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Redwood City Ferry Business Plan

Port of Redwood City

In association with the:

- City of Redwood City
- Water Emergency Transit Authority
- San Mateo County Transportation Authority

January 31, 2022

CDM Smith

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Chapter 1
Introduction

Purpose

The business plan for the Redwood City ferry terminal and services is intended to provide the conceptual plan, service plan, and financial plan for the planned Water Emergency Transportation Authority (WETA) operated ferry services between Redwood City – San Francisco and Redwood City – Oakland using a new ferry terminal to be constructed on Port of Redwood City property. It also addresses important elements of the ferry service such as first-last mile connections, considerations of equity, and options for governance of the future ferry service and facilities.

Source: Port of Redwood City

This business plan was funded by the San Mateo County Transportation Authority (SMCTA) and managed by the Port of Redwood City (also referred to throughout this report as "Port") and the City of Redwood City ("City" or "Redwood City," collectively the City and Port are referred to as RWC) with technical assistance from WETA. This effort was conducted by a consultant team lead by CDM Smith, with public outreach conducted by PlaceWorks.

Prior to the preparation of this business plan the SMCTA provided Measure A funding to Redwood City to conduct a ferry service feasibility study. This study, the Ferry Financial Feasibility Study & Cost Benefit and Economic Impact Analyses, was issued October 2020. It was reviewed and accepted by the Redwood City Council, Port Commission, WETA Board of Directors, and SMCTA Board of Directors.

In order to be considered for funding, SMCTA requires a business plan for Redwood City ferry service that demonstrates how the transit service would be cost-effectively provided, how ridership will be attracted, and how the overall project would be financed. Provided that the business plan is accepted by the Port, Redwood City and WETA, and then by the SMCTA, the next phase will be preliminary design (and associated environmental and permitting activities) for the construction of the ferry terminal.

Project Background and History

Ferry services have played an important role in the development of the San Francisco Bay Area transportation network. Ferries are a convenient and practical mobility alternative for those who wish to avoid traffic congestion and congested land-based public transit services. The Port of Redwood City has long been considered a potential ferry terminal site, with the first terminal planning study

completed in 2007.[1] Redwood City and WETA first studied ferry service at a Port site in 2012.[2] This partnership predates 2012 and began when WETA was known as the Water Transportation Authority (WTA) in 1999.

Prior to the Covid-19 pandemic, between 2009 and 2016, the number of jobs in the San Francisco Bay Area, specifically in San Francisco and San Jose and on the Peninsula, increased by 19.9% to over 3.8 million jobs, representing the fastest rate of job growth for a metropolitan area in the United States. Traffic congestion was at an all-time high with the number of highway miles traveled in congested conditions rising from 3.1% to 5.8% between 2009 and 2016.[3] The Bay Area is planning for and investing in multimodal solutions to ease congestion. This effort includes expansion of the regional ferry system. In its 2016 Strategic Plan WETA, the region's primary ferry operator, envisioned 11 ferry terminals and eight routes by the year 2035, including a potential terminal in Redwood City. Water transportation is an effective mode of transport in the Bay Area because San Francisco Bay is not a barrier on other forms of surface transportation.

During the Covid-19 pandemic, riders on WETA's ferry services have been returning at a much faster rate than is being experienced by other regional transit operators in the Bay Area. For example, in fall 2021 WETA's weekday ridership returned to 38% of pre-Covid levels, compared to 30% for BART and 18% for Caltrain.[4] WETA's weekend ridership has been increasing even faster than the weekday ridership, and now exceeds weekday ridership levels on most routes. This suggests that transit users find ferry services to be safer and perhaps more convenient than Caltrain, BART and bus services during the pandemic, an indication that advancing new ferry services on San Francisco Bay will continue to be a popular component of the regional transportation network.

Scope

This business plan builds upon past efforts and plans to bring ferry services to the South Bay, linking the Peninsula to San Francisco and the East Bay. The concept of such a ferry service is a part of the Port's *2020 Strategic Vision*, the City's General Plan and *RWCmoves* transportation plan, and WETA's *Strategic Plan* and *Short-Range Plan*. It is also identified as part of the Metropolitan Transportation Commission's *Plan Bay Area 2050*.

This business plan was prepared for submittal to the SMCTA as is required for the ferry project to be considered for funding under the SMCTA's Measure A Ferry and Measure W Regional Transit Connections funding programs. The business plan was prepared under the direction of the Port of Redwood City, in coordination with the City of Redwood City, WETA, and the SMCTA. Many of the information items and analyses required for this business plan were prepared as part of the Redwood City Ferry Financial Feasibility Study & Cost-Benefit and Economic Impact Analyses (Feasibility Study) project, which was completed by CDM Smith for the City of Redwood City in January 2021.

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1 Port of Redwood City, 2007. Port of Redwood City Ferry Terminal Locational Analysis, Environmental Assessment, & Conceptual Design. Report issued by CHS Consulting Group.

2 Redwood City Ferry Terminal Site Feasibility Report, 2012.

3 Vital Signs, Metropolitan Transportation Commission, 2016.

4 Note: WETA decreased fares by 7-30% (depending on the fare type) in July 2021.

Additionally, the Port and the other project partners, the City and WETA, view the document as a tool to provide a clear definition and assessment of the ferry project to be used as a resource to inform stakeholders and the general public about the project, its status and its future. As such the business plan is viewed as a living document that will be updated as the ferry project proceeds as needed.

Feasibility Study

The Feasibility Study was completed in April 2021 and is an evaluation of ferry service feasibility from five interconnected perspectives, as illustrated in **Figure 1-1**. These five perspectives were Consistency, Operations, Engineering, Economics and Financial. The study concluded that the proposed project was feasible from all five of these perspectives.

The study also included a significant public and stakeholder outreach effort and employed tools and strategies to solicit input from waterfront users, the business community, and the general public regarding ferry service to and from Redwood City.

Public outreach included two main components:

1. **Getting the Word Out** about the process to a variety of interested stakeholders.
2. **Multiple Channels for Participation** to engage a wide audience and facilitate a forum for people to identify community concerns and provide input on potential ferry service.

Figure 1-1: Feasibility Perspectives

Source: Redwood City Ferry Financial Feasibility Study & Cost-Benefit and Economic Impact Analyses, 2021

The target audience for outreach included: people interested in waterfront activities and environmental protection; potential ferry service passengers; and employers whose staff would use ferry service. The audience also included the broader Redwood City community, both to receive general information about the status and objectives of the Study and to help determine the level of interest in weekday commute-only ferry service.

Business Plan

The business plan includes consideration of the consistency, operations, engineering and financial elements which were already addressed in the Feasibility Study. In addition, it includes the following:

- Governance Plan – The options for how the ferry service and terminal facilities would be owned, operated, maintained and funded were evaluated in terms of the roles of each of the involved agencies, their capabilities in terms of the implementation and on-going operations, and their ability to provide or secure funding for the ferry project.
- Outreach/Equity Plan – The outreach effort conducted in the Feasibility Study was supplemented by additional outreach designed to reach a broader community base, including populations from the underserved and disadvantaged communities, both in the Redwood City area and in Oakland. There was also some additional outreach with the water recreational user groups and the environmental conservation interest groups.
- First-Last Mile Plan – An analysis considering alternatives for providing connected mobility services to and from the ferry terminal in the Port to major activity centers, employments sites, and communities within the ferry service catchment areas. The plan addresses both transit and active transportation options for ferry terminal access.
- Service Enhancement Options – the feasibility study only considered peak commute service. There was interest on the part of the Port Commission and City Council in expanded service offerings, including midday, weekend and special event ferry services. The development of additional service options also led to additional estimates of operating costs and ridership.

Report Structure

This business plan document is organized in nine chapters as follows:

1. Introduction
2. Organization and Governance
3. Ferry Service, Operations, Vessels and Facilities
4. Projected Ferry Ridership
5. Equity Analysis
6. First-Last Mile Plan
7. Financial Considerations
8. Summary and Next Steps

Chapter 2
Organization and Governance

The implementation and operation of a passenger ferry service between the Port of Redwood City and San Francisco and Oakland will require the direct participation of several governmental agencies. Each of the involved agencies will need to accept certain responsibilities and provide the necessary property, infrastructure, and operations and maintenance of vessels, facilities and services required to support successful ferry service. The ferry service will need to be cost-effective, and the host agencies will also need to address environmental concerns, social equity, ferry access via effective first-last mile connections, resiliency, and sustainability.

The key agencies that will be involved in the Redwood City ferry service include:

- Water Emergency Transportation Authority – In 1999 the state legislature created the San Francisco Bay Area Water Transit Authority (WTA) to plan new and expanded ferry service and related ground facilities in the Bay Area. In 2007, the governor signed SB 976, creating WETA as successor to the WTA. It directed WETA to run a consolidated regional ferry system and prepare the system to respond to a natural or man-made disaster that disrupts bridge traffic in and out of San Francisco. As a result, WETA has the charter and responsibility to operate passenger ferry services on San Francisco Bay including ownership of vessels and terminal infrastructure.

  WETA's Strategic Plan, issued in 2016, calls for a new ferry terminal and services in Redwood City. Also, the Draft WETA 2020 Short Range Transit Plan (SRTP) identifies Redwood City as a near term project to be implemented within the 10-year time frame of the plan. Redwood City is one of several locations slated for new ferry terminals and services as part of the SRTP.

- Port of Redwood City – The Port was founded by City Charter in 1937. The Port is an enterprise agency of the city of Redwood City with its own governing commission as appointed by the City Council. The Port's ownership and jurisdiction includes the management of over 120 acres of waterfront land, including the only deep-water cargo berths serving the south bay region. Most of the Port's property falls within the Port Priority Use designation for maritime commerce and ancillary maritime industrial uses identified in the San Francisco Bay Conservation and Development Commission's Seaport Plan. The Port is currently zoned for general industrial, industrial park, commercial park and industrial restricted uses. Maritime commerce is the economic engine that fuels the local economy with high paying blue-collar jobs, goods movement, and funds the activation of the commercial recreation facilities and infrastructure.

  Being an intermodal port, the Port possesses a fundamental role in providing a sustainable waterborne means of transportation through ferry service. Additionally, in 2017, the Federal Emergency Management Agency (FEMA) designated the Port as a Federal Staging Area during any catastrophic event, in which WETA's future ferry service will play an integral role serving the region with the delivery of emergency resources and first responders.

Ferry service is a priority for the Port and is identified as a short- and medium-term action in the Port's 2020 Strategic Vision adopted by the Board of Port Commissioners in January 2020.

- City of Redwood City – The City has the responsibility of providing services and facilities to its residents and businesses including ensuring the provision of mobility options which support access to jobs, businesses, educational facilities, recreational and cultural facilities, medical facilities, and social services. As the agency that owns and operates most roads within its jurisdiction, the City is, and will continue to be, a key player in providing potential first-last mile connections (primarily bike facilities), and in the future the City could have a larger role in connection to shuttle services (through a proposed future Transportation Management Agency) to a new ferry terminal. The City is also responsible for enforcing laws to maintain safety in the community. This includes the enforcement of safe driving on streets and safe piloting on the water around the Port.

  The City has an adopted a citywide transportation plan (*RWCmoves*) and the RWC Walk, Bike, Thrive plan is being drafted now to identify priority pedestrian, bicycle and traffic safety projects and programs. *RWCmoves* identifies the ferry terminal as a "Signature Project," one of ten priority projects which include major changes to infrastructure. *RWCmoves* also identifies a number of Tier 1 and Tier 2 priority projects (such as the Seaport Boulevard Bicycle Path, improvements to Woodside Road and the Woodside Road/US 101 Interchange) that will improve access to the Port and the ferry terminal as they are implemented.

- San Mateo County Transportation Authority – The SMCTA is tasked with the administration of the funds derived from voter-approved sales tax Measures A and W to enhance transportation and mobility options for residents of San Mateo County. The SMCTA must manage and disperse these funds in a manner consistent with the provisions of both expenditure plans. Measure A includes a specific earmark of funds to support a Redwood City ferry service, and Measure W includes provisions to allocate funds for regional transit improvements, including ferry services. SMCTA plays a key role in funding multimodal projects such as highway interchanges, bicycle facilities, roads, etc.

  The City is reliant on designated SMCTA funding for the project initiation components of the future ferry service including planning, design, and construction funding for landside infrastructure. The City will also look to other competitive SMCTA funding for roadway, bicycle and pedestrian, and other first-/last-mile access projects.

- Transit Providers – Agencies which provide first-last mile transit services include SamTrans and Commute.org, as well as private employers and institutions such as Stanford University, Oracle, Google, and Kaiser Permanente.

- Metropolitan Transportation Commission (MTC) – MTC administers the proceeds from regional funding measures RM1, RM2, and RM3 (currently under litigation). These funds, which are derived from bridge tolls, are intended to be used to support Transbay transportation and include funding for ferry services.

Ferry Service Elements

A ferry service operating out of the Port of Redwood City will require vessels, waterside facilities, landside facilities, and first-last mile transportation facilities and services.

- Vessels – Ferry services require special vessels designed to provide safe and comfortable service to passengers along with periodic maintenance at a specialized facility.
- Waterside Facilities – The required waterside facilities are defined as a float, which is a floating platform from which passengers can board or depart from the ferry; the gangway(s), which are walkways connecting the float to the landside ferry terminal facilities, and piles that support the float and provide navigational aid for landing vessels.
- Landside Facilities – These include a fixed pier, ferry terminal waiting area, areas for parking, transit stops, passenger drop-offs and pick-ups, bicycle/micromobility device parking, ferry information displays and may also include a structure to cover and enclose the waiting area as well as restrooms.
- First-Last Mile Connectivity – This includes elements such as linkages to the local and regional bicycle/pedestrian network and transit services such as fixed route shuttles or demand responsive transit, also known as microtransit.

Agency Capabilities

Table 2-1 shows how the required ferry system elements match up with the capabilities and the objectives of each of the governing agencies.

WETA is well equipped to procure and maintain the ferry vessels and operate a ferry service envisioned and expressed in the Feasibility Study. It also has legislative authority to operate and approve all public ferry service on the Bay. While theoretically the Port and/or the City or another agency or a private operator could offer ferry service with WETA's approval, none of them have sufficient facilities, vessels, experience and funding structure with public ferry service operations to match what WETA provides. WETA also has the advantage of being a recognized and established operator that has a history of funding support from both the SMCTA and MTC, as well as from the participating federal and state agencies.

WETA is also well equipped to operate and maintain the waterside facilities and has an advantage by being able to receive funding offered by the Federal Transit Administration for the rehabilitation of the floats, a major ongoing facilities expense. While the Port could operate and maintain waterside facilities and execute a landing fee agreement with WETA, this arrangement would require a subsidy and the Port would not be eligible for federal rehabilitation funds that are available to FTA-eligible agencies such as WETA.

In the past, WETA has leased the land and the landside facilities for its terminal facilities. WETA has found that it is generally not as well suited as the local port or the municipality where the terminal is located to operate and maintain the landside facilities. WETA is in the process of transitioning property it leases for terminals back to local cities or port districts, in an effort to streamline its

operations and allow for more transportation policy involvement from cities. For example, WETA is not equipped to provide security or parking management, while ports or cities typically provide those services and would simply need to expand coverage to the ferry terminal. In this case, the Port of Redwood City is best equipped to own and manage the landside facilities.

One of the challenges of this project is the need for effective first-last mile connections to the ferry terminal from the key activity centers including Downtown Redwood City, the Stanford Redwood City Campus, and the major employers such as Oracle, Box, and Facebook, as well as the County and Kaiser Permanente. The Port and the City can assist by providing safe and convenient facilities for pedestrians and bicyclists that provide connectivity with the existing and planned regional and local networks. Neither the Port nor the City has the equipment, experience or staff to provide regular shuttle service. These are best provided by the established transit operators such as SamTrans or Commute.org, or by the major employers, who already have experience operating these services.

Table 2-1: Agency Capabilities and Ferry Service Elements Comparison

Agency	Ferry Service Element			
	Vessels	Waterside Facilities	Landside Facilities	First-Last Mile Facilities and Services
WETA	Ability to provide vessels and holds a charter to operate and maintain ferry services	Ability to operate and maintain waterside facilities and to leverage FTA funding for rehabilitation	Not well equipped to manage landside facilities, particularly parking	WETA is not chartered to operate landside shuttles or to develop facilities such as bicycle lanes or roadways
Port of Redwood City		Ability to provide waterside facilities, but would not be able to obtain FTA funding for rehabilitation	Owns the land and has the ability to maintain and operate the facilities, including parking	Ability to participate in funding bike/ped facilities on Port property
City of Redwood City		Ability to provide enforcement on the waterways within and near the Port	Ability to provide enforcement of traffic and parking regulations	Ability to participate in implementing roadway and bike/ped facilities. Future capability to fund transit service through a TMA.
First/Mile Last Mile Transit Providers				Ability to provide transit services if funding is provided
SMCTA	Can provide funding for capital and operations costs (Measure W only)	Can provide funding for capital costs	Can provide funding for capital costs (Measure A or W)	Can provide funding for transit capital and operating costs (Measure A or W)
MTC	Can provide funding for capital and operations costs	Can provide funding for capital costs	Can provide funding for capital costs	Can provide funding for transit capital costs

- Indicates the agency best suited to perform each role

- Indicates a supporting role, blank indicates limited or no capability

The City of Redwood City provides law enforcement services to the Port. These services include law enforcement as well as enforcement of traffic and parking regulations, and enforcement of maritime regulations. Existing recreational users identified safety concerns caused by the wake generated by private ferries in the past. With the initiation of public ferry service, there could be a need for additional enforcement of the port waterways. The fully burdened cost to add 1.0 FTE enforcement officer staffing to service the waterways within and near the Port is around $300,000 annually. This would be considered a cost to the City. There is not a current request to add this position to the City's budget. The U.S. Coast Guard also participates in maritime enforcement. Currently, the Port is in the design and engineering phase for a new jet dock facility to house both Redwood City Fire Department and Police Department patrol boats at the Port. This will improve overall level of service in response times for safety and enforcement of the waterway. The completion of these new facilities is anticipated to be in 2023, before the ferry terminal would be completed.

Funding

The ability to implement and operate the ferry terminal and services is contingent on the funding capabilities and domains of each of the involved agencies. **Table 2-2** shows the funding role each agency would play. Some agencies do not have internal funding sources and must act secure funds from other sources, while other agencies are in the role of providing funds for the capital and operational costs of transportation projects. It is important to note that all of the funding sources available are competitive, meaning that the ferry project would need to compete against other projects in order to secure funding.

Table 2-2: Funding Roles

Project Element	Agency	Funding Role	
		Capital	Operations/Maintenance
Vessels & Operations	WETA	Secures funds to procure vessels	Secures funds to operate and maintain vessels
	MTC	Provides funds to purchase vessels through RM3	Provides funds to operate and maintain vessels through RM3
	Caltrans	Serves as a conduit for federal and state funding of transportation projects	
Terminal	Port	Secures funds to construct terminal facilities	Provides funds to maintain and operate terminal landside facilities
	WETA	Participates in the efforts to secure funds to construct terminal facilities	Secures funds to maintain and operate waterside facilities
	MTC	Provides funds to construct terminal facilities through RM3	
	Caltrans	Serves as a conduit for federal and state funding of transportation projects, for example, provided State funds to develop a ferry terminal (recent $5M award to the City)	
	Federal Transit Administration (FTA)		Provides funds to maintain waterside terminal facilities.
	SMCTA	Provides funds to construct terminal facilities through Measure A Ferry Program set aside for Redwood City	
First-Last Mile Facilities and Services	City	Secures funds to construct roadways, bicycle and pedestrian facilities. In the future may be able to provide funding for transit through a TMA.	Provides funds to maintain roadways, bicycle and pedestrian facilities. In the future may be able to provide funding for transit through a TMA
	SMCTA	Provides funds to construct first-last mile facilities via Measures A and W, if the City is awarded competitive funding	Provides funds to operate transit shuttle services via Measures A and W, if the City is awarded competitive funding

Project Element	Agency	Funding Role	
		Capital	Operations/Maintenance
	Caltrans	Provides funds to construct roadways, bicycle and pedestrian facilities through grant programs	
	Private sector	Provides funds to construct roadways, bicycle and pedestrian facilities, and purchase transit vehicles through development agreements, fees or contributions such as through a TMA	Provides funds to operate transit shuttle programs through development agreements, fees or contributions such as through a TMA

Funding for procurement of vessels and an operating subsidy would likely come from Regional Measure 3 Ferry Program funds. This source is currently in litigation, but the case is expected to be resolved in 2022. Other sources of capital funds for vessels can include federal and state programs.

Governance Plan

Based upon the above discussion and evaluation, the following plan for the governance of the Redwood City ferry terminal and services has been developed as shown in **Table 2-3**.

Table 2-3: Governance Plan

Agency	Role
WETA	▪ Service provider for ferry operations ▪ Procurement and maintenance of ferry vessels ▪ Maintenance of waterside facilities ▪ Partner agency for the implementation phase of the project
Port of Redwood City	▪ Provision of landside terminal facilities including parking ▪ Provision of pedestrian/bicycle facilities for ferry access on Port property ▪ Lead agency for the implementation phases of the project
City of Redwood City	▪ Provision of pedestrian/bicycle facilities for ferry access within the City ▪ Provision of $5.0 M in funding from the State ▪ Partner agency for the implementation phase of the project
First/Mile Last Mile Transit Providers	▪ Provision of transit services to provide access and connectivity of the ferry services to the local and regional transit network and nearby centers of activity
SMCTA	▪ Partner agency for the implementation phase of the project ▪ Provision of funding and project implementation oversight during the implementation phase of the project
MTC	▪ Provision of funding to cover implementation and ongoing operations/maintenance of the project

Project Implementation

Redwood City was the lead agency during the Feasibility Study of the ferry service which was completed in January 2021. The Port, WETA and the SMCTA were partner agencies participating in the

study as agreed under a Memorandum of Understanding (MOU). This business plan is being led by the Port in partnership with the other three agencies. The next step after this business plan would be to complete the environmental studies to get the necessary clearances to move into design and construction. The governance plan calls for the Port of Redwood City to continue in its current role as lead agency, in close partnership with the City, as well as with WETA and the SMCTA. An updated MOU defining each agency's roles and responsibilities would be required.

WETA has been involved in the implementation of many similar terminal/ferry service projects. Their reported experience is that having the local landside agency (in this case the Port) lead the implementation phase tends to result in a better approval process. The Port, as an entity of the City of Redwood City and working in close partnership with the City, is in a better position to understand the needs and interests of the community and of the key stakeholders. This can result in a review and approval process that is more reflective of the goals of the City and the communities in the vicinity of the ferry terminal.

Chapter 3

Ferry Service, Operations, Vessels and Facilities

This section will provide details about the physical and logistical aspects of the proposed Redwood City ferry service. Topics include:

- Base Ferry Service Plan
- Fare Structure Review
- Wake Enforcement
- Maintenance
- Human Resource Management
- Financial and Management Information Systems
- Marketing and Public Awareness Activities
- Vessel Fleet
- Facilities

Base Ferry Service Plan

The service plan is based on two routes that connect Oakland and San Francisco to Redwood City. The routes are designed to provide all day service, with a higher frequency of service during morning and evening peak periods on weekdays. Weekend day service is also proposed for the San Francisco route. Special event service to San Francisco sports stadia is also assumed in this service plan, although actual service will depend on demand and is subject to WETA's Special Event service policy and fare program.

It is important to note that the following description presents a conceptual Redwood City ferry service at full buildout. Service is likely to be phased in over time to match demand and available operating resources. For example, the Feasibility Study assumed commute-period only service Monday through Friday. Midday and weekend service may be introduced after commute-period service is established. In addition, either the San Francisco or Oakland component of the service could be deferred, again depending on demand and available operating dollars. The full buildout service described below is a response to interest on the part of the City and Port to explore ferry service beyond serving office commuters during congestion periods.

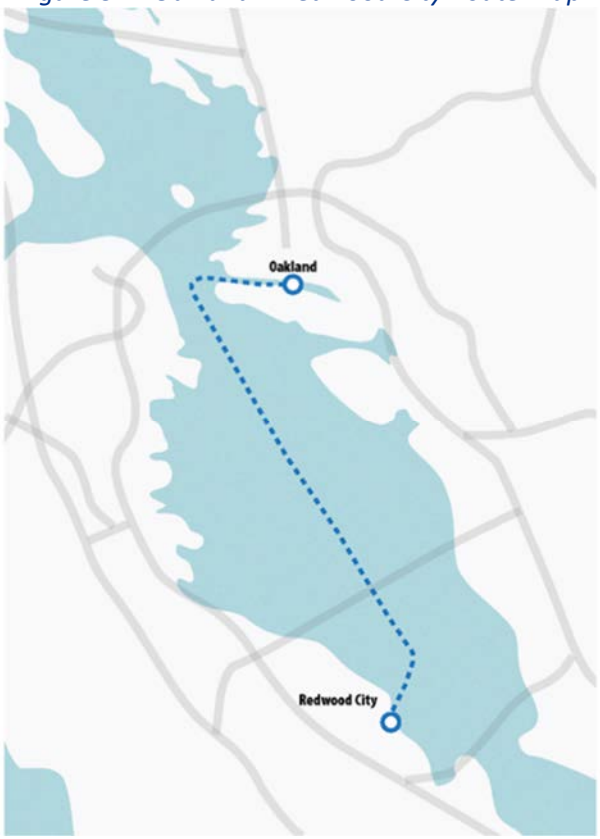
Oakland

This route is a round trip service between the East Bay and Redwood City with an approximate one-way running time of 65 minutes. The service would depart Oakland and travel westbound out of the estuary before heading south to Redwood City. Two ferry boats would be deployed for this service with two peak period trips from Oakland in the morning and two peak period trips from Redwood City in the evening. Weekend service is not planned for this route initially, but it could be added once the ridership of the new service is better understood, and riders have an opportunity to express their level of interest is such a service. **Table 3-1** describes a sample schedule for two boats and **Figure 3-1** illustrates this service.

Table 3-1: Redwood City Sample Schedule

OAK – RWC Weekdays				
Boat	**Depart OAK**	**Arrive RWC**	**Depart RWC**	**Arrive OAK**
Boat 1	6:15 AM	7:20 AM	7:30 AM	8:35 AM
Boat 2	7:20 AM	8:25 AM	8:35 AM	9:40 AM
Boat 1	9:20 AM	10:25 AM		
Boat 2	10:25 AM	11:30 AM		
Boat 1			2:20 PM	3:25 PM
Boat 2			3:00 PM	4:05 PM
Boat 1	4:10 PM	5:15 PM	5:25 PM	6:30 PM
Boat 2	4:50 PM	5:55 PM	6:05 PM	7:10 PM

Figure 3-1: Oakland – Redwood City Route Map



Source: CDM Smith, 2020

San Francisco

This route is a round trip service between San Francisco Ferry Terminal and Redwood City. It assumes passengers originating from ferry terminals in the North or East Bay could transfer in San Francisco to a ferry destined for Redwood City. This provides the greatest regional ferry access to Redwood City but would yield lengthy travel times with the transfer in San Francisco. The one-way running time from the Ferry Terminal would be about 55 minutes. **Table 3-2** describes a sample schedule and **Figure 3-2** illustrates this route. This scenario would provide two one-way morning peak trips from San Francisco and two evening peak trips from Redwood City. Two boats would be deployed for this service. A weekend service schedule has been included and would be implemented as part of the initial roll out of the new service.

Table 3-2: San Francisco – Redwood City Sample Schedule

SF – RWC Weekdays				
Boat	**Depart SF**	**Arrive RWC**	**Depart RWC**	**Arrive SF**
Boat 1	5:50 AM	6:45 AM	6:55 AM	7:50 AM
Boat 2	6:20 AM	7:15 AM	7:25 AM	8:20 AM
Boat 1	8:35 AM	9:30 AM	9:40 AM	10:35 AM
Boat 2	9:05 AM	10:00 AM		
Boat 1			1:55 PM	2:50 PM
Boat 2			2:55 PM	3:50 PM
Boat 1	3:00 PM	3:55 PM	4:40 PM	5:35 PM
Boat 2	4:00 PM	4:55 PM	5:45 PM	6:40 PM
SF-RWC Weekends				
Boat	**Depart SF**	**Arrive RWC**	**Depart RWC**	**Arrive SF**
Boat 1	9:30 AM	10:25 AM	10:35 AM	11:30 AM
Boat 2	10:15 AM	11:10 AM	11:20 AM	12:15 PM
Boat 1	12:30 PM	1:25 PM	1:35 PM	2:30 PM
Boat 2	1:15 PM	2:10 PM	2:20 PM	3:15 PM
Boat 1	2:40 PM	3:35 PM		
Boat 3			2:00 PM	2:55 PM
Boat 4			3:15 PM	4:10 PM
Boat 3	3:05 PM	4:00 PM	5:00 PM	5:55 PM
Boat 2	3:25 PM	4:20 PM		
Boat 4	4:20 PM	5:15 PM	6:15 PM	7:10 PM
Boat 3	6:05 PM	7:00 PM	7:10 PM	8:05 PM
Boat 4	7:20 PM	8:15 PM	8:25 PM	9:20 PM

Figure 3-2: San Francisco – Redwood City Route Map

Source: CDM Smith, 2020

The proposed service plan is for both routes to be implemented concurrently during weekdays with weekend and special events service to San Francisco only. Weekend and special events services could be added to the Oakland route once the demand for such services is better understood.

Fare Structure Review

In July 2021, WETA temporarily reduced their fares to encourage riders to return to the system as the region worked through the COVID-19 pandemic. In WETA's zonal fare structure, the Redwood City route would likely be in Zone 3, which is the same zone as the Vallejo route. The current Zone 3 fare is $9.00 for a Clipper/mobile app one-way ticket and $11.25 for a paper ticket. Fares will remain at this level for one year, then WETA will consider returning fares to pre-pandemic levels or evaluate other options for longer term fare structuring. Before the pandemic, the one-way Clipper fare for Zone 3 was $11.30. Pre-pandemic fares were used for estimating operating revenues in this study. Parking costs were not included for all modes examined.

Table 3-3 and **Table 3-4** compare the current and pre-pandemic Zone 3 WETA fare to comparable transit and auto trips from Redwood City to San Francisco and Oakland.

Table 3-3: Comparison of San Francisco-Redwood City Transit/Automobile Customer Costs

Service	One-way Clipper Fare	Notes
WETA Zone 3	$11.30	Fare was reduced to $9.00 in July 2021
Caltrain (Redwood City to 4th & King St. Station in San Francisco)	$5.45	
Caltrain & BART (Caltrain from Redwood City to Millbrae, change to BART to Embarcadero)	$8.25	Caltrain fare is $3.20, BART fare is $5.05
SamTrans (Route 398)	$4.00	
Auto Commuting without parking[5]	$30.20	Estimate of daily costs to drive one-way between Redwood City and San Francisco

Table 3-4: Comparison of San Francisco-Oakland Transit/Automobile Customer Costs

Service	One-way Clipper Fare	Notes
WETA Zone 3	$11.30	Fare was reduced to $9.00 in July 2021
Caltrain & BART (Caltrain from Redwood City to Millbrae, change to BART to 12th St.)	$10.80	Caltrain fare is $5.45, BART fare is $5.35
SamTrans & BART (Route 398 to San Francisco, walk to Embarcadero, BART to 12th St.)	$7.70	SamTrans express fare is $4.00, BART fare is $3.70
Auto Commuting without parking [6]	$39.25	Estimate of daily costs to drive one-way between Redwood City and Oakland

Wake Enforcement

Speed restrictions that extend into the San Francisco Bay are in place for safety reasons. Wake restrictions are intended to protect both non-motorized water users as well as sea and land species and their habitat, which can potentially be affected by wake and noise impacts. On Redwood Creek, wake enforcement is the responsibility of the Coast Guard in conjunction with the Redwood City Police Department. WETA follows maritime rules for wake enforcement and has a long history of successful conformance with wake related operating speed restrictions. There is no additional cost to the ferry service associated with adhering to wake regulations.

Maintenance

Maintenance of the ferry terminal would include ongoing needs such as security, landscaping, general maintenance, electricity, water/wastewater, telecommunications, and trash service. The preliminary estimates indicate annual maintenance costs of approximately $200,000 per year. WETA is responsible for waterside facilities at terminals, such as the maintenance and rehabilitation of floats

5 Assumptions: 29 one-way miles driven; 22 working days per month; small sedan with 25 mpg; $4.65 fuel price per gallon; $500 per month car payment; no parking costs included.

6 Assumptions: 37 one-way miles driven; 22 working days per month; small sedan with 25 mpg; $4.65 fuel price per gallon; $500 per month car payment; $7 bridge toll; no parking costs included.

and gangways. The Port is responsible for landside maintenance. The estimated annual cost includes both waterside and landside maintenance needs.

WETA has calculated that ferry vessel maintenance costs for all vessels anticipated for this service amounts to just over $800,000 per year. This includes vessel repair, related materials and supplies, and urea, which is a necessary reactant chemical used in marine vessel catalytic systems. New services for Redwood City are assumed to need a spare vessel, and maintenance expenses would apply to this vessel as well. Other maintenance processes include:

- Periodic haul-out and rehabilitation work of vessel major components that include propulsion system, navigation and alarm systems
- Preventive maintenance and inspections
- Quarter-life vessel repower/refurbishment at 6.5 and approximately 19 years of service life, including major dry-docking, overhauls to drive train running gear, passenger cabin refurbishment, and HVAC and main engine overhaul work

A small amount of dredging would be required for the initial terminal construction. Continuous dredging requirements will depend on which conceptual terminal location is selected. Per the Redwood City Feasibility Study, conceptual design option 2 (West of Westpoint slough) requires little or no dredging. For conceptual design option 1 (northside of Westpoint slough), the dredging depth at float is 12 feet. Typically, if dredging is required, it would occur every 2-10 years depending on the specifics of the facility. The Port would be responsible for dredging; it is likely that any required work could be coordinated with the Port's overall dredging program.

Labor Requirements

WETA will require eight total crews per weekday to operate the routes to/from San Francisco and Oakland. These crews would work eight-hour shifts. The weekend San Francisco route would also require four crews, though they would be working ten-hour shifts.

Financial and Management Information Systems

WETA tracks expenses throughout the year and incorporates these into its annual budget. WETA's operating cost model is used to track expenses on a regular basis.

Marketing and Public Awareness Activities

WETA, The Port, and Redwood City should coordinate on a WETA-led plan to market the Redwood City ferry service. The plan should focus on educating the population in the ridership sheds, describing the benefits of riding the San Francisco Bay Ferry and working with partners to spread information about the incoming new service.

The education phase should focus on a range of media formats. Digital media can include buying ad space on local news sites and scheduled social media posts. Radio advertisements could be bought in the weeks leading up to service. Billboard advertisements should be posted in high visibility areas in San Francisco, Redwood City (and surrounding areas), and Oakland (and surrounding areas). WETA has

found that it's important for marketing efforts to have more resources available to effectively reach Spanish-speaking populations.

It will be important to reach out to media partners to generate coverage of the new service. This should include local television news as well as newspaper reporters working on the transportation beat. This is critical as it creates unpaid exposure that can also be tied back into the social media strategy.

Advertisements and media appearances should focus on the new connections the Redwood City ferry service will create and the benefits of riding the San Francisco Bay Ferry. The comfort, views and ability to multi-task should be points to highlight, as customers often describe these factors as the primary reasons for why they ride the ferry.

Engaging with local partners and stakeholders will be critical, both to raise awareness and address any potential issues. Partners can include local elected officials, fellow transportation agencies, major employers and community groups. These partners can inform their constituencies of the upcoming service and help drive ridership. Tangentially, it is critical to continue to engage with local recreation and environmental groups in order to address any potential issues in a timely fashion.

Vessel Fleet

WETA's ferry fleet is composed of catamaran-style ships that can accommodate between 225 and 445 passengers. **Table 3-5** describes the characteristics of the controlling WETA vessel, which is the largest sized vessel type.

Table 3-5: Controlling Vessel Characteristics

Vessel	WETA NB445
Hull Type	Catamaran
Passenger Capacity	450 people
Displacement	225.1 long tons
Length at Waterline	144.3 ft.
Beam	39.4 ft.
Draft	4.92 ft.

Source: COWI, 2020

The Redwood City service will need new two vessels for each service route, plus a half of a spare vessel. The half spare vessel per route will combine to equal one spare ferry which will serve as the spare vessel for both routes. Each new ferry is estimated to cost approximately $16 million, which may vary depending on vessel class and costs at time of acquisition. In summary, ferry acquisition costs would total about $40 million per route.

Facilities

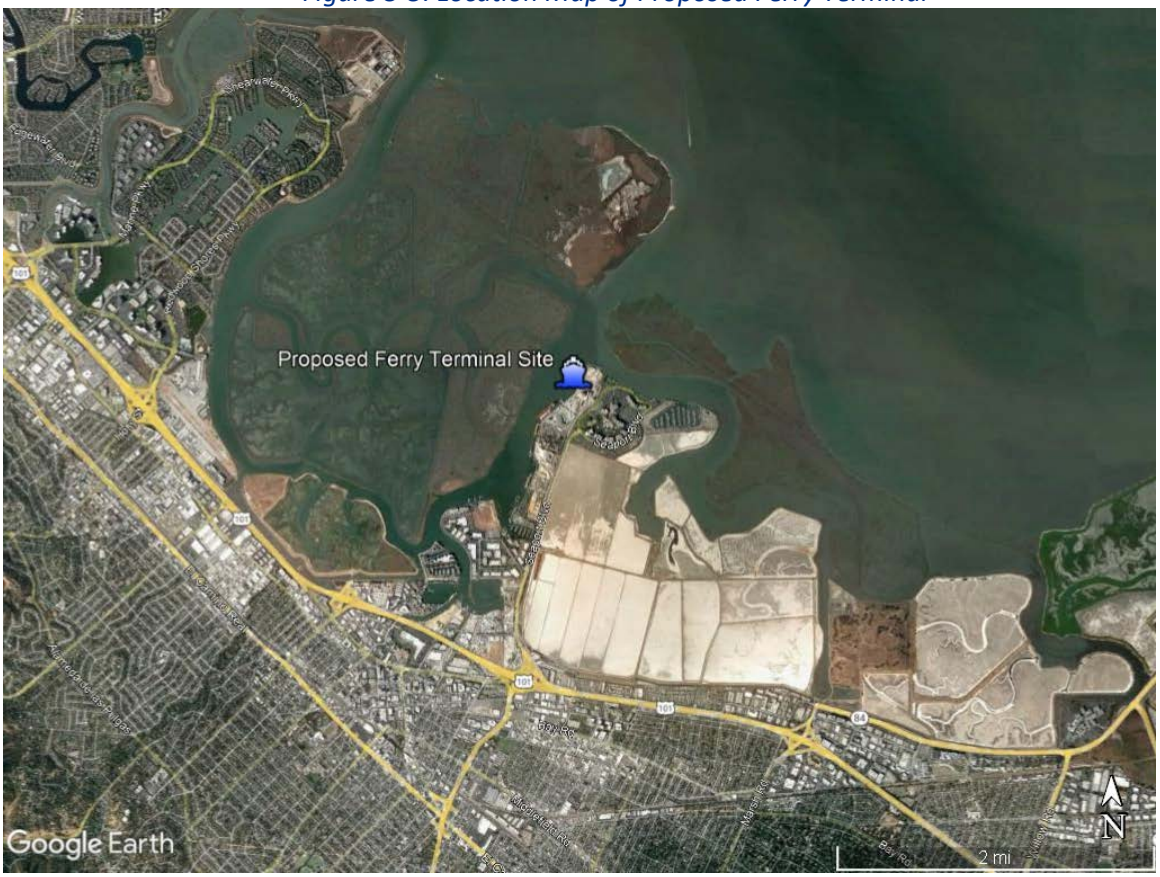
The Redwood City Ferry Terminal would be located on the northern end of Seaport Boulevard, where Westpoint Slough and Redwood Creek meet. The land is owned by the Port of Redwood City. The Redwood Creek Slough and adjacent shoreline in Redwood City is a hub for a wide variety of water and land-based recreational activities. The parcel is 9.2 acres and is undeveloped, and therefore,

would require landside improvements for it to function as a terminal. While parking facilities are assumed as part of the project, it is also assumed that some patrons will arrive by other modes, including transit, shuttles, bikes or rideshare. The site is approximately three miles northeast of the downtown business district and Caltrain station. The site is also directly adjacent to the 106-acre Pacific Shores office park, where Google and other companies occupy offices, and the Seaport Centre office park which offers over 550,000 square feet of office space.

The site is near Westpoint Harbor, a marina supporting recreational and commercial boating activity. In addition, the waterways in the area are host to daily, year-round non-motorized water activities include rowing, sailing, kayaking, stand-up paddleboarding, windsurfing, and kite surfing. Recreationists can access the water in multiple locations, including by using equipment rented from two outlets near the potential ferry dock site: California Canoe and Kayak on Seaport Court, and 101 Surf Sports at the Westpoint Harbor.

Sail and motorized boat traffic emanate largely from approximately 350 berths at Westpoint Harbor south of Westpoint Slough, which joins Redwood Creek Slough at the ferry landing site. Another 125 or more boats may be berthed at any time at the Sequoia Yacht Club on Seaport Boulevard near US 101. Both marinas offer sailing tours and instruction. Walkers, runners, birdwatchers, photographers, artists, and water-gazers are common along the shoreline around the ferry site as is lunchtime activity from the neighboring office, industrial, and residential developments.

Figure 3-3: Location Map of Proposed Ferry Terminal



Source: Google Earth and COWI, 2022

As part of the Feasibility Study, COWI updated the 2012 conceptual layout (called Option 1) for the ferry terminal located on the north side of the preferred (in 2012) Westpoint Slough site and developed a new conceptual layout (called Option 2) for the ferry terminal on the west side of the preferred site. Specifics on the conceptual designs can be found in Section 5 of the Feasibility Study.

Option 2 eliminates the need for dredging due to the existing navigation channel that provides deeper water for vessels operating at the Port. This site would provide easier maneuvering in and out of the berth and it also eliminates the need to demolish the existing wharf structure. Although the Option 2 site offers benefits, it also comes with constraints. The alternative location encroaches on the turning basin and facilities to the south, the float would be limited to a single side berthing, the float is not compatible with WETA's spare float, and the site is closer to the wetland areas. A spare float would allow ferry operations to continue while maintenance is performed on the main float.

The Port prefers Option 2 because it involves minimal dredging and is further away from environmentally sensitive habitat. WETA indicates that either of the options would work for their ferry operations. Both options would be studied in the environmental analysis phase.

Ferry Terminal Requirements

The basic requirements for a functional ferry terminal are discussed below and summarized in **Table** 3-6.

Water Side improvements

The ferry terminal waterside requirements call for a 135-foot-long by 42-foot-wide steel float, 5,670 square feet. The float would be compatible with the ferry facilities in the North and East Bay. The float is to be moored in place by up to six (6) 36-inch diameter steel float guide piles. To aid vessels during berthing, the site would require two (2) 36-inch donut fender piles. Walking platforms on the barge and ADA aluminum gangway would provide passenger access to a pile-supported shelter platform.

Land Side Improvements

The landside improvements would consist of the removal of existing bulk material stockpiled at the site. The existing lot is to be modified to accommodate a minimum of 250 parking spaces, a transit/shuttle stop, bike and pedestrian network connections, electrical utilities for shore power and communications systems, and mechanical utilities for potable water and fire protection. Typically, WETA’s ferry terminals are designed as an “essential” facility so that they remain operational after a seismic event. Like the Richmond Terminal, this terminal will not be staffed. The landside improvements complement the destination type uses in the Port’s 2020 Vision as well as the Port’s 2017 Federal Emergency Management Agency (FEMA) Federal Staging Area designation.

Table 3-6: Summary of Ferry Terminal Conceptual Design

Component	Description	Notes
Dredge Depth in Channel	EL -30ft.	No dredging required
Dredge Depth at Float	EL -12ft. and Deeper	Depending on final layout, little to no dredging will be required.
Float Size	34-ft. x 80-ft.	Will be similar to WETA Richmond terminal. May be possible to use WETA's standard size float but given only one side of the float is accessible this is larger than what is needed.
Board Sides	1 sided	Only one side of the float can be accessed by ferry
Float Material	Steel	As the spare float cannot be used given the smaller size float, the use of a concrete float should be studied further as it does not require future drydocking for maintenance.
Float Guide Piles	(4) to (6) 36" diameter steel	
Knee Fenders	Provided along sides of float	
Donut Fenders	2 donut fenders	
Gangway	ADA compliant	
Walkway & Boarding Ramps	3 boarding ramps	Will be similar to WETA Richmond terminal
Access Pier	Covered pier	Eliminates need to demolish existing wharf structure locate at the north side site. Proximity to wetlands will need to be further studied.
Utilities	Includes: ▪ Power ▪ Lighting ▪ Telecom ▪ Potable Water ▪ Fire System	
Landside	Includes: ▪ Bus stop ▪ Parking lot with 250 spots ▪ Pedestrian and bicycle trail ▪ Long-term bicycle parking ▪ Access roads ▪ Terminal Canopy Shelter	

Vessels serving Redwood City would operate out of the Ron Cowan Central Bay Operations and Maintenance facility, located in Alameda. This facility opened in 2018 to serve as the consolidated base for ferry operations for all routes except for Vallejo service. The Central Bay facility includes a working yard for light repair and maintenance and a fueling facility that can operate services for up to a week during an emergency. It has berthing slips for 12 vessels that all provide fuel and utility hookups, as well as several slips that are outfitted for maintenance.

Capital Costs

The costs of construction were estimated by COWI in the Feasibility Study. **Table 3-7** below provides a summary of the costs for the ferry terminal.

Table 3-7: Cost Estimate: Ferry Terminal - West Side at Westpoint Slough Location

Item Name	Description of Components	Total Cost
Construction Costs		
Waterside Construction Subtotal		**$8,300,000**
Contingency	Allowance for 25% Contingency	$2,075,000
	Subtotal	**$10,375,000**
Contingency	Allowance for 10% Construction Contingency	$1,037,500
	Total Estimated Waterside Cost	**$11,500,000**
Landside Construction Subtotal		**$2,400,000**
Contingency	Allow for 25% Contingency	$600,000
	Total Estimated Landside Cost	**$3,000,000**
Permitting Costs		
Float	Permit Compliance and support	$167,000
Lot	Permit Compliance and support	$167,000
	Total Estimated Cost (Marine Waterside, Marine Landside and Permitting)	**$14,900,000**
	Total Estimated Cost Construction (year 2022 dollars)	**$16,300,000**

Source: COWI, 2020

The estimated costs for the other option (Option 1) were higher, $21.8 million in year 2022 dollars, reflecting the need for dredging and the larger float which could accommodate a boat on each side.

Chapter 4
Projected Ferry Ridership

The weekday ridership estimates presented in this business plan were previously developed as part of the Feasibility Study. A custom ridership model was developed and applied to service scenarios for both the Redwood City – San Francisco service and the Redwood City – Oakland service. For the purposes of this business plan weekday ridership estimates were used, and separate estimates of potential weekend ridership were prepared. The Feasibility Study did not include consideration of weekend service.

Overview of Methodology

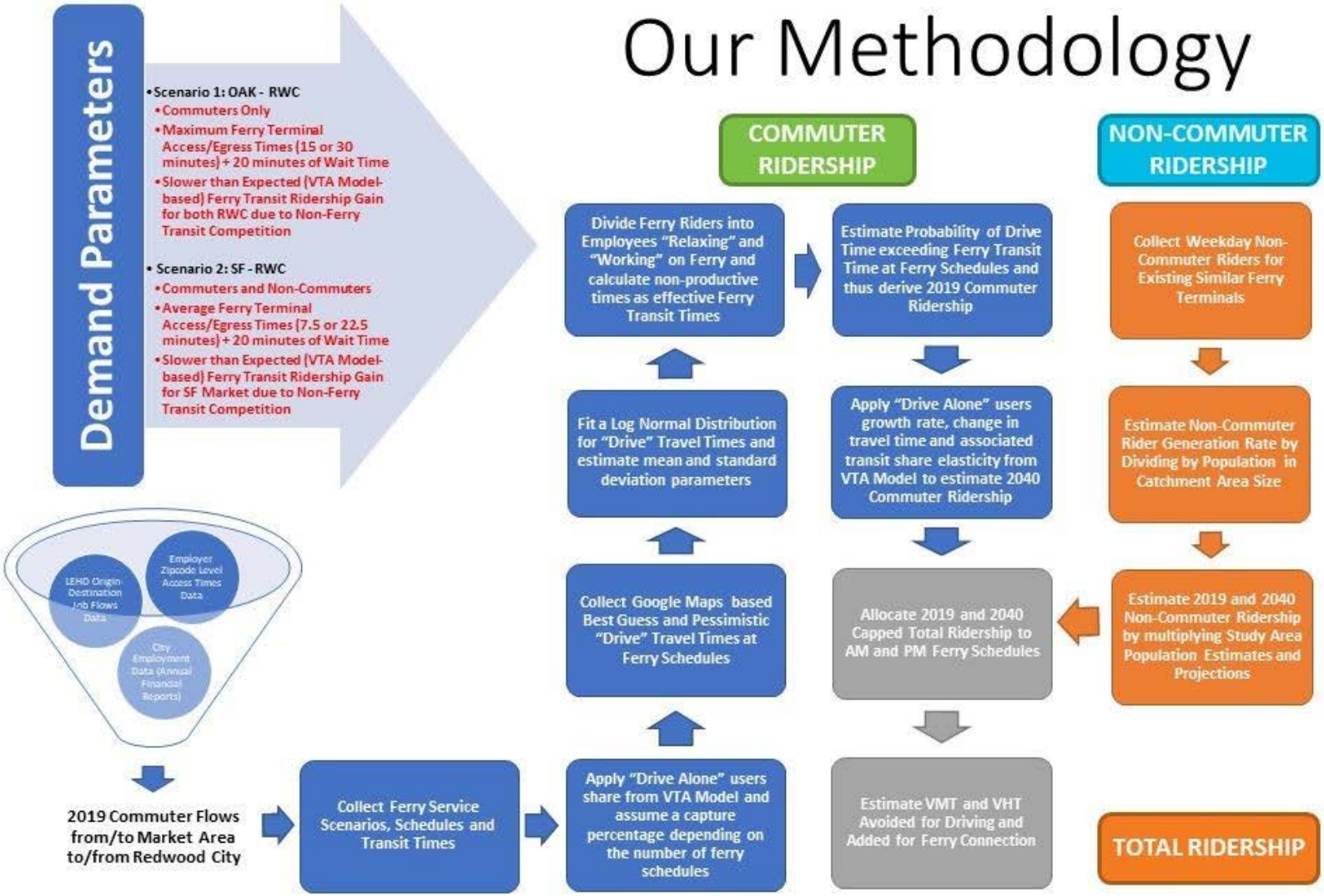
The methodology for the estimation of weekday ferry ridership (weekday boardings) is documented in the Feasibility Study. It is important to note that the ridership forecasts are purposely based on year 2019 conditions, to reflect pre-pandemic conditions. While it cannot be expected to accurately predict future conditions, there is a consensus in the transit industry that ridership will gradually return to pre-Covid levels in the next 3-5 years.[7] Observations of WETA ridership growth during the pandemic indicate that riders are gradually returning, but that use of the ferry has changed with more ridership occurring outside of the traditional peak commute times, and more ridership on weekends. This appears to be a reflection of flexible employer policies in terms of allowing remote working and flexible work schedules. These factors were considered in the ridership estimates.

Figure 4-1 on the next page provides an overview of the process used for ridership estimation. It treated commute and non-commute trips separately.

- Commute trips – the ridership model viewed commute trips as being competitive with existing transit modes such as Caltrain, SamTrans, and BART, as well as with drive-alone trips in private autos and shuttles. Comparative travel times were examined by time of day for all modes and for the planned ferry services. Drive-alone travel times were calculated from Google Maps information. The Santa Clara Valley Transportation Authority's (VTA) travel demand model (which includes San Mateo County) was used as a source to estimate drive-alone trips between Redwood City and both San Francisco and Oakland for 2019 and 2024. A mode choice analysis was then conducted to estimate the share of these trips that could be potentially captured by a ferry service. A unique aspect of the analysis was to factor in on-board surveys of ferry riders indicating that one key reason for riding the ferry is the ability to use the time on-board for either work related activities or recreational activities (such as reading, playing games, on-line activities, etc.). Thus, time spent on the ferry is considered in a more positive light than time spent driving an automobile.
- Non-Commute Trips – weekday non-commute trips were estimated by examining the 2019 ridership characteristics of existing WETA ferry services. The number of non-commute trips as a percentage of the commute trips was calculated as used as a guide to estimate non-commute travel for the new ferry services.

[7] NBC News, "The pandemic sank mass transit use. Data show its slow recovery." https://www.nbcnews.com/news/us-news/pandemic-sunk-mass-transit-use-data-shows-its-slow-recovery-n1274784.

Figure 4-1: Travel Demand Model Methodology – Weekday Ridership



Source: Redwood City Ferry Financial Feasibility Study & Cost-Benefit and Economic Impact Analyses (April 2021)

In the previous chapter the conceptual service plans for the two ferry routes to San Francisco and Oakland were presented. These plans differ in two ways from the service plans presented in the Feasibility Study:

1. Weekday Ferry Vessel Trips – while the number of weekday trips operated did not change, the spread of the trips throughout the day increased. This was to accommodate the recent observation that commuters using WETA ferries are traveling less in the peak commute periods and more in the commute shoulder or off-peak time of day.

2. Weekend Ferry Vessel Trips – the Feasibility Study did not consider weekend ridership, but recent observations of rider travel patterns on WETA services have shown a significant increase in weekend use of the ferry. In some cases, such as the Oakland/Alameda – San Francisco services, weekend ridership volumes exceed those on weekdays. As a result, it was assumed that the Redwood City – San Francisco service would include a weekend schedule, starting when service is implemented, as this is a proven market for travel based on Caltrain experience.[8] The operations plan for the Oakland service route, however, only included weekday service because there was no evidence that weekend service between Redwood City and Oakland would be popular. It was assumed weekend service could be implemented on this route with a better understanding of rider preferences after weekday service is operational, but that weekend service was not assumed as part of this business plan.

Forecast Results

Table 4-1 shows the ridership forecast for years 2019 and 2040 for both the San Francisco and Oakland routes. On weekdays the San Francisco route slightly higher boardings are forecast as compared to the Oakland route, 1,290 daily boardings in 2019 as compared to 850 daily boardings.

Table 4-1: Forecast Year 2019 and 2040 Average Daily Boardings

Year 2019 Daily Boardings	Average Weekday	Average Weekend Day	Special Events (Average per day)
Oakland – Redwood City	850	NA	NA
San Francisco – Redwood City	1,290	1,130	140
Year 2040 Daily Boardings			
Oakland – Redwood City	1,870	NA	NA
San Francisco – Redwood City	2,190	1,930	240

Source: CDM Smith 2021 Note: NA = weekend and event services not included for this route

Weekend and special event boardings were estimated by looking at year 2021 ridership records for July (when weekend services were resumed) through October. The ratio of the average weekend day ridership to the average weekday ridership was calculated as a percentage. For example, on the Oakland & Alameda route, weekend day ridership was 226% of the weekday ridership observed in

[8] Caltrain, "Caltrain 2018 Annual Passenger Count Key Findings", https://www.caltrain.com/about/statsandreports/Ridership.html.

2021 for this four-month period. This percentage varied widely for the routes that provide weekend services, as shown below:

- Oakland & Alameda – San Francisco: 226%
- Vallejo – San Francisco: 109%
- Richmond – San Francisco: 82%
- System average: 152%

To be conservative the percentage for the Richmond service was used. Richmond has some similarities to Redwood City in that the ferry terminal is somewhat remote from the core of Richmond and the service competes with BART just as the Redwood City service will compete with Caltrain. As a result, the estimated weekend day ridership (boardings) for the Redwood City – San Francisco route was 82% of the 1,290, year 2019, average weekday boardings or 1,130 boardings. The special event boardings were estimated in a similar fashion based on the characteristics of the Vallejo – San Francisco service. The Richmond – San Francisco route does not provide special event services, so Vallejo was used instead.

The ridership analysis revealed that regardless of the route, San Francisco or Oakland, the highest commute demand exists in the southbound direction in the AM peak hour period, and the northbound direction during the PM peak hour period, in both 2019 and 2040. The San Francisco to Redwood City has the highest ridership estimate for both the 2019 and 2040, and the San Francisco route would have a higher percentage of reverse commute direction travel as compared to the Oakland service.

Forecast Comparison

Table 4-2 shows how the forecast ridership for the two Redwood City ferry routes would compare with the year 2019 actual ridership on WETA services and with the forecasts for the planned Berkeley service, which is also currently in the process of business plan development.

Table 4-2: Comparison of Actual 2019 Ridership with Forecast Ridership for New Routes

Route	Weekday Boardings	Weekend Day Boardings
(forecast values for new routes shown in bold)		
Oakland/Alameda-San Francisco	5,047	4,120
Vallejo-San Francisco	4,081	1,983
Berkeley-San Francisco-Mission Bay	**2,020**	**1,270**
Berkeley-San Francisco	**1,830**	**1,150**
Harbor Bay-San Francisco	1417	-
Redwood City-San Francisco	**1,290**	**1,130**
Oakland-Redwood City	**850**	**-**
Richmond-San Francisco	813	680
Oakland/Alameda-South San Francisco	601	-
Berkeley-Larkspur (Weekend Service)	**-**	**490**

Source: Actual data from WETA 2019, Forecasts prepared by CDM Smith 2021

The weekday ridership forecasts for the two Redwood City routes fall between the 2019 actual riders for the Harbor Bay – San Francisco and the Richmond-San Francisco service. This suggests that, first, the ridership forecasts fall with the range of current ridership experience and are therefore reasonable from that perspective. And secondly, that the forecast ridership is similar to the ridership levels experienced on the Harbor Bay, Richmond and South San Francisco services in 2019.

Chapter 5
Equity Analysis

This chapter will review the public outreach efforts for this phase and discuss equity-related economic comparisons between the Peninsula and the East Bay.

Public Outreach

PlaceWorks led the outreach effort to engage the broader local communities in the planning of the ferry project.

Outreach Purpose

The purpose of the public outreach effort for the Business Plan is to help determine whether and how future ferry service can benefit historically underserved communities in and around Redwood City and/or desiring to travel to Redwood City from San Francisco and Oakland. Input from this phase complements the broader outreach findings reported in the Feasibility Study report. Outreach efforts during Fall 2021 have featured an online survey and booths at farmers markets in Redwood City and Oakland. This summary covers the following topics:

- Getting the Word Out
- Public Input Opportunities
- Analysis of Survey Results
- Key Themes

Getting the Word Out

To ensure that the community remains aware of the project, PlaceWorks prepared a handout in both English and Spanish for distribution at outreach events. The handout describes the potential future ferry service and shuttle connection from the Port of Redwood City and asks recipients to respond to the following questions:

1. Will the ferry service benefit you in some way?
2. Will the shuttle service benefit you in some way?
3. If the ferry and/or shuttle operate midday, at night, or on weekends, would that be useful to you?
    a. If you responded maybe, please explain, and feel free to add any comments such as a preference for Oakland or San Francisco as a destination and whether you might use the ferry for commuting, non-work travel, or both.

The handout invited recipients to submit their feedback in one of various ways:

- Take the online survey at: tinyurl.com/RWCferry or www.redwoodcityport.com/ferry
- Take a photo or scan each page of the survey and email it to lklein@placeworks.com
- Call the City at (650) 780-5957
- Drop off at City Hall (1017 Middlefield Rd) or the North Fair Oaks Library (2510 Middlefield Rd).

Public Input Opportunities

The Fall 2021 effort included outreach through various venues and platforms to target multiple communities and generate more input. These opportunities were:

- On-Site Survey Distribution
- In-Person Events
- Online Survey
- Redwood City Together Partnership

On-Site Survey Distribution

During the COVID-19 pandemic, most in-person events have been postponed or shifted to virtual settings. However, residents of historically underserved neighborhoods often lack access to technology required for participation in virtual events. Accordingly, PlaceWorks reached out to community members where they continue to visit during the COVID-19 pandemic: the Fair Oaks Community Center and the North Fair Oaks Library.

The Fair Oaks Community Center distributes food boxes monthly to households in need. PlaceWorks attended the October 8, 2021, distribution and packed 500 surveys into food boxes that were handed out during that day.

The North Fair Oaks Library continues to operate during the COVID-19 pandemic under safety precautions, and starting October 8, 2021, the library has been offering paper surveys with the questions listed above and providing a submittal box.

In-Person Events

PlaceWorks staff attended two events to spread the word about the project and solicit feedback: the Redwood City Kiwanis Farmers Market on Saturday, October 16, 2021, and the Oakland Jack London Square Farmers Market on Sunday, October 17, 2021.

Booth materials included paper surveys and a colorful 24”x36” board that provides high-level information about the project. Surveys were completed by 55 respondents at the markets, with the majority (76 percent) at the Redwood City Farmers Market.

Online Survey

PlaceWorks created a simple online survey in English and Spanish with the same questions as the handout distributed in person. The online survey is advertised on the City website, and 56 complete responses have been collected between October 22 and November 29, 2021.

Redwood City Together Partnership

PlaceWorks also partnered with Redwood City Together (RCT) to advertise the project and offer the survey in RCT's October e-newsletter. RCT is a collaborative that addresses complex community issues affecting Redwood City and North Fair Oaks residents. The e-newsletter included both English and Spanish information to ensure access for RCT's largely Spanish-speaking audience.

Analysis of Survey Results

While 119 complete responses have been collected thus far online and in-person, an additional 59 surveys have been partially completed online but not submitted. This section summarizes the survey results of completed responses and is organized by survey question.

Will the ferry service benefit you in some way?

Approximately 82% of respondents report that ferry service would benefit them in some way. An additional 14% answered "maybe," while the remaining 4% did not think the ferry would benefit them.

Will the shuttle service benefit you in some way?

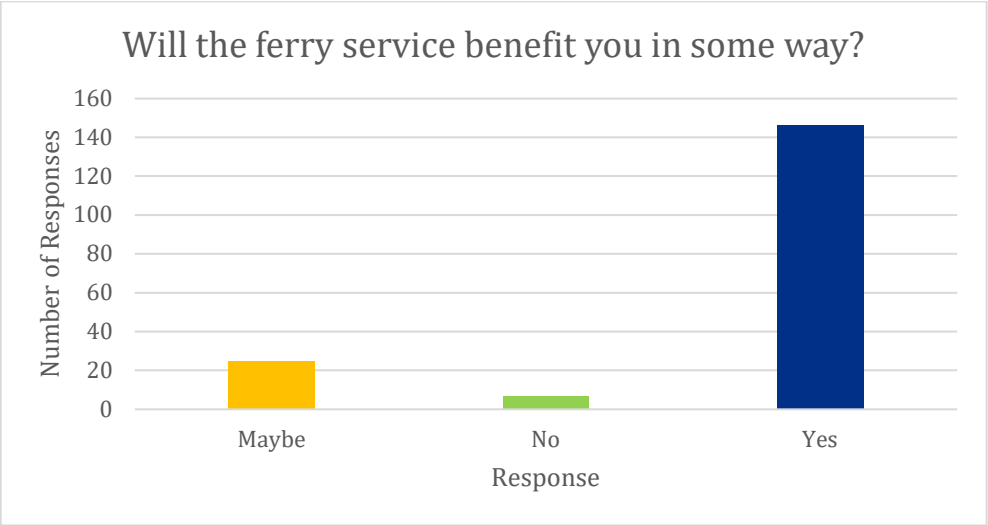
Approximately 59% of respondents report that shuttle service would benefit them in some way. An additional 26% answered "maybe," while the remaining 15% did not think the shuttle would benefit them.

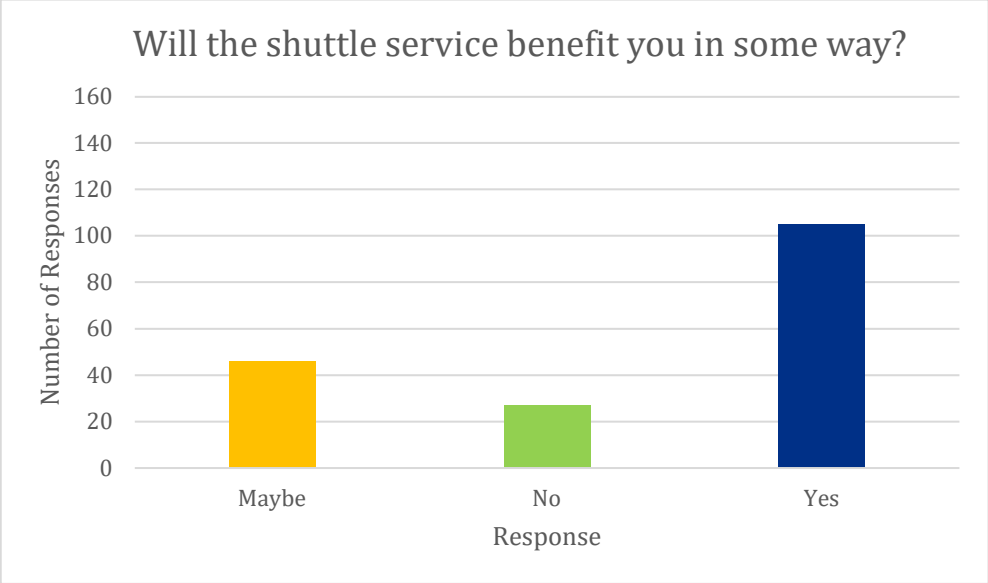
If the ferry and/or shuttle operate midday, at night, or on weekends, would that be useful to you?

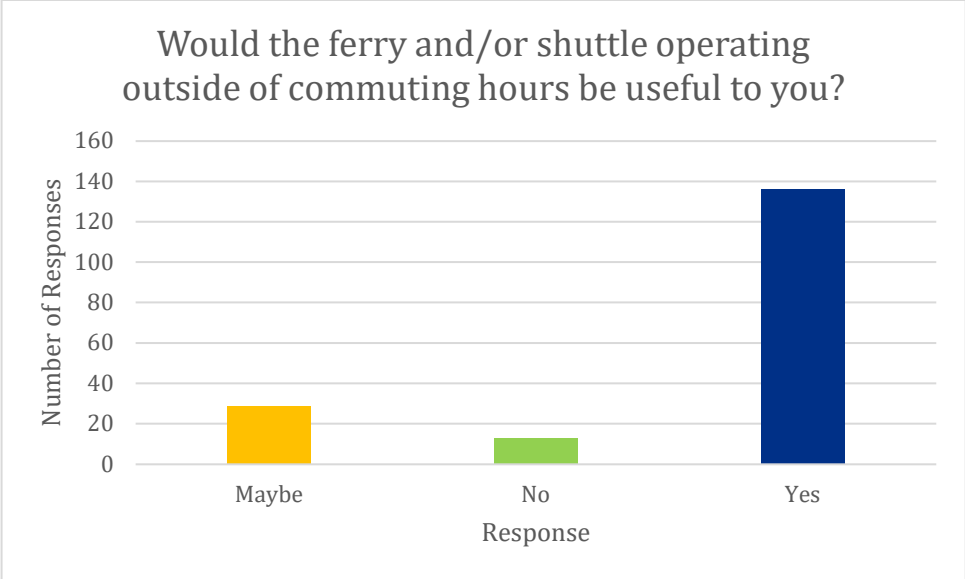
Approximately 76% of respondents report that midday, night, or weekend operation of the ferry or shuttle service would be useful to them. An additional 16% answered "maybe," while the remaining 8% did not think the off-peak commute services would benefit them.

Figure 5-1 displays the responses to these questions.

Figure 5-1: Survey Results



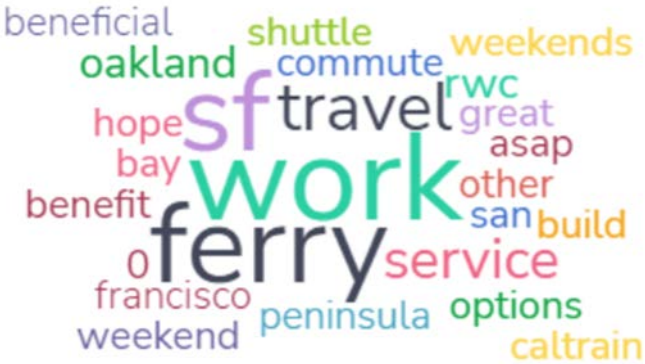




If you responded maybe, please explain, and feel free to add any comments, such as a preference for Oakland or San Francisco as a destination and whether you might use the ferry for commuting, non-work travel, or both

Forty-five people provided additional information about their personal preferences for travel, varying from requests for the ferry to allow dogs to recommendations that the project include construction of a bike route to the future Redwood City ferry terminal. A word cloud illustrating words commonly used in response to this question is displayed in **Figure 5-2**.

Figure 5-2: Open Ended Question Word Cloud



Key Themes

Overall sentiment suggests that historically underserved communities can indeed benefit from future ferry service connecting Redwood City to Oakland and San Francisco. Respondents in Oakland suggest that this new service could open employment opportunities for them on the Peninsula, and the Redwood City-area community indicates interest in both work and non-work travel via the ferry. Support for the associated shuttle service is also generally positive. Some respondents indicate they

would use the ferry if a parking lot were located near the Redwood City ferry terminal and/or if a safe bike connection is provided from Downtown Redwood City to the Port.

While travel patterns are still in flux due to the pandemic, survey takers widely agree that ferry travel is an attractive public transit option. Many respondents indicate that they are still working remotely, but they would consider using the ferry to commute upon returning to physical offices.

Water Resources Public Input Opportunities

The Port of Redwood City and the City of Redwood City held two additional meetings in January 2022 as a follow up to the meeting held in 2020. The purpose of both meetings was to hear from water, waterfront, and shoreline resource advocates and enthusiasts, including conservation and environmental representatives and both recreational and competitive rowers, sailors, paddlers, and swimmers. These meetings provided an opportunity to discuss concerns about future ferry service. Two events were advertised to the public using Eventbrite; one was held online on January 20th, 2022, while the other workshop was held in-person at the Port (460 Seaport Court) on January 26th, 2022.

Virtual Event

The virtual meeting was attended by 12 participants. Attendees included project staff (Water Emergency Transportation Authority, City of Redwood City, Port of Redwood City staff, and PlaceWorks), community members from neighboring cities, Bair Island Aquatic Center representatives, recreation and competitive water sports users, and environmental protection advocates. This meeting included a PowerPoint presentation by PlaceWorks Principal Charlie Knox and then an opportunity for participants to provide input about future ferry operations.

In-Person Event

This in-person meeting was attended by 10 community members, (plus project staff), again primarily representing Bair Island Aquatic Center, recreation and competitive water sports users, and environmental protection advocacy. This meeting included a roundtable-type discussion facilitated by PlaceWorks Principal Charlie Knox.

Key Themes

The majority of comments at these January 2022 two events addressed safety concerns over the magnitude of wakes from private ferries, which the participants have experienced creating unsafe boating conditions for human-powered craft, including capsizing of kayaks and paddle boards. The attendees called for low-speed zones and low/no wake zones as far out into the Bay as possible, with rapid and effective enforcement against any violators. Given staffing constraints faced by the Redwood City Police Department, some water users suggested implementing a community citation process and documenting with photos. Another suggestion focused on asking the U.S. Fish and Wildlife Service to consider re-opening a section of the inner channel for human-powered watercraft access to spread the boaters and paddlers across a wider area.

Participants also expressed concerns about marine and shoreline impacts that may arise as a result of ferry operations, especially since there are areas near the Port that are considered to be

environmentally sensitive. They suggested that dredging near the tidal marsh areas should be avoided and that ferry routes should be pinpointed to ensure they least impact environmentally sensitive areas. They also noted that minimizing wakes will also help protect shoreline habitats, plants, and animals.

Equity Considerations

Housing Costs

The mid-Peninsula's largest employers are in the technology and healthcare industries. In Redwood City, the County government complex and the Stanford in Redwood City campus are also major employers. Both industries rely on a highly educated workforce that commands high pay. High housing costs on the Peninsula require employers to further raise salaries to enable workers to live locally. The following sections document the regional salary and jobs-housing balance differentials affecting regional employment and commute patterns.

Regional Salary Differentials

Table 5-1 compares average salaries on the Peninsula (San Mateo and San Francisco Counties) with those in the East Bay (Alameda and Contra Costa Counties). The weighted average shows Peninsula salaries are about 23% higher than East Bay salaries. The most clustered Peninsula sector, Computer and Mathematical Occupations, commands a 13% premium.

Expanded access to areas with lower living and labor costs, such as the East Bay, would represent a positive economic impact on mid-Peninsula employers. By the same token, the new ferry service will positively impact East Bay residents, who gain increased access to higher-paying jobs on the Peninsula.

Table 5-1: Average Salary Comparison Between the East Bay and the Peninsula

Occupation Category	Average Salary (2020)		Number of Jobs		Peninsula Salary Premium
	Alameda and Contra Costa Counties	San Francisco and San Mateo Counties	Alameda and Contra Costa Counties	San Francisco and San Mateo Counties	
Management	$149,990	$171,965	81,060	116,890	15%
Business and Financial Operations	$92,190	$103,072	71,590	116,240	12%
Computer and Mathematical	$117,687	$132,509	51,100	108,320	13%
Architecture and Engineering	$106,030	$112,975	32,990	22,590	7%
Life, Physical, and Social Science	$98,582	$107,899	15,270	18,600	9%
Community and Social Services	$64,438	$68,398	17,930	16,510	6%
Legal	$136,591	$160,910	8,440	16,040	18%
Education, Training, and Library	$68,673	$76,237	70,580	55,000	11%
Arts, Design, Entmt., Sports, and Media	$67,681	$85,546	21,340	30,030	26%
Healthcare Practitioners and Technical	$114,681	$127,058	66,820	39,210	11%
Healthcare Support	$37,752	$39,536	71,860	38,930	5%
Protective Service	$68,632	$68,912	20,800	23,830	0%
Food Preparation and Serving Related	$35,310	$40,048	99,870	109,180	13%
Building and Grounds Cleaning/Maintenance	$45,796	$41,901	26,710	35,380	-9%

Occupation Category	Average Salary (2020)		Number of Jobs		Peninsula Salary Premium
	Alameda and Contra Costa Counties	San Francisco and San Mateo Counties	Alameda and Contra Costa Counties	San Francisco and San Mateo Counties	
Personal Care and Service	$39,445	$41,287	26,260	24,990	5%
Sales and Related	$52,883	$67,552	107,510	97,530	28%
Office and Administrative Support	$52,467	$57,159	136,810	134,410	9%
Farming, Fishing, and Forestry	$39,327	$40,694	1,180	930	3%
Construction and Extraction	$77,160	$78,830	58,430	35,310	2%
Installation, Maintenance, and Repair	$63,957	$66,893	40,480	25,610	5%
Production	$49,781	$48,645	66,080	21,780	-2%
Transportation and Material Moving	$46,078	$54,978	97,870	74,610	19%
Total Jobs/Weighted Avg Peninsula Premium	**$70,337**	**$86,481**	**1,190,980**	**1,161,920**	**23%**

Source: California Employment Development Department, Occupational Employment Statistics and Wages by Metropolitan Division, 2020 1st Quarter.

Regional Jobs-Housing Balance

The housing affordability crisis in the Bay Area is well documented. Housing costs are a key consideration in selecting where to live as an employee and where to establish a firm as an employer. From an employee standpoint, high housing costs often result in living farther away where housing is more affordable, accepting the trade-off of a long commute.

The regional jobs-housing imbalance will worsen as continued job growth outpaces new housing development. Between 2010 and 2015 San Mateo County added 72,500 total jobs but permitted the construction of 8,000 housing units and built only 3,844 new housing units, meaning that most new commuters to the county must live elsewhere.[9] A high jobs-housing imbalance contributes to inadequate housing supply, unaffordability, and in-commuting traffic congestion.

As shown below, Oakland has the smallest jobs-housing imbalance among the jurisdictions considered, suggesting better housing affordability. Although suffering from the same affordability challenges as the rest of the region, the East Bay offers a relatively lower cost of living than the Peninsula, as shown in **Table 5-2**.

[9] "Moving San Mateo County Forward – Housing and Transit at a Crossroads," Housing Leadership Council and TransForm, June 2018.

Table 5-2: Housing Cost Comparison Between Key Geographies

	Oakland	Redwood City	Alameda County	San Mateo County
Total Housing Units [1]	175,457	31,536	611,752	280,879
Labor Force [2]	355,658	68,178	1,335,756	622,386
Jobs Housing Balance [3]	2.03	2.16	2.18	2.22
Median Income [4]	$68,442	$107,469	$119,200	$143,100
Average Asking Rent [5]	$1,906	$2,789	$2,090	$2,679
Zillow Home Value Index [6]	$790,238	$1,572,431	$874,856	$1,368,711

Sources: California Department of Finance; American Community Survey, California Department of Housing and Community Development; Costar; Zillow; Economic & Planning Systems, Inc.

(1) California Department of Finance, 2020 Estimates.

(2) ACS 2018 5-Year Estimates.

(3) Number of jobs number of housing units.

(4) California Department of Housing and Community Development, 2020 Income Limits.

(5) Derived from Costar.

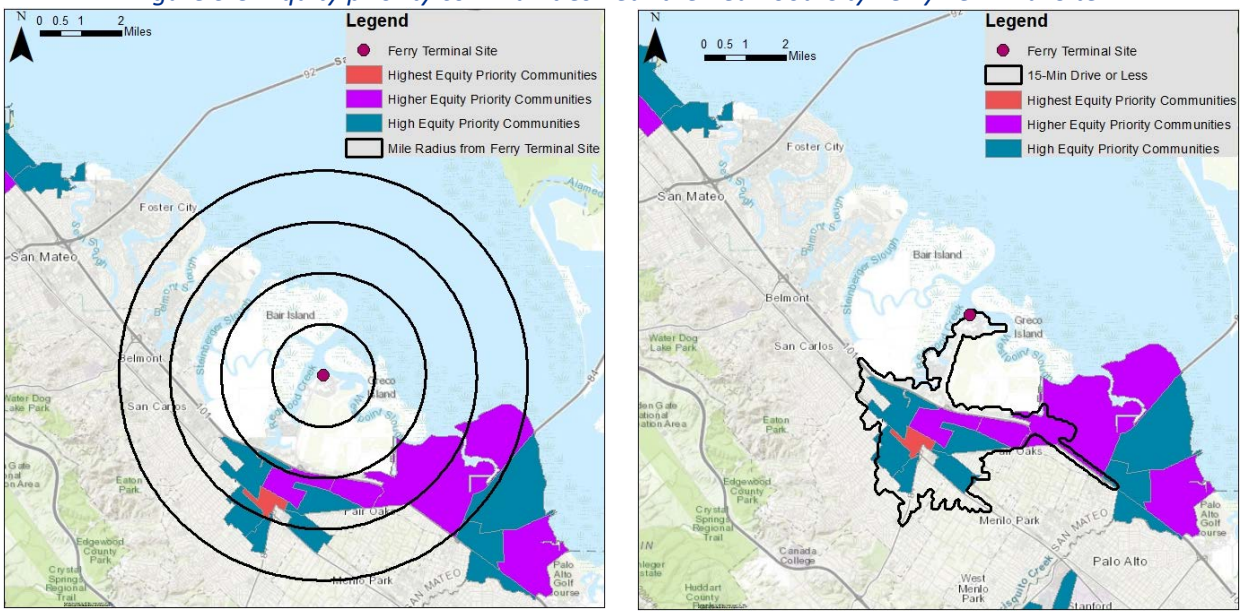
(6) Zillow Home Value Index is a smoothed, seasonally adjusted measure of home value and market changes.

Equity Priority Communities

MTC has identified equity priority communities, which are census tracts that have a significant concentration of populations that have historically faced disadvantage and underinvestment. This process is part of MTC's Equity Platform, which seeks to reverse disparities in access and dismantle systemic exclusion.

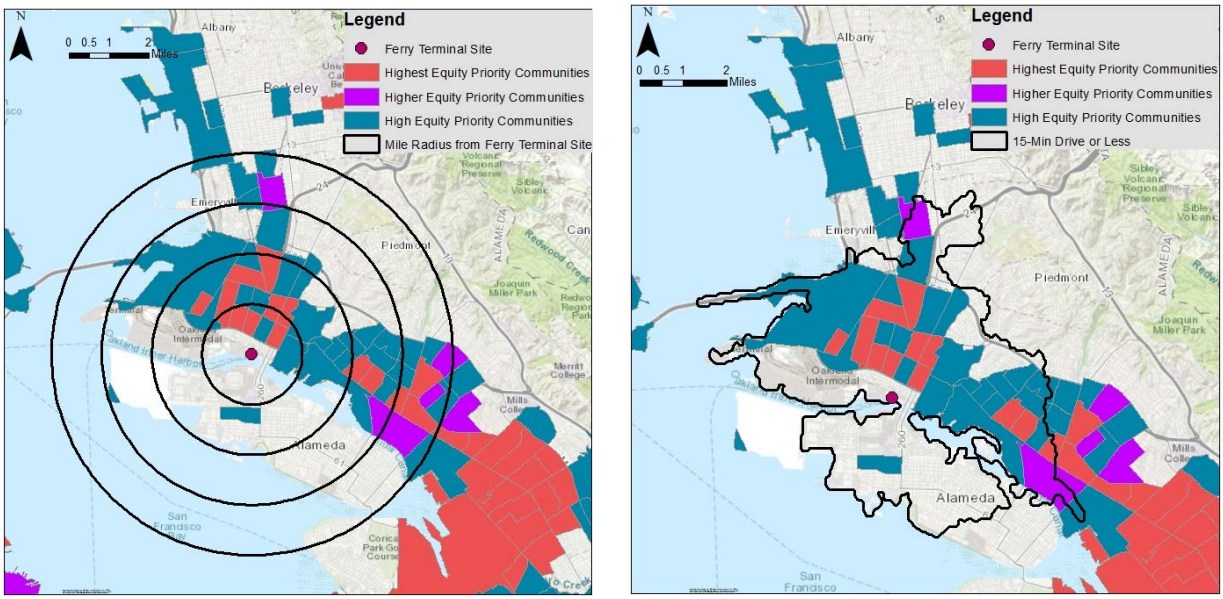
Figure 5-3 shows two maps of the equity priority communities near the Redwood City ferry terminal site. The equity priority communities are broken into three categories which display the standard deviation above the Plan Bay Area 2050 threshold for underserved populations. High is half a standard deviation above, higher is one standard deviation above and highest is 1.5 standard deviation above the threshold. The first map shows the boundary within a 15-minute drive or 30–40-minute bike trip from the terminal site. The second map shows four concentric rings around the ferry terminal site, each representing one mile.

Figure 5-3: Equity priority communities near the Redwood City Ferry Terminal Site



This analysis shows that there are nine equity priority communities within a 15-minute drive or 30–40-minute bike trip from the ferry terminal site and ten communities that are within a four-mile radius. **Figure 5-4** shows equity priority communities near the Oakland ferry terminal using the same distance-based parameters.

Figure 5-4: Equity Priority Communities Near the Oakland Ferry Terminal



This analysis shows that there are 36 equity priority communities within a 15-minute drive or 30–40-minute bike trip from the Oakland ferry terminal and 51 communities that are within a four-mile radius.

Overall Takeaways

Based on survey responses and data analysis, there are clear benefits to creating more connections between Redwood City, the East Bay, and San Francisco. This ferry service could help employees move to areas of the Bay Area where housing prices aren't as high, as well as open opportunities for current residents to work in the Peninsula. Redwood City residents have also responded that outbound ferry services would be useful for work and non-work trips. Lastly, there are many underserved communities within proximity to the Oakland ferry terminal and the potential Redwood City ferry terminal. Overall, Redwood City ferry services would be helpful to offer new mobility options to these equity priority communities.

Chapter 6

First-Last Mile Plan

Due to the location of the ferry terminal site, as well as the expectation that most of the ridership will have Redwood City as their destination, it is crucial that last-mile services are available. At the same time, providing first-mile opportunities will support Redwood City's, sustainability, mobility and equity goals by providing residents with mobility options that don't rely on a personal vehicle. This chapter follows two parallel tracks for transit/shuttle services and active transportation. The first subsection reviews the existing condition of shuttle services that operate in the area of the ferry terminal site. It will then review potential improvements and explain the options for a shuttle service plan. The active transportation subsection describes the results of an active transportation gap analysis for the current routes to key areas and major employers in Redwood City and surrounding cities. Based upon this data, improvements to the active transportation network are identified.

Transit/Shuttle Services

Existing Conditions

There are several existing transit and shuttle services that operate near the ferry terminal site, as shown in **Table 6-1** and described below.

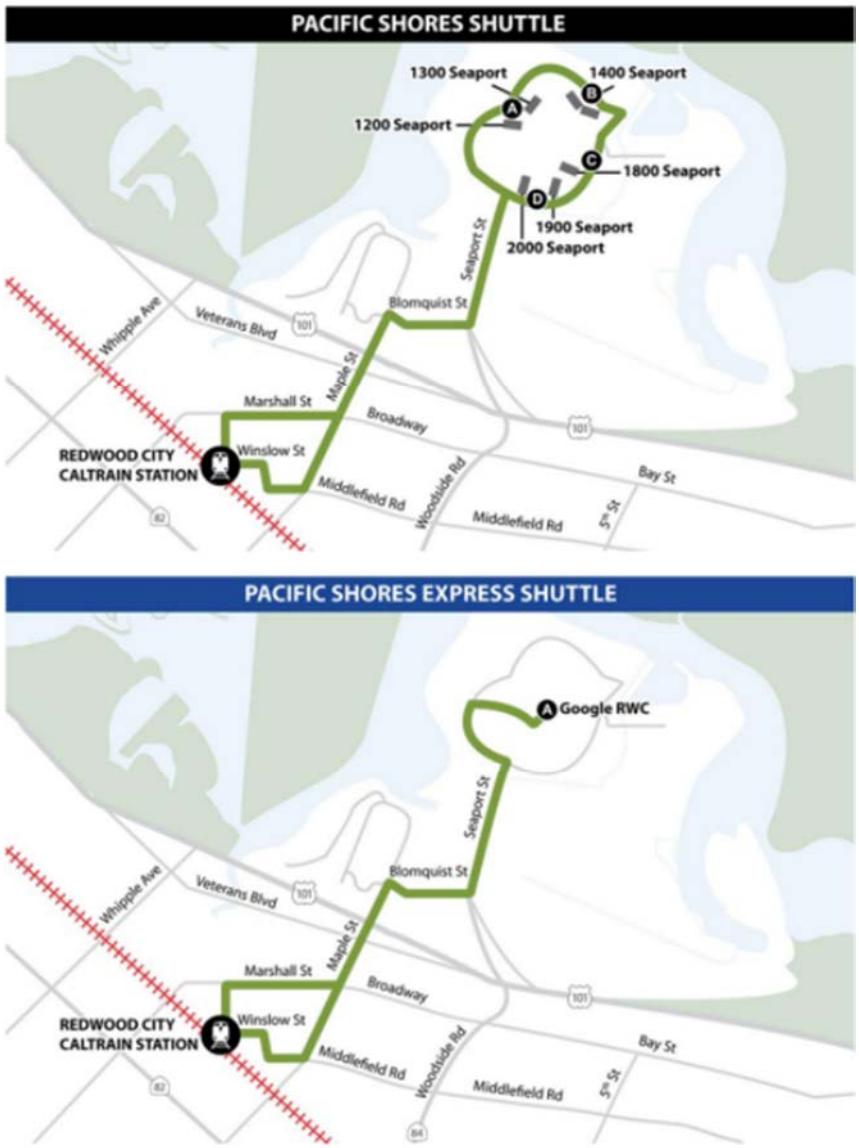
Table 6-1: Existing Transit and Shuttle First-Mile/Last-Mile Linkages

Linkage	Route	Provider	Span	Key Connections
Shuttle	Pacific Shores Shuttle	Google	AM/ PM Rush Hours	Redwood City Caltrain Station
Shuttle	Seaport Centre Shuttle	Commute.org	AM/ PM Rush Hours	Redwood City Caltrain Station
Public Bus	270	SamTrans	6:30 AM to 7:30 PM	Redwood City Caltrain Station/ Kaiser Hospital, Redwood Village

Pacific Shores Shuttle

The Pacific Shores Shuttle operates between the Redwood City Caltrain station and the Pacific Shores Center. The shuttle is timed to meet specific Caltrain arrivals in the morning and departures in the evening. Currently it operates two routes, one that makes four stops which serve different areas of the Pacific Shores Center, and one which only stops at Google's offices within the center. The longer route has a run time of 15 to 25 minutes from the Caltrain station to the final stop, with the express Google route taking between 10 to 20 minutes. Combined, these routes operate 13 morning trips from 6:52 AM until 11:00 AM and 12 evening trips from 3:45 PM to 8:04 PM. This schedule has been modified to reduce the hours of operation due to the reduced number of on-site employees during the COVID-19 pandemic.

Figure 6-1: Pacific Shores Shuttle Route Maps



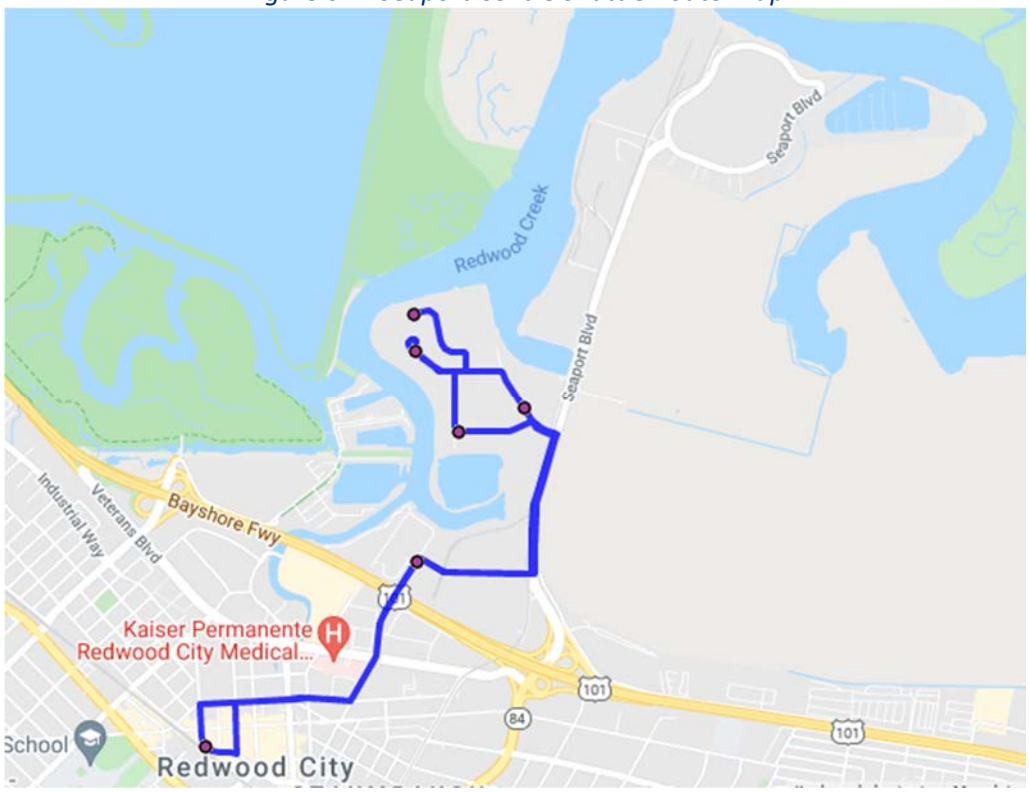
(https://www.smctd.com/shuttles)

Google is one of the major property owners on site, so both routes are managed by Google, though it is free and open to the public. The shuttle is jointly funded by the Peninsula Corridor Joint Powers Board, the Bay Area Air Quality Management District and Google, making it a public/private venture.

Seaport Centre Shuttle

This shuttle serves Seaport Centre, which is a business center roughly one mile south of Pacific Shores Center. It also connects to the Caltrain station and is scheduled to meet trains during the morning and evening rush periods. The shuttle makes five stops within the Seaport Centre and one stop near the Maple Street Correctional Center, with travel times between 15 and 25 minutes. There are six trips for the morning commute, running from 6:35 AM to 9:12 AM and six evening trips, operating from 3:37 PM to 5:55 PM.

Figure 6-2: Seaport Centre Shuttle Route Map



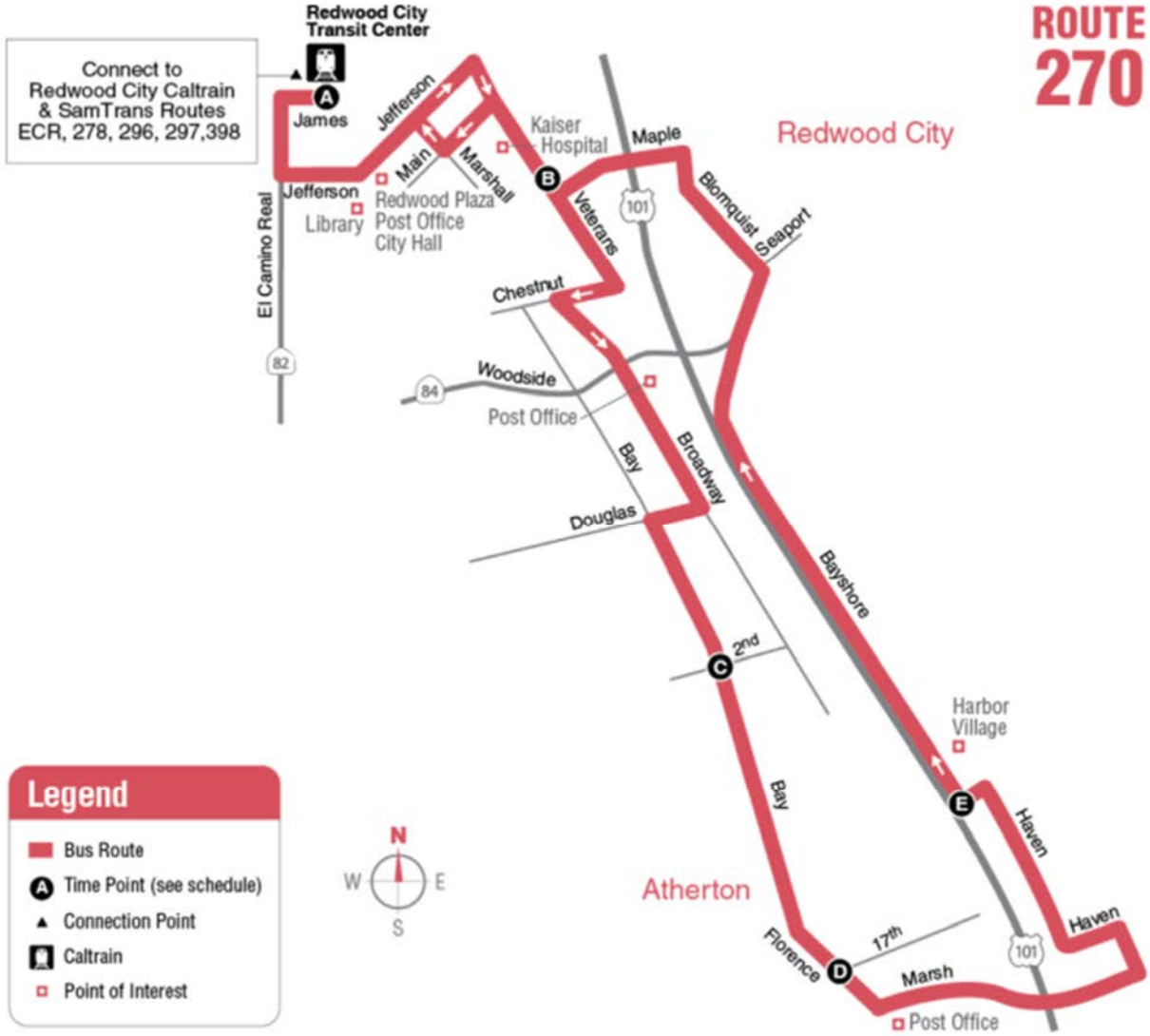
(https://commute.org/route/seaport-centre/)

This service is operated by commute.org and is free to the public. As with many commute.org services, funding comes from both public and private entities. CBRE is the largest private funder since they are the property managers for the Seaport Centre. Public funding sources include the Bay Area Air Quality Management District, San Mateo County Transportation Authority, and the City/County Association of Governments of San Mateo County.

SamTrans Route 270

The public bus route which stops closest to the ferry terminal site is SamTrans Route 270. This service operates as a loop out of the Caltrain station, heading east down Broadway and Bay Road before turning north on Marsh Road and heading back west East Bayshore Road. The closest stop Route 270 makes to the ferry terminal site is on East Bayshore Road near the intersection with Seaport Boulevard, about two miles away. From here, the route heads back downtown, stopping at Kaiser Hospital. This service operates hourly from 6:30 AM until 6:30 PM, making a total of 13 trips.

Figure 6-3: SamTrans Route 270 Map



(https://www.samtrans.com/schedulesandmaps/timetables/270.html)

Potential Improvements

There are several options for providing shuttle and transit services, each with benefits and drawbacks. These are described in **Table 6-2**.

Table 6-2: Transit Improvement Options

Option	Description	Benefits	Drawbacks
Incorporate Pacific Shores Shuttle	Adjust the service schedule to meet ferry arrivals/departures	▪ Provides a connection to Downtown ▪ Builds efficiency with an existing service (fills empty 'reverse commute' seats) ▪ Reduces operational costs compared to a new shuttle ▪ Leverages private funding	▪ Could be difficult to align schedule ▪ May require more shuttle trips to meet both ferries and Caltrain ▪ Requires coordination with private businesses
Extend Seaport Centre Shuttle	Extend the route to ferry terminal site to meet ferry arrivals/departures	▪ Provides connections to Seaport Centre and Downtown ▪ Builds efficiency with an existing service (fills empty 'reverse commute' seats) ▪ Reduces operational costs compared to a new shuttle ▪ Leverages private funding	▪ Could be difficult to align schedule ▪ May require more shuttle trips to meet both ferries and Caltrain ▪ Requires coordination with private businesses
Create New Service	Create a new shuttle service to make desired connections	▪ Full control of scheduling ▪ Can select locations to serve ▪ Could create a service that serves multiple purposes	▪ Partnerships for funding will be needed ▪ High operational costs
Promote Direct Employer Shuttles	Encourage large employers to provide shuttle service	▪ Requires no public funding commitment to	▪ No public control over service decisions ▪ Employer shuttles likely will only serve each employers' staff
Extend SamTrans Route 270	Extend runs to the ferry terminal site that would align with ferry schedules	▪ Increases potential service area ▪ Creates a link to the public transit system	▪ Coordination with ferry schedule could be difficult ▪ SamTrans cost per hour is higher than for shuttles ▪ Increases travel time for people not going to the ferry
Study On-Demand Service	Study the feasibility of an on-demand shuttle service within Redwood City	▪ Directly connects all Redwood City residents to the ferry terminal ▪ Increases connectivity to all parts of Redwood City	▪ Increases local costs ▪ Could require a new management structure

From a route design perspective, incorporating the Pacific Shores shuttle would be the easiest to implement. The route already makes several stops very close to the ferry terminal site. Since the route is open to the public, but managed by Google, Google will have to agree to align the stopping pattern so that the service is convenient for ferry riders, as it currently is for Caltrain customers. If this can be addressed, the service would provide a link to Downtown Redwood City. Incorporating this route into

serving ferry passengers would increase the efficiency of this route, as the shuttles are largely or entirely empty during their 'reverse-peak' runs.

Extending the Seaport Centre shuttle to the ferry terminal site would require adjusting the existing schedule to include the ferry terminal. Providing service to passengers would require an extra five minutes of run time in each direction. As this route is managed by commute.org, partnering to extend this service to the ferry should be a simple process, though additional funding may be needed. The route would provide connections from the ferry to the Seaport Centre as well as Downtown Redwood City. Incorporating this route into serving ferry passengers would increase the efficiency of this route, as the shuttles are largely or entirely empty during their 'reverse-peak' runs.

The two existing nearby shuttle services are largely oriented around Downtown Redwood City. In order to serve other parts of the city and nearby areas such as the Fair Oaks community by shuttle, a new route would need to be created. This option would be beneficial in that the route could be tailored primarily to serve ferry arrivals and departures. It could also serve multiple areas of the city while traveling to/from the terminal. The major drawback is creating a new shuttle route is much more expensive than leveraging an existing route (see below for potential expenses) and private sector participation may be more difficult to obtain.

SamTrans Route 270 currently stops about two miles from the ferry terminal site. It runs on an hourly schedule throughout the day in a loop pattern to and from Downtown Redwood City. Extending the route to serve the ferry terminal could be beneficial to ferry customers if the bus schedule aligned with ferry service. This would provide a ferry connection to more areas of Redwood City as well as neighboring Atherton. The drawbacks are that it could be difficult to align schedules, that it is more expensive to add service hours to SamTrans buses than for shuttles, and that buses that are re-routed to serve the ferry would add travel time for existing passengers.

Many large Bay Area companies operate their own shuttle network exclusively for their employees. Some shuttles run short routes that connect a given company's office center to the nearest major transit hub. The major employers (Oracle, Electronic Arts, Google, Facebook, Stanford, etc.) are known to do this, and it can be presumed that if enough employees used the ferry to arrive in Redwood City, then a company shuttle route would be implemented. To account for this, the shuttle pick-up/drop-off area at the terminal site should be built to safely accommodate multiple shuttles at a time.

A tangential option would be to leverage a potential Stanford University shuttle to provide a connection for residents. Stanford currently operates Line RWC during the midday as part of their Marguerite shuttle system. While designed for Stanford students and staff, the Marguerite is free to the public. Line RWC runs on a 30-minute frequency, connecting the Stanford Redwood City campus to the Caltrain station. During commuting hours, the commute.org shuttle operates the Midpoint line, which runs an identical route. Once the ferry terminal opens, there could be an opportunity to collaborate with Stanford to operate a shuttle that connects the campus to the ferry. There are just under 7,000 nearby residents of working age that could potentially benefit from a shuttle to access the ferry outbound from Redwood City.

One other option to consider is to study the feasibility of a microtransit network. Microtransit is an on-demand service in which transit vehicles don't operate on fixed routes. Instead, they respond in real time to trip requests from riders. Typically, rides are requested using an app and are limited to a defined geographical area. Several nearby municipalities are exploring microtransit systems. Cupertino inaugurated its Via Cupertino program in 2019, charging $4 for a one-way fare with a half price fare for seniors, students, low-income and disabled persons. Vehicles, which are small vans, operate from 7 AM to 7 PM on weekdays. Via Cupertino provides door-to-door service, operating within Cupertino city limits and several nearby destinations. Palo Alto will begin a microtransit program in the summer of 2022. Partially funded by a grant from the Santa Clara Valley Transportation Authority, the program will have designated pick-up/drop-off points as well as door-to-door service.

Concept Service Plan

The shuttle access plan for the ferry terminal should, at minimum, utilize three of the six options described above. Extending the Seaport Centre Shuttle would provide a crucial link to Downtown Redwood City, as well as connect to the Seaport Centre office park. As this route is managed by commute.org, there will be a smoother path to creating a service plan that benefits both Caltrain and ferry riders. This route can also benefit Redwood City residents, as the Redwood City Transportation Center serves as a hub for local bus routes and shuttles. As previously mentioned, partnering with an existing shuttle route saves on costs.

This option may be preferable to incorporating the Pacific Shores Shuttle for several reasons. While the Pacific Shores Shuttle is open to the public, it is managed by Google. This means that the shuttle is not as publicly advertised as the Seaport Center Shuttle; as an example, the Seaport Center Shuttle stops and schedule are visible on Google Maps, while the corresponding data for the Pacific Shores Shuttle is not. Finally, extending the Seaport Centre Shuttle means that Seaport Centre would be a shuttle option for inbound ferry commuters, as well as Downtown Redwood City. However, at this point it would be best to explore both the modification of the Google operated Pacific Shores shuttle, and the extension of the commute.org Seaport Centre Shuttle.

As part of the future SMCTA AND C/CAG Joint Shuttle Program, SamTrans will providing a review of all proposed shuttle routes to identify potential recommendations for service modifications and to ensure overlap with SamTrans services are minimized. Access to a future ferry terminal could be incorporated during this process by way of a condition of approval for potential services if not proposed directly as part of a shuttle application. Coordinating with regional transit connections including the future ferry service would be required to be eligible for Shuttle funding likely for these two routes. Furthermore, a requirement of the next shuttle call for projects from SMCTA and C/CAG will be for all publicly funded shuttles make data available so that they are visible on Google Maps.

A transit connection between the ferry terminal and Downtown Redwood City is vital, as a stop located adjacent to the Caltrain station would serve a wide range of employers including:

- County of San Mateo
- Kaiser Foundation Hospitals & Clinics

- Box, Inc.
- Redwood City School District

While there are existing Caltrain shuttles that serve Redwood Shores, it would be difficult to modify these shuttle routes to also serve the new ferry terminal. However, the idea of creating a new shuttle route between Redwood Shores and the ferry terminal should be explored with Oracle and the other Redwood Shores employers.

It is reasonable to anticipate that major employers would send shuttles to the ferry terminal to pick up their employees. This option should be pursued as it would be much more costly and duplicative to design and operate a publicly funded shuttle route that would provide service to companies like Oracle, Facebook or Stanford Redwood City. As this project progresses, major employers should continue to be informed and encouraged to provide these services.

It could be worthwhile to extend some of the trips run by SamTrans Route 270 to serve the ferry terminal. It would likely be unnecessary to change every trip to serve the ferry terminal, as there will be gaps in ferry service during the middle of the day, but if the schedule aligns then some of the peak period trips could make useful connections. As the project progresses and the ferry schedule nears finalization, it could be worthwhile to collaborate with SamTrans management to assess the feasibility of this concept.

One final consideration would be for Redwood City, in coordination with commute.org and SamTrans, to explore microtransit as an option to connect all parts of the city to the ferry terminal. This network would be useful for many other trip purposes and destinations, so it would need to be packaged with a larger mobility effort. There are three main avenues to operate this system. The first would be door-to-door service, with riders being able to input their exact point of origin and destination. This would be most beneficial to individual riders, but the specialization of trips would make the system more difficult to operate. The second option is to assign designated hubs throughout the geographic area. One hub per neighborhood could be selected centered around community centers, schools, medical facilities or transit centers. A third option would be what Vine Transit did for its microtransit effort in the City of Napa. Riders can select a trip between any two designated bus stops in the city limits. This provides for convenient boarding and alighting locations that are well known by bus operators.

Based on information from commute.org, operating costs for the shuttle services they manage run between $90-$120 per service hour. This estimate includes vehicle, labor, insurance, fuel and maintenance costs. If the service is operated as part of a larger network, as at commute.org, then the additional administrative cost is between 5% and 10% of the service hour cost. SamTrans estimates that operating costs for bus services are about $200 per service hour.

The Seaport Centre route totals roughly eight service hours per day[10] The costs of these eight hours are already covered by existing funding sources. It is likely that more service hours would be needed. If so, it will be necessary to obtain more funding, possibly from new sources.

[10] These costs are estimated to be: $924 per day, $4,620 per week, $20,020 per month, $240,240 per year. This is a rough estimate for the funding that would be necessary to operate a new shuttle route.

To calculate additional costs, $105 was used as the average cost per service hour. If one extra service hour was required, the additional expenses are estimated to be:

- $116 per day
- $578 per week
- $2,503 per month
- $30,030 per year

If two extra services hours were required, the additional expenses are estimated to be:

- $231 per day
- $1,155 per week
- $5,005 per month
- $60,060 per year

If a new shuttle route were pursued, then a new funding mechanism would be necessary. **Table 6-3** describes the sources and formats of shuttle funding in the region.

Table 6-3: Shuttle Funding Options

Source	Formats	Current Examples
San Mateo County Transportation Authority	▪ Competitive funding program ▪ Measure A funds	Providing funds to Commute.org for shuttle operations
City/County Association of Governments of San Mateo County	▪ Direct funding	Providing congestion relief funding to Menlo Park for shuttle operations
Bay Area Air Quality Management District	▪ Direct funding	Providing AB 434 funds to Commute.org for shuttle operations
Caltrans	▪ Pilot Programs	San Ramon Business Park autonomous shuttle pilot
Redwood City	▪ Direct funding ▪ TMA founding	Redwood City could directly provide funding for a dedicated shuttle. It could also lead the effort to establish a TMA that includes employer funding of shuttle operations.
Private Employers	▪ Direct funding	Local employers provide funding for shuttles that benefit their needs but are also open to the public

Existing data sources can be utilized to provide a rough forecast for the number of ferry passengers that would connect with shuttles in Redwood City. In the fiscal year before the COVID-19 pandemic, the commute.org shuttle program of 20 routes totaled 590,500 annual passenger trips. This means that the average shuttle route provided just under 30,000 passenger trips per year, or about 55 unique passenger trips per weekday.

The closest analogue to a Redwood City ferry shuttle service would be the routes that serve the South San Francisco ferry terminal. The last WETA passenger survey that catalogued riders on the

South San Francisco route found that 22% of passengers utilized a shuttle upon arrival. It would be reasonable to expect that this would be the minimal mode share in Redwood City, as the South San Francisco ferry terminal has more employment centers within walking distance or a short bike ride. The previous feasibility study estimated that initial ferry service would bring 820 daily riders to Redwood City. A 22% share would represent 180 ferry riders that would utilize a shuttle.

Active Transportation

Existing Conditions

The Seaport Boulevard Bike Path/Sidewalk is the major link that connects the ferry terminal site to the rest of the nearby bicycle network. This shared use path runs the length of Seaport Boulevard from East Bayshore Road to the Pacific Shores office center. It is on the east side of the roadway, with a width of about six feet. The shared use path is separated from the roadway and frequently has trees or landscaping in the area between the path and road. There are a few low-volume driveways across the path that access the adjacent salt ponds, otherwise it has no grade crossings. From end to end, the path is about 1.35 miles long. The Caltrans Highway Design Manual states that Class I bike paths shall be at least eight feet wide. As the path is only six feet wide, it's likely that it would need to be upgraded to serve a higher volume of cyclists.

Active Transportation Gap Analysis

Active transportation will be a critical component of providing access to the ferry terminal site. As such, a gap analysis was performed to understand the current gaps in the cycling network. Because of the distance, it is presumed that most travelers would need to use a bicycle, scooter or other non-pedestrian active transportation mode. The following locations were reviewed for this analysis:

- Downtown Redwood City (Broadway and Winslow Street)
- Stanford Redwood City (Broadway and Barron Avenue)
- Redwood Shores/Oracle (Oracle Building 500)
- Facebook (Facebook Headquarters)
- Fair Oaks (Fair Oaks Community Center)

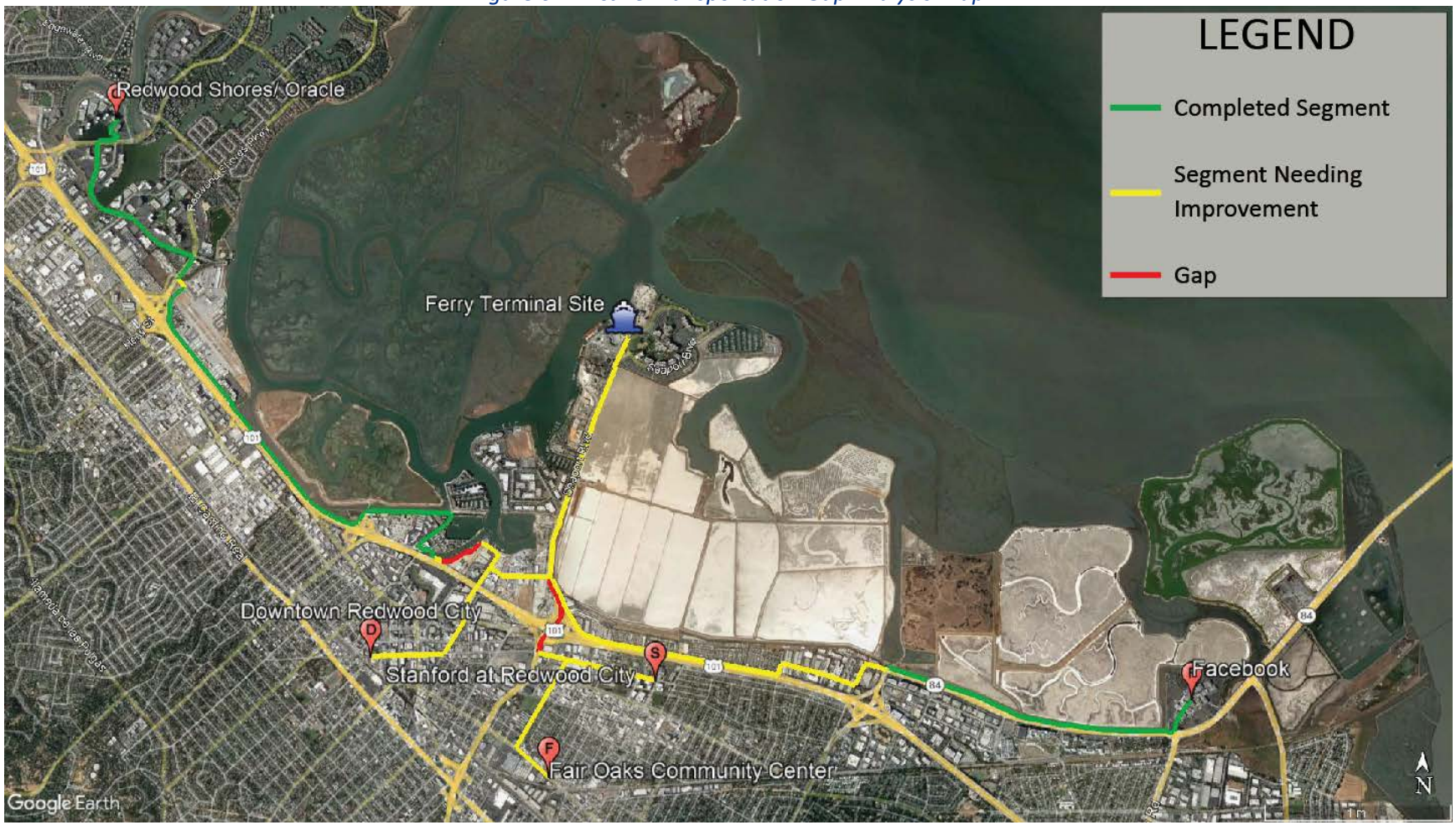
Table 6-4 describes the connections and gaps in the cycling routes between these locations and the Redwood City ferry terminal site. The table is color coded; green signifies a complete connection, yellow signifies a connection needing improvements, red signifies a gap. **Figure 6-4** shows these connections and gaps.

Table 6-4: Active Transportation Connections and Gaps

Location	Segment	Issue	Length
Downtown	Seaport Boulevard Shared Use Path	Will need upgrades for increased traffic	1.35 miles
	Blomquist Street Bike Lane	Industrial area, on-street truck parking, narrow bike lanes	.3 miles
	Maple Street Sharrows b/w Blomquist Street and Broadway	Sharrows only	.5 miles
	Broadway Sharrows	Two lane road, one lane each direction, sharrows only	.4 miles
Stanford at Redwood City	Seaport Boulevard Shared Use Path	None	2 miles
	Seaport Boulevard/Woodside Road under 101 to Broadway	No bike lane, underneath freeway with entrances and exits	.5 miles
	Broadway Bike Lane/ Sharrows	Roadway is primarily sharrows	.7 miles
Redwood Shores/Oracle	Seaport Boulevard Shared Use Path	None	2 miles
	Blomquist Street Bike Lane	Industrial area	.3 miles
	Maple Street Sharrows north of Blomquist Street	Sharrows only	.2 miles
	Docktown Marina	Informal road	.3 miles
	Cycling/pedestrian bridge	Dirt path, steep grade leading to bridge	.1 mile
	Path at Courtyard by Marriott	None	.1 mile
	Bair Island Road Shared Use Path	None	.3 mile
	SF Bay Trail	None	1.5 miles
	Skyway Road Sharrows	None	.9 miles
	Airport Way Bike Lane	Lack of a curb leads to debris spreading into the bike lane	.06 miles
	Holly Street Bike Lane	None	.2 miles
	Twin Dolphin Drive Bike Lane and/or Path	None	1.1 miles
	Oracle Shared Use Path around lake	None	.2 miles
Facebook	Seaport Boulevard Shared Use Path	None	2 miles
	E Bayshore Road Bike Lane/ Sharrows	High vehicle volume and speed	1.5 miles
	Sleepy Hollow Lane/ Sharrows	High vehicle volume and speed	.04 miles
	Haven Avenue Bike Lane/ Sharrows	High vehicle volume and speed	.7 miles
	Bedwell Bayfront Park Recreation Path	None	1.6 miles
	Connection Path to Facebook campus	None	.2 miles
Fair Oaks	Seaport Boulevard Shared Use Path	None	2 miles
	Seaport Boulevard/Woodside Road under 101 to Broadway	No bike lane, underneath highway with freeway entrances and exits	.5 miles
	Broadway Bike Lane	None	.2 miles
	Charter Street Sharrows b/w Broadway and Middlefield Road	Sharrows only	.5 miles
	Middlefield Road Sharrows east of Charter Street	Sharrows only	.2 miles

- Indicates a complete connection
- Indicates a segment needing improvement
- Indicates a gap

Figure 6-4: Active Transportation Gap Analysis Map



These gap segments were compared to Redwood City's 2018 plan *RWCmoves*, which includes a prioritization of transportation projects and programs within city boundaries. These projects will need to be developed in more detail and refined to reflect specific needs and costs to provide access to the ferry terminal site. **Table 6-5** shows the results of this comparison.

Table 6-5: Comparison of Gaps to Identified Projects

Gap Segment	RWCmoves Project	RWCmoves Project No.	Cost Estimate	RWCmoves Priority
Seaport Boulevard Shared Use Path	Seaport Boulevard Bicycle Path	18	$101,000-$750,000	Tier 2
Seaport Boulevard/Woodside Road under 101 to Broadway	Woodside Road Bicycle Safety Improvements	26	$101,000-$750,000	Tier 2
	Woodside Road Complete Street Corridor Study	31	$101,000-$750,000	Tier 1
Maple Street Sharrows	Maple Street Corridor Improvements	41	$101,000-$750,000	Tier 2
Broadway Sharrows	Broadway (between El Camino Real and Main Street) Corridor Complete Street Improvements	30	$751,000+	Tier 2
	Broadway (between Main Street and Chestnut Street) Corridor Complete Street Improvements	33	101,000-$750,000	Tier 2
Docktown Marina, Maple Street Sharrows north of Blomquist Street, Cycling/pedestrian bridge	Blomquist Street Extension	107	$751,000+	Tier 2
Middlefield Road Sharrows	Middlefield Road (South of Woodside Road) Corridor Study	36	101,000-$750,000	Tier 1
E Bayshore Road Bike Lane/ Sharrows	E. Bayshore Road Corridor Improvements	20	$101,000-$750,000	Tier 2

There are several segments that are scheduled to be improved due to planned development or are not directly addressed by RWCmoves:

- Docktown Marina, Maple Street Sharrows north of Blomquist Street, Cycling/pedestrian bridge
- Blomquist Street Bike Lane
- Charter Street sharrows between Broadway and Middlefield Road

The segment along the Docktown Marina runs along an informal road with no cycling infrastructure. When the road ends, a dirt path leads riders to a pedestrian bridge over Redwood Creek. This will be improved by the 1548 Maple Street residential development project, which will create 131 townhome-style residential units along Redwood Creek. The project developers will also construct a formal bike path that continues the Bay Trail along the waterfront to Maple Street. This project has been fully approved and is awaiting construction.

Blomquist Street is a crucial cycling facility that connects Downtown Redwood City to Seaport Boulevard. While there are bike lanes on both sides of the street, the industrial nature of the area could discourage some cyclists. There is on-street truck parking on the eastbound side of the road and trucks may infringe on the eastbound bike lane, which means cyclists may have to negotiate around them by merging into the main travel lane. These parked trucks can also block the view of the many driveways along the street, which creates potential safety hazards for cyclists. The proposed Harbor View project would replace the entire block south of Blomquist with a high-tech office campus with several office buildings and parking structures. Crucially, it would include a shared use path along its frontage that would provide an alternative to riding next to the industrial sites on Blomquist. The project is currently in environmental and design review. In the short-term, a possible remedy would be to provide a no parking apron around the driveways on the south side of the street to give cyclists more visibility.

The half-mile segment on Charter Street runs on a busy road that interacts with several significant intersections. Upgrading the facility to formal bike lanes would provide more comfort for cyclists. The Federal Highway Administration (FHWA) estimates that installing a bike lane costs between $5,000 and $50,000 per mile, depending on roadway condition and other conditions[11]. Installing bike lanes on this half-mile segment would likely cost between $2,500 and $25,000.

Lastly, it will be important to include a bike and pedestrian connection between the ferry site and Seaport Boulevard as it circles around Pacific Shores Center. Cyclists will need a designated connection between the ferry terminal and the Seaport Boulevard shared use path which would be part of the ferry terminal project costs, and commuters whose destination is in Pacific Shores will create their own path if a convenient one is not constructed. Considering the short distance of this connection it would likely cost between $2,500 and $25,000.

Recommended Improvements

As informed by the active transportation gap analysis, the most critical missing link to the ferry terminal site is the half-mile stretch of Seaport Boulevard/Woodside Road between East Bayshore Road and Broadway. This stretch of roadway has multiple entrance and exit ramps to the Bayshore Freeway, making it difficult for non-motorists to traverse. This link is vital because it is the most direct way to access the Seaport Boulevard shared use path for all residents and businesses east of Woodside Road. The path around this, using Blomquist Street, Maple Street and Broadway, adds an extra mile of out of direction travel. *RWCmoves* identifies two projects that could help close this gap, the Woodside Road Complete Street Corridor Study and Woodside Road Bicycle Safety Improvements. Furthermore, studies are under way for the Highway 101/84 interchange Signature Project that is expected to begin within the next decade. This project is anticipated to cost $265 million. As these projects proceed, it is recommended that they address the identified active transportation gap.

There are several connections that have been identified as uncomfortable, some of which could be remediated by projects outlined in *RWCmoves*. Many of these uncomfortable connections are sharrows, where cyclists to share a travel lane with vehicles. While a common roadway design practice, sharing a travel lane with vehicles can be a barrier for less confident cyclists, especially where

[11] "Adding Bicycle Lanes", FHWA, https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/10.htm

there are higher traffic volumes and speeds. As such, routes that have long stretches of sharrows may be too intimidating for some travelers and could discourage cycling. This can be remediated by installing dedicated cycling facilities as warranted by the road's traffic volumes and speeds.

One of the early investment projects listed in *RWCmoves* is a Wayfinding Signage Program, which would "(d)evelop and install citywide wayfinding signage network to popular destinations…". Once established, the ferry terminal should be included in this program, with signage strategically placed throughout the city. This will help cyclists safely access the terminal site.

While on-street infrastructure projects are outside of WETA and the Port's control, ferry terminal managers can encourage trips by bike. On-site bike storage would primarily benefit travelers who begin their ferry trip in Redwood City. Secure bike storage facilities should be located near the gangway in an open and well-lit area. Installing bike racks would be the base level option, while bike lockers would provide more security and confidence. Most of the bike parking should be in bike lockers given the length of time that they would be expected to park. The City Council of Redwood City recently directed city staff to develop regulations for bike- and scooter-share operators. Micromobility companies are expected to start operation by this summer. Space should be made available for bike and scooter corrals as the ferry terminal site plan is being developed.

Chapter 7
Financial Considerations

This chapter presents a forecast of the anticipated operating and capital costs associated with Redwood City ferry service. It also reviews the revenue and funding sources that could be used to pay for these costs.

Ten-Year Operating and Capital Expenses

Capital and operating costs are evaluated differently between the Redwood City ferry terminal and the ferry service. This reflects cost responsibilities between the different entities (i.e., Port of Redwood City and WETA, the ferry operator). Ferry service comprises most of the capital and operating expenses though terminal costs require an initial investment and ongoing operational expenses as well.

Capital costs primarily include a new Redwood City terminal, new ferries, and potential shuttle acquisition costs. Operating costs include both ferry (labor, fuel, etc.) and terminal maintenance.

Ten Year Operating Expense Budget

Ferry Service Operating Costs

Costs were prepared by WETA (in 2022 dollars) based upon existing ferry route experience and were inflated per WETA's assumptions. As such, there is a high degree of confidence in the cost assumptions. However, various circumstances could affect service costs in unforeseen ways including a fuel price "shock," and service configuration changes requiring additional labor hours and/or expenses.

Ferry operating costs include vessel expenses (crew-labor, fuel, and operations and maintenance), Terminal and Facility operations and maintenance expenses, and system expenses. Operating costs for each alternative are shown in **Table 7-1**. Costs are very similar for both routes; costs for the San Francisco route are higher due to the planned operations on weekdays and weekends. Costs are shown in 2022 dollars for the estimated opening year of 2025 and then inflated at 3% per year for the next ten years.

- *Crew Labor* – Affected by required minimum shift lengths and the required vessels. Trip length determines round-trip trips served by a single vessel within a shift period. Weekday crew shifts are 8 hours and weekend shifts are 10 hours. Crew hours are multiplied by a standard hourly rate consistent with current labor contracts. Four crew members are required per each 320-passenger vessel.
- *Vessel Maintenance* – Annual vessel maintenance costs just over $800,000, and includes vessel repair, related materials and supplies, and urea (a necessary reactant involved in marine vessel catalytic systems). New services are assumed to need a spare vessel, and maintenance expenses apply to the spare vessel as well.

- *Facility Operation & Maintenance* – These include the forecast for waterside Redwood City Ferry terminal operations and maintenance as well as the pro-rata share of Central Bay operation and maintenance costs that are based on the operational time of vessels in service on Redwood City routes.
- *System Expenses* – Includes insurance, advertising, marketing, consultant services, wireless services on the vessels, WETA administrative expenses and fixed expenses such as wages and benefits for dispatch, supervision and administrative staff. Assumptions are provided by WETA based on current operations.
- *Fuel* – Affected by the vessel type, trip length (distance and time), and water/current conditions. As the least certain expense, fuel varies significantly depending on current energy market conditions. The fuel assumption is based on the estimated nautical miles of each service, multiplied by the fuel needed per mile (gallons per mile), multiplied by the forecasted cost per gallon.

Table 7-1: 10-Year Operations/Maintenance Expenses (in $ Year 2022)

Item	Oakland	San Francisco
Service Assumptions		
AM Trips (Peak Dir./ Rev.)	2 / 2	2 / 2
PM Trips (Peak Dir./ Rev.)	2 / 2	2 / 2
Trip Time (Minutes)	65	55
Total Daily Crews	4	4
Number of Vessels	2	2
Annual Operations & Maintenance Costs - $ Year 2022		
Crew Labor	$2,410,624	$3,592,302
Vessel Maintenance	$805,748	$805,748
Facility Operation & Maintenance	$654,738	$840,737
System Expenses	$1,008,408	$1,190,568
Fuel	$2,234,820	$2,817,500
Total, Operating Expenses	**$7,114,338**	**$9,246,855**
10-Year Operating Expenses (2025-2034)		
Crew Labor	$27,635,103	$41,181,717
Vessel Maintenance	$9,236,998	$9,236,998
Facility Operation & Maintenance	$7,505,837	$9,638,108
System Expenses	$11,560,268	$13,648,528
Fuel	$25,619,707	$32,299,480
Total, Operating Expenses	**$81,557,912**	**$106,004,830**

Financial feasibility is evaluated in terms of the farebox recovery ratio for the initial ten-years of operation. Weekday ridership numbers, which are carried forward from Chapter 4, are multiplied by 255 days, which is consistent with WETA's total days of operation in FY2019; weekend ridership

numbers for the San Francisco route are multiplied by 100. Annual ridership is multiplied by the average fare to calculate annual farebox revenue, which are compared with annual operating costs. Ridership is conservatively estimated to grow by three percent each year.

The Oakland route generates sufficient ridership such that farebox recovery addresses 41% of its operating costs during the first ten years of operation, while the San Francisco route achieves a farebox revenue recovery ratio of 66%. Both ratios meet WETA's minimum farebox recovery target of 40% within the first ten years of operation, with the San Francisco route falling within the target of greater than 50% for mature services. These results are summarized below in **Table 7-2**.

Table 7-2: 10-Year Farebox Recovery Ratio (in $ Year 2022)

Item	Redwood City Routes	
	OAK	SF
10-Year Annual Operating Expenses	$81,557,912	$106,004,830
10-Year Ridership	2,484,796	5,196,003
10-Year Annual Fare Revenue	$33,424,330	$68,151,708
Farebox Recovery Percentage	41%	64%

Shuttle Operating Costs

The ten-year estimate for shuttle operating costs is based on the following service concept:

- Extending the Seaport Center shuttle or the Pacific Shores Shuttle with two more service hours per day.
- Starting in the fourth year, implementing a shuttle service managed by commute.org (or a similar entity) that has eight service hours per day. This shuttle is presumed to provide a connection to areas of Redwood City that remain underserved after all existing public and private shuttles have been established.

Table 7-3 shows the operating costs associated with this conceptual service plan. The estimated annual shuttle operating cost in years 1-4 would be $60,060, and in years 5-10 would be $367,033.

Table 7-3: Conceptual Service Plan Operating Costs (in $ Year 2022)

Service	10-year Operating Cost
Additional Seaport Center/ Pacific Shores Shuttle Service (years 1-10)	$ 600,600
8 Hours per Workday for a New Shuttle Service (years 4-10)	$ 1,841,840
Total, 10-year Shuttle Operating Cost	**$ 2,442,440**

Terminal Operating and Maintenance Costs

Ongoing maintenance at the ferry terminal includes security, landscaping, general maintenance, electricity, water/wastewater, telecommunications, and trash service. Estimates indicate annual maintenance costs of approximately $200,000 per year, which comes to about $2 million over ten

years. Related to the terminal there will also be some costs for maritime enforcement which would be provided by the City. This cost is not included in the current Redwood City Police Department's budget. WETA has a very good record of observed speed and wake provisions in the waterways at its existing terminals and the need for enforcement related to WETA's maritime operations should be minimal. Safety and security of the terminal facility and parking areas would be the primary enforcement need. Additional Redwood City Police Department enforcement would require adding 1.0 FTE officer for enhanced patrol of waterways and ferry terminal surroundings. This would cost the City around $300,000 per year and is not currently in the proposed operating budget.

Capital Improvement Plan and Budget

Terminal Construction Costs

Preliminary planning, design and engineering work was completed as part of the previous Feasibility Study. Section 5 in the Feasibility Study summarizes conceptual engineering work and confirms that the Westpoint Slough is the preferred location for a ferry terminal. Cost estimates account for water depth, float parameters, fenders, gangway and boarding ramps, access pier, utilities, and landside components (e.g., parking, bus stops, ride share pick-up/drop-off, bike/scooter facilities, queue covering, etc.).

Terminal and related facilities range from about $15 million (West Side at Westpoint Slough) to just under $20 million (North Side at Westpoint Slough) depending on the terminal location and existing conditions (in 2019 dollars). Even at $15 million to $20 million, current estimates for the Redwood City terminal are at the lower end of WETA's recent experience with terminal construction projects:

- *Richmond Ferry Terminal* – $19 million
- *Seaplane Lagoon Ferry Terminal* – $23 million
- *Treasure Island Ferry Terminal* – $47 million (estimate; note WETA is not responsible for the capital or operating costs of this project)
- *Mission Bay Ferry Terminal* – $51 million (estimate)
- *Downtown San Francisco Ferry Terminal Expansion Project* – $98 million

Figure 7-1: A commute.org shuttle

Source: commute.org

Vessel Acquisition Costs

WETA's ferry fleet will need new two vessels for each service route, plus a half of a spare vessel. If the routes are combined, the two routes could share the spare vessel, resulting in five new vessels. Each new ferry is estimated to cost approximately $16 million,

which may vary depending on vessel class and costs at time of acquisition. In summary, ferry acquisition costs would total $40 million for either route, or $80 million for both routes combined.

Shuttle Acquisition Costs

A typical shuttle used by commute.org is a cut-away style that seats 28-30 passengers. These vehicles cost roughly $150,000 and have about a 10-year service life. Most of the funded shuttles use the SamTrans Shuttle Operating contract and do not purchase shuttles themselves.

The initial capital costs are shown in **Table 7-4** below.

Table 7-4: Capital Costs Summary

Item	Cost
Terminal Construction	$ 19,800,000
Vessels	$ 80,000,000
Shuttle	$ 150,000
Environmental review and engineering	$ 3,000,000
Total	**$ 102,950,000**

Revenue Sources

Operating Funding Sources

Beyond ferry service operations, other costs include annual maintenance of the terminal and shuttle support services to facilitate first/last mile connections.

Non-Farebox Operating Funding

Public ferry operations typically require subsidization to offset operating costs not covered by fares. While the mix of funding sources has not been determined, potential sources could include Regional Measure 3, San Mateo County Transportation Agency Measure W Regional Transit Connections program, transportation impact fees, and/or private funding from employers/developers. In partnership with employers and developers, the City can incorporate funding for ferry operations in future Transportation Demand Management plans. Funding stability is also a feasibility concern; it will be important for any new sources to be committed over multi-year periods and be resistant to elimination by voters or elected officials.

- *Regional Measure 3* – Administered by MTC, Regional Measure 3 is a plan to build major roadway and public transit improvements via an increase in bridge tolls on all Bay Area toll bridges (except the Golden Gate Bridge). Final certified Regional Measure 3 election results were released in July 2018 and confirmed that 55% of Bay Area voters supported the measure. Although the funds that have been raised to date are currently being held in escrow due to a lawsuit, the Regional Measure 3 Expenditure Plan includes funding for ferry operations that provide WETA up to $35 million in annual operating funds for expansion.

- *SMCTA Measure W* – San Mateo County voters approved Measure W in 2018, generating additional sales tax revenue to improve transit and relieve traffic congestion in the County. Of

the funds generated, 50% are administered by the San Mateo County Transportation Agency. Measure W funding supports "Regional Transit Connections" at more than $9 million annually, and public agencies that operate regional transit including San Mateo County infrastructure. "Eligible Project Sponsors" include the City, BART, Caltrain, WETA, or public bus operators. The SMCTA's strategic plan indicates a 10% minimum match is required for infrastructure projects, and a 50% minimum match is required for operations and promotions, or measures made to increase ridership. How a project or service may qualify or how funds may be made available are still to be determined by the SMCTA.

- *Local Funding* – Local (City or Port) funding sources may also be established such as transportation impact fees, benefit improvement districts, or local property taxes. Examples include a local property tax charged in Bay Farm Island or a portion of Contra Costa County sales tax revenue for the Richmond service to provide this operating subsidy.
- *Private Funding* – Local developers or employers can help fund ferry service through Transportation Demand Management agreements and negotiated plans that generate operating subsidies. Private financial support can be especially important in the early years of operating a new ferry service as ridership is established.

Shuttle Support Services

As most first-last mile shuttle services are free to use, public and private funding service would be required. Specific funding sources for shuttle support services include SMTCA Measures A and W, and private organizations.

- *SMCTA Measure A* – includes a funding provision specifically for shuttle services, generating approximately $60 million during the 25-year life of the sales tax measure (through 2033).
- *SMCTA Measure W* – targets a range of transportation improvements and services, including Countywide Highway Congestion Relief Improvements (e.g., shuttles). Approximately 22.5% of annual Measure W revenue, or approximately $20.5 million per year, is targeted for congestion relief improvements. While Commute.org is considered an "Eligible Project Sponsor" and could apply for Measure W funding, shuttle programs are only potentially eligible for this funding pot since Measure A has a dedicated shuttle fund The TA tries to minimize overlap of different programs.
- *Private organizations* – these can be specific employers, a landowner or property manager for an office complex that would directly benefit from a public shuttle. The amount of private funding can vary depending on the shuttle route.

Capital Funding Sources

Historically, ferry terminals are funded by bridge toll revenues, federal grants, county transportation sales tax funding, and other local sources. The most recent terminals constructed, South San Francisco and Richmond, were funded through bridge toll revenue (Regional Measure funds), a FTA (federal) grant, and a State of California Proposition 1B grant. Specifically, Regional Measure 3 (which is currently held up in court) will fund up to $300 million for capital expenditures across WETA's system.

With so many prominent employers located in, or close to, Redwood City, the private sector may emerge as an important funding partner.

SMCTA Measure A

In 2004 San Mateo County voters approved extension of the Measure A transportation sales tax to fund transportation projects. This program includes $30 million to support capital development of new ferry services to South San Francisco and Redwood City, which the two cities agreed to an even funding share split of the Ferry category. While approximately $8 million of the funding was spent to develop the South San Francisco terminal, revenue may be available to fund (or partially fund) a Redwood City Terminal. WETA states in its 2020 Short Range Transit Plan that they will work with local entities and county transportation authorities as they develop and pursue future countywide transportation sales tax initiatives to support continued ferry transit operations.

SMCTA Measure W

As indicated earlier, $9 million in annual Measure W funding is available to support regional transit connections, including capital expenditures. The “Regional Transit Connections” will be a competitive funding program and public agencies providing transit service or constructing transit projects in San Mateo County are eligible. A 10% minimum match is required for infrastructure projects.

State Funding

Caltrans has awarded Redwood City $5 million in state funds for the Redwood City Ferry effort under AB 170 as a Section 174 project. This funding can be used for any purpose related to the ferry project.

Federal Funding

The federal Infrastructure Investment and Jobs Act (IIJA) which was signed into law in November 2021 as part of the Bipartisan Infrastructure Legislation (BIL), includes $39 billion of new investment to modernize transit, in addition to continuing the existing transit programs for five years as part of surface transportation reauthorization. In total, the new investments and reauthorization in the overall BID provide $89.9 billion in guaranteed funding for public transit over the next five years. There will be competitive funding programs, regional funding allocations and other mechanisms which could provide both capital and operating funds for the ferry service.

Chapter 8
Summary and Next Steps

Summary

This Business Plan is built upon a Feasibility Study which was funded by the SMCTA. This study, the Ferry Financial Feasibility Study & Cost Benefit and Economic Impact Analyses, was issued in October of 2020. It was reviewed and accepted by the Redwood City Council, the Port Commission, the WETA Board of Directors, and the SMCTA Board of Directors. The Feasibility Study set out to evaluate ferry service feasibility from five interconnected perspectives: Consistency, Operations, Engineering, Economics and Financial. The study concluded that the proposed project was feasible from all five of these perspectives.

The Business Plan includes consideration of the consistency, operations, engineering and financial elements which were addressed in the Feasibility Study. In addition, it includes the following:

- Governance Plan – The options for how the ferry service and terminal facilities would be owned, operated, maintained and funded were evaluated in terms of the roles of each of the involved agencies, their capabilities in terms of the implementation and on-going operations, and their ability to provide or secure funding for the ferry project. The Port was determined to be the agency best suited to own and operate the landside facilities, as these facilities would be on Port property and the Port has resources to manage the facilities. WETA is the logical agency to operate and maintain the ferry services, waterside facilities and to provide the ferry vessels, as it has both the charter and the experience and resources to perform these roles.

- Outreach/Equity Plan – The outreach effort conducted in the Feasibility Study was supplemented by additional outreach effort designed to reach a broader community base, including minorities and low-income groups, both in the Redwood City area and in Oakland. The provision of service between Redwood City and Oakland was viewed as offering Oakland residents from the underserved and disadvantaged communities near the ferry terminals access to higher paying jobs in the Peninsula. Also, the service area of the Redwood City ferry terminal included a number of census tracts in equity priority communities, potential offering these communities a new transit mode that provides access to jobs and for other non-commute trip types. There was also some additional outreach with the water recreational user groups and the environmental conservation interest groups.

- First-Last Mile Plan – A plan was developed to explore alternatives for provision of connecting mobility services to and from the ferry terminal in the Port to major activity centers, employments sites, and communities within the catchment areas of the ferry service. The plan addresses both transit and active transportation options for ferry terminal access. The plan first focuses on taking advantage of existing shuttle services to the Port, modifying them to serve the ferry terminal. It also identifies a future potential for a demand responsive, micro-transit type shuttle service that would serve the larger community, including the equity priority

communities near the Port. Critical gaps in the network for bicyclists and pedestrians were identified, and improvements to close these gaps and enhance the network are included in the plan.

- Service Enhancement Options – the feasibility study only considered peak commute service. There was interest in studying expanded service offerings, including midday, weekend and special event ferry services. The development of additional service options also led to additional estimates of operating costs and ridership. While the analysis assumed that all these services would be provided at the start-up of the ferry service, it is likely that WETA would implement the services in phases as the ridership performance of the service becomes established and better understood.

Approvals

This business plan will be presented to the following governing bodies for their acceptance:

- WETA Board of Directors
- Port of Redwood City Commission
- Redwood City Council
- SMCTA Board of Directors

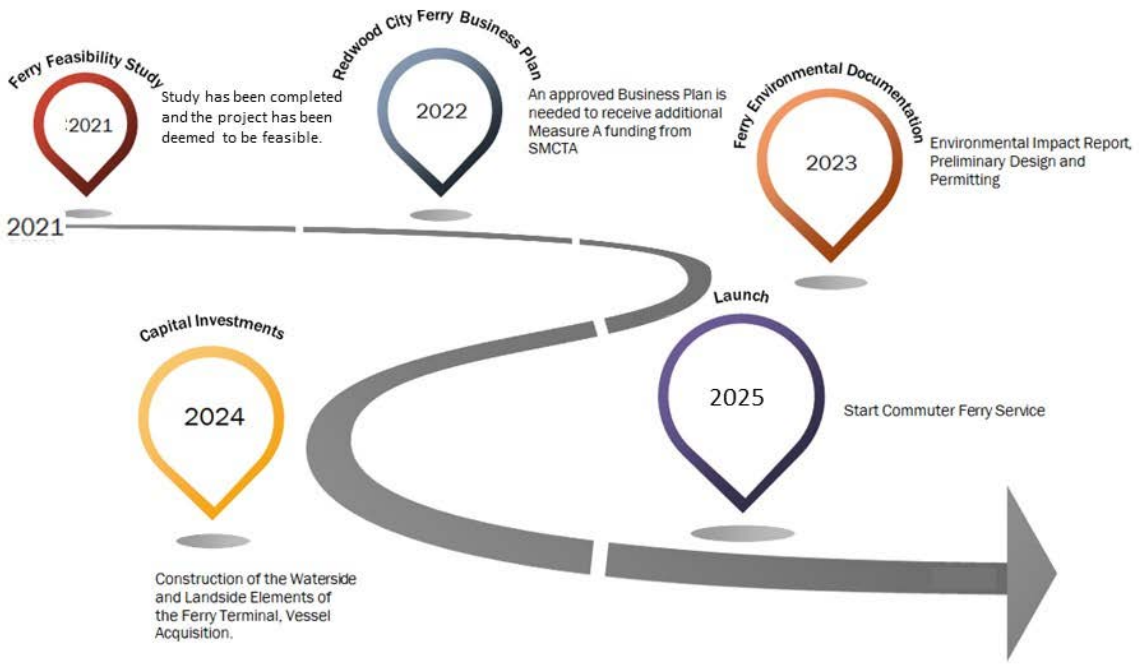
Next Phase

After the business plan is accepted, the project will advance to preliminary design and environmental review, and permitting. The Memorandum of Understanding that was executed between the Port, the City, WETA, and the SMCTA needs to be amended for this next phase with the Port filling the role of lead agency in close coordination with the City and WETA. Before this phase can proceed, the funds for this effort need to be secured. This will involve working closely with the SMCTA, MTC, and state and federal agencies to assemble funding for both the next phase, and the actual construction and vessel acquisition.

Timeline

Figure 8-1 is a high-level timeline of the steps needed to begin operating a commuter ferry service in Redwood City in 2025.

Figure 8-1: Timeline to Ferry Service Launch



It is important to note that waterside improvements can only happen during an annual construction window between June 1st and November 30th. This work window is established by the various regulatory agencies to minimize the disturbance to endangered and special status species found in the project area. The start of ferry service could be deferred due to construction delays or other unanticipated challenges.

Notable Items for Further Study

Based on the feedback received from the associated governing bodies, the following areas have been noted for further study in the next phase of work for this project:

- Mitigation of impacts of facility construction and ferry operations on the adjacent waterways and wetlands
- Management of ferry vessel operations and speeds to assure the safety of small boats and individuals participating in water recreational activities such a windsurfing, canoeing, kayaking and paddle boarding
- Consideration of equity for residents of equity priority communities in both the East Bay and the Peninsula should also continue to be an area of focus in terms of future ferry service planning and planning for first mile/last mile services
- More detailed considerations for First Mile/Last Mile projects and timelines