TIGER FY 2014 Discretionary Grant Funding Application – Planning Grants

San Francisco Bay Area Core Capacity Transit Study

Supporting Economic Growth with Transit

Project Location	**San Francisco and Alameda Counties, California** **CA-12, 13 and 14**
Type of Application	**Regional Planning**
Applicant Organization **Eligibility**	**Metropolitan Transportation Commission** **Metropolitan Planning Organization**
Project Partners	**San Francisco Bay Area Rapid Transit District (BART)** **San Francisco Municipal Transportation Agency (SFMTA)** **Alameda-Contra Costa Transit District (AC Transit)** **San Francisco County Transportation Authority (SFCTA),**
Amount of TIGER Funding Request	**$2,000,000**

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Project Narrative

1. INTRODUCTION

The San Francisco Bay Area (Bay Area) region—home to approximately 7.3 million people, 3.65 million jobs, and 7,000 square miles of land area spread over 9 counties—is a diverse region that is a magnet for people and businesses from around the globe. The Bay Area is one of the top economic engines of the nation, with a Gross Domestic Product of $535 billion, the highest per capita-GDP in the country and 19th highest in the world[1]. The natural beauty of the San Francisco Bay and the communities surrounding it, the extensive system of interconnected parks and open space, advanced mass transit system, top-notch educational institutions and rich cultural heritage continue to draw people who seek better opportunities. With the region's population projected to swell to some 9 million people by 2040, the Bay Area cannot take for granted that it will be able to sustain and improve its high quality of life and economic opportunity for current and future generations.

The region's robust transit network is a critical element of the Bay Area's ability to support existing communities and job centers and accommodate forecasted growth in an environmentally sustainable manner. On an average weekday, approximately 1.6 million trips[2] are made on a myriad of transit systems (rail, bus and ferry), representing about 10 percent of total commute trips made by all modes within the region. Transit is especially critical for supporting current and forecast growth in the region's three largest cities – San Francisco, Oakland, and San Jose – which are projected to absorb roughly 40 percent of the new jobs and housing in the region between now and 2040, as shown in Table 1.

Table 1. Projected Housing and Job Growth, 2010-2040

	2010	2040	Growth (2010-2040)	% Growth
Housing Units				
Bay Area	2,785,950	3,445,950	660,000	24%
San Jose	314,040	443,320	129,280	41%
San Francisco	376,940	469,430	92,490	25%
Oakland	169,710	221,160	51,450	30%
Jobs				
Bay Area	3,385,300	4,505,220	1,119,920	33%
San Francisco	568,720	759,500	190,780	34%
San Jose	377,140	524,510	147,370	39%
Oakland	190,490	275,760	85,270	45%

A confluence of recent trends – younger generations preferring urban environments and less car use, the resurgence of the economy and a significant increase in technology jobs, and a chronic regional undersupply of housing – have made the Bay Area's three largest cities ground zero for a conversation about the interaction between economic growth, equity, environmental sustainability, and transportation. In order to sustain economic competitiveness and enhance

[1] Bay Area Council Economic Institute: http://www.bayareaeconomy.org/bay-area-fast-facts/
[2] Statistical Summary of Bay Area Transit Operators, June 20, 2013, wwww.mtc.ca.gov/library/statsum/statsum.htm

urban livability, the region needs to develop transportation strategies and projects to accommodate the jobs and housing growth forecast for the region's core.

The need is especially critical in the San Francisco job centers of Downtown, Civic Center, South of Market, Mid-Market, and Mission Bay (Core San Francisco), which are forecast to experience high levels of jobs and housing growth going forward. The Core San Francisco neighborhoods are currently served by multiple transit operators and modes connecting the core to the rest of the region, as seen in Figure 1. On a typical workday, over 35 percent of San Francisco workers use transit to access their jobs. These systems are already stressed trying to serve today's ridership demand, with riders experiencing crowded conditions and transit systems struggling to maintain a satisfactory state of good repair. As shown in Figures 2 and 3, BART platforms and the Bay Bridge are at capacity during peak periods heading in to San Francisco. In 2010, it was estimated that in an average workday that 1.5 million trips originated or ended in the Core, of those, nearly 30 percent were made using transit.[3]

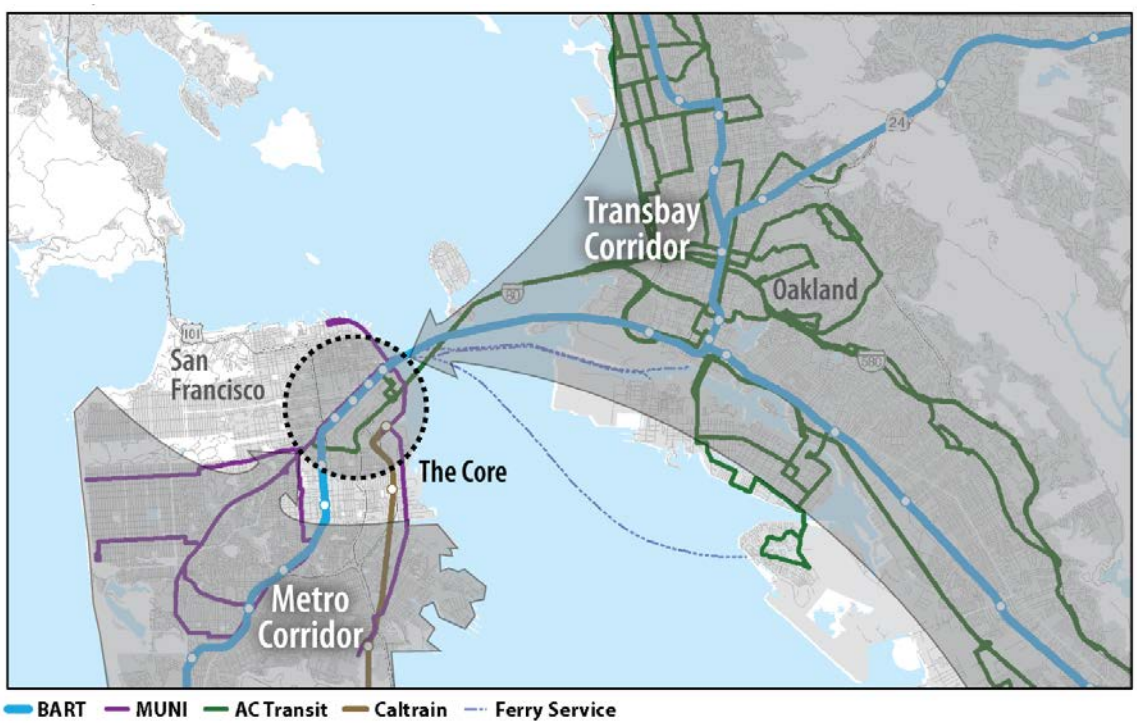


Figure 1. Core San Francisco Transit Connections

While the region has a strong history of investing to develop and maintain a vibrant transit system, this system is reaching capacity along many of the key corridors serving the Core San Francisco neighborhoods. In addition, many of the emerging neighborhoods in the Core, such as South of Market and Mission Bay, have not historically been well served by a coordinated and robust transit system connecting them to the workforce that commutes in from throughout the rest of the region. In addition, any new investments must be balanced against the region's continued need to invest in the transit and roadway networks state of good repair.

[3] Travel data forecasted through MTC's Travel Model 1, as part of Plan Bay Area?

Figure 2. BART Platform Crowding

Figure 3. Bay Bridge Traffic Congestion

The Metropolitan Transportation Commission (MTC), in partnership with San Francisco Bay Area Rapid Transit District (BART), San Francisco Municipal Transportation Agency (SFMTA), San Francisco County Transportation Authority (SFCTA), and Alameda-Contra Costa Transit District (AC Transit) are seeking TIGER Planning Grant funding to support a collaborative grant proposal for a Bay Area Transit Core Capacity Study ("Study"). **The Study will evaluate and prioritize short-, medium- and long-term transit investments, and strategies to address existing and forecasted capacity constraints in the core of the region. The Study will focus on identifying a package of investments that expand transit capacity and connectivity to rapidly growing Core San Francisco job centers.**[4] Building on the partnership formed during the long-range regional planning process, the Study will continue the collaborative work needed to support the region's land use vision, maintain continued economic vitality and opportunity, and enhance livability and mobility.

The Study is particularly well suited for the TIGER grant program, as it strongly supports many of the grant criteria and advances sustainable transportation and land use planning in support of economic development and opportunity. The proposed Study is particularly competitive for several reasons:

1) **Core Capacity / State of Good Repair** - The Study will address existing, near and long-term capacity limitations within the core of our region and its transit system which are impacting transit operators' abilities to maintain an optimal state of good repair and effective system operations. Opportunities to leverage state of good repair investments in a manner that could assist in addressing the region's capacity needs will also be considered.
2) **Economic Opportunity** - The Study focuses on providing robust transit service to one of the fastest growing and most dynamic job centers in the nation. The project will identify solutions to increase access to this area for residents from throughout the region.
3) **Sustainability** - The region's current and future growth plans are centered around transit-supported infill development that allows the region to meet our aggressive greenhouse gas emission reduction goals. For this growth to be successful, an integrated and effective transit system is needed.
4) **Performance-Based Planning** - The Study will use project evaluation to reach regional consensus on priorities among the region's many transit agencies on investments that improve system performance, enabling the region to meet short-, medium- and long-term performance metrics as described in the criteria section of this document.
5) **Partnership** - The Study brings together multiple transportation providers and planning agencies to develop, evaluate, and prioritize coordinated solutions to maintain and increase transit capacity and connectivity in the core of the Bay Area.

The remainder of the Project Narrative and application is organized into the following sections:

- **Section 2** provides more background on the Study Area, Study Corridors, and transportation challenges that the Study proposes to design solutions for;
- **Section 3** summarizes the scope of work for the proposed Study (with further detail in the attachments);
- **Section 4** describes how implementation of solutions developed through the Study will advance the Selection Criteria;

[4] A separate companion study focused on San Jose transit connectivity and capacity issues is under development.

- **Section 5** summarizes the budget, funding sources and uses, and schedule for the proposed Study (with further detail in the attachments);
- **Section 6** describes information on each of the participating agencies and their proposed role in the project;
- **Section 7** describes the projects readiness;
- **The Appendices** include (1) the detailed scope of work, budget and schedule; (2) letters of support; (3) Federal Wage Rate Certification; and (4) related reports.

2. BACKGROUND, STUDY AREA AND CORRIDORS

Background – Integrated Transportation and Land Use Planning

The Bay Area's most recent regional transportation plan, *Plan Bay Area*,[5] represents the region's first Sustainable Communities Strategy[6], which is an integrated long-range land use and transportation plan aimed at reducing greenhouse gas emissions in a way that accommodates the region's entire growth forecast on existing urbanized land. *Plan Bay Area* was adopted in 2013 after a three-year planning and outreach process and charts the region's course for accommodating housing and job growth forecast for 2040 while reducing greenhouse gas emissions per capita by 18 percent by 2040 (exceeding the state mandated target of 15 percent). *Plan Bay Area* seeks to accommodate growth while fostering an innovative, prosperous, and competitive economy; preserving a healthy and safe environment; and allowing all Bay Area residents to share the benefits of vibrant, sustainable communities connected by an efficient and well-maintained transportation network.

The region's forecasted housing and job growth is heavily concentrated in Priority Development Areas (PDA), which were areas identified by local governments as neighborhoods to accommodate new housing and commercial development. These areas are priority locations for transportation investments to support the day-to-day needs of residents and workers in a pedestrian-friendly environment served by transit. As shown in Figure 4, below, most PDAs are built along rail transit lines and stations, with particularly heavy clustering of PDAs in the Inner East Bay along the Transbay Corridor, and on San Francisco's eastern side. The PDA framework will allow the region to accommodate nearly 80 percent of new homes and 60 percent of new jobs on less than 5 percent of the region's land. This focused growth is supported by targeted transportation investments built around the region's "Fix it First" priority to maintain existing transportation assets, and are primarily concentrated in the region's core, reinforcing the plan's focused growth strategy.

[5] *Plan Bay Area* is the region's current long-range transportation plan and Sustainable Communities Strategy. http://onebayarea.org/plan-bay-area/final-plan-bay-area.html

[6] The Sustainable Communities Strategy (SCS) is an integrated land use and transportation plan that all metropolitan regions in California must complete under Senate Bill 375.

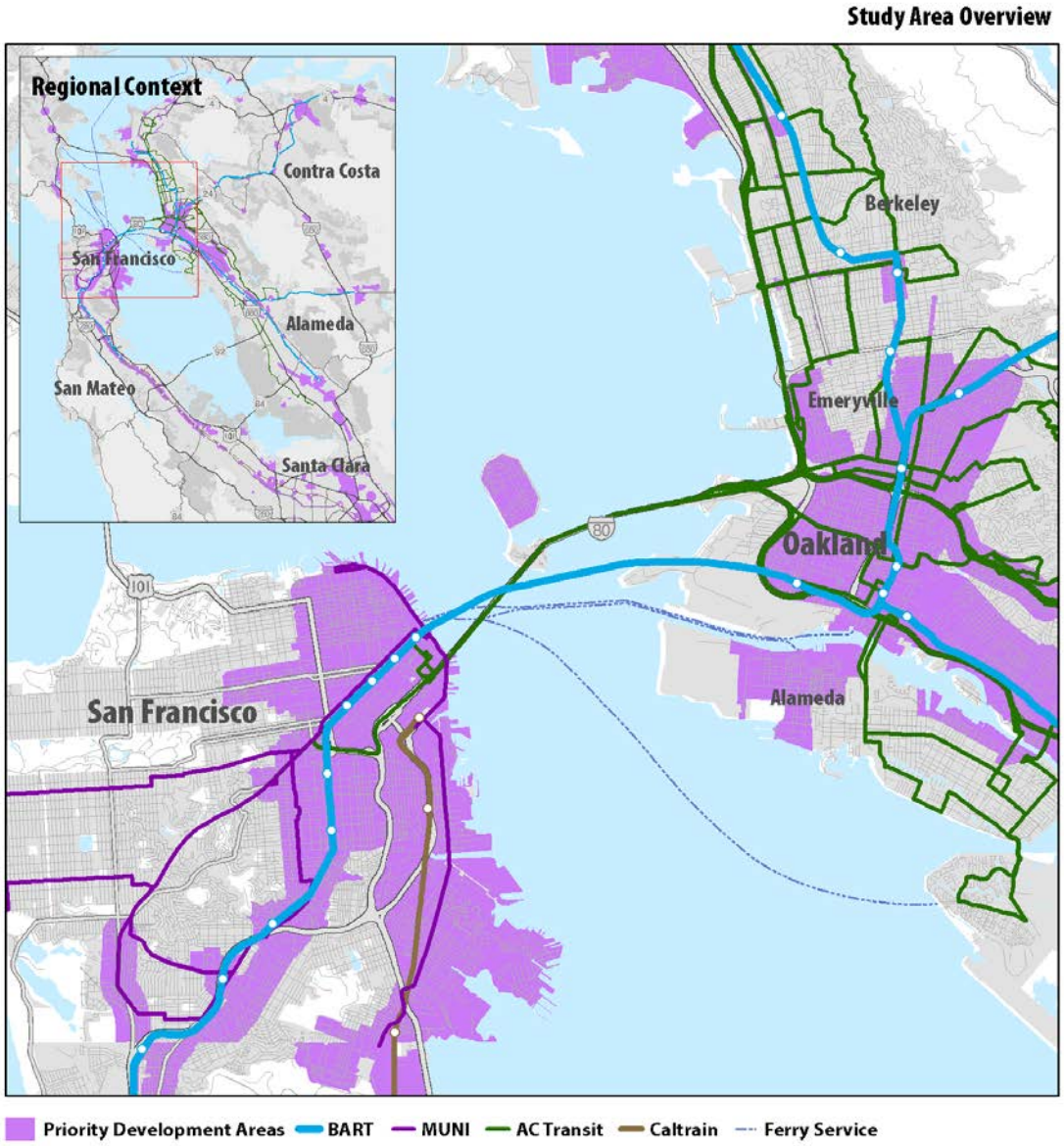


Figure 4. Priority Development Areas

Study Area

The PDA framework concentrates future development in the inner Bay Area where transit service is most frequent and at minimum providing 20-minute headways during peak periods. The assumed land use plan would increase travel demand in the dense urban fabric the region, particularly between the East Bay and San Francisco, which are both forecast to accommodate significant levels of growth, as shown in Figures 6 and 7. This growth will result in significant increases in the AM and PM Peak commutes to and from Core San Francisco[7], particularly along the key transit corridors in the Study Area, where much of the growth in concentrated. The Core includes established job centers with historic concentrations of financial and professional firms in traditional office spaces, as well as the recent rapid proliferation of technology jobs within San

[7] The Core refers to the established and emerging job centers in San Francisco including Downtown, Civic Center, Mid-Market, South of Market, and Mission Bay.

Francisco's Mid-Market, SoMa, and Mission Bay neighborhoods. With workers in technology industries increasingly preferring the vibrant urban atmosphere in San Francisco, the locus of

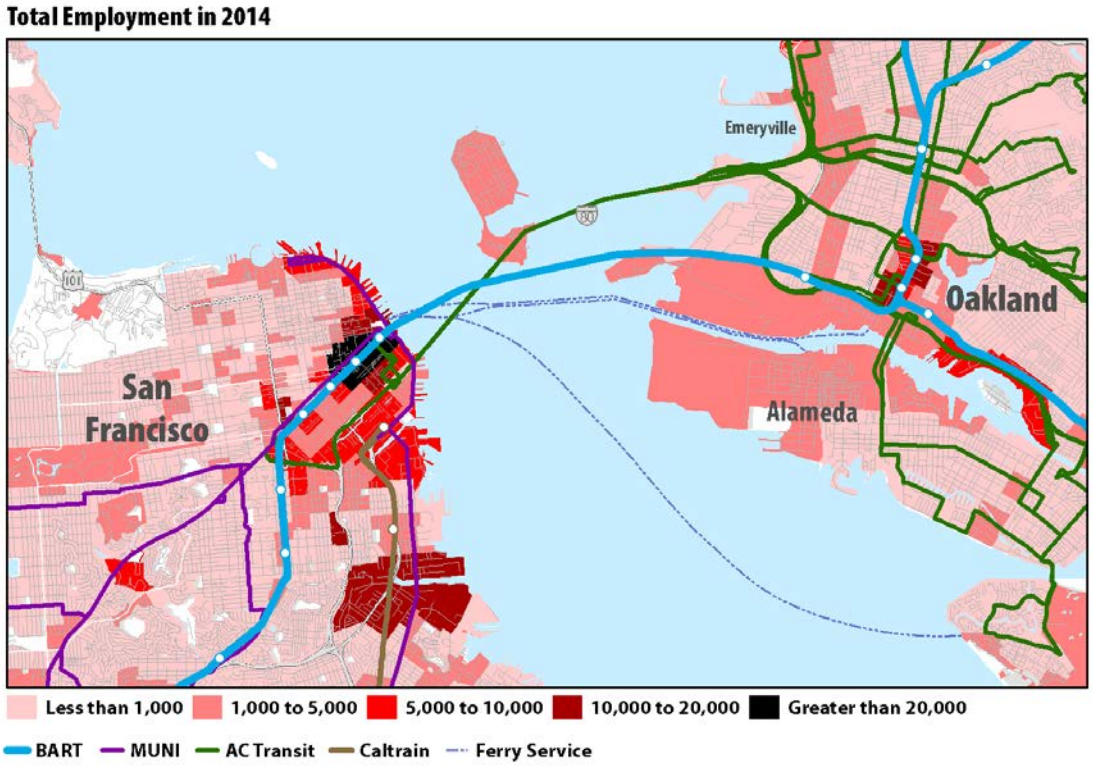
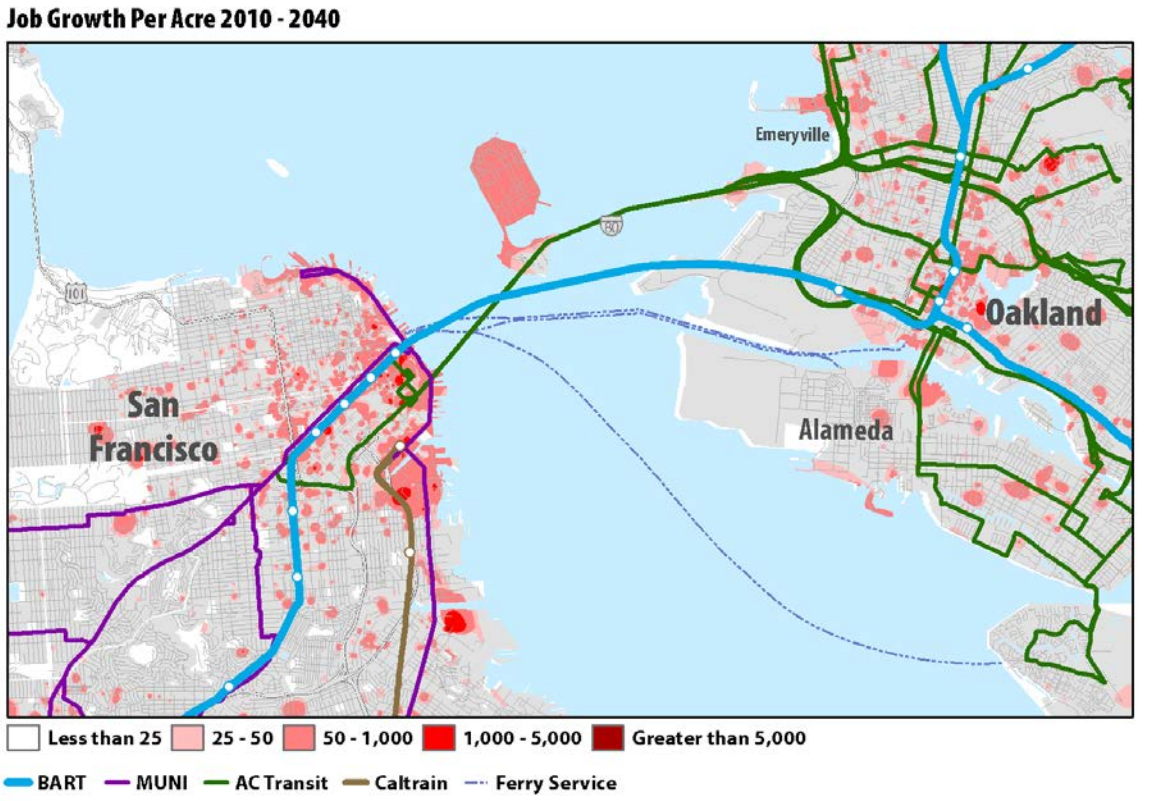
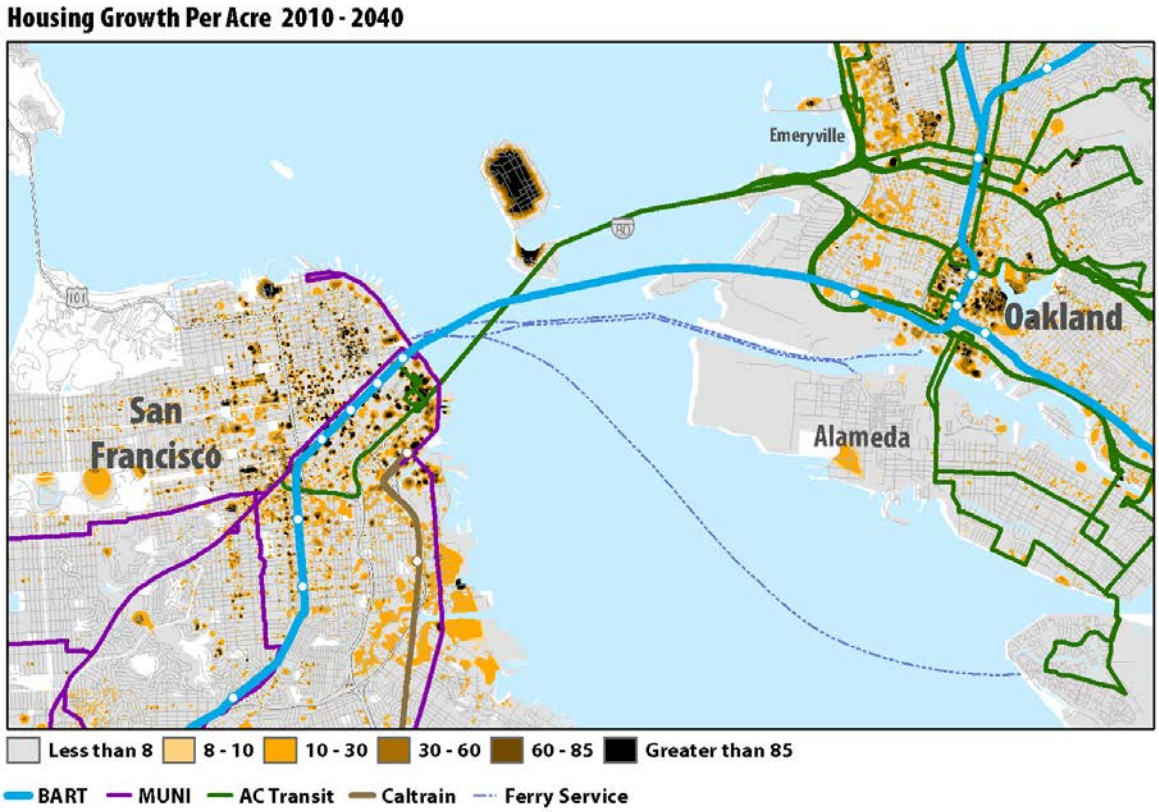


Figure 5. Total Employment, 2014

these industries has been increasingly shifting toward more urban, dense locations, supported by public transit and lively urban activity centers (this is further discussed in the Criteria section). Even major Silicon Valley corporations such as Google and Apple are leasing multiple floors of office space in the Core to provide shorter commutes for their San Francisco and East Bay workforce. Thus, despite its existing prominence in the nation's tech sector, the San Francisco MSA is the fourth fastest growing high-tech economy in the nation. Between 2010 to 2013, San Francisco added roughly 90,000 jobs, and is anticipated to add 90,000 more households and 191,000 more jobs by 2040. Yet, the BART, AC Transit and SFMTA Muni Metro rail systems serving the Core are operating near capacity today and ridership is steadily increasing.





Figures 6 and 7. Growth in Employment and Housing, 2010-2040

Several transit service providers serve the Core today, as shown in Figure 8. They include:

- Bay Area Rapid Transit (BART) – The BART system began operation in the 1970s, and has grown to be the core backbone of the regional transportation system. BART carries approximately 400,000 average weekday riders today over 104 system miles of track, serving 44 stations. Approximately 67 percent of trips on BART have either an origin or destination within the Core, at one of the four stations in downtown San Francisco. Of particular importance is BART Transbay service that connects the East Bay with Downtown San Francisco. Daily Transbay ridership is approximately 200,000 riders on an average weekday.
- The San Francisco Municipal Transportation Agency's (SFMTA) subway-surface light-rail (Muni Metro). Originally, a legacy streetcar system, Muni Metro was modernized during the construction of the BART system, when the Metro subway was constructed, and five streetcar lines were moved into the subway as modernized light-rail lines. Recently, a sixth line was added to the subway system. The system currently serves over 140,000 riders per day. SFMTA also provides transit service along motor coach, trolley coach, historic streetcar, and cable car lines for 700,000 riders per day, over half of whom start, end or travel through the Core.
- AC Transit has operated service in the Transbay Corridor since its inception as an agency, replacing the historic Key System. AC Transit carries approximately 13,000 riders in Transbay service on a daily basis connecting the East Bay and San Francisco.
- A number of other transit agencies provide service to Core San Francisco, including commuter rail, bus and ferry operators. Caltrain, the commuter rail system connecting Downtown San Francisco and the Peninsula, has its northern terminus in the heart of Core San Francisco and provides roughly 55,000 daily transit trips. Future California High Speed Rail service will also operate over the Caltrain alignment, terminating at the Transbay Transit Center in the core of downtown San Francisco. In addition, a ferry network operated by the Water Emergency Transit Authority and Golden Gate Bridge Highway and Transportation District (Golden Gate) have key terminals in the Core providing approximately 12,000 passengers a day access to jobs and ensuring redundancy in the system. Golden Gate and SamTrans also provide limited bus service to the study area. In addition, a number of private shuttles operate in the area to serve employers, health care facilities and education institutions.

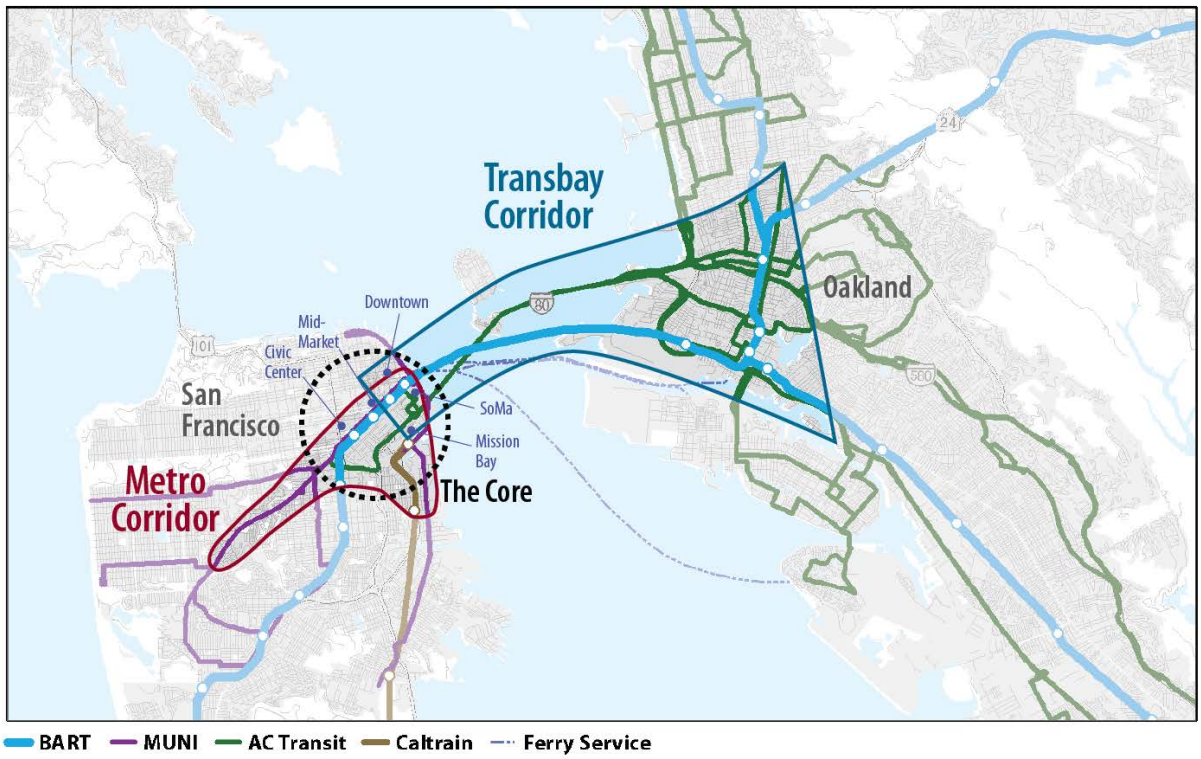


Figure 8. Core San Francisco Transit Service

In response to the recent and future growth trends, the region has invested in transportation improvements to increase capacity and improve service to the study area. Various projects are underway, including the Transbay Transit Center, SFMTA's Central Subway, and Phase 1 of BART train car replacement. The Bay Area's commitment to enhancing the region's transit systems is in part due to the significant commitment of the region's Federal funding partners. The Transbay Transit Center, Central Subway, BART train car replacement, and Caltrain electrification projects all leverage Federal programs in their funding plans.

The two largest projects, the Transbay Transit Center (see Figure 9 below) and Central Subway are leveraging funds from various Federal programs, including FTA New Starts, FRA High Speed Rail (ARRA), TIFIA Loans, and regional STP/CMAQ funds. In addition to the competitive programs, FTA's regional funding programs have enabled the region to invest $870 million to complete the first phase of the BART train car replacement project, and to invest $500 million to invest into Caltrain's new electric system.

Figure 9. Rendering of Transbay Tower (white) and associated development (green)

Study Corridors

Transit ridership is increasing all across the Bay Area, but particularly in the backbone trunk corridors that connect job centers to residential areas of a variety of incomes. The Core is served by two key corridors that are the focus of this Study: the Transbay Corridor and the Muni Metro Corridor. These two corridors overlap and it is important to evaluate these two corridors together as improvements to one can lead to further capacity challenges to the other. (The Caltrain Peninsula corridor is also a key corridor serving the Core, but has recently completed significant planning and operations analysis focused on current operations and a future extension to Downtown San Francisco, so is not included as a key study corridor for this Study. Analysis and results from the recent Caltrain initiatives will be integrated into the Study.)

The Study will consider all the major travel corridors serving the Core (**see Figure 8)** in prioritizing the next generation of transit capacity upgrades, but focus its project development work on two parts of the network, the Bay Bridge Transbay Corridor and the San Francisco Muni Metro spine, with demonstrated transit need but little opportunity for transit project development work to date.

The Bay Bridge **Transbay Corridor** connects the Inner East Bay and San Francisco. Multiple transit operators serve the Transbay Corridor. Services include regional rail services operated by BART, Transbay buses operated by AC Transit, and ferries operated by WETA. BART carries the bulk of transit riders in the Transbay Corridor, serving approximately 200,000 daily riders in the corridor. The corridor is fed by several BART lines that converge in West Oakland and travel through the Transbay tube under the San Francisco Bay and under Market Street in Downtown San Francisco. AC Transit's Transbay services operate from various locations in the East Bay, across the Bay Bridge, and drop-off exclusively at the Transbay Terminal in San Francisco, which is undergoing a major expansion that encompasses significant new development as described above. Ferries originating in Oakland and the City of Alameda as well

as the North Bay drop-off passengers predominantly at the San Francisco Ferry Building along the waterfront in Downtown.

The **San Francisco Muni Metro** spine connects residential neighborhoods of western and southern parts of San Francisco to the Core and carries passengers arriving in the Core via BART, AC Transit, Caltrain, or other regional transit operators to destinations throughout the city. The **Muni Metro Corridor**, operated by SFMTA, is served by the modern Muni Metro light rail system and is fed by five light-rail lines. The K-Ingleside, L-Taraval, and M-Ocean View lines merge at West Portal to enter the Twin Peaks tunnel, continuing in the Market Street Subway to Downtown San Francisco. The J-Church and N-Judah lines merge at the Church/Duboce portal, converging with the K/L/M in the Market Street Subway starting at Van Ness station. The T-Third extends K line service from the Market Street Subway, along The Embarcadero and the south-east waterfront to Sunydale. The Muni Metro Corridor is connected to the rest of Muni's extensive bus, trolley, historic streetcar, and cable car network, carrying approximately 700,000 passengers per average weekday.

Expanding capacity and improving reliability in the Transbay and Muni Metro Corridors is critical to sustaining regional economic growth and expanding access to economic opportunity for workers of all incomes. One-third of the region's jobs are in San Francisco and San Mateo Counties, which are also two of the region's most expensive housing markets. The Bay Area contributes a disproportionately high share of the nation's GDP, and core transportation is essential to that economic growth. Major employers have identified cost of living as the main barrier to future growth. Reinforcing regional transit access to these jobs from less expensive East Bay housing markets is an essential strategy to address this barrier, while simultaneously linking low-income communities to middle wage job openings. Without a dramatic increase in Core transit capacity, the economic, environmental, and equity goals established in *Plan Bay Area* will not be realized.

3. PROPOSED STUDY

Overview

The Study proposes to identify, evaluate and prioritize a package of investments that expand transit capacity and improve reliability and connectivity to major Core San Francisco job centers. The main Study objectives are to: 1) identify and prioritize feasible short-, mid-, and long-range transit improvements to maintain and increase transit capacity and improve reliability and connectivity and 2) develop scope for prioritized projects to ready them for subsequent project development phases.

The Study will be led and administered by MTC in close partnership with participating agencies: SFMTA, BART, AC Transit, and SFCTA (collectively the Agency Team). The Study is an innovative blend of regional planning work led by the region's Metropolitan Planning Organization/Regional Transportation Planning Agency (MPO/RTPA), supplemented by more focused work by the transit operating agencies on specific corridors. Generally, the role of MTC and SFCTA is to facilitate an objective analysis of capacity needs and the most effective solutions to meet these needs by corridor, while the roles of BART, SFMTA, and AC Transit are to provide expertise on their respective transit system conditions, needs, design standards, and

other agency-specific considerations. The Agency Team will primarily utilize consultant support competitively procured to conduct the analysis.

The outcome from the Study will be regional agreement on a plan for phased projects to enhance current system capacity to handle growing demand in the two subject corridors. These agreed upon enhancements will be incorporated into MTC's future regional transportation plans, the updates to *Plan Bay Area*. For the longer term, the Study will define major regional infrastructure improvements and supportive policies and strategies in the Transbay and Muni Metro corridors as part of a framework for sustainable growth in the region.

In the Transbay Corridor, the study will define the maximum capacity of the system if every component and operating strategy of the current multimodal system were to be enhanced as much as possible, and then beyond that, will look at a variety of potential solutions that include major new infrastructure construction in the corridor. The analysis will also consider additional transportation system management and demand management strategies that can delay the need for major infrastructure projects.

In the Muni Metro Corridor, the Study will allow SFMTA to identify potential solutions to remove operational bottlenecks impeding access between the local rail network and key regional and national rail connections. Improvements to regional rail connections to BART and Caltrain will be developed in detail. Capacity improvements for service that connects to the under construction Transbay Terminal and future California High Speed Rail San Francisco Terminus will also be included along with concepts for potential rail network expansion where ridership demand will require high capacity transit.

Work Plan Overview

(See Appendix 1 for the Detailed Scope of Work, Budget and Schedule)

Task 1. Project Start-up and Ongoing Management

Project start-up and ongoing management activities would include:

- Refining a work plan and budget by task
- Producing a Project Charter that confirms Study goals and objectives, roles and responsibilities of participating agencies, structure for collaboration and reaching agreement across agencies (e.g. when board actions/reports are required for different agencies, how to govern decision-making, etc.)
- Procuring a consultant team and ongoing administration
- Regular coordination meetings among Agency team and Consultant

Task 2. Public and Stakeholder Outreach

The Study will include a wide range of public and stakeholder outreach activities including traditional and innovative approaches. An Outreach Strategy will be produced during Study initiation that describes outreach goals and objectives as well as a work plan to notify and seek input from stakeholders and members of the public over the course of the Study. All members of the Agency Team have extensive experience in seeking public input and securing stakeholder engagement in planning processes. As part of Outreach for *Plan Bay Area,* MTC facilitated an extensive regional process with a wide range of stakeholders including county congestion management agencies, local governments and transit operators, environmental and equity

advocates, and workforce development organizations to identify a framework for regional growth and transportation investments that can address these concerns. The Outreach strategy will build on lessons learned from past outreach successes and utilize existing stakeholder forums to the greatest extent possible.

The Outreach Strategy will include Title VI outreach and include engagement with key stakeholders such as business coalitions, advocacy groups, and business improvement districts, as well as general public meetings as appropriate. Generally, two outreach phases are envisioned:

Phase 1 would happen after completion of Task 4 and be focused on:

- Providing an overview of the purpose of the Study and the evaluation framework
- Sharing the results of the existing and future needs analysis (Task 4), including capacity goals by corridor by time horizon
- Summarizing projects/policies/operational strategies that have already been defined by corridor during predecessor planning efforts
- Understanding the public's issues and comments around the various alternative investments to be evaluated
- Seeking input on additional ideas that should be considered for development and evaluation.

Phase 2 would happen after completion of Task 8 and be focused on:

- Sharing what was heard in Phase 1 and how it was used
- Sharing the results of the evaluation and prioritization of high-performing concepts by time horizon
- Seeking feedback on stakeholder preferences among these concepts

Task 3. Existing/Future Needs Synthesis and Identification

Together, the Transbay corridor and Muni Metro spine comprise the backbone of the Bay Area's core transit system. *Plan Bay Area* will sustainably manage future regional growth, but its increased travel demand is expected to fall particularly heavily on several downtown San Francisco transit stations, along the Transbay and Muni Metro Corridors. The key challenge to be addressed in the Study will be developing concepts to expand capacity on the very successful Transbay and SF Muni Metro trunk transit services that are currently operating at, near or over-capacity levels due to increasing ridership.

Sub-tasks include:

a. Establish project goals and objectives. The Agency Team will work with project stakeholders to confirm and communicate the project goals and objectives, which will then be used to frame the Evaluation Criteria developed in Task 4.
b. Quantify existing and planned future capacity provided by projects already in development, by Study Corridor and Mode.
c. Market Demand Analysis by Study Corridor. This task will utilize *Plan Bay Area* land use to forecast travel demand by corridor for short- medium- and long-term horizon years.

Task 4. Identify Transportation Challenges Facing the Study Area and Corridors

a. Synthesize past studies/work to identify: i) constraints/needs to maintaining/increasing capacity ii) capacity improvement concepts that have already been developed: Several past studies have been completed or are currently in progress that identify transit system needs

and/or have developed capacity improvement concepts for some of the Study Corridors. With limited effort, this task would allow for a small level of effort to synthesize all relevant past work, including core maintenance/State of Good Repair needs that must be achieved to maintain existing capacity.

b. Identify key transportation challenges in the Study Area and Corridors. The challenges will include both current and future challenges to providing a reliable, efficient transit system to meet the projected demand. It is anticipated that the challenges will include but not be limited to capacity constraints, operational challenges, track and right of way limitations, and vehicle constraints.

Task 5. Evaluation Framework

An evaluation framework will be established to translate the Study's goals and objectives into qualitative and quantitative metrics that can be used to screen and prioritize strategies and identify appropriate methodologies for carrying out the evaluation. The evaluation framework will build off the robust project performance analysis, including project level benefit-cost analysis, MTC conducts for the regional transportation plan, as well as project analysis frameworks used by the participating agencies in establishing their investment priorities. The framework will also take into account the performance measures currently being developed by U.S. DOT under the MAP-21 performance monitoring initiative.

The evaluation framework may include criteria such as:

Primary Goal: Amount of Peak Transit Capacity by Corridor/Mode and Travel Market	
Screening-level Criteria (used in Task 7)	
o Supports regional goals / targets o Order of magnitude capital cost estimates o Order of magnitude changes in operating costs	o Basic engineering feasibility o Constructability o Implementation timeframe
Full Evaluation Criteria (used in Task 9)	
o Transit travel time o Transit reliability o Fleet and facility needs o Refined capital cost estimates o Refined operating cost estimates o Environmental considerations o Rider experience o Potential influence on land use and economic development o Geographic and social equity o Ridership	o Affordable housing/vulnerable communities o Multi-modal and –operator integration/connectivity o Community and stakeholder feedback o Vehicle Miles Traveled (VMT) and greenhouse gas (GHG) reduction o Safety

Task 6. Develop Capacity Improvement Concepts

In this task, consultants will add to the existing improvement concept list synthesized in Task 4 to develop additional ways to achieve the targeted capacity by Study corridor, mode, and time

horizon. In this task, the transit operators (SFMTA, BART, and AC Transit) will provide direction to consultants for development of improvement concepts specific to their systems in consideration of their agency-wide policies and other system plans and needs.

For the near future, additional capacity must come through efficient use of existing infrastructure – a strategy that is consistent with Plan Bay Area's "Fix-it First" investment strategy. BART is proceeding with several projects designed to enhance capacity of the existing system, including a new train control system and new increased capacity vehicles. The options to expand capacity in this corridor are complicated by the geography of the San Francisco Bay, and the constrained nature of the transit and highway infrastructure that cross it. Fixed links through this corridor are limited to BART's Transbay Tube, and the San Francisco-Oakland Bay Bridge. BART's ability to handle additional demand in the Transbay Corridor is contingent on major new investments and station modifications to the BART system, some of which are underway, and some of which are unfunded. Plan Bay Area also advances the BART Metro concept, which facilitates long-term land use changes primarily by providing a high-frequency, high capacity urban core rail trunk system, with the Transbay Corridor as the central linchpin of the core system.

The Muni Metro Corridor has been incrementally upgraded over the last 30-40 years. Entry and exit points to the Muni Metro Corridor suffer from poor reliability due to the merging/diverging of multiple rail lines and the transition from manual to automatic train control. Topographic barriers provide few options for direct routes heading into or out of the financial district on a mode other than light rail. The Muni Metro Corridor provides a high-frequency local rail system, which is the core of the transit system in San Francisco, but which is also in need of capacity and operational modifications.

Concepts are expected to include the following categories:

Rail Strategies

- Interventions to increase line capacity on existing lines (upgrades to train control system, increase/enhancement to rolling stock/facilities, junction and station modifications)
- Interventions to increase speed/reliability of existing lines and operate different service patterns (e.g. tail tracks, crossovers, turn-backs, and portal improvements)
- New lines (e.g. second Transbay Tube, new BART line in San Francisco extending from second Tube, Central Subway extension to Fisherman's Wharf)
- Any rail capacity improvement strategies will consider all relevant aspects of capacity including line capacity, station capacity, station access considerations, rolling stock/facilities requirements, and relevant operating plans changes.

Bus strategies

- New route structure to better serve demand in East Bay as well as potential expanded employment destinations beyond downtown San Francisco such as Mission Bay and San Francisco Civic Center
- More frequent service in more high-density TOD corridors along with new vehicle fleet to increase per-trip capacity. Establishment of a transit network using Park & Rides to efficiently carry more riders, reduce travel time through neighborhoods, and consequently improve service frequencies

- Priority treatments to provide speed and reliability including Bay Bridge contra-flow lane, transit-only lanes and transit priority on East Bay arterials and intersection treatments (signal priority and queue jumps)
- Improved coordination and implementation with private shuttles

Ferry strategies

- More frequent ferry service/additional ferry terminals
- Improved multi-modal connectivity

Policy

- Regional pick-up/drop-off within San Francisco
- Peak hour fare premiums
- Station-specific congestion pricing
- Interagency fare coordination
- Employer Transportation Demand Management engagement and coordination

Task 7. Screen Capacity Improvement Concepts

Using the evaluation criteria identified in Task 45, the project team will conduct a screening of the concepts identified. Screening criteria will likely include; supports regional goals, potential implementation schedule, rough order of magnitude capital cost and change in operating cost, constructability, and basic engineering feasibility. The goal is to reduce the conceptual alternatives to a more limited number for further project development. Preliminarily, five to ten concepts would advance to further project development.

Task 8. Project Development

For the subset of concepts identified in Task 7 for further project development, SFMTA, BART, and AC Transit will manage consultants to conduct additional project development. Conceptual Engineering drawings to a level appropriate for evaluation and prioritization (up to 5% design for most concepts) will be developed.

Task 9. Evaluation, Prioritization, and Phasing of Capacity Improvements Concepts

Using the evaluation criteria identified in Task 5, the project team will conduct an evaluation of the concepts refined in Task 8. The goal is to prioritize the alternatives to a limited number for future project development and implementation work, and develop a preliminary recommendation for phasing by time horizon, and for inclusion in future updates of *Plan Bay Area* and agency planning efforts.

Potential alternatives include:

<u>Transbay Corridor</u>

The following potential alternatives may be considered, as well as other developed during the Study:

- No project
- Bus service and infrastructure improvements
    - Contraflow lane for AM Peak
    - Bus fleet with higher capacity
    - Shift model of service to high density areas

    - Integrate Park and Ride service
- BART capacity improvements to the existing system using the current tube
- Expanded ferry system
- BART West Oakland transfer station concept with SF shuttle trains (no through service)
- Second Transbay Tube (2-track and/or 4-track)

Muni Metro Corridor

The following potential alternatives may be considered, as well as other developed during the Study:

- No project
- Supplemental bus service
- Station platform extensions
- Portal area traffic control, transit only lanes, and Transit Signal Priority
- Wayside and Automatic Train Control System upgrades
- Three and four car trains with optimized interior configuration
- Additional pocket and crossover tracks
- Operating short lines and shuttles

Task 10. Refine Project Development

In this task, operators will guide the consultant team in additional scoping and project development of the highest prioritized projects, including:

a. Advance project conceptual design
b. Refine ridership estimates
c. Develop initial environmental assessment
Prepare an initial checklist assessment of environmental issues likely to be raised in future CEQA and NEPA processes, at both the Program-level and the Project-level.
d. Develop initial Title VI evaluation
Develop an initial Title VI evaluation of the preferred alternatives. Analysis will comply with FTA Title VI Circular 4702.1B Service and Fare Equity, released on October 12, 2012.
e. Phasing plan for construction and fleet expansion
Develop a phasing plan for construction of any rail alternatives that proceeds in logical segment order and allows interim operability of project phases as they are completed.
f. Refine cost estimates
Cost estimates will be completed using a format and level of detail appropriate for application for entry into the FTA New Starts process.

Task 11. Implementation Strategy

In this task, the Agency team will communicate the results of the effort to develop regional consensus on prioritized alternatives for short, mid, and long-term improvements. An implementation strategy will be developed that references the relationship between/amongst alternatives. Prioritized alternatives will be used to aid as an advocacy platform for future funding programs, and to leverage existing funding sources.

- Identify partnerships amongst agencies necessary for implementation.
- Identify major roadblocks for implementation

- Develop project development and implementation plan, design and environmental phases, project delivery methods
- Develop funding plan and strategy

Task 12. Draft and Final Report

The technical work completed will be summarized in a Draft Final Report. The report will be circulated for review and refined based on comments. This task also includes preparation of presentation materials and making presentations on the findings and recommendations to governing bodies of project team. A Final Report will be approved by the Agency Team.

4. SELECTION CRITERIA

The Study is particularly well suited for the TIGER grant program, as it strongly supports many of the grant criteria and advances sustainable transportation and land use planning in support of economic development and opportunity.

1. State of Good Repair:

The Study Corridors include some of the region's most critical and aging transportation infrastructure including:

- Twin Peaks Tunnel – this 2.3 mile tunnel was opened in 1918 for the San Francisco streetcar system and is now used by three modern Muni Metro light-rail lines;
- Market Street Subway – this double-deck subway serves five Muni Metro light-rail lines on one level, and four BART lines on a second level. It opened for service for BART in 1973 and for Muni in 1980; and
- Transbay Tube – this 3.6 mile immersed tube runs under the San Francisco Bay, up to 135 feet below sea level, and connects the East Bay and San Francisco, approximately 6 miles apart. The tube opened in 1974 and serves four BART lines.

While maintenance and upgrades to these systems have occurred over their lifetimes, both BART and Muni struggle with State of Good Repair (SGR) challenges that would be addressed through this Study. Without new investments in capacity to bring the region's workers to San Francisco's major job centers, current transit infrastructure will experience increasing delays, stymie economic growth forecasted in the city and hinder the ability of the nation's most innovative job center to continue to expand (see Criterion 2 for more on economic growth).

For BART, the Transbay Tube is likely to require substantial upgrades to extend its useful life. While still decades away, substantial work is expected to be needed for an extended period of time to upgrade the tube, and this may affect the ability to move trains regularly on the current schedule. To enable such work to happen without severely impacting the Bay Area's economic functioning, the region must advance Transbay capacity upgrades that could be in service before the existing Transbay tube's maintenance and rehabilitation work must commence. In the summer of 2013, the Bay Area Economic Council estimated the San Francisco economy lost $73 million a day during the BART strike.

For Muni, the existing aging subway infrastructure and old light-rail vehicles provide much less throughput than could be possible under ideal conditions and less than what was provided historically, when light-rail vehicles used to couple as they merged to transition from at-grade to subway operation. The subway experiences vehicle bunching and gaps that result in only 94% of

scheduled throughput through the Muni Metro Corridor being realized. During peak hours, crowded trains regularly prevent some riders from boarding the first train that arrives, and there is substantial latent transit demand that would be met if additional throughput was provided more reliably in the Muni Metro Corridor.

The Study's focus on these two networks' SGR needs is a natural extension of the national leadership MTC has provided in prioritizing SGR investments. Plan Bay Area directs $159 billion towards maintaining the existing transit system; yet a total funding shortfall of $17 billion remains over the 28-years to achieve an optimal SGR for the region's transit system. As such, of the $292 billion of revenue forecasted to be available in Plan Bay Area, 87 percent of all available funding is dedicated to sustaining and maximizing the existing transportation network, a reflection of the Bay Area' commitment to its "Fix-it-First" investment strategy.

Further, transit agencies collaborating on this application prioritize SGR: BART adopted an asset management policy in February 2014 that requires the agency to evaluate life cycle costs as part of new investments. Objective 3.5 of the SFMTA Strategic Plan call for reducing capital deficits by investing in critical capital assets. The Study is consistent with the respective agencies' asset management/SGR plans, and aligns with funding for new investments that support SGR goals. Therefore, this project is both consistent with Plan Bay Area and the respective agencies' asset management/state of good repair plans.

This project will consider financing options for investments and will incorporate short-, medium-, and long-term phasing of transit capacity enhancements to San Francisco's major job centers, ensuring that funding for capital, operations, and maintenance components of new major infrastructure are aligned while low-cost investments (e.g. contraflow bus lanes, platform doors, pricing) can alleviate interim capacity needs. MTC has developed several funding initiatives to support its "fix-it-first" strategy and to sustain and maximize the existing transit network. Most recently, MTC adopted a $7.5 billion Transit Core Capacity Challenge Grant program that targets funds to support capital needs of BART, SFMTA, and AC Transit, which carry 80 percent of the region's transit passengers and more than three-quarters of the region's minority and low-income passengers. The primary goal of the challenge grant is to fund capital needs and key infrastructure enhancements needed to support future transit service expansion. The Core Capacity Challenge Grant represents a significant investment in transit capital needs; however, it will primarily fund fleet replacement and expansion. This Study will now take the next step to identify key infrastructure and policy strategies to support current and project growth on the same transit systems. While the Core Capacity Challenge Grant focuses on transit capital needs, MTC's Transit Sustainability Project (TSP) sought to improve transit operations by improving the financial position of transit operators, improving the service experience of riders, and attracting new riders to the system. The TSP specifically looked at ways to improve service connectivity and integration in the core, including coordinated planning and fare policies.

Lastly, the project addresses the vulnerability of critical regional transportation infrastructure assets to major natural or manmade disasters, including earthquakes, terrorist acts, and sea level rise. The Bay Area Homeland Security Strategy identifies transportation as the top sector for terrorism risk and the fourth ranking sector for national hazard risk. Redundant transportation and transit investments connecting across the Bay and into Downtown San Francisco are essential to mitigate these risks. After the 1989 Loma Prieta earthquake, for example, the Transbay tube and ferry service played an essential role in maintaining the region's economic

productivity by offering commute alternatives during the 30-day period while the Bay Bridge was repaired. Further, the region has been studying adaptation strategies to address sealevel rise. These studies identified portions of the core transit network as vulnerable to sea level rise, making redundant transit options critical so that existing transit infrastructure can be modified to address this vulnerability.

Exploring alternative multimodal transportation alternatives to serve key economic centers in San Francisco will greatly enhance regional mobility, address current and projected capacity issues, create much-needed redundancy for critical regional infrastructure assets in order to support repair processes without delays in service, help the region withstand emergencies, and enable forecasted growth, as discussed in the following section.

2. Economic Competitiveness:

The Bay Area is one of the most powerful, innovative economic engines in the nation, and its continued success is dependent on effective transportation. The region houses 2.4% of the nation's population but contributes 3.7 percent of its GDP, and has the highest economic productivity in the nation. As numerous recent studies and press have highlighted, workers in key export industries (social media, biotech, medical research, software development) seek a high quality of life facilitated by frequent, reliable transit access. A recent study by Bloomberg, for example, highlighted that "with more than 50,000 engineers, San Francisco has one of the largest concentrations of engineering talent in the world…With its vibrant social and cultural scene, San Francisco is simply a more attractive place to live for the creative technical talent that fuels many…companies….The increasing emphasis on design-centric "interface" skills – especially among consumer web and mobile app companies, is serving to further accentuate this shift (to San Francisco from the Silicon Valley)." As a result the San Francisco MSA (San Francisco and San Mateo Counties) is the 4th fastest growing high-tech economy in the nation – experiencing a 20 percent increase in high-tech jobs in 2010 alone.

The Bloomberg study further states that "one notable factor has proven to be a challenge for the city: a robust and affordable infrastructure (including) challenges in affordable housing, transit, and education." BART and AC Transit Transbay connections, and SFMTA's rail and bus connections move workers to jobs in the high tech sector and other industries. Improvements to be studied in this project are essential to sustain and enhance the region's economic competitiveness, and hence enhance the growth of the epicenter of social media, web design, digital communications, and biotech industries, among others. SFMTA is currently piloting new relationships with private shuttles serving major national employer headquarters throughout San Francisco and the Silicon Valley.

While *Plan Bay Area's* projection that the City of San Francisco will add 191,000 new jobs by 2040 may have seemed optimistic a few years ago, the City's recent job growth is already far outpacing rates assumed in this forecast. Even major employers with headquarters several miles south are leasing hundreds of thousands of square feet in the Core of San Francisco. Silicon Valley companies such as Google and Apple have recently signed major leases in the Core, while longstanding San Francisco companies such as Dropbox, LinkedIn, Twitter, and SalesForce continue to expand into new space (including SalesForce's recent lease of half of the new 1.4 million sq. ft. Transbay Tower). As stated above, the biggest challenges to serving this accelerated pace of growth are housing affordability, transit capacity, and continuing to generate a trained labor force.

While the improvements proposed in this project are directly focused on transit operations and infrastructure, they also serve to help address the region's major housing affordability crisis. San Francisco as a job center has a major regional draw; 60 percent of all workers in San Francisco commute from a different county, with more than a quarter of San Francisco workers originating in the East Bay. Transit service provided by BART and AC Transit enable workers to maintain a reasonable commute from communities in the East Bay and other outlying areas offering a less expensive housing stock.

Further, the HUD Office of Sustainable Communities-funded Bay Area Economic Prosperity Strategy found that there is a concentration of middle income jobs in downtown San Francisco, and improving Transbay service would connect low and moderate income workers from economically distressed areas to middle wage job opportunities. See Criterion 3 for more on economically distressed areas and the Economic Prosperity Strategy's relationship to the project.

Project alternatives will also reduce future growth in congestion on Interstates 880 and 80, both of which were identified as key freight corridors in FHWA's Draft Primary Freight Network. I-880 and I-80 serve as access points for the Port of Oakland, supporting local, regional and national goods movement needs. In addition, the Study will improve circulation and reduce congestion on the Core San Francisco street network, which will alleviate urban goods movement challenges related to local truck deliveries.

3. Quality of Life:

This project is specifically designed to respond to the regional land use allocations included in *Plan Bay Area*, which intends to incorporate 100 percent of the region's future growth on existing urbanized land and reduce greenhouse gas emissions by 15 percent. The *Plan Bay Area* strategy is to concentrate growth within locally-designated Priority Development Areas that offer rich transportation choices including proximity to high capacity transit, walkability, and proximity to commercial nodes. As *Plan Bay Area* focuses growth near transit, capacity on existing transit networks – especially in the inner Bay Area, the Transbay Corridor, and San Francisco – becomes a priority issue.

Increasing the presence of core capacity improvements in the next update of *Plan Bay Area* is a key deliverable of this project. This core capacity project would help achieve all of the six livability principles defined by DOT with HUD and EPA:

- Provide more transportation choices. The rapidly growing employment area that is the focus of this effort is served not just by buses, light rail and heavy rail provided by SFMTA, AC Transit and BART, but is also the major hub for Caltrain rail and future high speed rail. A large share of workers also walk and bike to and in the Downtown and South of Market areas multiple times each day. Supporting these multimodal choices is key to ensuring reduced auto dependency, and achieving *Plan Bay Area's* goal of reducing the combined housing and transportation costs for low and moderate income workers by 10 percent. San Francisco draws workers from throughout the region, some with commutes upwards of 60 miles. Increase in capacity along the Transbay and Muni Metro corridors will provide new and current residents and employees across the region with continued access to affordable and convenient transit choices, keeping transportation costs low and stable. Conversely, the Transbay and Muni Metro Corridors will reach capacity in the coming years and without increases in capacity these transportation choices will effectively be removed for many

residents and employees. Many of the strategies that the Study will evaluate include integrating planning across multiple modes and improving the number and quality of transportation options available to the customer.

- Promote equitable, affordable housing. San Francisco continues to be the most expensive housing market in the country, regularly topping housing price charts. The deep need for affordable housing has drawn national attention as residents concerned with displacement protest the influx of high income workers from some of the major tech companies located on the Peninsula. Numerous public agencies and private partners are seeking new approaches to addressing the affordability crisis, and regional transportation providing convenient access to lower cost residential areas in the East Bay is a key component of the region's multi-pronged strategy for addressing the housing affordability crisis. Thus ensuring the core transit system can maintain capacity to serve the regional housing stock is critical to housing affordability.
- Enhance economic competitiveness. Criterion 2 addresses the ways that this project would allow for continued growth in one of the nation's most critical innovation economies.
- Support existing communities. Plan Bay Area places supporting existing communities at the forefront of its combined land use and transportation strategy. Reinforcing core capacity transit through the strategies to be explored in this project is critical if Plan Bay Area is to achieve its vision of accommodating 100% of its growth within existing urbanized areas. Further, the region's unparalleled commitment to allocating 87% of its regional transportation funding ensures that the land use visions in Plan Bay Area can truly be achieved.
- Coordinate policies and leverage investment. The section below discusses how this project is aligned with other regional policies and previous federal grants. Further, the multi-phased approach of this project will ensure that short-, and mid-term improvements to capacity fully leverage the region's existing transportation infrastructure system before new investments are made. The partnership of the region's three largest transit agencies and the MTC to execute this project is also a marker of the significance of the need for core capacity expansion and the coordination that will take place.
- Value communities and neighborhoods. Plan Bay Area values existing communities and neighborhoods by designating growth only in areas identified by local communities as priority development areas. These areas are defined with densities and land use characteristics appropriate to their surroundings. The region's three biggest cities accommodate 42 percent of housing growth, and 38 percent of job growth and two of these (San Francisco and Oakland) are served by the core transportation network that will be studied for capacity expansions in this Project.

Serving Economically Disadvantaged Communities: In a region the size of the Bay Area, economically disadvantaged populations are not particularly concentrated in one small location. The equity analysis within Plan Bay Area identified Communities of Concern, which are defined areas with concentrations of a combination of residents who are minority, low-income (200% below the federal poverty line), have limited English proficiency, are zero car households, are 75 or older, are disabled, are single parents, or are overburdened renters. These Communities of Concern significantly overlap with the service areas of the three partner transit operators in this grant, and thus help bring 75 percent of the region's low-income and minority transit passengers to key transit-rich job centers including the Core.

Alignment with previous federal grants from the Office of Sustainable Communities: In 2011, MTC received a HUD Regional Planning Grant from the Office of Sustainable Communities, on

behalf of a consortium of public agencies, non-profit groups and institutions. The culmination of this grant – which is entering its final year – will be a Regional Prosperity Plan with two components: Housing the Workforce, and an Economic Prosperity Strategy. The Economic Prosperity Strategy is focused on ladders of opportunity to move low- and moderate-wage workers in the Bay Area (the 35 percent of workers making less than $18 per hour) into more middle-wage jobs (those paying $18 to $30 per hour). While many of the recommended actions in the strategy are focused on modifications to the state's workforce development system or the region's wage structure, several findings can be addressed through transportation investments. Following are relevant findings from the Economic Prosperity Strategy for this Project:

- Low- and moderate-wage workers live everywhere, and low wage jobs are located everywhere. Unlike other regions in the country, there is no one particular location that needs to be targeted to help build ladders of opportunity for low wage workers in the region. Low-wage workers are dispersed, thus improving their opportunities requires a more regional approach. Reinforcing the accessibility of regional job centers, and the coordination of regional transit agencies- as this Project proposes to do – is essential to address this issue
- Low- and moderate-wage workers are much less likely to commute long distances to their jobs, and are more likely to take transit. Again, improving transit access to major regional job centers will encourage low and moderate wage workers to consider a wider geographic range for jobs that may open up further economic opportunity.
- Major regional job centers will continue to have the greatest share of new job openings for all workers. While the greater Downtown San Francisco area is most known for its growth in high wage industries such as finance and software development, in fact the area maintains a diversified economy with jobs requiring a range of skill sets and paying a range of wages. Therefore increasing transit access to Downtown San Francisco benefits all workers, not just highly paid ones.
- Low-wage industries such as food services, airport positions, and cleaning positions greatly benefit from improved transit frequencies at night and non-peak hours. While there are cost challenges for transit agencies offering frequent service during off-peak hours and nighttime, rail rights-of-ways face the additional challenge of requiring several hours each night for regular maintenance and repair. Maintenance on the Transbay Tube, for example, is completed within a 3-4 hour window at night when trains are not running. Additional Transbay capacity opens up the opportunity to expand transit hours without sacrificing the necessary time to conduct maintenance. This in turn could enable workers in 24-hour industries (e.g. restaurant workers, airport workers) to take transit where they are not able to today. As shown in Figure 10, a significant number of retail jobs are located in the Core.

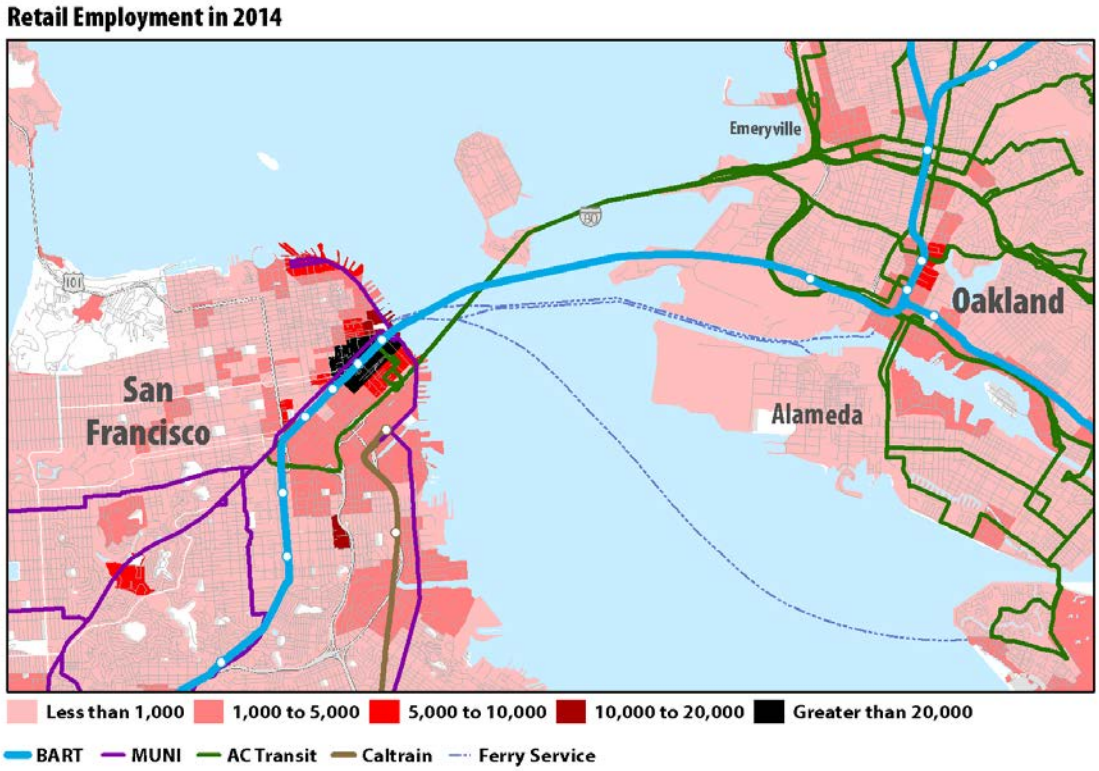


Figure 10. Retail Employment, 2014

Alignment with Land Use Plans: Unlike other projects that might be tangentially coordinated with land use plans, this project has emerged from the region's coordinated land use plan and long range transportation plan (aka Plan Bay Area). California Senate Bill 375 mandated that all regions develop a coordinated regional land use plan and transportation plan that reduce greenhouse gas emissions; thus the Bay Area and other regions in California have adopted some of the most sophisticated regional land use plans in the United States. Partner agencies on this Project have concluded that the transit capacity improvements to be evaluated in this work plan are essential to facilitate the growth in Plan Bay Area.

Alignment with Economic Plans: This project has also risen in priority as the region's economic growth targets in Plan Bay Area are quickly coming to fruition and will need to be served by increased transit capacity. Job growth in downtown San Francisco has generated record ridership growth over the last several years at AC Transit, BART, and SFMTA. BART has experienced an average annual increase in ridership of 5.3 percent since 2010, and six percent over each of the last two years. AC Transit systemwide ridership rose percent between 2012 and 2013. Transbay bus ridership grew 20 percent between 2012 and 2013. SFMTA experienced a ridership increase of over 4 percent since 2011. This increase has occurred in the face of service restructuring and reductions brought on by the economic recession. These increases in demand have led all of the transit operators to begin experiencing crowding, delays, and public perception issues associated with capacity constraints. The Bay Area Council – a membership-based policy organization representing 275 of the region's largest businesses – has expressed support for this project and understands the capacity constraints of transit and the jobs-housing

imbalance issues facing the region. The Council will be working in partnership with MTC in the coming year to develop the region's first Economic Development strategy.

4. Environmental Sustainability:

Ensuring that the region can continue to capture new riders on transit is critical to ensuring the successful implementation of *Plan Bay Area* and its target of reducing greenhouse gas emissions by cars and light trucks by 18 percent by 2040. The primary way that Plan Bay Area achieves this goal is concentrating the region's future growth near its core transit systems – which therefore elevates the need for additional core transit capacity. By focusing growth, *Plan Bay Area* also sets a goal that 100% of future growth occurs in existing urbanized areas, preserving habitats and avoiding a range of adverse impacts on air quality, and stormwater runoff. *Plan Bay Area's* focused growth pattern served by robust transit service will lessen pressure to develop open space, reduce particulate matter from vehicles and is critical to attainment of the Plan's greenhouse gas reduction targets. Addressing capacity and connectivity in the Core is critical to successful implementation of Plan Bay Area.

The region is also conducting sea level rise vulnerability and adaptation planning. Funding for these studies has been provided by FHWA and FTA through pilot programs. FHWA has funded two Adapting to Rising Tides Pilot projects that have identified the eastern portion of the Transbay tube as vulnerable to sea level rise. The FTA funded a BART study to evaluate vulnerabilities to sea level rise or extreme weather events for a few stations in Alameda County. The capacity upgrades developed through the Study will provide for system redundancy that increase the region's adaptive capacity to respond to sea level rise, and the Agency Team will integrate finding from the vulnerability and adaptation work, as appropriate, into this Study's recommendations.

5. Safety:

Plan Bay Area establishes a target of reducing collision injuries and fatalities by 50 percent, and increasing daily time spent walking and biking by 60 percent. Improving transit service and increasing the share of commuters taking transit will help facilitate this goal. Capacity improvements along each corridor, such as larger platforms, additional station access points, or improved station circulation, will also provide for continued safe operations of the transit system.

Secondary Criteria:

Innovation:

This project will consider innovative infrastructure technologies and policies. These include implementing capacity enhancement techniques rarely used in the US, such as two-sided boarding platforms and platform doors. It will also consider bus contraflow lanes on existing bridges. It will explore innovative pricing strategies, such as peak pricing on the BART system. If a preferred alternative includes new rail stations, TOD implementation strategies will include innovative financing and value capture approaches for both infrastructure and development, such as expanding the innovative Transit Oriented Affordable Housing Fund and implementing transit benefit assessment districts (both of which are currently being explored).

Partnership:

This project will be completed through unique partnerships of multiple transit agencies and MTC. Alternative alignments will be developed in partnership with local governments and with

consideration of the land uses, major destinations, employers, and institutions that could potentially be connected.

5. GRANT FUNDS & SOURCES/USES OF PROJECT FUNDS

Project budget is approximately $3 million. Assumed funding split is as follows:

- TIGER 6 (FTA): $ 2,000,000
- Local Match: $1,000,000 (non-federal funding provided by Agency Team)
    - MTC: $300,000
    - SFCTA: $300,000
    - SFMTA: $200,000
    - BART: $100,000
    - AC Transit: $100,000
- **TOTAL: $3,000,000**

Project Schedule

Overall schedule is approximately 28-30 months. Please see Appendix 1 for details.

6. PROJECT PARTNERS

The Study will be performed by an innovative multi-agency partnership. The Study will be led and administered by the MTC in close partnership with SFMTA, BART, AC Transit, and SFCTA (Agency Team). Generally, the role of MTC and SFCTA is to facilitate an objective analysis of capacity needs and the most effective solutions to meet these needs by corridor, while the roles of BART, SFMTA, and AC Transit are to provide expertise on their respective transit system conditions, needs, design standards, and other agency-specific considerations. Both these roles are expected to rely on consultant support procured competitively. The Study seeks to reach consensus among all Agency Team members on the short- medium- and long-term priorities.

The grant applicant and overall project lead will be the **MTC**, headquartered in Oakland, CA. MTC is the Metropolitan Planning Organization (MPO) and Regional Transportation Planning Agency (RTPA) for the 9-County San Francisco Bay Area, which includes the counties of Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma. MTC has responsibility for regional transportation planning in the Bay Area, and has recently adopted the landmark *Plan Bay Area* document described in the introduction and will ensure the outcomes of the Study are considered in future regional transportation plans. MTC regularly performs large, multi-jurisdictional studies in its role as the MPO/RTPA, coordinating with multiple agencies over many years to regularly produce nationally recognized plans.

As the Congestion Management Agency (CMA) for San Francisco **SFCTA** has a wide range of responsibilities, which include preparing the long-range Countywide Transportation Plan, prioritizing state, and federal transportation funds designated for San Francisco, developing and operating a computerized travel demand-forecasting model, and implementing the state-mandated Congestion Management Program (CMP). SFCTA will provide analysis and evaluation expertise for the study and ensure the Study outcomes are considered in future countywide planning initiatives. SFCTA regularly manages large corridor-level studies within San Francisco.

Three transit-operating agencies will guide consultant project development work for concepts affecting their transit systems.

- **BART** is a three-county district operating rapid rail services in the Bay Area. BART will direct consultant project development work for Transbay Corridor capacity upgrades to the BART system. BART has operated rail service for 42 years, and regularly conducts complex planning and environmental documentation studies for extensions and other projects throughout the district. The BART system is currently being extended to Sane Jose, Oakland International Airport, and eastern Contra Costa County in the inner East Bay. BART's average weekday ridership is approximately 400,000 riders per day.
- **SFMTA** is responsible for the management of all ground transportation within San Francisco, including the Muni system. SFMTA will direct consultant project development work for the San Francisco Muni Metro Corridor. SFMTA's Muni transit system has been in operation since 1912, and has assumed responsibility for transit services operated by predecessor private carriers that have been in continuous operation since 1860. SFMTA regularly conducts complex planning and environmental documentation studies for large capital projects and extensions throughout SFMTA's service area. The SFMTA system is currently being expanded to include the Central Subway line that will connect Chinatown and Union Square with the 4th and King Caltrain Station. SFMTA's ridership is approximately 700,000 per weekday.
- **AC Transit** is a two-county district operating Transbay and local bus services. AC Transit will direct consultant project development work for Transbay Corridor capacity upgrades to the AC Transit System. AC Transit has been in operation for 54 years, after taking control of formerly privately operated streetcar and bus systems. AC Transit regularly conducts complex alternative analysis and environmental documents for extensions throughout the district. AC Transit's weekday ridership is approximately 200,000 riders per day.

7. PROJECT READINESS

The Study is a natural extension of work already underway in the Bay Area. Several large core capacity projects were included in *Plan Bay Area* and are underway in the region, such as construction of the new Transbay Terminal, Transbay Bus Improvements, BART Metro, and SFMTA's Transit Effectiveness Project. The purpose of the Study is to develop new options for inclusion in the update of *Plan Bay Area* in 2017, and to provide direction for future major investments.

MTC has conducted several predecessor studies that are directly relevant to the Study, and will provide valuable data and input. The Regional Rail Plan, adopted in 2007, first proposed many of the ideas now included for further development in the Study, such as a second Transbay Tube, and the BART Metro concept. MTC conducted Bay Crossings studies (2000 and 2012), which developed significant travel demand data and explored alternatives for additional bay crossings.

MTC recently concluded the Transit Sustainability Plan (TSP). The TSP looked at many aspects of transit operations in the Bay Area, and one of the component sub-tasks was to analyze Transbay bus services operated by AC Transit. The Transbay bus service analysis has recently concluded and will provide valuable input into the Study.

The Bay Bridge Corridor Congestion Study, conducted in 2011 by AC Transit in conjunction with the Transbay Joint Powers Authority, found that future traffic growth along the Bay Bridge Corridor would result in a substantial worsening of congestion as well as a significant

degradation to transit operations. The Bay Bridge corridor study examined alternatives for using the existing capacity more efficiently to better meet the demand for Transbay trips.

MTC also recently initiated a project implementation program in the region called the Transit Core Capacity Challenge Grant. This program packaged several large, ready-to-go core capacity projects and identified funding to proceed with implementation. Projects within this implementation program include BART's Train Control Modernization Program, and fleet and maintenance facility replacement and expansion programs for each of the three transit operating agencies participating in the Study.

Building on the Regional Rail Plan, BART completed the Sustainable Communities Operations Analysis (SCOA) study in 2013 (see Appendix 4), and identified phased projects and operating plans to increase capacity on the BART system up to the point of requiring a second Transbay Tube. Information developed during the SCOA will feed directly into the Study.

SFMTA is currently conducting a Rail Strategy Study, which is scheduled to be completed in December of 2014. The rail study will develop alternatives along the Metro Corridor for examination in the Study, such as configuration or operational changes at junctions and portals. SFMTA has also recently adopted the Transit Efficiency Program (TEP) that looked at the bus side of SFMTA's operation, and SFMTA is in the process of implementing recommendations from the TEP.

Together, these prior studies provide a solid base for moving forward.

APPENDIX 1, DETAILED PROJECT SCOPE, SCHEDULE AND BUDGET

Preliminary Project Scope

Overview

The Study proposes to identify, evaluate and prioritize a package of investments that expand transit capacity and improve reliability and connectivity to major Core San Francisco job centers. The main Study objectives are to: 1) identify and prioritize feasible short-, mid-, and long-range transit improvements to maintain and increase transit capacity and improve reliability and connectivity and 2) develop scope for prioritized projects to ready them for subsequent project development phases. This section describes a proposed scope of work to achieve these objectives.

The Study will be led and administered by MTC in close partnership with participating agencies: SFMTA, BART, AC Transit, and SFCTA (collectively the Agency Team). The Study is an innovative blend of regional planning work led by the region's Metropolitan Planning Organization/Regional Transportation Planning Agency (MPO/RTPA), supplemented by more focused work by the transit operating agencies on specific corridors. Generally, the role of MTC and SFCTA is to facilitate an objective analysis of capacity needs and the most effective solutions to meet these needs by corridor, while the roles of BART, SFMTA, and AC Transit are to provide expertise on their respective transit system conditions, needs, design standards, and other agency-specific considerations. The Agency Team will primarily utilize consultant support competitively procured to conduct the analysis.

Summary

The outcome from the Study will be regional agreement on a plan for phased projects to enhance current system capacity to handle growing demand in the two subject corridors. These agreed upon enhancements will be incorporated as possible into MTC's future regional transportation plan, the update to *Plan Bay Area*. For the longer term, the Study will define major regional infrastructure improvements and supportive policies and strategies in the Transbay and Metro corridors as part of a framework for sustainable growth in the region.

In the **Transbay Corridor**, the study will define the maximum capacity of the system if every component of the current system were to be enhanced as much as possible, and then beyond that, will look at a variety of potential solutions that include major new infrastructure construction in the corridor. The analysis will also consider additional transportation system management and demand management strategies that can delay the need for major infrastructure projects.

In the **Muni Metro Corridor**, the Study will allow SFMTA to take the next steps in removing bottlenecks to access to/from the local rail network at key regional and national rail connections. Improvements to regional rail connections to BART and Caltrain would be developed in detail. Capacity improvements for service that connects to the under construction Transbay Terminal and future California High Speed Rail San Francisco Terminus would also be included along with concepts for potential rail network expansion where ridership demand will require high capacity transit.

Task 1. Project Start-up and Ongoing Management

Project start-up and ongoing management activities would include:

- Refining a work plan and budget by task
- Producing a Project Charter that confirms Study goals and objectives, roles and responsibilities of participating agencies, structure for collaboration and reaching agreement across agencies (e.g. when board actions/reports are required for different agencies, how to govern decision-making, etc.)
- Procuring a consultant team and ongoing administration
- Regular coordination meetings among Agency team and Consultant

Deliverables: Refined scope of work and budget by task, Project Charter, Consultant contract

Task 2. Public and Stakeholder Outreach

The Study will include a wide range of public and stakeholder outreach activities including traditional and innovative approaches.

a. Public Outreach

An Outreach Strategy will be produced during Study initiation that describes outreach goals and objectives as well as a work plan to notify and seek input from stakeholders and members of the public over the course of the Study. All members of the Agency Team have extensive experience in seeking public input and securing stakeholder engagement in planning processes. As part of Outreach for *Plan Bay Area,* MTC facilitated an extensive regional process with a wide range of stakeholders including county congestion management agencies, local governments and transit operators, environmental and equity advocates, and workforce development organizations to identify a framework for regional growth and transportation investments that can address these concerns. The Outreach strategy will build on lessons learned from past outreach successes and utilize existing stakeholder forums to the greatest extent possible.

The Outreach Strategy will include Title VI outreach and is expected to include in-person and online outreach techniques and opportunities provided in a number of languages to ensure a diverse range of opportunities for the public to participate in the project. Outreach would include engagement with key stakeholders such as business coalitions, advocacy groups, and business improvement districts, as well as general public meetings as appropriate.

While it would be further detailed as a part of Outreach Strategy development, generally, two outreach phases are envisioned:

Phase 1 would happen after completion of Task 4 and be focused on:

- Providing an overview of the purpose of the Study and the evaluation framework
- Sharing the results of the existing and future needs analysis (Task 4), including capacity goals by corridor by time horizon
- Summarizing projects/policies/operational strategies that have already been defined by corridor during predecessor planning efforts

- Understanding the public's issues and comments around the various alternative investments to be evaluated
- Seeking input on additional ideas that should be considered for development and evaluation.

Phase 2 would happen after completion of Task 9 and be focused on:

- Sharing what was heard in Phase 1 and how it was used
- Sharing the results of the evaluation and prioritization of high-performing concepts by time horizon
- Seeking feedback on stakeholder preferences among these concepts

b. Transit Agency Outreach

In addition to the Agency Partners, additional relevant public agencies will also be consulted at key points throughout the course of the Study. MTC will facilitate regular meetings with a Technical Advisory Committee, expected to include participation from all Agency Partners as well as other transit operators in the Core, County Congestion Management Agencies, City staff from local jurisdictions, local Federal Transit Administration staff, and the California Department of Transportation. This group will be consulted at key points throughout the course of the Study.

c. Local Government Outreach

At key points throughout the process, relevant staff from key local governments including in particular the Cities of Oakland and San Francisco will be engaged to ensure that potential modifications to service or new infrastructure investments generally align with their intended future land use visions. Elected officials from local governments will also be engaged through their participation in other Plan Bay Area activities; to ensure maximum efficiency, these efforts will be synchronized.

Deliverables: Public Outreach Plan, TAC meeting materials and summaries, Phase 1 and Phase 2 Outreach Materials and Summaries.

Task 3. Existing/Future Needs Synthesis and Identification

Together, the Transbay corridor and Muni Metro spine comprise the backbone of the Bay Area's core transit system. Plan Bay Area will sustainably manage future regional growth, but its increased travel demand is expected to fall particularly heavily on several downtown San Francisco transit stations, along the Transbay and Muni Metro Corridors. The key challenge addressed in the Study will be developing concepts to expand capacity on the very successful Transbay and SF Muni Metro trunk transit services that are currently operating at, near or over-capacity levels due to increasing ridership.

The main goal of this task is to establish target peak hour capacity goals for each of the Study Corridors and identify key transportation challenges facing the Study Area and Corridors. Sub-tasks include:

a. Establish project goals and objectives. The Agency Team will work with project stakeholders to define the project goals and objectives. The goals and objectives will then be used to frame the Evaluation Criteria developed in Task 4.
b. Quantify existing and planned future capacity of those projects already in development by Study Corridor and Mode. Operators will be asked to confirm or update the latest assumptions. This effort will also include information about capacity provided by employer shuttles operating to/from/within the Core.
c. Market Demand Analysis by Study Corridor. This task will utilize *Plan Bay Area* land use to forecast travel demand by corridor for short- medium- and long-term horizon years. The analysis would include:
    i. Identify the major travel markets for each corridor. For example, in the Transbay corridor, identifying the most common origins in the region to destinations in San Francisco, could inform new AC Transit bus routes that could serve origins and destinations not near existing BART stations in the shorter-term. Similarly, identifying these same Transbay travel markets could inform the ideal route for a second BART Transbay tube in the longer term.
    ii. Forecasting future travel within the region.
    iii. Determine the total number of forecast trips and peak period trips by all modes by corridor.
    iv. Using the results of the forecasts, a capacity target by corridor by travel market will be established.

Deliverables: Technical memos identifying: (1) the study goals and objectives, and (2) identifying and synthesizing future needs, quantification of existing and planned capacity by study corridor and mode, and market demand analysis. Maps and extensive data shall support the technical memo(s).

Task 4. Identify Transportation Challenges Facing the Study Area and Corridors

a. Synthesize past studies/work to identify i) constraints/needs to maintaining/increasing capacity ii) capacity improvement concepts that have already been developed: Several past studies have been completed or are currently in progress that identify transit system needs and/or have developed capacity improvement concepts for some of the Study Corridors. With limited effort, this task would allow for a small level of effort to synthesize all relevant past work, including core maintenance/State of Good Repair needs that must be achieved to maintain existing capacity.
b. Identify key transportation challenges in the Study Area and Corridors. The challenges will include both current and future challenges to providing a reliable, efficient transit system to meet the projected demand. It is anticipated that the challenges will include but not be limited to capacity constraints, operational challenges, track and right of way limitations, and vehicle constraints.

Deliverables: Technical memo identifying key transportation challenges constraining the transit system in the Study Area and Corridors

Task 5. Evaluation Framework

An evaluation framework will be established to translate the Study's goals and objectives into qualitative and quantitative metrics that can be used to screen and prioritize strategies and identify appropriate methodologies for carrying out the evaluation. The evaluation framework will build off the robust project performance analysis, including project level benefit cost analysis, MTC conducts for the regional transportation plan, as well as project analysis frameworks used by the participating agencies in establishing their investment priorities. The framework will also take into account the performance measures currently being developed by U.S. DOT under the MAP-21 performance monitoring initiative.

The evaluation framework may include criteria such as:

<table>
<tr><td colspan="2">Primary Goal: Amount of Peak Transit Capacity by Corridor/Mode and Travel Market</td></tr>
<tr><td colspan="2">Screening-level Criteria (used in Task 7)</td></tr>
<tr><td>o Supports regional goals / targets
o Order of magnitude capital cost estimates
o Order of magnitude changes in operating costs</td><td>o Basic engineering feasibility
o Constructability
o Implementation timeframe</td></tr>
<tr><td colspan="2">Full Evaluation Criteria (used in Task 9)</td></tr>
<tr><td>o Transit travel time
o Transit reliability
o Fleet and facility needs
o Refined capital cost estimates
o Refined operating cost estimates
o Environmental considerations
o Rider experience
o Potential influence on land use and economic development
o Geographic and social equity
o Ridership</td><td>o Affordable housing/vulnerable communities
o Multi-modal and –operator integration/connectivity
o Community and stakeholder feedback
o Vehicle Miles Traveled (VMT) and greenhouse gas (GHG) reductions
o Safety</td></tr>
</table>

Deliverables: Technical Memorandum: Evaluation Framework and Methodology

Task 6. Develop Capacity Improvement Concepts

In this task, consultants will add to the existing improvement concept list synthesized in Task 4 to develop additional ways to achieve the targeted capacity by Study corridor, mode, and time horizon. In this task, the transit operators (SFMTA, BART, and AC Transit) will provide direction to consultants for development of improvement concepts specific to their systems in consideration of their agency-wide policies and other system plans and needs.

For the near future, additional capacity must come through efficient use of existing infrastructure – a strategy that is consistent with Plan Bay Area's "Fix-it First" investment strategy. BART is proceeding with several projects designed to enhance capacity of the existing system, including a new train control system and new increased capacity vehicles. The options to expand capacity in this corridor are complicated by the geography of the San Francisco Bay, and the constrained nature of the transit and highway infrastructure that cross it. Fixed links through this corridor are limited to BART's Transbay Tube, and the San Francisco-Oakland Bay Bridge. While the primary focus is the flow through the corridor connecting San Francisco with the Inner East Bay, the Transbay Corridor is fed by major travel flows from many counties and travel markets to the north, east, and south. BART's ability to handle additional demand in the Transbay Corridor is contingent on major new investments and station modifications to the BART system, some of which are underway, and some of which are unfunded. Plan Bay Area also advances the BART Metro concept, which facilitates long-term land use changes primarily by providing a high-frequency, high capacity urban core rail trunk system, with the Transbay Corridor as the central linchpin of the core system.

The Muni Metro Corridor has been incrementally upgraded over the last 30-40 years. Entry and exit points to the Muni Metro Corridor suffer from poor reliability due to the merging/diverging of multiple rail lines and the transition from manual to automatic train control. Topographic barriers provide few options for direct routes heading into or out of the financial district on a mode other than light rail. The Muni Metro Corridor provides a high-frequency local rail system, which is the core of the transit system in San Francisco, but which is also in need of capacity and operational modifications.

Concepts are expected to include the following categories:

Rail Strategies

- Interventions to increase line capacity on existing lines (upgrades to train control system, increase/enhancement to rolling stock/facilities, junction modifications, station modifications)
- Interventions to increase speed/reliability of existing lines and operate different service patterns (e.g. tail tracks, crossovers, turn-backs, and portal improvements)
- New lines (e.g. second Transbay Tube, new BART line in San Francisco extending from second Tube, Central Subway extension to Fisherman's Wharf)
- Any rail capacity improvement strategies will consider all relevant aspects of capacity including line capacity, station capacity, station access considerations, rolling stock/facilities requirements, and relevant operating plans changes

Bus strategies

- New route structure to better serve demand in East Bay as well as potential expanded employment destinations beyond downtown San Francisco such as Mission Bay and San Francisco Civic Center
- More frequent service in more high-density TOD corridors along with new vehicle fleet to increase per-trip capacity. Establishment of a transit network using Park & Rides to

efficiently carry more riders, reduce travel time through neighborhoods, and consequently improve service frequencies
- Priority treatments to provide speed and reliability including Bay Bridge contra-flow lane, transit-only lanes and transit priority on East Bay arterials and intersection treatments (signal priority and queue jumps)
- Improved coordination and implementation with private shuttles

Ferry strategies

- More frequent ferry service/additional ferry terminals
- Improved multi-modal connectivity

Policy

- Regional pick-up/drop-off within San Francisco
- Peak hour fare premiums
- Station-specific congestion pricing
- Interagency fare coordination
- Employer Transportation Demand Management engagement and coordination

Deliverable: Capacity improvement concept descriptions and visuals for each corridor, mode, and time horizon

Task 7. Screen Capacity Improvement Concepts

Using the evaluation criteria identified in Task 5, the project team will screen the concepts identified. Screening criteria will likely include: supports regional goals, potential implementation schedule, rough order of magnitude capital cost and change in operating cost, constructability and basic engineering feasibility. The goal is to reduce the conceptual alternatives to a more limited number for further project development. Preliminarily, five to ten concepts would advance to further project development.

Deliverable: Technical memo detailing the results of the screening and recommending concepts for further analysis

Task 8. Project Development

For the subset of concepts identified in Task 7 for further project development, SFMTA, BART, and AC Transit will manage consultants to conduct additional project development. Conceptual Engineering drawings to a level appropriate for evaluation and prioritization (up to 5% design for most concepts) will be developed.

Deliverables: 5% engineering drawings including horizontal and vertical alignments, typical cross-sections, service and operating parameters

Task 9. Evaluation, Prioritization, and Phasing of Capacity Improvements Concepts

Using the evaluation criteria identified in Task 5, the project team will conduct an evaluation of the concepts refined in Task 8. The goal is to prioritize the alternatives to a limited number for future project development and implementation work, and develop a preliminary recommendation for phasing by time horizon, and for inclusion in future updates of Plan Bay Area and agency planning efforts.

Potential alternatives include:

Transbay Corridor

The study will take the next step toward defining what is needed for BART and for the other modal operators to serve additional demand in the Transbay Corridor, both through enhancements to the existing infrastructure, and major construction of new infrastructure. It is important for the region to identify the point at which current infrastructure, even when modified, would not be sufficient to handle future demand. The following potential alternatives are consistent with the alternatives shown in the Regional Rail Plan and may be considered:

- No project
- Bus service and infrastructure improvements
    - Contraflow lane for AM Peak (The contraflow lane alternative will need to build on the 2010 Study. Each alternative should be defined to a higher level of engineering - assumed to be approximately 5%)
    - Bus fleet with higher capacity
    - Shift model of service to high density areas
    - Integrate Park and Ride service
- BART capacity improvements to the existing system using the current tube
- Expanded ferry system
- BART West Oakland transfer station concept with SF shuttle trains (no through service)
- Second Transbay Tube (2-track and/or 4-track)

Muni Metro Corridor

The SFMTA and SFCTA are currently developing a strategy to increase the person carrying capacity of the current Metro rail system through removal of key bottlenecks and infrastructure expansion, called the San Francisco Rail Capacity Strategy (Rail Strategy). This strategy will produce project descriptions and conceptual engineering for near term projects (0-5 years) to provide additional capacity using existing infrastructure and concepts for medium and long term projects (5+ years) that would expand the SFMTA rail system to meet projected future demand. This Study will take the projects developed in the Rail Strategy and move them forward with additional planning and engineering work. Alternatives may include:

- No project
- Supplemental bus service
- Station platform extensions

- Portal area traffic control, transit only lanes, and Transit Signal Priority
- Wayside and Automatic Train Control System upgrades
- Three and four car trains with optimized interior configuration
- Additional pocket and crossover tracks
- Operating short lines and shuttles

Deliverables: Technical memo documenting evaluation methodology, recommended priorities, and recommendations for potentially phasing capacity improvements over time.

Task 10. Refine Project Development

In this task, operators will guide the consultant team in additional scoping and project development of the highest prioritized projects, including:

a. Advance project conceptual design

b. Refine ridership estimates

c. Develop initial environmental assessment

Prepare an initial checklist assessment of environmental issues likely to be raised in future CEQA and NEPA processes, at both the Program-level and the Project-level.

d. Develop initial Title VI evaluation

Develop an initial Title VI evaluation of the preferred alternatives. Analysis will comply with FTA Title VI Circular 4702.1B Service and Fare Equity, released on October 12, 2012.

e. Phasing plan for construction and fleet expansion

Develop a phasing plan for construction of any rail alternatives that proceeds in logical segment order and allows interim operability of project phases as they are completed.

f. Refine cost estimates

Cost estimates should be completed using a format and level of detail appropriate for application for entry into the FTA New Starts process.

Deliverables: Technical memo and visuals summarizing refined project concepts and evaluation work.

Task 11. Implementation Strategy

In this task, the Agency team will communicate the results of the effort to develop regional consensus on prioritized alternatives for short, mid, and long-term improvements. An implementation strategy will be developed that references the relationship between/amongst alternatives. Prioritized alternatives will be used to aid as an advocacy platform for future funding programs, and to leverage existing funding sources.

- Identify partnerships amongst agencies necessary for implementation.
- Identify major roadblocks for implementation

- Develop project development and implementation plan, design and environmental phases, and project delivery methods
- Develop funding plan and strategy.

Deliverables: Technical memo detailing an implementation strategy.

Task 12. Draft and Final Report

The technical work completed will be summarized in a Draft Final Report. The report will be circulated for review and refined based on comments. This task also includes preparation of presentation materials and making presentations on the findings and recommendations to governing bodies of project team. A Final Report will be approved by the Agency Team.

Deliverables: Draft and Final Report, Summary Presentation

Preliminary Schedule

Year	% Cost	Cost Est.	2014									2015												2016												2017		
Quarter			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1		
Month			Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
1. Project Start-up and Ongoing Management	3%	$100,000																																			
• Project Start-up																																					
• Ongoing Management																																					
2. Public Stakeholder Outreach	8%	$250,000																																			
2a. Public Outreach																																					
• Phase 1																																					
• Phase 2																																					
2b. Transit Agency Outreach																																					
2c. Local Government Outreach																																					
3. Existing/Future Needs Synthesis and Identification	5%	$150,000																																			
4. Identify Transportation Challenges Facing the Study Area and Corridors	5%	$150,000																																			
5. Evaluation Framework	3%	$100,000																																			
6. Develop Capacity Improvement Concepts	10%	$300,000																																			
7. Screen Capacity Improvement Concepts	7%	$200,000																																			
8. Project Development	23%	$700,000																																			
9. Evaluation, Prioritization, and Phasing of Capacity Improvement Concepts	7%	$200,000																																			
10. Refine Project Development	17%	$500,000																																			
11. Implementation Strategy	3%	$100,000																																			
12. Draft and Final Report	3%	$100,000																																			
Contingency	5%	$150,000																																			
TOTAL	100%	$3,000,000																																			

Preliminary Budget

Task		TIGER Grant Funds	Local Match	Total Cost ($000s)	% of Project
1	Project Start-up and Ongoing Management	$66,667	$33,333	$100	3%
2	Public Stakeholder Outreach	$166,667	$83,333	$250	8%
3	Existing/Future Needs Synthesis and Identification	$100,000	$50,000	$150	5%
4	Identify Transportation Challenges Facing the Study Area and Corridors	$100,000	$50,000	$150	5%
5	Evaluation Framework	$66,667	$33,333	$100	3%
6	Develop Capacity Improvement Concepts	$200,000	$100,000	$300	10%
7	Screen Capacity Improvement Concepts	$133,333	$66,667	$200	7%
8	Project Development	$466,667	$233,333	$700	23%
9	Evaluation, Prioritization, and Phasing of Capacity Improvement Concepts	$133,333	$66,667	$200	7%
10	Refine Project Development	$333,333	$166,667	$500	17%
11	Implementation Strategy	$66,667	$33,333	$100	3%
12	Draft and Final Report	$66,667	$33,333	$100	3%
Contingency		$100,0000	$50,000	$150	5%
TOTAL		$2M	$1M	$3,000	1000%