# Treasure Island Transportation Implementation Plan

**June 28, 2011**

TICD

**Treasure Island Community Development, LLC**

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# 1 INTRODUCTION

This Treasure Island Transportation Implementation Plan is being prepared in conjunction with the Disposition and Development Agreement (DDA) between the Treasure Island Development Authority (TIDA) and Treasure Island Community Development (TICD).

This document lays out a transportation program with a series of measures and strategies that will deliver a unique transportation experience. Grounded in the principles of transit-oriented, sustainable development, the Island's residents, visitors, and employees will enjoy access to high quality travel opportunities that prioritize walking, bicycling, and transit; that incentivize travel by modes other than private automobiles; and that provide disincentives to those who choose to travel by single-occupancy private vehicles.

The measures and strategies will be implemented in part through the financial obligations of TICD to fund the capital costs associated with the build-out of transit infrastructure and the operating subsidies in the initial phases of development, and by pricing mechanisms and financial incentives to encourage transit use over the long term. The Transportation Program described herein is consistent with the 2010 Term Sheet Update that was unanimously endorsed by the Treasure Island / Yerba Buena Citizens Advisory Board (TICAB), the TIDA Board, and the City and County of San Francisco Board of Supervisors (BOS), and supersedes in its entirety Exhibit J (Treasure Island Transportation Plan) to the 2006 Development Plan and Term Sheet for the Redevelopment of Naval Station Treasure Island between TIDA and TICD, which was unanimously endorsed by the TICAB, the TIDA Board, and the Board of Supervisors in December 2006.

## 1.1 HISTORY OF THE PROJECT'S TRANSPORTATION PLANNING PROCESS

In 2006, TICD and TIDA prepared a Transportation Plan that described the transportation and access components of the Land Use Plan for the redevelopment of Naval Station Treasure Island. That plan was based on an intensive and iterative planning and design effort that occurred over several years through an extensive public process. The 2006 Transportation Plan's role was to articulate a solution to one of the most critical aspects of the Project's land use plan—how to address the challenge of access to an island community in a congested region that demands innovative, efficient, and sustainable solutions. Some key elements of the land use plan and its transportation elements that were identified in 2006 include:

- A ferry terminal on Treasure Island's western shore, allowing water transit to arrive into the heart of the community, easily visible from downtown San Francisco, and within easy walking distance from all residents of the Treasure Island community;

- A compact, transit-oriented community, resulting in more public open space and more housing than a more suburban development pattern would;

- A complex and thoroughly articulated urban design and architectural plan, illustrating relationships between buildings, public space, transportation, views, and natural factors; and

- A strong commitment to sustainability, including a dense and compact urban form, renewable energy proposals, an innovative green-building agenda, and a commitment to create a self-sufficient community.

Since the endorsement of the 2006 Term Sheet, TICD and TIDA have worked closely with the TICAB, the Board of Supervisors' Land Use and Economic Development Committee, various transit agencies, stakeholders, and the public at large to refine both the land use and transportation plans for the Project. Extensive review and revision sessions were held with transit and traffic engineers, bicycle and pedestrian planners, public health and universal access advocates, and emergency access experts, resulting in decisions, solutions, and refinements that have been signed off by numerous responsible agencies. In response to comments made by the TICAB, TIDA Board, and members of the public through the course of the several years of Project refinements and environmental review process, a number of improvements have been made to the Project:

- The ferry terminal was moved to the south along the western shore, oriented along an axis with historic Building 1 in order to activate the historic buildings and enhance the reliability and efficiency of ferry operations.

- The retail street was shifted to continue that axis from Building 1 to Building 2, thereby bringing a new purpose to the historic buildings.

- The density of the Project was increased from a maximum of 6,000 to 8,000 homes, and the commercial program refined to include additional office space.

- In consultation with transit providers, the routes and schedules for the transbay bus service planned for the Islands were refined.

The Project, including these refinements, has been subject to environmental review under the California Environmental Quality Act (CEQA). A Draft Environmental Impact Report (DEIR) was prepared by the City and published on July 12, 2010 in order to evaluate the physical effects of the Project on the environment, including transportation effects. The scope of the DEIR's analysis of transportation effects includes forecasting the trips that could potentially be generated by the Project and evaluating the adequacy of the transportation services proposed by the Project under two scenarios: a base transit scenario with more limited transit service, and an alternative scenario with an expanded transit service program.

The purpose of this document, the Transportation Implementation Plan, is to describe how the Project's complete transportation program, including the expanded transit service, would be implemented. TICD has certain obligations—including building the infrastructure (such as the Transit Hub and ferry quay). making capital improvements, and providing operating subsidies—that will be required under the DDA. Because operation of the expanded transit service depends on third party operators and future funding, as well as the travel behavior of future Island residents, its exact parameters cannot be guaranteed. Rather, this Implementation Plan describes the tools available to TIDA to manage the transportation needs of the Project, the framework through which those tools will be used, and the arrangements that are in place now (including obligations of TICD), at the time of Project approvals, to enable implementation.

Through the extensive public planning process for the redevelopment of Naval Station Treasure Island, the commitments and principles of the Project, with its vision of Treasure Island as a diverse, sustainable, and family-friendly transit-oriented community, has not changed. Whereas the 2006 Transportation Plan focused on describing the vision and principles of the transportation program, this Implementation Plan memorializes the policies and commitments based on the prior work to focus on how those goals will come to be realized.

## 1.2 EXECUTIVE SUMMARY

### *1.2.1 LAND USE PROGRAM*

The land use program for the development of Treasure Island and Yerba Buena Island (in this document collectively called "Treasure Island") includes up to 8,000 homes (2,200 of which would be affordable units); approximately 207,000 square feet of neighborhood-serving and visitor-oriented retail in both new construction and adaptive reuse; an additional 244,000 square feet of adaptive reuse; up to 500 hotel rooms; up to 100,000 square feet of office space; up to 300 acres of public open spaces;

recreational areas; and public facilities such as a school, police and fire station, and community spaces. Full build-out of the development is expected to take place over the course of 15 to 20 years.

### *1.2.2 TRANSIT PROGRAM*

Specific transit programs include the following:

- A new ferry service operating from a new Ferry Terminal and Intermodal Transit Hub located on the western shore of Treasure Island. The ferry terminal is within a 10- to 15-minute walk of the majority of residences and is in the heart of the community. Ferries will operate between 5:00 am and 9:00 pm throughout the weekday and weekend, with peak hour service at 15-minute intervals at full build-out of the Project.

- Bus services operating to San Francisco's Civic Center and Transbay Terminal and to the East Bay (Downtown Oakland) will operate from the Transit Hub throughout the weekday and weekend, with service about every 5 to 15 minutes at full build-out.

- A fleet of four alternative-fuel shuttle buses will be provided for residents, employees, and visitors to make it possible for everyone who comes to Treasure Island to be able to navigate without the use of a private automobile. The shuttles will operate primarily on three routes serving all neighborhoods and the open spaces and will provide timed transfer connections at the Ferry Terminal and Transit Hub.

### *1.2.3 PARKING*

The number of spaces provided is consistent with creating an economically feasible, high-density, transit-oriented neighborhood with the goal of discouraging auto use and prioritizing transit, walking, and bicycling. All parking will incur a parking charge up-front and shared parking will be encouraged. Residential parking will be unbundled from the sale and rental of residential units. Monitoring, enforcement, and pricing of parking will be used to create a positive incentive for residents, employees, and visitors to choose transit rather than automobiles to access the Island.

Parking will occur in off-street facilities and on-street metered spaces. The parking ratios for the Project on an Islands-wide basis are to a maximum of one (1) space per residential unit; to a maximum of two (2) spaces per 1,000 sq ft of retail; to a maximum of one (1) space per 1,000 sq ft of office or commercial uses; and to a maximum of 0.4 spaces per hotel room for hotel uses. Parking will also be supplied for open space, including the Marina.

At full build-out, there will be a maximum of approximately 9,636 off-street parking spaces on Treasure Island and Yerba Buena Island:

- 8,000 spaces for residential uses;
- 220 spaces for hotel uses;
- 414 spaces for retail uses;
- 464 spaces for open space and recreational areas, excluding the Marina;
- 236 spaces for the Marina; and
- 302 spaces for office and other uses within the historic buildings not captured above.

An additional 1,035 on-street spaces will be provided for short-term use by visitors.

### *1.2.4 INCENTIVIZING USE OF TRANSIT AND DISINCENTIVIZING CAR USE*

The transportation infrastructure has been designed around maximizing the use of transit as a primary mode of travel. Automobile use will be discouraged through parking management, pricing, and other policies. The transportation demand management (TDM) mechanisms proposed include the following:

- Designation of an on-Island travel coordinator to staff programs encouraging the use of transit, walking, and bicycling for residents, visitors, and employees, including a "guaranteed ride home" program, a bicycling library and bicycle storage facilities, and a free on-Island shuttle, among others.

- Establishment of a comprehensive transit voucher built into the housing costs of residents and hotel room rates for hotel patrons that reduces "out-of-pocket" costs for transit use.

- Parking management based on a policy that all automobile users incur a parking charge. The charges will be applied at a level to encourage the use of transit services and discourage the use of single-occupancy vehicles.

- Implementation of a congestion pricing program authorized by state legislation (AB 981). Charges will be applied to residents who choose to use their car to get to or from the Island during peak travel periods.

- Coordination of ramp metering by Caltrans on the access ramps to the Bay Bridge to control the number of vehicles that can leave the Island during periods of bridge congestion.

- Provision of a fleet of bicycles, available to visitors and residents for checkout from a secure central "bike station" located near the Ferry Terminal using a "library-style" management system. The island's walkways and bicycle route network will connect to the shared-use path currently under construction as part of the East Span of the Bay Bridge.

These TDM programs will be administered by a Treasure Island-specific transportation agency, discussed in more detail below.

### *1.2.5 INSTITUTIONAL AND GOVERNANCE ISSUES*

AB 981 authorizes the Board of Supervisors to create a transportation agency specific to Treasure Island (the Treasure Island Transportation Management Agency, or TITMA) to provide the mechanism to regulate charges and collect revenues associated with the Island's congestion pricing program, transit vouchers, and non-residential and on-street parking facilities. The net revenues (gross revenues less operating costs) from congestion pricing and non-residential parking will be used to support transit operations and other TDM programs designed to encourage travel by alternative modes.

### *1.2.6 FUNDING, COSTS, AND REVENUES*

The capital costs of transit rolling stock, transit facilities, parking facilities, and other elements of the transportation demand management (TDM) program are itemized in the Plan. These costs are one-time capital expenditures totaling $144.9 million. Annual operating costs and revenues are also included: The operating costs at final build-out are estimated at approximately $20.5 million, compared to annual revenues estimated at about $27.9 million.

### *1.2.7 TICD AND TIDA RESPONSIBILITIES*

As master developer, TICD has obligations under the DDA that will enable the implementation of this Transportation Implementation Plan according to the Schedule of Performance as attached to the DDA. These obligations include the following:

- Developing transportation-related infrastructure, including the streets and public rights-of-way, and pedestrian and bicycle paths and facilities (as defined in the Infrastructure Plan);

- Developing the ferry terminal (both landside and waterside improvements) and Intermodal Transit Hub (see Infrastructure Plan);

- Providing capital funding to purchase on-Island shuttles and buses (100 percent for on-Island shuttles and AC Transit buses and 20 percent for Muni buses), as described in Chapter 11, in accordance with the schedule of Transportation Plan Obligations attached to the DDA; and

- Providing operating subsidies to operate the proposed transit facilities as the Project is built out, as described in Chapter 11, including the lease costs associated with ferry operations, in accordance with the schedule of Transportation Plan Obligations attached to the DDA.

Long-term management and oversight of the Transportation Program will be the responsibility of TIDA and the TITMA. The Transportation Program will be implemented starting with the first phase of horizontal infrastructure development and additional phasing of the measures and services will be implemented for the future development phases that will follow. TITMA will be responsible for regular monitoring of the Project and the decisions on whether to increase or decrease charges, extend or move their period of operation, or apply them at different times, as well as coordinating with the various transit providers on calibrating the level of service commensurate with actual ridership demand.

Similarly, the TITMA will monitor the transportation demand management (TDM) programs and test their effectiveness. Sponsors of special events on the Island will also be required to submit specially-tailored TDM plans to ensure that the event's travel needs are met without disruption to the travel needs of Island residents or other members of the Island community.

## 1.3 ABOUT THIS DOCUMENT

This document, the Treasure Island Transportation Implementation Plan, consists of two parts:

Part 1: Project Description summarizes the transportation planning process to date and outlines the Project's approach to a comprehensive transportation system:

2. Program Goals
3. Land Use and Transit-Oriented Design
4. Bicycle and Pedestrian Facilities and Programs
5. Transit Services
6. Transportation Demand Management Strategies

Part 2: Implementation describes how the transit and transportation demand programs will be implemented and managed over time by TIDA and the TITMA:

7. Implementation Framework
8. Transit Operations
9. Staffing, Monitoring, and Enforcement
10. Summary of Revenues and Costs

# PART ONE: PROJECT DESCRIPTION

# 2 PROGRAM GOALS

While specific elements of the transportation program have evolved since 2006, the goals and objectives of the Project's transportation program have not substantially changed since the 2006 Plan. The Treasure Island transportation program includes a series of transportation measures and strategies that will deliver a unique transportation experience. Grounded in the principles of sustainable development, the residents, visitors, and employees will enjoy access to high-quality travel opportunities that prioritize walking, bicycling, and transit. The program also incentivizes travel by modes other than the private automobile and provides disincentives to those who choose to own and use their private car on a daily basis. The measures and strategies are supported by financial commitments that support pedestrian, bicycling, and transit infrastructure and service; by pricing mechanisms and pricing structures; and by incentives to encourage transit use.

## 2.1 PRINCIPLES

- Transportation infrastructure on the Island will be designed around opportunities to safely and comfortably walk and bike as primary modes;
- Transit services to and from the Island will operate throughout the day, evening, and weekends at high levels of service consistent with meeting demand and providing high-quality alternatives to the private automobile;
- Automobile use will be discouraged via parking policies, congestion pricing, and other policies such as ramp metering;
- The plan will be financially viable; and
- Transportation services and pricing will be managed over time to meet the real-time needs of residents and visitors to Treasure Island.

## 2.2 MECHANISMS

- Transportation demand measures will support the use of transit, walking, and bicycling. These will be directed at residents, visitors, and employees;

- A newly created Treasure Island transportation agency will collect and disburse revenues from all non-residential parking facilities and the Island's congestion pricing program;

- Residential parking will be sold or leased separately from the unit (i.e., "unbundled parking");

- All non-residential parking on the Island will incur a parking charge. The charges will be applied at a level to encourage the use of transit services and discourage the use of single-occupancy vehicles, consistent with the Project goals;

- Charges will be applied to residents who choose to use their car to get to or from the Island during peak travel periods (i.e., congestion pricing); and

- Ramp metering will be applied by Caltrans on the access ramps to the Bay Bridge to control the number of vehicles that can leave the Island during periods of bridge congestion and facilitate access for transit vehicles merging onto the Bay Bridge.

## 2.3 IMPLEMENTATION AND MONITORING

- Implementation of the transportation program will begin at the earliest stages of development. Anticipated phasing of the measures and services is set out in this Implementation Plan.

- The Project will be monitored regularly against the objectives and options to meet them, including increasing or decreasing charges, extending or moving their period of operation, or applying them at different times, as well as adjusting the corresponding level of transit service.

- Transportation demand management (TDM) programs will be monitored and tested for their effectiveness in meeting the plan objectives. All residents, employees, and visitors will be aware of the options to use transit and will be actively encouraged to do so.

- Sponsors of special events will be required to submit a TDM plan designed to meet the event's travel needs without disrupting the travel needs of Island residents or other members of the Island community. Event sponsors would work with the TITMA to monitor travel conditions for the duration of the event, implementing emergency measures where necessary to ensure that the goals of the TDM plan are met.

## 2.4 TRANSPORTATION POLICIES AND MEASURES

The 2006 Transportation Plan established a series of policies and transportation measures:

1. Prioritize Walking
2. Maximize the Usefulness of Bicycling
3. Maximize Effectiveness and Convenience of Transit and Ridesharing
4. Use Transportation Demand Management
5. Promote Transit
6. Improve Bay Bridge Ramps

These policy goals in turn lead to a series of transportation measures that constitute the Transportation Program.

## 2.5 INTEGRATION WITH SUSTAINABILITY GOALS

Sustainability is a key Project priority. Many of the Project's wide range of sustainability goals and commitments are transportation-focused, and are intended to encourage sustainable choices as part of everyday life. The transportation strategy for the Island has been designed to facilitate a significant mode-shift from private automobiles to alternative, environmentally-sensitive means of transportation. The program to be implemented includes ferries, buses, electric or alternative-fuel on-Island shuttles, car-sharing, and a bicycle library program. In addition, parking will be managed, priced, and designed to reduce on-Island car trips and minimize impacts on the pedestrian environment. Congestion pricing will be used to charge fees for residents who choose to use their automobiles to travel to and from the Island during peak travel periods.

The Treasure Island community is designed to allow residents access to essential goods and services within a 10 to 15-minute walk, and pathways and streetscapes are designed to enhance the experience and safety of pedestrians and cyclists. Because services and amenities are located on-Island near the Ferry Terminal and Intermodal Transit Hub, commuters, residents, and visitors will be able to take advantage of them when arriving or leaving the Island, further reducing discretionary trips. All of these elements support a self-sufficient Island community.

A denser, more transit-oriented land-use pattern not only reduces automobile trips, but also preserves more land for open space, natural resources habitat, and storm water management, all while

consuming fewer material resources. All of these elements illustrate the confluence of good urban design, effective transportation planning, and environmental sustainability.

# 3 LAND USE AND TRANSIT-ORIENTED DESIGN

The integration of transportation and land use is a fundamental principle of the Project. Every aspect of the proposed design facilitates convenient access by foot, bicycle, and transit, and seeks to reduce the use of single-occupancy vehicles both on and off Treasure Island. The Project accomplishes this integration by designing a dense, compact development pattern centered around an active Ferry and Intermodal Transit Hub and commercial center. The plan provides a range of benefits including the following:

- Promotes access by foot, bicycle, and transit, reducing on-Island automobile trips;
- Establishes a strong mixed-use and transit-oriented character;
- Preserves more land for open space;
- Creates safe, convenient, pedestrian-friendly street design in all neighborhoods;
- Allows the development of more housing at a greater density;
- Creates a livelier, more dynamic community with services necessary to create a self-sufficient community;
- Establishes densities that allow frequent, efficient transit service;
- Serves the Project's sustainability goals;
- Manages parking to minimize dependence on automobiles and support an urban, pedestrian-friendly character;
- Discourages the use of the automobile by imposing congestion pricing on peak-period off-Island trips by residents;
- Welcomes visitors to a model of sustainable and walkable development; and
- Serves as a model for the region and the nation in encouraging alternative transportation modes.

Transportation and access issues have informed Project planning at every step, defining the character and quality of the Treasure Island community and focusing all of the residents and visitors toward the Ferry Terminal and Transit Hub. Whatever one's mode of arrival, it will be immediately clear that this is a community built around a western-shore transit terminal, which serves as the arrival point, an activity hub, a source of identity, and a distinctive architectural statement. The transit terminal

complex will also include connections to the on-Island shuttle, car-sharing facilities, and bicycle rental facilities.

The development pattern is designed to facilitate walking and cycling for on-Island trips, and access to ferry and bus service for commuting. Hotel, retail, public, and community uses are centered around the ferry quay and along the Intermodal Terminal Hub. About 50 percent of the homes proposed to be built on Treasure Island will be within a 10-minute walk of the Transit Hub. All residential units on Treasure Island would be within an approximately 15-minute walk of the Transit Hub. In addition, all residents of both Islands would be within an approximately 5-minute walk of a shuttle stop.

Streets have been designed to support a variety of travel modes at moderate to low speeds. Most streets have design speeds between 15 and 25 mph, although some streets have been designed to support two-way travel by buses, which requires greater travel lane dimensions and therefore results in a slightly higher design speed. In addition, a system of pedestrian-oriented tertiary streets will radiate from the terminal area into the surrounding districts. All non-residential off-street parking will be in centralized facilities, decoupled from residential and visitor uses and thereby enhancing Treasure Island's pedestrian character.

The Project's design intent is memorialized in the following documents:

- The *Design for Development*, to be adopted by TIDA, will govern design of both the public realm (streets and open spaces) and the private realm (individual buildings). *The Design for Development* includes a Frameworks section that outlines how the land use plan was formed and illustrates many of the underlying transportation principles. The *Design for Development* also includes the requirements that vertical developers must meet for automobile parking, loading, bicycle parking, and car-share spaces.

- The *Infrastructure Plan*, attached to the DDA between TICD and TIDA, includes a Transportation section. This section details the obligations of TICD to build certain improvements, including the streets and the ferry terminal (including both water and landside facilities).

- The *Development and Disposition Agreement* includes a section describing the financial subsidies provided by TICD to fund the elements of the transportation capital and operating program. The DDA also includes an exhibit that lists all of TICD's obligations as it relates to implementation of this Plan.

- TIDA approval of a *Streetscape Master Plan* will be required prior to starting infrastructure work. The *Streetscape Master Plan* is to be prepared by TICD and approved by TIDA prior to the approval of the first Major Phase Application.[1] The *Streetscape Master Plan* will describe the overall circulation plans, land uses, street hierarchy, and specific streetscape responses to the street typologies. The specific submission requirements for the Streetscape Master Plan are listed in the Project's *Design Review and Document Approval Procedure,* attached to the DDA.

Because transit-oriented design is such a fundamental part of the success of the transportation program, and will influence the ability of TIDA and TICD to implement the planned transportation infrastructure and programs, this section repeats information originally found in the *Treasure Island + Yerba Buena Island Design for Development* and *Treasure Island Infrastructure Plan*.

## 3.1 DESIGNING FOR DENSITY

### *3.1.1 COMPACT DEVELOPMENT*

Compact, pedestrian-oriented, and transit-served neighborhoods, which significantly reduce demand for travel in private vehicles, are the basic building blocks for sustainable cities. The *Design for Development*'s strategy for compact development includes creating an Intermodal Transit Hub and central retail district on Treasure Island's southwest corner, which is the location of its most buildable land and its single point of access by land. This area will provide an Intermodal Transit Hub, a hotel, shopping, dining, and cultural facilities, as well as higher-density urban housing options. It will be surrounded by intense, walkable, mixed-use neighborhood development and regional recreational and civic destinations.

Treasure Island's planned densities and scale are comparable to many San Francisco neighborhoods, but it will be developed with an urban form particular to the Island setting. The compact footprint of development will mix low-, mid-, and high-rise buildings to provide the population necessary to support social, commercial, and public transit infrastructure. Concentrating development will preserve large amounts of open space on the rest of Treasure Island. On Yerba Buena Island, compact development is clustered to minimize impacts on the natural land form and to preserve and enhance the Islands' natural and scenic qualities.

[1] The DDA between TICD and TIDA requires TICD to submit Major Phase and Sub-Phase Applications. Major Phase Applications will include schematic-level infrastructure plans for a group of 5-8 blocks, while Sub-Phase Applications will require permit-level drawings for a 1-2 block subset. TIDA will not transfer land to TICD until Sub-Phase Applications are approved and other conditions are met.

The compact development framework is illustrated in Figure 3.1.

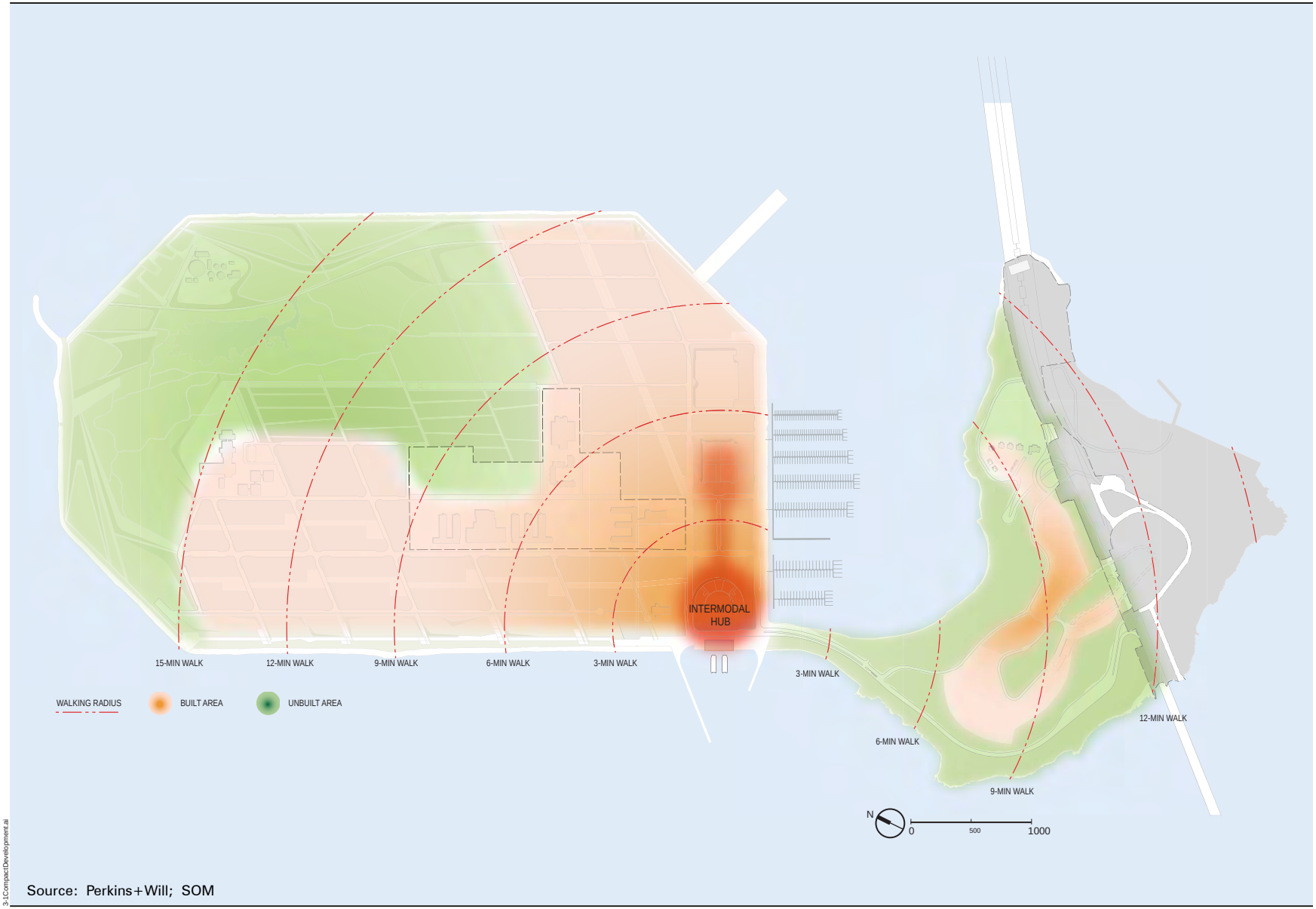
### *3.1.2 URBAN FORM*

The Islands' urban form is intended to be distinctive, place-based, and experience-focused, establishing a memorable identity on the Bay. It tells a story of social, economic, and environmental responsibility in every new neighborhood. On Treasure Island, dense and compact developed areas are dramatically juxtaposed with extensive open spaces, creating a distinctive urban form visible from around San Francisco Bay and memorable for both what is built and what is not. Within the densely developed portion of Treasure Island, another more varied and subtle urban form takes hold, realizing a fine-grained pattern of neighborhood spaces and pedestrian ways framed and enlivened by low-, mid-, and high-rise buildings.

Dramatic shifts in the urban form are used to announce places of entry, culture, and history. Buildings are carefully placed and varied in scale to realize sunlight access and bring a diverse population onto local streets and neighborhood parks. They feature materials, patterns, and entry sequences that will bring interest and activity to the lower floors of buildings, enhancing the pedestrian experience.

On Yerba Buena Island, the design concept for distinctive form and lively pedestrian settings takes a completely different path. Here, the topography of the Island dictates placement and form, with the pattern, heights, and orientation of buildings reinforcing the natural Island topography. At the same time, courts, pathways, stairs, and links to a dramatic public hilltop park create a variety of places where buildings will frame distant views or look onto densely-wooded habitat.

The urban form framework is illustrated in Figure 3.2.




3-1Compact Development.ai

Source: Perkins+Will; SOM

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**Figure 3.1**

## COMPACT DEVELOPMENT FRAMEWORK


3.2UrbanForm.ai

Source: Perkins+Will; SOM

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**Figure 3.2**

**URBAN FORM FRAMEWORK**

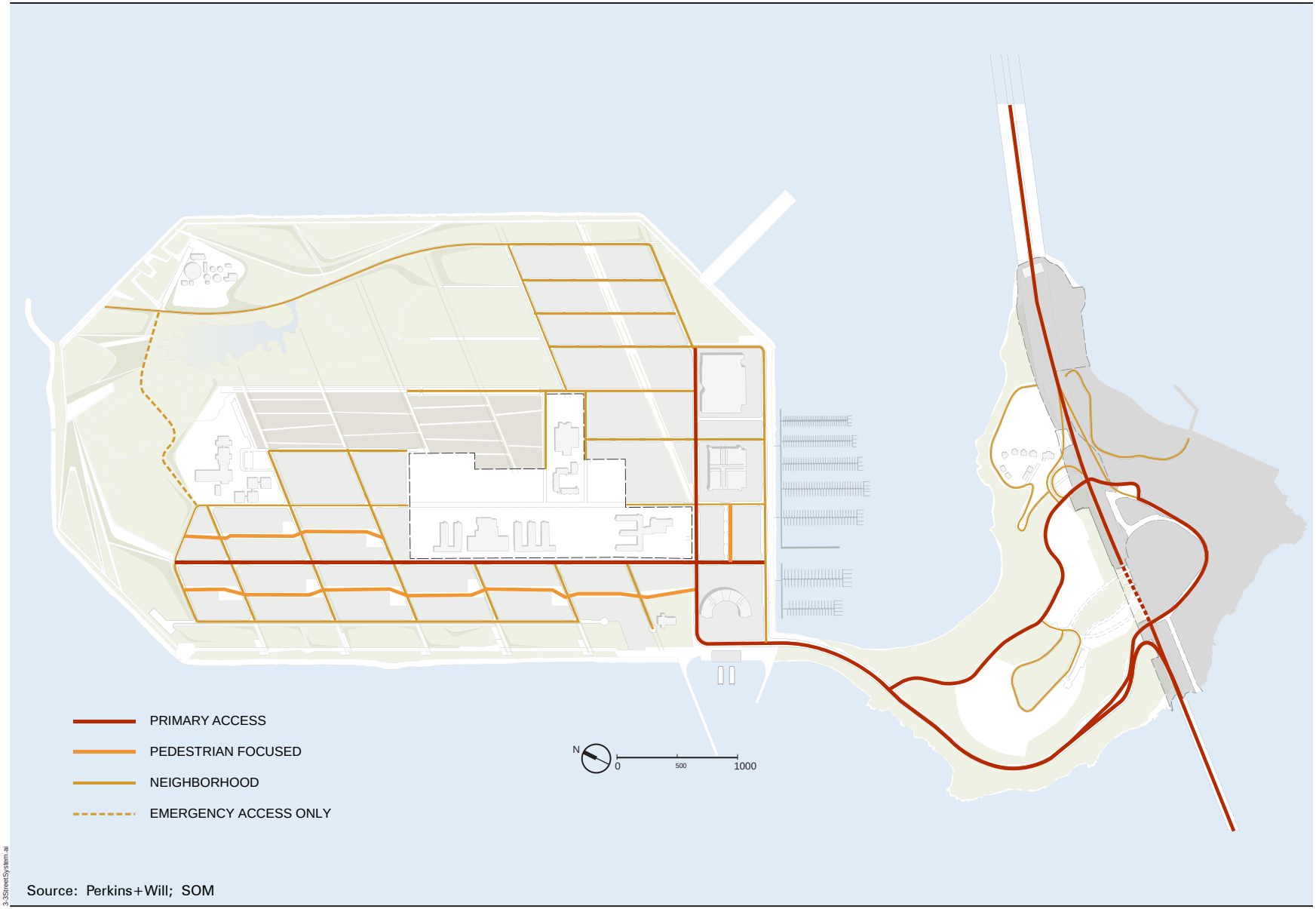
## 3.2 A STREET SYSTEM THAT FITS THE PLACE

Treasure Island's unconventional street grid is designed to maximize access to sunlight and views while minimizing the effects of wind on neighborhood public spaces. Rotating a conventional orthogonal street grid to maximize solar orientation would have resulted in cross streets opened directly to prevailing westerly winds that flow through the Golden Gate and blow unimpeded across the Bay. In response, Treasure Island's street pattern features a unique non-orthogonal grid that offers good solar access to streets and open spaces while protecting them from the prevailing west winds. The angled streets across the Island align with views to the San Francisco skyline, while accommodating full emergency vehicle access. In the Island Center, where several historic buildings are retained and preserved, the existing right-angle street grid is retained. The two grids intersect will intersect along the existing California Avenue.

Yerba Buena Island's steep topography calls for a completely different solution, substantially retaining the existing pattern of curved and switchback access-ways that have evolved over time. New public ways consist mainly of cascades—stepped terraces connected with public stairs—that cross-connect the looping streets to form walkable blocks within this challenging terrain.

The street system framework is illustrated in Figure 3.3.

The hierarchy, pattern, and design of streets reflect a commitment to a public realm designed first and foremost for bicyclists, pedestrians, and transit riders, while at the same time accommodating vehicular traffic. Primary access streets are gracious boulevards that provide primary vehicular access. They are limited to the essential routes linking the Cityside and Eastside neighborhoods of Treasure Island to the Island Center and Yerba Buena Island. Angled neighborhood streets have significantly lower traffic volumes. They provide views, a dramatic orientation to the Island setting, and equal access into the neighborhoods for pedestrians, cyclists, and vehicles alike. The angle of the neighborhood streets also serves to break the westerly winds and soften the Island's microclimate. Pedestrian-focused streets with limited vehicular access complete the network. They provide a small-scale, curbless, largely vehicular-free pedestrian "mews" linking residents to neighborhoods parks and the Island Center.




Source: Perkins+Will; SOM

3-3StreetSystem.ai

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**Figure 3.3**

**STREET SYSTEM FRAMEWORK**

The overall design recognizes the central role that streets play in the social life and comfort of a neighborhood. Buildings are oriented toward streets, with public sidewalks, street furniture, street lighting, public landscaping, building setback areas, and frontage design all contributing to a pleasant and safe pedestrian experience. In addition to their role as the "living rooms" of the community and as transportation corridors, streets are designed to collect and treat stormwater, be easy to maintain, and provide utility services that make them an integral part of the Islands' sustainable infrastructure.

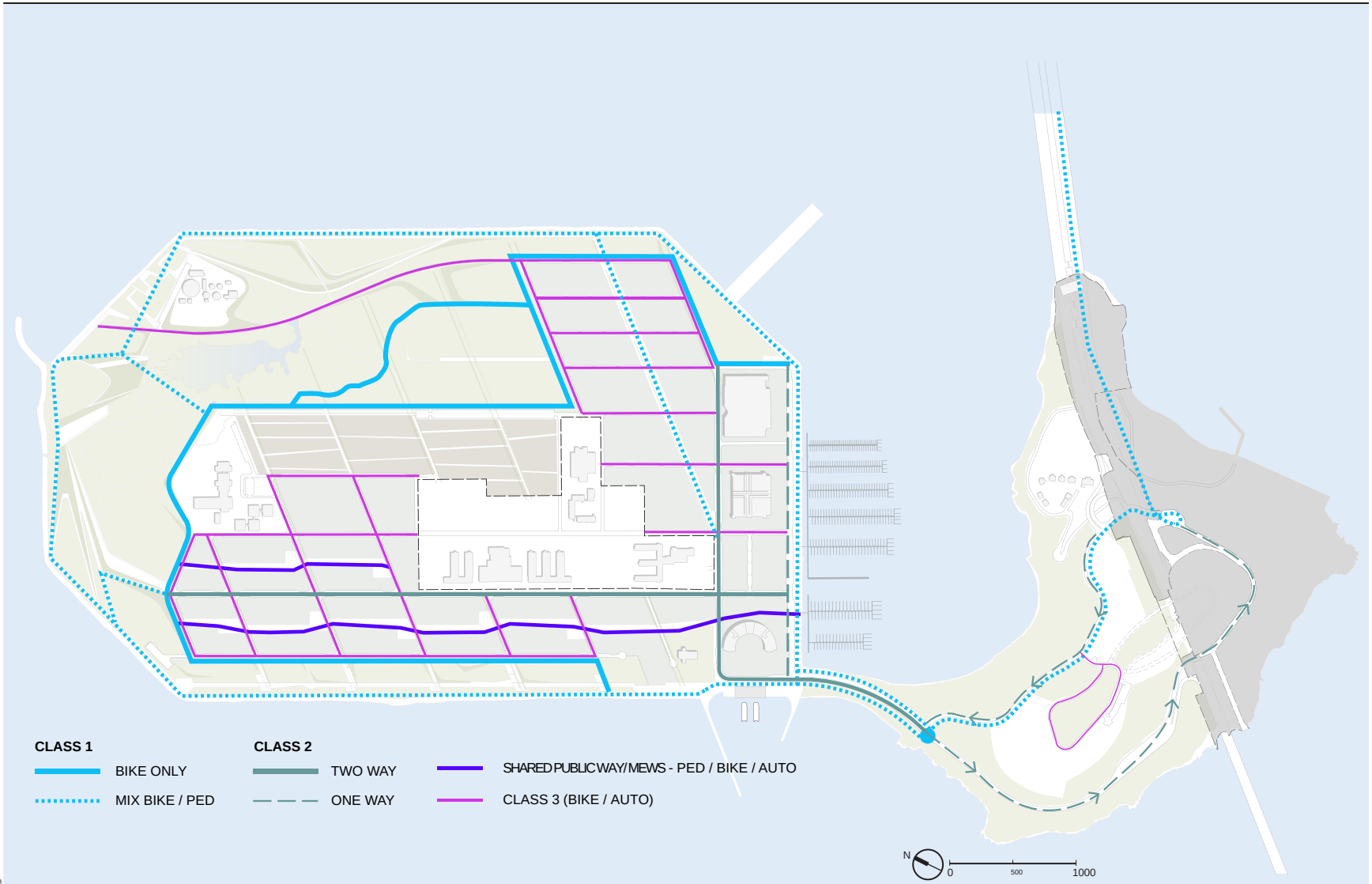
## 3.3 DESIGNING FOR ALL MODES OF TRAVEL

### *3.3.1 WALKING AND BIKING*

Island planning began with a focus on pedestrians and bicyclists, resulting in a transportation network that provides convenient non-motorized access to all areas of the Islands.

The Islands' various blocks, neighborhoods, parks, and other public spaces are connected by a diverse pedestrian network along a system of urban blocks. Its core consists of primary pedestrian routes leading from the Island Center and Intermodal Transit Hub, through the retail area, and out to the neighborhoods. These primary routes are made up of pedestrian-focused shared streets, park blocks, and pedestrian boulevards intended to invite all-day and year-round use in an active, tree-lined, and wind-sheltered environment. The primary pedestrian route leading east from the Transit Hub, the Eastside Commons, will be a grand pedestrian boulevard with broad street width and building height dimensions. Primary pedestrian routes north from the Transit Hub will be on a smaller scale and more intimate in character, meandering through the interior of blocks along pedestrian-oriented shared public ways, or mews. Secondary routes enable pedestrians to walk from neighborhood to neighborhood and explore the Island. They link directly out to regional open spaces and the Bay on both Treasure Island and Yerba Buena Island. The San Francisco Bay Trail wraps around the perimeter of Treasure Island and connects Yerba Buena Island to the Bay Bridge and the bike and pedestrian route to Oakland.

The bicycle facilities and pedestrian network frameworks are illustrated in Figure 3.4 and Figure 3.5, respectively.




3-4BicycleFacilities.ai

Source: Perkins+Will; SOM; CMG

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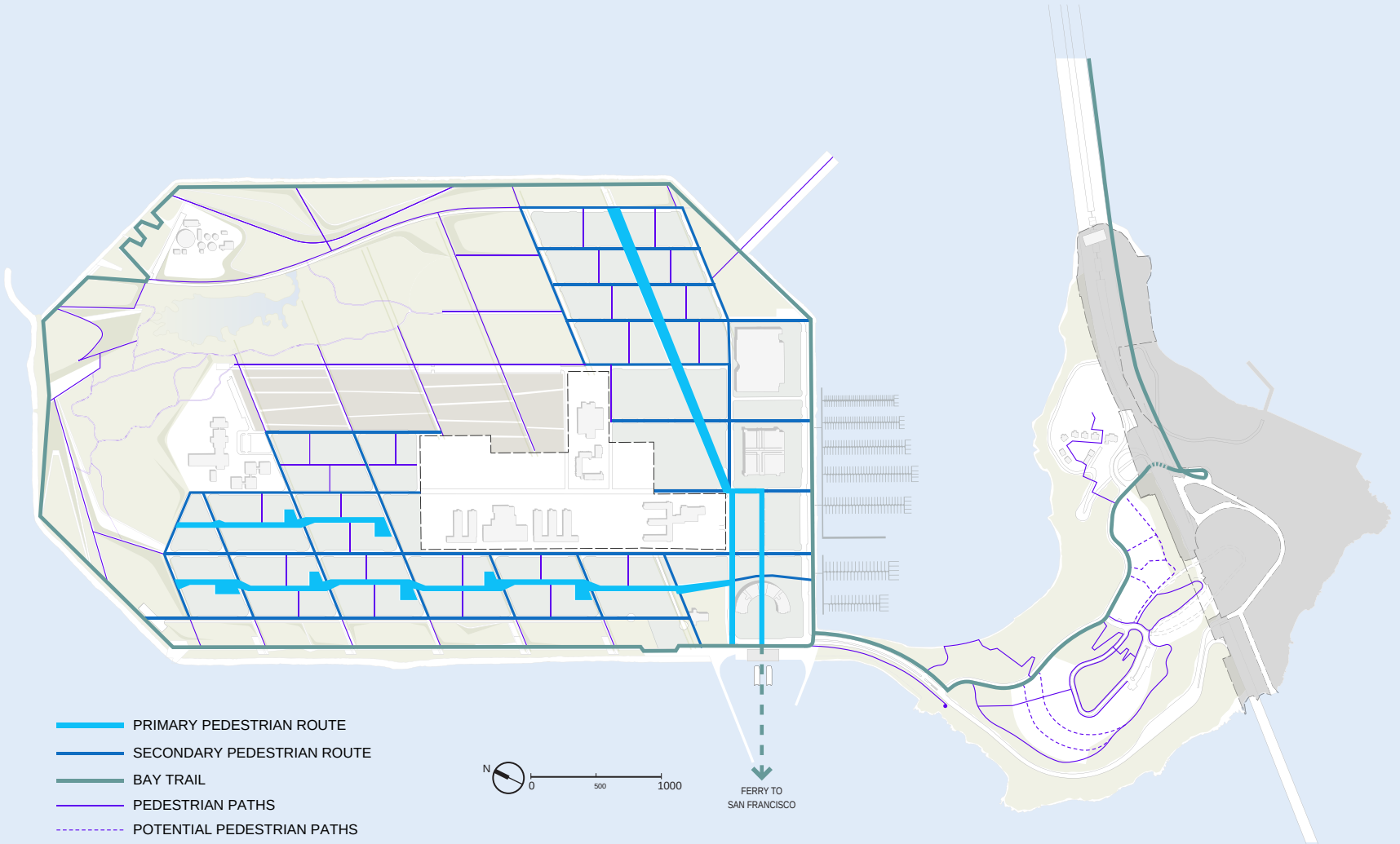
**Figure 3.4**

**BICYCLE FACILITIES FRAMEWORK**




Source: Perkins+Will; SOM; CMG

3-5PedestrianNetwork.ai

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**Figure 3.5**

**PEDESTRIAN NETWORK FRAMEWORK**

Bicycles are a key transportation option on the Islands. Routes are designed to invite riders of all ages and capabilities for trips that range from a daily commute, to a school trip, to convenient shopping and casual recreation. Facilities and services to support bicycle use, such as bike parking, storage, and servicing, are an integral part of neighborhood and individual building planning.

A Class 1 bikeway encircles Treasure Island, providing dedicated bicycle access and a full touring route to all shoreline parks and open spaces. The Class 1 bikeway continues on Yerba Buena Island across the causeway and up Macalla Road where it connects with the new mixed-use path on the east span of the Bay Bridge. Certain Class 1 routes are shared with pedestrians, primarily around the edge of Treasure Island. Class 2 routes are present on many of the Island's streets, with shared bicycle and vehicular lanes on low-speed neighborhood streets.

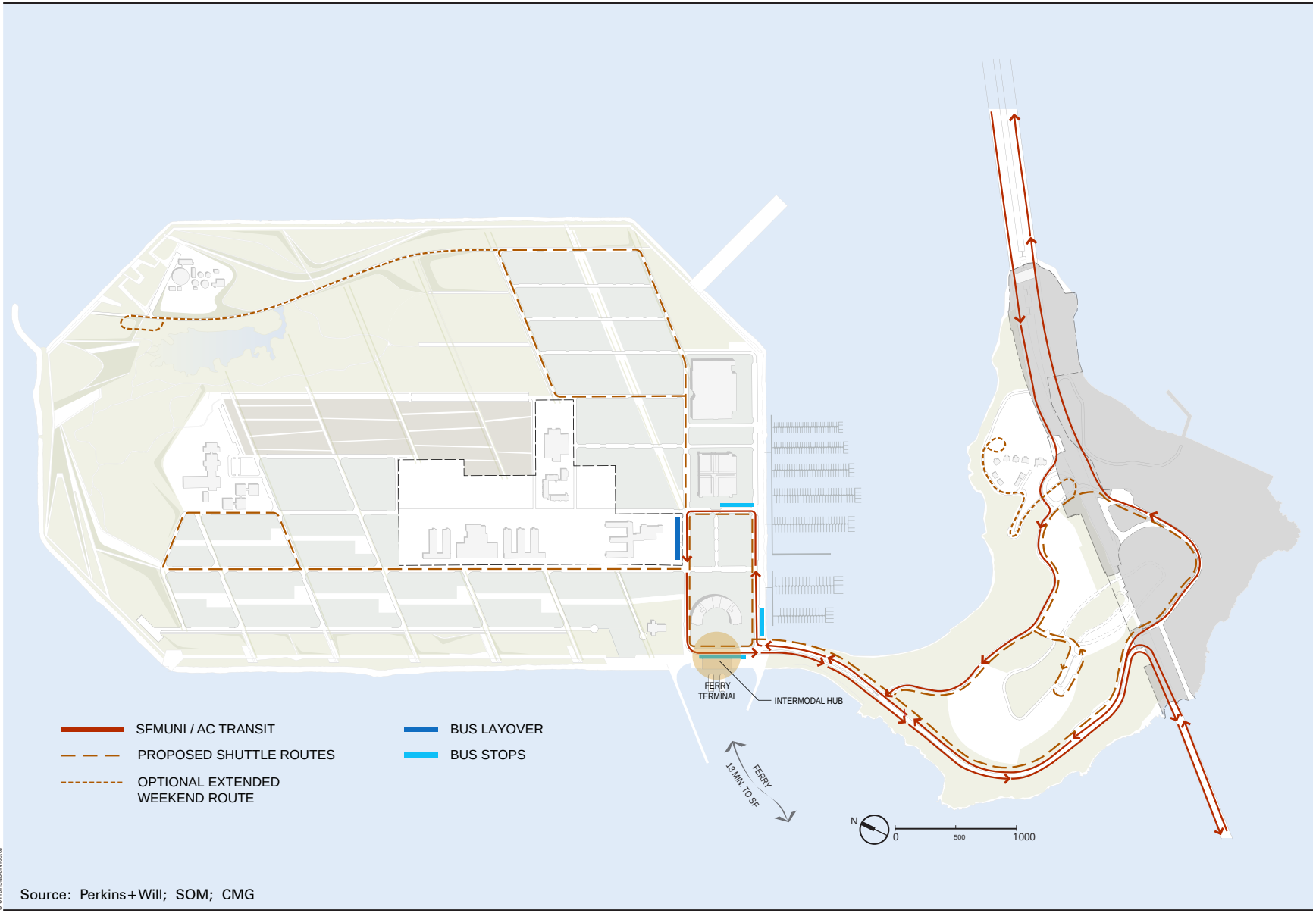
### *3.3.2 USING TRANSIT*

The use of public transportation by significant numbers of visitors, residents, and workers on the Islands is essential to meeting sustainability commitments, providing economic opportunity, and achieving high quality of life. The objective is to provide an efficient, attractive hub for transit in the Island Center district, located at the point of arrival from the Bay Bridge and at the junction of the two Islands. An Intermodal Transit Hub will connect all regional, off-Island transportation services such as buses and ferries with on-Island services such as shuttles, bicycles, and attractive pedestrian routes. The Transit Hub is planned to include a ferry terminal facing the historic Building 1 on the shore of the Treasure Island. Buses serving San Francisco and the East Bay have stops and layover spaces on streets in the Island Center.

The transit service framework is illustrated in Figure 3.6. Transit routes and Transit Hub design are covered in more detail in Chapter 5.

### *3.3.3 VEHICLE ACCESS*

A sustainable transportation system on Treasure Island and Yerba Buena Island will rely on a number of strategies, including the following: a) urban design that facilitates pedestrian and bicycle mobility in every way; b) a convenient transit system that encourages both regular and casual use: c) street design that accommodates vehicular traffic, including emergency vehicles, but at low to moderate volumes and speeds; and d) a park-once strategy to encourage walking once on the Islands.




Source: Perkins+Will; SOM; CMG

3-6TransitService.ai

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**Figure 3.6**

## TRANSIT SERVICE FRAMEWORK

All Island streets accommodate vehicles, but within design parameters that emphasize use by pedestrians and cyclists, regardless of the amount of traffic they must carry. The primary avenues, which serve as arrival and primary circulation routes, connect three categories of local streets: neighborhood streets, tertiary connectors, and a pedestrian mews, or shared public way. Lots and garages are planned at strategic locations throughout the network to encourage visitors arriving by car to park once and then circulate through the Islands primarily on foot, promoting use of pedestrian, bicycle, and shuttle routes while on the Islands.

The vehicle access framework is illustrated in Figure 3.7.

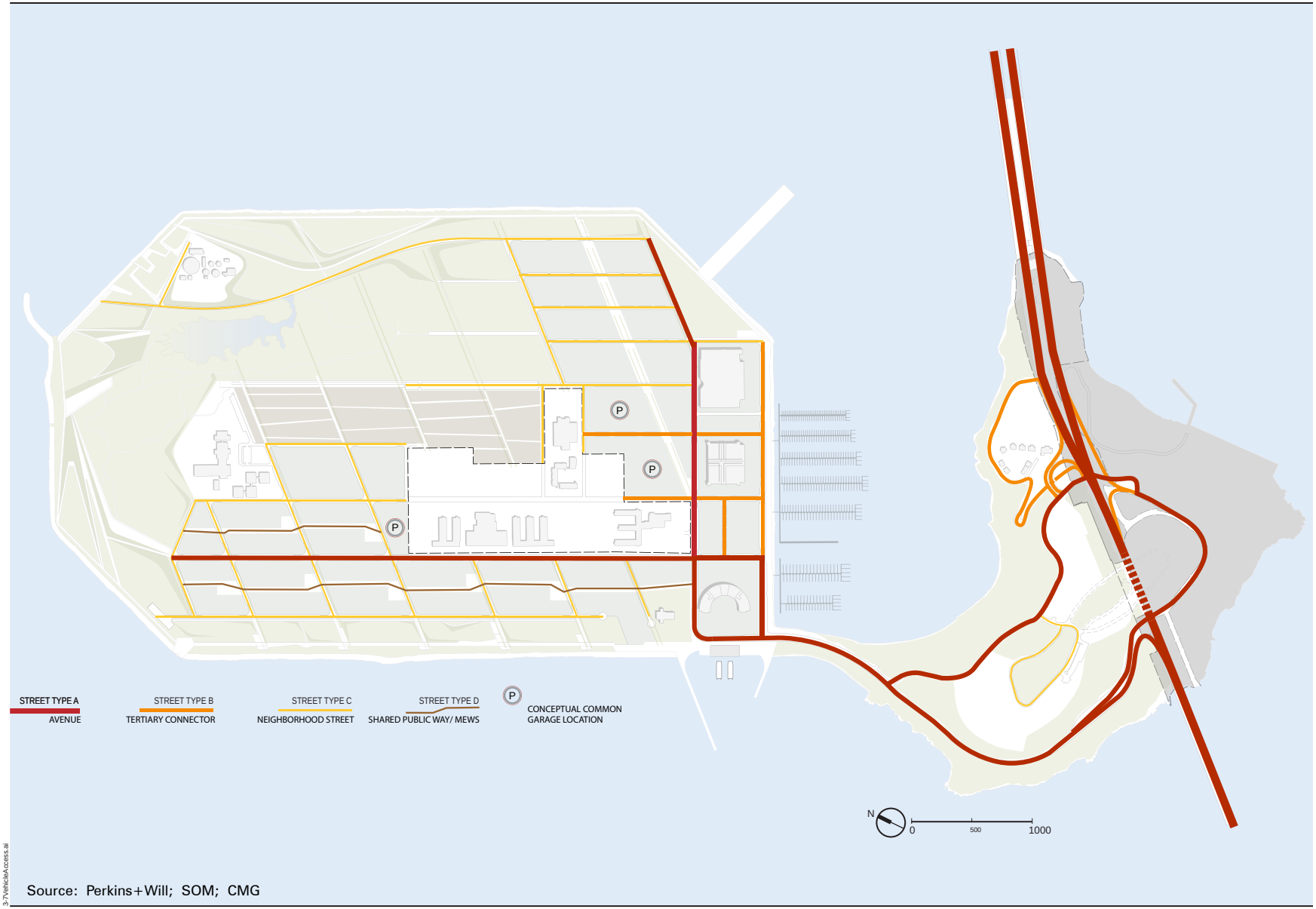
## 3.4 PLACE MAKING

Distinctive, attractive places with memorable urban form invite use, create neighborhood identity, and foster community. The design for Treasure Island focuses on a network of "social corridors" where people can live, recreate, and come together for community, commerce, and social connection. A successful social corridor relies on the quality of spaces that are created by built form, land use, and landscape, and the experience they offer. Whether those spaces are streets, parks, plazas, or a unique combination of those elements, they are critical to creating a social infrastructure for the Islands.

Place-making initiatives start and finish with attractive, pedestrian-friendly urban spaces tailored to their setting and likely use. On Treasure Island and Yerba Buena Island, the public realm is a collection of unique places designed for the enjoyment of humans on foot. This is as true of the quiet mews and the dramatic Eastside Commons as of the busy mixed-use streetscapes of the Island Center, the expansive waterfront parks, and the drama of Hilltop Park.

Social corridors on the Islands offer areas of intensity such as towers, parks, or the retail district streets where a mix of community uses and interactions can occur. The scale and detailing of each space, and the design of the buildings that frame them, are designed to provide comfortable public "living rooms" and gathering places for the neighborhoods. Throughout the Islands, these spaces are connected by pleasant pathways to useful destinations, where residents and visitors can informally interact.

The placemaking framework is illustrated in Figure 3.8.




3.7VehicleAccess.ai

Source: Perkins+Will; SOM; CMG

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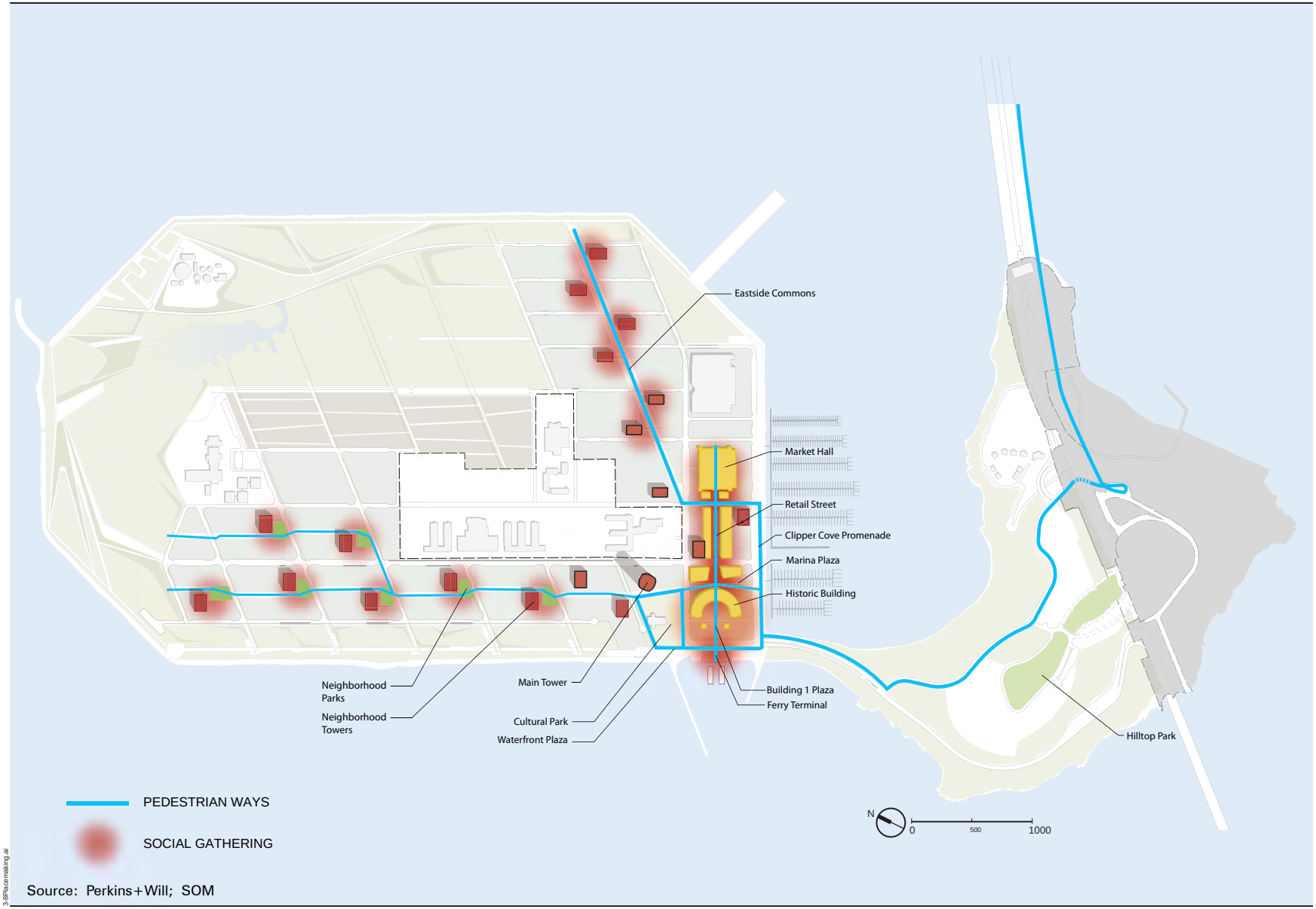
**Figure 3.7**

## VEHICLE ACCESS FRAMEWORK




Source: Perkins+Will; SOM

3-8Placemaking.ai

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**Figure 3.8**

**PLACEMAKING FRAMEWORK**

## 3.5 LAND USE & DEVELOPMENT PROGRAM

The land use and development program for the Project includes a mix of residential, commercial, and open space uses, as summarized in Table 3.1 below. In addition, through a separate project, TIDA will expand the existing Marina from 100 to 400 slips. Because the transportation services provided in this Project will serve Marina demand, those uses are included in the Implementation Plan. Existing travel demand that will remain with construction of the Project, such as from the Job Corps Campus and the Coast Guard Station, was also included in the EIR travel projections and therefore in this Implementation Plan.

The mix of uses is organized into five distinct districts. While all five are based on common principles of sustainable neighborhood design—compact urban form, diverse uses and housing choices, and a pedestrian-oriented public realm to encourage social interaction—each has its own unique design character. The Island Center is an active district with a memorable skyline, an inviting network of lively spaces, a retail street and plazas, Marina and water access, and the density and intensity to support an intermodal transit center. The Cityside district includes a diversity of housing types clustered around neighborhood parks and linked by a shared public way with primary pedestrian and bicycle use and limited vehicular service. The Eastside neighborhoods comprise the third planning district, defined by its seven block Eastside Commons, and its physical and visual access to open spaces and regional views. Open Space constitutes a fourth district, contributing powerfully to the experience, image and identity of the Island and to the viability of its sustainable infrastructure and ecosystems. Finally, Yerba Buena Island is characterized by its natural form and habitat, hillside neighborhoods with panoramic views, a hilltop regional park, and links to a regional system of bicycle and pedestrian access.

Figure 3.9 illustrates the five districts within the Project area and the proposed land uses for the Island.

TABLE 3.1: LAND USE PROGRAM FOR THE PROJECT

| LAND USE [a] | DESCRIPTION | ALLOWED PROGRAM |
|---|---|---|
| Residential | Treasure Island | 7,700-7,850 units |
| | Yerba Buena Island | 150-300 units |
| | Residential Subtotal | 8,000 units |
| Hotel | Treasure Island | 450 rooms |
| | Yerba Buena Island | 50 rooms |
| | Hotel Subtotal | 500 rooms |
| Retail | New Construction | 140,000 sf |
| | Adaptive Reuse | 67,000 sf |
| | Retail Subtotal | 207,000 sf |
| Commercial / Other Adaptive Reuse | Building 1 (Community / Other Uses ) [b] | 51,000 sf |
| | Building 2 (Food Production / Other Uses) [b] | 43,000sf |
| | Building 3 (Recreation / Entertainment Uses) | 150,000 sf |
| | Office | 100,000 sf |
| | Commercial / Adaptive Reuse Subtotal | 344,000 sf |
| Community / Civic Facilities | Police / Fire Station | 30,000 sf |
| | Museum | 75,000 sf |
| | School | 105,000 sf |
| | Other Community Facilities | 48,500 sf |
| | Treasure Island Sailing Center | 15,000 sf |
| | Community / Civic Facilities Subtotal | 273,500 sf |

Source: TICD, 2010.

[a] Land use program does not include existing uses (Job Corps and Coast Guard facilities), nor does it include the expansion of the existing Marina, which is a separate project.

[b] Only portions of Buildings 1 and 2 are listed, as adaptive reuse for retail is not included in this figures, and is instead included in the retail totals, above.


Source: Perkins+Will; SOM

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**Figure 3.9**

**ISLAND DISTRICTS**

On-Island services and amenities that support community life are spread throughout the Islands and accessible within a short walk of all neighborhoods. Key facilities include a school, police and fire station, corporation yard, Intermodal Transit Hub, and water treatment plant. The Urban Agricultural Park, the Northern Shoreline Park, and the Wilds offer outstanding educational opportunities for residents, and the existing Treasure Island Sailing Center contributes to community building. The Sports Park is likely to generate day and evening activity serving on- and off-Island users. Sponsors and operators of other community facilities are encouraged to cluster around neighborhood parks, along the Eastside Commons, and at the Island Center. Larger Cityside Neighborhood Parks are encouraged nearer to family-size housing, while senior and daycare services are encouraged in the neighborhoods and along shuttle routes.

The community services and amenities framework is illustrated in Figure 3.10.


Source: Perkins+Will; SOM; CMG

3-10CommunityServices.ai

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**Figure 3.10**

## COMMUNITY SERVICES AND AMENITIES FRAMEWORK

# 4 BICYCLE AND PEDESTRIAN FACILITIES AND PROGRAMS

## 4.1 BICYCLE FACILITIES AND PROGRAMS

The proposed transportation implementation plan for Treasure Island also includes a variety of amenities and facilities designed to encourage use of bicycles for recreational trips and short-distance "lifestyle-needs" trips, such as from residential areas in the City Side and East Side districts to supermarkets and other goods and services in the Island Center.

As illustrated in Figure 3.4, a comprehensive network of Class 1 and Class 2 bikeways and other shared bikeways will provide access to all parts of the Island and connect to the proposed pedestrian / bike path on the new East Span of the Bay Bridge currently under construction. These bikeways are discussed in more detail in the following sections.

### *4.1.1 CLASS 1 BIKEWAYS*

The network of Class 1 bikeways provides a web of dedicated bike-only or shared pedestrian / bike routes that serve as the core of the Island's bikeway system. Designed to serve mostly recreational trips, these Class 1 bikeways serve as the primary connection with the proposed pedestrian / bike path on the new East Span of the Bay Bridge via Macalla Road, and provide circulation routes to the Island Center district and around the perimeter of Treasure Island. In particular, a shared pedestrian / bike path is provided in a complete circle along Treasure Island's shoreline, while a second major bikeway provides a dedicated bike-only facility around the perimeter of the residential neighborhoods. Shorter bike-only and shared pedestrian / bike facilities provide additional connections between these two major routes, improving the convenience of recreational bicycle travel on the Island.

### *4.1.2 CLASS 2 BIKEWAYS*

A network of Class 2 bikeways provides critical connections along the major north-south and east-west axes of the Island. Designed to serve commuter or destination-oriented cyclists rather than recreational users, these bikeways would serve as arterials for bicycle traffic, carrying bicyclists from residential neighborhoods to the Island Center district. In particular, two major Class 2 bikeways would be provided:

- A north-south bikeway along Avenue C, serving bicycle traffic bound to / from the City Side district; and

- An east-west bikeway along California Avenue, serving bicycle traffic bound to / from the East Side district and through the Island Center district.

In addition to these two major bikeways, an additional one-way eastbound bikeway would be provided along Clipper Cove Avenue, providing an additional east-west connection through the Island Center district, while another one-way bikeway along Treasure Island Road would loop along the west side of Yerba Buena Island to connect with the ramp touchdown carrying bicycle traffic to / from the new East Span pedestrian / bike path.

### *4.1.3 OTHER BIKEWAYS*

In addition to the Class 1 and Class 2 bikeways, a series of smaller bikeways shared with pedestrians or with cars and other roadway traffic would serve as a finer-grained network of collector routes, connecting residents to the Island's Class 1 and Class 2 bikeways. These other bikeways primarily consist of two types of routes:

- The Shared Public Ways, or mews, running north-south through the City Side district, parallel to Avenue C, would be shared facilities with pedestrians and autos. This new San Francisco street type being proposed for Treasure Island consists of curb-less right-of-ways that prioritize pedestrians and bicyclists over cars. These bikeways would serve as convenient "shortcuts" directly connected to / from the Island Center and Transit Hub area as well as connecting to the shared streets (discussed below); and

- All remaining streets on Treasure Island would be designed as bicycle-friendly shared streets much like Class 3 bikeways. These bikeways would primarily serve as collectors of bicycle traffic throughout the developed portions of the Island, directing this traffic to the major Class 2 bikeways along Avenue C and California Avenue. One additional shared street bikeway would serve as primarily a recreational route through the open space on the east side of Treasure Island.

### *4.1.4 BIKE PARKING AND AMENITIES*

In addition to this comprehensive network of bikeways proposed for the two Islands, supplementary infrastructure would be designed to encourage bicycle use both on a regular and casual basis by ensuring convenience and comfort for bicycles. The key components of this effort would include provision of bicycle parking throughout the Island and a bicycle "library" for bicycle rentals to residents and visitors.

Public bike parking would be concentrated at major demand generators such as the Transit Hub or the Island Center district, or at scenic lookouts or major tourist spots expected to attract a large number of recreational bicyclists. In addition, the Design for Development requires that developers of residential and commercial uses provide bike parking on-site for their residents, employees, and visitors. While the quantity and quality of bike parking would vary depending on the associated use generating the demand, bike parking would be provided in sufficient quantity and quality to promote bike use and ensure the safety and security of bicyclists, their bicycles, and any personal possessions. Bike parking would generally be sheltered from wind, rain, or other inclement weather and be located so as to ensure a high degree of passive security from passersby or other bicyclists.

Options to bike to transit would be encouraged in a variety of ways. Ample bike parking would be provided at the Transit Hub for those who choose to leave their bike there, afterwards taking the bus or ferry and walking to their destinations in San Francisco or Oakland. While buses operated by SFMTA have more limited bike rack space, ferries with the capacity to carry a large number of bicycles would be selected. In addition, the shuttle route proposed for Yerba Buena Island would have extra bike capacity, in order to facilitate connections between Treasure Island and the new mixed-use path on the east span of the Bay Bridge.

TITMA would also operate a special bicycle rental system available to residents and visitors alike, providing a convenient "library"-style service that promotes casual bicycling. The bicycle library would be staffed to provide users with assistance, and special access cards would provide access to the library outside of regular business hours. The bicycle library is discussed in more detail in Section 7.5.2.

## 4.2 PEDESTRIAN FACILITIES

The proposed transportation implementation plan for Treasure Island places an emphasis on alternative transport modes, including walking. As every visitor or resident on the Island will need to walk at some point in their trip—whether they are on-foot for most of their journey or only traveling from a bus-stop or parking facility to their final destination. As a result, ensuring a safe and pleasant pedestrian realm benefits all members of the Island community.

As illustrated in Figure 3.5, the Island's proposed pedestrian network consists of a hierarchical web of primary and secondary pedestrian routes, connected by a Bay Trail ringing around the Island and a series of smaller pedestrian paths filling in the remaining gaps. These pedestrian facilities are discussed in more detail in the following sections.

### *4.2.1 PRIMARY PEDESTRIAN ROUTES*

A radial network of primary pedestrian routes emanating from the Ferry Terminal and Intermodal Transit Hub would serve as the backbone of the Island's pedestrian network. These routes would be the primary corridors for pedestrian traffic on the Island, moving residents between their homes and the Ferry Terminal / Intermodal Transit Hub and Island Center district. One route traveling from the Transit Hub to the Eastside Commons will be designed as a grand "pedestrian boulevard," while a series of two parallel routes, meandering through pedestrian-oriented mews, will connect the Transit Hub to the Cityside district.

### *4.2.2 SECONDARY PEDESTRIAN ROUTES*

A series of secondary pedestrian routes would cover most of the remaining major streets on the Island, providing a connection between primary pedestrian routes and the finer-grained network of pedestrian paths. These routes would also serve as alternatives to the primary pedestrian routes along major pedestrian corridors, as well as critical connections when moving from one Island neighborhood to another.

### *4.2.3 BAY TRAIL*

The San Francisco Bay Trail would fully encircle Treasure Island along the waterfront, connecting to the pedestrian / bike path on the East Span of the Bay Bridge via Treasure Island Road and Macalla Road. The Bay Trail would serve as the major recreational route on the Island, connecting open spaces and waterfront uses and offering scenic vistas looking out onto San Francisco Bay, Downtown San Francisco, and the new East Span of the Bay Bridge.

### *4.2.4 PEDESTRIAN PATHS*

A finer-grained web of pedestrian paths would serve to fill small gaps in the pedestrian network, providing circulatory and access functions within residential neighborhoods and connecting residential neighborhoods with the open space and waterfront.

# 5 TRANSIT SERVICES

This section describes the transit routes that are proposed as part of the Project. These services include:

- Ferry service between Treasure Island and San Francisco;
- Bus service between Treasure Island and San Francisco;
- Bus service between Treasure Island and Oakland; and
- A free on-Island shuttle system.

Chapter 8 provides more detail on how these routes would be operated.

The Environmental Impact Report (EIR) for the Project analyzes both a base level of transit service and an expanded level of transit service proposed as Mitigation Measure M-TR-2. The service as part of M-TR-2 is considered uncertain, because the expansion of Muni service must rely on future annual appropriations by future Boards of Supervisors, and because the provision of ferry service at the frequencies proposed by the mitigation measure requires expansion of the San Francisco berthing facilities, which relies on future environmental review and discretionary actions by the Port, the Board of Supervisors, and WETA. Nevertheless, it is the intention of the Project to implement these services, and therefore the service described below, and the commitments of TIDA and TICD, all assume that the mitigation measure is implemented.

## 5.1 FERRY SERVICE

Currently, there is no ferry service to Treasure Island. A new ferry service will be provided in conjunction with WETA between San Francisco's Ferry Terminal (Ferry Building) and Treasure Island. The proposed 1.8 mile ferry route between Treasure Island and San Francisco's Ferry Terminal is illustrated on Figure 5.1.

To serve the Island at full build-out, the Island will be served by up to three ferries operating every 15 minutes during peak periods. Multi-modal connections to the Treasure Island ferry terminal facility are designed and accommodated on the Island to make transfers to the ferries safe, direct, and quick. Ferries will operate between 5:00 am and 9:00 pm each day. Headways would be slower during off-peak periods (including midday, weekends, and nights), and service will be adjusted to meet demand. More information on the approach to service planning is included in Chapter 8.


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**Figure 5.1**
**PROPOSED TRANSIT SERVICE**

## 5.2 BUS AND SHUTTLE SERVICE

Bi-directional transbay bus service would be offered. SFMTA would operate services between the Island and San Francisco, while AC Transit would operate service between the Island and the East Bay (Downtown Oakland). All transbay bus services would operate as express services, with limited stops on and off the Island. In addition, a free on-Island shuttle would operate on Treasure Island and Yerba Buena Island to provide connections between the ferry or transbay bus services, Island residential and commercial uses, and open space.

All buses would originate and terminate service on Treasure Island at the Ferry Terminal and Intermodal Transit Hub. Layover space near the Hub is provided to maintain schedule reliability for AC and SFMTA (Muni) buses.

Figure 5.2 shows the routes that the buses and shuttles would travel on Treasure Island. A detail of the two-block loop where the transbay services would travel is included as Figure 5.3.

### *5.2.1 SAN FRANCISCO BUS SERVICE*

With the proposed development, two bus routes to San Francisco are proposed—one between the Transit Hub and the Transbay Terminal, and one between the Transit Hub and the Civic Center area—both with exclusive westbound on-ramp access to the Bay Bridge.

Service to the Transbay Terminal: At full build-out, this route would operate with service approximately every seven minutes in the weekday AM peak period and every five minutes in the weekday PM peak period. Headways would be slower during off-peak periods, including midday, weekends, and nights. Like the existing 108 service, this route would provide owl service and operate 24 hours per day.

Service to the Civic Center area: At full build-out, this route would operate with service every 12 minutes in both the weekday AM and PM peak periods. Headways would be slower during off-peak periods, including midday, weekends, and nights. This route would not offer owl service.

Figure 5.4 shows the path the two routes would travel in San Francisco.


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**Figure 5.2**

**PROPOSED BUS AND SHUTTLE ROUTES - TREASURE ISLAND**

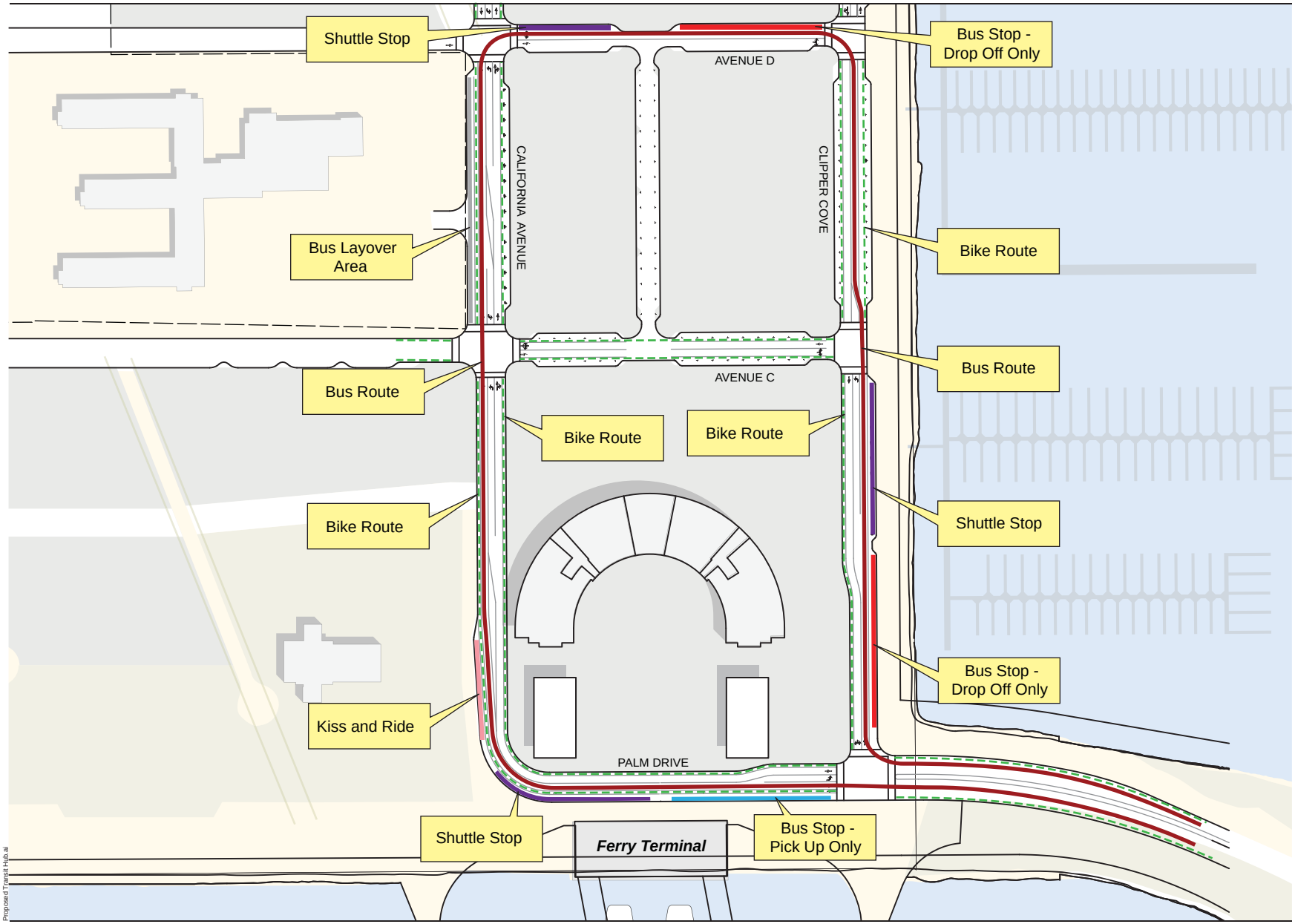


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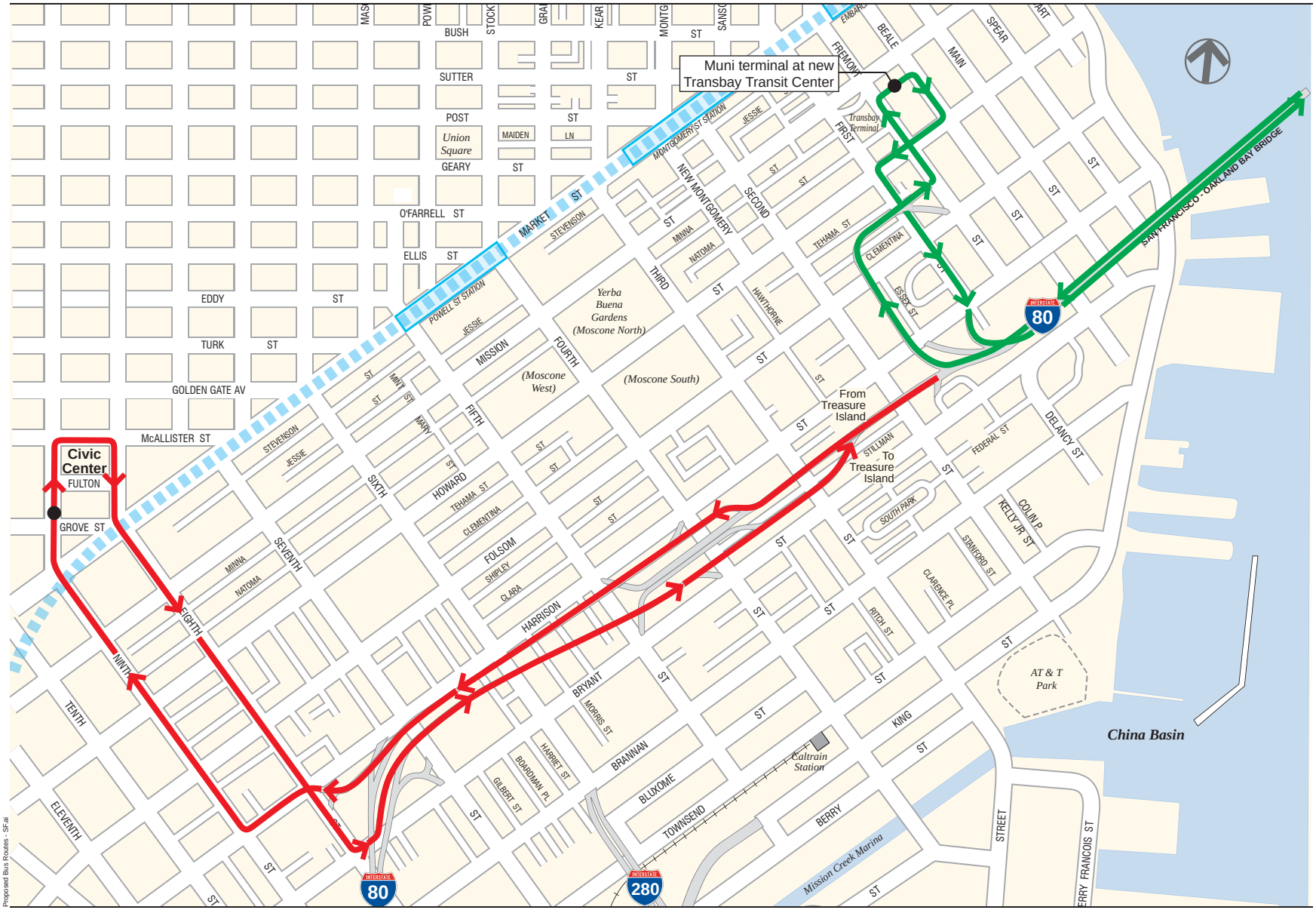
**Figure 5.3**

**PROPOSED TRANSIT HUB**




Proposed Bus Routes - SF.ai

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**Figure 5.4**

## PROPOSED BUS ROUTES - SAN FRANCISCO

### *5.2.2 EAST BAY BUS SERVICE*

There is currently no direct bus connection between the East Bay and Treasure Island. This Transportation Implementation Plan includes a new direct bus service from Treasure Island to Oakland Civic Center, with two stops at Broadway / 20th Street (19th Street BART Station and Uptown Transit Center) and Broadway / 14th Street (12th Street / Oakland City Center BART Station). Connections to both BART and other AC Transit lines are available at both these locations. Figure 5.5 shows the route the buses would travel in Oakland.

At full build-out, this route would operate with service every 10 minutes in both the weekday AM and PM peak periods. Service would be less frequent during off-peak periods, including midday, weekends, and nights. This route would operate approximately 17 hours per day, from 5:00 am to 10:00 pm.

### *5.2.3 SHUTTLE SERVICE*

The Project will provide a free on-Island shuttle system as a convenient amenity for residents, employees, and visitors on Treasure Island, allowing for easy circulation around the Island for those who choose not to or are unable to walk or bike and serving as a critical "last-mile" connection for transit riders using the transbay buses or ferry service. The shuttles will serve the majority of land uses on Treasure Island and Yerba Buena Island, including open spaces, retail commercial zones, and residential neighborhoods. The shuttle service also enables the transbay bus services to avoid circling on-Island, making that service more efficient and reliable.

The shuttles would operate primarily on three routes, two serving primarily Treasure Island and one primarily serving Yerba Buena Island. Shuttle vehicles will be designed to accommodate some bicycles, and all three shuttle routes would have connections to the transbay bus services and the ferry service. On weekends, routes could be extended as an optional service to the Northern Shoreline Park and Wilds open space areas on Treasure Island and the Great Whites area on Yerba Buena Island. The proposed routes for the two Treasure Island shuttle services and the one Yerba Buena Island shuttle service are shown in Figure 5.2.

The shuttle services would be free to riders and would operate 24 hours per day. All three routes would operate at regular headways from early in the morning until late in the evening. The headways and travel times would depend on the time of day and ridership, but would be timed to maximize coordination with ferry departures and arrivals.


West Grand Av Oakland.ai

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**Figure 5.5**

## PROPOSED BUS ROUTE - OAKLAND

## 5.3 TRANSIT HUB

The ferry and bus services will converge at an Intermodal Transit Hub to be located on the shoreline west of Building 1. Access to the Transit Hub would be via walking, biking, and the on-Island shuttle service, and specific facility design and traffic management treatments would accommodate the safe and frequent circulation of these modes. The Transit Hub will provide a central location for ticket sales, travel, and tourist information. Other transportation services at the Transit Hub will include bus stops and facilities for East Bay and San Francisco bus service providers, shuttle service stops, bicycle parking, car-sharing pods, and administration / office accommodation for the Island's Travel Coordinator.

# 6 EMERGENCY VEHICLE ACCESS

Emergency vehicle access to and throughout Treasure Island and Yerba Buena Island is a critical consideration in the circulation network design. All Island streets and intersections are designed to accommodate fire engines, ambulances, and police vehicles to ensure speedy response time and unimpeded access to all commercial centers, neighborhoods, and recreation sites. This degree of accommodation includes design treatments in the conventional as well as acute-angled intersections, the shared public way, and the placement and distribution of street furniture, streetscape vertical elements, and landscaping.

The combination of on-Island emergency vehicle accommodation and the extensive ferry-based infrastructure help enhance the safety and livability of Treasure Island and Yerba Buena Island for both incidental security events as well as regional resources in face of larger-scale emergencies.

# 7 TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

This chapter identifies the transportation demand management strategies designed to help the Project achieve the program goals and transit-oriented design guidelines outlined in Chapter 2 and Chapter 3. Specific key transportation demand management strategies are discussed comprehensively and in detail, from the objectives to the methods of implementation.

The following measures are the key strategies for the Island's managing transportation demand:

- Congestion pricing program;
- Parking policies;
- Mandatory pre-paid transit voucher;
- Ramp metering; and
- Special events and emergency access transportation planning.

Each of these topics is covered in depth below. In addition, a number of other TDM Programs, including car-sharing, a bicycle library, carpool and vanpool matching services, and a guaranteed ride home program, are proposed. These are also described below.

## 7.1 CONGESTION PRICING PROGRAM

The Transportation Program includes a demonstration congestion pricing program, authorized by the State Legislature in 2008, that will charge for access to and from Treasure Island and Yerba Buena Island. While charging vehicles for road space is a common traffic control technique on freeways and major roadways, its application in controlling traffic to and from a development is fairly innovative.

### *7.1.1 OBJECTIVES*

The objectives of the Project's congestion pricing program are as follows:

- To create a disincentive for residents to use their cars for commute trips;
- To increase the competitiveness and attractiveness of transit for commute trips;
- To mitigate the peak period impact of trips generated by the development on the regional road network (the Bay Bridge) and ramp queues; and
- To provide financial support for transit operating costs and the transportation demand management programs.

### *7.1.2 AUTHORIZATION FOR THE PROGRAM*

In 2008, the State of California passed legislation authorizing congestion pricing on Treasure Island as AB 981, the Treasure Island Transportation Management Act. The legislation authorized the following:

Designation by the Board of Supervisors of the City and County of San Francisco of a "transportation management agency." Powers of the transportation management agency include recommending an initial congestion pricing fee structure (to be adopted by the Board of Supervisors), and adoption of revenue structures for on- and off-street parking (e.g., fees, fines, and penalties) and a transit voucher fee structure for Treasure Island and Yerba Buena Island. The agency would also be responsible for adopting and administering a transportation program, collecting and distributing all revenues generated on-Island by and for the on-Island program, and coordinating with the SFMTA regarding issues such as transit service, parking enforcement, and traffic signaling.

### *7.1.3 INITIAL OPERATING ASSUMPTIONS*

The initial operating assumptions for the congestion pricing program are that charges will be applied to residents only, in both directions (on and off the Island) during the peak periods of 6:00 am to 9:00 am and 4:00 pm to 7:00 pm, Monday through Friday. The initial operating assumptions for the congestion pricing program are described in detail in Section 10.2.1. As also described in that section, the assumptions are subject to change by the TITMA depending on actual Project performance.

### *7.1.4 PROPOSED METHOD OF COLLECTION AND ENFORCEMENT*

The ultimate method of collection will be determined closer to the opening of the first phase of development, to take advantage of the latest in automated collection technology. The current approach is based on existing proven electronic technology such as the radio frequency identification (RFID) transponders used in FasTrak. The method of collection would be determined by the TITMA based on available technology at the time of Project opening.

All residents who have a car on the Island will be required to register their vehicle. If an electronic toll collection method is selected that requires a transponder, the residents would receive a transponder device as part of this process and be required to permanently fix the device to the car, allowing for the monitoring of both parking use and road user charges.

Enforcement technology could include imaging or video technology to read and record license plates, as is already used by FasTrak at toll booths such as on the Bay Bridge. Depending upon the technology

used and the institutional operating framework, it may be possible to link the road user charging technology to the parking technology (discussed below) to provide a single platform for the monitoring and enforcement of transportation on the Island.

The TITMA will be responsible for collection and enforcement, but may contract with third-party collection entities (e.g. FasTrak) and / or law enforcement agencies to carry out these duties.

## 7.2 PARKING POLICIES

The Project's parking policies are designed to reduce the overall usage of private automobiles through pricing, supply, new technology, and effective monitoring programs.

### *7.2.1 PARKING MAXIMUMS*

The Project's *Design for Development* sets out the parking limits that apply to the Project. There are no parking minimums; the parking limits are maximums, and establish the maximum number of parking spaces that can be provided Island-wide. This is in contrast to more typical San Francisco zoning, where parking limits are imposed on a project-by-project basis but parking outside the project is not controlled. The parking limits were based on the San Francisco Planning Code, Section 151 and the Institute of Transportation Engineers; *Parking Generation, Third Edition*, modified to reflect unique conditions on Treasure Island. The number of parking spaces provided for each land use is lower than the ITE demand, which is consistent with the Island's parking principles of discouraging the use of private automobiles through a strict and regulated parking supply.

The parking maximums by land use as established in the Project's *Design for Development* are described below:

- Residential: One (1) space per dwelling unit;
- Office / Commercial: One (1) space for every 1,000 square feet of gross floor area;
- Retail: Two (2) spaces for every 1,000 square feet of gross floor area;
- Hotel: 0.4 spaces per room; and
- Marina: 0.6 spaces per slip.

### *7.2.2 RESIDENTIAL PARKING*

The approach to residential parking is a central part of the comprehensive transportation program, the goals of which include minimizing the impact of the automobile on the future development, while still enabling the Project to be economically feasible. Residential parking will be limited to an Island-wide maximum ratio of one space per home. This cap will apply regardless of where the parking spaces are located, either within the building where the resident resides or in a centralized parking facility. Because the geotechnical approach to stabilizing Treasure Island enabled a substantial amount of the parking to be provided underground, it is anticipated that most of the residential parking (approximately 80-85%) will be provided in subterranean garages underneath residential buildings, while the balance would be provided in separate centralized facilities.

The cap will be administered by the Planning Department in accordance with the procedures set out in the Planning Code Section 249.52 (Treasure Island / Yerba Buena Island Special Use District). TIDA will also track the parking cap on a Major Phase and Sub-Phase basis in accordance with the *Disposition and Development Agreement*.

Under the Special Use District, a project may not be approved that would cause the number of off-street parking spaces to exceed the maximum Island-wide ratios set forth in the Special Use District for development increments of 2000 residential units and 100,000 s.f. of commercial; except that deviations of up to 10% will be permitted for the first two development increments.

Under the *Disposition and Development Agreement*, TICD will be required to make applications to TIDA for large groups of blocks (known as Major Phases) and smaller subsets within those Major Phases (known as Sub-phases). As part of its Major Phase and Sub-Phase Applications, TICD must identify the number of parking spaces allocated to each Major Phase and each Sub-phase, and show compliance with the parking ratios per development increment in accordance with the Special Use District. Individual lots within each Sub-phase must be sold with a recorded restriction on the number of parking spaces that can be constructed on the lot by the applicable vertical developer. TIDA will track the number of spaces allocated and constructed within each Sub-phase to ensure that the cap per development increment is not exceeded.

In addition, all residential parking will be economically "unbundled" from the cost of buying or renting a home.[2] This means that residents will have the option to purchase or rent a parking space with their home, but will not be required to do so a condition of their purchase or lease.

All residents who own a car (whether owners or renters) will be subject to a parking charge (either monthly rental or purchase) if they choose to utilize a parking space. Residential parking charges will be set at market rates for residential units priced at market or inclusionary levels. Affordable housing units constructed by or on behalf of TIDA, including Treasure Island Homeless Development Initiative (TIHDI) units, will be able to set their own parking prices. As discussed below, all on-street parking will also incur a charge, making it impossible for a resident to park on-street to avoid parking charges for structured parking.

Residential parking will be constructed by private developers or, for centralized facilities, by TICD or another developer on behalf of private developers, and leased or sold to individual households. Residential parking revenues would not be used as a funding source to support long-term transit operations.

### *7.2.3 NON-RESIDENTIAL PARKING*

Parking for all uses other than residential—including commercial, visitor, and recreational parking—will be located on-street or in centralized parking garages. The TITMA will operate all non-residential parking on the Island, including both on-street and off-street parking serving the development, and all revenues generated on-Island will be collected by TITMA to support the TDM programs and fund transit operations for the Project.

While the congestion pricing program applies only to residents, the TITMA-administered parking program will be aimed primarily at employees and visitors. Pricing of parking presents an opportunity to influence employee and visitor transportation travel behavior. Accordingly, non-residential parking will be priced as follows:

- All parking will incur a charge;
- Retail parking will be located in a parking garage separate from the retail buildings and the total supply controlled as the development is built out; and

[2] The *Design for Development* permits exceptions to this unbundling only for affordable housing developments where unbundling is not permitted by the financing sources.

- Retail or hotel users would not receive free parking through validation.

Like residential parking, hotel parking will be constructed by private hotel developers and the revenues from this parking would not be used as a funding source to support long-term transit operations. For all other commercial parking facilities, the TITMA will be responsible for setting parking rates and providing a comprehensive monitoring and enforcement program. Program implementation is discussed in more detail in Section 10.2.

### ON-STREET PARKING

On-street parking will be priced and managed as follows:

- All on-street parking will be charged, using wireless technologies similar to those already in use for the SF*park* program;
- All on-street spaces will be available to visitors with charges assessed on an hourly basis and calculated to encourage short-term use;
- Spaces will be controlled by multi-space meters; and
- Charges will apply from early morning (7:00 am) to late evening (10:00 pm) to discourage residents from using on-street spaces.

TICD will be responsible for installing the specified parking equipment (including meters, monitoring technology, etc.) on the streets when they are initially built.

### OFF-STREET PARKING

Off street parking will be in centralized parking garages and in surface lots located adjacent to recreation / open space areas. The locations of each public (non-residential) parking facility are shown in Figure 7.1.

TICD will be responsible for constructing enclosed parking structures and dedicating them to TIDA or the TITMA. The design of the centralized parking facilities must conform to the standards and guidelines set forth in the *Design for Development*. The enclosed parking structures would be sized to provide parking for the non-residential (i.e. commercial and visitor serving) uses, in accordance with the parking limits set forth in the *Design for Development*. The use of centralized garages would allow for the pool of parking to be shared among different uses.


Source: CMG Architects

PARKING-AREAS.ai

**TICD**
Treasure Island Community Development, LLC

TREASURE ISLAND TRANSPORTATION IMPLEMENTATION PLAN

**Figure 7.1**

**PUBLIC PARKING FACILITIES**

The enclosed parking structures could include some stalls intended for residential use, subject to the Island-wide cap on residential parking. In this case, the stalls would be sold or leased to individual residents for their exclusive use.

The TITMA will apply the following principles in pricing centralized garages:

- All spaces will be subject to a charge; and
- Charges for non-residential uses will encourage short-term use (up to 4 hours).

Surface parking lots that serve open space facilities will generally be built by TICD as part of the open space improvements. All spaces in surface off-street parking facilities will be subject to a parking charge consistent with the charge for on-street spaces and based on the same concepts for parking management.

The off-street parking supply will be phased to correspond to the level of development during construction. In early phases, temporary surface lots and temporary parking inside of Building 3 will be used in order to provide the minimum amount of parking needed for the then-current uses. The use of temporary facilities will enable the TITMA to better judge the demand for parking on the Island and determine how large the permanent parking facilities need to be. If warranted, larger centralized parking facilities will be built over time to help meet new demand, but still in accordance with Island-wide parking caps and the other objectives of this Implementation Plan. The TITMA will also use its variable parking pricing structure to keep parking supply and demand balanced as development occurs. In the very long-term, the land use plan for the Island is flexible, so if more parking was constructed than was later determined to be actually needed, TITMA could elect to adaptively reuse the garages or demolish them and convert the land to other uses.

At several key locations on the Island, information regarding parking facility locations will be posted to advise visitors where the parking facilities for each land use are located. The Project will evaluate the opportunities for real-time parking information at critical locations. It would be TICD's obligation to provide a comprehensive signage program that includes parking wayfinding. Such a program could include the use of real-time parking information, which would enable visitors to drive straight to the facility that is closest to their destination without creating confusion regarding how to travel around the Island during peak travel periods, thereby reducing automobile congestion on the Island.

## 7.3 MANDATORY PRE-PAID TRANSIT VOUCHER

In 2010, the Metropolitan Transportation Commission (MTC) launched a universal transit smartcard system called the "Clipper Card," which enables transit users to make fare payments on all Bay Area transit providers with a single card. All of the transit providers proposed on Treasure Island currently accept the Clipper Card, or will do so in the near future (the system is already in use on both Muni and AC Transit, and coordination is underway to rollout the system on future WETA-operated ferries).

The Project proposes to build the cost of a pre-paid Clipper Card into the Island's housing costs (i.e., homeowners dues or rents) and hotel room rates. Because the cost of the card is built into the housing or hotel room costs regardless of whether or not it is used, residents or visitors who do use their Clipper Card for transit will not be required to pay fares out of pocket and will essentially experience "free" transit service up to the amount on their cards. The convenience of smartcards, which can eliminate the hassle of determining arcane fare policies and make transit more accessible to casual users, have been demonstrated to have a positive impact on people choosing and using transit. For example, transit ridership in New York City, Washington, D.C., and Chicago increased with the introduction of new payment options (such as smartcards) in combination with fare discount programs or integrated fare structures.[3]

The TITMA would set the fee for the transit voucher, which would escalate over time. Current projections assume each household would pay $60 per month (equivalent to a monthly Muni "M" Fast Pass, good for all Muni service). The $60 monthly fee would be returned to the household on a Clipper Card, which could be used as monetary value towards the purchase of a monthly bus or ferry pass, or individual transit rides on any system, on or off the Island. The pass would likely be charged as part of the homeowner's fees, and would be mandatory for each market-rate or inclusionary home. The $60 monthly fee for the voucher would be required for all market-rate units regardless of whether the voucher is used or not, but the approximately 1,700 affordable housing units built by or on behalf of TIDA, including by TIHDI, would not be required to participate in the program. Since the monthly fee would be included in homeowners dues or rents, enforcement of the monthly fee would occur through the same mechanisms as enforcement of homeowners dues or rents.

In addition, hotel guests would be required to purchase a voucher with a certain pre-loaded value that could be used towards transit fares.

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[3] Victoria Transport Policy Institute. *Online TDM Encyclopedia: Public Transit Encouragement*. http://www.vtpi.org/tdm/tdm112.htm. Accessed December 22, 2010, 11:00 am.

## 7.4 RAMP METERING

Ramp metering is proposed to be implemented by Caltrans on or near all on-ramps onto the Bay Bridge from Yerba Buena Island to control the volume of vehicles accessing the bridge, to facilitate transit circulation, and to improve safety when vehicles attempt to enter the freeway.

Ramp meters are traffic signals placed on freeway entrance ramps to control the flow of vehicles entering the freeway. They are a commonly-used tool designed to decrease congestion and improve the average speed of vehicles traveling on the freeway by controlling vehicular flow at freeway on-ramps. By installing a meter at the on-ramp, the rate at which vehicles enter the freeway can be controlled. Vehicles entering at intervals are less likely to slow down mainline traffic and can merge onto the freeway without causing the traditional bottlenecks typically associated with heavy on-ramp traffic volumes. Meters also keep traffic on the mainline facility from exceeding its capacity.

Ramp metering of the on-ramps to the Bay Bridge from the Island is in different stages of implementation. The eastbound on-ramp is in the process of being reconstructed by Caltrans as part of the East Span Seismic Safety Project, and after reconstruction, will feature ramp metering.

There are also two existing westbound on-ramps (one each on the east and west sides of Yerba Buena Island), both currently stop-controlled. While these stop-controlled freeway on-ramps effectively act as metered on-ramps, unlike true metered ramps, the service rate for these on-ramps cannot be varied. As part of the Yerba Buena Island Ramps Improvement Project being studied by the San Francisco County Transportation Authority (SFCTA) and Caltrans, the westbound on-ramp on the east side of Yerba Buena Island would be reconstructed and ramp metering added. As part of that project, the westbound on-ramp on the west side of Yerba Buena Island would remain stop-controlled but would be closed to the general public and reserved for the exclusive use of transit and emergency vehicles.

Ramp metering on the Island on-ramps would be operated by Caltrans. TITMA would prepare materials to be given to all residents and employers advising them of the ramp meter and the potential delays associated with driving during peak periods. Ultimately, Caltrans and TITMA would coordinate to facilitate effective implementation of this mechanism.

## 7.5 SPECIAL EVENT AND EMERGENCY ACCESS TRANSPORTATION PLANNING

The Island's unique location in the middle of San Francisco Bay makes it a popular venue for events large and small, from intimate family weddings to concerts that attract thousands of visitors. Several large-scale events are already held annually on the Island, including various festivals and

performances. Managing travel needs and demands during these events becomes an even more critical as the Island population grows and new land uses that could attract additional visitors and events are opened.

In general, sponsors of special events would be required to file an approved TDM plan for the event. The plan would detail all the necessary requirements to ensure that all transportation-related activities for the event, including visitor access and parking / loading operations, do not substantially impact the travel needs of residents or other members of the Island community. Possible elements of the plan could include enhanced bus or ferry services to and from the Island, augmented on-Island shuttle services, and parking management.

The approved TDM plan would also evaluate any special needs for or effects on emergency access to and from the Island and provide solutions to ensure that emergency vehicle access to parts of the Island are not impeded by event activities.

## 7.6 OTHER TDM PROGRAMS

### *7.6.1 CAR-SHARE PROGRAM*

A car-share program will provide a network of vehicles parked in neighborhood "pods." Members would check out vehicles for use, making payments based on the total duration of the check-out period and/or the distance driven. Through a partnership with a car-share operator, a car-share program will be implemented to allow members to use vehicles when needed, and to pay based only on how much they drive, thus reducing the fixed costs associated with private automobile ownership.


The *Design for Development* requires car-share spaces be provided by any project that contains 50 or more residential units or commercial or non-accessory parking structures with 25 or more stalls. The car-share spaces must be made available to car-share organizations at no cost. TITMA would coordinate

agreement(s) with car-share operator(s) to determine the appropriate number of cars and locations for them on Treasure Island.

### *7.6.2 BICYCLE FLEET*

Treasure Island will have a fleet of bicycles, provided by TICD, available for checkout from a secure central "bike station" located at or near the Ferry Terminal. The TITMA will be responsible for overseeing the program, which is intended to use "library"-style management techniques that will provide accountability and usage tracking superior to anonymous "free bike" programs that have been tried in other cities. Visitors and residents will be able to borrow bicycles like library books, with free use for residents and a free or nominal fee for visitors. The bike station will be attended during daytime hours seven days a week. The facility's secure bicycle storage area will be accessible during unattended hours by residents with an access card.

### *7.6.3 CARPOOL AND VANPOOL RIDEMATCHING SERVICES*

Carpool and vanpool ridematching services would be provided by the TITMA staff, and designated spaces would be provided in the Island's parking facilities for vanpools, free of charge. Ridematching for carpool and vanpool riders would be arranged through the Project travel website, administered by TITMA staff. Consistent with state legislation, HOV carpools and vanpools meeting the requirements of the TITMA would not be subject to congestion pricing charges.

### *7.6.4 GUARANTEED RIDE HOME PROGRAM*

A guaranteed ride home program would be included as part of the Island's overall TDM program. Under this program, Island residents and employees who are registered as carpool or transit riders would be reimbursed for return trip travel in the event of an emergency where an alternative means of travel is not available. These travelers could use a taxi service to complete their return trip and would receive reimbursement for the cost of the trip by the TDM program.

### *7.6.5 VISITOR AND EMPLOYEE TDM PROGRAMS*

Transportation demand measures are intended to affect the travel behavior of all users of the island. All employers on the Island will be required to participate in TDM programs, and the TITMA's Travel Coordinator (discussed in Section 10.1, below) will work with employers to monitor progress and provide support. The TITMA will develop a detailed employer TDM program that will specify what programs are required of employers of different sizes. Each employer will be required to designate a single contact for transportation purposes.

The TITMA will coordinate its activities with those of the Island's employers to ensure that employees are kept fully informed of the available programs and any promotional activities and will be available to assist with new employee orientation. In addition, the Travel Coordinator will be available to coordinate these services on behalf of smaller employers. The Travel Coordinator would also be expected to work with on-Island retailers to provide delivery options to on-Island customers, providing another alternative to driving to stores to meet one's daily needs.

Many of the Project's transportation policies and services already support transportation demand management for visitors and employees, including the following measures:

- Establishment of priced parking for all employees and visitors;
- Availability of convenient transit services;
- Provision of bicycle access to the East Bay;
- Implementation of a car-share program;
- Establishment of a bicycle library;
- Operation of an on-Island shuttle service;
- Provision of on-Island amenities including child care facilities; and
- Provision of a pre-paid transit voucher for hotel guests.

In addition, all reasonably-sized employers (e.g., greater than 25 employees) will have design and program requirements imposed on them, including the following:

*Required Design Features in the Design for Development*

- Bicycle parking in a controlled-access or secure area;
- Design that is easily accessible by pedestrian and bicycle routes and transit;

*Required TDM Programs*

- Carpool and vanpool ridematching services, including designated spaces and reduced parking charges for carpools and vanpools; and
- Guaranteed ride home for registered carpool, vanpool, and transit riders in emergency situations.

Implementation of these TDM programs would be imposed on employers through stipulations in their lease agreements.

In addition, employers will be expected to offer programs to reduce automobile use and encourage the use of alternative modes. The programs include the following measures:

- Alternative commute subsidies or parking "cash-out." Employees are provided with a subsidy if they commute by transit or other alternative modes;
- Opportunities to provide employees with the option to purchase commuter checks;
- Opportunities to provide completely subsidized vanpool service for hotel employers or large employers;
- Marketing of alternative travel options. Employers, particularly hotels, will be encouraged to provide information to prospective visitors relative to the alternative modes of travel available;
- Special event planning. As part of planning for special events, such as weddings or hotel events, event sponsors will be required to develop individual TDM programs to meet the event's travel needs without disrupting the travel needs of Island residents or other members of the Island community (see Section 10.3 for more detail);
- Compressed work week and flextime: Employees are given the option to adjust their work schedule to reduce trips to the worksite; and
- Telecommuting options.

Some of these programs, such as special event planning, will be mandatory, but others may be optional or only enforced depending on the size of the employer.

# PART TWO: IMPLEMENTATION

# 8 IMPLEMENTATION FRAMEWORK

## 8.1 THE TREASURE ISLAND TRANSPORTATION MANAGEMENT AGENCY

The transportation program for Treasure Island calls for the establishment of a Treasure Island Transportation Management Agency (TITMA), which will be responsible for regulating charges and collecting revenues associated with off-street and non-residential on-street parking facilities and the congestion pricing program, and distributing those revenues to support the proposed transit operations and transportation demand programs contemplated in the transportation program.

The creation of the TITMA was authorized by the State Legislature in 2008 as part of AB 981 (Transportation Authorizing Legislation). The Transportation Authorizing Legislation authorized the San Francisco Board of Supervisors to designate a board or agency to act as the transportation management agency for Treasure Island and Yerba Buena Island. The Treasure Island Transportation Management Agency (TITMA) is the name of the agency designated in AB 981. AB 981 also authorizes the Board of Supervisors and the San Francisco County Transportation Authority, by a two-thirds majority of each body, to adopt a congestion pricing program for Treasure Island and Yerba Buena Island and to set an initial congestion pricing fee structure based on recommendation by TITMA. AB 981 authorizes TITMA, among other things, to establish parking fees, fines, and other parking-related revenues; to establish a transit pass fee structure and program; and to adopt amendments to the congestion pricing fee structure.

Pursuant to the Legislation, TIDA shall recommend, and the Board of Supervisors shall affirm, the creation or designation of the TITMA. TIDA is recommending the San Francisco County Transportation Authority (SFCTA) be designated to act as the TITMA. SFCTA, sitting as the TITMA, would be responsible for making decisions about congestion pricing for Treasure Island. SFCTA staff would support the organization and make professional recommendations on all aspects of the project's transportation demand management activities, including pricing, service levels, and programs. Staff would also consult with staff from cooperating agencies, including SFMTA, AC Transit, and WETA, to inform their decision making process.

## 8.2 RESPONSIBILITIES OF THE TITMA

### *8.2.1 TRANSPORTATION REVENUE COLLECTION*

The TITMA will be responsible for the following tasks related to transportation revenue collection.

- Management of the congestion pricing program for the Island, including setting pricing, collecting revenues, enforcing collection, monitoring performance, and reporting findings to the State legislature;

- Management of the commercial and on-street parking on the Island, including setting pricing, collecting revenues, enforcing collection, and ownership and maintenance of the parking garages; and

- Monitoring of the Master HOA's compliance with the requirement to charge all private households (except those in affordable housing projects) and hotel guests for a pre-paid transit voucher.

### *8.2.2 COORDINATION OF TRANSIT SERVICES*

The TITMA will be responsible for the following tasks related to coordination of transit services.

- Contracting for on-Island shuttle service to be provided at no cost to riders, including setting routes and schedules and paying for operating costs;

- Contracting for ferry service to be provided between Treasure Island and San Francisco, including coordinating with WETA on setting routes and schedules, and subsidizing operating costs, in accordance with the terms of the WETA MOU attached to this document and described further below;

- Contracting for bus service to be provided between Treasure Island and Oakland, including coordinating with AC Transit on setting routes and schedules, and subsidizing operating costs, in accordance with the terms of the AC Transit MOU attached to this document and described further below; and

- Coordination with SFMTA on its operations of the bus service between Treasure Island and San Francisco, in accordance with the Interagency Cooperation Agreement (ICA).

### *8.2.3 ADMINISTRATION OF OTHER TRANSPORTATION DEMAND MANAGEMENT (TDM) MEASURES*

The TITMA will be responsible for the following tasks related to administration of other TDM measures.

- Hiring of a Transportation Coordinator;

- Coordination of the Island's car-share network;
- Establishment and operation of the bicycle library;
- Provision of carpool and vanpool matching services;
- Coordination of the guaranteed ride home program;
- Coordination with Employers on their TDM programs; and
- Coordination with Caltrans on ramp metering.

### *8.2.4 COMPLIANCE WITH TRANSPORTATION MITIGATION MEASURES*

The TITMA will be responsible for the following tasks related to compliance with transportation mitigation measures.

- Development of a construction traffic management plan in accordance with Mitigation Measure M-TR-1;
- Coordination of the transit services in accordance with this Implementation Plan, which is equivalent to the service levels included in Mitigation Measure M-TR-2;[4] and
- Monitoring of on-Island queuing in accordance with Mitigation Measure M-TR-24.

### *8.2.5 PRE-OCCUPANCY ACTIVITIES*

The TITMA is intended to be an operating agency, focused on coordinating and operating transportation services once new residents move to the Islands, throughout the build-out and beyond. Prior to initial occupancy, TITMA may have limited responsibilities to set up the initial programs and prepare for initial operations. Service and programs are anticipated to be phased in over time, as described in subsequent sections, and therefore initial operations may not include all of the final Transportation Program components.

[4] Mitigation Measure M-TR-2 was rejected due to the inability of SFMTA or the current Board of Supervisors to commit future Boards of Supervisors to fund future service, and therefore is not a formal requirement of the Project. Nevertheless, the Project intends to implement the service levels from that mitigation measure to the extent possible, and this Implementation Plan describes how these service levels could be met.

## 8.3 TRANSPORTATION FUNDING STRUCTURE

An underlying principle of the Treasure Island / Yerba Buena Island Project is that the overall Project, including all of its components, is financially feasible. This concept is carried through to the Transportation Implementation Plan and an explicit goal of the comprehensive program outlined in this document is the establishment of a structure of flexible programs that support a transportation system that is financially feasible in terms of upfront capital costs and long-term operations.

The framework for financial feasibility is that the capital costs needed for the Project's transportation program will be provided as part of the up-front costs of development, with a minimal amount of outside leverage. On an operating basis, the Project includes several sources of revenues, to be collected by the TITMA, which, in conjunction with fare box revenues, are projected to cover the costs of operating the transit services and the TDM programs for which the TITMA is responsible. In the short-term, prior to completion of the Project, shortfalls in operating costs will be covered by a fixed schedule of payments from TICD to be made to TITMA through TIDA, as required under the DDA.

As it is not possible to know precisely how the Island's transportation demands and service needs will vary over time, the Transportation Implementation Plan is designed to be flexible. As transportation demands and service needs become established and begin to evolve, the Plan's many services and demand management mechanisms can be modified to promote long term financial stability. Parking pricing, congestion pricing, transit fares and ramp metering are some of the important transportation demand levers at the disposal of TITMA. These mechanisms, combined with changes to transit providers service plans to better suit the varying needs of the Island, can adjust in order to provide a balanced system (both operationally and financially) that is optimized to best meet the Island's transportation needs.

This section provides a general overview of the capital costs and operating costs and revenues for the Project. More detailed projections are provided as part of each of the transportation program elements, described in Chapter 9 and Chapter 10. Chapter 11 summarizes the total costs.

### *8.3.1 CAPITAL COSTS AND REVENUES*

As outlined in Chapter 11, the Project will fund more than $144.9 million in capital costs for transit rolling stock, transit facilities, parking facilities, and certain other infrastructure elements of the TDM program. The Project is expected to fund 100% of the costs related to physical construction of on-

island improvements and will contribute to purchases of rolling stock, to be leveraged by federal matching funds for SFMTA buses only. In addition, TIDA and TICD will work together with the various transit agencies and TITMA to seek new grants or other local, regional, and federal transportation funding sources to defray the capital requirements and enhance the Project's facilities. This could include grants to purchase ferry boats or buses, construct roads or ferry facilities, or implement pedestrian and bicycle improvements. In addition, opportunities for private funding sources would also be sought where appropriate, but, like grant funding, these funds are not assumed in the Project's capital budget today.

### *8.3.2 OPERATING COSTS AND REVENUES*

Chapter 11 details the estimated operating costs and revenues associated with each of the elements of the transportation program. Overall, the total operating costs at build-out for the transportation program are estimated at approximately $20.5 million. Total estimated operating revenues at build-out are approximately $27.9 million.

Primary sources of program revenues include the following:

- Farebox revenues from transit operations, including mandatory pre-paid transit fares. Transit operators will collect fares from passengers, which could include both direct cash fares and fares paid through the pre-paid transit voucher mandatory for residents of market-rate developments and all hotel guests.

- Non-residential parking revenues. The TITMA would receive all non-residential parking revenues, and use those funds to support the Island's transportation services and TDM programs.

- Congestion pricing fees.

Any surplus operating funds will be used for replacement transit costs or other transportation programs benefitting Treasure Island. During the early years of the Project before revenue sources such as parking and congestion pricing charges have reached certain levels, the overall transportation program operates at a financial deficit. The *Development and Disposition Agreement* obligates TICD to provide a transit operating subsidy of $30,000,000, paid annually based on budgeted need up to a $4,000,000 cap, in order to make up for this projected shortfall. In addition, if after the Island is 50% occupied, less than 50% of off-Island trips during the peak period are made by modes other than auto,

the DDA requires that TICD contribute an additional $5,000,000 in subsidy to be paid in five installments of $1,000,000.

Additional operating support in the form of grants or other funding could also be sought, either by the TITMA or by individual transit operators. For example, according to WETA, other potential funding sources for ferry service to Treasure Island could include the Federal Ferryboat Discretionary Fund. These funds would be used to supplement the above sources, but are not currently assumed.

# 9 TRANSIT OPERATIONS

## 9.1 FERRY SERVICE

A new ferry service will be provided in conjunction with WETA between San Francisco's Ferry Terminal (Ferry Building) and Treasure Island. The proposed 1.8 mile ferry route between Treasure Island and San Francisco's Ferry Terminal is illustrated in Figure 5.1.

### *9.1.1 SERVICE PLAN*

The ferry demand to San Francisco for the weekday AM and PM peak hours was estimated in the Draft EIR for the Project. Table 9.1 summarizes the service plan for the proposed ferry service at full build-out.

As shown in Table 9.1, at full build-out the Island will be served by a fleet of up to three ferries, operating at a combined frequency of every 15 minutes during peak periods. The service will operate between 5:00 am and 9:00 pm each day. Headways would be slower during off-peak periods (including midday, weekends, and nights), ranging between 30 and 60 minutes based on actual demand.

Table 9.1 shows three 299-passenger vessels operating at 15-minute frequencies at full build-out, but should ridership exceed that projected by the EIR forecasts, the size of vessels could be adjusted to meet demand. The vessels could range in size from 199- to 699-passenger boats, depending on ridership. Decisions about service levels would be coordinated between TITMA and WETA.

Ferry travel time between Treasure Island and the San Francisco Ferry Building is approximately 15 minutes each way. Cycle time for a side-loading vessel with capacity up to about 149 passengers is approximately 30 minutes, while a 199-passenger vessel could take slightly longer.

TABLE 9.1: SUMMARY OF PROJECTED FERRY SERVICE AT FULL BUILD-OUT

| DIRECTION | TOTAL RIDERSHIP[a] | CAPACITY PER FERRY[b] | HEADWAY | LOAD FACTOR | NUMBER OF FERRIES REQUIRED |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Inbound | 359 | 299 pax | 15 min | 0.50 | 3 |
| Outbound | 599 | | | | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Inbound | 719 | 299 pax | 15 min | 0.60 | 3 |
| Outbound | 516 | | | | |

Source: Fehr & Peers, 2010; AECOM, 2010.

[a] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[b] Service plan assumes 299-passenger vessels at 15-minute headways, but should ridership demand exceed capacity, the size of the vessel could be increased to accommodate more passengers.

### *9.1.2 CAPITAL NEEDS*

There are two primary capital needs for the ferry component of the Project:

- Treasure Island ferry quay and terminal; and
- Expanded San Francisco landing facilities.

Also discussed in this section are the ferry vessels, although as described later, no capital costs would be associated with the vessels because they would be acquired through lease arrangements.

#### 9.1.2.1 TREASURE ISLAND FERRY QUAY AND TERMINAL

The Infrastructure Plan attached to the DDA details the assumptions for the design of both the Treasure Island ferry quay and terminal. TICD is responsible for constructing the ferry quay (including the quay, side-loading ferry docks, breakwaters, and ferry basin) and terminal, according to the Schedule of Performance attached to the DDA. The quay itself would include two ferry slips for side-loading ferries and be designed to allow for replacement of the side-loading slips with bow-loading slips in the future, if and when passenger demand merits the change and funding for bow-loading facilities

is identified. TITMA and WETA would be responsible for coordinating the funding, design and engineering permitting, and construction of replacement facilities, including ensuring that service continues to be provided during construction.

The ferry infrastructure constructed by TICD would be completed in two phases, with the first phase involving construction of the northern breakwater, along with the ferry slips and terminal. The southern breakwater would be constructed several years later, depending on the desired service frequencies, routine maintenance requirements (dredging), and other factors. The total cost of the ferry quay and terminal, including soft costs, would be approximately $30.0 million (all in 2010 dollars).

#### 9.1.2.2 EXPANDED SAN FRANCISCO LANDING FACILITIES

Consistent with the base level of transit described in the Project's EIR, the Project can operate one ferry at approximately 50-minute headways using existing landing facilities in San Francisco. Ferries up to 199 passengers and headways as frequent as 30 minutes would be feasible with minor adjustments to existing ferry service schedules. In order to operate ferries larger than 199 passengers or provide service more frequent than every 30 minutes, a dedicated dock for the Treasure Island service is required. WETA, together with the Port of San Francisco, has responsibility for funding, designing, and constructing those facilities.

WETA is currently preparing preliminary designs for the expansion of the San Francisco Ferry Terminal, and is expected to issue a Notice of Preparation and Notice of Intent to commence environmental review under CEQA and NEPA in the spring of 2011. While the preliminary plans for the expanded landing facilities are still being prepared, it is expected that the terminal will be expanded to accommodate six additional ferry berths. Two of these additional berths would be dedicated to the Treasure Island service, while the remaining additional berths would accommodate overall system expansion on other routes as well as layover space. The Treasure Island berths would be sized and configured in a manner that would accommodate the Treasure Island route's forecast ridership.

#### 9.1.2.3 FERRY VESSELS

In 2009, WETA undertook a detailed study of the Treasure Island ferry service, in coordination with TICD and TIDA. One component of that study was to examine a range of vessel types and determine which vessels might be most appropriate for the Treasure Island – San Francisco route.

The analysis recommended an adaptable system that would be compatible with other ferry operations on the Bay. In order to maintain flexible operations and to take advantage of existing resources, the

Project includes funding to lease vessels for the ferry service. The selected vessels are anticipated to be side-loading ferries with capacity for between 199 and 499 passengers. The cost of leasing vessels has been included in the operating assumptions for the ferry service, but the Project does not preclude ultimately purchasing, rather than leasing, boats, if the funds to do so were identified. Either side-loading or bow-loading vessels could be purchased (bow-loading vessels could be sized in the range of 399-899 passengers, if demand warranted it).

Since vessels would be leased, there is no capital cost associated with the ferry boats. Instead, the cost of leasing arrangements for vessels has been included in the average hourly cost for service and incorporated in the total operating costs for the service. Details on the ferry operating costs are included in Section 9.1.3.4.

### *9.1.3 OPERATIONS*

#### 9.1.3.1 RUNNING TIME AND SCHEDULING

Side loading ferries operating at an assumed cruise speed of 12 knots can make the 1.8 statute mile crossing in about 11 minutes, including time for docking. Occasionally, harbor traffic may increase the running time as ferries slow for the passage of other vessels. Allowances will be made in the schedule for such occurrences.[5]

The ferry's service schedule will be adjusted by WETA in coordination with the TITMA to meet actual ridership demands as the Project is built out and travel behavior changes over time. The highest demand is anticipated during weekday peak period commute times. Initially, service may be less frequent and over time peak period headways could be reduced to provide sufficient capacity to meet demand. Mid-day and weekend service will be less frequent commensurate with demand and to allow fueling and servicing of the vessels at an off-Island location.

There may be seasonal changes to the service schedule to accommodate greater ridership demand during months with good weather, and as with other ferry services throughout the Bay, temporary reductions in service due to storms or high wave activity associated with high winds. During the off-peak season, temporary removal of vessels from service for maintenance and Coast Guard-required

[5] For comparison with the proposed side-loading ferries, WETA's plans for bow-loading vessels assume a 16 knot speed to provide greater flexibility to avoid harbor traffic and maintain schedule. Because the bow-loading boats are double-ended and can dock quickly, combined with a faster speed, the crossing time is about 8 minutes for bow-loading vessels, including time for docking.

annual inspection may occur. The service schedule may be adjusted during these times, as with other ferry services currently operating on the Bay.

Because procurement of vessels for the proposed ferry service would ensure general uniformity of design with other WETA vessels, economies of scale would preclude the purchase or lease of spare vessels exclusively for use on the Treasure Island ferry service in the event of regular maintenance, major overhaul, or inspection. Instead, spare vessels during these periods would generally be shared between all routes in WETA's system.

#### 9.1.3.2 FUELING, MAINTENANCE AND OVERNIGHT TIE-UP

Ferry vessels require fueling and service at regular intervals. No fueling and only light maintenance (cleaning, trash / recycling removal, fluids changes) of the ferry vessels would occur at Treasure Island. There would be no separate maintenance or fueling facilities provided on either Treasure Island or Yerba Buena Island. Fueling is most likely to occur at an off-Island location such as WETA's planned Central Bay Maintenance Facility at Alameda, or the leased vessel owner's facilities.

Overnight tie-up of up to two vessels may occur at Treasure Island, in which case some vessel servicing and light maintenance may occur at night. Otherwise, overnight tie-up might occur at the vessel owner's facilities, or WETA's planned Pier 9 or Alameda facilities. Heavy maintenance of the vessels, such as engine overhaul, would occur at a private shipyard or WETA's planned maintenance facilities, as with other ferry services currently operating on the Bay and as planned for WETA's other expansion services, including Alameda-Oakland, Harbor Bay, South San Francisco, Berkeley, and Vallejo.

#### 9.1.3.3 OPERATING COSTS

Ferry operating costs to be funded by the Project include costs for operating ferry service (including direct labor costs and additional operating costs such as fueling and maintenance), as well as the cost of leasing vessels for the service. Costs are based on WETA average service hour costs of $800 to $900 per hour depending on the type of staffing arrangement. Table 9.2 summarizes the preliminary estimates for annual operating costs, based on these unit costs.

TABLE 9.2: FERRY OPERATING COST ASSUMPTIONS

| NUMBER OF FERRIES | COST PER SERVICE HOUR | DAILY VESSEL-HOURS (WEEKDAYS) | ANNUAL OPERATING COSTS |
|---|---|---|---|
| One (1) | $800 | 16 | $4,000,000 |
| Two (2) | $900 | 24 | $6,750,000 |
| Three (3) | $900 | 40 | $11,250,000 |

Source: Moffatt & Nichol, 2010; WETA, *Final Transition Plan*, 2009.

### *9.1.4 PHASING*

The changes in ridership demand and service plan for the proposed ferry service as the Project is built out are summarized in Table 9.3. The service plan assumes the use of 199-passenger vessels in the first three phases of the development, with 299-passenger vessels entering service afterwards to help accommodate future demand. Should actual ridership exceed the forecasted estimates, however, the vessel size could be increased or headways reduced. Based on the phasing plan in Table 9.3, dedicated berthing facilities would be needed in San Francisco for Phase 4 and beyond.

### *9.1.5 ADDITIONAL FERRY SERVICES*

#### EAST BAY AND SOUTH BAY FERRY SERVICE

In the future, ferry service could be provided between Treasure Island and the East Bay or South Bay, if demand warrants it and if such services are shown to be feasible. As proposed currently, transit service to the East Bay will be provided by buses, which sufficiently meet the Project's expected ridership demand in this corridor. Direct transit service to the South Bay is not currently proposed, but is possible by taking either a bus or ferry to San Francisco, walking on foot, and transferring to CalTrain at the Fourth / King terminal or to SamTrans service at the Transbay Terminal.

#### WATER TAXI

Water taxi service refers to water-based transportation by small boats or ferries with less capacity than the commuter ferries proposed by the Project. Water taxis are more often used as a non-commute mode, generally responding to specific demands generated by tourists, visitors, or special events. For example, depending upon demand, such a service may be proposed between Fisherman's Wharf and Treasure Island to serve visitors rather than residents or employees.

TABLE 9.3: FERRY SERVICE PHASING

| LEVEL OF BUILD-OUT [a] | PEAK-HOUR RIDERSHIP IN PEAK DIRECTION[b] | CAPACITY PER FERRY | HEADWAY | LOAD FACTOR | NUMBER OF FERRIES REQUIRED |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Up to 1000 New Units | 155 | 199 pax | 60 min | 0.78 | 1 |
| Up to 2000 New Units | 166 | | 30 min | 0.42 | 2 |
| Up to 3000 New Units | 224 | | | 0.56 | |
| Up to 4000 New Units | 289 | 299 pax | | 0.48 | |
| Up to 5000 New Units | 367 | | 20 min | 0.41 | 3 |
| Up to 6000 New Units | 409 | | | 0.46 | |
| Up to 7000 New Units | 495 | | | 0.55 | |
| Up to 8000 New Units | 599 | | 15 min | 0.50 | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Up to 1000 New Units | 132 | 199 pax | 60 min | 0.67 | 1 |
| Up to 2000 New Units | 189 | | 30 min | 0.47 | 2 |
| Up to 3000 New Units | 266 | | | 0.67 | |
| Up to 4000 New Units | 343 | 299 pax | | 0.57 | |
| Up to 5000 New Units | 454 | | 20 min | 0.51 | 3 |
| Up to 6000 New Units | 504 | | | 0.56 | |
| Up to 7000 New Units | 602 | | | 0.67 | |
| Up to 8000 New Units | 719 | | 15 min | 0.60 | |

Source: Fehr & Peers, 2010; AECOM, 2010.

[a] The assumptions on how land uses are built out over time are presented in Table 11.1.

[b] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

Water taxi service on Treasure Island would be operated and funded by a private operator, who would be entirely responsible for the capital and operating costs of the service. However, dock space could be made available to an operator at an affordable rate at either the expanded Marina in Clipper Cove or Pier 1 on the northeast corner of Treasure Island. Dock space would not be available in the ferry quay in order to minimize potential conflicts with ferry operations.

The Port of San Francisco has already recently awarded a contract for water taxi service between San Francisco, Marin, and Alameda counties. In San Francisco, these water taxis would serve Pier 1½ (near the Ferry Building) and the Hyde Street Harbor at Fisherman's Wharf. Fares across the bay would be approximately $18, and the service would run from 6:00 am to 10:00 pm.

## 9.2 SAN FRANCISCO BUS SERVICE

Muni currently provides local transit service to Treasure Island, operated by SFMTA. Route 108 provides a service between Treasure Island and the Transbay Terminal operating 24 hours a day, seven days a week. On weekdays, buses run every 10 minutes during the AM peak period and every 15 minutes during the PM peak period, every 20 minutes during the midday and evening, and between 30 and 45 minutes at other times.

According to the most recent data available (collected by SFMTA between 2006 and 2007), peak one-directional flow on the 108 is 145 passengers per hour headed off the Island during the 8:00 to 9:00 am hour. The peak vehicle demand on Route 108 is four buses. The 108 service provides 16 stops on Treasure Island along Treasure Island Road, California Avenue, Avenue H, Gateview Avenue, Avenue B, and 9th Street. A connecting shuttle at the Treasure Island Main Gate serves Yerba Buena Island.

### *9.2.1 SERVICE PLAN*

With the proposed development, two bus routes to San Francisco are proposed—one between the Transit Hub and the San Francisco Transbay Terminal, and one between the Transit Hub and the Civic Center area—both with exclusive westbound Bay Bridge on-ramp access.

Service to the Transbay Terminal: During the weekday AM and PM peak periods, the minimum cycle time would vary between 23 and 25 minutes, which includes passenger loading / unloading, round-trip running time, and layover and recovery time. One bus could make two complete round-trips in one hour. The forecast bus service to and from the Transbay Terminal at full build-out is included in Table 9.4.

Service to the Civic Center area: During the weekday AM and PM peak periods, the minimum cycle time would vary between 44 and 47 minutes, which includes passenger loading / unloading, round-trip running time, and layover and recovery time. One bus could make one complete round-trip in one hour. The forecast bus service to and from the Civic Center area at full build-out is included in Table 9.5.

Currently, the Plan calls for all buses to originate and terminate service on Treasure Island at the Ferry Terminal and Intermodal Transit Hub. Primary access to the Intermodal Transit Hub would be via walking, biking, or the on-Island shuttle service.

TABLE 9.4: PROJECTED SAN FRANCISCO BUS SERVICE – TRANSBAY TERMINAL SERVICE

| DIRECTION | TOTAL RIDERSHIP[a] | CAPACITY PER BUS | HEADWAY | LOAD FACTOR | NUMBER OF BUSES REQUIRED[bc] |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Inbound | 276 | 94 pax | 7.5 min | 0.55 | 5 |
| Outbound | 414 | | | | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Inbound | 567 | 94 pax | 5 min | 0.50 | 6 |
| Outbound | 449 | | | | |

Source: Fehr & Peers, 2010; AECOM, 2010; SFMTA, 2010.

[a] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[b] These figures include the five standard coaches (four on-street and one maintenance float) currently serving Treasure Island on Muni Route 108; the number of new buses needed is four less than the number shown in each phase.

[c] Also includes an additional maintenance float (20% of peak vehicle demand).

TABLE 9.5: PROJECTED SAN FRANCISCO BUS SERVICE – CIVIC CENTER SERVICE

| DIRECTION | TOTAL RIDERSHIP[a] | CAPACITY PER BUS | HEADWAY | LOAD FACTOR | NUMBER OF BUSES REQUIRED[b] |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Inbound | 118 | 63 pax | 12 min | 0.57 | 5 |
| Outbound | 181 | | | | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Inbound | 243 | 63 pax | 12 min | 0.77 | 5 |
| Outbound | 193 | | | | |

Source: Fehr & Peers, 2010; AECOM, 2010; SFMTA, 2010.

[a] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[b] Also includes an additional maintenance float (20% of peak vehicle demand).

### *9.2.2 CAPITAL NEEDS*

#### 9.2.2.1 TREASURE ISLAND FACILITIES

Buses on the San Francisco services would make a two-block loop at the Transit Hub area shown in Figure 5.7. Bus stops for drop-off (alighting) and boarding (pick-up) would be segregated in the Transit Hub area. Alighting stops would be provided immediately east of the Palm Drive / Clipper Cove Avenue intersection (on the south side of Clipper Cove Avenue) and immediately north of the Avenue D / Clipper Cove Avenue intersection (on the east side of Avenue D). A single boarding stop would be provided directly outside the Ferry Terminal on the west side of Palm Drive. In general, both boarding and alighting stops would be designed with canopies or other shelter-type features to protect passengers from inclement weather and provide shade. A special "queue-jump" phase would be installed with the traffic signal near the Transit Hub to prioritize bus access to Treasure Island Road.

Layover facilities for San Francisco bus services would be located along the north side of California Avenue between Avenue C and Avenue D. In general, sidewalks at either end of boarding and alighting stops and the layover zone would be designed with bulbouts.

In addition to the bus stop and layover facilities, providing speedy and reliable access for buses to and from the Bay Bridge is critical to ensuring the viability and attractiveness of transit and reducing overall automobile use on the Island. However, limitations on ramp and bridge mainline capacities can conflict with this need to provide high-quality transit, as buses must generally share the road with other automobiles. To this effect, under the Yerba Buena Island Ramps Improvement Project, the existing westbound on-ramp from Treasure Island Road on the west side of Yerba Buena Island would be restricted to buses and emergency vehicles. Private automobiles and other vehicles would not be allowed to use this on-ramp and would instead be directed to use the westbound on-ramp from Macalla Road on the east side of Yerba Buena Island. This would ensure a dedicated access route to the bridge for the Transbay Terminal and Civic Center bus services.

In addition, Mitigation Measure M-TR-24, which is included in the EIR, would require the TITMA to monitor congestion on Treasure Island Road between the on-ramp and the Transit Hub. If the queues between First Street and the westbound on-ramp on the west side of Yerba Buena Island are observed to result in an operational delay to Muni service equal to or greater than the prevailing headway during the weekday AM / PM or Saturday peak periods, TITMA is required to implement a southbound transit-only lane between First Street on Treasure Island and the westbound Bay Bridge on-ramp (designated for transit and emergency vehicles only). The implementation of a transit-only lane would be triggered if impacts are observed over the course of six months at least 50 percent of the time during the weekday AM / PM or Saturday peak periods.

#### 9.2.2.2 VEHICLES

To help meet the demand for bus service between the Island and Downtown San Francisco, at full build-out the Transbay Terminal service would operate with articulated (60-foot) buses, while the Civic Center service would use standard (40-foot) buses. In the early phases of the Project, the Transbay Terminal route would operate with standard 40-foot coaches on the same route as the existing 108 service, in order to ensure a gradual change in transit service for existing transit riders. Eventually, the route would switch to a point-to-point service as the Island is built out and the on-Island shuttle service begins operations. When ridership demand warrants a switch to larger articulated buses, the standard coaches previously in use would then be transferred to the Civic Center service.

In keeping with the Island development's goals of environmental sustainability, all buses are planned to be diesel electric-hybrid coaches, using the same technology as in Muni's newest buses. However, Muni may decide to use different alternative-fuel technologies in the future as they are developed and made economically feasible.

At full build-out, the peak vehicle demand would be five buses on the Transbay Terminal service and four buses on the Civic Center service. In addition, Muni has a maintenance float policy of 20% of peak vehicle demand, yielding a total fleet requirement for the San Francisco bus services of eleven buses.

There are currently five buses used on the 108 Treasure Island route (four on-street and one maintenance float), so six additional buses would need to be purchased to provide the proposed services. To be conservative, these additional buses are all assumed to be larger, articulated coaches, although standard coaches could be used instead based on ridership and the operating assumptions at the time. TICD will be responsible for covering 20% of the total cost of purchasing the seven new vehicles. The TICD share of 20% is the typical local match portion required under federal programs that fund bus procurement. TITMA would work with SFMTA to seek funds under those federal programs. However, because federal funding is not yet committed to the Project, the remainder of the funding is conservatively assumed to be covered from Muni's share of the general fund revenues that are generated by the Project (e.g. sales tax revenues, property tax revenues, hotel taxes, etc.), as shown in the Fiscal Analysis prepared in conjunction with approval of the DDA.

### *9.2.3 OPERATIONS*

#### 9.2.3.1 RUNNING TIME AND SCHEDULING

Round-trip running time (not including layovers or passenger boarding / alighting at terminals) would vary between 17 minutes during the weekday AM peak period and 19 minutes during the weekday PM peak period for the Transbay Terminal service (point-to-point) and between 35 minutes during the weekday AM peak period and 38 minutes during the weekday PM peak period for the Civic Center service. These estimates were generated by SFMTA based on empirical running times measured on similar segments for the 19 Polk and 108 Treasure Island in fall 2006 and spring 2007 as part of the Transit Effectiveness Project (TEP). For the early development phases, when the Transbay Terminal service operates along the same route as the existing 108 service, round-trip running times would remain unchanged from current conditions (30 minutes).

Based on typical Muni scheduling policy, the minimum cycle time is given as the round-trip running time with an additional 10 percent and a flat five minutes to account for layover and recovery time. This results in the minimum cycle times given in Section 9.2.1. It should be noted that these cycle times are based on current travel times. As roadway conditions (e.g., congestion) change in the future, a re-evaluation of these cycle times will likely be necessary to ensure the appropriate amount of slack is provided in the schedule.

#### 9.2.3.2 LAYOVER OPERATIONS

As stated in Section 9.2.2.1, layover facilities would be provided on Treasure Island near the Ferry Terminal and Intermodal Transit Hub, along the north side of California Avenue between Avenue C and Avenue D. Buses arriving to the Island would first unload passengers at the first alighting stop at Palm Drive / Clipper Cove Avenue, then moving to the adjacent boarding stop to board passengers. Buses would then proceed to the second alighting stop at Avenue D / Clipper Cove Avenue before stopping in the layover zone. After the layover time has passed, the buses will then proceed to the boarding stop adjacent to the Ferry Terminal to board passengers heading back towards San Francisco.

If necessary, some layover time could be taken at the San Francisco terminals of both proposed services. In particular, the proposed Transbay Transit Center would include a street-level Muni terminal located on the block bounded by Mission Street on the north, Howard Street on the south, Fremont Street on the west, and Beale Street on the east, underneath the former elevated transit loop into the Transbay Terminal. Buses on the Transbay Terminal route could spend some portion of the allocated layover time at this location as passengers alight and board. Buses on the Civic Center service could take some layover time at the bus stop just north of Larkin Street / Grove Street, along the east side of Larkin Street. The current bus stop is approximately 75 feet long, but is only used by the 19 Polk, a relatively infrequent service (every 15 minutes during peak and midday periods, every 20 minutes during other times).

#### 9.2.3.3 FUELING AND MAINTENANCE

No fueling or maintenance facilities would be provided on the Island. Similar to other buses in Muni's network, the buses on the proposed Transbay Terminal and Civic Center routes would fuel at Muni facilities in San Francisco.

TITMA would work with SFMTA to provide clean-fuel vehicles when and where available and feasible. Currently, SFMTA uses biodiesel fuels in its diesel and hybrid diesel-electric bus fleets. SFMTA's *Climate Action Plan* also calls for maximizing use of zero-emissions vehicles (such as electric buses, light rail, and streetcars) and the city's *Zero Emissions 2020* plan discusses the possibility of purchasing and upgrading to hydrogen fuel cell buses when they become commercially available.

#### 9.2.3.4 OPERATING COSTS

Financial analysis of San Francisco bus operations is documented separately in the Project's Fiscal Analysis.

### *9.2.4 PHASING*

The changes in ridership demand and service plan as the Project is built out for the Transbay Terminal and Civic Center services are summarized in Table 9.6 and Table 9.7.

As shown in Table 9.6, the proposed Transbay Terminal service would operate along the same route as the existing 108 service, using standard (40-foot) coaches, for the first two development phases. When the development begins to exceed about 3,000 units, the service would switch to a point-to-point service that originates and terminates at the Intermodal Transit Hub, with the on-Island shuttle service shuttling passengers to and from other points on the Island. When the development begins to exceed about 4,000 housing units, the Transbay Terminal service is then assumed to transition to articulated coaches in order to meet ridership demand, but the standard coaches previously used on the line could later be transitioned over to the Civic Center service, which commences operation when the development exceeds 6,000 units.

TABLE 9.6: TRANSBAY TERMINAL BUS SERVICE PHASING

| LEVEL OF BUILD-OUT[a] | PEAK-HOUR RIDERSHIP IN PEAK DIRECTION[b] | CAPACITY PER BUS | HEADWAY | LOAD FACTOR | NUMBER OF BUSES REQUIRED[cd] |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Up to 1000 New Units | 90 | 63 pax | 10 min | 0.24 | 5 (standard) |
| Up to 2000 New Units | 151 | | | 0.40 | |
| Up to 3000 New Units | 212 | | | 0.56 | |
| Up to 4000 New Units[e] | 272 | | 7.5 min | 0.54 | |
| Up to 5000 New Units | 347 | 94 pax | | 0.46 | 5 (articulated) |
| Up to 6000 New Units | 386 | | | 0.51 | |
| Up to 7000 New Units | 317 | | | 0.42 | |
| Up to 8000 New Units | 414 | | | 0.55 | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Up to 1000 New Units | 126 | 63 pax | 15 min | 0.50 | 4 (standard) |
| Up to 2000 New Units | 213 | | 12 min | 0.68 | 5 (standard) |
| Up to 3000 New Units | 300 | | 10 min | 0.79 | |
| Up to 4000 New Units[e] | 387 | | 7.5 min | 0.77 | |
| Up to 5000 New Units | 512 | 94 pax | | 0.68 | 5 (articulated) |
| Up to 6000 New Units | 568 | | | 0.76 | |
| Up to 7000 New Units | 475 | | | 0.63 | |
| Up to 8000 New Units | 567 | | 5 min | 0.50 | 6 (articulated) |

Source: Fehr & Peers, 2010; AECOM, 2010; SFMTA, 2010.

[a] The assumptions on how land uses are built out over time are presented in Table 11.1.

[b] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[c] These figures include the five standard coaches (four on-street and one maintenance float) currently serving Treasure Island on Muni Route 108; the number of new buses needed is five less than the number shown in each phase.

[d] Also includes an additional maintenance float (20% of peak vehicle demand).

[e] Service switches from the existing Route 108 circulating through the Island to a point-to-point service, coincident with the start of the on-Island shuttle service.

TABLE 9.7: CIVIC CENTER BUS SERVICE PHASING

| LEVEL OF BUILD-OUT [a] | PEAK-HOUR RIDERSHIP IN PEAK DIRECTION[b] | CAPACITY PER BUS | HEADWAY | LOAD FACTOR | NUMBER OF BUSES REQUIRED[bc] |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Up to 7000 New Units | 150 | 63 pax | 12 min | 0.47 | 5 (standard) |
| Up to 8000 New Units | 181 | | | 0.57 | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Up to 7000 New Units | 203 | 63 pax | 12 min | 0.65 | 5 (standard) |
| Up to 8000 New Units | 243 | | | 0.77 | |

Source: Fehr & Peers, 2010; AECOM, 2010; SFMTA, 2010.

Note: Ridership forecasts include ridership from existing land uses to remain after Project build-out.

[a] The assumptions on how land uses are built out over time are presented in Table 11.1.

[b] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[c] Also includes an additional maintenance float (20% of peak vehicle demand). The buses for this line are expected to be transferred from the Transbay Terminal route, once that route switches to larger, articulated buses.

## 9.3 EAST BAY BUS SERVICE

### *9.3.1 SERVICE PLAN*

There is currently no direct bus connection between the East Bay and the Island. With the implementation of the Project, bus service to the East Bay would be provided by AC Transit between Treasure Island and Downtown Oakland, with stops in the Uptown area at Broadway / 20th Street (connection to the Uptown Transit Center and 19th Street / Oakland BART Station) and in the City Center area at Broadway / 14th Street (connection to 12th Street / Oakland City Center BART Station).

East Bay-bound buses would travel eastbound on the Bay Bridge and exit I-80 at the West Grand Avenue off-ramp in West Oakland. They would continue along Grand Avenue, making a right at San Pablo Avenue and left onto 20th Street to stop at the Uptown Transit Center. They would then proceed

south on Broadway, stopping at the terminus at Broadway / 14th Street. In the westbound direction, buses would also use Grand Avenue and enter the toll plaza at the West Grand on-ramp, which provides a clear route to the bus and carpool lane. A limited number of stops will be provided along West Grand Avenue. The expected route for buses between the Island and Downtown Oakland is shown in Figure 5.5.

At Treasure Island, all buses will operate along the same 2-block loop as described for the SFMTA service, with alighting stops immediately east of the Palm Drive / Clipper Cove Avenue intersection (on the south side of Clipper Cove Avenue) and immediately north of the Avenue D / Clipper Cove Avenue intersection (on the east side of Avenue D), and a boarding stop directly outside the Ferry Terminal on the west side of Palm Drive.

During the weekday AM and PM peak hour, minimum cycle time for the East Bay bus service would be approximately 63 minutes, which includes passenger loading / unloading, round-trip running time, and layover and recovery time. During weekday off-peak and weekend periods, when roadways are less congested, the cycle time would drop to 58 minutes. Table 9.8 summarizes the proposed East Bay bus service during the weekday AM and PM peak hours at full build-out.

TABLE 9.8: PROJECTED EAST BAY BUS SERVICE

| DIRECTION | TOTAL RIDERSHIP[b] | CAPACITY PER BUS | HEADWAY | LOAD FACTOR | NUMBER OF BUSES REQUIRED[b] |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Inbound | 110 | 54 pax | 10 min | 0.54 | 9 |
| Outbound | 175 | | | | |
| WEEKDAY PM PEAK HOUR | | | | | |
| Inbound | 228 | 54 pax | 10 min | 0.70 | 9 |
| Outbound | 163 | | | | |

Source: Fehr & Peers, 2010; AECOM, 2010; AC Transit, 2009.

[a] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[b] Includes an additional 20% requirement (above the peak vehicle demand) for spares.

### *9.3.2 CAPITAL NEEDS*

#### 9.3.2.1 TREASURE ISLAND FACILITIES

On the Island, the East Bay bus service would use many of the same facilities as the San Francisco bus service above, including bus stops and layover facilities. Please refer to Section 9.2.2.1 for a more complete description of those facilities.

#### 9.3.2.2 VEHICLES

It is expected that AC Transit would operate 45-foot commuter coaches on the proposed East Bay bus service, similar to those it currently uses on some of its current Transbay services. The buses would have approximately 54 seats, but could accommodate additional passengers (as standees) on individual runs if demand exceeds the seated capacity of the coach.

At full build-out, the East Bay bus service would have a peak transit vehicle demand of seven coaches. After applying AC Transit's policy of an additional 20% of the peak transit vehicle demand to serve as an active spare fleet to accommodate routine maintenance needs or supplementary service in case of breakdowns or service disruptions, an additional two coaches would be required, bringing the total fleet requirements for the East Bay bus service to nine coaches.

TICD would pay for the full cost of purchasing the fleet for the East Bay bus service.

### *9.3.3 OPERATIONS*

#### 9.3.3.1 RUNNING TIME AND SCHEDULING

As described in Section 9.3.1, AC Transit has estimated that the cycle time for the proposed East Bay bus service would be approximately 63 minutes during the weekday AM and PM peak periods and approximately 58 minutes during the weekday off-peak periods and on weekends. The round-trip running time would be slightly less, as the cycle time also considers layover and recovery time and passenger loading / unloading at terminals. In general, approximately five to ten minutes of layover and recovery is factored into the cycle time. It should be noted that these cycle times are based on current travel times. As roadway conditions (e.g., congestion) change in the future, a re-evaluation of these cycle times will likely be necessary before the line begins service to ensure the appropriate amount of slack is provided in the schedule.

#### 9.3.3.2 LAYOVER OPERATIONS

Layover facilities for the East Bay bus service would be provided on both Treasure Island and in Downtown Oakland. On Treasure Island, buses on the East Bay service would share layover facilities with buses on the San Francisco service (see Section 9.2.3.2 for more details), while in Downtown Oakland, layover space could be shared with other existing routes or a new layover area could be designated by removing a small section of on-street parking.

#### 9.3.3.3 FUELING AND MAINTENANCE

No fueling or maintenance facilities would be provided on the Island. Since the East Bay bus service would be operated by AC Transit, it is expected that fueling and maintenance of buses on the route would use existing AC Transit fueling and maintenance facilities. The closest existing AC Transit maintenance facility is Division 2 in Emeryville, near San Pablo Avenue / 47th Street.

TITMA would work with AC Transit to provide clean fuel vehicles when and where available and feasible. AC Transit is currently testing hydrogen fuel-cell technology and plans to construct two hydrogen fueling stations in Emeryville and East Oakland.

#### 9.3.3.4 OPERATING COSTS

AC Transit estimates the operating costs of the Treasure Island service (using comparables from other typical services) at $118.17 per vehicle-hour. The calculation of total operating cost includes time spent deadheading (approximately a half-hour one-way) to and from the bus depot.

### *9.3.4 PHASING*

The changes in estimated East Bay bus ridership and corresponding service plan as the Project is built out are summarized in Table 9.9.

## 9.4 ON-ISLAND SHUTTLE SERVICE

The Project will supply a fleet of four low-emissions (electric, diesel-electric hybrid, or alternative-fuel) shuttles to provide mobility for residents, employees, and visitors on the Island and help discourage use of private automobiles. The shuttles will serve most land uses on Treasure Island and Yerba Buena Island, including open spaces, retail commercial zones, and residential neighborhoods.

TABLE 9.9: EAST BAY BUS SERVICE PHASING

| LEVEL OF BUILD-OUT[a] | PEAK-HOUR RIDERSHIP IN PEAK DIRECTION[b] | CAPACITY PER BUS | HEADWAY | LOAD FACTOR | NUMBER OF BUSES REQUIRED[c] |
|---|---|---|---|---|---|
| WEEKDAY AM PEAK HOUR | | | | | |
| Up to 1000 New Units | 74 | 54 pax | 30 min | 0.68 | 4 |
| Up to 2000 New Units | 75 | | | 0.69 | |
| Up to 3000 New Units | 86 | | | 0.80 | |
| Up to 4000 New Units | 102 | | 20 min | 0.63 | 5 |
| Up to 5000 New Units | 127 | | | 0.79 | |
| Up to 6000 New Units | 138 | | | 0.85 | |
| Up to 7000 New Units | 159 | | 15 min | 0.74 | 6 |
| Up to 8000 New Units | 175 | | 10 min | 0.54 | 9 |
| WEEKDAY PM PEAK HOUR | | | | | |
| Up to 1000 New Units | 97 | 54 pax | 20 min | 0.60 | 5 |
| Up to 2000 New Units | 99 | | | 0.61 | |
| Up to 3000 New Units | 104 | | | 0.64 | |
| Up to 4000 New Units | 124 | | | 0.77 | |
| Up to 5000 New Units | 166 | | 15 min | 0.77 | 6 |
| Up to 6000 New Units | 178 | | | 0.83 | |
| Up to 7000 New Units | 204 | | 12 min | 0.76 | 8 |
| Up to 8000 New Units | 228 | | 10 min | 0.70 | 9 |

Source: Fehr & Peers, 2010; AECOM, 2010.

[a] The assumptions on how land uses are built out over time are presented in Table 11.1.

[b] Ridership forecasts are based on the Project EIR and include ridership from the proposed expansion of the Marina and the existing land uses to remain after the development of the Project.

[c] Includes an additional 20% requirement (above the peak vehicle demand) for spares.

The goal of the shuttle service is to make it possible for everyone who comes to Treasure Island to be able to get around without the use of a private automobile. Whether it is a family with school-aged children where the parents use the ferry and bus for work trips and their children use the shuttle for on-Island uses such as school or recreation, or the visitor who arrives via bus or ferry, the on-Island shuttle will be scaled and designed to address the specific internal transportation circulation needs of all Island users—residents, visitors, and / or workers—including provisions for bicycles.

### *9.4.1 SERVICE PLAN*

The shuttle services would be provided free of charge to all passengers and operate 24 hours per day. At full build-out, the shuttles would operate primarily on three routes: Routes A and B would primarily serve Treasure Island, while Route C would primarily serve Yerba Buena Island. On weekends, optional service could be provided on Route A to the Northern Shoreline Park and Wilds area at the northeast corner of Treasure Island and / or on Route C to the Great Whites area on Yerba Buena Island. The proposed routes for the on-Island shuttle services are shown in Figure 5.6.

All three routes would operate at regular headways from early in the morning until late in the evening. The headways and travel times would depend on the time of day and ridership, but would be designed to maximize coordination with ferry and off-Island bus departures and arrivals, which are expected to generate "surges" in passenger demand. Typically, each shuttle would make a round-trip in approximately seven minutes. Peak period headways would be approximately ten minutes, but during late-night periods, one shuttle would operate across all three routes at longer headways of 30 minutes. Shuttle use will also be coordinated with the Island's bicycle and parking programs, and the vehicles used on the service would also be available for transporting passengers during special events at Treasure Island (see Section 10.3 for more details).

All three shuttle routes would stop adjacent to the Ferry Terminal on Treasure Island, facilitating transfers with the adjacent ferry service and off-Island bus services to Downtown San Francisco and Oakland. In addition to the main Ferry Terminal stop, the shuttles would share two other stops with the off-Island bus services, allowing for convenient connections to the on-Island shuttles.

### *9.4.2 CAPITAL NEEDS*

The shuttle has low capital requirements for on-Island facilities. The proposed streets would all accommodate the proposed shuttle, meaning no special lane widths, grades, or other accommodations would be required. Maintenance and fueling would take place off-Island and be provided by the shuttle service operator, so no new maintenance or fueling facilities would need to be constructed for the

shuttle service. Therefore, the only capital requirements triggered by the shuttle service are stops and the vehicles.

#### 9.4.2.1 SHUTTLE STOPS

Shuttle stops would be located near intersections and not inhibit pedestrian movement along adjacent sections of sidewalk. Shuttle areas would be well lit and have adequate seating that is sheltered from wind and rain. Passenger information, including shuttle routes and schedules, would be available at each stop.

*Transit Hub Circulation Route and Stops*
All three shuttle routes are proposed to operate in a counterclockwise loop near the Transit Hub, following the same routes as for the off-Island bus services to and from Downtown San Francisco and Oakland. Shuttles would stop at three locations along the loop, including a stop adjacent to the Ferry Terminal. Unlike the off-Island bus services, there would be no segregation of stops for alighting and boarding since the shuttles would have lower capacity and would be expected to carry less passengers. In general, the shuttle stops would be placed adjacent or in close proximity to stops for the off-Island bus services, facilitating intermodal transfers between off-Island transit and the on-Island shuttles. At the Clipper Cove stop, shuttles would share a stop with the off-Island buses.

*Treasure Island Shuttle Stops*
The shuttle stops along the Treasure Island shuttle routes would be located nearside at intersections (i.e., on the approach side of the intersections), as shown in Figure 5.3. This strategy is recommended because many intersections on Treasure Island outside of the Island Center district would feature all-way stop controls. In such cases, the deceleration and acceleration associated with a shuttle stop and with a stop-controlled intersection can be effectively combined, minimizing acceleration and deceleration and maximizing the average speed of the shuttles. Where possible, shuttle stops would be provided in parking lanes, rather than in indented bus bays. Most streets on Treasure Island which would have bus service have parking lanes which could be used for the provision of bus stops.

*Yerba Buena Island Shuttle Stops*
Three shuttle stops would be provided on Yerba Buena Island as described below.

- East Stop: Along South Gate Road at the intersection with North Gate Road and Macalla Road. This stop would be located in the travel lane on the South Gate Road approach at the intersection to Northgate Road. This location has been identified by Caltrans as the best

location to locate a transit stop to provide Americans with Disabilities Act (ADA) compliant access to the new East Span bicycle / pedestrian path.

- Central Stop: At the intersection of Yerba Buena Road and Forest Road. This stop would serve the residential areas along these roads, as well as the planned hotel and hilltop park.

- West Stop: Along Macalla Road, between the roads that are now called Macalla Court and Nimitz Drive.[6] This stop would serve the residential areas along these two streets.

#### 9.4.2.2 FLEET SIZE AND CHARACTERISTICS

At build-out, a fleet of four shuttle vehicles would be maintained, allowing three vehicles to be in service—one on each of the routes. The fourth vehicle would be maintained as a spare and entered into service during times of exceptional demand. Based on the demand estimates presented below, each shuttle would need to be designed with a capacity of 28 passengers.

Low-emissions vehicles would be used to operate the three shuttle routes, which could be powered by natural gas or hydrogen fuel cells, or feature diesel-electric hybrid motors. The shuttles would also be low-floor for ease of boarding and alighting and be designed for ADA compliance, which would require that curbs at stops be constructed to shuttle specifications such as the height of the bus floor. Front-loading bike racks would also be provided, but additional capacity to store five to ten bikes (particularly if demanded for Route C, on Yerba Buena Island) could be accommodated by installing additional racks at the rear of and / or inside the bus.

Shuttle bus providers were contacted to identify vehicles suitable to meet the demands for Treasure Island and Yerba Buena Island shuttle services. Vehicles can be custom-built based on particular requirements with regard to seating arrangements and door size / location.

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6 These roads would be removed as part of the Project, and replaced with new roads in a similar alignment.

Shuttle bus providers estimate the cost of a 29-foot, low-floor clean diesel bus is approximately $395,000, or $1,580,000 for a complete fleet of four shuttles.

### *9.4.3 OPERATIONS*

#### 9.4.3.1 RUNNING TIME

Table 9.10 summarizes the route lengths and the number of shuttle stops proposed along each shuttle route, as well as the round-trip travel time (based on an average travel speed of 15 mph and an average dwell time at shuttle stops of 20 seconds per stop) at full build-out. Because the travel distances and times are relatively short, shuttle drivers would not need to take layover time after every trip. Instead, layover would be taken after completion of several trips. Layover operations are discussed in more detail in Section 9.4.3.3.

TABLE 9.10: SUMMARY OF SHUTTLE ROUTES

| ROUTE | ROUTE CHARACTERISTICS | | ESTIMATED PEAK HOUR ROUND-TRIP TRAVEL TIME (MIN:SEC) | | |
|---|---|---|---|---|---|
| | ROUTE LENGTH (MI) | SHUTTLE STOPS | TRAVEL TIME[a] | STOP TIME[b] | TOTAL TIME |
| Route A (Treasure Island) | 1.65 | 8 | 6:35 | 2:40 | 9:15 |
| Route B (Treasure Island) | 1.60 | 11 | 6:25 | 3:40 | 10:05 |
| Route C (Yerba Buena Island) | 2.70 | 6 | 10:50 | 2:00 | 12:50 |

Source: AECOM, 2010.

[a] Travel time calculated assuming an average travel speed of 15 mph.

[b] Stop time calculated assuming an average dwell time of 20 seconds per stop.

#### 9.4.3.2 SCHEDULES

At full build-out, all three shuttle routes would operate during daytime and evening hours (5:00 am to 10:00 pm). To the extent possible, shuttles would coordinate with the ferry service, while also operating as frequently as possible based on the estimated peak hour roundtrip travel times summarized in Table 9.10. Between 10:00 pm and 5:00 am, on-Island shuttle service would operate at 20-30 minute headways to coordinate with the Transbay Terminal bus service. During this time period, service would be provided by one shuttle vehicle operating across all three routes, which would be feasible late at night when delays would be minimal.

The proposed scheduling and headways of the three on-Island shuttle routes at full build-out is summarized below in Table 9.11. For reference, the proposed ferry service to and from Downtown San Francisco would operate at 15-minute headways during the peak periods, with less-frequent service during off-peak periods.

TABLE 9.11: SHUTTLE ROUTES – PROPOSED SCHEDULING

| ROUTE | TIME PERIOD | HEADWAY |
|---|---|---|
| Route A (Treasure Island) | 5:00 am to 10:00 pm | 10 minutes |
| Route B (Treasure Island) | 5:00 am to 10:00 pm | 15 minutes |
| Route C (Yerba Buena Island) | 5:00 am to 10:00 pm | 15 minutes |
| Combined Route A / B / C | 10:00 pm to 5:00 am | 20-30 minutes |

Source: AECOM, 2010.

#### 9.4.3.3 LAYOVER OPERATIONS

Given the short travel distances and times, it is expected that drivers would operate each route continuously and complete several circuits between breaks. A relief driver would operate a route while another driver is on an extended break and would be assigned from route to route as needed. Thus, each route would not need its own relief driver, and cycle times for each of the shuttle routes would not be affected by drivers' layover and recovery periods.

When needed to facilitate driver breaks and / or to maintain schedule, a shuttle would lay over after discharging passengers at the main shuttle stop located adjacent to the Ferry Terminal. A shuttle entering a layover would pull in and stop to discharge passengers at the rear of the bay designated for shuttles. Upon re-entering service, the shuttle would pull up to the front of the bay to receive passengers.

#### 9.4.3.4 FUELING AND MAINTENANCE

Maintenance and fueling / charging would be performed off-Island at an existing location designed for such purposes, depending on the ultimate design and disposition of the shuttle service, and as determined by the shuttle service operator. Given the extent and nature of the proposed shuttle service, new dedicated maintenance and fueling facilities would likely not be warranted.

#### 9.4.3.5 OPERATING COSTS

Operating costs for the shuttle service are assumed to be approximately $72 per vehicle-hour. The assumed cost is based on other existing shuttle services operating in the San Francisco Bay Area such as the University of California, San Francisco shuttle service or the San Francisco State University shuttle service, which are both under $60 per vehicle-hour, with a 20% contingency factor for underwriting purposes.

### *9.4.4 RIDERSHIP DEMAND AND PHASING*

#### 9.4.4.1 FORECAST RIDERSHIP DEMAND

Potential ridership on the shuttle would be comprised of people making off-Island trips to and from the Ferry Terminal and Intermodal Transit Hub or internal ("on-Island") trips, primarily to and from the retail uses on the Island. Most of these journeys would be made either on foot, on bike, or by shuttle.

Based on travel demand information contained in the EIR for the Project, it is expected that the combined peak directional demand for the Treasure Island shuttle services would be approximately 220 passengers per hour, during the weekday PM peak hour. For the Yerba Buena Island shuttle service, peak directional demand would be approximately 75 passengers per hour, also during the weekday PM peak hour.

#### 9.4.4.2 PHASING

The service, headways, routes, number of shuttles, and hours of operation presented in Section 9.4.3 are intended for implementation at Project build-out. In the interim years during Project development and construction, shuttle service would be expanded in phases, mirroring the level of development until reaching the service and operating plan detailed above at full build-out.

The initial assumption is that existing Muni service would continue to circulate on-Island until about 3,000 new homes are built. At that point, the Muni service would switch to a point-to-point service, and the shuttle service would begin. Initial shuttle service could be operated by two shuttles operating on one route, but as the Island is built out and the length of the shuttle routes grows, service would expand to operate on all three routes, with a fleet of four vehicles.

# 10 STAFFING, MONITORING, AND ENFORCEMENT

## 10.1 TRAVEL COORDINATOR

### *10.1.1 ROLE OF THE TRAVEL COORDINATOR*

TITMA will provide for staffing of a Travel Coordinator who will play a key role in providing residents, employers, employees, and visitors with all the information they need to make the best use of the opportunities available for travel by alternative modes other than the automobile. The Travel Coordinator will be in regular communication with the transit agencies and will work with them to monitor transit usage and make appropriate changes to services to match demand. The Travel Coordinator will be the lead in providing educational materials to keep residents, employers, and employees apprised of travel incentives or changes to travel options. The Travel Coordinator will also be responsible for managing visitors and groups holding functions / events on the Island and maintaining the physical programs that reduce dependency on single-occupancy vehicle-trips, including the following tasks:

- Managing and maintaining the Project travel website;
- Managing the carpooling / car-sharing database and "guaranteed ride home" program;
- Monitoring of bicycle parking provision and usage;
- Managing the bicycle library program;
- Reporting maintenance issues;
- Developing and distributing educational material on travel options and emergency access; and
- Working with TITMA staff to establish proper parking and congestion pricing rates.

Specific TDM programs that will be administered by the Travel Coordinator include the following:

- Car-sharing program;
- Carpool / vanpool ridematching services;
- Guaranteed ride home program; and
- Visitor and employee TDM programs.

The Travel Coordinator will coordinate with on-Island employers to ensure that employees are kept fully informed of the available programs and any promotional activities, and will be available to assist with new employee orientation. In addition, the Travel Coordinator will be available to coordinate these services on behalf of smaller employers. The Travel Coordinator would also be expected to work with on-Island retailers to provide delivery options to on-Island customers, providing another alternative to driving to stores to meet one's daily needs.

### *10.1.2 TRAVEL COORDINATOR / PROGRAM ADMINISTRATION COSTS*

Administrative offices for the Travel Coordinator and TDM programs are expected to require a total capital investment of approximately $1.1 million. About half of the capital costs are expected to kick in when Island development reaches approximately 3,000 units, with the remainder kicking in when the development reaches approximately 6,000 units. In addition to these capital costs, there would be an associated annual operating cost of approximately $1.1 million for the administrative offices and approximately $275,000 for TDM program monitoring at full build-out of the Project. For intermediate development phases, annual operating costs are expected to vary relative to the size of the development.

Costs for other elements of the transportation program administered by the Travel Coordinator and TITMA would be as follows:

- Bicycle library
    - Capital cost: Approximately $110,000
    - Annual operating cost at full build-out: Approximately $110,000
- Maintenance facilities
    - Capital cost: Approximately $950,000
    - Annual operating cost at full build-out: Approximately $275,000

## 10.2 MONITORING AND ENFORCEMENT

The unique transportation measures and programs proposed for implementation by the Project ensure that the Island's transportation systems can be self-sustaining and self-regulating. Through the congestion pricing program and parking cost structures, the Island's automobile use can be controlled by changing the costs of these programs to induce shifts from automobiles to buses and ferries. In

addition, the Island on-ramps will be metered by Caltrans to control the volume of cars that can access the Bay Bridge during peak periods. Due to the unique nature of special events, coordination, monitoring and enforcement of special events is discussed separately in Section 10.3.

### *10.2.1 CONGESTION PRICING PROGRAM*

The congestion pricing program is intended to be flexible and evolve as travel behavior changes. This section describes the initial operating assumptions, as well as how operations might be adjusted if conditions warranted.

The Board of Supervisors and SFCTA are required to establish the initial congestion pricing fee structure (expected to apply only to residents who access the bridge during peak periods). Changes to that initial fee structure will be determined by TITMA using then-current best-practice research and market studies. The fee could later be adjusted to manage congestion. An increase in this charge will encourage transit use and more carpooling activity during the peak periods as well as generate revenues to fund transit. An innovative, flexible, and comprehensive program like this does not currently exist in the Bay Area. Dedicated TITMA staff involved in the administration and monitoring of this program will constantly reevaluate travel patterns and costs to make this program effective in balancing the goals of restricting the use of private automobiles and generating revenues to fund transit.

#### 10.2.1.1 INITIAL OPERATING ASSUMPTIONS

The Project proposes charges on residents for on- and off-Island trips, only during the weekday peak travel periods. Residential trips represent approximately 75 percent of all peak vehicle-trips, so the program will therefore have a significant impact on travel behavior at the time most people are traveling.

Initially, the charge will apply in the weekday peak commute periods only (6:00 am to 9:00 am and 4:00 pm to 7:00 pm, Monday through Friday), and only to residential trips. This is consistent with addressing the impact of trips in the peak periods. Travel patterns will be monitored to determine if an extension beyond these periods is necessary. The TITMA could choose to expand the peak hours or define the peak period as all periods in which traffic volumes on the bridge are greater than 85 percent of capacity.

The charge will be established at a level that meets the program objectives of reducing off-Island peak travel via private automobile and maximizing revenue generation to fund transit. The program will be

monitored and the charge will be changed (up or down) as required to meet these program objectives. Charges that vary dependent upon demand may be considered as the details of the program are developed. The charge will apply in both directions (to autos traveling off the Island *and* onto the Island. Charges will vary based on time periods and directionality of trip (to and from the East Bay *and* San Francisco). For underwriting purposes, a charge of $5 each way has been assumed.

The charge will be applied to low occupancy vehicles. High occupancy vehicles, transit vehicles, and vanpool services will not be charged. The HOV limit for the Project will be set by the TITMA and can be adjusted as needed. No charges would be imposed on residents, employees, or visitors of the two federal installations, the Job Corps, or the Coast Guard, as established in the TITMA formation documents.

#### 10.2.1.2 PROGRAM ADJUSTMENTS

The program will be monitored by TITMA against the program objectives on a regular basis and changes will be made as required. The following types of changes could be made, based on observed behavior:

- Charges could be increased or decreased;
- The charge assessment period could be expanded (e.g., charges could be assessed in the "shoulders" of the peak periods or be based on "real-time" congestion);
- Charges could be applied to trips by non-residents;
- The technology used for collection and enforcement could be altered to be more effective, as technologies change over time; and / or,
- The HOV limit could be adjusted.

#### 10.2.1.3 PHASING

The congestion pricing fee structure would be applied in the first phase of development, once the program is adopted and the initial charges set by the Board of Supervisors and SFCTA, as described above.

#### 10.2.1.4 REVENUE AND EXPENSE ASSUMPTIONS

As noted above, in addition to being a transportation demand management tool, one of the primary purposes of congestion pricing is to generate revenues that would be collected by TITMA for the sole purpose of supporting the on-Island transportation programs. The revenues generated by the program will stay with the Project and be used to cover TITMA's costs of administration and enforcement and to support other transportation programs on the Island.

The congestion pricing program does not have any upfront capital costs. Any equipment or other upfront purchases will be amortized and collected out of congestion pricing revenues. Annual operating costs are assumed to be variable, equivalent to approximately 25% of the total revenue collected from the congestion fee. The operating costs and administration of the program will be managed by the TITMA.

### *10.2.2 PARKING*

The pricing structures for non-residential parking (both on-street and off-street parking) serve as another mechanism that will help control the use of private automobiles and encourage alternative modes of travel by funding transit and other TDM programs. These parking pricing structures will serve as a parallel to congestion pricing and effect similar changes in travel behavior, but for trips by non-residents.

The concept of pricing the use of private automobiles to fund transit service is not uncommon, although it is typically not implemented at the level of individual developments as proposed for Treasure Island. For example, revenues generated by California's gasoline tax go towards a variety of transportation projects (both capital improvements and repair / maintenance), including funding for transit services. The parking program will attempt to strike a balance between restricting private automobile use on the Island (and encouraging alternative transit modes) and generating revenues to fund the proposed transit services.

The TITMA will have the responsibility and authority to:

- Set parking charges;
- Enforce the parking control measures;
- Amend parking charges as part of the overall intent of encouraging the use of modes other than the automobile;

- Provide real-time monitoring and adjustment of parking space occupancy and availability at the garages and other parking facilities; and
- Collect and retain funds from parking to be applied to other on-Island transportation programs.

To this effect, the powers of the TITMA with respect to parking control will be similar to those of a parking district. Parking districts are routinely used by cities and transportation agencies to control specific areas or to grant special powers in a specific area. For example, the TITMA will be responsible for determining appropriate parking rates for on- and off-street facilities to maximize revenues while still discouraging travel by private automobile. The TITMA would collect revenues generated by the Project's parking program and would bear operations and maintenance costs incurred through the program.

Use of a variable pricing structure when charging parking fees has already been implemented in several cities, and can help influence mode choice among Island residents and visitors. In fact, San Francisco has already implemented variable pricing for on-street parking as part of a federally-funded pilot program (SF*park*), covering the Embarcadero, SOMA, Financial District, Fisherman's Wharf, Mission, Civic Center / Hayes Valley, Fillmore, and Marina neighborhoods. The price of on-street parking in high-demand areas is gradually increased until at least one open space is available on the block, while the prices in low-demand areas are decreased to encourage use of the spaces. In addition, city-owned parking garages will be priced to attract drivers away from on-street parking. The program is aimed at creating a better scheme for managing the limited supply of on-street parking and reducing the impacts of drivers circling for spaces—namely, pollution, noise, pedestrian and bicycle safety, emergency vehicle response times, and transit vehicle speeds. Although the goals of variable pricing for parking on the Island would be slightly different (namely, to discourage use of automobiles and maximize revenues to fund transit), SF*park* demonstrates that it is possible to influence driver behavior through the use of creative pricing schemes.

Through resident and employer surveys, along with research and monitoring, the proposed parking programs would be adapted accordingly to reach the desired travel outcome. At this stage of Project development, the precise format and process to control these programs has not yet been fully developed, but will be established by TITMA before the development would be expected to create any transportation impacts on the existing transportation infrastructure. TITMA's Travel Coordinator and their team would also be in direct communication with all operators of transportation service to the Island, such as the bus, ferry, and on-Island shuttle operators.

#### 10.2.2.1 REVENUE AND EXPENSE ASSUMPTIONS

The parking demand and supply by development phase varies according to the land uses under each phase.

For all revenue estimates, an hourly parking charge of $1.50 is assumed, in effect 365 days a year from 7:00 am to 10:00 pm. However, during early phases of development, when some amount of free on-street parking will still be available for use in undeveloped areas, the estimates assume reduced parking revenues. As the Island is gradually developed and parking collection and enforcement become more efficient, the parking revenues increase to reach the full potential revenues.

For expense estimates, a system similar to SF*park* is proposed, consisting of sensors and multispace meters. Based on data collected as part of the SF*park* program, the estimated capital and operating costs of the parking program include the following costs:

- Capital costs:
  - Parking sensor: $300 per space; and
  - Multispace parking meter: $1,900 per space;
- Operating costs:
  - Parking sensor: $10 per space per month;
  - Multispace parking meter: $10 per space per month;

On-street parking would be subject to all of these capital and operating costs. Off-street (structured) parking capital costs would be approximately $41.4 million, with an additional operating cost of approximately $10 per space per month.

For both on- and off-street parking, an additional variable operating cost of 6.75% of the operating revenue, covering other expenses such as coin collection and enforcement, is also assumed.

### *10.2.3 RAMP METERING AND QUEUE JUMP FACILITIES*

The ramp metering program will enable Caltrans to control the volume of traffic accessing the bridge from the Island during peak travel periods. The precise number of vehicles allowed to use each ramp will likely vary with traffic volumes on the mainline, as well as the direction and time of day. Ramp

metering controls the traffic volumes accessing the bridge during periods of congestion by manipulating the traffic signals that control ramp traffic. For example, should bridge congestion reach unacceptable levels, Caltrans could increase the length of the red phase of the signal, decreasing the total number of green phases shown to vehicles accessing the bridge at the on-ramps at Treasure Island and Yerba Buena Island. Ramp metering helps to not only ensure the integrity of traffic flow on the bridge mainline but also puts a cap on automobile use during peak periods..

Assuming construction of the new westbound ramps as proposed in the Yerba Buena Island Ramps Improvement Project being considered by Caltrans and SFCTA, the existing westbound on-ramp on the west side of Yerba Buena Island would be converted to transit and emergency vehicle use only. This would provide significant travel time savings for SFMTA and enable San Francisco-bound buses to avoid queuing and the ramp meters at the eastside on-ramps. Mitigation Measure M-TR-24 further requires that TITMA monitor queuing on-Island and, in conjunction with SFMTA, determine whether queues are unacceptably delaying Muni buses. If that were to occur, Treasure Island Road would be restriped to eliminate the Class 2 bike lane and a transit-only lane from the Transit Hub to the west-side westbound on-ramp would be added.

The queue jump facility under M-TR-24 would also benefit AC Transit buses on a portion of Treasure Island Road. Beyond the diverge point for the west-side westbound on-ramp, however, AC Transit buses would need to enter mixed-flow with automobile traffic for about one-third of a mile.

## 10.3 SPECIAL EVENTS

Ensuring travel management plans are in place for large special events is an important function of the Travel Coordinator. When filing an application with the City for a large public event on the Island, the event sponsor will be required to submit an accompanying TDM plan approved by the Island's Travel Coordinator. During the TDM plan development process, the Travel Coordinator could provide input on what types of services should be provided to help meet the event's travel needs while preserving the needs of Island residents, emergency service providers, and other uses on the Island. The ultimate scope of the TDM plan would vary depending on the scale of the event and its expected impact on access modes to the Island (including the Bay Bridge and the proposed bus and ferry services), but would sufficiently address all travel needs for the event, including visitor access, heavy vehicle access, and parking / loading operations. After a plan is filed, the Travel Coordinator would then approve (or reject) the plan. If approved, the event sponsors (with assistance from the Travel Coordinator) would be responsible for monitoring the effectiveness of the plan for the duration of the event and implementing additional emergency measures as necessary to ensure the goals of the TDM plan are met.

For larger events, the TDM plan could include provisions for additional transit service outside of the regular service plan to provide adequate access to / from the Island for event visitors. In particular, the proposed ferry, bus, and shuttle services could be augmented with more frequent service (e.g., increasing shuttle frequencies), specially-timed service (e.g., increasing ferry service after let-out of a sports event), or rerouted service (e.g., extending bus services beyond the Transit Hub and directly to the event venue on the Island). Event sponsors would be required to fund the costs of these or any additional measures (e.g., roadway closures / changes, parking removal, etc.) required to serve the event's travel needs.

# 11 SUMMARY OF COSTS, REVENUES, AND PHASING

An underlying principle of the Treasure Island / Yerba Buena Island Project is that the overall Project be financially feasible. This principle is carried through to the Transportation Implementation Plan. An explicit goal of the comprehensive TDM programs and transit service and operations outlined in this document is the establishment of a structure of flexible programs that support a transportation system that is financially feasible in terms of upfront capital costs and long-term operations.

The framework for financial feasibility is that the capital costs needed for the Project's transportation program will be provided as part of the up-front costs of development, with a minimal amount of outside leverage. On an operating basis, the Project includes several sources of revenues, to be collected by the TITMA, which, in conjunction with farebox revenues, will cover the costs of operating the transit services and the TDM programs for which the TITMA is responsible. As transportation demands and service needs become established and begin to evolve, the Plan's demand management mechanisms (pricing, ramp metering, etc) and transit service plans can be modified to promote long-term financial stability and best serve the Island's changing transportation needs. In the short term, prior to completion of the Project, the projected shortfalls in operating costs would be covered by a series of payments from TICD, according to a fixed schedule as described in the DDA.

This chapter summarizes the sources and uses for the transportation capital and operating program for the Project both in total and over time as the Project builds out in phases. The assumptions on how land uses in the Project would be built out over time are presented in Table 11.1.

TABLE 11.1: LAND USE PHASING ASSUMPTIONS

| LAND USE | LAND USE AMOUNT AT RESIDENTIAL UNIT COUNT | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | UP TO 1000 NEW UNITS | UP TO 2000 NEW UNITS | UP TO 3000 NEW UNITS | UP TO 4000 NEW UNITS | UP TO 5000 NEW UNITS | UP TO 6000 NEW UNITS | UP TO 7000 NEW UNITS | UP TO 8000 NEW UNITS |
| New Residential (DU) | 1,000 | 2,000 | 3,000 | 4,000 | 5,000 | 6,000 | 7,000 | 8,000 |
| Office (SF) | | | | | | | | 100,000 |
| Retail (SF) | | | | | | | | |
| Neighborhood-Serving | 30,000 | 33,125 | 36,250 | 39,375 | 65,625 | 68,750 | 71,875 | 75,000 |
| Other | 25,125 | 25,125 | 25,125 | 25,125 | 95,000 | 95,000 | 95,000 | 95,000 |
| Restaurant (SF) | | | | | 37,000 | 37,000 | 37,000 | 37,000 |
| Community-Oriented Services / Offices (SF) | | | | | 30,000 | 30,000 | 30,000 | 30,000 |
| Food Production / Manufacturing (SF) | 22,000 | 22,000 | 22,000 | 22,000 | 22,000 | 22,000 | 22,000 | 22,000 |
| Recreation / Entertainment (SF) | | | | | | | 150,000 | 150,000 |
| School (SF) | 26,250 | 26,250 | 52,500 | 52,500 | 78,750 | 78,750 | 105,000 | 105,000 |
| Police / Fire (SF) | | | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 | 30,000 |
| Community Center (SF) | | | | | 48,500 | 48,500 | 48,500 | 48,500 |
| Hotel (rooms) | 50 | 50 | 50 | 50 | 120 | 120 | 420 | 500 |
| Sailing Center (SF) | | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 | 15,000 |
| Museum / Cultural (SF) | | | | | | | | 75,000 |
| General Open Space (acres) | 33 | 65 | 98 | 130 | 163 | 195 | 228 | 260 |
| Athletic Fields (acres) | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 |

Source: TICD & TIDA, 2009.

## 11.1 CAPITAL COSTS

As noted above, the Project will fund all capital costs associated with the improvements described herein, or in the Infrastructure Plan as they relate to transportation infrastructure.

There are three primary types of transportation capital expenditures:

- *Transit Fleet*. These costs include the costs of purchasing rolling stock for Muni, AC Transit, and the shuttle operations. As noted in Chapter 9, the number of buses and shuttles being purchased for all routes includes spare vehicles. For the San Francisco bus services, the calculation of total capital costs also assumes a credit for existing buses already in service currently on Muni's 108 line serving Treasure Island. An additional facilities (storage) cost is assumed for San Francisco buses. Ferry operations will be conducted with leased vessels, and therefore ferry boat purchases are not included in the transit fleet costs.

  TICD will be responsible for the majority of the capital costs in this category, through the funding sources as described in the Financing Plan attached to the DDA. For San Francisco Muni buses, TICD will be responsible for covering 20% of the total cost of purchasing the new vehicles. TICD's share of 20% is the typical local match portion required under federal programs that fund bus procurement. TICD, TIDA, and TITMA would work with SFMTA to seek funds under those federal programs. However, because federal funding is not yet committed to the Project, the remainder of the funding for rolling stock and the facilities charge are conservatively assumed to be covered from Muni's share of the general fund revenues that are generated by the Project (e.g. sales tax revenues, property tax revenues, hotel taxes, etc.), as described in the Fiscal Analysis prepared in conjunction with approval of the DDA. The total cost of the transit fleet is $21.3 million.

- *Transportation Infrastructure and Facilities*. These costs include the costs of building out the Project's transportation infrastructure, including streets, sidewalks, bike paths, and the ferry quay. These costs also include construction of buildings needed for the transportation program, specifically the ferry terminal and the public parking garages to be operated by the TITMA. Finally, this category includes a contribution from the Project for the separate ramps and viaduct improvement projects being analyzed by the SFCTA. These costs, totaling $121.4 million, comprise the majority of the transportation capital expenses.

- *TDM & Monitoring.* These costs include set-up costs associated with operating the transportation program, and total $2.2 million.

Table 11.2 summarizes the total projected transportation capital costs for the Project's transportation program, while Table 11.3 summarizes the cumulative capital costs by development phase.

TABLE 11.2: PROJECTED TRANSPORTATION CAPITAL COSTS (IN $2010)

| LINE ITEM | COST |
|---|---|
| Transit Fleet | |
| San Francisco Bus: Rolling Stock (6 buses) [a] | $9,058,000 [f] |
| San Francisco Bus: Facilities (6 buses) [a] | $4,920,000 [g] |
| East Bay Bus (9 buses) | $5,785,000 |
| Shuttle (4 shuttles) | $1,580,000 |
| Subtotal | $21,343,000 |
| Transportation Infrastructure and Facilities [b] | |
| Ferry Quay / Terminal | $30,047,000 |
| Ramps / Viaducts (Project Contribution) | $10,000,000 |
| Street Improvements (YBI) [c] | $7,441,000 |
| Street Improvements (TI) [c] | $26,694,000 |
| Waterfront Plaza / Ferry Landscaping | $3,461,000 |
| Off-Street Public Parking (Structured) | $41,439,000 |
| On-Street Public Parking [d] | $2,277,000 |
| Subtotal | $121,360,000 |
| TDM & Monitoring | |
| Bicycle Library | $111,000 |
| TITMA Administrative Offices [e] | $1,104,000 |
| Maintenance Facilities | $939,000 |
| Subtotal | $2,154,000 |
| TOTAL | $144,856,000 |

Source: AECOM, 2010.

[a] Capital costs for the San Francisco bus service will be generally borne by Project-generated tax revenues, with 20% of the cost of the new rolling stock being paid by TICD. The figures here show net new buses required, and are assumed to be articulated buses. The five existing buses would be used first on the Transbay Terminal Route and then transferred to the Civic Center Route.

[b] Includes hard costs, plus associated design costs, construction costs, and contingency.

[c] Does not include grading, retaining walls, etc.

[d] Includes cost of parking meters and sensors for metered on-street parking.

[e] Administrative office includes the capital costs associated with administrative facilities for the Travel Coordinator, car-share program, shuttle, carpool / vanpool organization, and other TDM measures.

[f] Amortized annual costs of rolling stock for the San Francisco bus service are $732,000.

[g] Amortized annual costs of facilities (storage) for the San Francisco bus service are $320,000.

TABLE 11.3: CAPITAL COSTS BY PHASE (IN MILLIONS, $2010)

| ROUTE | RESIDENTIAL UNIT COUNT | | | | | | | | TOTAL |
|---|---|---|---|---|---|---|---|---|---|
| | UP TO 1000 NEW UNITS | UP TO 2000 NEW UNITS | UP TO 3000 NEW UNITS | UP TO 4000 NEW UNITS | UP TO 5000 NEW UNITS | UP TO 6000 NEW UNITS | UP TO 7000 NEW UNITS | UP TO 8000 NEW UNITS | |
| Transit Fleet | | | | | | | | | |
| SF Bus: Rolling Stock [a] | -- | -- | -- | -- | $7.548 | -- | -- | $1.510 | $9.058 |
| SF Bus: Facilities | -- | -- | -- | -- | $4.100 | -- | -- | $0.820 | $4.920 |
| East Bay Bus | $3.214 | -- | -- | -- | $0.643 | -- | $1.285 | $0.643 | $5.785 |
| Shuttle | -- | -- | $0.790 | $0.395 | $0.395 | -- | -- | -- | $1.580 |
| Subtotal | $3.214 | -- | $0.790 | $0.395 | $12.686 | -- | $1.285 | $2.972 | $21.342 |
| Transportation Infrastructure and Facilities | | | | | | | | | |
| Ferry Quay / Terminal | $21.210 | -- | -- | -- | $4.419 | $4.419 | -- | -- | $30.047 |
| Ramps / Viaducts | $8.000 | $2.000 | -- | -- | -- | -- | -- | -- | $10.000 |
| Street Imps. (YBI) | $7.441 | -- | -- | -- | -- | -- | -- | -- | $7.441 |
| Street Imps. (TI) | $20.620 | $2.749 | $2.626 | $0.699 | -- | -- | -- | -- | $26.694 |
| Plaza / Ferry Landscp. | $3.461 | -- | -- | -- | -- | -- | -- | -- | $3.461 |
| Off-Street Public Parking | $1.645 | $19.142 | $19.665 | -- | $0.988 | -- | -- | -- | $41.439 |
| On-Street Public Parking | $0.570 | $0.204 | $0.223 | $0.204 | $0.423 | $0.089 | $0.310 | $0.254 | $2.277 |
| Subtotal | $66.947 | $24.094 | $22.515 | $0.903 | $5.829 | $4.508 | $0.310 | $0.254 | $121.360 |
| TDM & Monitoring | | | | | | | | | |
| Bicycle Library | $0.063 | $0.006 | $0.007 | $0.007 | $0.007 | $0.007 | $0.007 | $0.007 | $0.111 |
| TITMA Admin. Offices | -- | -- | $0.552 | -- | -- | $0.552 | -- | -- | $1.104 |
| Maintenance Facilities | -- | -- | $0.470 | -- | -- | $0.470 | -- | -- | $0.939 |
| Subtotal | $0.063 | $0.006 | $1.029 | $0.007 | $0.007 | $1.029 | $0.007 | $0.007 | $2.154 |
| TOTAL | $66.223 | $24.100 | $24.333 | $1.304 | $18.522 | $5.536 | $1.603 | $3.233 | $144.856 |

Source: AECOM, 2010.

[a] Net-new costs, with credit taken for the five standard coaches currently operating on Route 108.

## 11.2 OPERATING COSTS & REVENUES

### *11.2.1 TITMA SUPPORTED OPERATIONS*

Generally, with the exception of the San Francisco bus service to be operated by SFMTA, all transportation on Treasure Island will be administered or coordinated by the TITMA. The SFMTA bus service is supported by other Project-generated revenues, and is discussed in separately in Section 11.2.2.

On a long-term basis, there are three sources of revenue available to the TITMA and its partners to fund these services and programs:

- *Farebox recovery (including pre-paid transit vouchers).* TITMA would be responsible for coordinating some service that would be operated by others, specifically the East Bay bus service to be operated by AC Transit and the San Francisco ferry service to be operated by WETA. These services would all be offered for a fare, so there would be monies collected at the farebox directly from riders that would be available to fund these services. These funds would flow directly to the service providers, and are therefore not available to TITMA for other services, but the TITMA's contractual arrangement with these service providers would account for the fact that the service providers would receive these funds and would back that out of the other funds that TITMA would provide to subsidize those services. By way of example, assuming AC Transit's average fare recovery is $0.40 per passenger and TITMA owes $1 for AC Transit to provide the service, TITMA would pay the remaining $0.60 (assuming there is just one rider). Overall, farebox revenue accounts for approximately 35% of the total TITMA budget.

- *Commercial / on-street parking.* As discussed in Chapter 10, TICD will build on-street metered parking and off-street commercial parking facilities that will be managed by the TITMA. TITMA will have responsibility for pricing, collection, and enforcement, and will receive all revenues from those actions for use on-Island. Effectively, TITMA will receive all the revenues from these parking sources, without incurring any of the capital costs to pay for them. Overall, commercial and on-street parking accounts for approximately 40% of the total TITMA budget.

- *Congestion pricing.* As discussed in Chapter 10, TITMA would administer a congestion pricing program. The congestion pricing program is initially assumed to apply only to residential trips that are entering or exiting the Bay Bridge during peak hours. An initial charge of $5 each way is assumed in the analysis. Overall, congestion pricing accounts for approximately 25% of the total TITMA budget.

The farebox recovery assumptions include reimbursements to the transit providers for any trips made using the pre-paid transit vouchers. Overall, farebox recovery, including the funds from the pre-paid transit vouchers, accounts for approximately 35% of the total TITMA operating revenues.

Table 11.4 summarizes the annual operating costs and revenues at full build-out for TITMA-supported elements of the Island's transportation program.

TABLE 11.4: SUMMARY OF TITMA-SUPPORTED OPERATING COSTS AND REVENUES (AT BUILD-OUT) (IN $2010)

| ITEM | ANNUAL OPERATING COSTS | ANNUAL REVENUE | ANNUAL SURPLUS (SHORTFALL) |
|---|---|---|---|
| Transit Fleet | | | |
| Ferry (3 ferries) | $11,250,000 | $8,570,000 | ($2,680,000) |
| East Bay Bus (9 buses) | $3,241,000 | $1,294,000 | ($1,947,000) |
| Shuttle (4 shuttles) | $1,524,000 | -- | ($1,524,000) |
| Subtotal | $16,015,000 | $9,864,000 | ($6,151,000) |
| Transportation Infrastructure and Facilities | | | |
| Public Parking | $1,211,000 | $11,742,000 | $10,531,000 |
| Subtotal | $1,211,000 | $11,742,000 | $10,531,000 |
| TDM & Monitoring | | | |
| Bicycle Library | $111,000 | $101,000 | ($10,000) |
| Administrative Offices | $1,104,000 | -- | ($1,104,000) |
| Maintenance Facilities | $276,000 | -- | ($276,000) |
| TDM & Monitoring | $276,000 | -- | ($276,000) |
| Congestion Pricing Program | $1,551,000 | $6,205,000 | $4,654,000 |
| Subtotal | $3,318,000 | $6,306,000 | $2,988,000 |
| TOTAL | $20,544,000 | $27,912,000 | $7,367,000 |

Source: AECOM, 2010.

On an interim basis, there are insufficient revenues from the above sources to pay for the required services. The reason for this is two-fold: First, in early phases, there is not a sufficient amount of development and associated residents, visitors, and workers to generate as much congestion pricing and commercial parking revenue as would be available in the later phases. Second, while the proposed transit service levels increase over time, service levels in the early phases are disproportionately frequent relative to the size of the population. Put another way, in order to establish the transportation services and "brand" Treasure Island as a transit-first community, more transit service is being provided than the population would warrant. Together, these two facts mean that the transportation operations will run deficits in interim phases. The *Development and Disposition Agreement* obligates TICD to provide a transit operating subsidy of $30,000,000, paid annually based on budgeted need up to a $4,000,000 cap, in order to make up for this projected shortfall. In addition, if after the Island is 50% occupied, less than 50% of off-Island trips during the peak period are made by modes other than auto, the DDA requires that TICD contribute an additional $5,000,000 in subsidy to be paid in five installments of $1,000,000.

Table 11.5 and Table 11.6 summarize annual operating costs and revenues by development phase. Table 11.7 summarizes the net annual operating surplus (or deficit) by phase.

TABLE 11.5: ANNUAL OPERATING COSTS BY PHASE (IN MILLIONS, $2010)

| ROUTE | RESIDENTIAL UNIT COUNT | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | UP TO 1000 NEW UNITS | UP TO 2000 NEW UNITS | UP TO 3000 NEW UNITS | UP TO 4000 NEW UNITS | UP TO 5000 NEW UNITS | UP TO 6000 NEW UNITS | UP TO 7000 NEW UNITS | UP TO 8000 NEW UNITS |
| Transit Fleet | | | | | | | | |
| Ferry | $4.000 | $6.750 | $6.750 | $6.750 | $11.250 | $11.250 | $11.250 | $11.250 |
| East Bay Bus | $2.218 | $2.218 | $2.218 | $2.350 | $2.515 | $2.515 | $2.812 | $3.241 |
| Shuttle | -- | -- | $1.025 | $1.419 | $1.524 | $1.524 | $1.524 | $1.524 |
| Subtotal | $6.218 | $8.968 | $9.993 | $10.519 | $15.289 | $15.289 | $15.586 | $16.015 |
| Transportation Infrastructure and Facilities | | | | | | | | |
| Public Parking | $0.196 | $0.292 | $0.391 | $0.488 | $0.800 | $0.866 | $1.057 | $1.211 |
| Subtotal | $0.196 | $0.292 | $0.391 | $0.488 | $0.800 | $0.866 | $1.057 | $1.211 |
| TDM & Monitoring | | | | | | | | |
| Bicycle Library | $0.014 | $0.028 | $0.042 | $0.056 | $0.069 | $0.083 | $0.097 | $0.111 |
| TITMA Admin. Offices | $0.138 | $0.276 | $0.414 | $0.552 | $0.690 | $0.828 | $0.966 | $1.104 |
| Maintenance Facilities | $0.035 | $0.069 | $0.104 | $0.138 | $0.173 | $0.207 | $0.242 | $0.276 |
| TDM & Monitoring | $0.035 | $0.069 | $0.104 | $0.138 | $0.173 | $0.207 | $0.242 | $0.276 |
| Cong. Pricing Prog. | $0.194 | $0.388 | $0.582 | $0.776 | $0.969 | $1.164 | $1.357 | $1.551 |
| Subtotal | $0.415 | $0.830 | $1.244 | $1.659 | $2.074 | $2.489 | $2.903 | $3.318 |
| TOTAL | $6.829 | $10.089 | $11.629 | $12.666 | $18.163 | $18.644 | $19.547 | $20.544 |

Source: AECOM, 2010.

TABLE 11.6: ANNUAL OPERATING REVENUES BY PHASE (IN MILLIONS, $2010)

| ROUTE | RESIDENTIAL UNIT COUNT | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | UP TO 1000 NEW UNITS | UP TO 2000 NEW UNITS | UP TO 3000 NEW UNITS | UP TO 4000 NEW UNITS | UP TO 5000 NEW UNITS | UP TO 6000 NEW UNITS | UP TO 7000 NEW UNITS | UP TO 8000 NEW UNITS |
| Transit Fleet | | | | | | | | |
| Ferry | $1.694 | $2.360 | $3.090 | $3.755 | $5.516 | $5.857 | $7.171 | $8.570 |
| East Bay Bus | $0.534 | $0.607 | $0.687 | $0.760 | $0.993 | $1.026 | $1.159 | $1.294 |
| Shuttle | -- | -- | -- | -- | -- | -- | -- | -- |
| Subtotal | $2.228 | $2.967 | $3.777 | $4.515 | $6.509 | $6.883 | $8.330 | $9.864 |
| Transportation Facilities | | | | | | | | |
| Public Parking | $0.675 | $1.386 | $2.315 | $3.461 | $7.434 | $8.170 | $10.153 | $11.742 |
| Subtotal | $0.675 | $1.386 | $2.315 | $3.461 | $7.434 | $8.170 | $10.153 | $11.742 |
| TDM & Monitoring | | | | | | | | |
| Bicycle Library | $0.013 | $0.025 | $0.038 | $0.051 | $0.063 | $0.076 | $0.088 | $0.101 |
| TITMA Admin. Offices | -- | -- | -- | -- | -- | -- | -- | -- |
| Maintenance Facilities | -- | -- | -- | -- | -- | -- | -- | -- |
| TDM & Monitoring | -- | -- | -- | -- | -- | -- | -- | -- |
| Cong. Pricing Prog. | $0.776 | $1.551 | $2.327 | $3.103 | $3.877 | $4.654 | $5.429 | $6.205 |
| Subtotal | $0.789 | $1.576 | $2.365 | $3.154 | $3.940 | $4.730 | $5.517 | $6.306 |
| TOTAL | $3.691 | $5.930 | $8.457 | $11.130 | $17.883 | $19.783 | $24.001 | $27.912 |

Source: AECOM, 2010.

TABLE 11.7: NET ANNUAL OPERATING SURPLUS (DEFICIT) BY PHASE (IN MILLIONS, $2010)

| ITEM | RESIDENTIAL UNIT COUNT | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | UP TO 1000 NEW UNITS | UP TO 2000 NEW UNITS | UP TO 3000 NEW UNITS | UP TO 4000 NEW UNITS | UP TO 5000 NEW UNITS | UP TO 6000 NEW UNITS | UP TO 7000 NEW UNITS | UP TO 8000 NEW UNITS |
| Operating Costs | ($6.829) | ($10.089) | ($11.629) | ($12.666) | ($18.163) | ($18.644) | ($19.547) | ($20.544) |
| Operating Revenues | $3.691 | $5.930 | $8.457 | $11.130 | $17.883 | $19.783 | $24.001 | $27.912 |
| TOTAL | ($3.137) | ($4.160) | ($3.172) | ($1.536) | ($0.280) | $1.139 | $4.454 | $7.367 |

Source: AECOM, 2010.

### *11.2.2 MUNI OPERATIONS*

Financial analysis of Muni operations (operating costs and revenues) is documented separately in the *Fiscal Analysis of the Treasure Island / Yerba Buena Island Development Project*, May 2011.

# APPENDIX A: SHUTTLE RIDERSHIP AND DEMAND

The Project EIR does not include specific estimates of shuttle ridership demand; therefore, this Appendix provides a separate estimate of shuttle ridership in order to describe how that ridership would be served at full build-out.

The residential land uses on Treasure Island would contribute to the majority of the ridership demand for the shuttle bus services. In general, the residential uses would generate the following types of trips:

- Off-Island trips to and from the Ferry Terminal and Transit Hub; and
- Internal (i.e., "on-Island") trips (primarily to and from the retail land uses).

Most residents would make these trips either by walking, bicycling or riding the shuttle service.

Off-Island and on-Island trips are forecasted to reach a maximum during the weekday PM peak hour. At full build-out, the number of peak directional person-trips generated by uses on Treasure Island during the weekday PM peak hour is estimated as the following:

- From Ferry Terminal / Transit Hub: 1,757 person trips
- From internal on-Island trips: 2,500 person trips
- Total inbound person-trips: 4,257 person trips

All of the residential units on Treasure Island would be located within a ¾-mile walk (15-20 minutes) of Ferry Terminal and Transit Hub. Given the proposed location of residential uses on the Island, The breakdown of residential units by distance from the main Ferry Terminal and Intermodal Transit Hub would be approximately as follows:

- Within ¼ mile: 30 percent of residential units
- ¼ mile to ½ mile: 53 percent of residential units
- ½ mile to ¾ mile: 17 percent of residential units

Data from the *2008 BART Station Profile Survey* were evaluated to help estimate the proportion of residents who would be likely to walk or bicycle to and from the transit terminals (rather than ride the shuttle service) for each distance range presented above. In this comparison, it is assumed that the concept of walking or bicycling between a residential unit on Treasure Island and the Ferry Terminal / Transit Hub would be analogous to walking between a residential unit and a BART station.

The new development and street grid planned for the Island are expected to create a walkable and bikeable streetscape comparable to the Mission District. According to the *2008 BART Station Profile Survey*, the walk / bicycle mode share at the 16th Street / Mission BART station was approximately 96 percent for residents within ½ mile of the station and 88 percent for residents living between ½ and ¾ mile of the station.

Trips to / from the station via modes other than walking or biking (e.g., car or transit) are assumed to represent the demand for the Island's shuttle service. Since parking would not be provided at the Ferry Terminal / Transit Hub (parking is also not provided at 16th Street / Mission Station), transit users on the Island are not expected to take cars to / from the Ferry Terminal / Transit Hub.

The forecast demand for shuttle ridership by residents traveling to and from the Ferry Terminal / Transit Hub is summarized below:

- 4 percent of trips by residents living within ½ mile of the Ferry Terminal / Transit Hub; and
- 12 percent of trips by residents living between ½ mile and ¾ mile of the Ferry Terminal / Transit Hub.

This analysis has assumed the same shuttle mode share demand for internal on-Island residential trips. While it would be expected that a lower proportion of residents would walk / bicycle for a retail trip, it is also expected that a higher proportion of these trips would be either automobile trips or linked trips. Thus, the same proportion of shuttle ridership is assumed for internal trips.

In summary, by applying the assumed shuttle mode share demand, the proportion of residential units within each distance range, and the total residential person trips, it is estimated that the total peak directional demand for the two Treasure Island shuttle routes would be 220 passengers per hour during the weekday PM peak hour at full build-out.

A similar analysis was undertaken for Yerba Buena Island, where about 200 residential units, a hotel (capacity for approximately 50 guests), and park would be constructed. It is estimated that the total peak directional demand for the Yerba Buena Island shuttle route would be approximately 75 passengers per hour during the weekday PM peak hour at full build-out. This estimate assumes a much lower walk / bicycle mode split, given that the majority of Yerba Buena Island's residential units would be located further than ¾ miles from the main transit terminals. Relatively imposing topography would also work against transit demand at this location.