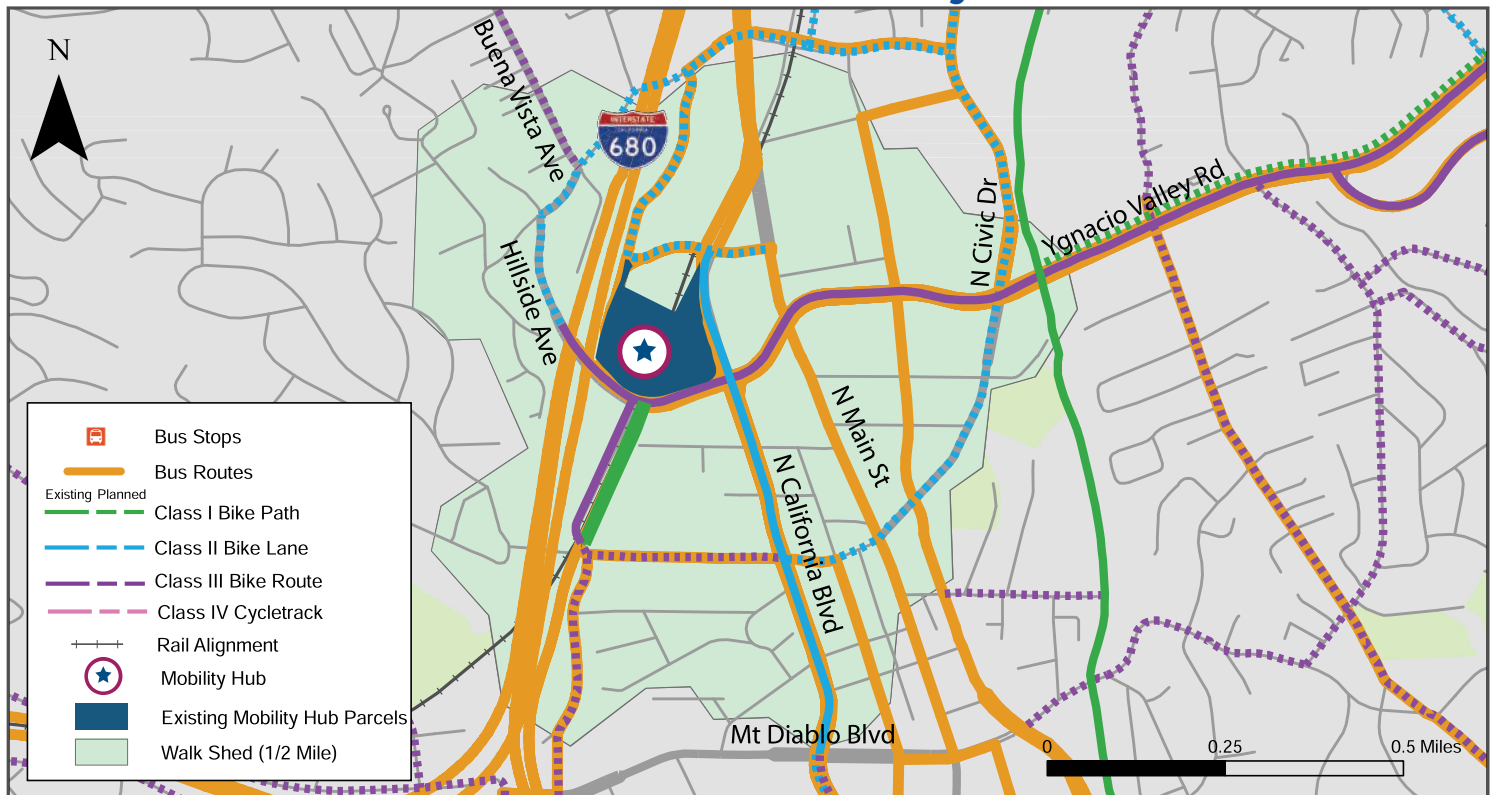
The mobility hub includes an elevated BART station, two parking garages (one privately owned and operated), and a bus transfer center underneath one of the garages.

A major transit oriented developed (TOD) is currently under construction at the station. Named the Walnut Creek Transit Village, the TOD will include 596 multi-family housing units and 27,000 square feet of retail space.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County





SHARED MOBILITY HUBS

HUB SITE FACT SHEET: WALNUT CREEK BART STATION

What Are the Demographics Around the Mobility Hub?

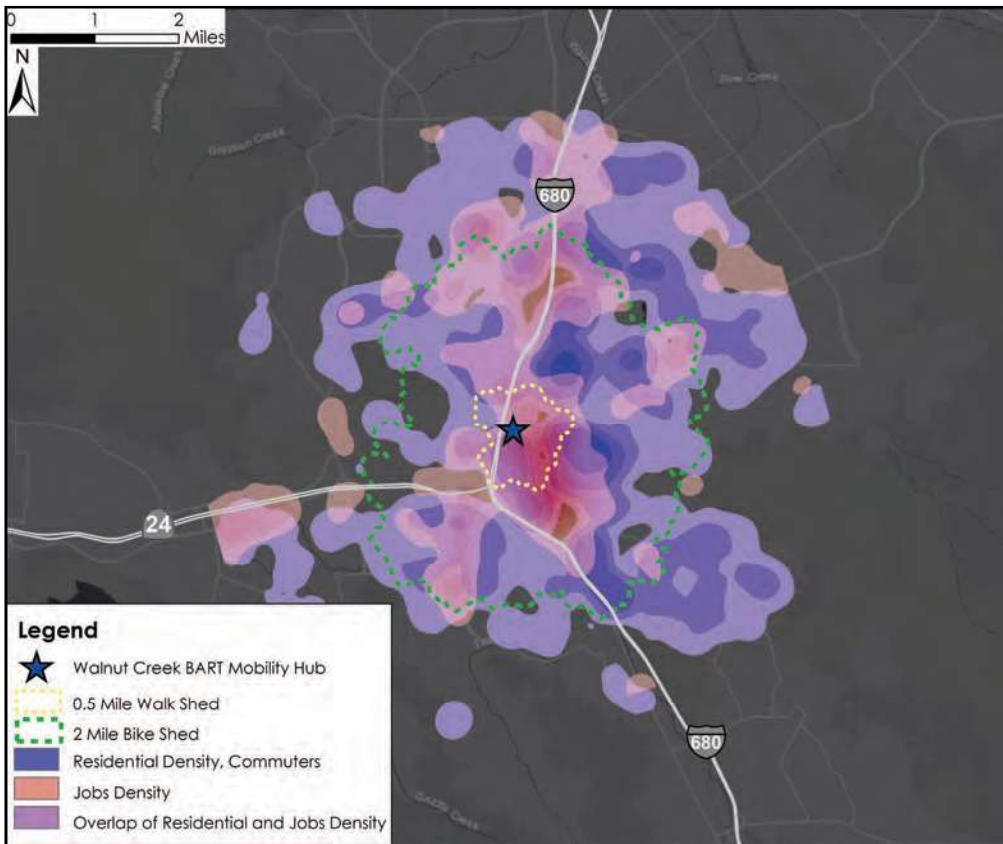
- 3,530 (8%) people below federal poverty line
- 7,210 (16%) people 65 or older
- 1,509 (7%) households without a vehicle
- 15,804 (35%) people of color

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	4,017	2,283
Bikeshed (2 mile)	45,208	20,341
Driveshed (Selected areas)	33,249	14,427

What Are the Jobs and Workers Concentrated in the Mobility Hub?



52,428
Jobs Within
2 Miles



22,411
Workplace
Commuters
Within 2 Miles

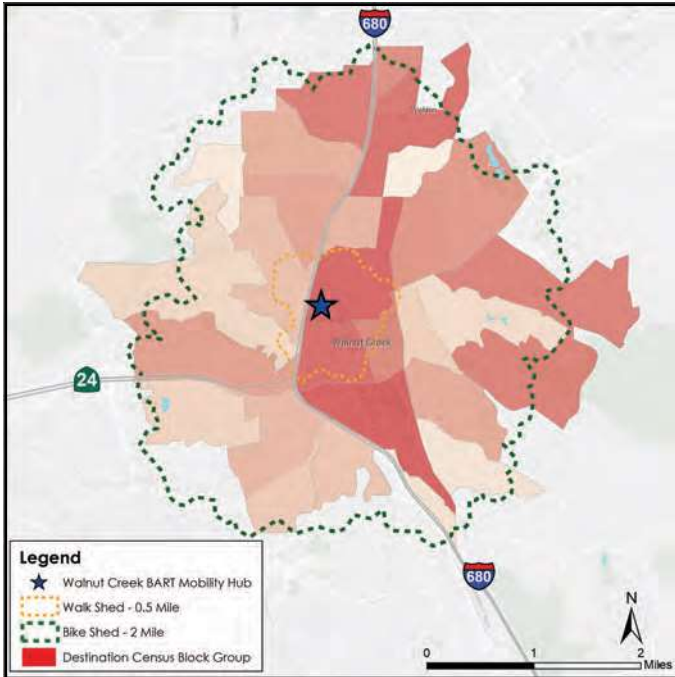
Source: LEHD, 2018



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: WALNUT CREEK BART STATION

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

10,143 Internal Trips to Mobility Hub Area



2,338 Trips Less Than a Mile to Mobility Hub Area



3,990 Trips 1-2 Miles to Mobility Hub Area



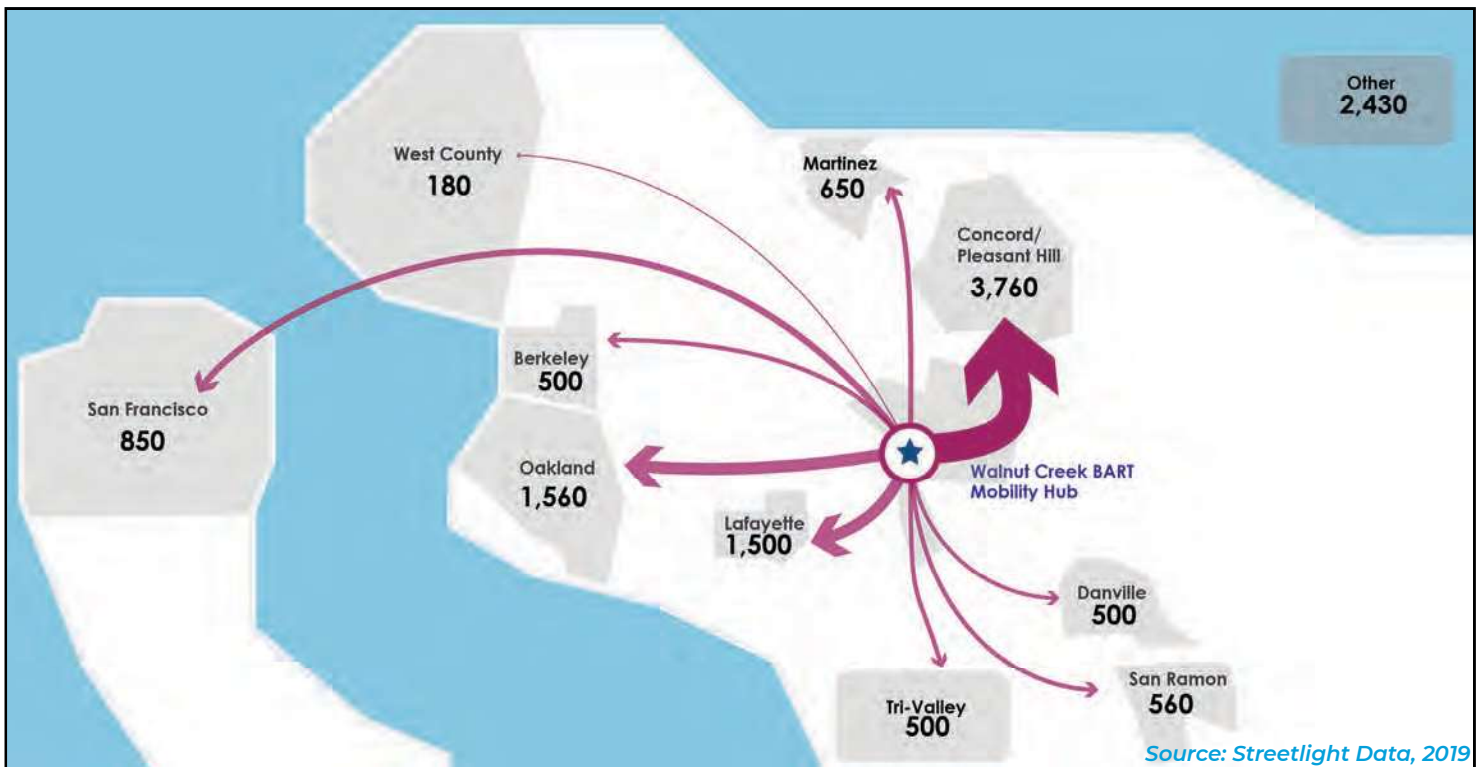
30,449 Trips Beyond 2 Miles to the Mobility Hub Area



*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People From the Mobility Hub Area Going to in the Morning?



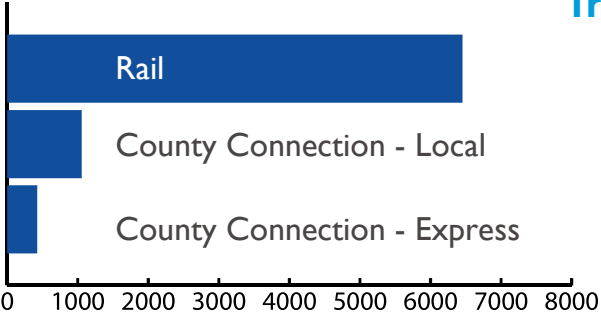
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: WALNUT CREEK BART STATION

How Many People Are Using the Mobility Hub?



Daily Weekday Boardings at Station

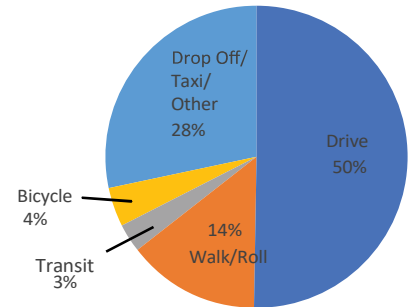
Source: County Connection, BART 2019

Note: Solano Express and Wheels ridership at station was not available

Transit Service Providers

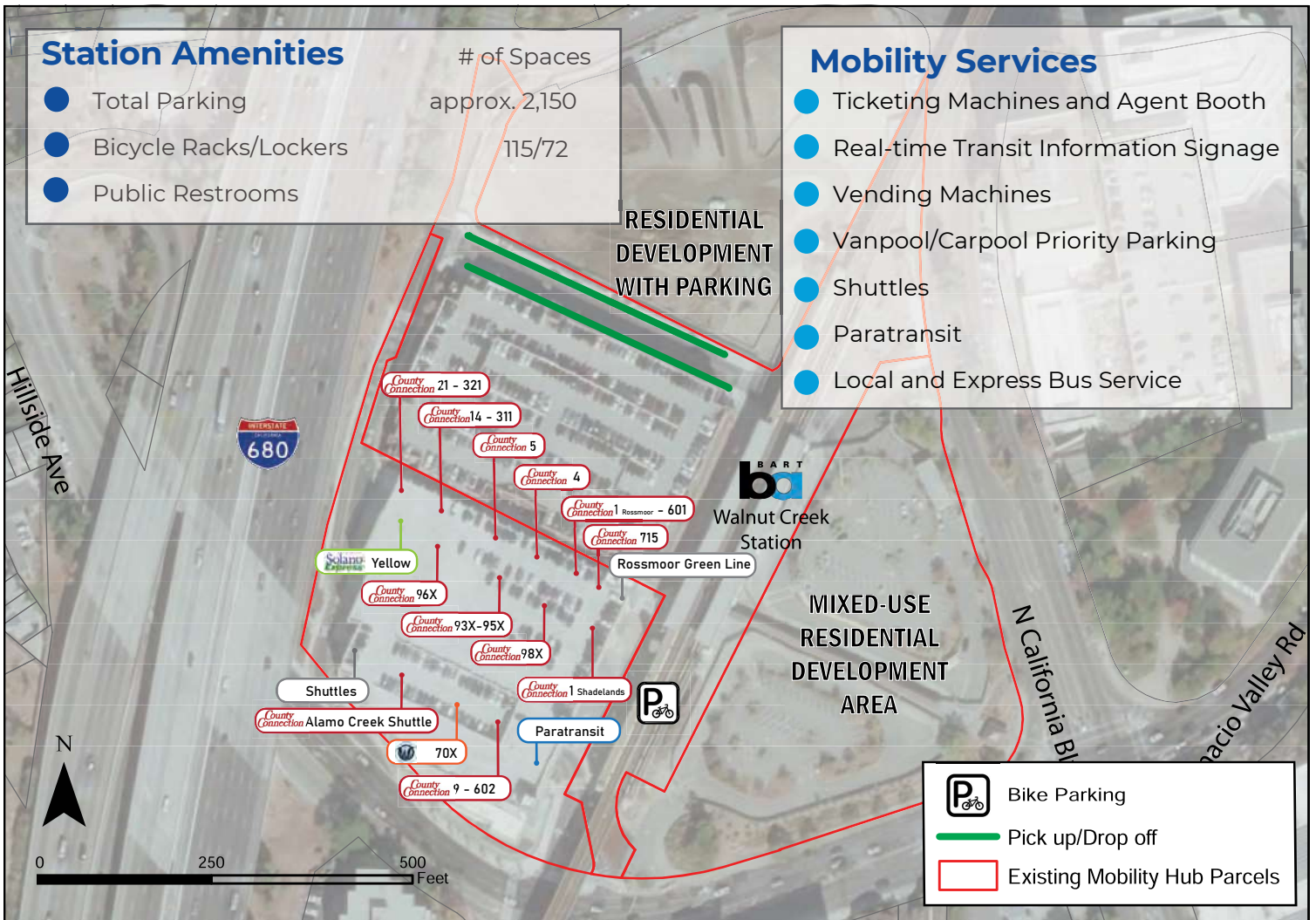


Existing Station Access



Source: BART Station Profiles - Home Origins for Walnut Creek BART, 2015

Facility Map





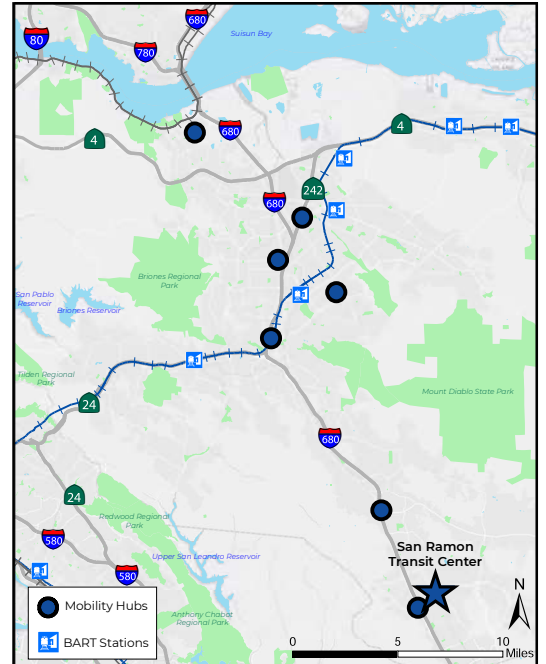
SHARED MOBILITY HUBS

HUB SITE FACT SHEET: SAN RAMON TRANSIT CENTER

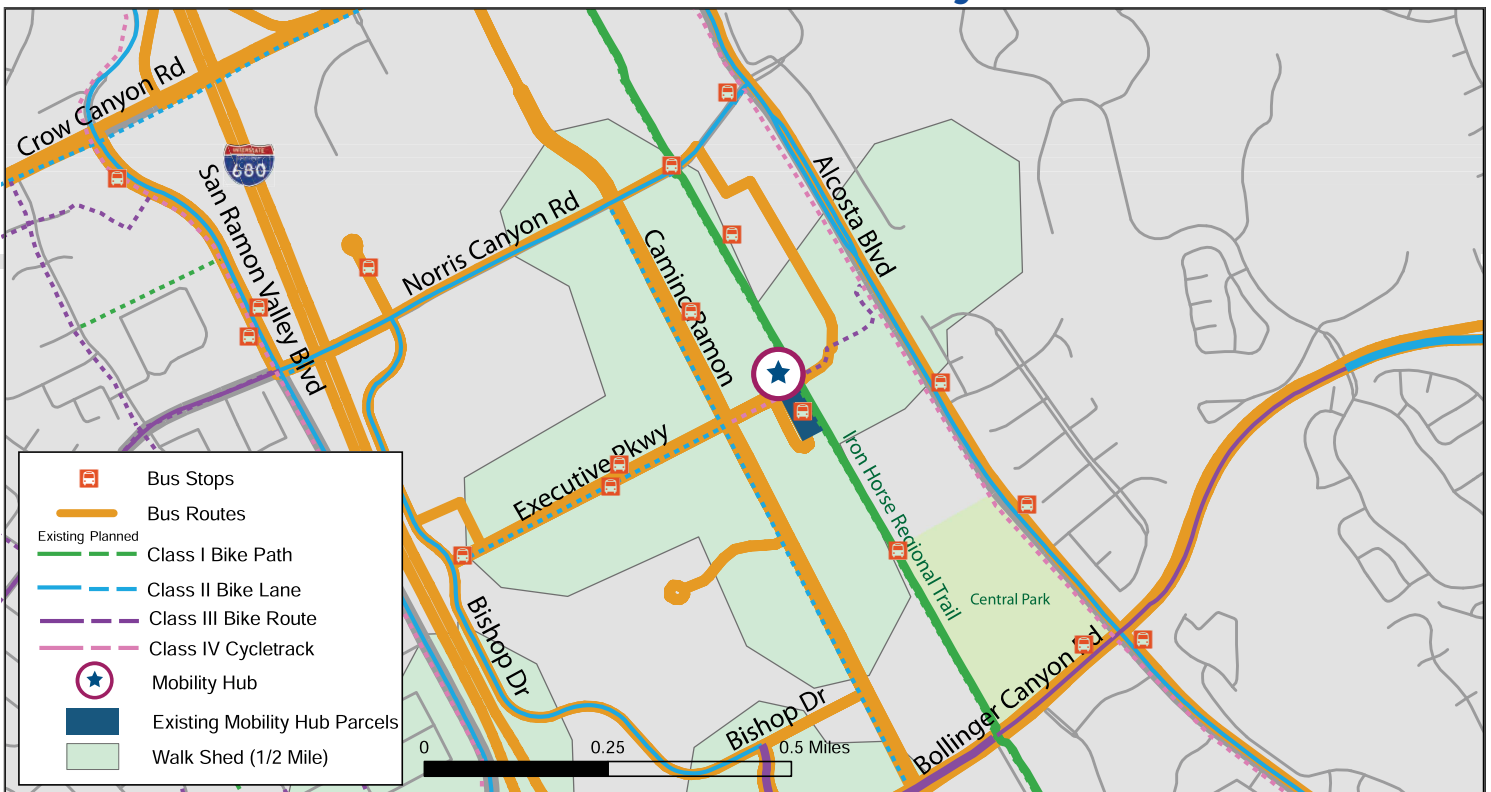
Location Overview

The San Ramon Transit Center Mobility Hub is located at the eastern end of Executive Parkway in the Bishop Ranch business park in the City of San Ramon. It is located near several office buildings, Iron Horse Trail, and the Bishop Ranch parking garage. The transit center serves six weekday County Connection bus routes and two weekend routes. The transit center has 52 public parking spaces, including seven EV charging spaces, along with bike racks and lockers and public restrooms.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: SAN RAMON TRANSIT CENTER

What Are the Demographics Around the Mobility Hub?

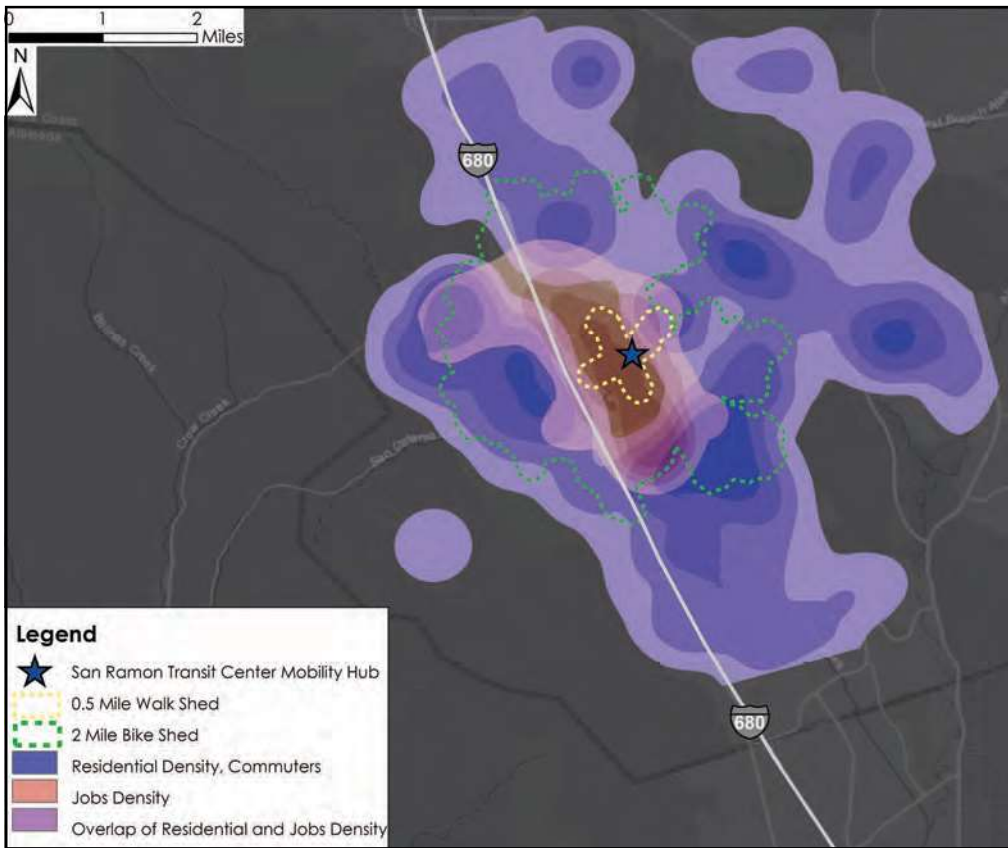
- 951 (12%) people below federal poverty line
- 2,727 (15%) people 65 or older
- 241 (3%) households without a vehicle
- 8,823 (49%) people of color

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	2,467	940
Bikeshed (2 mile)	18,206	7,044
Driveshed (Selected areas)	10,361	3,852

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



37,669
Jobs Within
2 Miles



9,696
Workplace
Commuters
Within 2 Miles

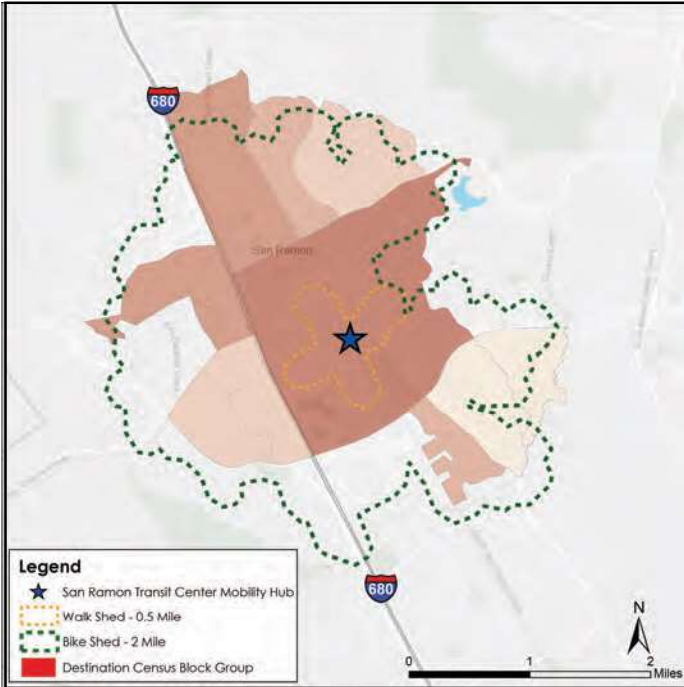
Source: LEHD, 2018



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: SAN RAMON TRANSIT CENTER

Where Are People Going to the Mobility Hub in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

4,361 Internal Trips to Mobility Hub Area



1,144 Trips Less Than a Mile to Mobility Hub Area



1,977 Trips 1-2 Miles to Mobility Hub Area

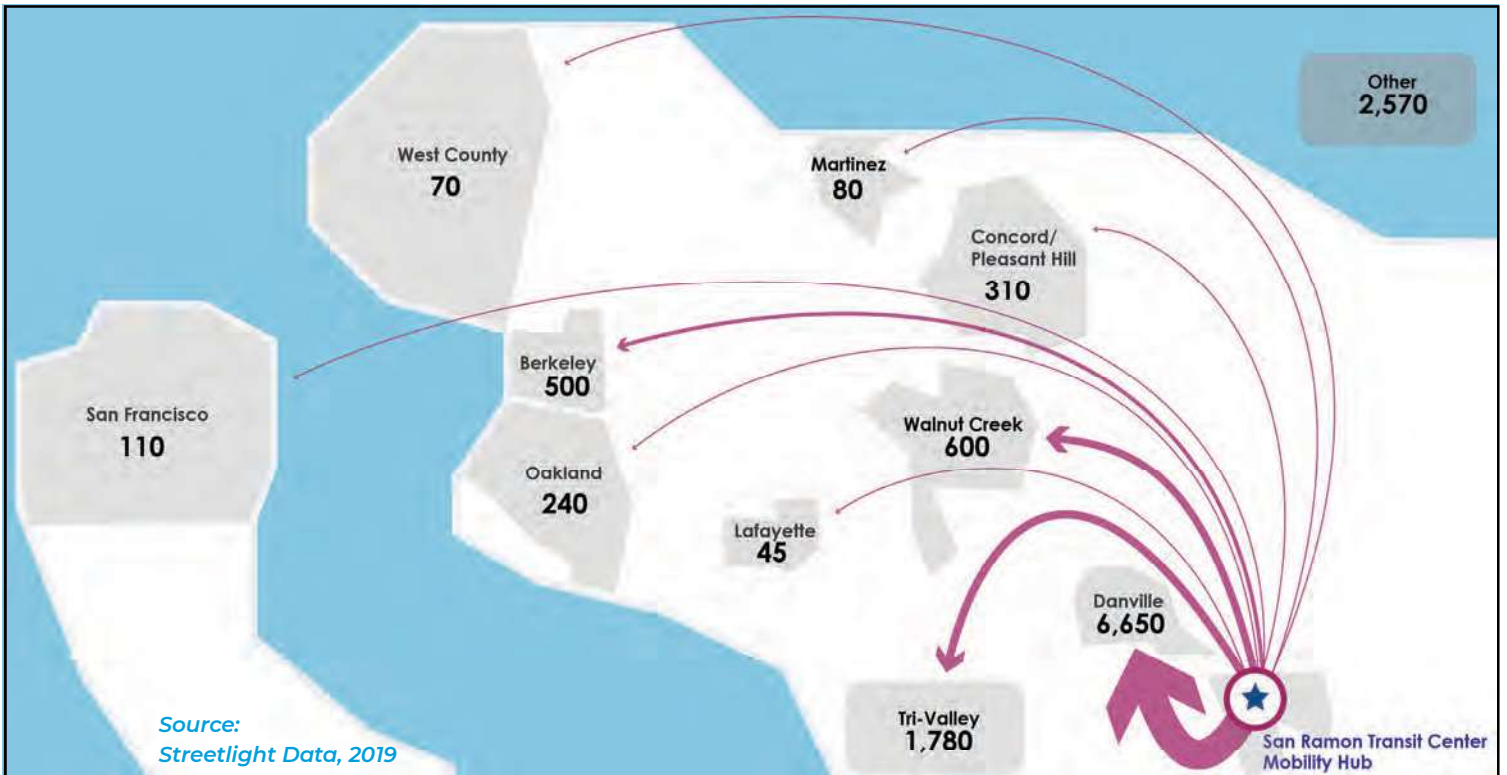


20,473 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



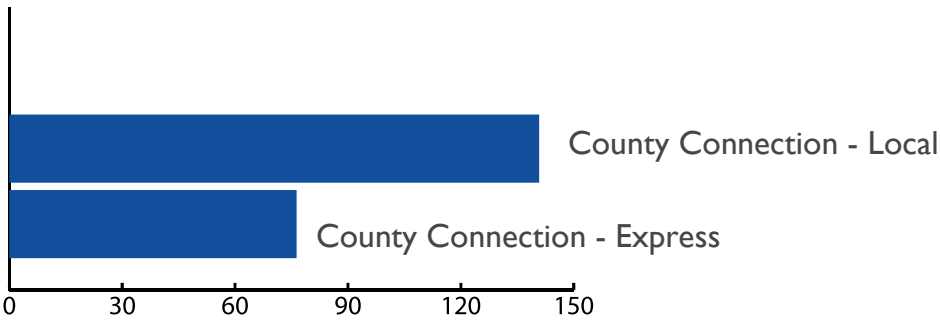
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: SAN RAMON TRANSIT CENTER

How Many People Are Using the Mobility Hub?



Daily Weekday Boardings at Station
Source: County Connection, 2019

Transit Service Providers



Facility Map





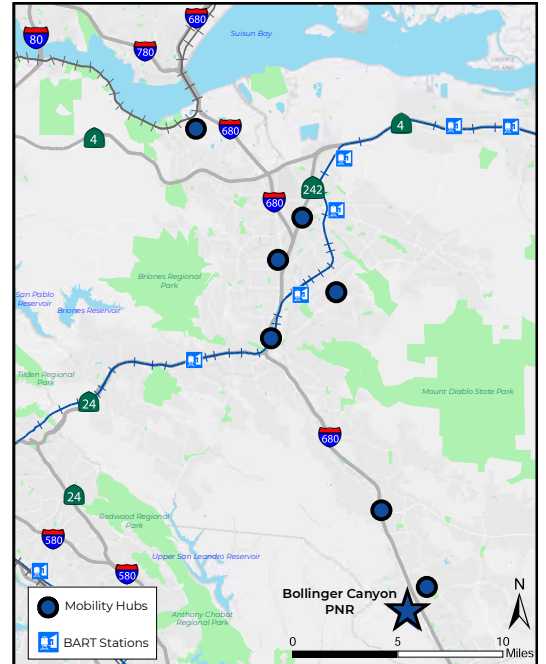
SHARED MOBILITY HUBS

HUB SITE FACT SHEET: BOLLINGER CANYON PARK-AND-RIDE

Location Overview

The Bollinger Canyon Park-and-Ride is located at the southwest corner of Bollinger Canyon Road and Interstate 680. It is located entirely on Caltrans property. The park-and-ride is located approximately 0.4 miles west of the City Center Bishop Ranch shopping center. The park-and-ride has 109 public parking spaces for carpool commuters. The park-and-ride is primarily used by casual carpoolers and as a pickup point for private employer shuttles. The only transit service directly adjacent to the Mobility Hub is a school route with a single trip. No EV charging or other amenities are currently provided.

Regional Context



What Multimodal Facilities Are in the Mobility Hub Area?



Source: Contra Costa County, County Connection



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: BOLLINGER CANYON PARK-AND-RIDE

What Are the Demographics Around the Mobility Hub Area?

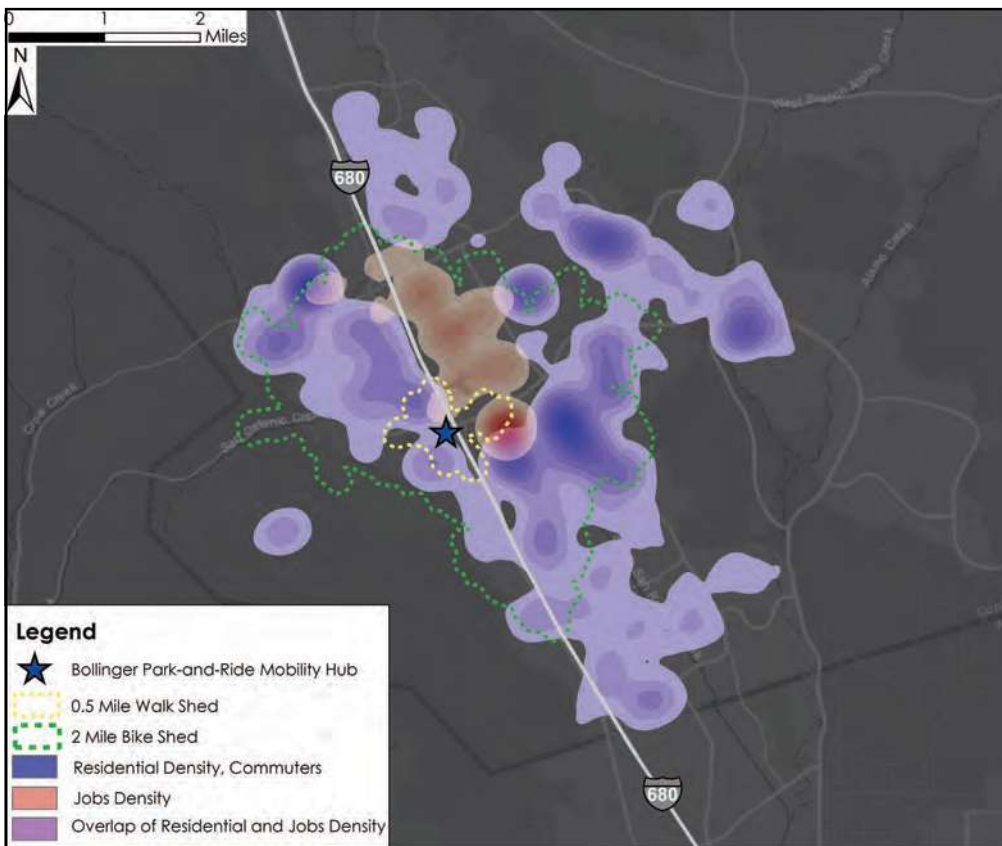
- 786 (9%) people below federal poverty line
- 2,443 (11%) 65 or older
- 217 (3%) households without a vehicle
- 11,890 (52%) people of color

Source: ACS, 2019. Data provided for Census Block Groups within 2 miles of the mobility hub

How many people are within a typical walk, bike, or drive from the mobility hub?

	People	Households
Walkshed (0.5 mile)	3,049	937
Bikeshed (2 mile)	22,735	8,139
Driveshed (Selected areas)	47,471	16,666

Where Are Jobs and Workers Concentrated in the Mobility Hub Areas?



37,897
Jobs Within
2 Miles



13,400
Workplace
Commuters
Within 2 Miles

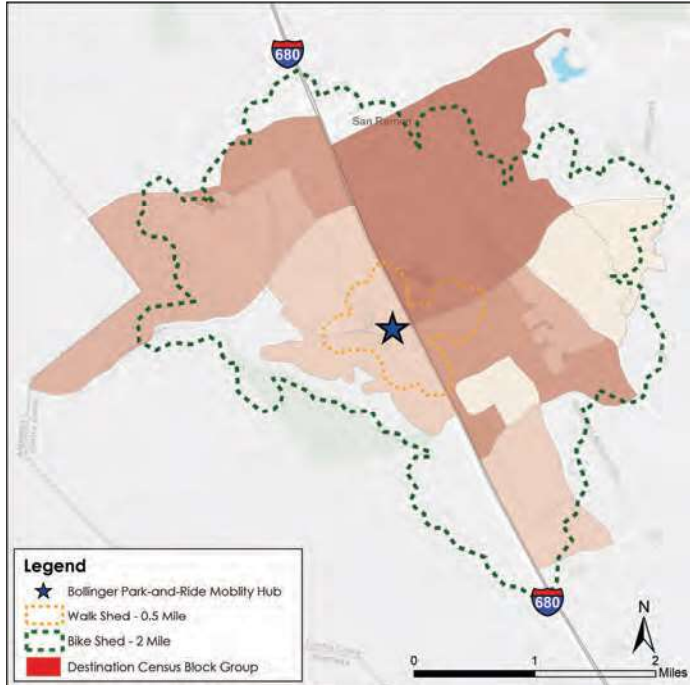
Source: LEHD, 2018



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: BOLLINGER CANYON PARK-AND-RIDE

Where Are People Going to the Mobility Hub Area in the Morning Coming From?



How far are people traveling to get to the mobility hub area?

5,788 Internal Trips to Mobility Hub Area



1,352 Trips Less Than a Mile to Mobility Hub Area



2,350 Trips 1-2 Miles to Mobility Hub Area

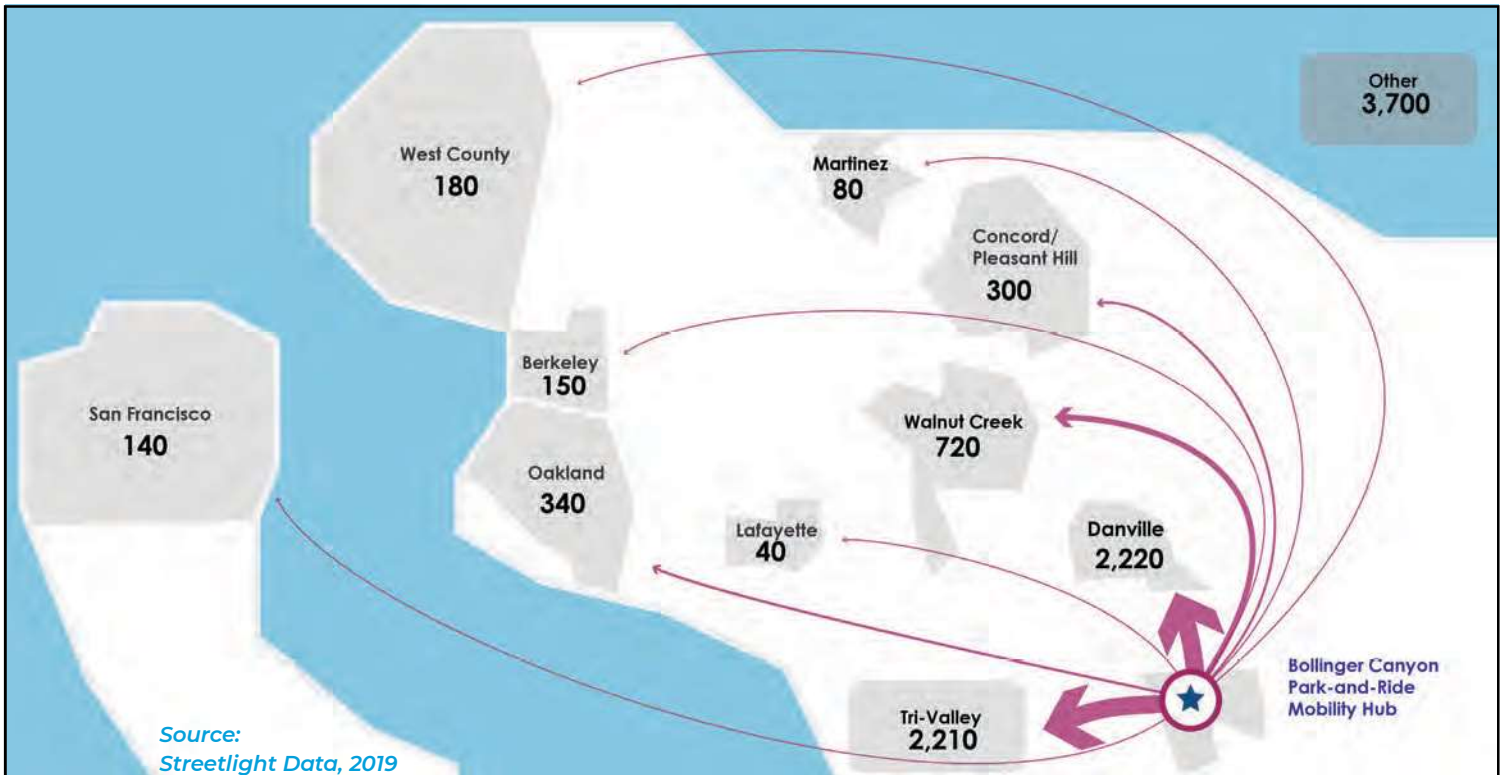


20,823 Trips Beyond 2 Miles to the Mobility Hub Area

*Mobility Hub Area Consists of Census Block Groups Located Around the Station

Source: Streetlight Data, 2019

Where Are People from the Mobility Hub Area Going to in the Morning?



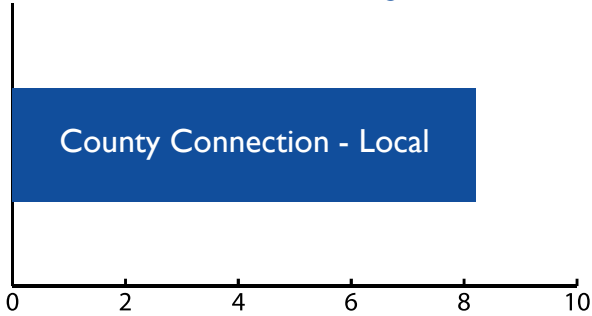
Source: Streetlight Data, 2019



SHARED MOBILITY HUBS

HUB SITE FACT SHEET: BOLLINGER CANYON PARK-AND-RIDE

How Many People Are Using Transit at the Mobility Hub?

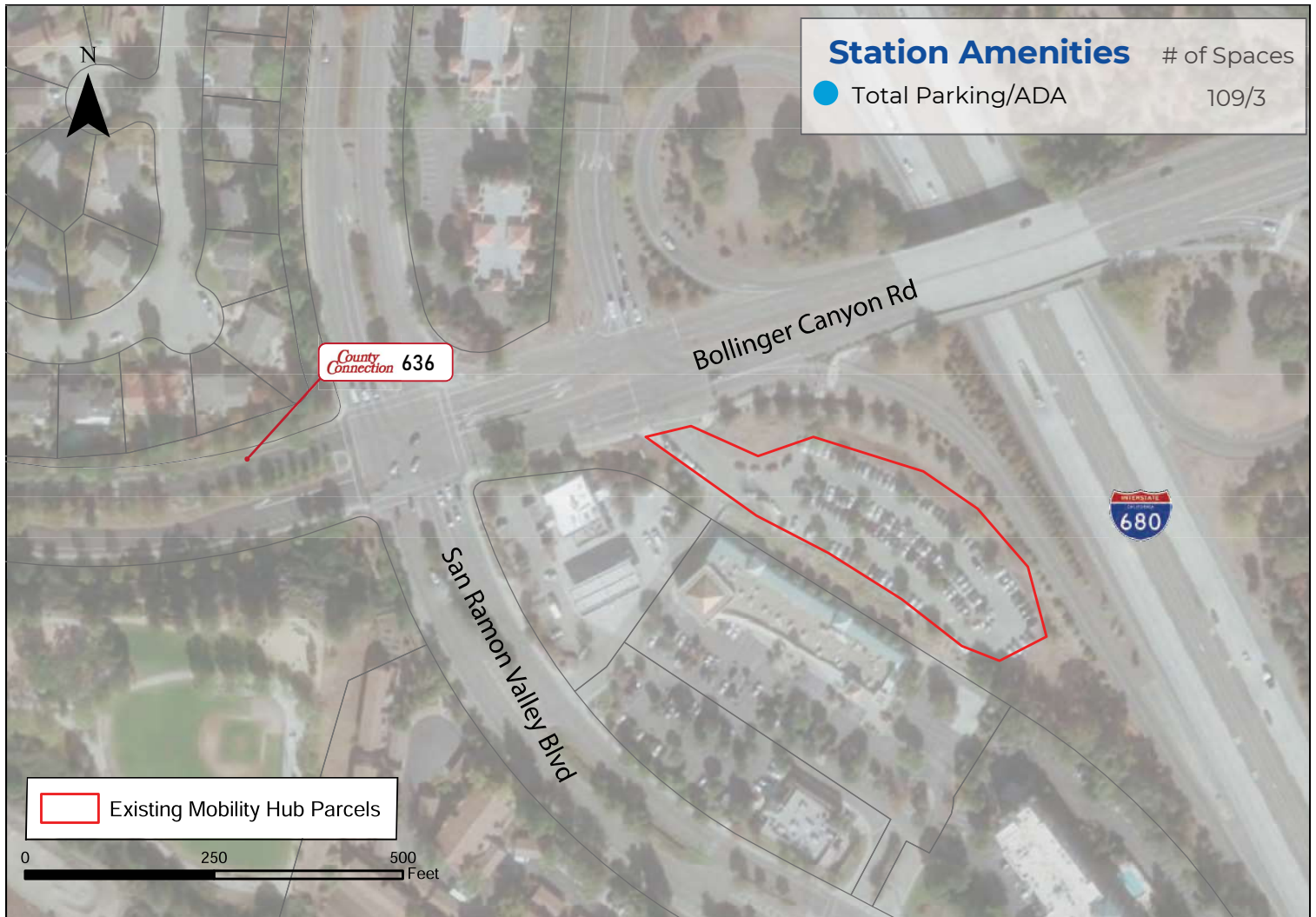


Source: County Connection, 2019

Transit Service Providers



Facility Map



APPENDIX E
STATION CONCEPTS AND
IMPROVEMENT PACKAGES REPORT

SHARED MOBILITY HUB

Concepts and Improvement Packages Report

July 2022

Kimley»Horn

Version 1.0

INNOVATE 680
SHARED MOBILITY HUB
CONCEPTS AND IMPROVEMENT PACKAGES REPORT
REVISION HISTORY

Revision	Date	Description	Submitted by
0.0	05/18/2022	Internal Review Draft	MI
0.1	05/31/2022	Final External Draft	AD
1.0	7/19/2022	Final Revised per TAC comments	AD

Contents

Introduction.....	4
Mobility Hub Services and Amenities	7
Mobility Hub Concepts.....	8
I. Martinez Amtrak Regional Mobility Hub.....	8
II. Concord Park-and-Ride (PNR) 680 Access Mobility Hub.....	13
III. Downtown Pleasant Hill Community Mobility Hub	17
IV. Mitchell Drive Community Mobility Hub.....	21
V. Walnut Creek BART Regional Mobility Hub.....	25
VI. Danville Sycamore Valley 680 Access Mobility Hub.....	29
VII. San Ramon Transit Center Community Mobility Hub.....	33
VIII. Bollinger Canyon 680 Access Mobility Hub.....	37
Cost Estimates.....	41
Summary and Next Steps.....	42
Appendices.....	43

Tables

Table 1. Improvement Packages for Martinez Amtrak Station Mobility Hub	9
Table 2. Improvement Packages for Concord PNR 680 Access Mobility Hub.....	14
Table 3. Improvement Packages for Downtown Pleasant Hill Community Mobility Hub...	18
Table 4. Improvement Packages for Mitchell Drive Community Mobility Hub.....	22
Table 5. Improvement Packages for Walnut Creek BART Regional Mobility Hub.....	26
Table 6. Improvement Packages for Danville Sycamore Valley 680 Access Mobility Hub	30
Table 7. Improvement Packages for San Ramon Transit Center Community Mobility Hub	34
Table 8. Improvement Packages for Bollinger Canyon 680 Access Mobility Hub.....	37
Table 9: Mobility Hub Cost Estimates	41

Figures

Figure 1: Mobility Hub Sites by Typology.....	5
Figure 2: Mobility Hub Feature Icons.....	7
Figure 3: Martinez Amtrak Regional Mobility Hub Phase 1 Concept.....	12
Figure 4: Martinez Amtrak Regional Mobility Hub Phase 2 Concept	14
Figure 5: Concord PNR 680 Access Mobility Hub	16
Figure 6: Downtown Pleasant Hill Community Mobility Hub.....	20
Figure 7: Mitchell Drive Community Mobility Hub	24
Figure 8: Walnut Creek BART Regional Mobility Hub	28
Figure 9: Danville Sycamore Valley 680 Access Mobility Hub.....	32
Figure 10: San Ramon Transit Center Community Mobility Hub.....	36
Figure 11: Bollinger Canyon 680 Access Mobility Hub	40

Introduction

Shared Mobility Hubs are multimodal transportation nodes where a variety of shared mobility services and supporting amenities interact to create a cohesive transportation network. These nodes facilitate local and regional travel with a specific focus on shared mobility: travel modes and services in which resources are shared between different users. This includes public transit, micromobility (e.g., bikeshare, scooters, etc.), shared rides (e.g., vanpools, carpools, on-demand services, etc.), and technology (e.g., electric vehicle chargers, information kiosks, etc.). Shared Mobility Hubs represent one of six Innovate 680 Program projects to expand mobility options, improve traffic conditions, and enhance the travel experience in the I-680 corridor.

The Project Identification and Prioritization report presents site-specific sketch concepts for each of the eight mobility hub study sites and recommends improvement packages for implementation. These recommendations are based on the suite of mobility hub services and amenities presented in the *Mobility Hub Strategies Toolkit* (Kimley-Horn, August 2021) and address site-specific mobility opportunities and constraints summarized in the *Background and Issues Report* (Kimley-Horn, May 2022). The sketch concept plans are illustrative in nature and do not reflect detailed engineering design.

The eight mobility hub study locations do not represent the final list of mobility hub sites that can be developed as part of the Innovate 680 program. They were selected because they provide a representative cross-section of site characteristics for location and sizing of specific mobility hub services and amenities.

INNOVATE 680 Projects



PART-TIME
TRANSIT LANES



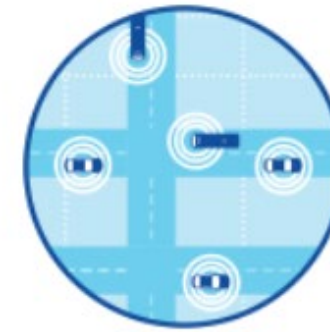
EXPRESS LANE
COMPLETION



SHARED
MOBILITY HUBS



MOBILITY AS
A SERVICE



AUTOMATED
DRIVING SYSTEMS

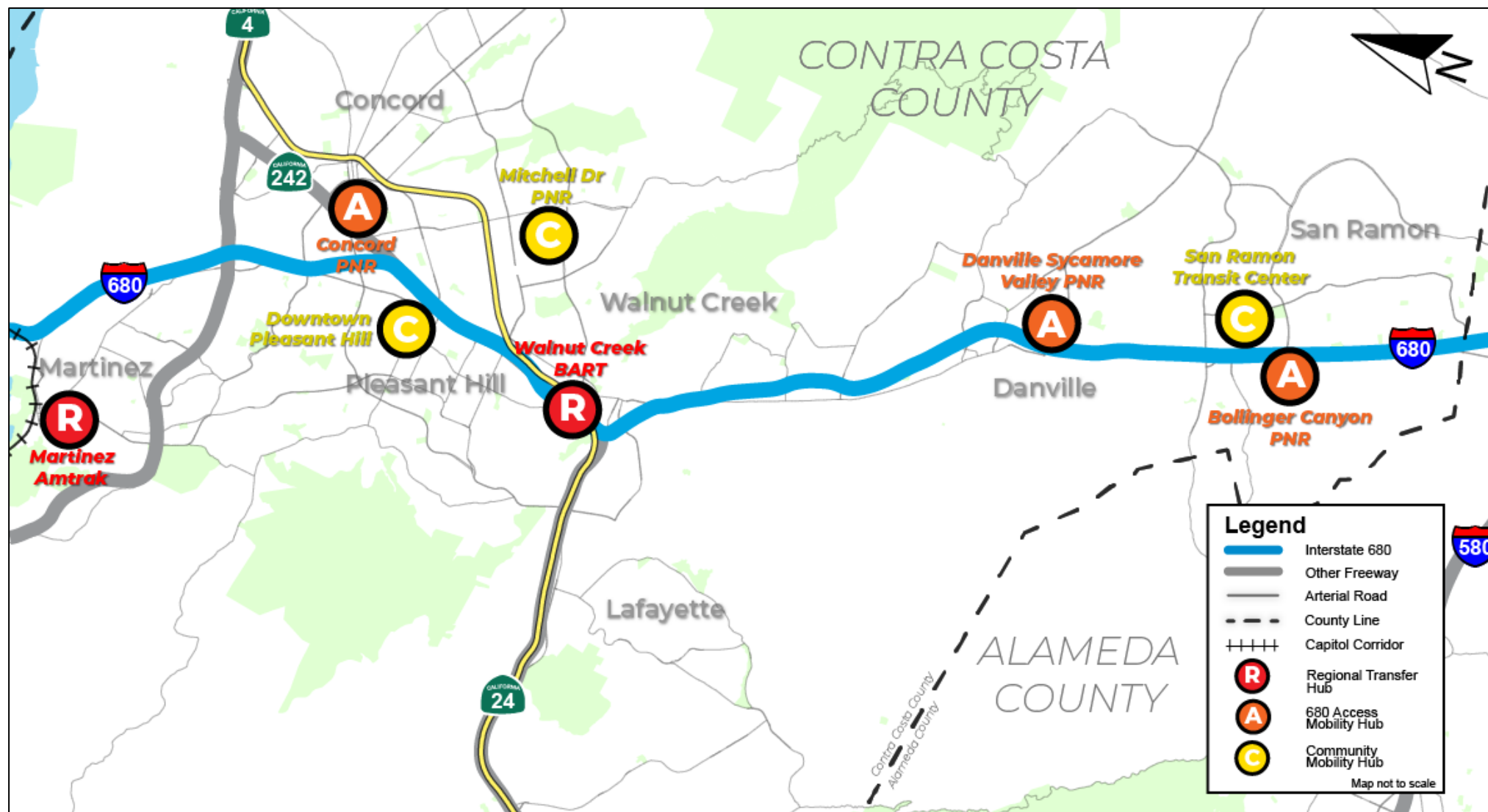


ADVANCED
TECHNOLOGIES

presents the eight mobility hub sites categorized by their “typology”, which include:

- **Regional Transfer Hub:** provide breadth of amenities and services serving large catchment area with connection needs between local transit services and regional rail services.
- **680 Access Mobility Hub:** serves as gateway to the I-680 corridor transportation network and provides connections between transit services operating on I-680 and mobility hub transportation options that serve the surrounding community.
- **Community Mobility Hub:** serves as a gateway connecting regional transit facilities to local housing and employment centers.

Figure 1: Mobility Hub Sites by Typology



The following sections present the mobility hub strategies, the site-specific sketch concept plans, and the list of improvement packages for each mobility hub. Each improvement package consists of a combination of capital infrastructure and programs that can be implemented concurrently and address specific mobility hub needs and opportunities. These improvement packages include off-site projects that are critical components to enhancing the accessibility of the mobility hub sites. The alignment of each improvement package with the Shared Mobility Hub program vision statements previously developed.

For each mobility hub site, the recommended services and amenities are assessed based on their alignment with six distinct mobility hub goals identified in the *Shared Mobility Hubs Vision White Paper* (Kimley-Horn, August 2020):



Efficient Movement of People: facilitate convenient and intuitive transfers between travel modes, maximize movement of people, and prioritize modes that efficiently use the transportation network



Universal Accessibility and Enhanced Safety: promote equitability and enhance accessibility for disadvantaged and mobility-impaired populations by leveraging information, technology, and design to provide safe and accessible mobility options



Improved Access to Alternative Transportation Modes: overcome existing barriers to use of alternative transportation modes by providing a network of safe and comfortable pathways, promoting first/last-mile connections, and target new and occasional alternative transportation users to achieve mode shift from SOVs



Mobility Hubs as Community Assets: support neighborhood integration by creating seamless pathways between mobility hubs and surrounding areas, providing on-site amenities, facilities, and activity beyond in-route trips, and providing a context-sensitive and high-quality aesthetic



Flexibility to Accommodate New Technology and Changing Transportation Conditions: provide flexible and adaptable designs for amenities and services in order to adapt to new technologies and changes in how mobility services are consumed



Reflect Community and Regional Aspirations: integrate local, regional, and mode-specific plans into the mobility hub infrastructure design, leverage public-private partnerships to encourage innovation and support the advancement of key regional initiatives

Mobility Hub Services and Amenities

The Toolkit describes a range of services and amenities that may be implemented at a mobility hub or on streets that provide access to the facility. These services and amenities are intended to improve transportation connectivity, access to a range of mobility options, user amenities, and safety. The mobility hub services are organized by five categories of service and amenities listed below.



1. Transit Amenities: located within a transit station area that help riders plan trips, connect between services, access stops and comfortably wait for their transit or mobility service.



2. Bike Amenities: located within biking distance of the mobility hub, intended to expand the bike network, improve bike network safety and comfort, provide secure options for parking a bike, improve access to bikes, and allow connections to other modes such as transit.



3. Pedestrian Amenities: located within walking distance of the mobility hub, intended to improve pedestrian connections, enhance pedestrian network safety and comfort, enhance public spaces, and improve wayfinding.



4. Motorized Services & Amenities: located within the driveway of the mobility hub intending to expand access and connections to other modes, efficiently use mobility hub space, and allow motorists to make informed mobility choices.



5. Support Services & Amenities: features available to mobility hub users that facilitate convenient use of other mobility strategies, assist users in making informed mobility choices, and provide amenities to enhance the comfort and convenience of alternative mobility options.

Within each category, there are a range of potential services and amenities that can be deployed at each mobility hub site depending on the specific needs. **Figure 2** presents the full set of potential mobility hub strategies.

The remainder of this report summarizes the improvement packages for each of the eight mobility hub sites.

Figure 2: Mobility Hub Feature Icons

1 | Transit Amenities



TRANSIT SIGNAL PRIORITY



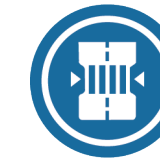
ENHANCED TRANSIT WAITING AREAS



BATTERY ELECTRIC BUS (BEB) CHARGING STATION



FAIR VENDING MACHINES



CURB EXTENSIONS (BULB-OUTS)



MICROTRANSIT / AUTONOMOUS TRANSIT



DRIVER RELIEF FACILITY / LAYOVER

2 | Bike Amenities



BIKEWAYS



ELECTRIC BIKE CHARGING STATIONS



BICYCLE PARKING / STORAGE



SHARED MOBILITY



BICYCLE REPAIR STATION

3 | Pedestrian Amenities



PEDESTRIAN WALKWAYS



PEDESTRIAN CROSSINGS



PUBLIC SPACE / PLAZA

4 | Motorized Services and Amenities



ELECTRIC VEHICLE CHARGING STATION



RIDESHARE



DROP OFF / PICK UP



TRANSPORTATION NETWORK COMPANY (TNC)



PARKING RESERVATION



CARPPOOL / VANPOOL PARKING



ADA PARKING

5 | Support Services and Amenities



LIGHTING



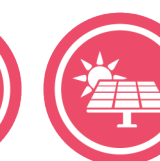
MONUMENT / PLACEMAKER



REAL-TIME TRAVEL INFORMATION



WIFI AMENITIES



CCTV



SOLAR POWER CANOPY



MOBILE RETAIL SERVICES



PARKING INFORMATION

WAYFINDING

Mobility Hub Concepts

I. Martinez Amtrak Regional Mobility Hub

The Martinez Amtrak (Regional Mobility Hub) is located at the west end of downtown Martinez near various residential, commercial, and civic uses. The mobility hub is connected to I-680 via Marina Vista Avenue and State Route 4 (SR 4) via Alhambra Avenue. The Martinez Amtrak Station serves as a major intermodal hub for Northern California Amtrak service, including the Capitol Corridor, Coast Starlight, California Zephyr, and San Joaquin line, and public transit operated by County Connection and other operators.

The priorities for the Martinez Amtrak mobility hub include:

- Expand bus capacity, enhance passenger amenities, and improve transit access and connections.
- Improve pedestrian and bicycle access to the mobility hub, including new on and off-site pedestrian and bicycle connections to the station, expanding on-site bicycle amenities, and enhancing station visibility to/from downtown destinations.
- Enhance mobility hub usability by providing carshare space and electric vehicle (EV) charging.
- Improve station access by enlarging the area for pick-up/drop-off activities, including Transportation Network Companies (TNCs).

Figure 3 and **Figure 4** shown sketch concepts and improvement packages reflect a two-phase implementation of the bus transit center and access improvements adjacent to the station as the additional amenities are needed and shared mobility services are added. Phase 1 would build the sawtooth bus bays for County Connection and other operators but retain approximately half of the southern surface lot for parking. Phase 2 would build out the remainder of the bus transit center to provide additional bus bay capacity, including space for micro-transit and bus layovers.

Recommended service and amenities for the Martinez Amtrak Station mobility hub are presented in two phases. The additional off-site improvements not depicted are described to the right of each plan.

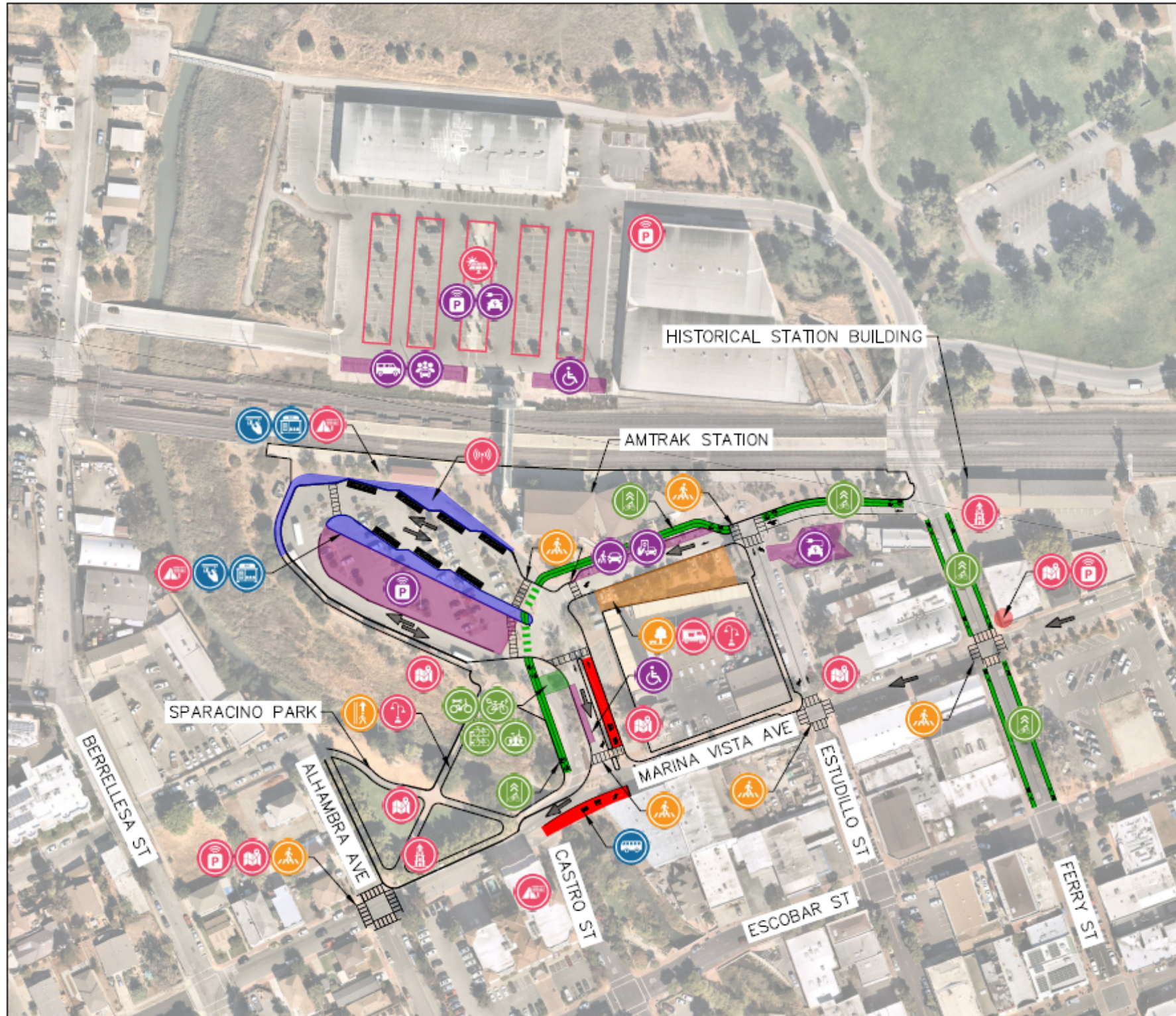
Table 1 provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 1. Improvement Packages for Martinez Amtrak Regional Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Build transit center Phase 1 and reconfigure surface parking lot adjacent to the station	<ul style="list-style-type: none"> Construct up to 7 sawtooth bus bays by reconfiguring the surface parking Construct bus shelters/waiting areas, fare vending machines, WIFI amenity, and on-site real-time traveler information systems Improve the pedestrian pathways to the bus bays Implement parking reservation system for the surface parking that remains Construct transit-only lane on Marina Vista Ave Provide parking spaces for microtransit Provide bus charging infrastructure 	●	●	●		●	
2. Construct new passenger pick-up/drop-off area	<ul style="list-style-type: none"> Construct new passenger pick-up/drop-off curb and TNC loading zone in front of the station by reconfiguring existing parking spaces Relocate ADA spaces 		●				
3. Implement north parking lot improvements	<ul style="list-style-type: none"> Install EV chargers and construct solar power canopies Reconfigure parking spaces for carpool, vanpool, rideshare, and ADA parking Relocate ADA spaces Implement parking reservation system 		●			●	●
4. Implement signage and wayfinding program	<ul style="list-style-type: none"> Implement signage and wayfinding improvements on and off-site, including parking information and real-time traveler information at locations on and off-site Implement monument and lighting for on and off-site locations 	●	●		●	●	
5. Implement on-site bike storage, charging, and shared bicycle facilities	<ul style="list-style-type: none"> Construct bike parking and storage for on-site bike facility area Construct E-bike charging station and bike repair station Construct bike sharing facilities Construct plaza and lighting improvements near bike facility area 			●		●	
6. Implement off-site transit signal priority (TSP) projects	<ul style="list-style-type: none"> Implement transit signal priority (TSP) at key off-site intersections along transit routes, including Marina Vista Avenue/Escobar Street, Alhambra Avenue/Berrellesa Street 	●					

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
7. Construct off-site pedestrian / bicycle improvements	<ul style="list-style-type: none"> Construct off-site bike lanes and sharrows on Ferry St, Estudillo St, and in front of the bike facility area Construct pedestrian walkways through Sparacino Park and high visibility crosswalks at major intersections on Marina Vista Avenue at Alhambra Avenue, Castro Street, Estudillo Street, Ferry Street, and in front of bike facility area Construct public bike parking and storage at Sparacino Park. Construct bike improvements on Marina Vista Ave/Escobar St east of downtown and Alhambra Ave/Berrellesa St and Court St/Pine St to the south Implement enhanced wayfinding and signage on major pedestrian routes to major employment sites at the Contra Costa County Superior Court and County government office complex around Court Street. Improve bicycle wayfinding to major destinations south of downtown (Contra Costa Regional Medical Center, Alhambra High School, Veterans Affairs Martinez). Install secure bike parking and bike charging infrastructure at these locations. 	●	●	●			
8. Build transit Center Phase 2	<ul style="list-style-type: none"> Reconfigure the remainder of the parking lot to add an additional 7 sawtooth bus bays for microtransit Construct bus charging station, relief, and layover area Build the transit-only lane from Marina Vista into the bus center Construct transit-only lane between transit center and Marina Vista Avenue Construct the public plaza with mobile retail services 	●	●	●		●	
9. Implement a shared mobility services program for microtransit, micromobility, and vanpool /carpool services	<ul style="list-style-type: none"> Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	

Figure 3. Martinez Amtrak Regional Mobility Hub Phase 1 Concept



ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- ENHANCE BIKE FACILITIES ON MARINA VISTA AVENUE/ESCOBAR EAST OF DOWNTOWN AND ALHAMBRA AVENUE/BERRELLESA STREET AND COURT STREET/PINE STREET TO THE SOUTH.
- ENHANCE WAYFINDING AND PEDESTRIAN ROUTES TO MAJOR EMPLOYERS AT THE CONTRA COSTA COUNTY SUPERIOR COURT AND COUNTY GOVERNMENT OFFICE COMPLEX AROUND COURT STREET. PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR EMPLOYMENT SITES.
- IMPROVE BICYCLE WAYFINDING TO MAJOR DESTINATIONS SOUTH OF DOWNTOWN SUCH AS THE CONTRA COST REGIONAL MEDICAL CENTER, ALHAMBRA HIGH SCHOOL, VETERANS AFFAIRS (VA) MARTINEZ, AND OTHER COMMERCIAL CENTERS ALONG SR-4. PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT THESE LOCATIONS.
- EXPAND THE BICYCLE NETWORK TO RESIDENTIAL AREAS IN THE BIKESHED.
- MINIMIZE THE TRANSIT TRAVEL TIME TO ACCESS THE SITE BY INCORPORATING TRANSIT SIGNAL PRIORITY (TSP) AT TRAFFIC SIGNALS ALONG THE PRIMARY TRANSIT ROUTES CONNECTING TO REGIONAL HIGHWAYS, INCLUDING MARINA VISTA AVENUE/ESCOBAR STREET TO CONNECT TO I-680 AND ALHAMBRA AVENUE/BERRELLESA STREET TO CONNECT TO SR-4.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES

← DIRECTION OF TRAVEL



GRAPHIC SCALE IN FEET

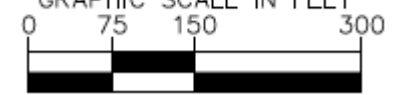
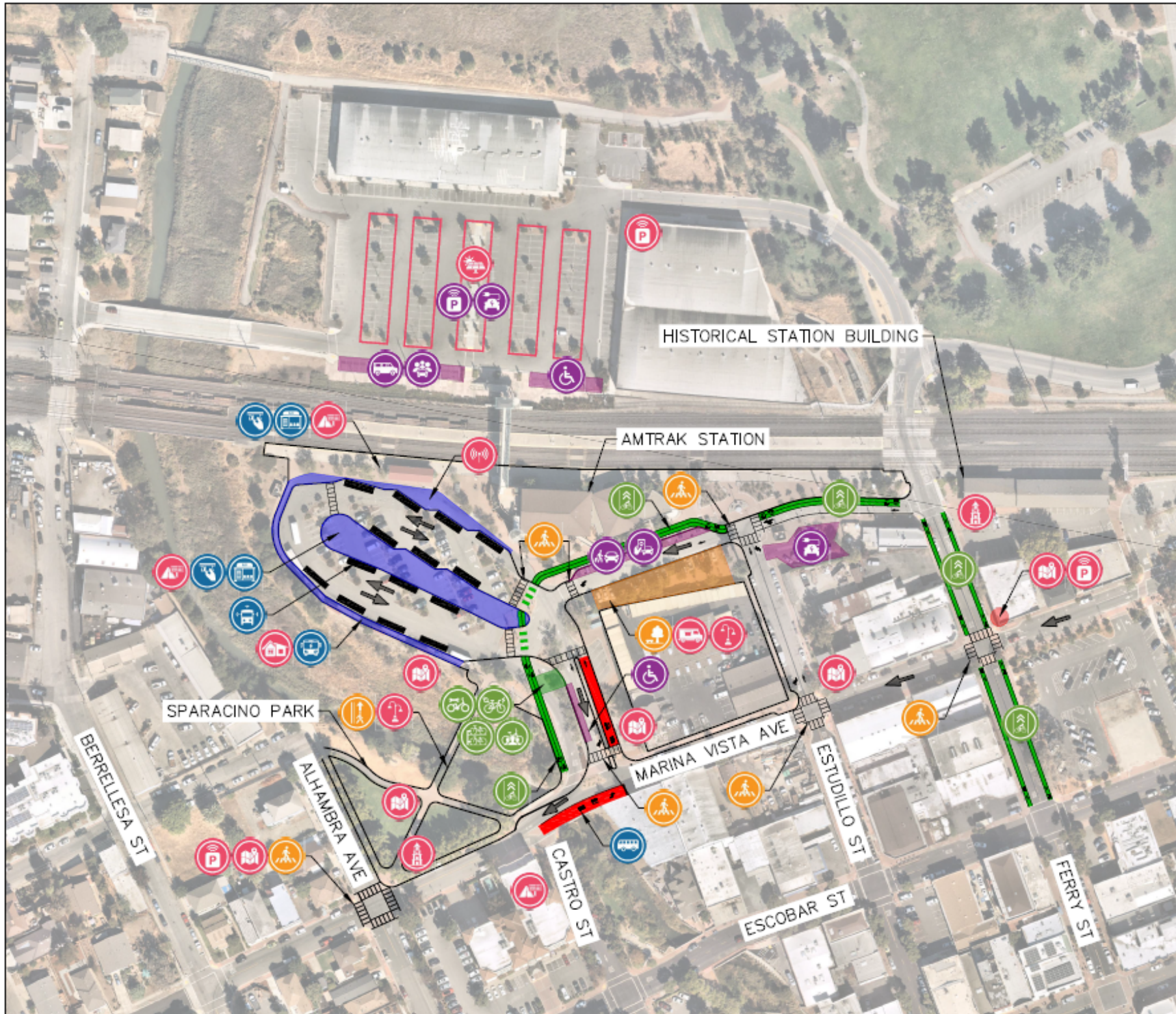









Figure 4: Martinez Amtrak Regional Mobility Hub Phase 2 Concept



ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- ENHANCE BIKE FACILITIES ON MARINA VISTA AVENUE/ESCOBAR EAST OF DOWNTOWN AND ALHAMBRA AVENUE/BERRELLESA STREET AND COURT STREET/PINE STREET TO THE SOUTH.
- ENHANCE WAYFINDING AND PEDESTRIAN ROUTES TO MAJOR EMPLOYERS AT THE CONTRA COSTA COUNTY SUPERIOR COURT AND COUNTY GOVERNMENT OFFICE COMPLEX AROUND COURT STREET. PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR EMPLOYMENT SITES.
- IMPROVE BICYCLE WAYFINDING TO MAJOR DESTINATIONS SOUTH OF DOWNTOWN SUCH AS THE CONTRA COST REGIONAL MEDICAL CENTER, ALHAMBRA HIGH SCHOOL, VETERANS AFFAIRS (VA) MARTINEZ, AND OTHER COMMERCIAL CENTERS ALONG SR-4. PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT THESE LOCATIONS.
- EXPAND THE BICYCLE NETWORK TO RESIDENTIAL AREAS IN THE BIKESHED.
- MINIMIZE THE TRANSIT TRAVEL TIME TO ACCESS THE SITE BY INCORPORATING TRANSIT SIGNAL PRIORITY (TSP) AT TRAFFIC SIGNALS ALONG THE PRIMARY TRANSIT ROUTES CONNECTING TO REGIONAL HIGHWAYS, INCLUDING MARINA VISTA AVENUE/ESCOBAR STREET TO CONNECT TO I-680 AND ALHAMBRA AVENUE/BERRELLESA STREET TO CONNECT TO SR-4.

LEGEND

-  TRANSIT AMENITIES
 -  BICYCLE AMENITIES
 -  PEDESTRIAN AMENITIES
 -  MOTORIZED SERVICES & AMENITIES
 -  SUPPORT SERVICES & AMENITIES
-  DIRECTION OF TRAVEL
-  NORTH
- GRAPHIC SCALE IN FEET
0 75 150 300

II. Concord Park-and-Ride (PNR) 680 Access Mobility Hub

The Concord PNR (680 Access Mobility Hub) is bounded by Willow Pass Road, Market Street, and the State Route (SR) 242 / Clayton Road interchange. The site is located in the City of Concord and the PNR lot is owned and operated by Caltrans. Vehicular access to the site is provided by two right-in/right-out driveways connecting to Market Street and Willow Pass Road. The mobility hub is located close to many retail and high-density residential areas on either side of SR 242 with big box retailers, large parking lots, and longer distances between shopping, dining, or job opportunities.

The priorities for the mobility hub include:

- Increase the utilization of the lot by accommodating microtransit, carpool/vanpool and other modes.
- Improve pedestrian and bicycle access to the mobility hub and provide on-site bicycle amenities.
- Expand mobility choices throughout the mobility hub area through improved bicycle and pedestrian safety, new and expanded shared mobility services programs, and improved transit amenities.

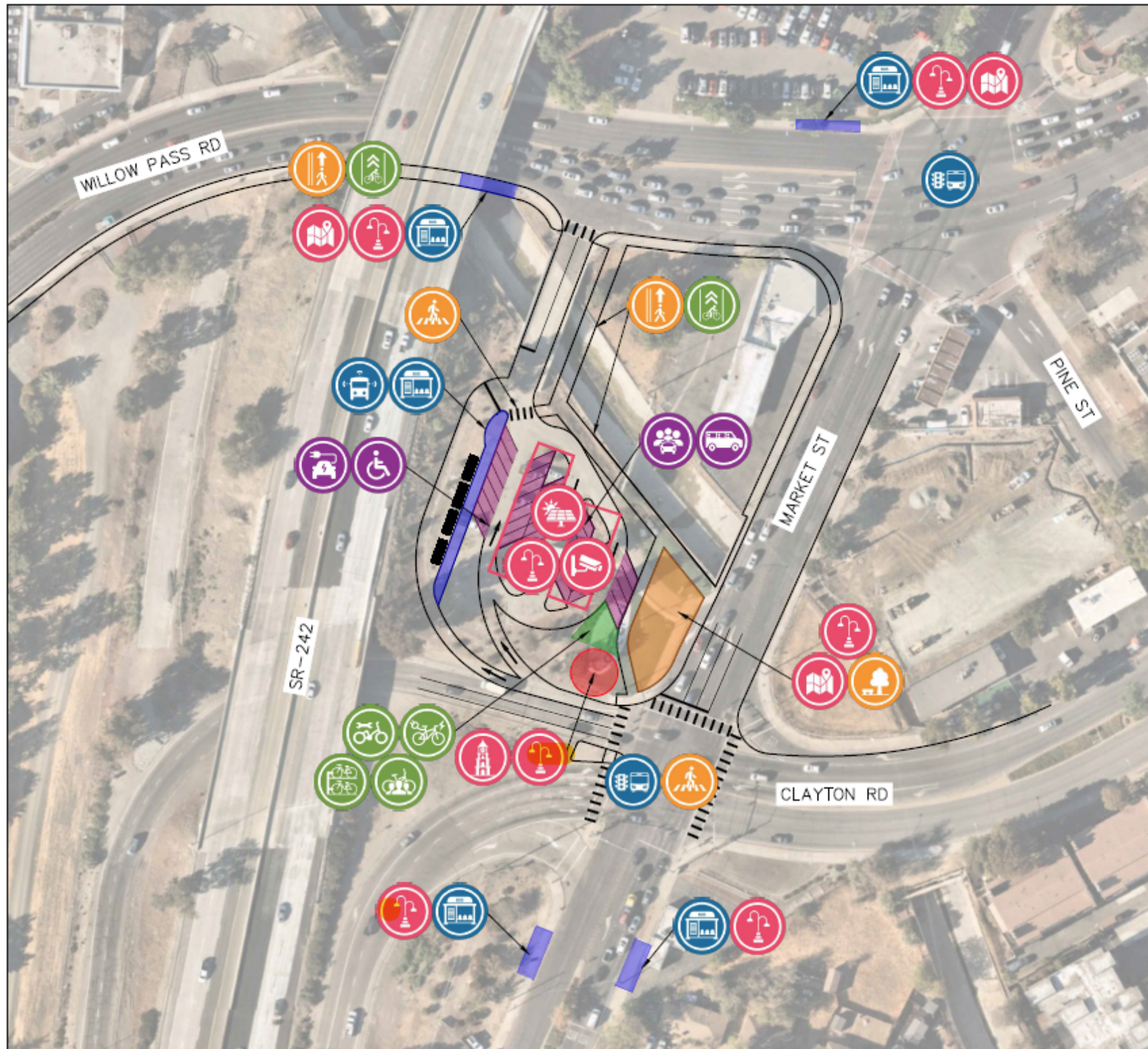
Figure 5 presents the Concord PNR mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 2** provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 2. Improvement Packages for Concord PNR 680 Access Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Reconfigure the parking lot and create the new ingress from the southbound SR 242 ramps	<ul style="list-style-type: none"> Expand and reconfigure the parking lot with a new ingress point from the SR 242 ramps Construct a transit curb with space for up to 4 microtransit shuttles or other transit vehicles Construct bus shelters and real-time traveler information systems Install solar power canopies, lighting, and CCTV cameras Restripe the parking lot and install EV charging and dedicated space for ADA, rideshare, carpool/vanpool parking Install monument/placemaker along with on-site signage and wayfinding Construct a pedestrian plaza to the east of the parking lot and create new sidewalks around the edge of the site Install secure bicycle parking, electric bike charging, bicycle repair station, and bikeshare facilities 	●	●	●		●	
2. Construct off-site bus stop & pedestrian and bicycle improvements	<ul style="list-style-type: none"> Reconstruct off-site bus stops on Clayton Rd, Market St, and Willow Pass Rd with enhanced shelters and lighting Improve bus stop amenities and accessibility at bus stops throughout the hub shed area, prioritized by existing ridership Implement sidewalk improvements, high visibility crosswalks, and bicycle treatments on nearby streets, including Market Street, Willow Pass Road, and Clayton Road. Modify intersections and conflict points to improve safety and access to the residential areas southeast of the mobility hub and surrounding commercial and employment centers 		●	●		●	
3. Construct a new pedestrian & bicycle access to Willow Pass Rd	<ul style="list-style-type: none"> Construct a new pedestrian and bicycle bridge or widen the existing bridge from the mobility hub over the channel to connect with Willow Pass Rd 	●	●	●			

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
4. Implement a shared mobility services program	<ul style="list-style-type: none"> • Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator to connect to nearby commercial areas, downtown Concord, and residential areas to the southeast • Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	
5. Implement off-site transit-signal priority (TSP) projects	<ul style="list-style-type: none"> • Implement transit signal priority (TSP) at key intersections on Market St and Clayton Rd 	●					

Figure 5: Concord PNR 680 Access Mobility Hub

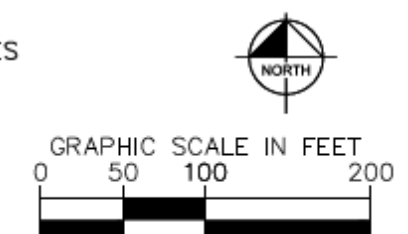


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING ALONG THE FOLLOWING CORRIDORS: MARKET STREET TO THE CORRIDOR TRAIL PATH SOUTH OF THE MOBILITY HUB; WILLOW PASS ROAD AND CLAYTON ROAD TO DOWNTOWN CONCORD AND THE BART STATION TO THE EAST; WILLOW PASS ROAD TO THE IRON HORSE TRAIL AND SUNVALLEY SHOPPING CENTER AND COMMERCIAL AREAS TO THE WEST.
- CONNECT TO THE PLANNED BIKE TRAILS WEST OF SR-242 IN EBMUD CORRIDOR AND EAST OF SR-242. PROVIDE WAYFINDING SIGNAGE TO DIRECT USERS BETWEEN THESE PATHS, THE MOBILITY HUBS, AND KEY DESTINATIONS.
- IDENTIFY OPPORTUNITIES FOR MICROTRANSIT SERVICES TO COMMERCIAL AREAS TO THE WEST AND EAST OF SR 242, INCLUDING DOWNTOWN CONCORD, AND THE RESIDENTIAL AREAS TO THE SOUTHEAST OF THE MOBILITY HUB.
- EXPLORE OPPORTUNITIES FOR LEVERAGING OTHER CALTRANS AND PUBLIC LAND FOR FUTURE MOBILITY HUB EXPANSION ON MARKET STREET SOUTH OF THE SR 242 RAMPS AND ALONG THE WEST SIDE OF SR 242.
- ENHANCE THE BUS STOPS ON CLAYTON ROAD AND MARKET STREET THAT ARE WALKING DISTANCE FROM THE MOBILITY HUB.
- MODIFY INTERSECTIONS AND CONFLICT POINTS TO IMPROVE SAFETY AND MOBILITY TO BETTER CONNECT THE RESIDENTIAL AREA TO THE SOUTHEAST OF THE MOBILITY HUB TO THE HUB AND SURROUNDING COMMERCIAL AND EMPLOYMENT AREAS.
- IMPROVE BUS STOP AMENITIES AND ACCESSIBILITY THROUGHOUT THE HUB SHED AREA, PARTICULARLY IN AREAS WITH HIGHER TRANSIT RIDERSHIP.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES
- DIRECTION OF TRAVEL



III. Downtown Pleasant Hill Community Mobility Hub

The Downtown Pleasant Hill Mobility Hub (Community Mobility Hub) is proposed for a location owned by the City and located near City Hall at the southeast corner of Gregory Lane and Cleaveland Road, approximately 0.5 miles from the I-680 on- and off-ramps. Access to the site is from Trelany Road. The City Hall complex currently consists of Pleasant Hill City Hall, Pleasant Hill Library (temporary), two municipal parking lots, and Pleasant Hill Park. The City Hall complex is bordered on the east and south by large retail shopping centers with ample surface parking and on the north and west by residential neighborhoods of varying density levels.

The priorities for the mobility hub include:

- Provide additional mobility options for accessing City Hall and nearby civic and retail uses through new and expanded shared mobility services and amenities.
- Enhance pedestrian and bicycle connectivity and safety on nearby streets.
- Improve the desirability and efficiency of transit through TSP and bus stop improvements.

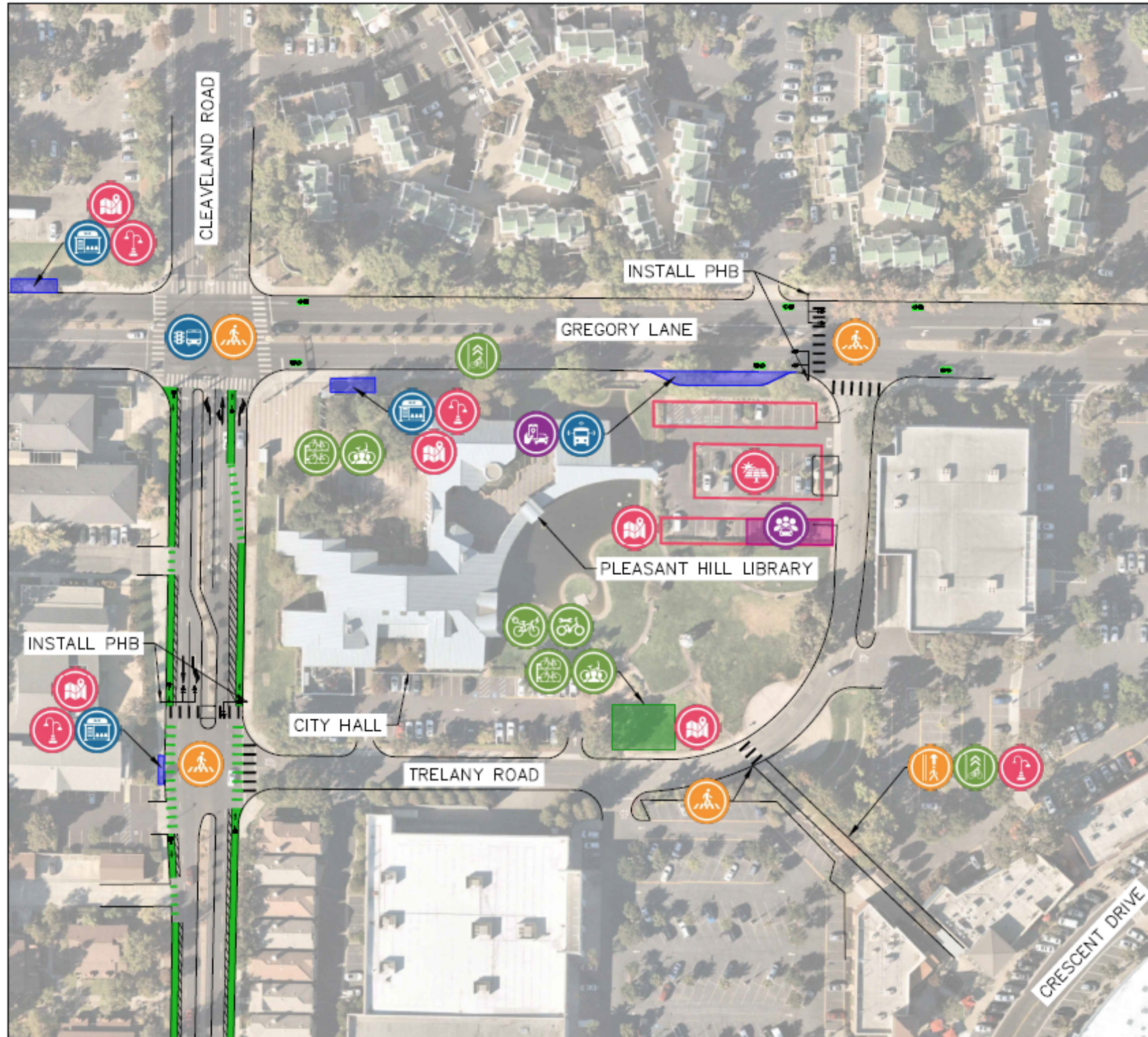
Figure 6 presents the Downtown Pleasant Hill mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 3** provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 3. Improvement Packages for Downtown Pleasant Hill Community Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Construct mobility hub amenities at City Hall	<ul style="list-style-type: none"> Restripe the parking lot adjacent to Gregory Ln with rideshare, carpool/vanpool, and ADA spaces Install lighting, solar power canopies, signage and wayfinding and real-time traveler information at key locations Install secure bicycle parking, E-bike charging, bike repair station, and bike sharing facilities on Trelany Rd Install secure bicycle parking and bike sharing facilities at the southeast corner of Gregory Ln / Cleaveland Rd Construct a TNC pick-up/drop-off and microtransit stop with passenger amenities on Gregory Ln at the northeast corner of the City Hall block 	●			●	●	●
2. Construct off-site pedestrian / bicycle improvements	<ul style="list-style-type: none"> Construct high visibility bicycle and pedestrian crosswalks at intersection on Gregory Ln and Cleaveland Rd Implement a road diet on Cleaveland Rd from Gregory Ln south to Boyd Rd and construct bike lanes on Cleaveland Rd from Gregory Ln to Boyd Rd Provide sharrows on Gregory Ln Install pedestrian hybrid beacons (PHBs) on Gregory Lane and Cleaveland Road at intersections with Trelany Road to improve access to bus stops and overall walkability Construct a shared pedestrian and bicycle path connecting Crescent Drive to Trelany Road with lighting and other path enhancements Improve pedestrian and bicycle connections to the senior housing and residential areas to the north and south of the mobility hub 	●	●	●		●	

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
3. Implement off-site transit-signal priority (TSP) projects and bus stop improvements	<ul style="list-style-type: none"> Implement transit signal priority (TSP) at at Cleaveland Road/Gregory Lane Install enhanced bus shelters, lighting, and wayfinding at existing bus stops on Cleaveland Rd and Gregory Ln Incorporate wayfinding and real-time transit information into bus stops, plazas, and commercial and employment areas around Downtown Pleasant Hill 	●	●				
4. Implement a shared mobility services program	<ul style="list-style-type: none"> Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	

Figure 6: Downtown Pleasant Hill Community Mobility Hub

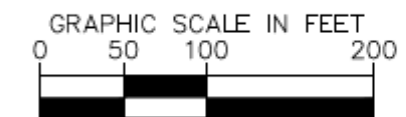


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- IMPLEMENT A ROAD DIET AND CONSTRUCT BIKE LANES ON CLEVELAND ROAD FROM GREGORY LANE SOUTH TO BOYD ROAD, CONNECTING TO EXISTING FACILITIES SOUTH OF BOYD ROAD.
- IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING TO THE EBMUD TRAIL ACCESSED VIA CONTRA COSTA BOULEVARD OR CLEVELAND ROAD SOUTH OF THE MOBILITY HUB.
- EXPLORE OPPORTUNITIES TO PROVIDE ENHANCED PEDESTRIAN AND BICYCLE FACILITIES ON MONUMENT BOULEVARD TO CONNECT TO THE IRON HORSE REGIONAL TRAIL AND COMMERCIAL AREAS EAST OF I-680.
- PROVIDE IMPROVED PEDESTRIAN AND BICYCLE CONNECTIONS TO PLEASANT HILL SENIOR CENTER, SEQUOIA ELEMENTARY SCHOOL, SEQUOIA MIDDLE SCHOOL, AND SENIOR HOUSING AND RESIDENTIAL AREAS LOCATED NORTH OF GREGORY LANE AND TO THE SOUTH ALONG CLEVELAND ROAD.
- INTEGRATE MOBILITY HUB SERVICES, SUCH AS SHARED MICROMOBILITY, WITHIN CITY'S DOWNTOWN PARKING STRUCTURE TO THE SOUTHEAST OF THE MOBILITY HUB IN DOWNTOWN PLEASANT HILL.
- INCORPORATE WAYFINDING AND REAL-TIME TRANSIT INFORMATION INTO BUS STOPS, PLAZAS, AND COMMERCIAL AND EMPLOYMENT AREAS AROUND DOWNTOWN PLEASANT HILL.
- CONSIDER OPPORTUNITIES FOR MICROTRANSIT TO NEARBY MAJOR DESTINATIONS AND EMPLOYERS SUCH AS THE NEW LIBRARY AND COUNTY EDUCATION BUILDING ON OAK PARK BOULEVARD AND SENIOR HOUSING ON CLEVELAND ROAD.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES



IV. Mitchell Drive Community Mobility Hub

The Mitchell Drive PNR (Community Mobility Hub) is located in the Shadelands Business Park approximately 0.4 miles north of Ygnacio Valley Road and two miles east of I-680. The PNR is owned and operated by the City of Walnut Creek. There is one vehicle access point from Mitchell Drive. The mobility hub is located close to several large office buildings, the Contra Costa School of Performing Arts and Springfield Montessori School. The Orchards at Walnut Creek shopping center and the Sequoia Living Viamonte senior housing complex are both located approximately 0.4 miles to the south/east. The Contra Costa Canal Regional Trail, a multi-use pedestrian and bicycle facility, is located just to the north of the mobility hub.

The priorities for the mobility hub include:

- Provide additional mobility options for accessing Shadelands and nearby schools through new and expanded shared mobility services and amenities, including additional traveler information and wayfinding/signage.
- Improve pedestrian and bicycle access improvements in the Shadelands area as envisioned in the *Shadelands Multi-Modal Improvement Plan* (Fehr & Peers, February 2021).
- Connect the mobility hub to regional trails and destinations, including the Contra Costa Canal Trail and nearby schools.
- Increase utilization of the PNR through prioritization of vanpool/carpool and rideshare services, as well as EV charging.

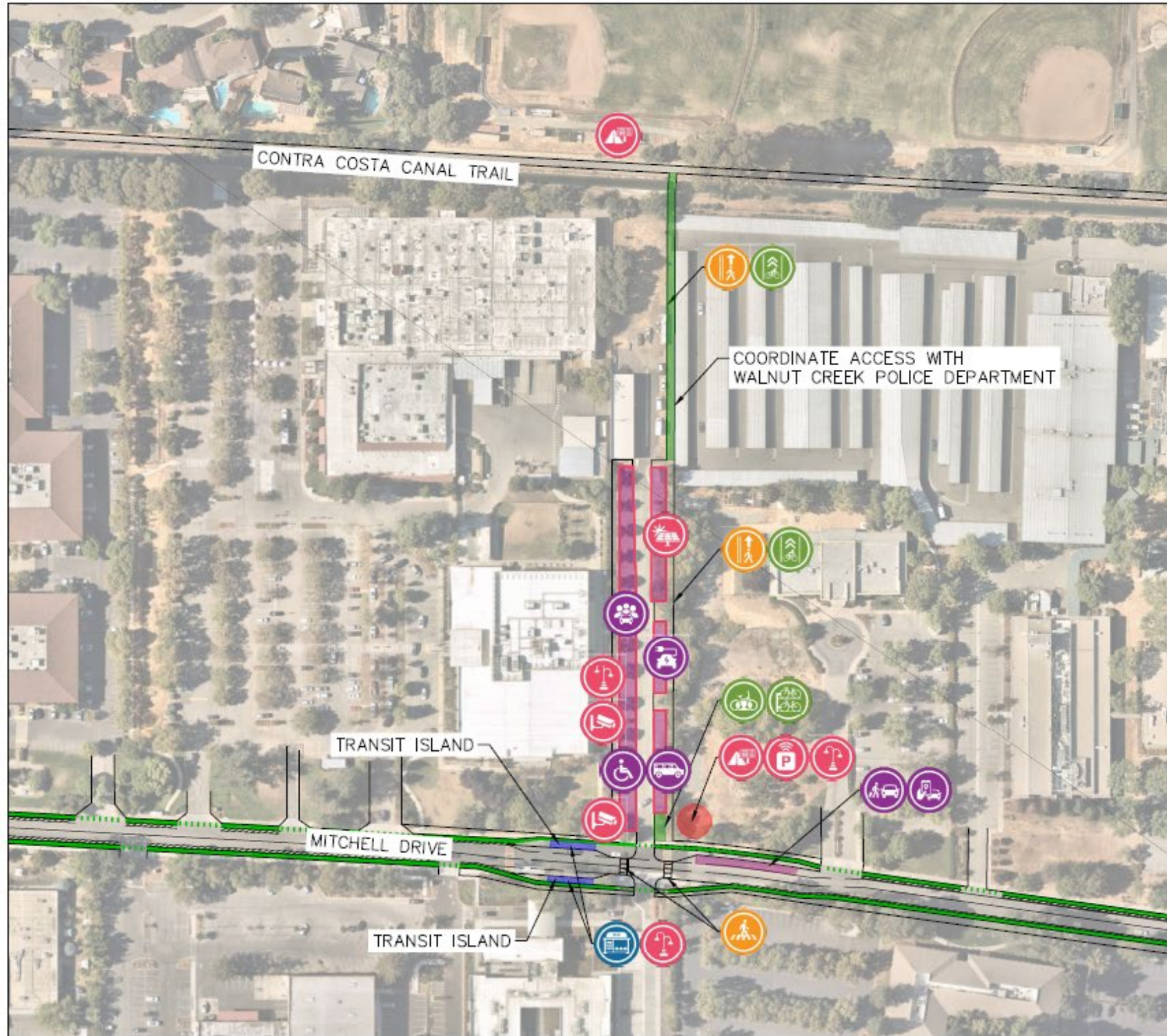
Figure 7 presents the Mitchell Drive mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 4** provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 4. Improvement Packages for Mitchell Drive Community Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Construct mobility hub amenities in the Mitchell Drive lot	<ul style="list-style-type: none"> Restripe parking lot to incorporate spaces for rideshares services, vanpool/carpool, EV charging, and ADA Install lighting, solar power canopies, CCTV cameras, wayfinding, and a parking reservation system Install secure bicycle parking and bike sharing facilities at the entrance on Mitchell Dr Construct enhanced pedestrian and bicycle paths along the eastern edge of the mobility hub. 		●	●		●	
2. Construct off-site improvements along Mitchell Drive	<ul style="list-style-type: none"> Construct high visibility bicycle and pedestrian crosswalks across Mitchell Dr Construct bicycle facilities on Mitchell Drive extending to the east and west of the mobility hub site Construct new bus shelters with lighting at bus stops near the mobility hub entrance Construct passenger and TNC pick-up/drop-off area on Mitchell Dr Improve pedestrian and bicycle access and wayfinding from key points along Ygnacio Valley Rd, Oak Grove Rd, and Wiget Ln 	●	●	●		●	
3. Create a new connection to the Contra Costa Canal Trail	<ul style="list-style-type: none"> Construct a new pedestrian and bicycle connection from the mobility hub to the Contra Costa Canal Trail through the Walnut Creek Police Department property Create a new bridge over the canal and provide enhanced wayfinding to the schools north of the canal 	●	●	●			
4. Implement a shared mobility services program	<ul style="list-style-type: none"> Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
5. Identify locations for other mobility hubs in the Shadelands Business Park	<ul style="list-style-type: none"> Identify other opportunities for additional mobility hub locations closer to Ygnacio Valley Rd with enhanced local, express, and microtransit services to destinations in the Shadelands Business Park 			●	●		●

Figure 7: Mitchell Drive Community Mobility Hub

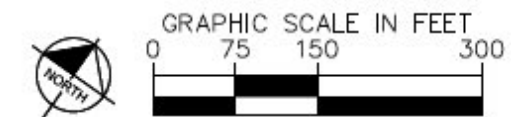


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- CONSTRUCT CLASS IV BIKE LANES ALONG MITCHELL DRIVE AND INCORPORATE THE BROADER SET OF BICYCLE AND PEDESTRIAN IMPROVEMENTS PLANNED AS PART OF THE SHADELANDS MULTI-MODAL IMPROVEMENT PLAN.
- INSTALL SIGNAGE AND WAYFINDING TO THE MOBILITY HUB FROM KEY POINTS ON YGNACIO VALLEY ROAD TO THE SOUTH AND OAK GROVE ROAD EAST OF THE MOBILITY HUB.
- IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING TO THE CONTRA COSTA TRAIL CONNECTION ON WIGET LANE WEST OF THE MOBILITY HUB.
- EXPLORE OPTIONS FOR A DIRECT CONNECTION BETWEEN THE MOBILITY HUB, THE CONTRA COSTA CANAL TRAIL AND THE HIGH SCHOOLS NORTH OF THE MOBILITY HUB.
- EXPLORE MICROTRANSIT AND SHUTTLE SERVICES TO EMPLOYERS THROUGHOUT THE SHADELANDS BUSINESS CENTER AREA.
- IDENTIFY OPPORTUNITIES FOR CREATING A NEW TRANSIT HUB TO FACILITATE CONNECTIONS BETWEEN LOCAL, EXPRESS, AND MICROTRANSIT BUS SERVICES MORE PROXIMATE TO YGNACIO VALLEY ROAD.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES



V. Walnut Creek BART Regional Mobility Hub

The Walnut Creek BART (Regional Mobility Hub) is located at the northwestern edge of downtown Walnut Creek, on the block bounded by California Boulevard, Ygnacio Valley Road, Pringle Road, and I-680. The station is a major intermodal hub served by BART, County Connection, Solano Express, Tri Delta Transit, WestCAT, and LAVTA. The station includes the BART station facilities, two parking garages (one recently completed in 2019 and privately owned and operated), a new bus transfer center on the first floor of the new garage, and surrounding streets on the station block.

The priorities for the mobility hub include:

- Improve bicycle connectivity by implementing on-site bicycle amenities and bike connections and off-site bicycle projects to connect to regional destinations and trails.
- Increase utilization by adding amenities for and prioritizing microtransit, carpool/vanpool, ride share, and shared micromobility services
- Improve user experience by providing amenities such as improved signage and wayfinding and installing EV chargers, solar power canopies, parking reservation systems, and Wi-Fi.
- Improve transit access by implementing off-site transit signal priority (TSP) projects at key access points.

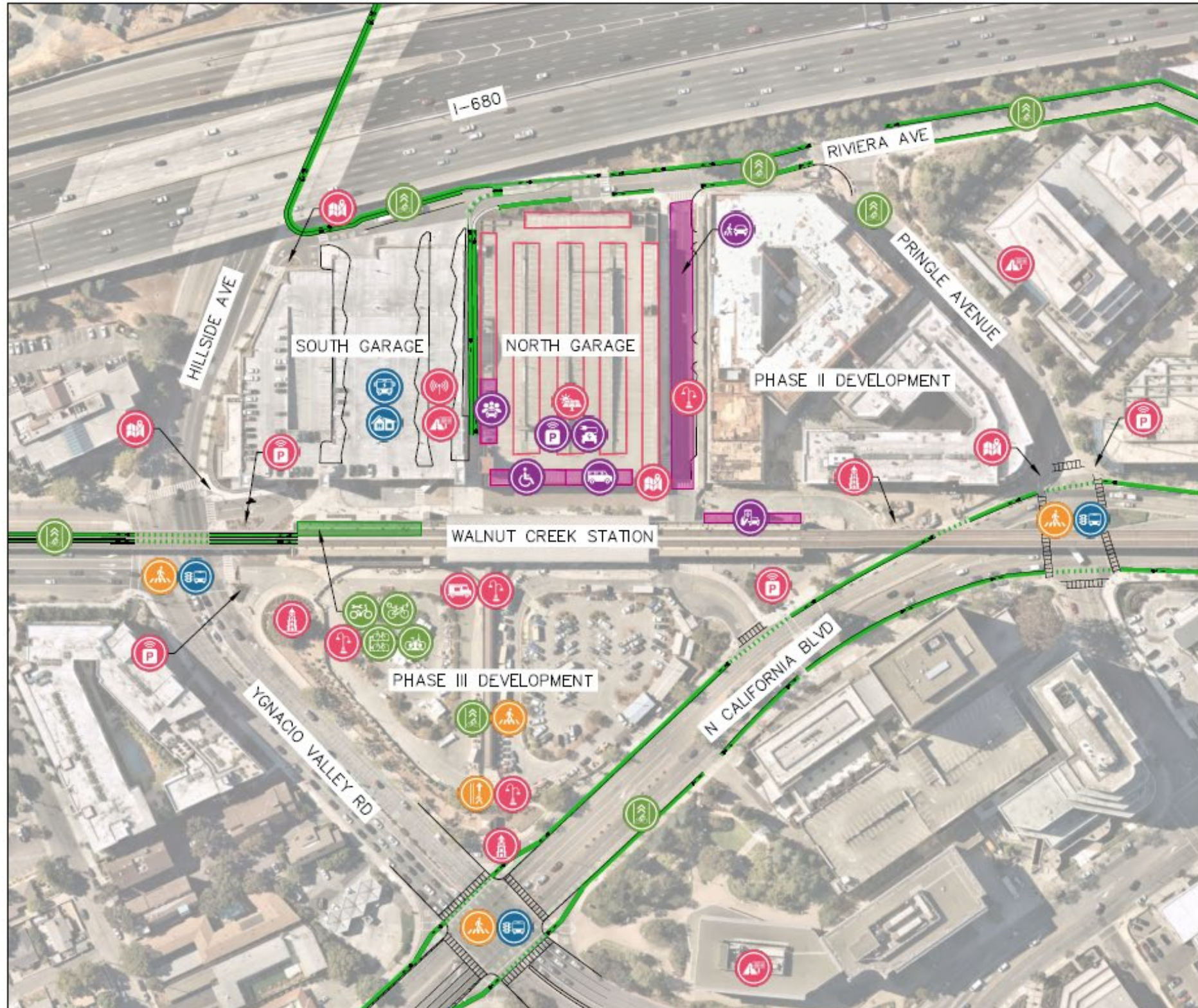
Figure 8 presents the Walnut Creek BART Station mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 5** provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 5. Improvement Packages for Walnut Creek BART Regional Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Implement north parking garage projects	<ul style="list-style-type: none"> Implement changes to ADA, carpool/vanpool, ride share spaces inside the garage Implement parking reservation and real-time traveler information systems Install EV chargers for electric vehicles and buses Install solar power canopy 	●				●	
2. Implement south parking garage projects	<ul style="list-style-type: none"> Incorporate microtransit and autonomous transit services into the south garage Construct driver relief facility, Wifi amenity, and on-site real-time traveler information systems 		●	●			
3. Implement signage and wayfinding program	<ul style="list-style-type: none"> Implement signage, wayfinding, lighting at keys locations on and off-site Implement real-time traveler information and parking information signs on and off-site Install monument or placemarkers at three locations Install solar power canopy to two off-site locations 	●	●			●	●
4. Implement bike storage, charging, and shared bicycle facilities and other on-site changes	<ul style="list-style-type: none"> Construct bike parking and storage for on-site bike facility area Construct E-bike charging station Implement bike sharing facilities Implement mobile retail services and lighting improvements near bike facility area Relocate TNC pick-up/drop-off area and lighting improvements (per BART plans) 		●	●		●	
5. Construct off-site pedestrian / bicycle improvements	<ul style="list-style-type: none"> Construct off-site bike lanes and sharrows on Riviera Ave, Parkside Dr, N California Blvd, Oakland Blvd, and along Hillside Ave and through Phase II/III development parcels 	●	●				

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
	<ul style="list-style-type: none"> Construct pedestrian walkways and high visibility crosswalks at major intersections on Ygnacio Valley Rd, California Blvd, and through the Phase II/III development parcels Implement off-site bike parking at key destinations in downtown 						
6. Implement off-site transit-signal priority (TSP) projects	<ul style="list-style-type: none"> Implement transit signal priority (TSP) at key intersections on Ygnacio Valley Road and California Blvd 	●					
7. Implement a shared mobility services program	<ul style="list-style-type: none"> Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	

Figure 8: Walnut Creek BART Regional Mobility Hub

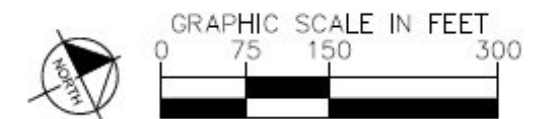


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- IMPROVE BIKE CONNECTIVITY ALONG RIVIERA AVENUE AND PARKSIDE DRIVE TO CONNECT TO IRON HORSE REGIONAL TRAIL. PROVIDE INTERSECTION ENHANCEMENTS AT RIVIERA AVENUE/PARKSIDE DRIVE.
- ENHANCE WAYFINDING TO CYCLE TRACK AND SIDEWALK ALONG OAKLAND BOULEVARD, WHICH PROVIDES A CONNECTION TO DOWNTOWN.
- IMPROVE BICYCLE FACILITIES ALONG CALIFORNIA BOULEVARD TO CONNECT TO DOWNTOWN.
- PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR COMMERCIAL, MEDICAL AND EMPLOYMENT DESTINATIONS IN AND AROUND DOWNTOWN.
- PROVIDE A BICYCLE CONNECTION ALONG HILLSIDE AVENUE ACROSS I-680 TO PARKSIDE DRIVE.
- PROVIDE TRANSIT SIGNAL PRIORITY ON YGNACIO VALLEY ROAD AND CALIFORNIA BOULEVARD/N MAIN STREET.
- PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT KEY EMPLOYMENT AND COMMERCIAL DESTINATIONS IN DOWNTOWN.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES



VI. Danville Sycamore Valley 680 Access Mobility Hub

The Danville Sycamore Valley PNR (680 Access Mobility Hub) is located at the northeast quadrant of the I-680 and Sycamore Valley Road interchange. The PNR is owned and maintained by the Town of Danville and consists of a large PNR lot, a transit stop, bike parking, and pick-up/drop-off curb. The PNR is also adjacent to the Iron Horse Regional Trail, although a direct connection from the PNR lot to the trail does not exist today. The mobility hub primarily connects residential neighborhoods on both sides of I-680 to public and private transit.

The priorities for the mobility hub include:

- Expand on-site transit facilities to increase transit capacity and amenities, including real-time traveler information systems.
- Provide enhanced pedestrian and bicycle connections to the Iron Horse Trail, including additional bike storage.
- Improve mobility hub access through access and circulation improvements along Sycamore Valley Road for buses, bikes, and pedestrians.
- Increase the utilization of the mobility hub through expanded pick-up/drop-off areas, EV charging, shared mobility services, and carpool/vanpool priority treatments.

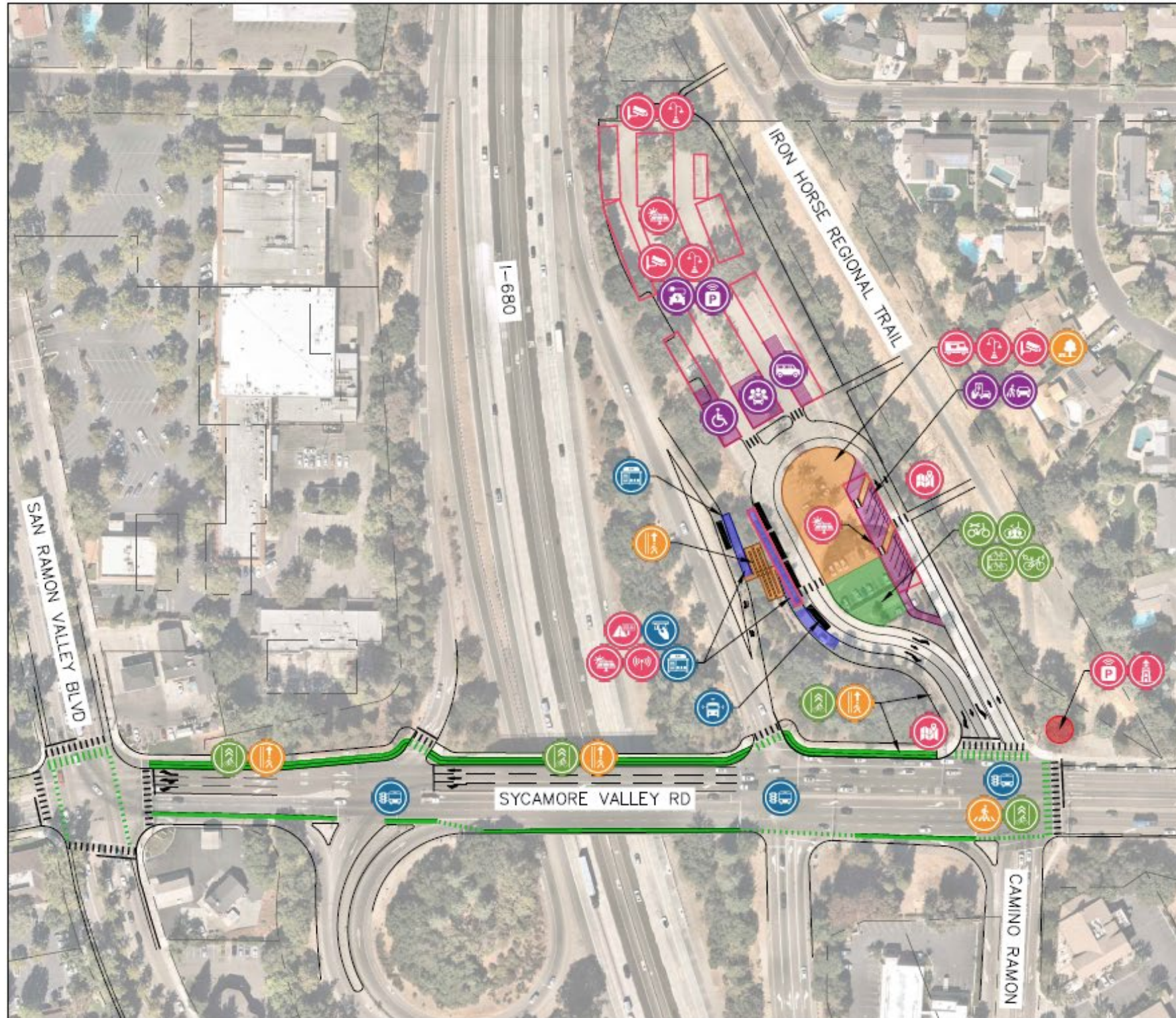
Figure 9 presents the Danville Sycamore Valley mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 6** provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 6. Improvement Packages for Danville Sycamore Valley 680 Access Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Construct transit related improvements	<ul style="list-style-type: none"> Widen the parking lot footprint to construct the transit loop and modifications to the ingress and egress lanes in the south portion of the lot Construct 4 bus bays along the west edge of the south site for buses along with enhanced bus shelters/waiting areas, fare vending machines, wifi amenities, real-time traveler information systems, and pedestrian walkways Construct mobility hub amenities inside the loop, which include pick-up/drop-off diagonal “pull through” parking spaces, solar canopies, a public plaza with mobile retail options, and bicycle amenities (secure parking, e-bike charging, bicycle repair station, bike share station) Construct monument and parking information signage at the entrance driveway 	●	●	●	●	●	
2. Reconfigure the parking lot and provide on-site pedestrian / bicycle connections	<ul style="list-style-type: none"> Restripe the north portion of the widened parking lot to provide parking spaces dedicated to EV charging, rideshare, carpool/vanpool, and ADA spaces Construct pedestrian/bicycle path connecting to Iron Horse Trail along the eastern edge of the site Widen shared pedestrian / bicycle path connecting to Sycamore Valley Road Implement parking reservation system Install CCTV, lighting, real-time traveler information signs, and solar power canopies through project site 	●	●	●		●	
3. Construct in-line bus stop	<ul style="list-style-type: none"> Construct an in-line bus stop on the northbound I-680 on-ramp with a shelter and real-time traveler information Provide a pedestrian path to the in-line bus stop from the bus stops within the mobility hub 	●	●				

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
4. Construct off-site pedestrian / bicycle improvements	<ul style="list-style-type: none"> Construct a two-way cycletrack and improved sidewalk along the north side of Sycamore Valley Rd from the mobility hub to San Ramon Valley Blvd west of the site Improve bicycle facilities on San Ramon Valley Road, Sycamore Valley Road east of Camino Ramon, and Camino Ramon within the mobility hub bikeshed Provide high visibility bicycle and pedestrian crosswalks at Sycamore Valley Road and Camino Ramon 	●	●	●		●	●
5. Implement off-site transit-signal priority (TSP) projects	<ul style="list-style-type: none"> Implement transit signal priority (TSP) at key intersections on Sycamore Valley Road at the I-680 off-ramps and the mobility hub access driveway / Camino Ramon intersection 	●					
6. Implement a shared mobility services program	<ul style="list-style-type: none"> Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	

Figure 9: Danville Sycamore Valley 680 Access Mobility Hub

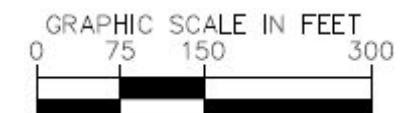


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING ALONG SYCAMORE VALLEY ROAD TO RESIDENTIAL NEIGHBORHOODS EAST OF THE MOBILITY HUB AND CAMINO RAMON TO THE SOUTH.
- IDENTIFY OPPORTUNITIES FOR MICROTRANSIT AND OTHER TRANSIT SERVICES TO PROVIDE CONNECTIONS TO THE MOBILITY HUB FROM LOWER-DENSITY RESIDENTIAL AREAS OUTSIDE OF THE WALKSHED.
- EXPLORE OPPORTUNITIES FOR PRIVATE SHUTTLE PERMITTING PROGRAM FOR USE OF TRANSIT CENTER.
- IDENTIFY OPPORTUNITIES FOR IMPROVED BIKE FACILITIES ON SAN RAMON VALLEY BLVD.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES



VII. San Ramon Transit Center Community Mobility Hub

The San Ramon Transit Center (Community Mobility Hub) is located at the eastern end of Executive Parkway in the Bishop Ranch area in the City of San Ramon. The site consists of the San Ramon Intermodal Transit Facility and a small commuter parking lot. It is located near several office buildings and the Iron Horse Middle School, and immediately adjacent to a parking structure and the Iron Horse Regional Trail.

The priorities for the mobility hub include:

- Increase the capacity of the transit center by adding and improving the usability of bus bays
- Enhance utilization of the mobility hub by increasing space for pick-up/drop-off and TNCs.

- Providing additional parking for carpool/vanpool and rideshare to better connect the mobility hub to surrounding employment areas and regional trails through new pedestrian and bicycle facilities at and near the mobility hub.
- Increase visibility and awareness of the mobility hub through features such as improved signage, wayfinding, and traveler information.
- Expand the effectiveness of the mobility hub through new shared mobility services programs within and around Bishop Ranch.

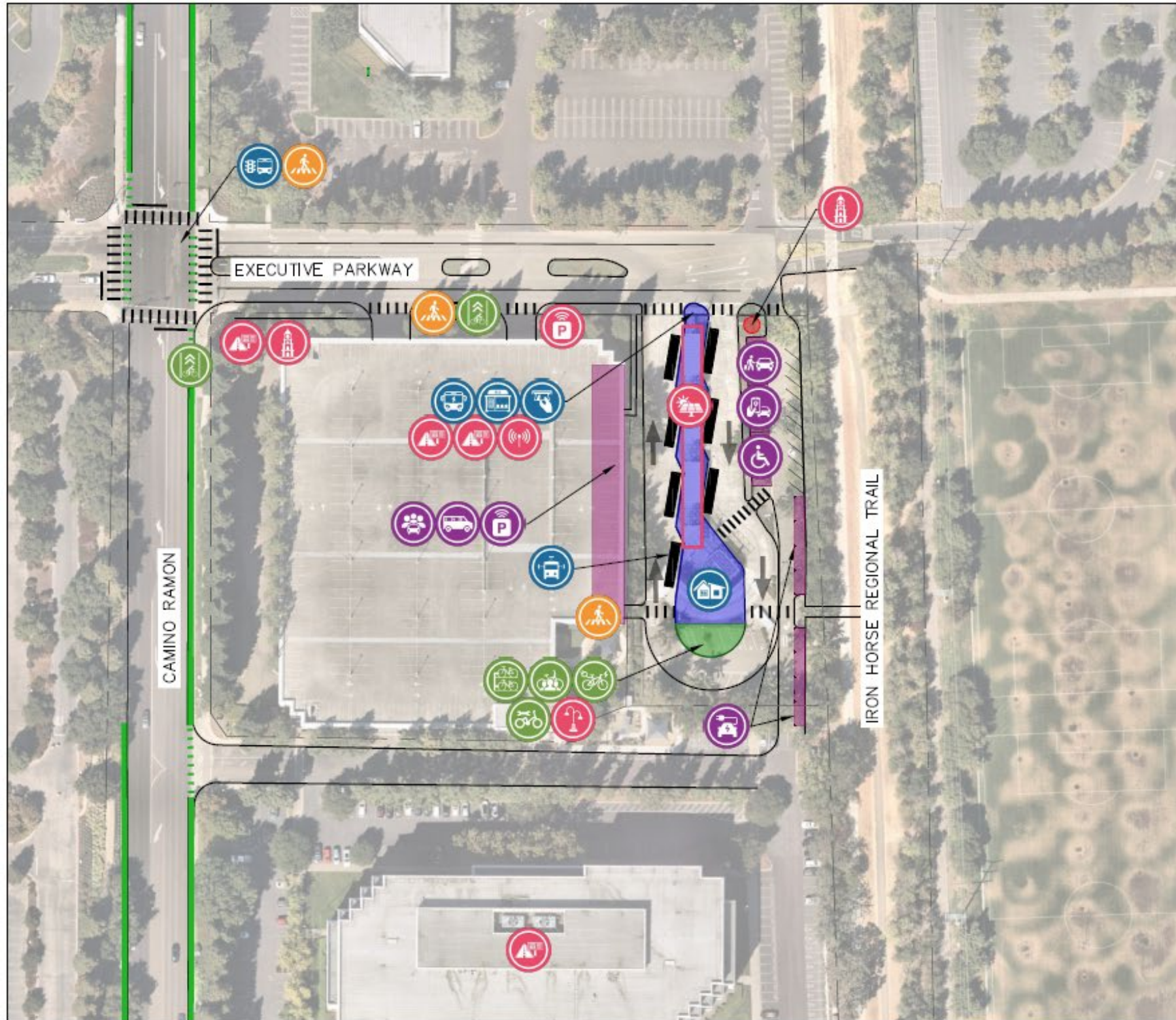
Figure 10 presents the San Ramon Transit Center mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 7** provides the improvement packages and the assessment of each to the six mobility hub goals.

Table 7. Improvement Packages for San Ramon Transit Center Community Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Construct transit related improvements within the existing San Ramon Transit Center footprint	<ul style="list-style-type: none"> Reconstruct transit center to accommodate 7 sawtooth bus bays and expand the transit island to the south Install fare vending machines, wifi amenities, real-time traveler information systems, enhanced bus shelters, a driver relief area, EV bus charging facilities, and a solar power canopy over the transit island Reconfigure the parking lot to accommodate an expanded TNC passenger and kiss-and-ride pick-up/drop-off area with ADA spaces along the eastern edge of the parking lot Create a new egress driveway at the south end of the transit center Provide EV charging spaces along the eastern edge of the site Incorporate microtransit shuttles and future autonomous transit at one sawtooth bay Install lighting, signage and wayfinding on and off-site, including parking information and real-time traveler information Install secure bicycle parking, E-bike charging, bike repair station, and bike sharing facilities on the expanded transit island Build an enhanced pedestrian/bicycle path to the Iron Horse Trail 	●	●	●	●	●	●
2. Modify first level of the parking garage to integrate with the transit center	<ul style="list-style-type: none"> Restripe eastern portion of the first level of the parking garage to provide rideshare, carpool/vanpool, and reserved parking spaces Implement parking reservation system Construct new pedestrian connections from the first level of the parking garage to the transit center 		●	●		●	

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
3. Construct off-site pedestrian / bicycle improvements	<ul style="list-style-type: none"> Construct bike lanes and sharrows along Camino Ramon Construct high visibility crosswalks at the Camino Ramon/Executive Parkway intersection Provide dedicated bicycle facilities along Executive Parkway, Norris Canyon Road, and Bishop Drive Provide a pedestrian and bicycle path to connect the Mobility Hub to Alcosta Boulevard 	●	●	●		●	
4. Implement signage and wayfinding program with off-site transit signal priority (TSP)	<ul style="list-style-type: none"> Implement transit signal priority (TSP) at key intersections within Bishop Ranch Install monument/placemaker signs, signage and wayfinding, parking information and real-time traveler information at the mobility hub along Executive Parkway and at key off-site locations 	●	●			●	●
5. Implement a shared mobility services program	<ul style="list-style-type: none"> Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Implement a frequent shuttle connection to City Center and other Bishop Ranch attractions Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●		●	



Figure 10: San Ramon Transit Center *Community Mobility Hub*

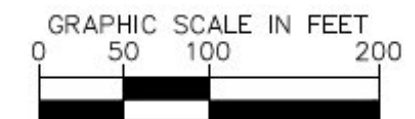


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- PROVIDE SAFE AND COMFORTABLE DEDICATED BICYCLE FACILITIES AMONG CAMINO RAMON, EXECUTIVE PARKWAY, NORRIS CANYON ROAD, AND BISHOP DRIVE.
- PROVIDE TRANSIT PRIORITY TREATMENTS ALONG BUS ROUTES WITHIN BISHOP RANCH.
- ADDRESS CONGESTION ISSUES AT THE TRANSIT CENTER ASSOCIATED WITH PICK-UP/DROP-OFF ACTIVITIES AT IRON HORSE MIDDLE SCHOOL.
- PROVIDE A PUBLICLY-ACCESSIBLE PEDESTRIAN AND BICYCLE PATH OF TRAVEL FROM THE MOBILITY HUB TO ALCOSTA BOULEVARD NORTH OF THE MIDDLE SCHOOL.
- INCORPORATE THE PROPOSED MOBILITY HUB IMPROVEMENTS WITH OTHER PLANNED MOBILITY HUBS WITHIN BISHOP RANCH TO CREATE A COHESIVE NETWORK.
- PROVIDE A FREQUENT SHUTTLE CONNECTION TO CITY CENTER AND OTHER ATTRACTORS WITHIN BISHOP RANCH.

LEGEND

-  TRANSIT AMENITIES
-  BICYCLE AMENITIES
-  PEDESTRIAN AMENITIES
-  MOTORIZED SERVICES & AMENITIES
-  SUPPORT SERVICES & AMENITIES
-  DIRECTION OF TRAVEL



VIII. Bollinger Canyon 680 Access Mobility Hub

The Bollinger Canyon PNR (680 Access Mobility Hub) is located at the southwest corner of the Bollinger Canyon Road / I-680 interchange and is owned by Caltrans and maintained by the City of San Ramon. The facility sits adjacent to the southbound I-680 on- and off-ramps, limiting access options to the facility. The mobility hub is located approximately 0.4 miles west of the City Center shopping center, Bishop Ranch and Chevron’s corporate headquarters.

The priorities for the mobility hub include:

- Provide an integrated and easily-accessed bus facility with multiple bus bays, including real-time travel information systems.
- Encourage pedestrian and bicycle access by implementing on and off-site pedestrian and bicycle amenities and connections.
- Enhance the utilization of the mobility hub through provision of dedicated space for carpool/vanpool, ride share, and pick-up/drop-off activities.
- Provide shared mobility and shuttle connections to Bishop Ranch.

Figure 11 presents the Bollinger Canyon mobility hub and the recommended services and amenities. The additional off-site improvements not depicted are described to the right of each plan. **Table 8** provides the improvement packages and the assessment of each to the six mobility hub goals.

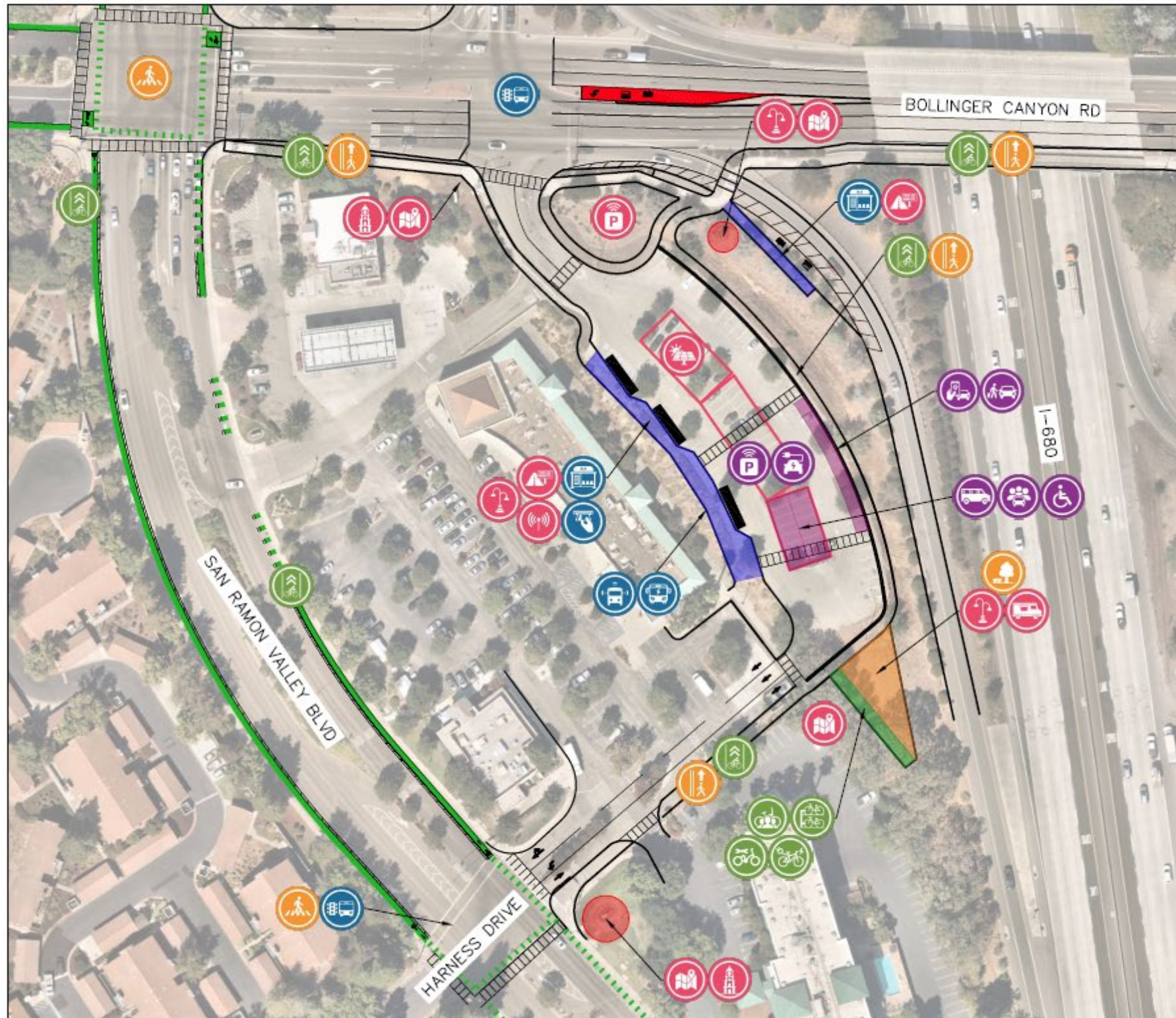
Table 8. Improvement Packages for Bollinger Canyon 680 Access Mobility Hub

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
1. Construct transit related improvements and modify mobility hub circulation	<ul style="list-style-type: none"> • Construct 3 sawtooth bus bays along the west edge of the site for buses and microtransit/autonomous transit • Construct a wide pedestrian path to accommodate bus shelters/waiting areas with lightings, fare vending machines, WIFI amenity, and real-time traveler information systems • Construct bus-only left-turn lane from westbound Bollinger Canyon Rd into the transit center • Construct exit route at south end of mobility hub to San Ramon Valley Blvd • Close existing access near mobility hub entrance in the north 	●	●	●		●	

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
2. Construct sidewalks and other parking lot changes	<ul style="list-style-type: none"> Restripe parking lot to provide EV charging, ride share, carpool/vanpool, and ADA spaces Install solar power canopies for all parking Implement parking reservation system Construct sidewalk for passenger and TNC pick-up/drop-off along the east edge of the site Provide sidewalk improvements into the mobility hub from Bollinger Canyon Rd and San Ramon Valley Blvd 	●	●	●		●	
3. Implement signage and wayfinding program	<ul style="list-style-type: none"> Implement lighting, signage and wayfinding on and off-site, including parking information and real-time traveler information at on-site and off-site locations Install monument at north entrance on Bollinger Canyon Rd and southern exit at Harness Dr 	●	●			●	●
4. Construct on-site pedestrian / bicycle improvements	<ul style="list-style-type: none"> Construct shared pedestrian and bicycle lane on Harness Dr and within project site Construct public plaza space with proper lighting for mobile retail services Construct bike parking and storage adjacent to plaza space Construct E-bike charging station and bike repair station Implement bike sharing facilities 		●	●	●	●	●

Improvement Package	Description	Alignment with Mobility Hub Goals					
		Efficient Movement of People	Universal Accessibility & Enhanced Safety	Improved Access to Alternative Transportation Modes	Mobility Hubs as Community Assets	Flexibility to Accommodate New Technology	Reflect Community & Regional Aspirations
5. Construct off-site pedestrian / bicycle improvements and modifications to overcrossing	<ul style="list-style-type: none"> Construct bike lanes and sharrows along San Ramon Valley Blvd and on Bollinger Canyon Rd (west of San Ramon Valley Rd) Provide high visibility crosswalks at Bollinger Canyon Rd/San Ramon Valley Blvd and San Ramon Valley Rd/Harness Dr intersections Modify the eastbound overcrossing on Bollinger Canyon Rd to provide a wider shared pedestrian and bicycle lane by moving the barrier and narrowing the outer travel lane. Connect this path on the overcrossing with an enhanced bike/pedestrian path on the south side of Bollinger Canyon Rd to the Sunset Dr/Chevron Dr intersection Construct secure off-site bike parking and bike charging stations at key destinations near the mobility hub 	●	●	●		●	
6. Construct in-line bus stop	<ul style="list-style-type: none"> Construct an in-line bus stop with shelter and real-time traveler information sign on the I-680 southbound on-ramp 	●	●				
7. Implement off-site transit-signal priority (TSP) projects	<ul style="list-style-type: none"> Implement transit signal priority (TSP) at key intersections at the Bollinger Canyon Rd, at San Ramon Valley Blvd/Harness Dr traffic signals, and within Bishop Ranch area 	●					
8. Implement a shared mobility services program and shuttle service in Bishop Ranch	<ul style="list-style-type: none"> Implement shuttle service between the mobility hub and key Bishop Ranch destinations, including City Center, Chevron, and the San Ramon Transit Center mobility hub Create a microtransit, micromobility, and vanpool/carpool program with a private-sector operator Operator is responsible for mobility services, infrastructure (docks, charging, signage), app development, payment, branding and marketing, and data sharing with public agencies 	●		●			

Figure 11: Bollinger Canyon 680 Access Mobility Hub

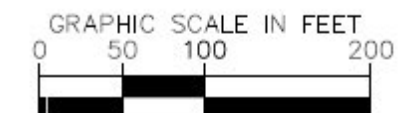


ADDITIONAL IMPROVEMENTS IN MOBILITY HUB AREA

- PLAN FOR THE CONSTRUCTION OF A NEW BICYCLE/PEDESTRIAN OVERCROSSING OF I-680, SOUTH OF BOLLINGER CANYON ROAD TO CONNECT TO DESTINATIONS EAST OF I-680, SUCH AS CHEVRON, CITY CENTER, AND BISHOP RANCH.
- PROVIDE SHARED USE PATH OR CLASS I BICYCLE PATH ALONG SOUTH SIDE OF BOLLINGER CANYON ROAD TO AT LEAST SUNSET DRIVE/CHEVRON DRIVE.
- PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR EMPLOYMENT AND COMMERCIAL SITES IN THE AREA, INCLUDING CHEVRON AND CITY CENTER.
- PROVIDE A SHUTTLE CONNECTION BETWEEN MOBILITY HUB AND CITY CENTER AND OTHER KEY BISHOP RANCH DESTINATIONS. INCORPORATE TRANSIT SIGNAL PRIORITY ALONG BOLLINGER CANYON ROAD AND WITHIN BISHOP RANCH.
- PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT KEY EMPLOYMENT AND COMMERCIAL DESTINATIONS EAST OF I-680.

LEGEND

- TRANSIT AMENITIES
- BICYCLE AMENITIES
- PEDESTRIAN AMENITIES
- MOTORIZED SERVICES & AMENITIES
- SUPPORT SERVICES & AMENITIES



Cost Estimates

Table 9 presents cost estimates for each of the mobility hubs. For a detailed breakdown of the cost by improvement package, please refer to **Appendix A**. The cost estimates include capital costs in 2022 dollars along with a 30% contingency for each improvement package.

Table 9: Mobility Hub Cost Estimate Summary, 2022 Dollars

Mobility Hub	Estimated Cost of All Improvements (\$)
Martinez Amtrak (Phase 1 Projects)	\$30,778,000
Martinez Amtrak (Phase 2 Project)	\$4,867,000
Concord PNR	\$13,659,000
Downtown Pleasant Hill	\$11,693,000
Mitchell Drive	\$11,607,000
Walnut Creek BART	\$27,480,000
Danville Sycamore Valley	\$29,353,000
San Ramon Transit Center	\$13,152,000
Bollinger Canyon PNR	\$21,645,000
TOTAL	\$164,234,000

The cost estimates include all of the on-site infrastructure and technology elements and the off-site improvements immediately adjacent to the mobility hubs and shown on the concept sketches. However, there is uncertainty related to some of the off-site improvements due to the complexity and distance of the projects from the mobility hub. For these off-site improvements, the estimates utilized “rough order-of-magnitude” cost ranges that capture the scale, complexity, and extent of the projects. The cost ranges were assigned based on the magnitude of the off-site projects according to three categories: “Low” (\$500,000), “Medium” (\$1,000,000-\$1,500,000) and “High” (\$3,000,000). These cost estimates can be used for planning and funding purposes but will need to be refined as improvements are advanced into engineering phases.

Summary and Next Steps

This report summarizes the sketch concepts plans and improvement packages for the eight shared mobility hub study sites. The sketch concept plans provide design elements for on- and off-site improvements at each mobility hub including bus bays, transit amenities, bicycle and pedestrian connections and circulation, parking for shared mobility services and micro-transit, auto access and circulation, signage and wayfinding, EV charging technology, and other supportive infrastructure. The sketch concept plans

were utilized to create improvement packages that consist of capital infrastructure and programs that advance the objectives of the Innovate 680 Shared Mobility Hubs project. Improvement packages were developed with considerations of potential implementation strategies and responsible parties. Implementation, phasing, and prioritization considerations for each mobility hub and the I-680 shared mobility hub program as a whole will be further developed in a subsequent project deliverable.



Appendices

Appendix A. Mobility Hub Detailed Cost Estimates

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - MARTINEZ AMTRAK			
Sub-Project	Total	Design	Construction
Project 1 (Transit Center Phase 1 and Surface Parking Lot) w/ 30% contingency	\$ 7,633,452	\$ 979,842	\$ 6,653,611
Project 2 (Construct New Passenger PUDO Area) w/ 30% contingency	\$ 225,553	\$ 37,224	\$ 188,329
Project 3 (Implement North Parking Lot Improvements) w/ 30% contingency	\$ 7,832,439	\$ 931,790	\$ 6,900,649
Project 4 (Implement Signage and Wayfinding Program) w/ 30% contingency	\$ 992,710	\$ 163,830	\$ 828,880
Project 5 (Implement On-Site Bike Storage, Charging, and Shared Bicycle Facilities) w/ 30% contingency	\$ 1,678,219	\$ 276,961	\$ 1,401,258
Project 6 (Implement Off-Site Transit Signal Priority (TSP) Projects) w/ 30% contingency	\$ 358,020	\$ 59,085	\$ 298,935
Project 7 (Construct Off-Street Pedestrian/Bicycle Improvements) w/ 30% contingency	\$ 12,057,666	\$ 1,989,909	\$ 10,067,757
Project 8 (Build Transit Center Phase 2) w/ 30% contingency	\$ 4,866,834	\$ 803,187	\$ 4,063,648
Project 9 (Implement a Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 35,644,893	\$ 5,241,826	\$ 30,403,066

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 1 (Transit Center Phase 1 and Surface Parking Lot)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Fare Vending Machines	1	EA	\$ 75,000	\$ 75,000	
2	Battery Electric Bus Charging Stations	4	EA	\$ 20,000	\$ 80,000	Assumes charger and dual-wand charging (minor conduit cost), new service is accounted for below under item #37. Additional 900k-1.2m would need to be added for battery electric storage system, if desired
3	Shelters	7	EA	\$ 80,000	\$ 560,000	Assume custom shelters
4	Benches	7	EA	\$ 5,000	\$ 35,000	
5	Lighting	1	LS	\$ 125,000	\$ 125,000	
6	Security	1	LS	\$ 150,000	\$ 150,000	
7	Curb & Gutter Reconstruction	700	LF	\$ 175	\$ 122,500	
8	Bus Area Repaving	20,000	SF	\$ 20	\$ 400,000	
9	Transit Waiting Area	10,000	SF	\$ 30	\$ 300,000	
					SUBTOTAL \$ 1,847,500	
SUPPORT SERVICES & AMENITIES						
10	Wi-Fi and Device Charging	10	EA	\$ 1,700	\$ 17,000	
11	Package Delivery Stations	1	LS	\$ 12,000	\$ 12,000	
12	Information Kiosks	2	EA	\$ 20,000	\$ 40,000	
13	Mobile Retail Services	1	EA	\$ 15,000	\$ 15,000	
					SUBTOTAL \$ 84,000	
HARDSCAPE IMPROVEMENTS						
14	Dedicated Transit Lanes	400	LF	\$ 400	\$ 160,000	Assume red painted concrete and minor curb work
					SUBTOTAL \$ 160,000	
OTHER CONSTRUCTION ITEMS						
15	Drainage	1	LS	\$ 209,150	\$ 209,150	10% of construction bid items
16	Traffic Control	1	LS	\$ 209,150	\$ 209,150	10% of construction bid items
17	Mobilization	1	LS	\$ 209,150	\$ 209,150	10% of construction bid items
18	Utility Relocation/Removals	1	LS	\$ 104,575	\$ 104,575	5% of construction bid items
					SUBTOTAL \$ 732,025	
PROFESSIONAL SERVICES						
19	Project Development (Environmental Clearance)	1	LS	\$ 28,235	\$ 28,235	1% of hard costs
20	Preliminary Engineering and Final Design	1	LS	\$ 395,294	\$ 395,294	14% of hard costs
21	Project Management for Design and Construction	1	LS	\$ 2,201,304	\$ 2,201,304	15% of hard costs
22	Construction Administration & Management (+DSDC)	1	LS	\$ 423,529	\$ 423,529	15% of hard costs
					SUBTOTAL \$ 3,048,361	
					PROJECT SUBTOTAL \$ 5,871,886	
					UNALLOCATED CONTINGENCY (30%) \$ 1,761,566	
					TOTAL PROJECT COST \$ 7,633,452	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 2 (Construct New Passenger PUDO Area)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
MOTORIZED SERVICES & AMENITIES						
1	Curb and Gutter Reconstruction	300	LF	\$ 175	\$ 52,500	Assume entire perimeter of PUDO area (south of Mtz. Ped bridge)
2	Parking Area Repaving	2,100	SF	\$ 15	\$ 31,500	Assume entire PUDO area repaved (south of Mtz. Ped bridge)
					SUBTOTAL \$	84,000
OTHER CONSTRUCTION ITEMS						
3	Drainage	1	LS	\$ 8,400	\$ 8,400	10% of construction bid items
4	Traffic Control	1	LS	\$ 8,400	\$ 8,400	10% of construction bid items
5	Mobilization	1	LS	\$ 8,400	\$ 8,400	10% of construction bid items
6	Utility Relocation/Removals	1	LS	\$ 4,200	\$ 4,200	5% of construction bid items
					SUBTOTAL \$	29,400
PROFESSIONAL SERVICES						
7	Project Development (Environmental Clearance)	1	LS	\$ 3,402	\$ 3,402	3% of hard costs
8	Preliminary Engineering and Final Design	1	LS	\$ 22,680	\$ 22,680	20% of hard costs
9	Project Management for Design and Construction	1	LS	\$ 17,010	\$ 17,010	15% of hard costs
10	Construction Administration & Management (+DSDC)	1	LS	\$ 17,010	\$ 17,010	15% of hard costs
					SUBTOTAL \$	60,102

PROJECT SUBTOTAL \$ 173,502
 UNALLOCATED CONTINGENCY (30%) \$ 52,051
TOTAL PROJECT COST \$ 225,553

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 3 (Implement North Parking Lot Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
MOTORIZED SERVICES & AMENITIES						
1	Electric Vehicle Charging Station	20	EA	\$ 18,450	\$ 369,000	
2	Parking Area Reconfiguration	4,400	SF	\$ 10	\$ 44,000	All parking (Rideshare, ADA, Carpool/vanpool)
3	Parking Signage (Static and Dynamic)	1	LS	\$ 100,000	\$ 100,000	
4	Parking Space Availability Sensors	261	Space	\$ 400	\$ 104,400	
5	Real-time occupancy digital signage and backroom hardware/software	2	EA	\$ 30,000	\$ 60,000	
SUBTOTAL \$					677,400	
SUPPORT SERVICES & AMENITIES						
6	Solar Panel Canopy	35,000	SF	\$ 60	\$ 2,100,000	
SUBTOTAL \$					2,100,000	
HARDSCAPE IMPROVEMENTS						
7	New Service for EV Charging Stations	1	LS	\$ 1,000,000	\$ 1,000,000	Assumes equipment (switchgear, transformer, etc.) and conduits
SUBTOTAL \$					1,000,000	
OTHER CONSTRUCTION ITEMS						
8	Drainage	-	LS	\$ 377,740	\$ -	10% of construction bid items
9	Traffic Control	-	LS	\$ 377,740	\$ -	10% of construction bid items
10	Mobilization	1	LS	\$ 377,740	\$ 377,740	10% of construction bid items
11	Utility Relocation/Removals	-	LS	\$ 188,870	\$ -	5% of construction bid items
SUBTOTAL \$					377,740	
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 41,551	\$ 41,551	1% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 581,720	\$ 581,720	14% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 623,271	\$ 623,271	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 623,271	\$ 623,271	15% of hard costs
SUBTOTAL \$					1,869,813	

PROJECT SUBTOTAL \$ 6,024,953
 UNALLOCATED CONTINGENCY (30%) \$ 1,807,486
TOTAL PROJECT COST \$ 7,832,439

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 4 (Implement Signage and Wayfinding Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Real Time Travel Information	2	EA	\$ 17,000	\$ 34,000	
					SUBTOTAL \$	34,000
PEDESTRIAN AMENITIES						
2	Lighting	1	LS	\$ 100,000	\$ 100,000	
					SUBTOTAL \$	100,000
SUPPORT SERVICES & AMENITIES						
3	Wayfinding	1	LS	\$ 100,000	\$ 100,000	
4	Monumentation	2	EA	\$ 100,000	\$ 200,000	
					SUBTOTAL \$	300,000
OTHER CONSTRUCTION ITEMS						
5	Drainage	-	LS	\$ 43,400	\$ -	10% of construction bid items
6	Traffic Control	-	LS	\$ 43,400	\$ -	10% of construction bid items
7	Mobilization	1	LS	\$ 43,400	\$ 43,400	10% of construction bid items
8	Utility Relocation/Removals	1	LS	\$ 21,700	\$ 21,700	5% of construction bid items
					SUBTOTAL \$	65,100
PROFESSIONAL SERVICES						
9	Project Development (Environmental Clearance)	1	LS	\$ 14,973	\$ 14,973	3% of hard costs
10	Preliminary Engineering and Final Design	1	LS	\$ 99,820	\$ 99,820	20% of hard costs
11	Project Management for Design and Construction	1	LS	\$ 74,865	\$ 74,865	15% of hard costs
12	Construction Administration & Management (+DSDC)	1	LS	\$ 74,865	\$ 74,865	15% of hard costs
					SUBTOTAL \$	264,523

PROJECT SUBTOTAL \$ 763,623
 UNALLOCATED CONTINGENCY (30%) \$ 229,087
TOTAL PROJECT COST \$ 992,710

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 5 (Implement On-Site Bike Storage, Charging, and Shared Bicycle Facilities)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
PEDESTRIAN AMENITIES						
1	Landscaping	1	LS	\$ 125,000	\$ 125,000	
2	Lighting	1	LS	\$ 150,000	\$ 150,000	
					SUBTOTAL \$	275,000
BICYCLE AMENITIES						
1	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000	
2	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers
3	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000	
					SUBTOTAL \$	265,000
HARDSCAPE IMPROVEMENTS						
4	Pedestrian Walkways	4,500	SF	\$ 30	\$ 135,000	
					SUBTOTAL \$	135,000
OTHER CONSTRUCTION ITEMS						
5	Drainage	1	LS	\$ 67,500	\$ 67,500	10% of construction bid items
6	Traffic Control	-	LS	\$ 67,500	\$ -	10% of construction bid items
7	Mobilization	1	LS	\$ 67,500	\$ 67,500	10% of construction bid items
8	Utility Relocation/Removals	1	LS	\$ 33,750	\$ 33,750	5% of construction bid items
					SUBTOTAL \$	168,750
PROFESSIONAL SERVICES						
9	Project Development (Environmental Clearance)	1	LS	\$ 25,313	\$ 25,313	3% of hard costs
10	Preliminary Engineering and Final Design	1	LS	\$ 168,750	\$ 168,750	20% of hard costs
11	Project Management for Design and Construction	1	LS	\$ 126,563	\$ 126,563	15% of hard costs
12	Construction Administration & Management (+DSDC)	1	LS	\$ 126,563	\$ 126,563	15% of hard costs
					SUBTOTAL \$	447,188

PROJECT SUBTOTAL \$ 1,290,938
 UNALLOCATED CONTINGENCY (30%) \$ 387,281
TOTAL PROJECT COST \$ 1,678,219

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 6 (Implement Off-Site Transit Signal Priority (TSP) Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
Off-site Improvements						
1	Traffic Signal Modifications (Transit Signal Priority)	3	EA	\$ 50,000	\$ 150,000	Assuming additional improvements are needed for each of 3 intersections.
					SUBTOTAL \$	150,000
OTHER CONSTRUCTION ITEMS						
2	Drainage	-	LS	\$ 15,000	\$ -	10% of construction bid items
3	Traffic Control	1	LS	\$ 15,000	\$ 15,000	10% of construction bid items
4	Mobilization	1	LS	\$ 15,000	\$ 15,000	10% of construction bid items
5	Utility Relocation/Removals	-	LS	\$ 7,500	\$ -	5% of construction bid items
					SUBTOTAL \$	30,000
PROFESSIONAL SERVICES						
6	Project Development (Environmental Clearance)	1	LS	\$ 5,400	\$ 5,400	3% of hard costs
7	Preliminary Engineering and Final Design	1	LS	\$ 36,000	\$ 36,000	20% of hard costs
8	Project Management for Design and Construction	1	LS	\$ 27,000	\$ 27,000	15% of hard costs
9	Construction Administration & Management (+DSDC)	1	LS	\$ 27,000	\$ 27,000	15% of hard costs
					SUBTOTAL \$	95,400
					PROJECT SUBTOTAL \$	275,400
					UNALLOCATED CONTINGENCY (30%) \$	82,620
					TOTAL PROJECT COST \$	358,020

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 7 (Construct Off-Street Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Bikeways - Re-striping	1,600	LF	\$ 5	\$ 8,000	
2	Bikeways - Off-street Path Construction	5,000	SF	\$ 30	\$ 150,000	
3	Pedestrian Crossing Pavement Marking and Signage	7,600	SF	\$ 50	\$ 380,000	
4	Pedestrian Walkways	23,000	SF	\$ 30	\$ 690,000	
5	Curb & Gutter Replacement	1,500	LF	\$ 175	\$ 262,500	Assume perimeter of Amtrak site outside of PUDO area
6	Additional Improvements in the Mobility Hub Area	1	LS	\$ 3,000,000	\$ 3,000,000	COST IMPACT: HIGH PROJECTS INCLUDE: -ENHANCE BIKE FACILITIES ON MARINA VISTA AVENUE/ESCOBAR EAST OF DOWNTOWN AND ALHAMBRA AVENUE/BERRELLESA STREET AND COURT STREET/PINE STREET TO THE SOUTH. -ENHANCE WAYFINDING AND PEDESTRIAN ROUTES TO MAJOR EMPLOYERS AT THE CONTRA COSTA COUNTY SUPERIOR COURT AND COUNTY GOVERNMENT OFFICE COMPLEX AROUND COURT STREET. PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR EMPLOYMENT SITES. -IMPROVE BICYCLE WAY FINDING TO MAJOR DESTINATIONS SOUTH OF DOWNTOWN SUCH AS THE CONTRA COST REGIONAL MEDICAL CENTER, ALHAMBRA HIGH SCHOOL, VETERANS AFFAIRS (VA) MARTINEZ, AND OTHER COMMERCIAL CENTERES ALONG SR-4. PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT THESE LOCATIONS. -EXPAND THE BICYCLE NETWORK TO RESIDENTIAL AREAS IN THE BIKESHED. -MINIMIZE THE TRANSIT TRAVEL TIME TO ACCESS THE SITE BY INCORPORATING TRANSIT SIGNAL PRIORITY (TSP) AT TRAFFIC SIGNALS ALONG THE PRIMARY TRANSIT ROUTES CONNECTING TO REGIONAL HIGHWAYS, INCLUDING MARINA VISTA AVENUE/ESCOBAR STREET TO CONNECT TO I-680 AND ALHAMBRA AVENUE/BERRELLESA STREET TO CONNECT TO SR-4.
SUBTOTAL \$					4,490,500	
OTHER CONSTRUCTION ITEMS						
7	Drainage	1	LS	\$ 449,050	\$ 449,050	10% of construction bid items
8	Traffic Control	1	LS	\$ 449,050	\$ 449,050	10% of construction bid items
9	Mobilization	1	LS	\$ 449,050	\$ 449,050	10% of construction bid items
10	Utility Relocation/Removals	1	LS	\$ 224,525	\$ 224,525	5% of construction bid items
SUBTOTAL \$					1,571,675	
PROFESSIONAL SERVICES						
11	Project Development (Environmental Clearance)	1	LS	\$ 181,865	\$ 181,865	3% of hard costs
12	Preliminary Engineering and Final Design	1	LS	\$ 1,212,435	\$ 1,212,435	20% of hard costs
13	Project Management for Design and Construction	1	LS	\$ 909,326	\$ 909,326	15% of hard costs
14	Construction Administration & Management (+DSDC)	1	LS	\$ 909,326	\$ 909,326	15% of hard costs
SUBTOTAL \$					3,212,953	
PROJECT SUBTOTAL \$					9,275,128	
UNALLOCATED CONTINGENCY (30%)					\$ 2,782,538	
TOTAL PROJECT COST \$					12,057,666	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 8 (Build Transit Center Phase 2)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Shelters	7	EA	\$ 80,000	\$ 560,000	Assume custom shelters
2	Benches	7	EA	\$ 5,000	\$ 35,000	
3	Lighting	1	LS	\$ 125,000	\$ 125,000	
4	Security	1	LS	\$ 150,000	\$ 150,000	
5	Curb & Gutter Reconstruction	700	LF	\$ 175	\$ 122,500	
6	Bus Area Repaving	20,000	SF	\$ 20	\$ 400,000	
7	Transit Waiting Area	10,000	SF	\$ 30	\$ 300,000	
					SUBTOTAL \$ 1,692,500	
HARDSCAPE IMPROVEMENTS						
8	Dedicated Transit Lanes	300	LF	\$ 400	\$ 120,000	Assume red painted concrete and minor curb work
					SUBTOTAL \$ 120,000	
OTHER CONSTRUCTION ITEMS						
9	Drainage	1	LS	\$ 181,250	\$ 181,250	10% of construction bid items
10	Traffic Control	1	LS	\$ 181,250	\$ 181,250	10% of construction bid items
11	Mobilization	1	LS	\$ 181,250	\$ 181,250	10% of construction bid items
12	Utility Relocation/Removals	1	LS	\$ 90,625	\$ 90,625	5% of construction bid items
					SUBTOTAL \$ 634,375	
PROFESSIONAL SERVICES						
13	Project Development (Environmental Clearance)	1	LS	\$ 73,406	\$ 73,406	3% of hard costs
14	Preliminary Engineering and Final Design	1	LS	\$ 489,375	\$ 489,375	20% of hard costs
15	Project Management for Design and Construction	1	LS	\$ 367,031	\$ 367,031	15% of hard costs
16	Construction Administration & Management (+DSDC)	1	LS	\$ 367,031	\$ 367,031	15% of hard costs
					SUBTOTAL \$ 1,296,844	
					PROJECT SUBTOTAL \$ 3,743,719	
					UNALLOCATED CONTINGENCY (30%) \$ 1,123,116	
					TOTAL PROJECT COST \$ 4,866,834	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Martinez Amtrak Project 9 (Implement a Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL \$					-	
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL \$					-	
PROJECT SUBTOTAL \$					-	
UNALLOCATED CONTINGENCY (30%) \$					-	
TOTAL PROJECT COST \$					-	

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - Concord PNR			
Sub-Project	Total	Design	Construction
Project 1 (Parking Lot Reconfiguration and New Ingress) w/ 30% contingency	\$ 9,139,451	\$ 1,087,279	\$ 8,052,171
Project 2 (Off-site Bus Stop and Pedestrian/Bicycle Improvements) w 30% contingency	\$ 3,280,259	\$ 541,350	\$ 2,738,909
Project 3 (New Pedestrian and Bicycle Access to Willow Pass Rd) w/ 30% contingency	\$ 1,004,981	\$ 190,795	\$ 814,186
Project 4 (Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Project 5 (Off-Site Transit Signal Priority (TSP) Projects) w/ 30% contingency	\$ 234,702	\$ 38,734	\$ 195,969
Total	\$ 13,659,393	\$ 1,858,158	\$ 11,801,235

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Concord PNR Project 1 (Parking Lot Reconfiguration and New Ingress)						January 2023	
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment	
TRANSIT AMENITIES							
1	Real Time Travel Information	1	EA	\$ 17,000	\$ 17,000		
2	Fare Vending Machines	2	EA	\$ 75,000	\$ 150,000		
3	Battery Electric Bus Charging Stations	3	EA	\$ 20,000	\$ 60,000	Assumes charger and dual-wand charging (minor conduit cost), new service is accounted for below under item #36. Additional 900k-1.2m would need to be added for battery electric storage system, if desired	
4	Shelters	2	EA	\$ 80,000	\$ 160,000	Assume custom shelters	
5	Benches	2	EA	\$ 5,000	\$ 10,000		
6	Lighting	1	LS	\$ 50,000	\$ 50,000		
7	Security	1	LS	\$ 80,000	\$ 80,000		
8	Curb & Gutter Reconstruction	1,000	LF	\$ 175	\$ 175,000		
9	Bus Area Repaving	7,500	SF	\$ 20	\$ 150,000		
10	Transit Waiting Area	2,000	SF	\$ 30	\$ 60,000		
					SUBTOTAL \$	912,000	
BICYCLE AMENITIES							
11	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000		
12	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers	
13	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000		
					SUBTOTAL \$	265,000	
PEDESTRIAN AMENITIES							
14	Landscaping	1	LS	\$ 50,000	\$ 50,000	Completely new public space required	
15	Lighting	1	LS	\$ 50,000	\$ 50,000		
					SUBTOTAL \$	100,000	
MOTORIZED SERVICES & AMENITIES							
16	Curb and Gutter Reconstruction	700	LF	\$ 175	\$ 122,500	Assume entire perimeter of PUDO area and mobile retail area	
17	Parking Area Repaving	25,000	SF	\$ 15	\$ 375,000	Assume entire PNR area repaved	
18	Parking Area Reconfiguration	25,000	SF	\$ 5	\$ 125,000	Assume entire PNR area reconfigured	
					SUBTOTAL \$	622,500	
SUPPORT SERVICES & AMENITIES							
19	Wi-Fi and Device Charging	5	EA	\$ 1,700	\$ 8,500		
20	Wayfinding	1	LS	\$ 50,000	\$ 50,000		
21	Information Kiosks	2	EA	\$ 20,000	\$ 40,000		
22	Solar Panel Canopy	10,000	SF	\$ 60	\$ 600,000		
23	Monumentation	1	EA	\$ 50,000	\$ 50,000		
					SUBTOTAL \$	748,500	
HARDSCAPE IMPROVEMENTS							
24	New Service for EV Charging Stations	1	LS	\$ 800,000	\$ 800,000	Assumes equipment (switchgear, transformer, etc.) and conduits	
25	Bikeways - Off-street Path Construction	1,000	SF	\$ 30	\$ 30,000		
26	Pedestrian Walkways	5,000	SF	\$ 30	\$ 150,000		
27	Curb & Gutter Replacement	100	LF	\$ 175	\$ 17,500	New curb along Market St; close southeast access point	
					SUBTOTAL \$	997,500	
OTHER CONSTRUCTION ITEMS							
28	Drainage	1	LS	\$ 364,550	\$ 364,550	10% of construction bid items	
29	Traffic Control	1	LS	\$ 291,640	\$ 291,640	8% of construction bid items	
30	Mobilization	1	LS	\$ 364,550	\$ 364,550	10% of construction bid items	
31	Utility Relocation/Removals	1	LS	\$ 182,275	\$ 182,275	5% of construction bid items	
					SUBTOTAL \$	1,203,015	
PROFESSIONAL SERVICES							
32	Project Development (Environmental Clearance)	1	LS	\$ 48,485	\$ 48,485	1% of hard costs	
33	Preliminary Engineering and Final Design	1	LS	\$ 678,792	\$ 678,792	14% of hard costs	
34	Project Management for Design and Construction	1	LS	\$ 727,277	\$ 727,277	15% of hard costs	
35	Construction Administration & Management (+DSDC)	1	LS	\$ 727,277	\$ 727,277	15% of hard costs	
					SUBTOTAL \$	2,181,832	
					PROJECT SUBTOTAL \$	7,030,347	
					UNALLOCATED CONTINGENCY (30%) \$	2,109,104	
					TOTAL PROJECT COST \$	9,139,451	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Concord PNR Project 2 (Off-site Bus Stop and Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Shelters	4	EA	\$ 80,000	\$ 320,000	Assume custom shelters
2	Benches	4	EA	\$ 5,000	\$ 20,000	
3	Lighting	1	LS	\$ 100,000	\$ 100,000	
4	Security	1	LS	\$ 40,000	\$ 40,000	
5	Transit Waiting Area	2,000	SF	\$ 30	\$ 60,000	
					SUBTOTAL \$	540,000
HARDSCAPE IMPROVEMENTS						
6	Pedestrian Crossings	4,000	SF	\$ 50	\$ 200,000	Assume crosswalk striping
7	Additional Improvements in the Mobility Hub Area	1	LS	\$ 500,000	\$ 500,000	COST IMPACT: LOW PROJECTS INCLUDE: - IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING ALONG THE FOLLOWING CORRIDORS: MARKET STREET TO THE CORRIDOR TRAIL SOUTH OF THE MOBILITY HUB; WILLOW PASS ROAD AND CLAYTON ROAD TO DOWNTOWN CONCORD AND THE BART STATION TO THE EAST; WILLOW PASS ROAD TO THE IRON HORSE TRAIL AND SUNVALLEY SHOPPING CENTER AND COMMERCIAL AREAS TO THE WEST. -CONNECT TO THE PLANNED BIKE TRAILS WEST OF SR-242 IN EBMUD CORRIDOR AND EAST OF SR-242. PROVIDE WAYFINDING SIGNAGE TO DIRECT USERS BETWEEN THESE PATHS, THE MOBILITY HUBS, AND KEY DESTINATIONS. -ENHANCE THE BUS STOPS ON CLAYTON ROAD AND MARKET STREET THAT ARE WALKING DISTANCE FROM THE MOBILITY HUB. -MODIFY INTERSECTIONS AND CONFLICT POINTS TO IMPROVE SAFETY AND MOBILITY TO BETTER CONNECT THE RESIDENTIAL AREA TO THE SOUTHEAST OF THE MOBILITY HUB TO THE HUB AND SURROUNDING COMMERCIAL AND EMPLOYMENT AREAS. -IMPROVE BUS STOP AMENITIES AND ACCESSIBILITY THROUGHOUT THE HUB SHED AREA, PARTICULARLY IN AREAS WITH HIGHER TRANSIT RIDERSHIP
					SUBTOTAL \$	700,000
OTHER CONSTRUCTION ITEMS						
8	Drainage	1	LS	\$ 124,000	\$ 124,000	10% of construction bid items
9	Traffic Control	1	LS	\$ 99,200	\$ 99,200	8% of construction bid items
10	Mobilization	1	LS	\$ 124,000	\$ 124,000	10% of construction bid items
11	Utility Relocation/Removals	1	LS	\$ 62,000	\$ 62,000	5% of construction bid items
					SUBTOTAL \$	409,200
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 49,476	\$ 49,476	3% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 329,840	\$ 329,840	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 247,380	\$ 247,380	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 247,380	\$ 247,380	15% of hard costs
					SUBTOTAL \$	874,076
					PROJECT SUBTOTAL \$	2,523,276
					UNALLOCATED CONTINGENCY (30%)	\$ 756,983
					TOTAL PROJECT COST \$	3,280,259

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Concord PNR Project 3 (New Pedestrian and Bicycle Access to Willow Pass Rd)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Walkway - Off-street Path Construction	500	SF	\$ 30	\$ 15,000	Assume off-street path construction; includes base and pavement
2	Walkway - Willow Pass Bridge Modification	1	LS	\$ 450,000	\$ 450,000	New pedestrian bridge access to Willow Pass Rd
					SUBTOTAL \$ 465,000	
OTHER CONSTRUCTION ITEMS						
3	Drainage	1	LS	\$ 46,500	\$ 46,500	10% of construction bid items
4	Traffic Control	-	LS	\$ 37,200	\$ -	8% of construction bid items
5	Mobilization	1	LS	\$ 46,500	\$ 46,500	10% of construction bid items
6	Utility Relocation/Removals	1	LS	\$ 23,250	\$ 23,250	5% of construction bid items
					SUBTOTAL \$ 116,250	
PROFESSIONAL SERVICES						
7	Project Development (Environmental Clearance)	1	LS	\$ 17,438	\$ 17,438	3% of hard costs
8	Preliminary Engineering and Final Design	1	LS	\$ 116,250	\$ 116,250	20% of hard costs
9	Project Management for Design and Construction	1	LS	\$ 87,188	\$ 87,188	15% of hard costs
10	Construction Administration & Management (+DSDC)	1	LS	\$ 87,188	\$ 87,188	15% of hard costs
					SUBTOTAL \$ 308,063	
					PROJECT SUBTOTAL \$ 773,063	
					UNALLOCATED CONTINGENCY (30%) \$ 231,919	
					TOTAL PROJECT COST \$ 1,004,981	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Concord PNR Project 4 (Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL					\$ -	
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL					\$ -	
PROJECT SUBTOTAL					\$ -	
UNALLOCATED CONTINGENCY (30%)					\$ -	
TOTAL PROJECT COST					\$ -	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Concord PNR Project 5 (Off-Site Transit Signal Priority (TSP) Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Traffic Signal Modifications (Transit Signal Priority)	2	EA	\$ 50,000	\$ 100,000	
					SUBTOTAL \$	100,000
OTHER CONSTRUCTION ITEMS						
8	Drainage	-	LS	\$ 10,000	\$ -	10% of construction bid items
9	Traffic Control	1	LS	\$ 8,000	\$ 8,000	8% of construction bid items
10	Mobilization	1	LS	\$ 10,000	\$ 10,000	10% of construction bid items
11	Utility Relocation/Removals	-	LS	\$ 5,000	\$ -	5% of construction bid items
					SUBTOTAL \$	18,000
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 3,540	\$ 3,540	3% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 23,600	\$ 23,600	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 17,700	\$ 17,700	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 17,700	\$ 17,700	15% of hard costs
					SUBTOTAL \$	62,540
					PROJECT SUBTOTAL \$	180,540
					UNALLOCATED CONTINGENCY (30%) \$	54,162
					TOTAL PROJECT COST \$	234,702

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - PLEASANT HILL			
Sub-Project	Total	Design	Construction
Project 1 (Mobility Hub Amentities at City Hall) w/ 30% contingency	\$ 3,924,358	\$ 394,341	\$ 3,530,017
Project 2 (Off-Site Pedestrian/Bicycle Improvements) w/ 30% contingency	\$ 6,216,884	\$ 1,025,989	\$ 5,190,895
Project 3 (Off-Site TSP and Bus Stop Improvements) w/ 30% contingency	\$ 1,551,380	\$ 25,603	\$ 1,525,777
Project 4 (Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 11,692,622	\$ 1,445,933	\$ 10,246,689

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Pleasant Hill Project 1 (Mobility Hub Amenities at City Hall)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
BICYCLE AMENITIES						
1	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000	
2	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers
3	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000	
					SUBTOTAL \$	265,000
MOTORIZED SERVICES & AMENITIES						
4	Curb and Gutter Reconstruction	150	LF	\$ 175	\$ 26,250	PUDO area
5	Parking Area Repaving	1,500	SF	\$ 15	\$ 22,500	assume PUDO entire area
6	Parking Area Reconfiguration	21,000	SF	\$ 10	\$ 210,000	Assume parking area
7	Landscaping	1	LS	\$ 50,000	\$ 50,000	
8	Lighting	1	LS	\$ 100,000	\$ 100,000	
					SUBTOTAL \$	408,750
SUPPORT SERVICES & AMENITIES						
9	Real Time Travel Information	3	EA	\$ 17,000	\$ 51,000	
10	Parking Signage (Static and Dynamic)	1	LS	\$ 25,000	\$ 25,000	
11	Wayfinding	1	LS	\$ 25,000	\$ 25,000	
12	Solar Panel Canopy	15,000	SF	\$ 60	\$ 900,000	
					SUBTOTAL \$	1,001,000
OTHER CONSTRUCTION ITEMS						
13	Drainage	1	LS	\$ 167,475	\$ 167,475	10% of construction bid items
14	Traffic Control	1	LS	\$ 133,980	\$ 133,980	8% of construction bid items
15	Mobilization	1	LS	\$ 167,475	\$ 167,475	10% of construction bid items
16	Utility Relocation/Removals	1	LS	\$ 83,738	\$ 83,738	5% of construction bid items
					SUBTOTAL \$	552,668
PROFESSIONAL SERVICES						
17	Project Development (Environmental Clearance)	1	LS	\$ 17,585	\$ 17,585	1% of hard costs
18	Preliminary Engineering and Final Design	1	LS	\$ 246,188	\$ 246,188	14% of hard costs
19	Project Management for Design and Construction	1	LS	\$ 263,773	\$ 263,773	15% of hard costs
20	Construction Administration & Management (+DSDC)	1	LS	\$ 263,773	\$ 263,773	15% of hard costs
					SUBTOTAL \$	791,319
				PROJECT SUBTOTAL \$	3,018,737	
				UNALLOCATED CONTINGENCY (30%) \$	905,621	
				TOTAL PROJECT COST \$	3,924,358	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Pleasant Hill Project 2 (Off-Site Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
SUPPORT SERVICES & AMENITIES						
1	Wayfinding	1	LS	\$ 25,000	\$ 25,000	
2	Lighting	1	LS	\$ 50,000	\$ 50,000	
					SUBTOTAL \$	25,000
HARDSCAPE IMPROVEMENTS						
3	Bikeways - Re-striping	4,300	LF	\$ 7	\$ 30,100	
4	Bikeways - Off-street Path Construction	3,000	SF	\$ 30	\$ 90,000	
5	Pedestrian Crossing Pavement Marking and Signage	3,000	SF	\$ 50	\$ 150,000	
6	Pedestrian Hybrid Beacon	2	EA	\$ 150,000	\$ 300,000	
7	Median Replacement	17,000	SF	\$ 15	\$ 255,000	
8	Additional Improvements in the Mobility Hub Area	1	LS	\$ 1,500,000	\$ 1,500,000	COST IMPACT: MEDIUM PROJECTS INCLUDE: -IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING TO THE EBMUD TRAIL ACCESSED VIA CONTRA COSTA BOULEVARD OR CLEVELAND ROAD SOUTH OF THE MOBILITY HUB. -EXPLORE OPPORTUNITIES TO PROVIDE ENHANCED PEDESTRIAN AND BICYCLE FACILITIES ON MONUMENT BOULEVARD TO CONNECT TO THE IRON HORSE REGIONAL TRAIL AND COMMERCIAL AREAS EAST OF I-680. -PROVIDE IMPROVED PEDESTRIAN AND BICYCLE CONNECTIONS TO THE SENIOR HOUSING AND RESIDENTIAL AREAS, INCLUDING NORTH OF GREGORY LANE AND TO THE SOUTH ALONG CLEVELAND ROAD. -INCORPORATE WAYFINDING AND REAL-TIME TRANSIT INFORMATION INTO BUS STOPS, PLAZAS, AND COMMERCIAL AND EMPLOYMENT AREAS AROUND DOWNTOWN PLEASANT HILL.
					SUBTOTAL \$	2,325,100
OTHER CONSTRUCTION ITEMS						
9	Drainage	1	LS	\$ 235,010	\$ 235,010	10% of construction bid items
10	Traffic Control	1	LS	\$ 188,008	\$ 188,008	8% of construction bid items
11	Mobilization	1	LS	\$ 235,010	\$ 235,010	10% of construction bid items
12	Utility Relocation/Removals	1	LS	\$ 117,505	\$ 117,505	5% of construction bid items
					SUBTOTAL \$	775,533
PROFESSIONAL SERVICES						
13	Project Development (Environmental Clearance)	1	LS	\$ 93,769	\$ 93,769	3% of hard costs
14	Preliminary Engineering and Final Design	1	LS	\$ 625,127	\$ 625,127	20% of hard costs
15	Project Management for Design and Construction	1	LS	\$ 468,845	\$ 468,845	15% of hard costs
16	Construction Administration & Management (+DSDC)	1	LS	\$ 468,845	\$ 468,845	15% of hard costs
					SUBTOTAL \$	1,656,585

PROJECT SUBTOTAL \$ 4,782,218
 UNALLOCATED CONTINGENCY (30%) \$ 1,434,666
TOTAL PROJECT COST \$ 6,216,884

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Pleasant Hill Project 3 (Off-Site TSP and Bus Stop Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Real Time Travel Information	3	EA	\$ 17,000	\$ 51,000	
2	Traffic Signal Modification (Transit Signal Priority)	1	EA	\$ 50,000	\$ 50,000	Assuming additional improvements are needed for Cleaveland Road and Gregory Lane intersection
3	Shelters	3	EA	\$ 80,000	\$ 240,000	Assume custom shelters
4	Benches	5	EA	\$ 5,000	\$ 25,000	
5	Lighting	1	LS	\$ 120,000	\$ 120,000	
6	Security	1	LS	\$ 150,000	\$ 150,000	
7	Wayfinding	1	LS	\$ 25,000	\$ 25,000	
SUBTOTAL \$					661,000	
OTHER CONSTRUCTION ITEMS						
8	Drainage	-	LS	\$ 66,100	\$ -	10% of construction bid items
9	Traffic Control	1	LS	\$ 52,880	\$ 52,880	8% of construction bid items
10	Mobilization	1	LS	\$ 66,100	\$ 66,100	10% of construction bid items
11	Utility Relocation/Removals	-	LS	\$ 33,050	\$ -	5% of construction bid items
SUBTOTAL \$					118,980	
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 23,399	\$ 23,399	3% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 155,996	\$ 155,996	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 116,997	\$ 116,997	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 116,997	\$ 116,997	15% of hard costs
SUBTOTAL \$					413,389	

PROJECT SUBTOTAL \$ 1,193,369
 UNALLOCATED CONTINGENCY (30%) \$ 358,011
TOTAL PROJECT COST \$ 1,551,380

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Pleasant Hill Project 4 (Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL \$					-	
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL \$					-	
PROJECT SUBTOTAL \$					-	
UNALLOCATED CONTINGENCY (30%) \$					-	
TOTAL PROJECT COST \$					-	

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - Mitchell Drive			
Sub-Project	Total	Design	Construction
Project 1 (Mobility Hub Amenities) w/ 30% contingency	\$ 7,180,191	\$ 854,195	\$ 6,325,996
Project 2 (Off-Site Improvements) w 30% contingency	\$ 3,582,872	\$ 486,384	\$ 3,096,487
Project 3 (Connection to Contra Costa Canal Trail) w/ 30% contingency	\$ 844,250	\$ 117,875	\$ 726,375
Project 4 (Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Project 5 (Add'l Mobility Hub Improvements) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 11,607,313	\$ 1,458,454	\$ 10,148,858

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Mitchell Drive Project 1 (Mobility Hub Amenities)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
BICYCLE AMENITIES						
1	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000	
2	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers
3	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000	
					SUBTOTAL \$	265,000
PEDESTRIAN AMENITIES						
4	Security	1	LS	\$ 40,000	\$ 40,000	
5	Lighting	1	LS	\$ 50,000	\$ 50,000	
					SUBTOTAL \$	90,000
MOTORIZED SERVICES & AMENITIES						
6	Electric Vehicle Charging Station	20	EA	\$ 18,450	\$ 369,000	
7	Parking Area Reconfiguration	17,000	SF	\$ 10	\$ 170,000	
8	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000	Parking reservation system
9	Parking Space Availability Sensors	100	Space	\$ 400	\$ 40,000	Parking reservation system
10	Real-time occupancy digital signage and backroom hardware/software	1	EA	\$ 30,000	\$ 30,000	Parking reservation system
					SUBTOTAL \$	634,000
SUPPORT SERVICES & AMENITIES						
11	Wayfinding	1	LS	\$ 25,000	\$ 25,000	
12	Solar Panel Canopy	17,000	SF	\$ 60	\$ 1,020,000	
					SUBTOTAL \$	1,045,000
HARDSCAPE IMPROVEMENTS						
Off-site Improvements						
13	Pedestrian Walkways	1,000	SF	\$ 30	\$ 30,000	
14	New Service for EV Charging Stations	1	LS	\$ 800,000	\$ 800,000	
					SUBTOTAL \$	830,000
OTHER CONSTRUCTION ITEMS						
15	Drainage	1	LS	\$ 286,400	\$ 286,400	10% of construction bid items
16	Traffic Control	1	LS	\$ 229,120	\$ 229,120	8% of construction bid items
17	Mobilization	1	LS	\$ 286,400	\$ 286,400	10% of construction bid items
18	Utility Relocation/Removals	1	LS	\$ 143,200	\$ 143,200	5% of construction bid items
					SUBTOTAL \$	945,120
PROFESSIONAL SERVICES						
19	Project Development (Environmental Clearance)	1	LS	\$ 38,091	\$ 38,091	1% of hard costs
20	Preliminary Engineering and Final Design	1	LS	\$ 533,277	\$ 533,277	14% of hard costs
21	Project Management for Design and Construction	1	LS	\$ 571,368	\$ 571,368	15% of hard costs
22	Construction Administration & Management (+DSDC)	1	LS	\$ 571,368	\$ 571,368	15% of hard costs
					SUBTOTAL \$	1,714,104

PROJECT SUBTOTAL \$ 5,523,224
 UNALLOCATED CONTINGENCY (30%) \$ 1,656,967
TOTAL PROJECT COST \$ 7,180,191

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Mitchell Drive Project 2 (Off-Site Improvements)						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Fare Vending Machines	1	EA	\$ 75,000	\$ 75,000	
2	Shelters	2	EA	\$ 80,000	\$ 160,000	Assume custom shelters
3	Benches	2	EA	\$ 5,000	\$ 10,000	
4	Lighting	1	LS	\$ 50,000	\$ 50,000	
5	Curb & Gutter Reconstruction	350	LF	\$ 175	\$ 61,250	
6	Bus Area Repaving	1,800	SF	\$ 20	\$ 36,000	
7	Transit Waiting Area	3,500	SF	\$ 30	\$ 105,000	Includes bus waiting areas
					SUBTOTAL \$ 497,250	
MOTORIZED SERVICES & AMENITIES						
Passenger Loading Zones						
8	Curb and Gutter Reconstruction	300	LF	\$ 175	\$ 52,500	Assume entire perimeter of PUDO area
9	Passenger Loading Area Repaving	2,300	SF	\$ 20	\$ 46,000	
10	Passenger Waiting Area	1,800	SF	\$ 30	\$ 54,000	Includes PUDO waiting area
					SUBTOTAL \$ 152,500	
SUPPORT SERVICES & AMENITIES						
11	Wi-Fi and Device Charging	5	EA	\$ 1,700	\$ 8,500	
12	Package Delivery Stations	1	LS	\$ 12,000	\$ 12,000	
13	Wayfinding	1	LS	\$ 100,000	\$ 100,000	
14	Information Kiosks	2	EA	\$ 20,000	\$ 40,000	
					SUBTOTAL \$ 160,500	
HARDSCAPE IMPROVEMENTS						
Off-site Improvements						
15	Bikeways - Re-striping	2,500	LF	\$ 5	\$ 12,500	
16	Bikeways - Off-street Path Construction	2,800	SF	\$ 30	\$ 84,000	
17	Bulbouts	2	EA	\$ 25,000	\$ 50,000	
18	Pedestrian Crossings	500	SF	\$ 50	\$ 25,000	Assume crosswalk striping
19	Additional Improvements in the Mobility Hub Area	1	LS	\$ 500,000	\$ 500,000	COST IMPACT: LOW PROJECTS INCLUDE: -CONSTRUCT BIKE LANES ALONG MITCHELL DRIVE AND INCORPORATE THE BROADER SET OF BICYCLE AND PEDESTRIAN IMPROVEMENTS PLANNED AS PART OF THE SHADELANDS MULTI-MODAL IMPROVEMENT PLAN. -INSTALL SIGNAGE AND WAYFINDING TO THE MOBILITY HUB FROM KEY POINTS ON YGNACIO VALLEY ROAD TO THE SOUTH AND OAK GROVE ROAD EAST OF THE MOBILITY HUB. -IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING TO THE CONTRA COSTA TRAIL CONNECTION ON WIGET LANE WEST OF THE MOBILITY HUB. -EXPLORE OPTIONS FOR A DIRECT CONNECTION BETWEEN THE MOBILITY HUB, THE CONTRA COSTA CANAL TRAIL AND THE HIGH SCHOOLS NORTH OF THE MOBILITY HUB.
					SUBTOTAL \$ 671,500	
OTHER CONSTRUCTION ITEMS						
20	Drainage	1	LS	\$ 148,175	\$ 148,175	10% of construction bid items
21	Traffic Control	1	LS	\$ 118,540	\$ 118,540	8% of construction bid items
22	Mobilization	1	LS	\$ 148,175	\$ 148,175	10% of construction bid items
23	Utility Relocation/Removals	1	LS	\$ 74,088	\$ 74,088	5% of construction bid items
					SUBTOTAL \$ 488,978	
PROFESSIONAL SERVICES						
24	Project Development (Environmental Clearance)	1	LS	\$ 44,453	\$ 44,453	3% of hard costs
25	Preliminary Engineering and Final Design	1	LS	\$ 296,350	\$ 296,350	20% of hard costs
26	Project Management for Design and Construction	1	LS	\$ 222,263	\$ 222,263	15% of hard costs
27	Construction Administration & Management (+DSDC)	1	LS	\$ 222,263	\$ 222,263	15% of hard costs
					SUBTOTAL \$ 785,328	
					PROJECT SUBTOTAL \$ 2,756,055	
					UNALLOCATED CONTINGENCY (30%) \$ 826,817	
					TOTAL PROJECT COST \$ 3,582,872	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Mitchell Drive Project 3 (Connection to Contra Costa Canal Trail)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Bikeways - Off-street Path Construction	4,000	SF	\$ 30	\$ 120,000	Assume off-street path construction; includes base and pavement
2	Bikeways - Canal Crossing	1	LS	\$ 150,000	\$ 150,000	
					SUBTOTAL \$	270,000
OTHER CONSTRUCTION ITEMS						
3	Drainage	1	LS	\$ 27,000	\$ 27,000	10% of construction bid items
4	Traffic Control	1	LS	\$ 21,600	\$ 21,600	8% of construction bid items
5	Mobilization	1	LS	\$ 27,000	\$ 27,000	10% of construction bid items
6	Utility Relocation/Removals	1	LS	\$ 13,500	\$ 13,500	5% of construction bid items
					SUBTOTAL \$	89,100
PROFESSIONAL SERVICES						
7	Project Development (Environmental Clearance)	1	LS	\$ 10,773	\$ 10,773	3% of hard costs
8	Preliminary Engineering and Final Design	1	LS	\$ 71,820	\$ 71,820	20% of hard costs
9	Project Management for Design and Construction	1	LS	\$ 53,865	\$ 53,865	15% of hard costs
10	Construction Administration & Management (+DSDC)	1	LS	\$ 53,865	\$ 53,865	15% of hard costs
11	Easement Acquisition	1	LS	\$ 100,000	\$ 100,000	Access easement through Police Department
					SUBTOTAL \$	290,323
					PROJECT SUBTOTAL \$	649,423
					UNALLOCATED CONTINGENCY (30%) \$	194,827
					TOTAL PROJECT COST \$	844,250

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Mitchell Drive Project 4 (Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL \$					-	
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL \$					-	
PROJECT SUBTOTAL \$					-	
UNALLOCATED CONTINGENCY (30%) \$					-	
TOTAL PROJECT COST \$					-	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Mitchell Drive Project 5 (Add'l Mobility Hub Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
1	Identify locations for other mobility hubs in the Shadelands Business Park	1	LS	\$ -	\$ -	
SUBTOTAL \$					-	
OTHER CONSTRUCTION ITEMS						
2	Drainage	1	LS	\$ -	\$ -	10% of construction bid items
3	Traffic Control	1	LS	\$ -	\$ -	8% of construction bid items
4	Mobilization	1	LS	\$ -	\$ -	10% of construction bid items
5	Utility Relocation/Removals	1	LS	\$ -	\$ -	5% of construction bid items
SUBTOTAL \$					-	
PROFESSIONAL SERVICES						
6	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	3% of hard costs
7	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	20% of hard costs
8	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
9	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL \$					-	
PROJECT SUBTOTAL \$					-	
UNALLOCATED CONTINGENCY (30%) \$					-	
TOTAL PROJECT COST \$					-	

PROJECT: SHARED MOBILITY HUBS - WALNUT CREEK BART			
Sub-Project	Total	Design	Construction
Project 1 (Implement North Parking Garage Projects) w/ 30% contingency	\$ 14,853,310	\$ 1,767,032	\$ 13,086,278
Project 2 (Implement South Parking Garage Projects) w/ 30% contingency	\$ 1,159,686	\$ 191,386	\$ 968,300
Project 3 (Implement Signage and Wayfinding Program) w/ 30% contingency	\$ 933,075	\$ 111,004	\$ 822,071
Project 4 (Implement Bike Storage, Charging, and Shared Bicycle Facilities and Other On-Site Changes) w/ 30% contingency	\$ 1,980,050	\$ 326,773	\$ 1,653,277
Project 5 (Construct Off-Site Pedestrian/Bicycle Improvements) w/ 30% contingency	\$ 8,434,056	\$ 1,391,895	\$ 7,042,161
Project 6 (Implement Off-Site Transit-Signal Priority (TSP) Projects) w/ 30% contingency	\$ 119,340	\$ 19,695	\$ 99,645
Project 7 (Implement a Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 27,479,517	\$ 3,807,784	\$ 23,671,733

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 1 (Implement North Parking Garage Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
MOTORIZED SERVICES & AMENITIES						
1	Electric Vehicle Charging Station	100	EA	\$ 18,450	\$ 1,845,000	
2	Parking Reconfiguration	20,000	SF	\$ 10	\$ 200,000	
3	Curb and Gutter Reconstruction	200	LF	\$ 175	\$ 35,000	
4	Parking Area Repaving	25,000	SF	\$ 15	\$ 375,000	
5	Parking Signage (Static and Dynamic)	1	LS	\$ 100,000	\$ 100,000	
6	Parking Space Availability Sensors	1,271	Space	\$ 400	\$ 508,400	
7	Real-time occupancy digital signage and backroom hardware/software	4	EA	\$ 30,000	\$ 120,000	
SUBTOTAL \$					3,183,400	
SUPPORT SERVICES & AMENITIES						
8	Solar Panel Canopy	53,000	SF	\$ 60	\$ 3,180,000	
SUBTOTAL \$					3,180,000	
HARDSCAPE IMPROVEMENTS						
9	New Service for EV Charging Stations	1	LS	\$ 800,000	\$ 800,000	Assumes equipment and conduits
SUBTOTAL \$					800,000	
OTHER CONSTRUCTION ITEMS						
10	Drainage	-	LS	\$ 716,340	\$ -	10% of construction bid items
11	Traffic Control	-	LS	\$ 716,340	\$ -	10% of construction bid items
12	Mobilization	1	LS	\$ 716,340	\$ 716,340	10% of construction bid items
13	Utility Relocation/Removals	-	LS	\$ 358,170	\$ -	5% of construction bid items
SUBTOTAL \$					716,340	
PROFESSIONAL SERVICES						
14	Project Development (Environmental Clearance)	1	LS	\$ 78,797	\$ 78,797	1% of hard costs
15	Preliminary Engineering and Final Design	1	LS	\$ 1,103,164	\$ 1,103,164	14% of hard costs
16	Project Management for Design and Construction	1	LS	\$ 1,181,961	\$ 1,181,961	15% of hard costs
17	Construction Administration & Management (+DSDC)	1	LS	\$ 1,181,961	\$ 1,181,961	15% of hard costs
SUBTOTAL \$					3,545,883	
PROJECT SUBTOTAL \$					11,425,623	
UNALLOCATED CONTINGENCY (30%)					\$ 3,427,687	
TOTAL PROJECT COST \$					14,853,310	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 2 (Implement South Parking Garage Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Real Time Travel Information	3	EA	\$ 17,000	\$ 51,000	
2	Fare Vending Machines	2	EA	\$ 75,000	\$ 150,000	
3	Operator Restroom	1	LS	\$ 100,000	\$ 100,000	
4	Battery Electric Bus Charging Stations	5	EA	\$ 20,000	\$ 100,000	Assumes charger and dual-wand charging (minor conduit cost), new service is accounted for below under item #32. Additional 900k-1.2m would need to be added for battery electric storage system, if desired
					SUBTOTAL \$	401,000
SUPPORT SERVICES & AMENITIES						
5	Wi-Fi and Device Charging	20	EA	\$ 1,700	\$ 34,000	
6	Package Delivery Stations	1	LS	\$ 12,000	\$ 12,000	
7	Information Kiosks	3	EA	\$ 20,000	\$ 60,000	
					SUBTOTAL \$	106,000
OTHER CONSTRUCTION ITEMS						
8	Drainage	-	LS	\$ 50,700	\$ -	10% of construction bid items
9	Traffic Control	-	LS	\$ 50,700	\$ -	10% of construction bid items
10	Mobilization	1	LS	\$ 50,700	\$ 50,700	10% of construction bid items
11	Utility Relocation/Removals	1	LS	\$ 25,350	\$ 25,350	5% of construction bid items
					SUBTOTAL \$	76,050
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 17,492	\$ 17,492	3% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 116,610	\$ 116,610	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 87,458	\$ 87,458	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 87,458	\$ 87,458	15% of hard costs
					SUBTOTAL \$	309,017
					PROJECT SUBTOTAL \$	892,067
					UNALLOCATED CONTINGENCY (30%) \$	267,620
					TOTAL PROJECT COST \$	1,159,686

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 3 (Implement Signage and Wayfinding Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
SUPPORT SERVICES & AMENITIES						
1	Wayfinding	1	LS	\$ 100,000	\$ 100,000	
2	Monumentation	3	EA	\$ 100,000	\$ 300,000	
3	Bike Stair Channels	1	LS	\$ 50,000	\$ 50,000	
					SUBTOTAL \$	450,000
OTHER CONSTRUCTION ITEMS						
4	Drainage	-	LS	\$ 45,000	\$ -	10% of construction bid items
5	Traffic Control	-	LS	\$ 45,000	\$ -	10% of construction bid items
6	Mobilization	1	LS	\$ 45,000	\$ 45,000	10% of construction bid items
7	Utility Relocation/Removals	-	LS	\$ 22,500	\$ -	5% of construction bid items
					SUBTOTAL \$	45,000
PROFESSIONAL SERVICES						
8	Project Development (Environmental Clearance)	1	LS	\$ 4,950	\$ 4,950	1% of hard costs
9	Preliminary Engineering and Final Design	1	LS	\$ 69,300	\$ 69,300	14% of hard costs
10	Project Management for Design and Construction	1	LS	\$ 74,250	\$ 74,250	15% of hard costs
11	Construction Administration & Management (+DSDC)	1	LS	\$ 74,250	\$ 74,250	15% of hard costs
					SUBTOTAL \$	222,750
					PROJECT SUBTOTAL \$	717,750
					UNALLOCATED CONTINGENCY (30%) \$	215,325
					TOTAL PROJECT COST \$	933,075

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 4 (Implement Bike Storage, Charging, and Shared Bicycle Facilities and Other On-Site Changes)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
BICYCLE AMENITIES						
1	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000	
2	Bicycle Parking - BikeStation facility (or similar)	1	EA	\$ 700,000	\$ 700,000	Assume bike station facility; cost based on range of estimates for bike station construction from BART's bicycle capital plan (2017).
					SUBTOTAL \$	905,000
OTHER CONSTRUCTION ITEMS						
3	Drainage	-	LS	\$ 90,500	\$ -	10% of construction bid items
4	Traffic Control	-	LS	\$ 90,500	\$ -	10% of construction bid items
5	Mobilization	1	LS	\$ 90,500	\$ 90,500	10% of construction bid items
6	Utility Relocation/Removals	-	LS	\$ 45,250	\$ -	5% of construction bid items
					SUBTOTAL \$	90,500
PROFESSIONAL SERVICES						
7	Project Development (Environmental Clearance)	1	LS	\$ 29,865	\$ 29,865	3% of hard costs
8	Preliminary Engineering and Final Design	1	LS	\$ 199,100	\$ 199,100	20% of hard costs
9	Project Management for Design and Construction	1	LS	\$ 149,325	\$ 149,325	15% of hard costs
10	Construction Administration & Management (+DSDC)	1	LS	\$ 149,325	\$ 149,325	15% of hard costs
					SUBTOTAL \$	527,615
					PROJECT SUBTOTAL \$	1,523,115
					UNALLOCATED CONTINGENCY (30%) \$	456,935
					TOTAL PROJECT COST \$	1,980,050

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 5 (Construct Off-Site Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
PEDESTRIAN AMENITIES						
1	Lighting - pedestrian areas and pathway	1	LS	\$ 250,000	\$ 250,000	Assumes minor improvements for lighting, if any.
					SUBTOTAL \$ 250,000	
HARDSCAPE IMPROVEMENTS						
2	Bikeways - Re-striping	8,500	LF	\$ 5	\$ 42,500	
3	Bikeways - Off-street Path Construction	20,000	SF	\$ 30	\$ 600,000	Assume off-street path construction (2000' x 10' width); includes base and pavement
4	Pedestrian Walkways	1,700	SF	\$ 30	\$ 51,000	
5	Pedestrian Crossings	8,000	SF	\$ 50	\$ 400,000	Assume crosswalk striping
6	Curb & Gutter Replacement	1,700	LF	\$ 175	\$ 297,500	Assume bulbouts at California / YVR intersection + 50%
7	Additional Improvements in the Mobility Hub Area	1	LS	\$ 1,500,000	\$ 1,500,000	COST IMPACT: MEDIUM PROJECTS INCLUDE: -IMPROVE BIKE CONNECTIVITY ALONG RIVIERA AVENUE AND PARKSIDE DRIVE TO CONNECT TO IRON HORSE REGIONAL TRAIL. PROVIDE INTERSECTION ENHANCEMENTS AT RIVIERA AVENUE/PARKSIDE DRIVE. -ENHANCE WAYFINDING TO CYCLE TRACK AND SIDEWALK ALONG OAKLAND BOULEVARD, WHICH PROVIDES A CONNECTION TO DOWNTOWN. -IMPROVE BICYCLE FACILITIES ALONG CALIFORNIA BOULEVARD TO CONNECT TO DOWNTOWN. -PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR COMMERCIAL, MEDICAL AND EMPLOYMENT DESTINATIONS IN AND AROUND DOWNTOWN. -PROVIDE A BICYCLE CONNECTION ALONG HILLSIDE AVENUE ACROSS I-680 TO PARKSIDE DRIVE. -PROVIDE TRANSIT SIGNAL PRIORITY ON YGNACIO VALLEY ROAD AND CALIFORNIA BOULEVARD/N MAIN STREET. -PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT KEY EMPLOYMENT AND COMMERCIAL DESTINATIONS IN DOWNTOWN.
					SUBTOTAL \$ 2,891,000	
OTHER CONSTRUCTION ITEMS						
8	Drainage	1	LS	\$ 314,100	\$ 314,100	10% of construction bid items
9	Traffic Control	1	LS	\$ 314,100	\$ 314,100	10% of construction bid items
10	Mobilization	1	LS	\$ 314,100	\$ 314,100	10% of construction bid items
11	Utility Relocation/Removals	1	LS	\$ 157,050	\$ 157,050	5% of construction bid items
					SUBTOTAL \$ 1,099,350	
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 127,211	\$ 127,211	3% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 848,070	\$ 848,070	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 636,053	\$ 636,053	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 636,053	\$ 636,053	15% of hard costs
					SUBTOTAL \$ 2,247,386	

PROJECT SUBTOTAL \$ 6,487,736
 UNALLOCATED CONTINGENCY (30%) \$ 1,946,321
TOTAL PROJECT COST \$ 8,434,056

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 6 (Implement Off-Site Transit-Signal Priority (TSP) Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Traffic Signal Modifications (Transit Signal Priority)	1	EA	\$ 50,000	\$ 50,000	
					SUBTOTAL \$	50,000
OTHER CONSTRUCTION ITEMS						
2	Drainage	-	LS	\$ 5,000	\$ -	10% of construction bid items
3	Traffic Control	1	LS	\$ 5,000	\$ 5,000	10% of construction bid items
4	Mobilization	1	LS	\$ 5,000	\$ 5,000	10% of construction bid items
5	Utility Relocation/Removals	-	LS	\$ 2,500	\$ -	5% of construction bid items
					SUBTOTAL \$	10,000
PROFESSIONAL SERVICES						
6	Project Development (Environmental Clearance)	1	LS	\$ 1,800	\$ 1,800	3% of hard costs
7	Preliminary Engineering and Final Design	1	LS	\$ 12,000	\$ 12,000	20% of hard costs
8	Project Management for Design and Construction	1	LS	\$ 9,000	\$ 9,000	15% of hard costs
9	Construction Administration & Management (+DSDC)	1	LS	\$ 9,000	\$ 9,000	15% of hard costs
					SUBTOTAL \$	31,800
					PROJECT SUBTOTAL \$	91,800
					UNALLOCATED CONTINGENCY (30%) \$	27,540
					TOTAL PROJECT COST \$	119,340

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Walnut Creek BART Project 7 (Implement a Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
					SUBTOTAL \$	-
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
					SUBTOTAL \$	-
					PROJECT SUBTOTAL \$	-
					UNALLOCATED CONTINGENCY (30%) \$	-
					TOTAL PROJECT COST \$	-

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - Danville Sycamore Valley			
Sub-Project	Total	Design	Construction
Project 1 (Transit Related Improvements) w/ 30% contingency	\$ 6,957,347	\$ 827,684	\$ 6,129,662
Project 2 (Parking Lot Reconfiguration and On-site Pedestrian/Bicycle Connections) w 30% contingency	\$ 14,564,877	\$ 1,732,718	\$ 12,832,159
Project 3 (In-line Bus Stop) w/ 30% contingency	\$ 2,307,913	\$ 391,646	\$ 1,916,267
Project 4 (Off-Site Pedestrian/Bicycle Improvements) w/ 30% contingency	\$ 5,045,397	\$ 832,655	\$ 4,212,741
Project 5 (Off-Site Transit Signal Priority (TSP) Projects) w/ 30% contingency	\$ 477,360	\$ 78,780	\$ 398,580
Project 6 (Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 29,352,893	\$ 3,863,484	\$ 25,489,409

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 1 (Transit Related Improvements)							
						January 2023	
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment	
TRANSIT AMENITIES							
1	Real Time Travel Information	1	EA	\$ 17,000	\$ 17,000		
2	Fare Vending Machines	1	EA	\$ 75,000	\$ 75,000		
3	Battery Electric Bus Charging Stations	3	EA	\$ 20,000	\$ 60,000	Assumes charger and dual-wand charging (minor conduit cost), new service is accounted for below under item #36. Additional 900k-1.2m would need to be added for battery electric storage system, if desired	
4	Shelters	4	EA	\$ 80,000	\$ 320,000	Assume custom shelters	
5	Benches	4	EA	\$ 5,000	\$ 20,000		
6	Lighting	1	LS	\$ 50,000	\$ 50,000		
7	Security	1	LS	\$ 40,000	\$ 40,000		
8	Curb & Gutter Reconstruction	1,000	LF	\$ 175	\$ 175,000		
9	Bus Area Repaving	20,000	SF	\$ 20	\$ 400,000		
10	Transit Waiting Area	3,000	SF	\$ 30	\$ 90,000		
					SUBTOTAL \$	1,247,000	
BICYCLE AMENITIES							
11	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000		
12	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers	
13	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000		
					SUBTOTAL \$	265,000	
PEDESTRIAN AMENITIES							
14	Landscaping	1	LS	\$ 100,000	\$ 100,000	Completely new public space required	
15	Lighting	1	LS	\$ 150,000	\$ 150,000		
					SUBTOTAL \$	250,000	
MOTORIZED SERVICES & AMENITIES							
16	Curb and Gutter Reconstruction	500	LF	\$ 175	\$ 87,500	Assume entire perimeter of PUDO area and mobile retail area	
17	Parking Area Repaving	700	SF	\$ 15	\$ 10,500	Assume entire PUDO area repaved	
18	Parking Area Reconfiguration	700	SF	\$ 5	\$ 3,500	Assume entire PUDO area reconfigured	
19	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000		
					SUBTOTAL \$	126,500	
SUPPORT SERVICES & AMENITIES							
20	Wi-Fi and Device Charging	5	EA	\$ 1,700	\$ 8,500		
21	Package Delivery Stations	1	LS	\$ 12,000	\$ 12,000		
22	Wayfinding	1	LS	\$ 50,000	\$ 50,000		
23	Information Kiosks	2	EA	\$ 20,000	\$ 40,000		
24	Mobile Retail Services - Utility Connections	1	EA	\$ 15,000	\$ 15,000		
25	Solar Panel Canopy	8,000	SF	\$ 60	\$ 480,000		
26	Monumentation	1	EA	\$ 100,000	\$ 100,000		
					SUBTOTAL \$	705,500	
HARDSCAPE IMPROVEMENTS							
27	Curb & Gutter Replacement	800	LF	\$ 175	\$ 140,000		
					SUBTOTAL \$	140,000	
OTHER CONSTRUCTION ITEMS							
28	Drainage	1	LS	\$ 273,400	\$ 273,400	10% of construction bid items	
29	Traffic Control	1	LS	\$ 273,400	\$ 273,400	10% of construction bid items	
30	Mobilization	1	LS	\$ 273,400	\$ 273,400	10% of construction bid items	
31	Utility Relocation/Removals	1	LS	\$ 136,700	\$ 136,700	5% of construction bid items	
					SUBTOTAL \$	956,900	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 1 (Transit Related Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
PROFESSIONAL SERVICES						
32	Project Development (Environmental Clearance)	1	LS	\$ 36,909	\$ 36,909	1% of hard costs
33	Preliminary Engineering and Final Design	1	LS	\$ 516,726	\$ 516,726	14% of hard costs
34	Project Management for Design and Construction	1	LS	\$ 553,635	\$ 553,635	15% of hard costs
35	Construction Administration & Management (+DSDC)	1	LS	\$ 553,635	\$ 553,635	15% of hard costs
SUBTOTAL					\$ 1,660,905	

PROJECT SUBTOTAL \$ 5,351,805
 UNALLOCATED CONTINGENCY (30%) \$ 1,605,542
TOTAL PROJECT COST \$ 6,957,347

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 2 (Parking Lot Reconfiguration and On-site Pedestrian/Bicycle Connections)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
PEDESTRIAN AMENITIES						
Public Space						
1	Landscaping	1	LS	\$ 100,000	\$ 100,000	Completely new public space required
2	Lighting	1	LS	\$ 200,000	\$ 200,000	
					SUBTOTAL \$	300,000
MOTORIZED SERVICES & AMENITIES						
3	Electric Vehicle Charging Station	30	EA	\$ 18,450	\$ 553,500	
4	Curb and Gutter Reconstruction	1,000	LF	\$ 175	\$ 175,000	Assume entire perimeter of north parking lot
5	Parking Area Repaving	20,000	SF	\$ 15	\$ 300,000	North parking lot extension
6	Parking Area Reconfiguration	80,000	SF	\$ 10	\$ 800,000	Assume entire north parking lot repaved
7	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000	
8	Parking Space Availability Sensors	100	Space	\$ 400	\$ 40,000	
9	Real-time occupancy digital signage and backroom hardware/software	1	EA	\$ 30,000	\$ 30,000	
					SUBTOTAL \$	1,923,500
SUPPORT SERVICES & AMENITIES						
10	Solar Panel Canopy	40,000	SF	\$ 60	\$ 2,400,000	
					SUBTOTAL \$	2,400,000
HARDSCAPE IMPROVEMENTS						
11	Bikeways - Off-street Path Construction	5,000	SF	\$ 30	\$ 150,000	Assume off-street path construction; includes base and pavement
12	Pedestrian Walkways	5,000	SF	\$ 30	\$ 150,000	
13	New Service for EV Charging Stations	1	LS	\$ 800,000	\$ 800,000	
					SUBTOTAL \$	1,100,000
OTHER CONSTRUCTION ITEMS						
14	Drainage	1	LS	\$ 572,350	\$ 572,350	10% of construction bid items
15	Traffic Control	1	LS	\$ 572,350	\$ 572,350	10% of construction bid items
16	Mobilization	1	LS	\$ 572,350	\$ 572,350	10% of construction bid items
17	Utility Relocation/Removals	1	LS	\$ 286,175	\$ 286,175	5% of construction bid items
					SUBTOTAL \$	2,003,225
PROFESSIONAL SERVICES						
18	Project Development (Environmental Clearance)	1	LS	\$ 77,267	\$ 77,267	1% of hard costs
19	Preliminary Engineering and Final Design	1	LS	\$ 1,081,742	\$ 1,081,742	14% of hard costs
20	Project Management for Design and Construction	1	LS	\$ 1,159,009	\$ 1,159,009	15% of hard costs
21	Construction Administration & Management (+DSDC)	1	LS	\$ 1,159,009	\$ 1,159,009	15% of hard costs
					SUBTOTAL \$	3,477,026
					PROJECT SUBTOTAL \$	11,203,751
					UNALLOCATED CONTINGENCY (30%) \$	3,361,125
					TOTAL PROJECT COST \$	14,564,877

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 3 (In-line Bus Stop)							
						January 2023	
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment	
TRANSIT AMENITIES							
1	Real Time Travel Information	1	EA	\$ 17,000	\$ 17,000		
2	Shelters	1	EA	\$ 80,000	\$ 80,000	Assume custom shelters	
3	Benches	1	EA	\$ 5,000	\$ 5,000		
4	Lighting	1	LS	\$ 50,000	\$ 50,000		
5	Security	1	LS	\$ 40,000	\$ 40,000		
6	Curb & Gutter Reconstruction	1,000	LF	\$ 175	\$ 175,000		
7	Bus Area Repaving	15,000	SF	\$ 20	\$ 300,000		
8	Transit Waiting Area	1,000	SF	\$ 30	\$ 30,000		
					SUBTOTAL \$	697,000	
HARDSCAPE IMPROVEMENTS							
9	Walkways - In-line bus stop connection	1	LS	\$ 100,000	\$ 100,000		
					SUBTOTAL \$	100,000	
OTHER CONSTRUCTION ITEMS							
7	Drainage	1	LS	\$ 79,700	\$ 79,700	10% of construction bid items	
8	Traffic Control	1	LS	\$ 79,700	\$ 79,700	10% of construction bid items	
9	Mobilization	1	LS	\$ 79,700	\$ 79,700	10% of construction bid items	
10	Utility Relocation/Removals	1	LS	\$ 39,850	\$ 39,850	5% of construction bid items	
					SUBTOTAL \$	278,950	
PROFESSIONAL SERVICES							
11	Project Development (Environmental Clearance)	1	LS	\$ 53,798	\$ 53,798	5% of hard costs	
12	Preliminary Engineering and Final Design	1	LS	\$ 215,190	\$ 215,190	20% of hard costs	
13	Project Management for Design and Construction	1	LS	\$ 215,190	\$ 215,190	20% of hard costs	
14	Construction Administration & Management (+DSDC)	1	LS	\$ 215,190	\$ 215,190	20% of hard costs	
					SUBTOTAL \$	699,368	
					PROJECT SUBTOTAL \$	1,775,318	
					UNALLOCATED CONTINGENCY (30%) \$	532,595	
					TOTAL PROJECT COST \$	2,307,913	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 4 (Off-Site Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Bikeways - Re-striping	1,500	LF	\$ 5	\$ 7,500	
2	Bikeways - Off-street Path Construction	15,000	SF	\$ 30	\$ 450,000	Assume off-street path construction; includes base and pavement
3	Pedestrian Walkways	7,800	SF	\$ 30	\$ 234,000	
4	Pedestrian Crossings	6,500	SF	\$ 50	\$ 325,000	Assume crosswalk striping
5	Curb & Gutter Replacement	1,500	LF	\$ 175	\$ 262,500	
6	Traffic Signal Modifications (Bike/Ped Improvements)	2	EA	\$ 50,000	\$ 100,000	
7	Additional Improvements in the Mobility Hub Area	1	LS	\$ 500,000	\$ 500,000	COST IMPACT: LOW PROJECTS INCLUDE: -IMPROVE PEDESTRIAN AND BICYCLE ACCESS AND WAYFINDING ALONG SYCAMORE VALLEY ROAD TO RESIDENTIAL NEIGHBORHOODS EAST OF THE MOBILITY HUB AND CAMINO RAMON TO THE SOUTH. -IDENTIFY OPPORTUNITIES FOR IMPROVED BIKE FACILITIES ON SAN RAMON VALLEY BLVD.
SUBTOTAL					\$ 1,879,000	
OTHER CONSTRUCTION ITEMS						
8	Drainage	1	LS	\$ 187,900	\$ 187,900	10% of construction bid items
9	Traffic Control	1	LS	\$ 187,900	\$ 187,900	10% of construction bid items
10	Mobilization	1	LS	\$ 187,900	\$ 187,900	10% of construction bid items
11	Utility Relocation/Removals	1	LS	\$ 93,950	\$ 93,950	5% of construction bid items
SUBTOTAL					\$ 657,650	
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance)	1	LS	\$ 76,100	\$ 76,100	3% of hard costs
13	Preliminary Engineering and Final Design	1	LS	\$ 507,330	\$ 507,330	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 380,498	\$ 380,498	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 380,498	\$ 380,498	15% of hard costs
SUBTOTAL					\$ 1,344,425	
PROJECT SUBTOTAL					\$ 3,881,075	
UNALLOCATED CONTINGENCY (30%)					\$ 1,164,322	
TOTAL PROJECT COST					\$ 5,045,397	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 5 (Off-Site Transit Signal Priority (TSP) Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
Off-site Improvements						
1	Traffic Signal Modifications (Transit Signal Priority)	4	EA	\$ 50,000	\$ 200,000	
					SUBTOTAL \$	200,000
OTHER CONSTRUCTION ITEMS						
2	Drainage	-	LS	\$ 20,000	\$ -	10% of construction bid items
3	Traffic Control	1	LS	\$ 20,000	\$ 20,000	10% of construction bid items
4	Mobilization	1	LS	\$ 20,000	\$ 20,000	10% of construction bid items
5	Utility Relocation/Removals	-	LS	\$ 10,000	\$ -	5% of construction bid items
					SUBTOTAL \$	40,000
PROFESSIONAL SERVICES						
6	Project Development (Environmental Clearance)	1	LS	\$ 7,200	\$ 7,200	3% of hard costs
7	Preliminary Engineering and Final Design	1	LS	\$ 48,000	\$ 48,000	20% of hard costs
8	Project Management for Design and Construction	1	LS	\$ 36,000	\$ 36,000	15% of hard costs
9	Construction Administration & Management (+DSDC)	1	LS	\$ 36,000	\$ 36,000	15% of hard costs
					SUBTOTAL \$	127,200
					PROJECT SUBTOTAL \$	367,200
					UNALLOCATED CONTINGENCY (30%) \$	110,160
					TOTAL PROJECT COST \$	477,360

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Danville Sycamore Valley Project 6 (Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL					\$ -	
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL					\$ -	
PROJECT SUBTOTAL					\$ -	
UNALLOCATED CONTINGENCY (30%)					\$ -	
TOTAL PROJECT COST					\$ -	

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - San Ramon Transit Center			
Sub-Project	Total	Design	Construction
Project 1 (Transit Related Improvements) w/ 30% contingency	\$ 10,338,369	\$ 1,025,792	\$ 9,312,576
Project 2 (First Level of Parking Garage Reconfiguration) w 30% contingency	\$ 350,064	\$ 57,772	\$ 292,292
Project 3 (Off-Site Pedestrian/Bicycle Improvements) w/ 30% contingency	\$ 2,012,570	\$ 332,140	\$ 1,680,430
Project 4 (Signage and Wayfinding with Off-Site Transit Signal Priority (TSP)) w/ 30% contingency	\$ 450,628	\$ 74,368	\$ 376,260
Project 5 (Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 13,151,630	\$ 1,490,072	\$ 11,661,558

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - San Ramon Project 1 (Transit Related Improvements)							
						January 2023	
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment	
TRANSIT AMENITIES							
1	Real Time Travel Information	1	EA	\$ 17,000	\$ 17,000		
2	Fare Vending Machines	2	EA	\$ 75,000	\$ 150,000		
3	Battery Electric Bus Charging Stations	3	EA	\$ 20,000	\$ 60,000	Assumes charger and dual-wand charging (minor conduit cost), new service is accounted for below under item #36. Additional 900k-1.2m would need to be added for battery electric storage system, if desired	
4	Shelters	7	EA	\$ 80,000	\$ 560,000	Assume custom shelters	
5	Benches	7	EA	\$ 5,000	\$ 35,000		
6	Lighting	1	LS	\$ 50,000	\$ 50,000		
7	Security	1	LS	\$ 40,000	\$ 40,000		
8	Curb and Gutter Reconstruction	500	LF	\$ 175	\$ 87,500		
9	Bus Area Repaving	10,000	SF	\$ 20	\$ 200,000		
10	Transit Waiting Area	11,000	SF	\$ 30	\$ 330,000		
					SUBTOTAL \$	1,529,500	
BICYCLE AMENITIES							
11	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000		
12	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers	
13	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000		
					SUBTOTAL \$	265,000	
PEDESTRIAN AMENITIES							
14	Landscaping	1	LS	\$ 50,000	\$ 50,000		
15	Lighting	1	LS	\$ 150,000	\$ 150,000		
					SUBTOTAL \$	200,000	
MOTORIZED SERVICES & AMENITIES							
16	Electric Vehicle Charging Station	20	EA	\$ 18,450	\$ 369,000		
17	Curb and Gutter Reconstruction	500	LF	\$ 175	\$ 87,500	Assume entire perimeter of PUDO area and mobile retail area	
18	Parking Area Repaving	20,000	SF	\$ 15	\$ 300,000	Assume new southern access point paved	
19	Parking Area Reconfiguration	15,000	SF	\$ 10	\$ 150,000	Assume existing parking area reconfigured	
20	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000		
					SUBTOTAL \$	931,500	
SUPPORT SERVICES & AMENITIES							
21	Wi-Fi and Device Charging	5	EA	\$ 1,700	\$ 8,500		
22	Package Delivery Stations	1	LS	\$ 12,000	\$ 12,000		
23	Wayfinding	1	LS	\$ 100,000	\$ 100,000		
24	Information Kiosks	2	EA	\$ 20,000	\$ 40,000		
25	Mobile Retail Services - Utility Connections	1	EA	\$ 15,000	\$ 15,000		
26	Solar Panel Canopy	4,000	SF	\$ 60	\$ 240,000		
27	Monumentation	2	EA	\$ 100,000	\$ 200,000		
					SUBTOTAL \$	615,500	
HARDSCAPE IMPROVEMENTS							
28	Bikeways - Off-street Path Construction	500	SF	\$ 30	\$ 15,000	Assume off-street path construction; includes base and pavement	
29	New Service for EV Charging Stations	1	LS	\$ 800,000	\$ 800,000	Cost roughly based on Summit County Transit HQ and scaled down (10 chargers at SC, 2 at Bollinger Canyon); assumes equipment and conduits	
					SUBTOTAL \$	815,000	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - San Ramon Project 1 (Transit Related Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
OTHER CONSTRUCTION ITEMS						
30	Drainage	1	LS	\$ 435,650	\$ 435,650	10% of construction bid items
31	Traffic Control	1	LS	\$ 348,520	\$ 348,520	8% of construction bid items
32	Mobilization	1	LS	\$ 435,650	\$ 435,650	10% of construction bid items
33	Utility Relocation/Removals	1	LS	\$ 217,825	\$ 217,825	5% of construction bid items
SUBTOTAL \$					1,437,645	
PROFESSIONAL SERVICES						
34	Project Development (Environmental Clearance)	1	LS	\$ 45,743	\$ 45,743	1% of hard costs
35	Preliminary Engineering and Final Design	1	LS	\$ 640,406	\$ 640,406	14% of hard costs
36	Project Management for Design and Construction	1	LS	\$ 686,149	\$ 686,149	15% of hard costs
37	Construction Administration & Management (+DSDC)	1	LS	\$ 686,149	\$ 686,149	15% of hard costs
38	Easement Acquisition	1	LS	\$ 100,000	\$ 100,000	Access easement through commercial properties for new access point
SUBTOTAL \$					2,158,446	
PROJECT SUBTOTAL \$					7,952,591	
UNALLOCATED CONTINGENCY (30%)					\$	2,385,777
TOTAL PROJECT COST \$					10,338,369	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - San Ramon Project 2 (First Level of Parking Garage Reconfiguration)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
MOTORIZED SERVICES & AMENITIES						
1	Parking Area Reconfiguration	7,000	SF	\$ 5	\$ 35,000	
2	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000	
3	Parking Space Availability Sensors	100	Space	\$ 400	\$ 40,000	
4	Real-time occupancy digital signage and backroom hardware/software	1	EA	\$ 30,000	\$ 30,000	
					SUBTOTAL \$	130,000
HARDSCAPE IMPROVEMENTS						
5	Pedestrian Walkways	1,000	SF	\$ 30	\$ 30,000	
					SUBTOTAL \$	30,000
OTHER CONSTRUCTION ITEMS						
6	Drainage	-	LS	\$ 16,000	\$ -	10% of construction bid items
7	Traffic Control	-	LS	\$ 12,800	\$ -	8% of construction bid items
8	Mobilization	1	LS	\$ 16,000	\$ 16,000	10% of construction bid items
9	Utility Relocation/Removals	-	LS	\$ 8,000	\$ -	5% of construction bid items
					SUBTOTAL \$	16,000
PROFESSIONAL SERVICES						
10	Project Development (Environmental Clearance)	1	LS	\$ 5,280	\$ 5,280	3% of hard costs
11	Preliminary Engineering and Final Design	1	LS	\$ 35,200	\$ 35,200	20% of hard costs
12	Project Management for Design and Construction	1	LS	\$ 26,400	\$ 26,400	15% of hard costs
13	Construction Administration & Management (+DSDC)	1	LS	\$ 26,400	\$ 26,400	15% of hard costs
					SUBTOTAL \$	93,280
					PROJECT SUBTOTAL \$	269,280
					UNALLOCATED CONTINGENCY (30%) \$	80,784
					TOTAL PROJECT COST \$	350,064

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - San Ramon Project 3 (Off-Site Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Bikeways - Re-striping	1,500	LF	\$ 5	\$ 7,500	
2	Pedestrian Crossings	7,000	SF	\$ 50	\$ 350,000	Assume crosswalk striping
3	Additional Improvements in the Mobility Hub Area	1	LS	\$ 500,000	\$ 500,000	COST IMPACT: LOW PROJECTS INCLUDE: -PROVIDE SAFE AND COMFORTABLE DEDICATED BICYCLE FACILITIES AMONG CAMINO RAMON, EXECUTIVE PARKWAY, NORRIS CANYON ROAD, AND BISHOP DRIVE. -PROVIDE TRANSIT PRIORITY TREATMENTS ALONG BUS ROUTES WITHIN BISHOP RANCH. -PROVIDE A PUBLICLY-ACCESSIBLE PEDESTRIAN AND BICYCLE PATH OF TRAVEL FROM THE MOBILITY HUB TO ALCOSTA BOULEVARD NORTH OF THE MIDDLE SCHOOL
SUBTOTAL \$					857,500	
OTHER CONSTRUCTION ITEMS						
4	Drainage	-	LS	\$ 85,750	\$ -	10% of construction bid items
5	Traffic Control	1	LS	\$ 68,600	\$ 68,600	8% of construction bid items
6	Mobilization	1	LS	\$ 85,750	\$ 85,750	10% of construction bid items
7	Utility Relocation/Removals	-	LS	\$ 42,875	\$ -	5% of construction bid items
SUBTOTAL \$					154,350	
PROFESSIONAL SERVICES						
8	Project Development (Environmental Clearance)	1	LS	\$ 30,356	\$ 30,356	3% of hard costs
9	Preliminary Engineering and Final Design	1	LS	\$ 202,370	\$ 202,370	20% of hard costs
10	Project Management for Design and Construction	1	LS	\$ 151,778	\$ 151,778	15% of hard costs
11	Construction Administration & Management (+DSDC)	1	LS	\$ 151,778	\$ 151,778	15% of hard costs
SUBTOTAL \$					536,281	
PROJECT SUBTOTAL \$					1,548,131	
UNALLOCATED CONTINGENCY (30%)					\$	464,439
TOTAL PROJECT COST \$					2,012,570	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - San Ramon Project 4 (Signage and Wayfinding with Off-Site Transit Signal Priority (TSP))						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Real Time Travel Information	1	EA	\$ 17,000	\$ 17,000	
					SUBTOTAL \$	17,000
MOTORIZED SERVICES & AMENITIES						
2	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000	
					SUBTOTAL \$	25,000
SUPPORT SERVICES & AMENITIES						
3	Wayfinding	1	LS	\$ 100,000	\$ 100,000	
					SUBTOTAL \$	100,000
HARDSCAPE IMPROVEMENTS						
4	Transit Signal Modifications (Transit Signal Priority)	1	EA	\$ 50,000	\$ 50,000	intersection of Executive Pkwy/Camino Ramon
					SUBTOTAL \$	50,000
OTHER CONSTRUCTION ITEMS						
5	Drainage	-	LS	\$ 19,200	\$ -	10% of construction bid items
6	Traffic Control	1	LS	\$ 15,360	\$ 15,360	8% of construction bid items
7	Mobilization	1	LS	\$ 19,200	\$ 19,200	10% of construction bid items
8	Utility Relocation/Removals	-	LS	\$ 9,600	\$ -	5% of construction bid items
					SUBTOTAL \$	34,560
PROFESSIONAL SERVICES						
9	Project Development (Environmental Clearance)	1	LS	\$ 6,797	\$ 6,797	3% of hard costs
10	Preliminary Engineering and Final Design	1	LS	\$ 45,312	\$ 45,312	20% of hard costs
11	Project Management for Design and Construction	1	LS	\$ 33,984	\$ 33,984	15% of hard costs
12	Construction Administration & Management (+DSDC)	1	LS	\$ 33,984	\$ 33,984	15% of hard costs
					SUBTOTAL \$	120,077

PROJECT SUBTOTAL \$ 346,637
 UNALLOCATED CONTINGENCY (30%) \$ 103,991
TOTAL PROJECT COST \$ 450,628

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - San Ramon Project 5 (Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL \$					-	
PROFESSIONAL SERVICES						
5	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
6	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
7	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
8	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL \$					-	
PROJECT SUBTOTAL \$					-	
UNALLOCATED CONTINGENCY (30%) \$					-	
TOTAL PROJECT COST \$					-	

INNOVATE 680			
PROJECT: SHARED MOBILITY HUBS - BOLLINGER CANYON PNR			
Sub-Project	Total	Design	Construction
Project 1 (Transit Improvements and Mobility Hub Circulation) w/ 30% contingency	\$ 3,459,169	\$ 396,056	\$ 3,063,113
Project 2 (Sidewalks and Other Parking Lot Changes) w/ 30% contingency	\$ 6,085,930	\$ 724,016	\$ 5,361,914
Project 3 (Signage and Wayfinding) w/ 30% contingency	\$ 698,537	\$ 115,281	\$ 583,255
Project 4 (On-Site Pedestrian/Bicycle Improvements) w/ 30% contingency	\$ 1,803,360	\$ 296,153	\$ 1,507,208
Project 5 (Off-Site Pedestrian/Bicycle Improvements and Overcrossing Improvements) w/ 30% contingency	\$ 7,844,587	\$ 1,331,203	\$ 6,513,384
Project 6 (Construct In-Line Bus Stop) w/ 30% contingency	\$ 1,395,752	\$ 236,855	\$ 1,158,897
Project 7 (Implement Off-Site Transit Signal Priority (TSP) Projects) w/ 30% contingency	\$ 358,020	\$ 59,085	\$ 298,935
Project 8 (Implement a Shared Mobility Services Program) w/ 30% contingency	\$ -	\$ -	\$ -
Total	\$ 21,645,354	\$ 3,158,649	\$ 18,486,706

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 1 (Transit Improvements and Mobility Hub Circulation)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Fare Vending Machines	2	EA	\$ 75,000	\$ 150,000	
2	Battery Electric Bus Charging Stations	3	EA	\$ 20,000	\$ 60,000	Assumes charger and dual-wand charging (minor conduit cost), new service is accounted for below under item #36. Additional 900k-1.2m would need to be added for battery electric storage system, if desired
3	Shelters	3	EA	\$ 80,000	\$ 240,000	Assume custom shelters
4	Benches	3	EA	\$ 5,000	\$ 15,000	
5	Lighting	1	LS	\$ 150,000	\$ 150,000	
6	Security	1	LS	\$ 40,000	\$ 40,000	
7	Curb & Gutter Reconstruction	450	LF	\$ 175	\$ 78,750	
8	Bus Area Repaving	10,000	SF	\$ 20	\$ 200,000	
9	Transit Waiting Area	3,800	SF	\$ 30	\$ 114,000	
					SUBTOTAL \$	1,047,750
SUPPORT SERVICES & AMENITIES						
10	Wi-Fi and Device Charging	5	EA	\$ 1,700	\$ 8,500	
11	Package Delivery Stations	1	LS	\$ 12,000	\$ 12,000	
12	Information Kiosks	2	EA	\$ 20,000	\$ 40,000	
13	Mobile Retail Services - Utility Connections	1	EA	\$ 15,000	\$ 15,000	
					SUBTOTAL \$	75,500
HARDSCAPE IMPROVEMENTS						
14	Dedicated Transit Lanes	200	LF	\$ 400	\$ 80,000	Assume red painted concrete and minor curb work
15	Curb & Gutter Replacement	600	LF	\$ 175	\$ 105,000	Assume access point off Harness Drive and Bollinger Canyon Rd
					SUBTOTAL \$	185,000
OTHER CONSTRUCTION ITEMS						
16	Drainage	1	LS	\$ 130,825	\$ 130,825	10% of construction bid items
17	Traffic Control	1	LS	\$ 130,825	\$ 130,825	10% of construction bid items
18	Mobilization	1	LS	\$ 130,825	\$ 130,825	10% of construction bid items
19	Utility Relocation/Removals	1	LS	\$ 65,413	\$ 65,413	5% of construction bid items
					SUBTOTAL \$	457,888
PROFESSIONAL SERVICES						
20	Project Development (Environmental Clearance)	1	LS	\$ 17,661	\$ 17,661	1% of hard costs
21	Preliminary Engineering and Final Design	1	LS	\$ 247,259	\$ 247,259	14% of hard costs
22	Project Management for Design and Construction	1	LS	\$ 264,921	\$ 264,921	15% of hard costs
23	Construction Administration & Management (+DSDC)	1	LS	\$ 264,921	\$ 264,921	15% of hard costs
24	Easement Acquisition	1	LS	\$ 100,000	\$ 100,000	Access easement through commercial properties for new access point to PNR
					SUBTOTAL \$	894,762

PROJECT SUBTOTAL \$ 2,660,899
 UNALLOCATED CONTINGENCY (30%) \$ 798,270
TOTAL PROJECT COST \$ 3,459,169

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 2 (Sidewalks and Other Parking Lot Changes)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
PEDESTRIAN AMENITIES						
1	Landscaping	1	LS	\$ 25,000	\$ 25,000	Landscaping within parking lot
2	Lighting	1	LS	\$ 150,000	\$ 150,000	Lighting within parking lot
					SUBTOTAL \$ 175,000	
MOTORIZED SERVICES & AMENITIES						
3	Electric Vehicle Charging Station	20	EA	\$ 18,450	\$ 369,000	
4	Curb and Gutter Reconstruction	900	LF	\$ 175	\$ 157,500	Assume entire perimeter of PUDO area and mobile retail are;
5	Parking Area Repaving	20,000	SF	\$ 15	\$ 300,000	Assume access points repaved
6	Parking Area Reconfiguration	10,000	SF	\$ 10	\$ 100,000	Assume entire PUDO area reconfigured
7	Parking Space Availability Sensors	109	Space	\$ 400	\$ 43,600	Parking Reservation System
8	Real-time occupancy digital signage and backroom hardware/software	1	EA	\$ 30,000	\$ 30,000	Parking Reservation System
					SUBTOTAL \$ 1,000,100	
SUPPORT SERVICES & AMENITIES						
9	Solar Panel Canopy	11,000	SF	\$ 60	\$ 660,000	
10	Security	1	LS	\$ 150,000	\$ 150,000	
					SUBTOTAL \$ 810,000	
HARDSCAPE IMPROVEMENTS						
11	Pedestrian Walkways	5,000	SF	\$ 30	\$ 150,000	Sidewalk improvements into the mobility hub from Bollinger Canyon Rd and San Ramon Valley Blv
12	New Service for EV Charging Stations	1	LS	\$ 800,000	\$ 800,000	Cost roughly based on Summit County Transit HQ and scaled down (10 chargers at SC, 2 at Bollinger Canyon); assumes equipment and conduits
					SUBTOTAL \$ 950,000	
OTHER CONSTRUCTION ITEMS						
13	Drainage	-	LS	\$ 293,510	\$ -	10% of construction bid items
14	Traffic Control	-	LS	\$ 293,510	\$ -	10% of construction bid items
15	Mobilization	1	LS	\$ 293,510	\$ 293,510	10% of construction bid items
16	Utility Relocation/Removals	-	LS	\$ 146,755	\$ -	5% of construction bid items
					SUBTOTAL \$ 293,510	
PROFESSIONAL SERVICES						
17	Project Development (Environmental Clearance	1	LS	\$ 32,286	\$ 32,286	1% of hard costs
18	Preliminary Engineering and Final Desigr	1	LS	\$ 452,005	\$ 452,005	14% of hard costs
19	Project Management for Design and Construction	1	LS	\$ 484,292	\$ 484,292	15% of hard costs
20	Construction Administration & Management (+DSDC)	1	LS	\$ 484,292	\$ 484,292	15% of hard costs
					SUBTOTAL \$ 1,452,875	
					PROJECT SUBTOTAL \$ 4,681,485	
					UNALLOCATED CONTINGENCY (30%) \$ 1,404,445	
					TOTAL PROJECT COST \$ 6,085,930	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 3 (Signage and Wayfinding)						
						April 2022
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Real Time Travel Informatior	1	EA	\$ 17,000	\$ 17,000	
					SUBTOTAL \$	17,000
MOTORIZED SERVICES & AMENITIES						
2	Parking Signage (Static)	1	LS	\$ 25,000	\$ 25,000	Parking Information
					SUBTOTAL \$	25,000
SUPPORT SERVICES & AMENITIES						
3	Wayfinding	1	LS	\$ 100,000	\$ 100,000	
4	Monumentation	2	EA	\$ 100,000	\$ 200,000	monument at north entrance on Bollinger Canyon Rd and southern exit at Harness Dr
					SUBTOTAL \$	300,000
OTHER CONSTRUCTION ITEMS						
5	Drainage	-	LS	\$ 34,200	\$ -	10% of construction bid items
6	Traffic Control	-	LS	\$ 34,200	\$ -	10% of construction bid items
7	Mobilization	1	LS	\$ 34,200	\$ 34,200	10% of construction bid items
8	Utility Relocation/Removals	-	LS	\$ 17,100	\$ -	5% of construction bid items
					SUBTOTAL \$	34,200
PROFESSIONAL SERVICES						
9	Project Development (Environmental Clearance	1	LS	\$ 10,536	\$ 10,536	3% of hard costs
10	Preliminary Engineering and Final Desigr	1	LS	\$ 70,240	\$ 70,240	20% of hard costs
11	Project Management for Design and Construction	1	LS	\$ 52,680	\$ 52,680	15% of hard costs
12	Construction Administration & Management (+DSDC)	1	LS	\$ 52,680	\$ 52,680	15% of hard costs
					SUBTOTAL \$	186,136
					PROJECT SUBTOTAL \$	537,336
					UNALLOCATED CONTINGENCY (30%) \$	161,201
					TOTAL PROJECT COST \$	698,537

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 4 (On-Site Pedestrian/Bicycle Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
BICYCLE AMENITIES						
1	Electric Bike Charging Stations	20	EA	\$ 10,250	\$ 205,000	
2	Bicycle Parking - Automated Valet Room (small)	20	EA	\$ 2,500	\$ 50,000	Assume structures similar to automatic bike lockers
3	Bicycle Repair Stations	2	EA	\$ 5,000	\$ 10,000	
					SUBTOTAL \$	265,000
PEDESTRIAN AMENITIES						
4	Landscaping	1	LS	\$ 75,000	\$ 75,000	Completely new public space requirec
5	Lighting	1	LS	\$ 50,000	\$ 50,000	
					SUBTOTAL \$	125,000
HARDSCAPE IMPROVEMENTS						
6	Bikeways - Off-street Path Constructior	15,000	SF	\$ 30	\$ 450,000	Within project site and Harness Dr
7	Curb & Gutter Replacement	250	LF	\$ 175	\$ 43,750	Completely new public space required
					SUBTOTAL \$	493,750
OTHER CONSTRUCTION ITEMS						
8	Drainage	-	LS	\$ 88,375	\$ -	10% of construction bid items
9	Traffic Control	-	LS	\$ 88,375	\$ -	10% of construction bid items
10	Mobilization	1	LS	\$ 88,375	\$ 88,375	10% of construction bid items
11	Utility Relocation/Removals	1	LS	\$ 44,188	\$ 44,188	5% of construction bid items
					SUBTOTAL \$	132,563
PROFESSIONAL SERVICES						
12	Project Development (Environmental Clearance	1	LS	\$ 30,489	\$ 30,489	3% of hard costs
13	Preliminary Engineering and Final Desigr	1	LS	\$ 176,750	\$ 176,750	20% of hard costs
14	Project Management for Design and Construction	1	LS	\$ 137,136	\$ 137,136	15% of hard costs
15	Construction Administration & Management (+DSDC)	1	LS	\$ 159,075	\$ 159,075	15% of hard costs
					SUBTOTAL \$	503,450
					PROJECT SUBTOTAL \$	1,387,200
					UNALLOCATED CONTINGENCY (30%) \$	416,160
					TOTAL PROJECT COST \$	1,803,360

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 5 (Off-Site Pedestrian/Bicycle Improvements and Overcrossing Improvements)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Bikeways - Re-striping	3,800	LF	\$ 5	\$ 19,000	
2	Bikeways - Off-street Path Constructor	15,000	SF	\$ 30	\$ 450,000	External access and eastbound overcrossing connection
3	Bikeways - Bollinger Canyon OH Modificator	1	LS	\$ 500,000	\$ 500,000	Includes modification to Bollinger Canyon Bridge (Moving Type K Rail, On-Ramp Reconfiguration, and other structural modifications)
4	Pedestrian Walkways	500	SF	\$ 30	\$ 15,000	
5	RRFBs	1	EA	\$ 50,000	\$ 50,000	
6	Bulbouts	4	EA	\$ 25,000	\$ 100,000	
7	Pedestrian Crossings	11,500	SF	\$ 50	\$ 575,000	Assume crosswalk striping
8	Additional Improvements in the Mobility Hub Area	1	LS	\$ 1,000,000	\$ 1,000,000	COST IMPACT: MEDIUM PROJECTS INCLUDE: -PROVIDE SHARED USE PATH OR CLASS I BICYCLE PATH ALONG SOUTH SIDE OF BOLLINGER CANYON ROAD TO AT LEAST SUNSET DRIVE/CHEVRON DRIVE. -PROVIDE REAL-TIME TRANSIT INFORMATION AT MAJOR EMPLOYMENT AND COMMERCIAL SITES IN THE AREA, INCLUDING CHEVRON AND CITY CENTER. -INCORPORATE TRANSIT SIGNAL PRIORITY ALONG BOLLINGER CANYON ROAD AND WITHIN BISHOP RANCH. -PROVIDE SECURE BIKE PARKING, SHARED MICROMOBILITY SERVICES, AND BIKE CHARGING INFRASTRUCTURE AT KEY EMPLOYMENT AND COMMERCIAL DESTINATIONS EAST OF I-680
SUBTOTAL					\$ 2,709,000	
OTHER CONSTRUCTION ITEMS						
9	Drainage	1	LS	\$ 270,900	\$ 270,900	10% of construction bid items
10	Traffic Control	1	LS	\$ 270,900	\$ 270,900	10% of construction bid items
11	Mobilization	1	LS	\$ 270,900	\$ 270,900	10% of construction bid items
12	Utility Relocation/Removals	1	LS	\$ 135,450	\$ 135,450	5% of construction bid items
SUBTOTAL					\$ 948,150	
PROFESSIONAL SERVICES						
13	Project Development (Environmental Clearance	1	LS	\$ 182,858	\$ 182,858	5% of hard costs
14	Preliminary Engineering and Final Desigr	1	LS	\$ 731,430	\$ 731,430	20% of hard costs
15	Project Management for Design and Construction	1	LS	\$ 731,430	\$ 731,430	20% of hard costs
16	Construction Administration & Management (+DSDC)	1	LS	\$ 731,430	\$ 731,430	20% of hard costs
SUBTOTAL					\$ 2,377,148	
PROJECT SUBTOTAL					\$ 6,034,298	
UNALLOCATED CONTINGENCY (30%)					\$ 1,810,289	
TOTAL PROJECT COST					\$ 7,844,587	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 6 (Construct In-Line Bus Stop)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Real Time Travel Informatior	1	EA	\$ 17,000	\$ 17,000	
2	Shelters	1	EA	\$ 80,000	\$ 80,000	Assume custom shelters
3	Benches	1	EA	\$ 5,000	\$ 5,000	
4	Lighting	1	LS	\$ 50,000	\$ 50,000	
5	Curb & Gutter Reconstruction	200	LF	\$ 175	\$ 35,000	
6	Bus Area Repaving	7,500	SF	\$ 20	\$ 150,000	
7	Transit Waiting Area	1,500	SF	\$ 30	\$ 45,000	
8	Signing and Striping	1	LS	\$ 100,000	\$ 100,000	
SUBTOTAL					\$ 482,000	
OTHER CONSTRUCTION ITEMS						
9	Drainage	1	LS	\$ 48,200	\$ 48,200	10% of construction bid items
10	Traffic Control	1	LS	\$ 48,200	\$ 48,200	10% of construction bid items
11	Mobilization	1	LS	\$ 48,200	\$ 48,200	10% of construction bid items
12	Utility Relocation/Removals	1	LS	\$ 24,100	\$ 24,100	5% of construction bid items
SUBTOTAL					\$ 168,700	
PROFESSIONAL SERVICES						
13	Project Development (Environmental Clearance	1	LS	\$ 32,535	\$ 32,535	5% of hard costs
14	Preliminary Engineering and Final Desigr	1	LS	\$ 130,140	\$ 130,140	20% of hard costs
15	Project Management for Design and Construction	1	LS	\$ 130,140	\$ 130,140	20% of hard costs
16	Construction Administration & Management (+DSDC)	1	LS	\$ 130,140	\$ 130,140	20% of hard costs
SUBTOTAL					\$ 422,955	

PROJECT SUBTOTAL \$ 1,073,655
 UNALLOCATED CONTINGENCY (30%) \$ 322,097
TOTAL PROJECT COST \$ 1,395,752

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 7 (Implement Off-Site Transit Signal Priority (TSP) Projects)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
HARDSCAPE IMPROVEMENTS						
1	Traffic Signal Modifications (Transit Signal Priority)	3	EA	\$ 50,000	\$ 150,000	Assuming additional improvements are needed for each of 3 intersections.
					SUBTOTAL \$ 150,000	
OTHER CONSTRUCTION ITEMS						
2	Drainage	-	LS	\$ 15,000	\$ -	10% of construction bid items
3	Traffic Control	1	LS	\$ 15,000	\$ 15,000	10% of construction bid items
4	Mobilization	1	LS	\$ 15,000	\$ 15,000	10% of construction bid items
5	Utility Relocation/Removals	-	LS	\$ 7,500	\$ -	5% of construction bid items
					SUBTOTAL \$ 30,000	
PROFESSIONAL SERVICES						
6	Project Development (Environmental Clearance)	1	LS	\$ 5,400	\$ 5,400	3% of hard costs
7	Preliminary Engineering and Final Design	1	LS	\$ 36,000	\$ 36,000	20% of hard costs
8	Project Management for Design and Construction	1	LS	\$ 27,000	\$ 27,000	15% of hard costs
9	Construction Administration & Management (+DSDC)	1	LS	\$ 27,000	\$ 27,000	15% of hard costs
					SUBTOTAL \$ 95,400	
					PROJECT SUBTOTAL \$ 275,400	
					UNALLOCATED CONTINGENCY (30%) \$ 82,620	
					TOTAL PROJECT COST \$ 358,020	

INNOVATE 680 PROJECT: SHARED MOBILITY HUBS Conceptual Draft Cost Estimate - Bollinger Canyon PNR Project 8 (Implement a Shared Mobility Services Program)						
						January 2023
Item	Description	Estimated Quantity	Unit	Unit Cost	Total Cost	Comment
TRANSIT AMENITIES						
1	Microtransit Program	-	LS	\$ -	\$ -	
2	Micromobility Program	-	LS	\$ -	\$ -	
3	Vanpool/Carpool Program	-	LS	\$ -	\$ -	
4	Shuttle Service	-	LS	\$ -	\$ -	
5	Operator Services	-	LS	\$ -	\$ -	
SUBTOTAL					\$ -	
PROFESSIONAL SERVICES						
6	Project Development (Environmental Clearance)	1	LS	\$ -	\$ -	1% of hard costs
7	Preliminary Engineering and Final Design	1	LS	\$ -	\$ -	14% of hard costs
8	Project Management for Design and Construction	1	LS	\$ -	\$ -	15% of hard costs
9	Construction Administration & Management (+DSDC)	1	LS	\$ -	\$ -	15% of hard costs
SUBTOTAL					\$ -	
PROJECT SUBTOTAL					\$ -	
UNALLOCATED CONTINGENCY (30%)					\$ -	
TOTAL PROJECT COST					\$ -	

APPENDIX F
MTC MOBILITY HUB SITING CRITERIA,
SCREENING METHODOLOGY, AND PRIORITIZATION



MOBILITY HUB ADVISORY SERVICES

SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION



METROPOLITAN
TRANSPORTATION
COMMISSION



In association
with Arup and
Circlepoint

FINAL
October 2020

Contents

Introduction	3
Siting Analysis Approach.....	7
Step One: Establish Baseline Network.....	7
Step Two: Categorize Candidate Locations by Hub Type.....	14
Step Three & Four: Prioritize Regionally Significant Mobility Hubs & Identify those that Advance Equity	15
Step Five: Rank Regionally Significant Mobility Hubs with Implementation Screening Criteria.....	22
Appendix A: Siting Analysis Methodology Overview.....	24
Appendix B: Technical Typology Methodology.....	27
Appendix C: Technical Prioritization Methodology	27
Appendix D: Technical Spatial Analysis Methodology	32
Appendix F: Top 25 Mobility Hubs by Type	34

INTRODUCTION

With transportation services and infrastructure evolving rapidly, mobility hubs present an opportunity to flexibly design and integrate a variety of sustainable transportation options to enhance connectivity across the region. Unprecedented growth, affordability challenges, the climate crisis, and changing travel behaviors resulting from the pandemic show the need to prioritize low emission transportation options that support resiliency, choice, and embrace future changes in technology.

Mobility hubs can integrate public and private mobility services in a way that enhances customer experience and transportation system resiliency. Expanding on initial direction in MTC's Transit Connectivity Report (2005), this program will create implementation guidance and hub typologies, and identify a set of regionally significant mobility hubs.

The mobility hub program is a Climate Initiative Strategy from Plan Bay Area 2040. The primary goal is to reduce greenhouse gas emissions by reducing vehicle miles traveled. The program supports other regional and Plan Bay Area goals of increasing transit access and connectivity, focusing growth, increasing transit-oriented development and providing viable travel options to all Bay Area communities.

Purpose of this Document

This report describes MTC's mobility hubs siting analysis methodology — a framework to identify and rank candidate mobility hub locations for the nine-county Bay Area to help meet regional and Plan Bay Area 2040 goals. The methodology described in this report is a data-driven mobility hubs prioritization process for selecting sites with the highest potential of advancing program and regional goals.

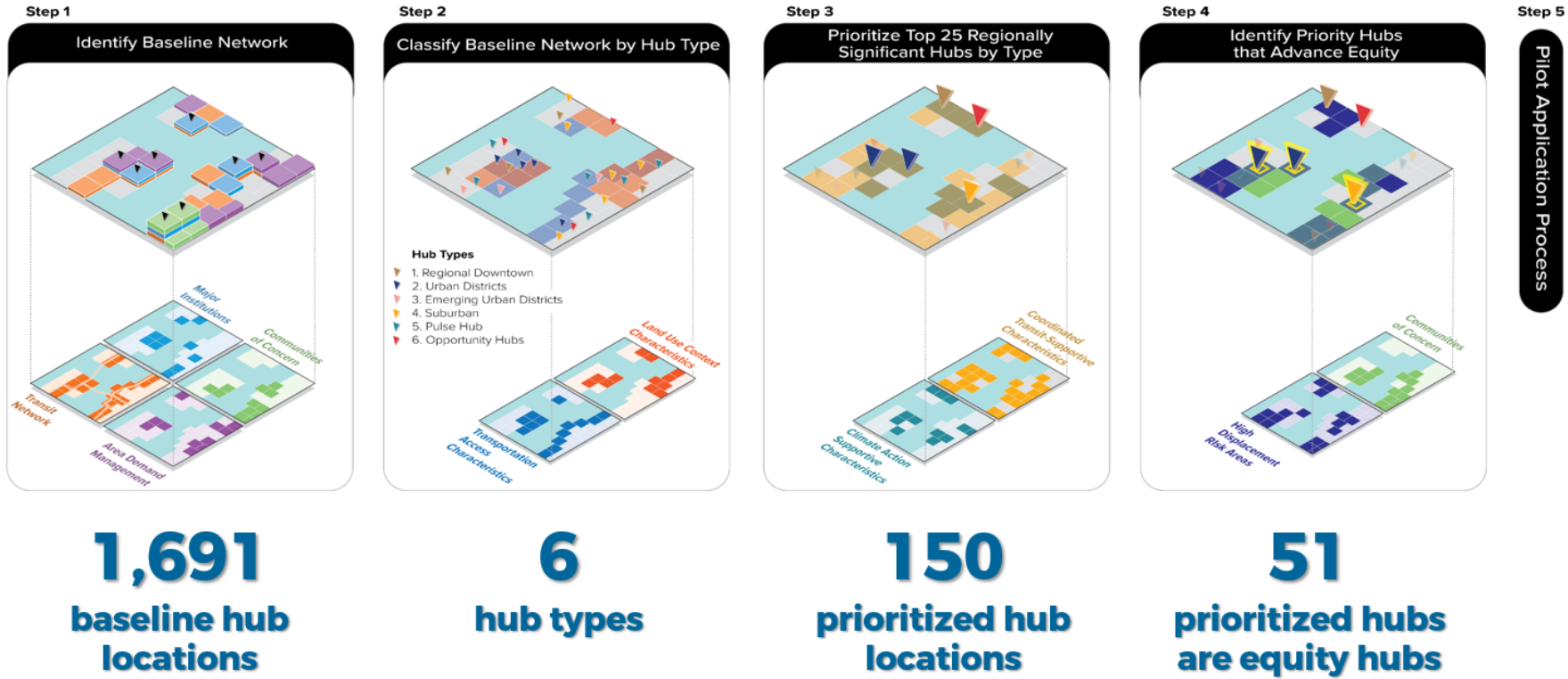
To meet regional and Plan Bay Area 2040 goals, the methodology developed key objectives for the hub sites:

- **Coordinated Mobility:** sites with frequent and interjurisdictional transit service;
- **Climate Action:** potential to convert low-occupancy, solo vehicle trips to other sustainable modes such as transit, shared mobility options, biking, and walking; and
- **Equitable Mobility:** ability to achieve equitable outcomes through need-based mobility and anti-displacement measures.

To meet these objectives, the analysis started with discovering the full universe of hubs based on existing and planned transit connections, major trip generators, and areas of mobility need. The resulting universe of locations were then categorized by hub typology based on the transportation and land use factors surrounding the hub site (see Appendix B for definitions). All locations were then ranked based on factors that included transit connectivity, pedestrian and bicycle access, areas with potential for shift from solo driving trips, and location in Priority Development Areas, MTC Communities of Concern, and communities at high risk of displacement. The next section details the approach and Appendix E lists each of the top 25 scoring hub sites in each typology. Figure 1 provides an overview of the siting analysis methodology. Appendix C provides full detail on the data sources used in each step.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Figure 1 Siting Analysis Approach Overview



Best Practices and Workshop Input

This siting analysis methodology pulls from leading methods developed for Seattle and Minneapolis, but establishes a unique, flexible framework that is tailored to the region's goals and the data available. The advantages of this siting analysis methodology include:

The baseline network of hub locations is reflective of regional goals and objectives.

The siting analysis is based on a baseline network comprised of locations fundamental to achieving desired outcomes for mobility hubs. The universe of candidate mobility hub locations is based on existing and planned transit connections, major trip generators, and areas of mobility need. This approach both highlights places where mobility hubs will center travel options on the transit network, convert drive-alone trips, and provide mobility options for communities underserved by transit.

In addition to helping meet Plan Bay Area 2040 goals, the hub sites also align with the guiding principles and the Growth Framework developed as part of Plan Bay Area 2050. In particular, the siting methodology supports the Connected guiding principle and performance metrics: *an expanded, well-functioning transportation system connects the Bay Area—fast, frequent and efficient intercity trips are complemented by a suite of local transportation options, connecting communities and creating a cohesive region.*¹

The Regional Growth Framework is the Bay Area's strategy for coordinating housing and job growth to achieved shared goals, and shapes the investments and growth pattern detailed in the Plan. The Framework is comprised of Priority Development Areas, Priority Conservation Areas and Priority Production Areas. Mobility hubs can support growth in these areas by providing a coordinated set of mobility options to reduce vehicle miles traveled and greenhouse gas emissions.

Quantitative hub ranking is tailored based on policy direction.

Candidate mobility hub locations are ranked and prioritized according to two key objectives: Coordinated Transit and Climate Action. These two objectives were prioritized highest by transit agency, county transportation agency, and City staff during MTC's mobility hub framework workshops in June 2020 (additional key outcomes from the workshops are listed in Figure 2). Each objective is comprised of criteria to identify locations with the highest potential to connect people across public transit options (Coordinated Transit), and to convert drive-alone trips (Climate Action). In a parallel process, the criteria to assess the Equitable Mobility objective is applied to all mobility hubs to flag those locations with the highest equity impacts and mobility needs in areas identified by MTC as Communities of Concern.

This approach streamlines the process to rank all mobility hubs based on transportation-centered objectives (Coordinated Transit and Climate Action), and ensure that sites with high equity impacts are identified even if they do not rank high in the Coordinated Transit or Climate Action objectives. This approach balances the functionality and transportation-centered nature of mobility hubs, and the need to provide visibility to sites that otherwise would be left out.

Ranking occurs across all candidate hubs and by hub type.

The candidate mobility hubs were classified using a mobility hub typology allowing candidate locations to be ranked across all hub types or within each hub type. The flexibility afforded by this approach ensures

¹ <https://mtc.ca.gov/our-work/plans-projects/horizon>

that highly urbanized mobility hubs types and suburban hub types with high mode shift potential are both represented. See Step Two for more information on the mobility hub typology.

Figure 2 Workshop Outcomes

Key Outcomes from the Mobility Hub Framework Workshops

In June 2020, regional transit agencies (BART, Caltrain, WETA, etc.), county transportation agencies, local/county transit agencies, large cities, and suburban cities participated in one of five workshops. The objectives of the workshops were to inform the hub site selection methodology, typology development, and implementation assistance needs.

During the workshop, agency participants established several key ideas and positions, which are addressed in this methodology and siting analysis. This includes:

- Prioritizing the Coordinated Transit and Climate Action objective criteria highest;
- Factoring ongoing mobility hubs, on-demand transit, bike share, and transit service enhancements into the siting analysis;
- Considering agencies and geographies with limited transit connectivity and resources;
- Providing insights on implementation readiness factors, like development coordination, property and right-of-way opportunities, station modernization projects, funding availability, greatest potential for mode shift, and partner buy-in; and
- Establishing implementation guidance on community engagement, data sharing, partnerships and contract guidance, curb management, phasing, and operational and maintenance, among others.

SITING ANALYSIS APPROACH

The following description of the three-step siting analysis approach is intended to convey the outcome-based approach to identifying and ranking candidate mobility hub locations in line with regional goals and Plan Bay Area.

Summary of Steps

- Step One:** Establish Baseline Network
- Step Two:** Categorize Candidate Hub Locations by Hub Type
- Step Three:** Prioritize Top 25 Regionally Significant Mobility Hubs by Hub Type
- Step Four:** Identify Priority Hubs that Advance Equity
- Step Five:** Rank Regionally Significant Mobility Hubs with Implementation Screening Criteria

STEP ONE: ESTABLISH BASELINE NETWORK

The five-step siting analysis process begins with identifying a universe of candidate mobility hub locations based on baseline network criteria. The baseline mobility hub network is identified using criteria described in Figure 3. This step divides the Bay Area into small equally-sized grid cells. This grid is fundamental to the analysis because it associates a consistent land area with the criteria elements to be evaluated. A common analysis grid also enables a consistent unit to compare across the entire region. Appendix D provides the technical methodology for the grid-based spatial methodology.

Figure 3 Mobility Hub Baseline Network Criteria

Criteria	Data	Source
Transit Network: Current & Planned Transit Connections		
High Capacity Transit Stations	BART, Caltrain, SMART, Muni Metro stations, and San Francisco Bay Ferry Terminals	MTC Open Data Portal Major Transit Stops (2017)
Frequent Transit Connections	Two intersecting frequent transit routes with 15-minute or better service	
Transit Centers	Key Transit Centers (19 total)	MTC Transit Connectivity Report (2005)
Average Daily Transfer Activity	Clipper Transfer Data (October 2018) ²	Procured directly by MTC
Park-and-Ride or Transit Line/Route Terminus	MTC Park and Ride locations	511 SF Bay ³

² Data available only for transfer between high-capacity transit (rail and ferry) and bus.

³ For this project MTC provided a georeferenced files based on the 2019 park and ride data in 511 SF Bay Portal

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Criteria	Data	Source
Area Demand Management		
Transportation Management Associations (TMA)	Transit facility within Bay Area TMAs (10 total)	List of TMAs provided by MTC and geocoded
Major Institutions		
Stadiums	Professional and college sport venues with capacity of 4,000 and above (14 total)	Information compiled from the web and digitized
University Campuses	Top 35 universities and colleges (1,000 minimum enrollment)	Information compiled from the web and digitized
Employment Campuses	Employment campuses with 5,000 or more employees (17 total)	California Employment Development Department Major Employers in California
Airports ⁴	Transit facility serving three major Bay Area airports (SFO, OAK, SJC)	KML retrieved from Google Earth
MTC Communities of Concern (2018), not served by frequent transit		
Community of Concern	Hub is within a Community of Concern as defined by MTC ⁵	MTC Open Data Portal Communities of Concern (2018) with ACS 2016 Data
No frequent service	Hub not served by frequent transit service	MTC Open Data Portal Major Transit Stops (2017)

Step One Results

The siting analysis identified 1,691 potential mobility hub locations that offer connections into the local and regional transit network or areas of mobility need with proximity to a potential hub anchor site. Figure 3 maps the universe of potential hub locations throughout the nine county Bay Area region and Figures 4 through 7 illustrate the universe of candidate hub locations in the North Bay, inner East Bay, South Bay and the Peninsula, and San Francisco, respectively. All mobility hub locations can be viewed in the interactive web map located [here](#).⁶

⁴ MTC considers the three international airports in the Bay Area (SFO, OAK and SJC) as mobility hubs as they are key access points to the regional transit network, serve as points of entry to the Bay Area, and generate significant travel demand for a variety of different mobility options (including public transit, private shuttles, pickup and drop off from private autos, taxis, and transportation network companies, rental cars, and more).

⁵ Uses MTC Communities of Concern designated “High,” “Higher,” and “Highest”.

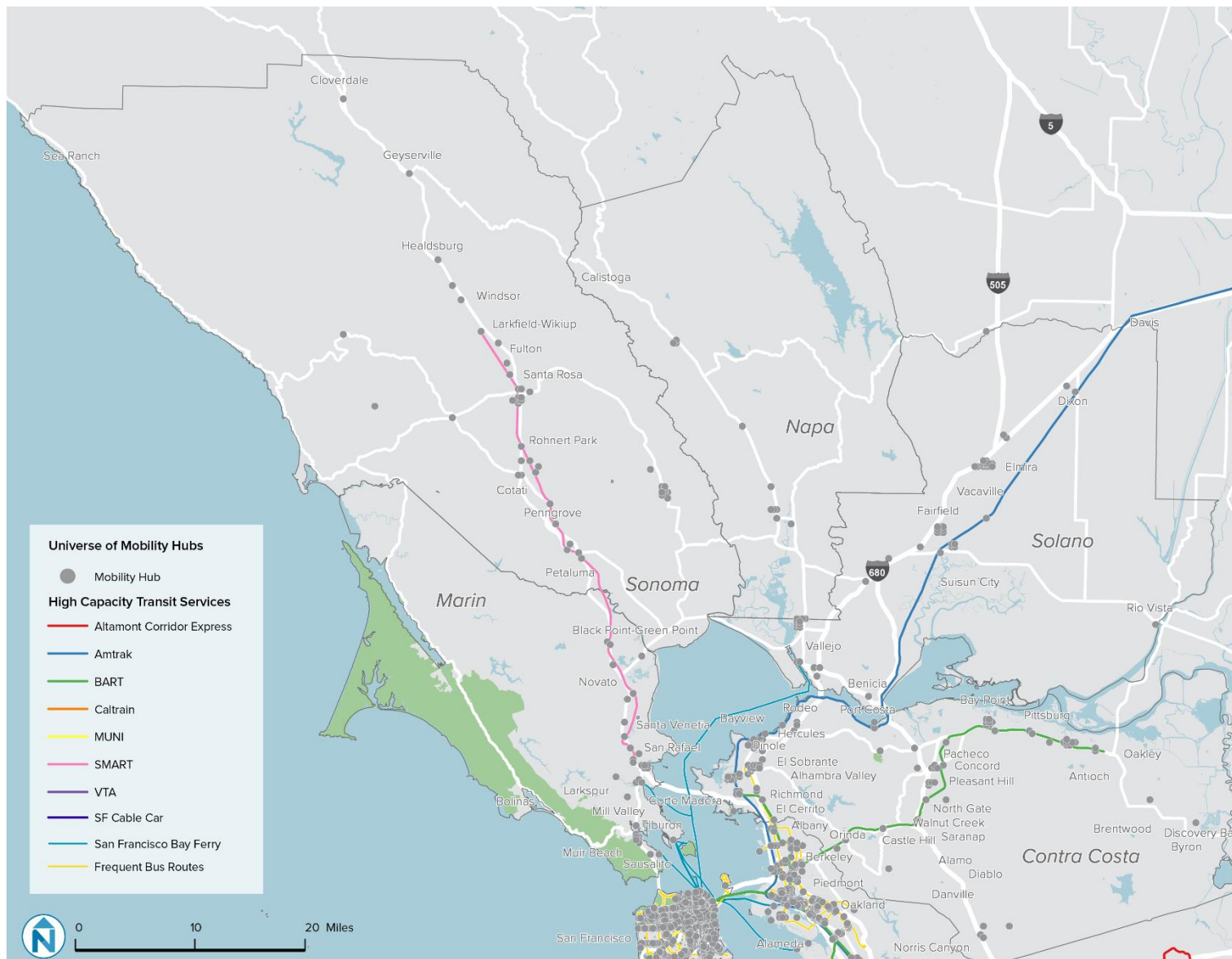
⁶ <https://mtc.ca.gov/mobility-hubs/universe-bay-area-mobility-hubs>

Figure 4 Universe of Bay Area Mobility Hubs



MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Figure 5 Universe of Bay Area Mobility Hubs, North Bay



MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
 Metropolitan Transportation Commission

Figure 6 Universe of Bay Area Mobility Hubs, Inner East Bay



Figure 7 Universe of Bay Area Mobility Hubs, South Bay and Peninsula



Figure 8 Universe of Bay Area Mobility Hubs, San Francisco



STEP TWO: CATEGORIZE CANDIDATE LOCATIONS BY HUB TYPE

Once the universe of candidate mobility hubs was defined, the candidate hub locations in the baseline network were categorized by type according to a mobility hub typology. The goal of this step is to capture the land use context and transportation access characteristics of the candidate hub locations. The hub typology informs the hub design, elements, and mobility options available at each type of mobility hub.

The MTC Mobility Hub Typology consists of the following land use context and transportation characteristics that, in combination, determine the mobility hub type (see a more detailed description of the technical methodology in Appendix B):

Land Use Context

- **Regional Downtown:** Regional central business districts including San Francisco, Oakland, and San Jose each with an established mix and scale of development, multiple destinations, and the highest residential and employment densities of all hub types.
- **Urban District:** Major and local centers of moderate to high residential and employment densities with a mix of uses and inside MTC Priority Development Areas (PDAs).
- **Emerging Urban District:** Areas of moderate and low residential and employment densities with a mix of uses, future development potential, and inside MTC PDAs.
- **Suburban/Rural:** Areas with small neighborhood or dispersed destinations and auto-oriented urban form with the lowest residential and employment densities of all hub types. Being inside a PDA is not a requirement for a hub to be classified as suburban—it is simply a classification. Sites with potential to induce mode shift in suburban areas are prioritized in Step Three.
- **Pulse:** Large trip generators, either spatially or temporally, including airports, stadiums, universities, and major employers as well as Plan Bay Area 2050's Priority Production Areas (PPAs).
- **Opportunity:** An area of high mobility need lacking frequent or high-capacity transit or other mobility services located within a MTC Community of Concern.

Transportation Access

- **Integrated Multimodal:** Major transit hub served by multiple transit lines, including current and planned high capacity transit stations and transit centers served by multiple frequent routes and multi-jurisdictional service.
- **Transit-Serving:** Transfer point within the regional transit network, or locations where two or more frequent and/or multi-jurisdictional transit routes intersect.
- **Auto-Oriented:** Park and rides and transit route termini that are primarily accessed by low occupancy vehicle and limited feeder bus connections.
- **Limited Mobility Access:** Areas not served by frequent transit.

Given the interdependent nature of the land use and transportation access characteristics, the mobility hub typology categorization process requires metrics from both spheres. Because mobility hubs primarily serve a transportation function, the hub types are primarily defined by their transit network characteristics—even though the mix of transit services is often determined by the land use mix and development intensity near the hub.

Typology assignment is a data-driven process. However, due to the inability to perfectly capture the nature of a place through standardized and regionally available data, initial Step Two results were reviewed to ensure the assigned hub type matches reality. The primary focus of this human review process is to investigate hubs classified as Opportunity Hubs; to maintain the mobility-need nature of

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION Metropolitan Transportation Commission

these sites, any sites originally classified as Opportunity Hubs that are indeed served by high-capacity or high-frequency transit were reclassified to an appropriate type based on land use characteristics. Details on the technical approach to classify the hubs into types and a summary of the results is provided in Appendix B. Typology classifications are provided within Step Three results below.

STEP THREE & FOUR: PRIORITIZE REGIONALLY SIGNIFICANT MOBILITY HUBS & IDENTIFY THOSE THAT ADVANCE EQUITY

After identifying the universe of mobility hub candidate locations based on the baseline network criteria (n=1,691), Step Three ranks candidate locations using prioritization criteria centered on the mobility hub objectives. Ranking is intended to elevate candidate hub locations that best align with mobility hub objectives. Figure 16 in Appendix C provides a detailed account of each objective, its associated criteria and data sources, and weighting applied across criteria to score and rank candidate mobility hub locations by objective.

- *Coordinated Transit:* Highly ranks candidate hub locations with the most mobility options and connections including transit and mobility services to facilitate seamless interagency, interjurisdictional, and public to private mobility connections.
- *Climate Action:* Highly ranks candidate hub locations near major trip generators, in areas with high walking and bicycling network connectivity, or in areas where vehicle trips are most likely to be converted to sustainable modes.
- *Equitable Mobility:* Highly ranks candidate hub locations in MTC Communities of Concern and communities at high risk of displacement (see more information below). This provides an opportunity for collaboration with trusted community leaders on how mobility hubs could be tailored to meet mobility needs of communities underserved by transit and lacking mobility options.

The Equitable Mobility objective is evaluated for all hubs in a parallel process to the Coordinated Transit and Climate Action objectives ranking. The Equitable Mobility objective is processed separately from the Coordinated Transit and Climate Action objectives ranking to ensure that sites located in areas designated as MTC Communities of Concern with limited mobility options are not penalized for limited regional transit connectivity (and therefore left out of potential investments). This is operationalized by identifying the hub candidates with a high score on the Equitable Mobility objective that are not in the top candidates for Coordinated Transit and Climate Action objectives. Scoring as high as 100 points, the Equitable Mobility objective is composed of 60 points if the hub is located within an MTC Community of Concern and 40 points if it is located within a High Displacement Risk Area (HDRA). Hence, the “equity hubs” scoring highest will be located within both an MTC Community of Concern and an HDRA. HDRAs are defined in the CASA Equity Analysis that investigated the geographic impacts of the CASA Compact—Committee to House the Bay Area (2018).⁷ Areas with high displacement risk are where greater than 39% of the households in the Census tract are considered low-income and are undergoing displacement or are experiencing advanced gentrification. Equity hubs are anchored to a small site within the MTC Community of Concern area using employment density by block to identify the block with highest employment density to site the hub.

The candidate mobility hubs within MTC Communities of Concern and areas with high displacement risk will trigger equitable mobility hub design and engagement processes. This might include collaboration

⁷ CASA Compact (2018) <https://mtc.ca.gov/our-work/plans-projects/casa-committee-house-bay-area>

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION

Metropolitan Transportation Commission

with trusted community leaders and residents to understand how mobility hubs can meet unique mobility needs, provide affordable mobility options where they are lacking, and create community assets that are designed with the community.

Step Three & Four Results

After screening the universe of mobility hub candidates, this process assigns a score to every individual hub site. In many parts of the region, some high scoring hub locations are surrounded by or near other similar hub locations. To reflect the functionally integrated nature of these proximate hubs, hub locations that effectively co-operate are clustered into a singular hub location, keeping the highest score assigned to the cluster. Prime examples of this are along Market Street in San Francisco and along the BART spine in the inner East Bay.

After the clustering exercise, the number of cluster hub sites are reduced to **866 cluster sites—including 232 equity hub clusters that exhibit transportation disadvantage and mobility demand**. Over one-third of the regionally significant hubs are classified as Urban District Hubs, followed by 30% as Suburban/Rural Hubs, 14% as Emerging Urban District, 11% as Opportunity Hubs, and 4% as Regional Downtown Hubs. Pulse Hubs make up only 3% of regionally significant hub sites.

To further refine the mobility hub clusters that advance to Step 3 for implementation-readiness screening and prioritization, the top 25 scoring mobility hub clusters in each mobility hub type are screened. Therefore, **only 150 regionally significant cluster hub locations advance to Step Five.**⁸ Figures 10 illustrates the location of regionally significant mobility hub clusters (n = 150) by hub type. Figures 11 through 14 illustrate the regionally significant hub cluster locations in the inner East Bay, South Bay and the Peninsula, and San Francisco. The top 25 mobility hub locations by type can be viewed in the interactive web map located [here](#) and are listed by rank, unique cluster ID, hub name, city, and hub type in Appendix E.⁹

⁸ To ensure an equitable distribution and spread of limited investments throughout the Bay Area, San Francisco Hubs in the Urban District Hub Type are capped at 6 cluster hubs max in the top 25 list. This limit is consistent with San Francisco's all-type hubs share of 25% in the overall clusters. There are 218 hubs in San Francisco out of the 866 total clusters in the region.

⁹ <https://mtc.ca.gov/mobility-hubs/top-25-hub-clusters>

Figure 9 Regionally Significant Mobility Hub Clusters by Hub Type



MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Figure 10 Regionally Significant Mobility Hub Clusters by Hub Type, North Bay

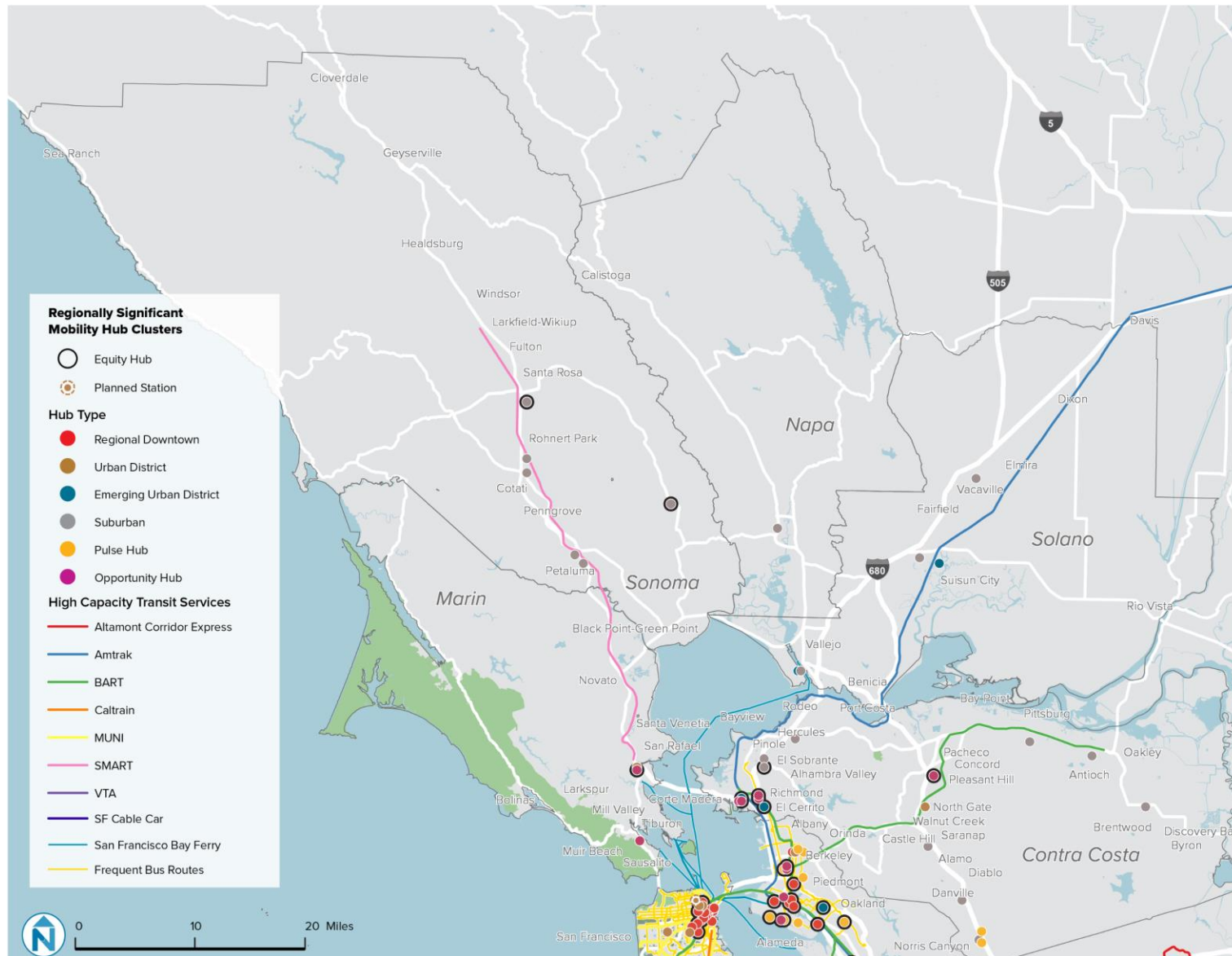


Figure 11 Regionally Significant Mobility Hub Clusters by Hub Type, Inner East Bay

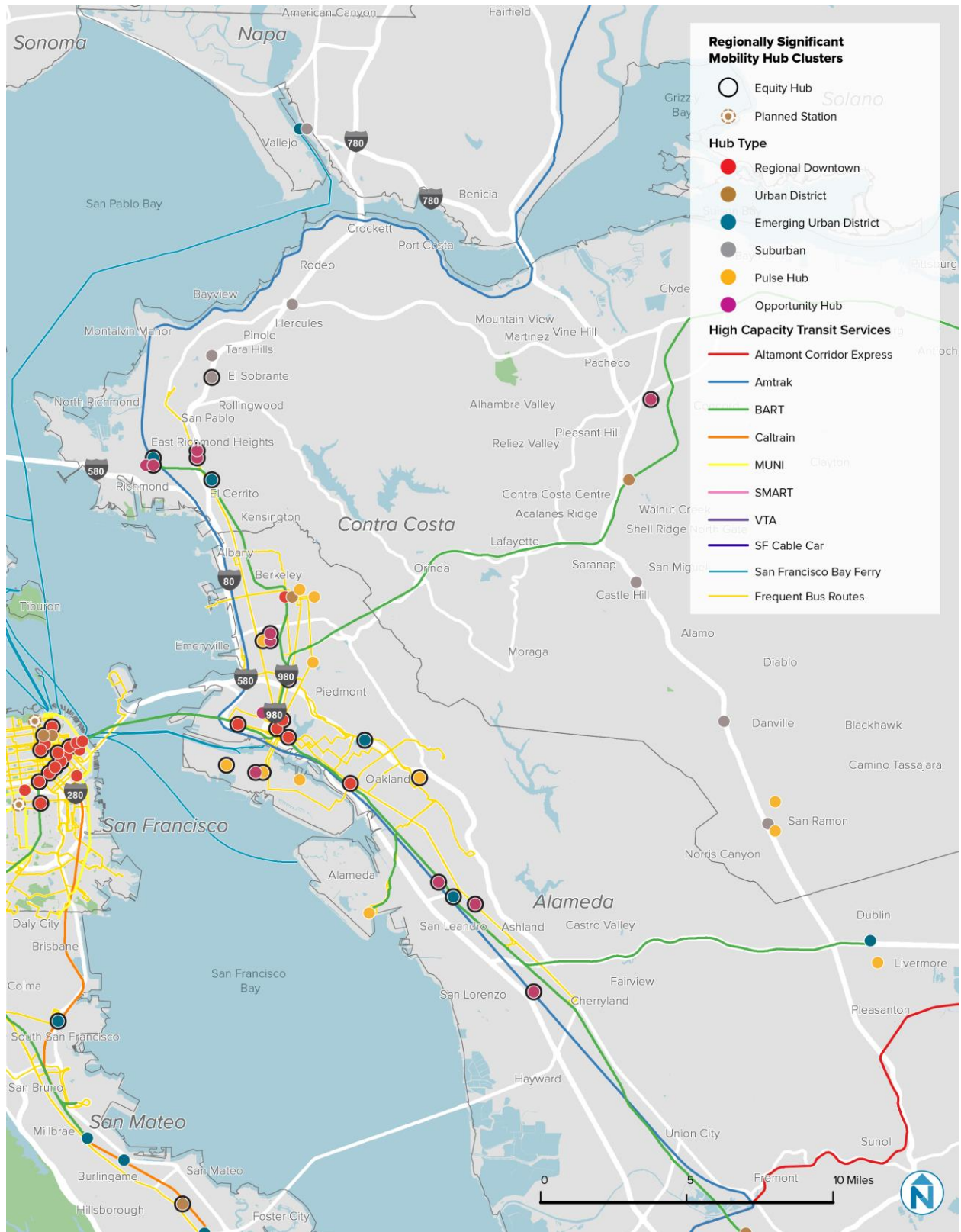
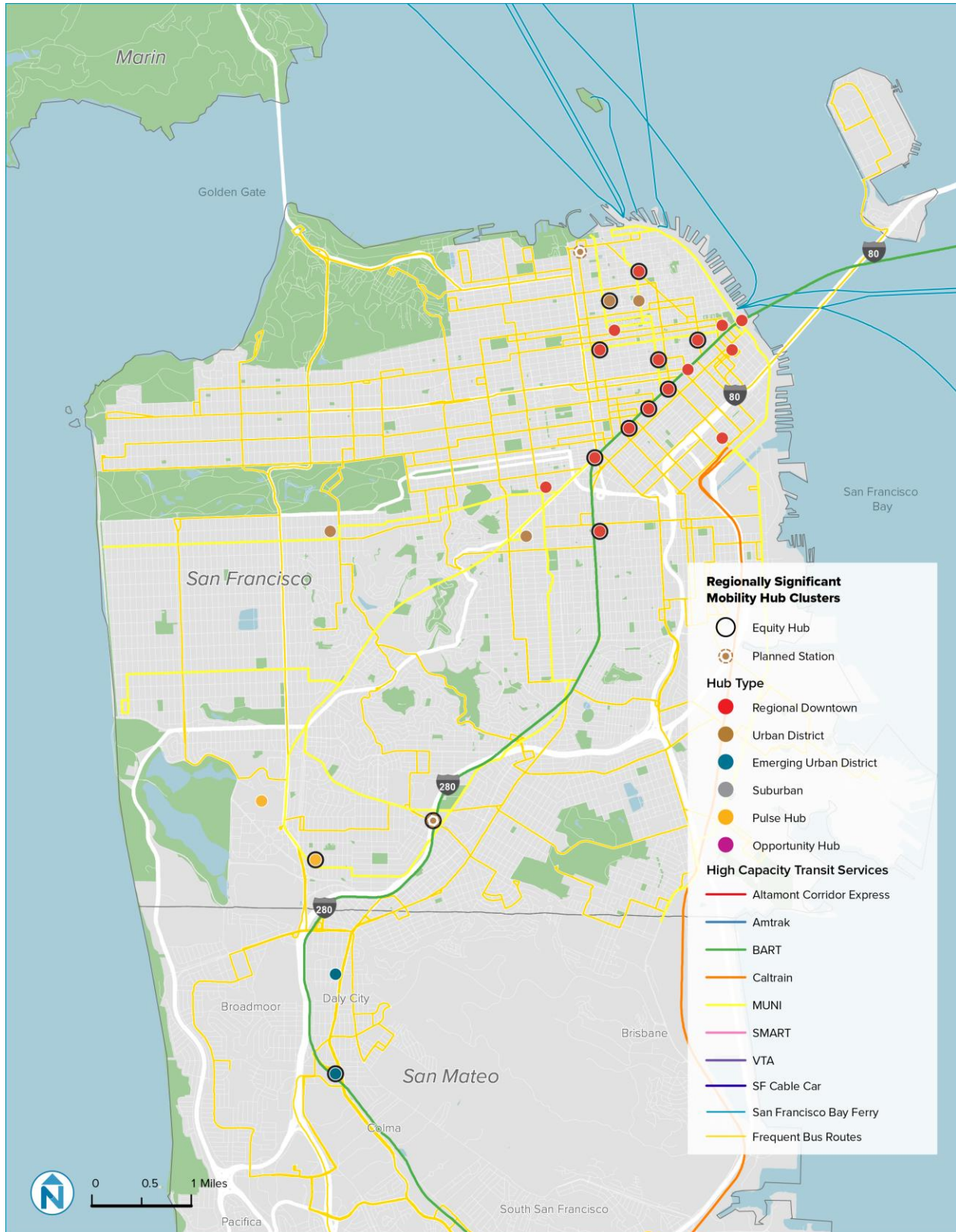


Figure 12 Regionally Significant Mobility Hub Clusters by Hub Type, South Bay and Peninsula



Figure 13 Regionally Significant Mobility Hub Clusters by Hub Type, San Francisco



STEP FIVE: RANK REGIONALLY SIGNIFICANT MOBILITY HUBS WITH IMPLEMENTATION SCREENING CRITERIA

The final step of the siting analysis is to apply an implementation-readiness filter to the regionally significant mobility hub locations identified in Steps Three and Four. This process will highlight regionally significant locations that are quick-wins, easily implementable, or ripe for partnership.

Due to the lack of available datasets that cover the entire region, the Step Five screening process will primarily occur as part of the mobility hub pilot demonstration application evaluation process. Through a data-driven process, hubs sites with larger potential market sizes—those with the highest number of residents and jobs within a ½-mile and 3-mile radius—will first be identified. Figure 14 describes potential implementation screening pilot application criteria. In a September 2020 workshop, potential implementing partners shared lots of feedback on this initial list. In general, implementing partners need more detail on what is expected to be demonstrated and how to demonstrate candidate sites' ability to meet the screening criteria, and they would like to better understand how proposals will be evaluated. They emphasize the importance of readiness and the coordination between property owners, the sponsor agency, the community, and other local partners.

The criteria described below are undergoing review and will be refined based on data availability and ability to systematize the analysis process across the region.

Figure 14 Implementation Screening Criteria

Objective	Screening Criteria
<p>EXCEPTIONAL EXPERIENCE <i>Create inclusive public spaces and support a high-quality customer experience through people-centered amenities, and integrated wayfinding, travel information, and payment options.</i></p>	<ul style="list-style-type: none"> ▪ Connections to civic centers, parks, and other areas of public life ▪ Commercial areas generating retail activity, cultural amenities, community center and community-based organizations ▪ Priority bicycle network and walking routes, including quality and level of protection ▪ Existing or planned physical public realm enhancements ▪ Existing or planned public realm programming ▪ Regional Wayfinding Tiers 0-5
<p>SAFETY <i>Create a safe environment at mobility hubs, incorporating local and regional Vision Zero policies and improvements within mobility hub areas.</i></p>	<ul style="list-style-type: none"> ▪ Projects that clearly address safety issues related to hub access, including delivery of Vision Zero strategies, project elements, and programming
<p>VALUE <i>Leverage development and partner opportunities, while targeting implementation-ready sites first and demonstrating lessons learned.</i></p>	<ul style="list-style-type: none"> ▪ Completion of or active engagement in a community outreach process (minimum requirements to be developed) ▪ MTC Priority Development Areas ▪ Development coordination and developer agreements ▪ Property and right-of-way opportunities ▪ Transit Priority Areas ▪ Existing pricing and demand management controls or ordinances ▪ Partnership opportunities with community organization, property owners, providers, and other implementation partners ▪ Locations with community-driven designs or community-based initiatives ▪ Sites with a singular landowner ▪ Undeveloped parcels ▪ Areas seeing rapid redevelopment

APPENDIX A: SITING ANALYSIS METHODOLOGY OVERVIEW

STEP 1: IDENTIFY BASELINE NETWORK	
Base Criteria	Data Points
REGIONAL TRANSIT NETWORK	Current and planned major transit stations ^{10,11}
MAJOR INSTITUTIONS	Including stadiums, universities, major employers, and airports
AREA DEMAND MANAGEMENT	Areas managed by a Transportation Management Association (TMA)
AREAS OF MOBILITY NEED	Defined as MTC Communities of Concern (2018) that are not served by frequent transit



STEP 2: CLASSIFY BASELINE NETWORK BY HUB TYPE		
Base Criteria	Land Use Data Points	Transportation Data Points
REGIONAL DOWNTOWNS	N/A	<ul style="list-style-type: none"> High capacity rail service must be present AND high frequency bus service with 2 or more transit agencies Contains a car share location (point) and/or a bike share station¹²
URBAN DISTRICTS	N/A	<ul style="list-style-type: none"> High capacity rail service can be present OR high frequency bus service with 2 or more transit agencies Within car share and/or bike share service areas

¹⁰MTC's definition of a major transit stop in the nine-county San Francisco Bay Area is in line with the California Public Resources Code definition (Section 21064.3). They include an existing rail or bus rapid transit station; a ferry terminal served by either a bus or rail transit service; or the intersection of two or more major bus routes with a frequency of service interval of 15 minutes or less during the morning and afternoon peak commute periods.

¹¹ During initial framing workshops for MTC's mobility hub program, several suburban cities and smaller suburban transit agencies expressed concern that focusing the regional mobility hub baseline network only on locations served by frequent transit (i.e., served by more than two routes with 15-minute headways or less) may reduce opportunities in locations that need better transit connections and more mobility options. To address this potential gap, this methodology classifies all park-and-rides as default mobility hubs and identifies "Areas of Mobility Need"—largely suburban locations that are considered both MTC Communities of Concern and underserved by frequent transit.

¹² Data available and used in this analysis include:

- Zipcar locations (dedicated parking locations) in the nine counties in the Bay Area. Data manually collected from Google Earth as of July 2020.
- GIG Car share Home Zones (area of service) and dedicated parking lots in the Bay Area. Retrieved from GIG Car website as of July 2020.
- Bay Wheels service area and bike share stations. Data retrieved from Bay Wheels website as of July 2020.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

EMERGING URBAN DISTRICTS	Within PDA	<ul style="list-style-type: none"> High capacity rail service can be present OR high frequency bus service with 2 or more transit agencies
SUBURBAN SITES	Not in PDA	<ul style="list-style-type: none"> Park and ride present OR Outside car share and bike share service areas
PULSE HUBS	N/A	<ul style="list-style-type: none"> Large trip generators, either spatially or temporally, including airports, stadiums, universities, and major employers.
OPPORTUNITY HUBS		<ul style="list-style-type: none"> No access to multiple frequent transit routes (in addition to being in a MTC Community of Concern)



STEP 3: PRIORITIZE TOP 25 REGIONALLY SIGNIFICANT HUB BY TYPE

Objective	Data Points
COORDINATED TRANSIT	Average Daily Transfer Activity High Capacity Transit Stations Transit Centers Frequent Transit Connections Park-and-Ride or Transit Line/Route Terminus.
CLIMATE ACTION	Bike Share Service Area and Station Locations Free-Floating Car Share Service Area and Car Share Station Locations Transportation Management Associations (TMA) Pedestrian Network Bicycle Network Census tracts with highest concentration of drive-alone trip origins and destinations Stadiums University Campuses Employment Campuses Airports MTC Priority Development Areas
EQUITABLE MOBILITY	MTC Communities of Concern (COC) High Displacement Risk Areas



MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

STEP 4: IDENTIFY PRIORITY HUBS THAT ADVANCE EQUITY	
Objective	Data Points
EQUITABLE MOBILITY	MTC Communities of Concern (COC) High Displacement Risk Areas



STEP 5: SCREEN PRIORITY SITES FOR IMPLEMENTATION READINESS (in development)	
Objective	Desired Outcome
EXCEPTIONAL EXPERIENCE	Create inclusive public spaces and support a high-quality customer experience through people-centered amenities, and integrated wayfinding, travel information, and payment options.
SAFETY	Create a safe environment at mobility hubs, incorporating local and regional Vision Zero policies and improvements within mobility hub areas.
VALUE	Leverage development and partner opportunities, while targeting implementation-ready sites first and demonstrating lessons learned.

APPENDIX B: TECHNICAL TYPOLOGY METHODOLOGY

Categorizing hub candidates into specific hub types is based primarily on transportation access characteristics with support of land use characteristics (i.e. PDA designation) to refine hub type differentiation (see Figure 15). The criteria selected to define the hub types was constrained by the availability of data and the ability to systematize the analysis process in the future. The variables used to define all hub types except for pulse hubs is listed below.

- If hub is within a MTC’s Priority Development Area
- Level of transit service: high capacity transit and/or high frequency bus service with two or more transit agencies serving the hub
- Bike share availability
- Car share availability
- Park and ride availability

Once the metrics to define hub types were defined, each hub candidate was passed through a screen process to evaluate which of the hub type conditions were met and assign a hub type classification. The relation between the hub types and the criteria to define each of them is showed in Figure 15. For instance, if a hub candidate is within a PDA and has a high capacity transit station then it is classified as Emerging Urban District.

The definition of the hub types is an iterative process. The goal is to get the classification in a systematic way; however, some outliers and special hubs might require manual recalibration at the end. The logic behind this definition is to ensure that the transit functionality of each hub described above is captured.

Figure 15 Mobility Hub Typology Criteria

Hub type	Land Use	Transportation Criteria
Regional Downtown	<i>N/A – defined by transportation criteria</i>	<ul style="list-style-type: none"> ▪ High capacity rail service must be present AND high frequency bus service with 2 or more transit agencies ▪ Contains a car share location (point) and/or a bike share station
Urban District	<i>N/A – defined by transportation criteria</i>	<ul style="list-style-type: none"> ▪ High capacity rail service can be present OR high frequency bus service with 2 or more transit agencies ▪ Within car share and/or bike share service areas
Emerging Urban District	<ul style="list-style-type: none"> ▪ Within PDA 	<ul style="list-style-type: none"> ▪ High capacity rail service can be present OR high frequency bus service with 2 or more transit agencies
Suburban	<ul style="list-style-type: none"> ▪ Not in PDA 	<ul style="list-style-type: none"> ▪ Park and ride present OR Outside car share and bike share service areas
Opportunity Hubs	<ul style="list-style-type: none"> ▪ Within a MTC Community of Concern* 	<ul style="list-style-type: none"> ▪ No access to transit or mobility services listed above (i.e. this is an area of mobility need as identified in Step One)
Pulse Hubs	By definition, pulse hubs are located at the following locations: <ul style="list-style-type: none"> ▪ Colleges and Universities ▪ Employer campus ▪ Stadium Venues ▪ Airports ▪ TMAs 	

*Note: Included to complement the lack of access to frequent transit with other needs in this communities.

APPENDIX C: TECHNICAL PRIORITIZATION METHODOLOGY

MTC, with input from regional transit agencies, county transportation agencies, local/county transit agencies, large cities, and suburban cities from the hub workshops, defined the criteria and weights to prioritize hub locations for the Mobility Hubs Pilot Program. See next page.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Figure 16 Prioritization Scenarios Based on Mobility Hub Objectives

Mobility Hub Objectives: Criteria and Weights for Ranking ¹³				
Objective	Data Point	Data Source	Scoring Range/Criteria	Weight
Coordinated Transit	Transit Activity			
	Average Daily Transfer Activity*	Clipper Transfer Data (October 2018)	Candidate hub with highest amount of transfer activity = 100 points Candidate hub with lowest amount of transfer activity = 1 point	10%
	Transit Network: Current & Planned Transit Connections			
	High Capacity Transit Stations*	Major Transit Stops (2017)	Candidate hub at high capacity station = 100 points	13%
	Transit Centers*	MTC Report: Key Transit Centers (2005)	Candidate hub at transit center = 100 points	13%
	Frequent Transit Connections*	Major Transit Stops (2017)	Candidate hub served by two frequent transit routes = 100 points	17%
	Park-and-Ride or Transit Line/Route Terminus*	MTC Park and Ride locations	Park-and-Ride or Transit Line/Route Terminus = 100 points	13%
Climate Action	Transit Activity			
	Bike Share Service Area	Bay Wheels stations/ Bay Wheels area of service	Candidate hub within Bay Wheels service area ¹⁴ and/or within ¼ of mile from a Bay Wheel station = 100 points	6%

¹³ Data Points marked with (*) in this table are also used in Step 1 to identify the baseline network. The difference is that Step 1 only checks if at least one of the elements is present in at the candidate hub site (grid cell). If so, it is marked as part of the baseline network. In Step 3 and 4, the elements are weighted, and each hub can be scored for as many elements as it contains.

¹⁴ Removing the mobility service criteria from the Climate Action scenario could isolate candidate hub locations in areas that generate a large number of drive-alone trips and major trip generators but are *not* within mobility service areas. This isolation could highlight candidate hub locations where there are low or no shared mobility options creating a gap in the network. These locations may be good candidates for CARB's Clean Mobility Vehicle Options Grant.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Free-Floating Car Share Service Area/ Car Share Station Locations	GIG Car area of service/ Zipcar Locations	Candidate hub with Zipcar locations within ¼ of mile and/or within free-floating car share service area = 100 points	3%
Mobility Networks			
Pedestrian Network ¼ of mile buffer from candidate hub, number of intersections per sq/mile	EPA Smart Location Database	Candidate hub with highest intersection density within 10-minute walkshed = 100 points	5%
Bicycle Network ¼ of mile buffer from candidate hub, connections to regional bikeway network	MTC Regional Bikeway Network (Existing and Planned) ¹⁵	Candidate hub served by existing regional bikeway network = 100 points	5%
Travel Density			
Areas with highest concentration of drive-alone trip origins and destinations	Streelight Data (O-D Pairs Motor Vehicles)	Candidate hub within area of highest density of drive-alone trips = 100 points Candidate hub with lowest density of drive-alone trips = 1 point	5%
Major Institutions/Trip Generators			
Transportation Management Associations (TMA)*	Transit facilities within TMA polygon (10 total)	Candidate hub within TMA area = 100 points	1%
Stadiums*	14 major stadium venues; closest transit facility	Candidate hub within 1-mile of biggest stadium = 100 points Candidate hub within 1-mile of smallest stadium = 1 point	1%
University Campuses*	Top 35 universities and colleges	Candidate hub within 1-mile of largest university = 100 points Candidate hub within 1-mile smallest university/college ¹⁶ : 1 point	1%

¹⁵ In future runs of this analysis as MTC's Mobility Hubs Program advances, MTC will use the MTC Active Transportation Network file instead of the Regional Bikeway Network file, which is being phased out.

¹⁶ 1,000 minimum student enrollment

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

	Employment Campuses*	Major employer campus facilities	Candidate hub within 1-mile of largest employer = 100 points Candidate hub within 1-mile of smallest major employer = 1 point	1%
	Airports*	Three major Airports; Transit facility serving airport	Candidate hub within 1-mile of major airport = 100 points	1%
	Land Use			
	MTC Priority Development Areas (PDAs) ¹⁷	MTC PDAs (March 2020)	Candidate hub is within a PDA = 100 points	5%
			Total score	100% = 100 points ¹⁸

¹⁷ Including the transit-rich and connected communities PDA designations

¹⁸ Because each individual criteria score is normalized from 1-100, after applying the weighting and adding up each criteria the maximum score is also in the range 1-100.

APPENDIX D: TECHNICAL SPATIAL ANALYSIS METHODOLOGY

This section describes the spatial analysis approach used in steps 1-5 of the siting analysis. It also presents the rationale for the analytical/technical methods selected and provides context on interpreting the results.

Unlike other large urban and transportation infrastructure, mobility hubs cover a relatively small urban area--the surrounding space of a bus stop or transit station, for instance. The spatial analysis goal was to consistently evaluate this small-scale area across all Bay Area contexts. More specifically, the technical approach aimed at:

- Developing a uniform evaluation for the whole region
- Assessing candidate sites efficiently with a data-driven process and using reasonable alternatives when data was limited or unavailable
- Maximizing replicability of the analysis

The spatial analysis can be divided into four technical processes described next.

Process 1. Develop a regional tile grid

This process overlaid a grid (squares) over the Bay Area to divide the region into small, equally sized grid cells. The tile grid enables consistent processing of different spatial data types such as points (like transit stops), lines (such as transit routes), and polygons (such as Priority Development Areas). Each tile represents a 1/4-mile square for all locations except in the region's most dense cities--Oakland, San Francisco, and San Jose. In these cities, the tiles are 520 by 520 feet. Figure 17 shows an example of Lake Merritt's tile overlay in Oakland. With this approach, each tile captures the different characteristics of the area it contains. The regional grid includes more than 50,000 tiles.

Figure 17 Example of grid overlay in Lake Merritt area, Oakland



Process 2. Pass all datasets representing the different site selection criteria (see Appendix A) through the grid

The next process passes each dataset through the grid and associates each grid cell with the features it contains (e.g., the number of bus stops with high-frequency service; the density of pedestrian intersections; whether or not it is located at a university or in a PDA). This process is performed for every criteria used in the baseline network (Step 1), typology assessment (Step 2), and prioritization (Step 3). Each tile's features, combined with definitions and weights, result in each hub's scoring and typology classification. Each grid cell may contain zero, one, or more transit stops.

Process 3. Consolidate adjacent universe hubs into a cluster hub

As described in this document and illustrated in Figures 4-8, the resulting universe of candidate hub sites at this stage was above 1,600. To identify the highest-scoring hubs, it was necessary to consolidate tiles representing the same or very similar characteristics in the vicinity—this is referred to as a “cluster.” Most spatial tools to conduct a cluster analysis work better with point features (like a single bus stop) as opposed to polygons (a tile). Therefore, each tile was transformed to a point feature by locating the tile centroid. Although this is a subtle detail, it is important to highlight that this conversion responds only to processing data. The centroid (point) represents the characteristics of the full grid area, but it appears as a single point on a map that may or may not be located exactly at a transit stop location. With the centroids created, an algorithmic cluster analysis consolidated neighboring points together into one single point.

Process 4. Assign the attributes of the highest-scoring hub within the cluster, and produce the final hub ranking

Each cluster point could contain one or up to 11 original points. Naturally, the original points had different scores, and even though they are located in close physical proximity, some were classified as different typologies. To ensure the best underlying characteristics of the area represented (and also ranked), each clustered hub site was assigned with the type and score of its highest individual hub. Lastly, each cluster hub is ranked by hub type. Figures 9-13 illustrate the top 25 by type.

When viewing the results and particularly the point locations in the maps, it is important to keep in mind that they represent the suitability of the closest surrounding area to become a mobility hub. This explains why some points might look oddly placed. A refinement of the actual hub location (i.e. associating it with the nearest actual bus stop or transit station) is a necessary implementation step.

APPENDIX E: TOP 25 MOBILITY HUBS BY TYPE

The following tables summarize the top 25 regionally significant mobility hub clusters identified in each of the six mobility hub types.

Top 25 Regional Downtown Hub Clusters

Rank	Cluster ID	Hub Description	City
1	778	Transbay Transit Center	San Francisco
2	740	BART/Muni - Civic Center	San Francisco
3	734	Caltrain - 4th & King	San Francisco
4	36	BART/AC Transit - 12th St Oakland City Center	Oakland
5	771	BART/Muni - Montgomery	San Francisco
6	359	BART/AC Transit - Downtown Berkeley	Berkeley
7	759	BART/Muni - Powell Station/Downtown	San Francisco
8	782	Muni - Bush St & Montgomery St	San Francisco
9	789	BART/Muni - Embarcadero	San Francisco
10	804	Muni - Mason St & Filbert St	San Francisco
11	843	VTA - San Antonio Station	San Jose
12	690	BART/Muni - 16Th St Mission	San Francisco
13	750	Muni - Market St & 6Th St	San Francisco
14	7	BART/AC Transit - Fruitvale	Oakland
15	775	Muni - Powell St & Geary Blvd	San Francisco
16	722	Muni - Market St & Gough St	San Francisco
17	790	Multi-agency - SF Ferry Building	San Francisco
18	42	BART/AC Transit - 19Th St	Oakland
19	51	BART/AC Transit - Macarthur	Oakland
20	30	BART/AC Transit - Lake Merritt	Oakland
21	784	Muni - California St & Leavenworth St	San Francisco
22	777	Muni - California St & Van Ness Ave	San Francisco
23	845	VTA - St James	San Jose
24	704	Muni - Duboce Ave & Church St	San Francisco
25	40	BART West Oakland	Oakland

Note: Hubs shaded are defined as Equity Hubs according to the criteria established in this methodology.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Top 25 Urban District Hub Clusters

Rank	Cluster ID	Hub Description	City
1	387	BART Pleasant Hill	Contra Costa Centre
2	111	Caltrain - Mountain View Station	Mountain View
3	609**	San Jose Ave & Niagara Ave	San Francisco
4	794	Mason St & Pacific Ave	San Francisco
5	793	Hyde St & Broadway	San Francisco
6	807**	Hyde St & Bay St	San Francisco
7	684	Church St & 18Th St	San Francisco
8	839	ACE - San Jose Station	San Jose
9	841	Convention Center Station	San Jose
10	686	Judah St & 12Th Ave	San Francisco
11	859	Alum Rock Station	San Jose
12	851**	Santa Clara & 26th	San Jose
13	158	Caltrain - Palo Alto Station	Palo Alto
14	829	Bascom Station	San Jose
15	832	Tamien Station	San Jose
16	868	Penitencia Creek Station	San Jose
17	88	Caltrain - Santa Clara Station	Santa Clara
18	826	Caltrain - Capitol Station	San Jose
19	206	Caltrain - San Mateo Station	San Mateo
20	181	Caltrain - Redwood City Station	Redwood City
21	101	Caltrain - Sunnyvale Station	Sunnyvale
22	119	Moffett Park Station	Sunnyvale
23	435	SMART - San Rafael	San Rafael
24	204	BART Fremont	Fremont
25	360	Bancroft Way & Ellsworth St	Berkeley

Note: Hubs shaded are defined as Equity Hubs according to the criteria established in this methodology.

San Francisco hubs in this category are limited to the top 6 hubs (approximately 25% of the available spots in the top 25) to ensure an equitable distribution of hubs across other cities in the Bay Area. The 25% limit is based on the share of San Francisco Hubs (218) in all clusters (866) identified in this analysis.

** The score of these hubs is based on a planned transit stop or station. If only the existing frequent transit network is considered, these hubs would score lower.

The planned stations are:

Cluster 609 includes a stop from the planned SFMTA BRT Line

Cluster 807 includes a stop from the planned SFMTA Light Rail extension

Cluster 851 includes a station from the planned BART system extension

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Top 25 Emerging Urban District Hub Clusters

Rank	Cluster ID	Hub Description	City
1	225	Caltrain - Millbrae Station	Millbrae
2	126	ACE - Great America Station	Santa Clara
3	316	BART San Leandro	San Leandro
4	273	BART Colma	Colma
5	386	BART El Cerrito Del Norte	El Cerrito
6	296	BART Dublin/Pleasanton	Dublin
7	159	Caltrain - Menlo Park Station	Menlo Park
8	394	BART Richmond	Richmond
9	128	Caltrain - San Antonio Station	Mountain View
10	197	Caltrain - Hillsdale Station	San Mateo
11	184	Caltrain - San Carlos Station	San Carlos
12	201	Caltrain - Hayward Park Station	San Mateo
13	825	Capitol Station	San Jose
14	240	Caltrain - S San Francisco Station	South San Francisco
15	216	Caltrain - Broadway Station	Burlingame
16	823	Ohlone-Chynoweth Station	San Jose
17	112	Whisman Station	Mountain View
18	817	Almaden Station	San Jose
19	824	Branham Station	San Jose
20	95	Caltrain - Lawrence Station	Sunnyvale
21	821	Blossom Hill Station	San Jose
22	491	Vallejo Ferry Terminal	Vallejo
23	512	Suisun-Fairfield	Suisun City
24	33	Fruitvale Av & Montana St	Oakland
25	298	Mission St & Westlake Ave	Daly City

Note: Hubs shaded are defined as Equity Hubs according to the criteria established in this methodology.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Top 25 Suburban/Rural Hub Clusters

Rank	Cluster ID	Hub Description	City
1	78	Winchester Station	Campbell
2	141	I-880 Station	Milpitas
3	67	Caltrain - San Martin Station	San Martin
4	492	Fitzgerald Dr & Lucky	Vallejo
5	86	Wolfe & Stevens Creek	Cupertino
6	581	Santa Rosa Transit Mall	Santa Rosa
7	373	Walnut Creek	Walnut Creek
8	260	Dublin/Pleasanton	Livermore
9	517	E Washington St & Ellis St	Petaluma
10	467	Pittsburg Center	Pittsburg
11	468	Hercules Transit Center	Hercules
12	324	West Dublin/Pleasanton	San Ramon
13	438	Richmond Pkwy Transit Center (Park & Ride)	Tara Hills
14	336	Danville (Park & Ride)	Danville
15	511	Hwy 101 & Lakeville Hwy	Petaluma
16	389	Antioch	Brentwood
17	436	Hilltop Dr & Park & Ride	Richmond
18	444	Antioch	Antioch
19	553	Vacaville	Vacaville
20	566	Redwood Dr / Commerce Blvd	Rohnert Park
21	514	Amtrak Fairfield	Fairfield
22	562	Rohnert Park Expy Bus Pad	Rohnert Park
23	284	Dublin/Pleasanton	Livermore
24	541	Hwy 12 & Thompson Ave	Sonoma
25	531	West Imola Avenue (Park & Ride)	Napa

Note: Hubs shaded are defined as Equity Hubs according to the criteria established in this methodology.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Top 25 Pulse Hub Clusters

Rank	Cluster ID	Hub Description	City
1	600	19Th Ave & Randolph St - San Francisco State University	San Francisco
2	157	TMA - Palo Alto	Stanford
3	325	TMA - Bishop Ranch	San Ramon
4	0	BART Oakland Int'L Airport	Oakland
5	362	Stadium - California Memorial Stadium Berkeley	Berkeley
6	844	University/College - San Jose State University	San Jose
7	346	TMA - Emeryville	Oakland
8	56	University/College - California College of the Arts	Oakland
9	615	University/College - San Francisco State University	San Francisco
10	84	University/College - San Jose City College	San Jose
11	367	University/College - University of California Berkeley	Berkeley
12	331	TMA - Alameda North Waterfront	NA
13	333	University/College - College of Alameda	Alameda
14	334	TMA - Alameda Point	Alameda
15	146	Job Center - Google Llc	Mountain View
16	279	TMA - Hacienda Pleasanton	Pleasanton
17	323	Job Center - Chevron Corp	San Ramon
18	144	TMA - North Bayshore/Mountain View	Mountain View
19	185	Job Center - Western Digital Corp	Fremont
20	302	University/College - Las Positas College	Livermore
21	10	University/College - Mills College Oakland	Oakland
22	836	Stadium - San Jose Municipal Stadium San Jose	San Jose
23	835	Stadium - CEFCU Stadium San Jose	San Jose
24	854	Stadium - Avaya Stadium San Jose	San Jose
25	863	San Jose International Airport	San Jose

Note: Hubs shaded are defined as Equity Hubs according to the criteria established in this methodology.

MOBILITY HUB SITING CRITERIA, SCREENING METHODOLOGY, AND PRIORITIZATION
Metropolitan Transportation Commission

Top 25 Opportunity Hub Clusters

Rank	Cluster ID	Hub Description	City
1	434	San Rafael Transit Center Platform A	San Rafael
2	376	Manzanita Park & Ride Lot	Manzanita
3	347	Market St & 62nd St	Oakland
4	47	Market St & 16th St	Oakland
5	319	Acalanes Dr & Catron Dr	San Leandro
6	830	Winchester & Payne	San Jose
7	332	Pacific Av & 4th St	Alameda
8	175	Woodside Rd & Hess Rd	Redwood City
9	179	El Camino Real & Main St	Redwood City
10	348	Sacramento St & Fairview St	Berkeley
11	391	Harbour Way & Ohio Av	Richmond
12	170	El Camino Real & Northumberland Ave	Redwood City
13	176	El Camino Real & Charter St	Redwood City
14	395	San Pablo Av & I-80 Fwy	Richmond
15	396	San Pablo Av & Clinton Av	Richmond
16	177	Northumberland Ave & Marlborough Ave	North Fair Oaks
17	392	Richmond BART	Richmond
18	82	Winchester & Cadillac	San Jose
19	178	Middlefield Rd & Dumbarton Ave	North Fair Oaks
20	423	Concord	Concord
21	105	Mathilda & California	Sunnyvale
22	315	E 14th St & Blossom Way	San Leandro
23	171	El Camino Real & Oakwood Dr	North Fair Oaks
24	106	Sunnyvale & Central	Sunnyvale
25	254	Meekland Av & Grove Way	Cherryland