

Members of the Board

James Wunderman, Chair Monique Moyer, Vice Chair Jessica Alba Jeffrey DelBono Pippin Dew

SAN FRANCISCO BAY AREA WATER EMERGENCY TRANSPORTATION AUTHORITY BOARD OF DIRECTORS SPECIAL MEETING

Monday, April 17, 2023 at 2:00 p.m.

Port of San Francisco Pier 1 San Francisco, CA Face masks are strongly recommended for in-person participation.

> and Videoconference Join WETA BOD Zoom Meeting https://us02web.zoom.us/j/89718217408 Meeting ID: 897 1821 7408 Password: 33779 Dial by your location +1 669 900 6833 US (San Jose) +1 929 205 6099 US (New York)

The full agenda packet is available for download at weta.sanfranciscobayferry.com

AGENDA

1. CALL TO ORDER

- 2. ROLL CALL/PLEDGE OF ALLEGIANCE
- 3. <u>BUSINESS PLAN WORKSHOP #2</u> Discuss WETA's Business Plan, including planning, policies, funding, and strategies to carry out the 2050 WETA Service Vision.

ADJOURNMENT

All items appearing on the agenda are subject to action by the Board of Directors. Staff recommendations are subject to action and change by the Board of Directors.

PUBLIC COMMENTS WETA welcomes comments from the public.

If you know in advance that you would like to make a public comment during the videoconference, please email BoardOfDirectors @watertransit.org with your <u>name and item number</u> you would like to provide comment on no later than 15 minutes after the start of the meeting. Comments will also be accepted in real time. During the public comment period, speakers will be allotted <u>no more than 3 minutes</u> to speak and will be heard in the order of sign-up. Said time frames may be extended only upon approval of the Board of Directors.

Agenda Items: Speakers on individual agenda items will be called in order of sign-up after the discussion of each agenda item.

Upon request, WETA will provide written agenda materials in appropriate alternative formats to individuals with disabilities. In addition, WETA will arrange for disability-related modifications or accommodations including auxiliary aids or services to enable individuals with disabilities to participate in public meetings. Please send an email with your request to: contactus@watertransit.org or by telephone: (415) 291-3377 as soon as possible and no later than 5 days prior to the meeting, and we will work to accommodate access to the meeting.

AGENDA ITEM 1 CALL TO ORDER

AGENDA ITEM 2 ROLL CALL/PLEDGE OF ALLEGIANCE

NO MATERIALS

MEMORANDUM

TO: Board Members

FROM: Seamus Murphy, Executive Director Kevin Connolly, Planning & Development Manager Michael Gougherty, Principal Planner Gabriel Chan, Transportation Planner

SUBJECT: Business Plan Workshop #2

Recommendation

There is no recommendation associated with this informational item.

Background

The 2050 Service Vision & Business Plan is being developed to define a long-term service vision based on input from agency stakeholders, the public, and other parties with an interest in the future of the agency. During an initial outreach effort in 2021, staff identified six focus areas for consideration in the Business Plan. These include:

- 1. Regional Ferry Network
- 2. Emergency Response
- 3. Environmental Stewardship
- 4. Community Connections
- 5. Financial Capacity
- 6. Organizational Capacity

At Business Plan Workshop #1 held in August 2022, the Board identified a set of network expansion concepts for consideration in developing a preferred 2050 Service Vision. Over the past six months, staff has worked with its consultant team to undertake a technical evaluation of each expansion concept based on the focus areas described above. These results were reviewed and refined through engagement with the WETA Business Plan Subcommittee, project stakeholders, and input from the public. The final results of this evaluation are summarized in a memorandum prepared by the consultant team and included as *Attachment A*.

The purpose of this Business Plan Workshop #2 is to review the final evaluation results and discuss a proposal by staff for developing a final 2050 Service Vision. Staff has prepared a presentation that summarizes both the evaluation results and the service vision proposal. The presentation was publicly posted and distributed to stakeholders prior to this workshop. Staff will also be providing a brief update on the status of agency work regarding Regional Measure 3 and its relationship to the 2050 Service Vision and Business Plan process.

The service vision proposal blends two of the network concepts that were analyzed and presented to stakeholders. It is based on the Core network concept that is characterized by investment in existing WETA services and routes with select expansion opportunities. Some of those opportunities include expanding service to destinations beyond Downtown San Francisco, the introduction of short hop service between hubs, and introducing service from WETA

terminals to Marin County. The proposal also includes a recommendation for establishing pragmatic standards for expansion to other candidate terminals throughout San Francisco Bay.

Based on Board feedback provided during this workshop, staff will move forward with preparing a final 2050 Service Vision for future Board consideration at its June meeting. The final proposed 2050 Service Vision will be accompanied by a report detailing the rationale and basis for the recommendation. Pending adoption of a 2050 Service Vision, staff will move forward with preparing a draft and final Business Plan in FY 2024.

Fiscal Impact

There is no fiscal impact associated with this informational item.

END

Attachment A – Memorandum on "WETA Business Plan Evaluation" prepared by Fehr & Peers



Draft

Subject:	WETA Business Plan Evaluation
From:	Daniel Jacobson and Nate Conable, Fehr & Peers
То:	Michael Gougherty, Kevin Connolly, and Gabriel Chan, WETA
Date:	April 12, 2023

OK22-0472

Introduction

This memo details the technical analyses completed to evaluate three new network concepts to expand WETA service over the next 25 years. Based on this evaluation and stakeholder input, WETA will define a 2050 service vision to include in its Business Plan to be developed later this year. The service vision will inform how WETA operates in the future and what strategies and actions will be included in the Business Plan. This memorandum presents the technical evaluation of three potential 2050 networks compared to the existing network in 2050. The content in this memorandum represents an updated of the slide deck presented to stakeholder groups in the first quarter of 2023 based on final evaluation results.

2050 Networks

The project team is evaluating four potential 2050 ferry networks, each representing distinct choices and tradeoffs for WETA's future, as input to the development of the service vision. These networks – Existing, Plan Bay Area, Core, and Coverage – are summarized below in Figures 1-4 and Table 1.





Figure 1: Existing Network



The Existing Network (Figure 1) would maintain WETA's six existing routes and 10 existing terminals. These routes include serving San Francisco via Vallejo/Mare Island, Richmond, Oakland, Alameda Seaplane, and Alameda Harbor Bay, along with serving South San Francisco via Oakland and Alameda. For the purposes of analysis in this memo, the Existing Network was evaluated for the Year 2050 futures, which included service enhancements to each of the routes over today's levels.

April 12, 2023 Page 3 of 29



Figure 2: Plan Bay Area Network



The Plan Bay Area Network (Figure 2) would build upon the Existing Network, adding five routes and four terminals identified in the Regional Transportation Plan/Sustainable Communities Strategy: Berkeley-San Francisco, Oakland-Redwood City, San Francisco-Redwood City, Treasure Island-Downtown San Francisco, and Mission Bay-Downtown San Francisco. This network is also largely consistent with WETA's most recent strategic plan.





Figure 3: Core Network



The Core Network (Figure 3) would expand upon the Plan Bay Area Network primarily within WETA's core service area. It would add four terminals and six routes to the Plan Bay Area Network, including Larkspur-Berkeley, Richmond-South San Francisco, a Marinez-San Francisco service, and local services in San Francisco (Pier 41, the Ferry Building, Mission Bay, and Hunters Point), the East Bay (Oakland-Alameda Landing), and the North Bay (Mare Island-Vallejo).





Figure 4: Coverage Network



The Coverage Network would expand upon the Plan Bay Area Network emphasizing new connections across the region. It would add 12 terminals and 14 routes or more to the Plan Bay Area Network, including routes to San Francisco from Benicia, Antioch, Hercules, San Leandro, and San Jose, as well as routes between San Leandro-Foster City/Redwood City, Union City-Foster City, San Leandro/Union City-Mountain View, Oakland-San Jose, and Vallejo-Oakland.



Year	Network Concept	Routes	Terminals	Peak Vessels	Annual Revenue Hours	Annual Operating Cost (\$2022)
2022	Existing	6	10	16	25K	\$62M
2050	Existing	6	10	16-26	70-90K	\$100-\$130M
	Plan Bay Area	11	14	22-42	110-140K	\$160-\$210M
	Core	17	18	36-59	150-220K	\$200-\$280M
	Coverage	25	26	67-87	180-370k	\$240-\$470M

Table 1: Summary of Network Concepts

Source: WETA and Fehr & Peers

2050 Futures

Planning for 2050 conditions involves a substantial level of uncertainty. Even as the Bay Area emerges from the COVID-19 Pandemic, related trends such as the rise of remote work, diminished activity in the region's downtown employment hubs, and declining transit ridership continue to persist. Whether the region has reached a "new normal" or slowly reverts to pre-pandemic conditions, extrapolating previous trends and assumptions are not necessarily a reliable guide to what may happen next.

The Business Plan incorporates a scenario planning approach to understand how WETA could perform under a range of potential conditions. The scenario planning process considers four distinct Futures, focusing on the effects of travel behavior, regional transit service policy, land use, and station access investment (Figure 5 and Table 1). The following sections summarize each Future.



Figure 5: Summary of 2050 Futures



Торіс	Subtopic	Steady as it Goes	Throttle Back	Chart a New Course	Tack to the Wind
Commuting	Levels of Commuting & Remote Work	Pre-pandemic	30% reduction in commute travel ¹	Pre-pandemic	30% reduction in commute travel ¹
Behavior	Regional Rail and Bus Projects	Link 21/Plan Bay Area	Plan Bay Area	Plan Bay Area	Plan Bay Area
Land Use & Access	Development Activity	Plan Bay Area + local adjustments ²	30% reduction in employment growth near terminals	30% increase in housing growth near terminals	30% reduction in employment growth near terminals
	Parking & Access Conditions	Constrained	Constrained	Enhanced	Enhanced
	Peak Hour Frequency ³	15 / 30 / 60	30 / 60 / 60	15 / 30 / 60	30 / 60 / 60
	Off Peak Frequency ³	30 / 60 / None	30 / 60 / None	30 / 60 / 60	30 / 60 / 60
Service & Fares	Weekend Frequency ³	30 / 60 / None	30 / 60 / None	30 / 60 / 60	30 / 60 / 60
	Fares	40% premium over other regional transit services	40% premium over other regional transit services	Aligned with other regional transit services	Aligned with other regional transit services

Table 2: Summary of 2050 Futures by Topic

¹Reduction based on Caltrain's Fall 2021 rider survey of expected changes in post-COVID commuting patterns in San Francisco, San Mateo, and Santa Clara Counties.

²Local adjustments to Plan Bay Area forecasts occurred in areas where adopted plans substantially varied from Plan Bay Area growth forecasts, including South San Francisco, Larkspur, Union City, Benicia, and Mare Island

³Frequencies are presented for high/medium/low tiers of routes. The high frequency tier are routes that typically exhibit the highest ridership demand.

Steady as it Goes

Steady as it Goes envisions a return to pre-pandemic expectations of the Bay Area's travel behavior and WETA's role within the region. It assumes commuters are going into the office on a daily basis, land use and transportation investments manifest as envisioned in Plan Bay Area, and a substantial investment in regional rail occurs via the Link 21 project. WETA would continue its pre-pandemic



role as a premium commute-oriented transit option, with higher peak-period frequencies and higher fares than bus and rail services. Access conditions to ferry terminals would remain somewhat constrained with the region emphasizing rail connectivity over ferry connectivity.

Throttle Back

Throttle Back envisions lasting changes to the Bay Area's travel behavior as pandemic-related trends of remote work and decentralization of growth persists. It assumes a 30 percent reduction in commute travel relative to pre-pandemic conditions, 30 percent less growth near terminals, and no Link 21 investment. WETA would continue its pre-pandemic role as a premium commute-oriented transit option and would provide modestly higher levels of service but would not partner with cities to make substantial station access investments.

Chart a New Course

Chart a New Course envisions a return to pre-pandemic expectations of the Bay Area's travel behavior and a significant expansion of WETA's role within the region. It assumes commuters are going into the office on a daily basis, but the region would forgo the Link 21 project and create a need for ferries to help meet growing demand (with a corresponding 30 percent increase in housing development near ferry terminals). WETA would expand its midday and off-peak and weekend service offerings, align its fares with other regional operators, and partner with cities, MTC and other transit operators to substantially enhance access to ferry terminals.

Tack to the Wind

Tack to the Wind envisions lasting changes to the Bay Area's travel behavior and a pivot in WETA's approach to serving regional travel. It assumes a 30 percent reduction in commute travel relative to pre-pandemic conditions, 30 percent less growth near terminals, and no Link 21 investment. In order to diversify its ridership base, WETA would expand its midday and off-peak and weekend service offerings, align its fares with other regional operators, and substantially enhance access to ferry terminals.

Evaluation

WETA conducted an evaluation of each network against the following Focus Areas of the Business Plan: Regional Ferry Network, Emergency Response, Environmental Stewardship, Community Connections, and Financial Capacity.¹ These Focus Areas were developed during the first phase of

¹An analysis of the Organizational Capacity Focus Area would follow the selection of the 2050 Service Vision.



the planning process based on input from stakeholder advisory groups, the general public and the WETA Board and the Business Plan Board Subcommittee. Each Focus Area is summarized below.

- **Regional Ferry Network** characterizes the long-term market potential of expanding ferry service on San Francisco Bay and WETA's potential role as ferry network manager.
- **Emergency Response** broadly defines goals related to the functionality (e.g., first responders, evacuation, economic recovery), capacity, and geographic reach (e.g., by terminal location, population, span of shoreline) of a comprehensive water emergency transportation system.
- Environmental Stewardship presents WETA's commitments for protecting species and habitat on and along San Francisco Bay and its responsibilities for operating services that promote public goals to ensure environmental justice, limit noise and air pollution, reduce VMT, and curb greenhouse gas emissions.
- **Community Connections** articulates priorities for promoting and providing connections between regional ferry service and the communities it serves.
- **Organizational Capacity** identifies the depth and breadth of organizational capacity required by WETA.
- **Financial Capacity** identifies near-term and long-term strategies for funding the overall service vision that balance financial sustainability and equity as key WETA objectives.

Evaluation metrics were developed to assess the performance of each network across the Focus Areas. The evaluation is based on high-level analysis of topics such as conceptual service plans, fleet mix, service area, ridership, and costs. This analysis incorporates work by WETA staff and Fehr & Peers to reflect each network in relation to the 2050 Futures and represent the best current understanding of future conditions, technology applications and cost profiles for different types of service. There are significant uncertainties inherent in this type of long-range planning, so as projects are developed over time more detailed analysis will occur to refine the understanding of performance of specific routes and terminal investments. Given the range of topics covered, the conceptual definition of terminals and services, and the long-term perspective, this analysis is intended to provide a general snapshot of performance across potential futures.

While some metrics were not affected by the 2050 futures, others varied substantially depending on the underlying assumptions (particularly those related to ridership, capacity, land use, and costs); consequently, some values are presented as a range. The Appendix provides more information on the specific values associated with each network and future as well as a summary of the ridership forecasting methodology.



Regional Ferry Network

The Regional Ferry Network Focus Area considers the market potential of expanding ferry service. Evaluation metrics for this Focus Area include: total ridership (how many riders are served by ferries), productivity (how many ferry riders are served per hour of service), and regional network gaps served (how many transit gaps are filled by ferry service).

Relative to the Existing Network in 2050, the Plan Bay Area, Core and Coverage Networks would each increase ferry ridership and serve more regional transit gaps, but all would decrease productivity. Each of the network expansion concepts are not forecasted to generate enough new ridership to offset the progressive increase in service hours associated with each level of expansion. Table 3 displays the Regional Ferry Network evaluation.

	2050 Futures					
Topics Studied	Existing	Plan Bay Area	Core	Coverage		
Ridership Annual Total	6.4 - 12.1M	8.6 - 16.5M	9.6 - 19.0M	10.0 - 20.4M		
Productivity Riders per Service Hour	90-140	80-120	70-90	40-70		
Regional Transit Gaps Served Number of New Routes Serving Markets without Overlapping Regional Transit	N/A	1	4	11		

Table 3: Regional	Ferry	Network	Evaluation
-------------------	-------	---------	-------------------

Source: Fehr & Peers

Emergency Response

The Emergency Response Focus Area considers WETA's ability to provide capacity and reach to serve Emergency Response needs. Evaluation metrics for this Focus Area include: capacity (total passenger seats across the fleet), Bay Bridge capacity (percentage of capacity served by ferries across Bay Bridge corridor), and reach (number of "superdistricts" served as defined by MTC's Plan Bay Area).

Compared to the Existing Network, each network would progressively increase WETA's capacity and reach, enhancing WETA's Emergency Response abilities. The Coverage Network would provide the most extensive Emergency Response capability. Table 4 displays the Emergency Response evaluation.



	2050 Futures				
Topics Studied	Existing	Plan Bay Area	Core	Coverage	
Capacity Total Passenger Seats across Fleet	5,000- 10,000	9,000 - 16,000	14,000 - 24,000	26,000 - 34,000	
Bay Bridge Capacity % of Peak Hour Capacity of Bay Bridge Corridor Served by Ferries	4% - 8%	5% - 10%	6% - 11%	8% - 12%	
Reach Number of Regional Superdistricts Served	4	8	10	15	

Table 4: Emergency Response Evaluation

Source: WETA and Fehr & Peers

Environmental Stewardship

The Environmental Stewardship Focus Area considers WETA's effects on the environment. Evaluation metrics for this Focus Area include: zero emissions feasibility (number of routes with travel times beyond the current 45-60 minute range of battery electric ferries), effects on wetlands (number of terminals potentially impacting sensitive or protected wetlands), and on the need for dredging (number of terminals requiring moderate or substantial dredging due to water depths less than ten feet). A summary of results by route is presented in the appendix.

		-			
	2050 Futures				
Topics Studied	Existing	Plan Bay Area	Core	Coverage	
Zero Emissions Feasibility: Number of Routes with Limited Feasibility of Zero Emissions Vessels	2	4	5	12	
Wetland Effects: Number of Terminals Potentially Impacting Wetlands	-	-	-	5	
Dredging Effects: Number of Terminals Requiring Moderate or High Dredging	-	1	2	8	

Table 5: Environmental Stewardship Evaluation

Source: WETA and Fehr & Peers

Table 5 displays the Environmental Stewardship evaluation. The Plan Bay Area and Core Networks would have comparable environmental effects to the Existing Network. However, without significant



technological breakthroughs, the Coverage Network would involve the most disruptions associated with wetlands and dredging while adding the most routes that would likely be diesel-powered based on current zero-emissions ferry technology.

Community Connections

The Community Connections Focus Area considers WETA's role in providing connections between regional ferry service and the communities it serves. Evaluation metrics for this Focus Area include: the total population and jobs within its service area (located within three miles of terminals), the total population within MTC-designated Equity Priority Communities (located within three miles of terminals), and the number of terminals serving MTC-designated Priority Development Areas (planned hubs for transit-oriented development). Other community connection strategies and needs will be identified as the Business Plan progresses.

Relative to the Existing Network, each network would progressively expand WETA's Community Connections, with the Coverage Network offering the largest service area and most connections to equity priority communities. Table 6 displays the Community Connections evaluation.

	2050 Futures				
Topics Studied	Existing	Plan Bay Area	Core	Coverage	
Service Area: Population + Jobs within 3 Miles of Terminals (2050)	2.3 - 2.5M	2.6 - 2.9M	2.8 - 3.1M	4.0 - 4.5M	
Equity Priority Communities: Population of Equity Priority Communities within 3 Miles of Terminals (2050)	400 - 500k	400 - 500k	400 - 500k	700 - 800k	
Development Connections: Number of Terminals within MTC Priority Development Areas	5	9	13	14	

Table 6: Community Connections Evaluation

Source: Fehr & Peers, based on Plan Bay Area 2050

Organizational Capacity

Organizational capacity was not evaluated at this stage of the Business Plan. An assessment of organizational capacity will occur after selection of the 2050 Service Vision.



Financial Capacity

The Financial Capacity Focus Area considers the financial effectiveness of WETA operations and capital expenditures. Evaluation metrics for this Focus Area include: annual subsidy (the total amount needed to be secured by WETA to cover the difference between operating costs and fare revenues), operating cost per passenger mile (a measure of the effectiveness of spending per the amount of travel via ferry), and capital costs (the total cost of expansion). Cost estimates are preliminary and conceptual; costs would be further refined through the Business Plan process and the development and refinement of individual terminals and routes.

During the course of the Business Plan Evaluation phase, the legal objections that had held up Regional Measure 3 were resolved, freeing a significant source of funding for WETA. This news arrived too late to incorporate into the analysis but will be integrated into future Business Plan efforts. The Regional Measure 3 legislation identifies \$300 million in capital for WETA along with up to \$35 million annually as an additional operating fund that is flexible as a reserve or capital source as well. WETA staff is preparing a Five-Year Plan as required by the legislation that will be adopted by the WETA Board and submitted to MTC. This plan -- to be updated annually – will be consistent with the Business Plan and the Service Vision.

Relative to the Existing Network, each network would progressively increase annual subsidies, operating costs per passenger mile, and capital costs. The Coverage Network would be the least cost-effective of the four networks analyzed as it would require the highest subsidy, operating cost per passenger mile, and capital cost. Table 7 displays the Financial Capacity evaluation.

	2050 Futures				
Topics Studied	Existing	Plan Bay Area	Core	Coverage	
Annual Subsidy	\$60-70M	\$110-\$140M	\$140-190M	\$180-\$360M	
Operating Cost per Passenger Mile	\$0.80-\$1.20	\$1.00-\$1.60	\$1.20-\$1.70	\$1.40-\$2.00	
Capital Cost	Low	Medium	Med/High	High	

Table 7: Financial Capacity Evaluation

Source: Fehr & Peers, WETA



Comparison to Existing Network in 2050

The Plan Bay Area, Core, and Coverage Networks each offer tradeoffs compared to the Existing Network in 2050, as illustrated in Table 8 with the color-coded boxes. Each of these networks increase service, capacity, and reach at the expense of reducing productivity and financial efficiency. Overall, the Coverage Network has more pronounced effects than the Plan Bay Area and Core Networks, with greater benefits associated with emergency response and community connections, yet also greater challenges associated with environmental stewardship and financial capacity. Network performance exhibits similar trends across each Future: Plan Bay Area provides the most productive and cost-effective service; Coverage provides the highest ridership but requires the largest subsidies, and Core falls in the middle of Plan Bay Area and Coverage.

The evaluation illustrates that each network offers tradeoffs, and no single network performs best under all Focus Areas. Expansion increases regional coverage and reach, which improves connections to ferry service and emergency response capacity. However, expansion in some locations can pose challenges related to service productivity, environmental stewardship, and financial effectiveness. The Coverage Network amplifies the benefits and challenges of expansion, while the Core and Plan Bay Area Networks represent incremental changes over Existing.



Focus Area	Торіс	Plan Bay Area Network	Core Network	Coverage Network
	Ridership			
Regional Ferry Network	Productivity			
	Regional Transit Gaps Served			
	Capacity			
Emergency Response	Bay Bridge Capacity			
	Reach			
Environmental Stewardship	Zero Emissions Fleet			
	Wetland Effects			
	Dredging Effects			
	Service Area			
Community Connections	Equity Priority Communities			
	Development Connections			
Financial Capacity	Subsidy			
	Financial Effectiveness			
	Capital Cost			

Table 8: Comparison to 2050 Existing Network

Worse	Similar	Better



Comparison Across 2050 Futures

Each network exhibits relatively similar performance across the 2050 Futures, with the strongest performance occurring in the Chart a New Course Future (which has the most favorable outlook for ferry service) and the weakest performance occurring in the Throttle Back Future (which has the least favorable outlook for ferry service). Since the 2050 Futures are intended to test changes to travel behavior, service, and land use conditions, the Futures primarily affect quantitative metrics related to topics such as ridership, productivity, and financial effectiveness.

While each network varies across the four Futures, the relative differences between networks tends to be similar across the Futures. For example, total ridership is the highest for the Coverage Network across all Futures, while ridership is lowest for the Existing Network (Figure 6). In contrast, productivity is highest for the Existing Network and lowest for the Coverage Network (Figure 7). There is some variation in operating cost per passenger mile across the Futures depending on the underlying service assumptions: the Coverage Network the highest in three of the four Futures, while the Core Network is highest in one Future. Additional detail is provided in Table 14.



Figure 6: Ridership by Network and Future

April 12, 2023 Page 17 of 29









Figure 8: Operating Cost per Passenger Mile by Network and Future



Appendix

Ridership Forecasts by Route

Ridership forecasts played a key role in several criteria for the 2050 network evaluation. This section describes the approach to ridership forecasting for the Business Plan. Refinements to forecasts of individual routes are warranted on future terminal projects to better capture specific service and access characteristics.

Approach

Forecasting ferry ridership has traditionally posed challenges for regional travel demand models in the Bay Area. Ferry ridership represents a small proportion of overall regional travel; consequently, a small margin of error in regional forecasts can lead to a large variance in ferry ridership forecasts. Tools like MTC's Travel Model 1.5 and county-specific travel demand models are typically not well calibrated to the niche regional submarkets that ferries tend to serve, and sometimes lack responsiveness to the unique ability of ferries to induce demand and influence mode choice, particularly when providing connections that were previously very difficult via other modes. For these reasons, the Business Plan sought to develop a ferry-specific ridership model that would address these challenges while enabling analysis of a range of futures with a quick-response approach.

Ridership forecasts were prepared using a direct ridership modeling approach – a quick-response model tailored to variables that influence ferry ridership. Building upon similar approaches by peer agencies such as BART, Caltrain, and Capitol Corridor, the ridership model incorporates agency-specific data, spatial data, and travel data, such as:

- 2019 and 2022 transit ridership (WETA, Golden Gate Transit, and other overlapping services such as BART)
- 2019 and 2022 WETA rider surveys
- 2019 population and employment data (American Community Survey & US Census Longitudinal Employer Household Dynamics)
- 2050 population and employment forecasts (MTC Model based on Plan Bay Area 2050, with adjustments to reflect local land use forecasts in South San Francisco, Larkspur, Benicia, Mare Island, and Union City)



- 2019 origin-destination data from Streetlight (an aggregator of cell phone location-based services data)
- 2050 origin-destination data from the MTC Model
- Existing and forecasted auto travel times and transit travel times/frequencies/fares
- Special generators for non-commute trips

The direct ridership model consists of two components: a model for total travel demand between ferry terminal catchment areas and a mode choice model which splits that total travel demand into three possible modes: ferry, other transit, and auto. Both components segment travel demand into commute and non-commute travel, and both consider four different time periods: weekday AM peak, weekday Off-peak, and weekend.

The demand model uses a variety of data sources for existing total travel demand as noted in the bullet list above. Future total travel demand was estimated from growth in catchment area population, employment, and special generators, using a set of elasticities which varied by travel purpose, time period, and direction as depicted in Table 1.

The mode choice model uses a utility equation in which each mode's utility is related to its estimated terminal-to-terminal travel time, access and egress time, waiting time, and cost (fares and auto tolls). The coefficients in the utility equation were further calibrated to provide both a reasonable fit to observed mode split data and to provide reasonable sensitivity of ferry ridership to these four variables. The strength of each variable in the mode choice model is depicted in Table 2.



Period	Commute		Non-Co	ommute
	Origin	Destination	Origin	Destination
AM Peak				
Population	Low	Low	Low	Limited
Employment	Low	High	Limited	Limited
Special Generators	Limited	Limited	Low	Low
PM Peak				
Population	Low	Low	Low	Low
Employment	High	Low	Low	Low
Special Generators	Limited	Limited	Medium	Medium
Off-Peak				
Population	Low	Low	Low	Low
Employment	Medium	Medium	Low	Low
Special Generators	Limited	Limited	Medium	Medium
Weekend				
Population	Limited	Limited	Low	Low
Employment	Low	Medium	Low	Low
Special Generators	Limited	Limited	Medium	Medium

Table 1: Travel Demand Elasticities

Note: Limited or low elasticity indicates a relatively small effect on demand, while medium and high indicates a larger effect on demand.



		Commute		Non-Commute				
	Ferry	Ferry Transit Auto		Ferry	Transit	Auto		
AM Peak								
Travel Time	Medium	Medium	Medium	Low	Low	Low		
Access/Egress	Medium	Medium	Medium	Low	Low	Low		
Wait Time	High	High	High	Medium	Medium	Medium		
Cost	Medium	Medium	Medium	High	High	High		
PM Peak								
Travel Time	Low	Low	Low	Low	Low	Low		
Access/Egress	Low	Low	Low	Low	Low	Low		
Wait Time	Medium	Medium	Medium	Low	Low	Low		
Cost	Medium	Medium	Medium	High	High	High		
Off-Peak								
Travel Time	Medium	Medium	Medium	Low	Low	Low		
Access/Egress	Medium	Medium	Medium	Low	Low	Low		
Wait Time	High	High	High	Medium	Medium	Medium		
Cost	Medium	Medium	Medium	High	High	High		
Weekend								
Travel Time	Low	Low	Low	Low	Low	Low		
Access/Egress	Low	Low	Low	Low	Low	Low		
Wait Time	Medium	Medium	Medium	Low	Low	Low		
Cost	Medium	Medium	Medium	High	High	High		

Table 2: Mode Choice Variables

Note: Low indicates a weaker mode choice variable, while high indicates a stronger mode choice variable.

The ridership model was calibrated to 2019 conditions. Dynamic validation was performed to forecast and backcast changes to key variables to confirm the responsiveness of the model. After iterating through several versions, the model achieved calibration to approximately five percent of daily ridership systemwide and on most routes, and within 10 percent of systemwide ridership during peak periods as shown in Figures 9 and 10. This level of calibration is typically appropriate for demonstrating reasonable sensitivity to key variables without over-calibrating to existing conditions.



While the model achieves reasonable forecasts that are responsive to potential variables of interest in the Business Plan, many challenges remain in forecasting ferry ridership. There are various data gaps, directional imbalances, outliers, and other variances in travel behavior that complicate the ability of a model to capture ferry travel – especially as travel behavior continues to evolve as the COVID-19 pandemic diminishes. For these reasons, forecasts are presented as daily totals rounded to the nearest hundred riders, and should be viewed as rough estimates.



Figure 9: Weekday Ridership Calibration by Line

Figure 10: Ridership Calibration by Period





The Business Plan introduces two particular areas of complexity that are inherently more challenging to forecast: induced demand and local services.

- Induced Demand: Some of the proposed routes serve origin-destination pairs with limited existing travel (per Streetlight) or projected demand (per the MTC Model), often due to the difficulty in making such trips by any mode today. In such cases, ferries would induce demand by providing new connections with competitive travel times. Estimates of induced demand in the ridership model were anchored to observations of the existing Oakland/Alameda-South San Francisco ferry (opened up an entirely new market) and the Richmond-San Francisco ferry (opened up a market that partially overlapped other regional transit service). Induced demand and mode choice steps described above.
- Local Services: Some potential routes serve local markets that pose challenges due to their smaller scale and lack of comparable routes (given the regional focus of existing ferries).
 For these routes, the ridership model relies more heavily on local travel demand models by partner agencies (SFCTA, Alameda CTC, and STA) to establish demand and mode shift potential prior to incorporating into the Business Plan forecasting process.

Ridership Forecasts

Table 1 and Figure 11 illustrate the daily 2050 ridership forecasts for each route.



Route	Steady as it Goes	Throttle Back	Chart New Course	Tack to the Wind
Oakland-SF	6,600	4,600	9,400	6,400
West Alameda-SF	4,900	5,300	8,100	6,300
SFFB-Mission Bay	900	700	1,300	1,000
Pier 41-SFFB-Mission Bay-Hunters Point	1,900	1,400	2,900	2,100
Vallejo/Mare Island-SF	9,000	6,300	10,600	7,800
SFFB-Treasure Island	4,400	3,300	6,600	4,800
Berkeley-SF	2,500	1,800	4,000	2,600
Oakland-Alameda	1,100	1,100	2,000	1,500
Vallejo-Mare Island	500	400	700	500
Richmond-SF	2,800	2,000	4,600	2,800
Harbor Bay-SF	2,300	1,900	3,400	2,400
Oakland-Alameda-SSF	5,200	2,900	8,000	4,000
Oakland-Redwood City	1,500	800	2,200	800
SF-Redwood City	300	200	400	400
Hercules-SF	600	400	1,100	1,000
San Leandro-SF	800	600	1,800	1,600
Antioch-SF	100	100	100	100
Benicia-SF	400	300	700	600
Larkspur-Berkeley	300	200	400	400
Berkeley-RC	400	200	700	600
San Leandro-SSF	1,000	900	1,700	1,400
Richmond-SSF	1,100	800	1,900	1,600
Vallejo-OAK	600	400	1,100	1,000
SF-SSF	500	400	1,000	900
San Leandro-Foster City-Redwood City	1,000	800	1,500	1,300
Union City-Foster City	600	400	1,000	800
San Leandro-Union City-Mountain View	1,800	1,000	2,500	2,100
San Francisco- Alviso	100	100	100	100
Oakland-Alviso	100	100	100	100
Martinez-San Francisco	400	300	700	600

Table 11: 2050 Daily Ridership Forecasts

Source: Fehr & Peers

April 12, 2023 Page 25 of 29







Several factors were found to affect ridership forecasts across the networks and futures. Ridership forecasts were heavily influenced by service levels, fares, and travel demand: all routes showed gains when increasing peak and off-peak service levels, while lower fares and a return to pre-COVID travel patterns also boosted ridership demand. Routes that offered competitive travel times and frequencies tended to have higher ridership by capturing a larger mode share and inducing greater demand; conversely, routes without competitive travel times and frequencies tended to serve fewer riders (especially if routes overlapped with Link 21 regional rail improvements in the Steady as it Goes future). Land use growth also played a key role in ridership demand: routes with more population and job growth tended to have higher ridership demand, and the differences in growth expectations across futures influenced the wide range in forecasts on some routes.



In particular, the following trends surfaced for specific routes and terminals exhibiting higher ridership demand:

- Routes serving San Francisco due to a combination of very high 2050 employment density projections and convenient terminal access.
- Routes serving South San Francisco due to the robust growth underway in the City (tripling employment to over 100,000 jobs near the ferry terminal by 2050) and very good travel time competitiveness.
- Routes serving Mountain View due to the proximity of the ferry terminal to the North Bayshore area (projected to double employment by 2050) and very good travel time competitiveness.
- Routes serving Oakland due to the robust housing growth projected to occur by 2050 (adding over 100,000 new residents).

Conversely, the following trends surfaced for specific routes and terminals exhibiting lower ridership demand:

- Routes lacking travel time competitiveness such as San Francisco-Redwood City (ferry service would be about twice as long as Caltrain), Oakland-Alviso (ferry service would be three times longer than Capitol Corridor), and Antioch-San Francisco (ferry service would be 60 percent longer than BART)
- Routes serving smaller travel home-based markets including lower intensity areas with limited growth (such as Benicia, Antioch, and Larkspur) or moderate growth (Hercules, Martinez, San Leandro, and Union City
- Routes serving smaller employment markets primarily Foster City and Redwood City, which have less existing and projected jobs near the terminals than others noted above

Due to the differences in methodology, ridership forecasts from the Business Plan may differ from previous forecasts prepared for individual projects. Refinements to forecasts of individual routes are warranted on future terminal projects to better capture specific project characteristics.

Evaluation Summary Tables

Tables 12, 13, and 14 summarize data used to inform the evaluation process. Table 12 presents terminal-based metrics related to effects on wetlands and dredging as well as interface with regional superdistricts, Priority Development Areas, and Equity Priority Communities. Tables 13 and 14 present route-based metrics related to new one-seat rides via transit, zero-emissions vessels, route productivity, and financial effectiveness.

Terminals	Plan Bay Area	Core	Coverage	Overlaps with Wetlands	Dredging Need	Superdistrict Number	Priority Development Area	Equity Priority Community within 3 miles
Alameda Landing		\checkmark			Limited	18	\checkmark	\checkmark
Alameda Seaplane	\checkmark	\checkmark	\checkmark		-	18	\checkmark	\checkmark
Alviso (San Jose)			\checkmark	\checkmark	Substantial	9		\checkmark
Antioch			\checkmark		Limited	24	\checkmark	\checkmark
Benicia			\checkmark		Some	25	\checkmark	\checkmark
Berkeley	\checkmark	\checkmark	\checkmark		Some	19		\checkmark
Foster City			\checkmark	\checkmark	Substantial	6		\checkmark
Harbor Bay (Alameda)	\checkmark	\checkmark	\checkmark		-	18		\checkmark
Hercules			\checkmark	\checkmark	Substantial	20	\checkmark	\checkmark
Hunters Point (San Francisco)		\checkmark			Substantial	3	\checkmark	\checkmark
Larkspur		\checkmark	\checkmark		-	34		\checkmark
Mare Island (Vallejo)	\checkmark	\checkmark	\checkmark		Limited	25	\checkmark	\checkmark
Martinez		\checkmark	\checkmark		Limited	21		\checkmark
Mission Bay	\checkmark	\checkmark	\checkmark		Limited	3	\checkmark	\checkmark
Mountain View			\checkmark	\checkmark	Substantial	9		\checkmark
Oakland	\checkmark	\checkmark	\checkmark		-	18	\checkmark	\checkmark
Pier 41 (San Francisco)		\checkmark			-	1	\checkmark	\checkmark
Redwood City	\checkmark	\checkmark	\checkmark		Limited	7		\checkmark
Richmond	\checkmark	\checkmark	\checkmark		-	20	\checkmark	\checkmark
San Francisco Ferry Building	\checkmark	\checkmark	\checkmark		-	1	\checkmark	\checkmark
San Leandro			\checkmark		Substantial	17		\checkmark
South San Francisco	\checkmark	\checkmark	\checkmark		-	5		\checkmark
Treasure Island (San Francisco)	\checkmark	\checkmark	\checkmark		Limited	1	\checkmark	\checkmark
Union City			\checkmark	\checkmark	Substantial	16		
Vallejo	\checkmark	\checkmark	\checkmark		Limited	25	\checkmark	\checkmark

Table 12: Terminal Summary

Notes:

• Designation of <u>Superdistricts</u>, <u>Priority Development Areas</u>, and <u>Equity Priority Areas</u> based on the Metropolitan Transportation Commission's Plan Bay Area 2050

Wetland classification based on <u>Estuarine and Marine Wetland designation by US Fish and Wildlife Service's National Wetlands Inventory</u>
Dredging needs classified into three categories based on estimated water depth from <u>US Fish and Wildlife Service's nautical chart</u> at potential terminal location: "limited" indicates greater than 11 feet of depth, "some" indicates 6 to 10 feet of depth, and "substantial" indicates less than 6 feet of depth.



Doute		Netwo	rks Included		Travel Time +	Peak Vessels		
Koute	Existing	Plan Bay Area	Core	Coverage	Length (Miles)	(Minutes)	Low	High
Oakland-SF	\checkmark	\checkmark	\checkmark	\checkmark	6.5	30	2	4
Alameda Seaplane-SF	\checkmark	\checkmark	\checkmark	\checkmark	6	25	2	4
SF FB-Mission Bay		\checkmark		\checkmark	2.8	15	1	2
Pier 41-SFFB-Mission Bay-Hunters Point			\checkmark	0	8.6	55	4	8
Vallejo/Mare Island-SF	\checkmark	\checkmark	\checkmark	\checkmark	29.6	65	5	9
Treasure Island-SF		\checkmark	\checkmark	\checkmark	2	15	1	2
Berkeley-SF		\checkmark	\checkmark	\checkmark	7.1	30	2	4
Oakland-Alameda Landing			\checkmark		0.2	10	1	1
Mare Island-Vallejo			\checkmark		0.2	15	1	1
Richmond-SF	\checkmark	\checkmark	√	\checkmark	10.1	40	2	3
Harbor Bay-SF	\checkmark	\checkmark	\checkmark	\checkmark	8.8	30	1	2
Oakland-Alameda-SSF	\checkmark	\checkmark	\checkmark	\checkmark	15.3	5	2	4
Oakland-Redwood City		\checkmark	\checkmark	\checkmark	26.4	60	2	4
SF-Redwood City		\checkmark	\checkmark	\checkmark	24.4	60	2	4
Hercules-SF				\checkmark	23.8	65	3	3
San Leandro-SF				\checkmark	14.1	45	2	2
Antioch-SF				\checkmark	51.2	125	5	5
Benicia-SF				\checkmark	31.2	70	3	3
Larkspur-Berkeley			\checkmark	\checkmark	12.1	40	2	2
Berkeley-RC				\checkmark	30.6	75	3	3
San Leandro-SSF				\checkmark	11	40	2	2
Richmond-SSF			\checkmark		20.3	55	2	2
Vallejo-OAK				\checkmark	33.6	65	3	3
SF-SSF			\checkmark		11.2	40	2	2
San Leandro-Foster City-Redwood City				\checkmark	24	10	3	3
Union City-Foster City				\checkmark	9.2	35	2	2
San Leandro-Union City-Mountain View				\checkmark	30.7	10	4	4
San Francisco- Alviso				\checkmark	35.8	125	5	5
Oakland-Alviso				\checkmark	38.2	125	5	5
Martinez-San Francisco			\checkmark	\checkmark	33.2	70	3	3

Table 13: Route Summary



New One-Seat Ride	ZEV Classification
	ZEV Possible
	ZEV Ready
	ZEV Ready
	ZEV Possible
	ZEV Infeasible
	ZEV Ready
	ZEV Possible
	ZEV Ready
	ZEV Ready
	ZEV Possible
	ZEV Possible
	ZEV Infeasible
\checkmark	ZEV Infeasible
	ZEV Infeasible
	ZEV Infeasible
\checkmark	ZEV Possible
	ZEV Infeasible
\checkmark	ZEV Infeasible
\checkmark	ZEV Possible
\checkmark	ZEV Infeasible
\checkmark	ZEV Possible
\checkmark	ZEV Possible
\checkmark	ZEV Infeasible
	ZEV Possible
\checkmark	ZEV Possible
\checkmark	ZEV Possible
\checkmark	ZEV Possible
	ZEV Infeasible
	ZEV Infeasible
\checkmark	ZEV Infeasible

		Operating Cost per Passenger Mile				Total Operating Subsidy						
Route	Steady as it Goes	Throttle Back	Chart New Course	Tack to the Wind	Steady as it Goes	Throttle Back	Chart New Course	Tack to the Wind	Steady as it Goes	Throttle Back	Chart New Course	Tack to the Wind
Oakland-SF	137	128	199	183	\$1.3	\$1.4	\$0.9	\$1.0	\$6,522,725	\$5,464,475	\$5,053,900	\$4,518,400
Alameda Seaplane-SF	107	150	171	177	\$1.9	\$1.3	\$1.2	\$1.1	\$8,531,213	\$4,336,463	\$6,540,970	\$4,750,870
SFFB-Mission Bay	41	42	62	61	\$6.0	\$6.0	\$4.1	\$4.1	\$3,826,731	\$2,928,419	\$3,679,525	\$2,827,450
Pier 41-SFFB-Mission Bay-Hunters Point	24	23	37	35	\$3.3	\$3.5	\$2.2	\$2.3	\$16,555,394	\$12,746,988	\$16,154,725	\$12,470,125
Vallejo/Mare Island-SF	76	67	91	85	\$0.9	\$1.0	\$0.7	\$0.8	\$38,016,850	\$32,940,575	\$39,226,760	\$32,841,560
SFFB-Treasure Island	209	205	314	297	\$1.7	\$1.7	\$1.1	\$1.2	\$731,575	\$624,981	-\$39,950	\$155,800
Berkeley-SF	53	52	85	74	\$3.2	\$3.3	\$2.0	\$2.3	\$12,147,413	\$9,390,225	\$11,168,640	\$9,002,980
Oakland-Alameda	74	70	130	97	\$47.0	\$49.8	\$26.8	\$36.2	\$2,466,044	\$2,524,544	\$2,043,100	\$2,423,575
Vallejo-Mare Island	32	24	46	32	\$110.8	\$143.2	\$76.3	\$110.8	\$3,071,856	\$3,172,825	\$2,999,575	\$3,161,125
Richmond-SF	72	60	115	84	\$1.7	\$2.0	\$1.0	\$1.4	\$9,652,850	\$8,968,950	\$8,449,500	\$8,580,680
Harbor Bay-SF	101	111	148	142	\$1.4	\$1.2	\$0.9	\$1.0	\$4,488,288	\$3,175,038	\$3,886,100	\$3,095,600
Oakland-Alameda-SSF	106	78	164	108	\$0.7	\$1.0	\$0.5	\$0.7	\$5,061,075	\$6,057,694	\$2,548,800	\$5,405,640
Oakland-Redwood City	32	21	48	22	\$2.3	\$3.6	\$1.6	\$3.4	\$21,876,975	\$17,906,400	\$21,112,120	\$18,260,640
SF-Redwood City	7	7	10	13	\$11.0	\$11.5	\$8.1	\$6.2	\$25,226,675	\$19,368,050	\$25,131,760	\$19,011,760
Hercules-SF	33	22	23	21	\$1.1	\$1.7	\$1.6	\$1.8	\$2,954,813	\$3,346,875	\$11,397,405	\$11,618,190
San Leandro-SF	67	50	59	53	\$1.3	\$1.7	\$1.4	\$1.6	\$2,103,750	\$2,495,813	\$8,408,070	\$8,785,680
Antioch-SF	3	3	1	1	\$5.3	\$5.3	\$12.3	\$12.3	\$6,623,625	\$6,623,625	\$22,322,620	\$22,322,620
Benicia-SF	22	17	15	12	\$1.3	\$1.7	\$2.0	\$2.4	\$3,085,500	\$3,346,875	\$11,765,380	\$12,059,760
Larkspur-Berkeley	25	17	11	11	\$4.0	\$6.0	\$8.9	\$8.9	\$3,279,938	\$3,410,625	\$11,601,560	\$11,601,560
Berkeley-RC	22	11	13	11	\$2.9	\$5.9	\$5.2	\$6.0	\$8,134,500	\$8,657,250	\$28,607,020	\$28,816,120
San Leandro-SSF	83	75	44	37	\$1.3	\$1.5	\$2.5	\$3.0	\$2,365,125	\$2,495,813	\$10,242,410	\$10,556,060
Richmond-SSF	92	67	49	42	\$0.6	\$0.9	\$1.2	\$1.4	\$1,515,656	\$2,103,750	\$9,018,765	\$9,489,240
Vallejo-OAK	50	22	21	19	\$1.2	\$2.7	\$2.8	\$3.1	\$4,551,750	\$8,134,500	\$27,514,780	\$27,809,160
SF-SSF	42	33	26	24	\$2.6	\$3.2	\$4.1	\$4.5	\$3,018,563	\$3,149,250	\$10,974,260	\$11,078,810
San Leandro-Foster City-Redwood City	83	44	27	24	\$0.6	\$1.1	\$1.8	\$2.1	\$1,711,688	\$3,939,750	\$15,549,345	\$15,862,995
Union City-Foster City	100	33	27	22	\$1.3	\$3.9	\$4.8	\$5.8	\$1,051,875	\$3,149,250	\$10,931,620	\$11,140,720
San Leandro-Union City-Mountain View	150	42	35	29	\$0.3	\$0.9	\$1.1	\$1.3	-\$1,032,750	\$4,730,250	\$18,385,620	\$19,307,300
San Francisco- Alviso	4	3	1	1	\$6.0	\$7.5	\$17.6	\$17.6	\$5,246,625	\$6,623,625	\$22,322,620	\$22,322,620
Oakland-Alviso	4	3	1	1	\$5.7	\$7.1	\$23.2	\$23.2	\$5,246,625	\$6,623,625	\$22,407,900	\$22,407,900
Martinez-San Francisco	22	17	15	13	\$1.2	\$1.6	\$1.9	\$2.1	\$3,085,500	\$3,346,875	\$11,765,380	\$11,974,480

Table 14: Route Summary Metrics



	Operating Cost per Passenger										
e	Steady as it Goes	Throttle Back	Chart New Course	Tack to the Wind							
1	\$9	\$9	\$6	\$7							
	\$11	\$8	\$7	\$7							
	\$17	\$17	\$11	\$11							
5	\$29	\$30	\$19	\$20							
C	\$26	\$30	\$22	\$24							
	\$3	\$3	\$2	\$2							
	\$22	\$23	\$14	\$16							
	\$9	\$10	\$5	\$7							
	\$22	\$29	\$15	\$22							
	\$17	\$20	\$10	\$14							
)	\$12	\$11	\$8	\$8							
	\$11	\$15	\$7	\$11							
C	\$62	\$94	\$42	\$89							
)	\$270	\$280	\$197	\$151							
C	\$27	\$41	\$38	\$43							
	\$18	\$24	\$20	\$23							
C	\$270	\$270	\$630	\$630							
)	\$41	\$54	\$62	\$74							
)	\$48	\$72	\$107	\$107							
)	\$90	\$180	\$160	\$185							
C	\$14	\$16	\$27	\$33							
	\$13	\$18	\$24	\$29							
C	\$40	\$90	\$94	\$105							
C	\$29	\$36	\$45	\$50							
5	\$14	\$27	\$44	\$50							
)	\$12	\$36	\$44	\$54							
C	\$8	\$29	\$34	\$41							
)	\$216	\$270	\$630	\$630							
C	\$216	\$270	\$887	\$887							
)	\$41	\$54	\$62	\$70							



Business Plan Workshop #2

April 17, 2023



bayferry2050.org

Agenda

RM3 Update

5 MINS

Overview Next Steps 2050 Service Vision

Review of Network

10 MINS

Concepts

Proposal

30 MINS

Evaluation Results Outreach Summary

Evaluation &

Outreach

Results

Next Steps &

Discussion

Service Vision Optimization

60 MINS

Service Vision Policy Statement

Discussion



Regional Measure 3 Update


RM3 – Overview

Resolved in January 2023

- Too late to incorporate into service vision
- Freed up \$300 million in capital and \$35 million annually in operating funding

Candidates for RM3 capital funds

- In-progress terminal expansion projects
- Other initiatives (fleet expansion, emergency floats, zero emission infrastructure)



RM3 – Next Steps

Business Plan

- Future work will assume RM3 as a potential funding source
- Will help guide RM3 expenditure at the program-level
- Details of actual expenditures will be included in WETA's RM3 5-year plan

• 5-year RM3 expenditure plan

- Legislation requires WETA submit a 5-year plan to MTC to access funds
- Currently in-progress (estimated completion June 2023)



2050 Service Vision



Current Baseline Network

Network details

- 10 terminals
- 6 routes
- 16-26 vessels







Plan Bay Area Network

Network details

- 14 terminals
- 11 routes
- 22-42 vessels







Core Network

Network details

- 18 terminals
- 17 routes
- 36-59 vessels

Route

Multiple options

for terminal location

WETA

0

NEW

GGF

EXISTING EXISTING





Coverage Network

Network details

- 26 terminals
- 25 routes
- 67-87 vessels

Route

Multiple options

for terminal location

WETA

0

NEW

GGF

EXISTING EXISTING



Proposal for Finalizing the 2050 Service Vision

Coverage Network

Core Network

Optimize into 2050 Service Vision with Guidance for Considering Additional Expansion to North and South Bay

Plan Bay Area

CURRENT NETWORK

2050 NETWORK CONCEPTS



Service Vision Components

Service Vision Network Map: "The Where"



Service Vision Policy Statement: "What and How"

Draft Service Vision Policy Statement Outline

Summary statement about what the vision (for the Core Network) is and what goals it <u>addresses</u>

 Statement describing the network (reference to a map or a list of routes or both?)

- b. Statement one about the service approach and levels (service types and generally how operated)
 - i. Local
 - ii. Regional
 - iii. Special Event
- c. Statement two about service approach (all day and weekend and/or commute focus)

d. Statement three about service approach and levels (general frequency)

- i. Routes (or route characteristics) that would have the highest tier of frequency
- ii. Routes that would have the middle tier of frequency
- iii. Routes that would have bwest tier of frequency
- Standard for moving a route into a higher frequency tier based on funding and or ridership
- e. Statement about serving as an emergency responder?
- f. Statement about how service vision will be implemented incrementally and refined through additional studies and engagement
 - i. Sub statement about electrification
 - ii. Sub statement about station access
 - iii. Sub statement about terminals
 - iv. Sub statement about fleet mix
 - v. Sub statement about storage and maintenance facilities?



2050 Service Vision Proposal:

Optimize the Core Network to:

- Continue to improve and enhance cross bay service to San Francisco
- Expand cross bay service beyond San Francisco to the Central and Northern Peninsula
- Provide short hop service between dense hubs
- Introduce cross bay routes to Marin County
- Establish pragmatic standardsbased approach for expansion beyond optimized network in the North and South Bay





Evaluation Results



Network Concept Summary

All 2050 networks consider a substantial expansion of service in addition to new routes. Specific service plans vary by "Futures" resulting in a range of hours and costs for each network. Operating cost estimates are based on the current WETA service model and do not yet consider potential savings associated with electrification and small vessel deployment.

	Network Concept	Routes	Terminals	Peak Vessels	Annual Revenue Hours	Annual Operating Cost (\$2022)
2022	Existing	6	10	16	25K	\$62M
2050 -	Baseline	6	10	16-26	70-90K	\$100-\$130M
	Plan Bay Area	11	14 HYDRU	22-42	110-140K	\$160-\$210M
	Core	17	18	36-59	150-220K	\$200-\$280M
	Coverage	25	26	67-87	180-370k	\$240-470M

Performance Compared to Existing 2050 Network

Focus Area	Торіс	Plan Bay Area Network	Core Network	Coverage Network
	Ridership			
Regional Ferry Network	Productivity			
	Transit Gaps Served			
	Capacity			
Emergency Response	Bay Bridge Capacity			
	Reach			
	Zero Emissions			
Env. Stewardship	Wetland Effects			
	Dredging Effects			

Focus Area	Торіс	Plan Bay Area Network	Core Network	Coverage Network
	Service Area			
Community Connections	Equity Priority Communities			
	Development Connections			
Financial Capacity	Subsidy			
	Operating Cost per Pax Mile			
	Capital Cost			





Findings for Expansion Beyond Plan Bay Area

Expansion Increases Ridership, Capacity, and Connectivity

Expanding the region's ferry network supports a more accessible ferry network with a broader reach for mobility and emergency response needs.

Expansion Can Produce Diminishing Returns

Expansion Can Result in Environmental Challenges

Productivity and financial effectiveness tend to decline as more routes are added, while operating subsidy increases substantially. Markets with the highest concentration of demand are already mostly served by ferries and regional transit.

Some routes and terminals present substantial environmental constraints - adversely affecting wetlands, requiring substantial dredging, and limiting the use of zero emissions vessels.



Rationale for Optimized Core Network Service Vision

Regional Ferry Network

- Increases ridership
- Serves gaps in the regional transit network

Emergency Response

- Expands fleet and terminal capacity
- Expands regional ferry access

Environmental Stewardship

- Minimizes new terminals that impact sensitive wetlands and wildlife areas
- Minimizes new terminals that would require significant volume of dredging
- Emphasizes routes with clear path to zero emissions vessels



Rationale for Optimized Core Network Service Vision (cont.)

Community Connections

- Expands connections to new communities and markets
- Serves additional Equity Priority Communities and Priority Development Areas

Financial Capacity

- Incrementally increases operating subsidy
- Mitigates higher cost per passenger by incorporating smaller vessels on local and lower demand routes
- Minimizes capital costs by leveraging existing terminals to create new routes



2050 Futures



Resilience – Key Takeaways

Ferry networks generally perform best in Chart a New Course and Tack to the Wind futures

- **Plan Bay Area** is the most productive and most cost-effective network under all futures
- **Coverage Network** has the highest ridership but requires the most subsidy under all futures
- **Core Network** falls in the middle in terms of performance in all futures



Potential Expansion Beyond Core Network

Market Conditions

Environmental Feasibility

Funding Opportunities

Transformative changes in housing and employment patterns, as well as the regional transportation network. Evolving vessel technologies and changes in local land use or shoreline conditions. Future sources of currently unanticipated public or private funding become available.



Public Outreach



Current Outreach and Engagement Activities

CBO Listening Sessions January 5 – 31, 2023

Business Advisory Group January 18, 2023

Community Advisory Group January 25, 2023

Online Community Survey January 25 – March 24, 2023

County Working Groups February 8 – 23, 2023 WETA Board Workshop April 6, 2023

Present findings from community engagement

18 total meetings this round

Final Service Vision June 2023



CBO Listening Sessions

9 Sessions

- All Home California
- Calle 24
- Five Keys
- Martinez Community
 Foundation
- Multicultural Institute
- Palo Alto TMA
- PODER
- Ryse Center
- Samaritan House San Mateo

Key Feedback

- To reach lower-income communities, meet people at the places they frequent
- Promote using flyers, other physical collateral
- Use paper surveys instead of online
- Offer incentives for participation, "this is a dealbreaker" for many orgs

Future Considerations

- Provide free opportunities for Bay Area youth to experience the ferry
- More intentional campaign to change the perception that ferry is too expensive



Advisory Groups

Consider key tradeoffs

Remain open to future technologies

Access is key to increasing ridership

- Environmental stewardship vs. expanding coverage: Trust WETA to handle environmental issues responsibly
- Service coverage vs. cost effectiveness: Potential for increased ridership is too important not to pursue coverage
- They can change the way we handle dredging, wetlands, vessel strikes, and long-haul routes, etc.
- Anticipate all routes will be feasible at some point in the future

- Access, equity and growth are all tied together
- Make it easier for all people to use the ferry
- Landside, first/last mile will be key factor of success

2050

Six County Working Groups

Alameda County

- Alameda County
 Transportation Authority
- Alameda

- Berkeley
- Oakland
- San Leandro

Solano County

- Solano Transportation
 Authority
- Vallejo
- Benicia

City and County of San Francisco

- San Francisco County TA
- SFMTA
- Port of SF

- TIDA
 - SF Mayor's Office

San Mateo County

- San Mateo County TA
- SamTrans
- South San Francisco

Contra Costa County

- Contra Costa Transportation Authority
- WCCTAC

Santa Clara County

- VTA
- Palo Alto
- Mountain View
- Milpitas

- Redwood City
- Foster City
- Port of Redwood City
- Richmond
- Hercules

- Martinez
- Antioch



County Working Groups

Environment

Weary of expansion requiring significant environmental impacts to sensitive or protected shoreline areas.

System Productivity

Expansion without efficiency is a disservice to the entire system's operations and funding.

Maintain and enhance the existing system's highperforming core routes.



Allow for greater flexibility in WETA's project delivery model. Smaller vessels or alternative operating agreements can allow more communities access to ferry transit.



Online Public Survey

4,568 responses

JAN 30 - MARCH 24

- Six questions about future ferry system trade-offs
- How to balance...
 - Affordability
 - Service frequency
 - Service speed
 - Coverage
 - Environmental sustainability

Bay Ferry 2050 Public Survey

f y in 🖂

San Francisco Bay Ferry is exploring how best to serve Bay Area residents in the years to come. How should the ferry system balance affordability, service frequency and speed, expansion, and environmental sustainability to be a mode of transportation you use and trust?

Take this survey to tell us what is most important to you and your household, and enter to win a \$50 Clipper Card or a San Francisco Bay Ferry water bottle at the end of the survey. The survey takes less than 10 minutes to complete. We appreciate your time and opinions to help guide San Francisco Bay Ferry's future.





HELP SHAPE THE

FUTURE OF

WATER TRANSIT

Who Did We Hear From?

Race



30

Responses by County



Top Survey Takeaways

Trip Frequency is Priority

A majority of respondents ranked "increased trip frequency" as a reason to take the ferry more often

Secondary Concerns

- Transit connections
- Travel time
- Cost



Most Important Factors When Deciding Whether to Take the Ferry



Services Changes that Would Most Influence People to Ride the Ferry More Often



Top Reasons for Not Taking the Ferry

45.2% Do not live close enough to ferry terminal 7.4% 28.2% Do not travel where the ferry goes 19.3% Do not travel when the ferry operates

2050 35

Likelihood of Riding the Ferry if...

Less likely

No difference Orre likely



205

Most Important 2050 Ferry Service Outcomes

1 – most important; 8 – least important



Discussion



Next Steps


Next Steps



Draft Service Vision Policy Statement

- Describe the **high-level vision and service approach** and key implementation and network refinement activities that will shape delivery of specific routes and terminals
- Provide guidance as to WETA's role in consideration of expansion beyond Core Network in North and South Bay
- Describe actions that staff will take to advance the Service Vision (e.g. finish the Business Plan, evolve the organization, pursue funding)
- Describe how often and under what circumstances Service Vision will be updated



Implementing the 2050 Service Vision

Implementation of the Service Vision will not necessarily follow a linear path. In Phase 3 of the process, the Business Plan will develop specific criteria to advance new routes and terminals, consider phasing and assess organizational, partnership, and funding needs for the selected Service Vision.

> 2050 Service Vision

CURRENT NETWORK

POTENTIAL IMPLEMENTATION PATHS





Bay Ferry 2050 microsite bayferry2050.org

WETA staff contacts

Mike Gougherty <u>Gougherty@watertransit.org</u> Gabriel Chan <u>Chan@watertransit.org</u>

