



Executive Summary



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The City/Park Streetcar Feasibility Study represents a partnership effort by the San Diego Metropolitan Transit System (MTS) and the many stakeholders who live, work, and play in Downtown San Diego and Balboa Park to determine the feasibility of a transit project connecting the two communities. The City/Park Streetcar would be the initial segment of an urban streetcar loop that is envisioned in the 2050 Regional Transportation Plan (2050 RTP) by the San Diego Association of Governments (SANDAG). This streetcar loop would eventually connect the neighborhoods of Downtown, Bankers Hill, Hillcrest, North Park, South Park, and Golden Hill.

Balboa Park is an iconic and historic destination that is popular among both locals and tourists. With approximately 14 million visitors per year, it is the nation's fourth-most-visited city park, hosting the San Diego Zoo as well as many other museums, landmarks, and cultural institutions.¹ In addition, the public institutions along Park Boulevard—which, as Balboa Park's central spine, serves as its primary access route from Downtown San Diego—share rich histories as some of the region's most important education and employment centers, to include San Diego High School, San Diego City College, and the Naval Medical Center San Diego. For this reason, the 1.5-mile Park Boulevard corridor was specifically named in the grant that funded this study as the preferred alignment corridor for a streetcar “starter line.” Additionally, the Park Boulevard corridor conforms to the future streetcar network in the 2050 RTP. The California Department of Transportation and the San Diego Gas & Electric Company provided the grant to perform this study, and consultant Parsons Brinckerhoff assisted in its completion.

Streetcars are just one of many transportation options that may be offered in an urban community. Compared to other transit modes, streetcars typically are intended for local, short-distance circulation, and are effective at providing a sense of permanence and identity within a corridor. They are intended to promote walkability and livability within communities and encourage a “park once and walk” attitude. While streetcars have historically enjoyed popular sentiment among local residents and visitors, this does not always translate into sustainable ridership levels, as ridership can vary with a number of external factors. For the most part, smart-growth land use policies, “complete street” transportation policies, and development partnerships can greatly affect the ridership and ultimate success of streetcar lines.

This feasibility study sought to address the many opportunities and constraints that would affect streetcar service on Park Boulevard. Its analysis focused on:

- Assessing potential engineering issues related to existing infrastructure and site conditions;
- Identifying and evaluating available streetcar vehicles;
- Defining a streetcar alignment within the right-of-way of Park Boulevard;
- Generating potential ridership estimates and conceptual service characteristics;
- Developing conceptual capital, operating, and maintenance cost estimates; and
- Identifying a set of potential financing options.

This study represents the first step in the process of planning and constructing a streetcar line in the City of San Diego. At this time, no specific streetcar project has been initiated, no detailed planning or design work has been performed, and no funding sources have been committed. This report is summarized as follows:

Section 2: Existing Conditions – Section 2 describes the existing conditions in the study area corridor that would affect the planning and implementation of a streetcar system, including existing plans and policies, infrastructure, utilities, right-of-way constraints, parking, and potential environmental concerns. A careful survey of existing conditions, combined with the results of several stakeholder workshops and surveys, revealed several important factors that influenced the cost and overall feasibility of the alignment alternatives for the City/Park Streetcar. These included:

¹ “2011 City Park Facts,” The Trust for Public Land, 2011.

- Required width necessary for project implementation, including possible impacts to the Park Boulevard right-of-way;
- Limitations of the Interstate 5 bridge;
- Height issues associated with the Prado Pedestrian Bridge spanning Park Boulevard;
- Potential changes to on-street and off-street parking facilities;
- Planned future pedestrian and bicycle facilities in the corridor;
- Planned future transit facilities in the corridor, including the Mid-City Rapid Bus, Mid-City Light-Rail Transit (LRT), and Downtown streetcar network; and
- Retention of the landscaped median on Park Boulevard through Balboa Park.

Section 3: Systems Requirements – Section 3 examines the design and engineering features necessary for a streetcar to operate in the Park Boulevard corridor. These include: right-of-way needs for the streetcar and LRT vehicles; proposed bicycle and pedestrian facilities in the corridor; individual station amenities including requirements for persons with disabilities; overhead catenary system and suspension poles; substation needs for the 1.5-mile alignment; the potential location of future substations as the network is expanded; and the maintenance and storage facility needs for this initial segment.

Section 4: Streetcar Vehicles – Section 4 surveys the different types and features of streetcar vehicles, including modern, historic, and replica cars. Due to the relatively straight alignment of the Park Boulevard study area, all vehicles reviewed could likely operate along the route without any problems; however, the eventual expansion of the line planned in the 2050 RTP may entail tighter turns that longer cars could have difficulty navigating. The assessment concluded that maximum design flexibility will be achieved with a vehicle that uses both sides for boarding, allows for bi-directional travel, and requires minimal track installation.

Additionally, the assessment determined that the selection of historic vehicles may require the use of modern vehicles in the corridor as well. This is due to the limited inventory and lengthy restoration time of historic cars combined with the increased demand that is projected to occur in the city's streetcar network. Essentially, the modern vehicles could be used as the everyday "workhorses" in the corridor, with the historic cars operating when their aesthetic appeal would be most appreciated, such as during weekends or special events in Balboa Park.

Section 5: Operations Plan – Section 5 provides a sample plan for operating and maintaining the City/Park Streetcar, including vehicle requirements, schedule considerations, and operational costs. The corridor would have seven stations on Park Boulevard with a total of 2.4 track miles, would run daily on 15-minute frequencies (8:00 a.m. to 6:00 p.m.), and would provide point-to-point service between the City College Trolley Station and the San Diego Zoo. This type of operating plan would require up to four vehicles to operate in the corridor.

The operation and maintenance cost estimate assumes 7,215 annual revenue hours with an annual operating cost in the range of \$1.0 million - \$1.1 million in FY 2012 dollars. It should be noted that if a modern streetcar vehicle is selected other than the Siemens vehicle currently operated by MTS, the operations and maintenance costs could be higher due to new training and parts-acquisition needs.

Section 6: Alignment Concepts and Evaluation – This section provides five different alignment concepts for the Park Boulevard segment north of I-5, with each alignment option evaluated for its implementation feasibility. The evaluation considered the engineering, operational, cost feasibility, and other site conditions such as environmental issues and consistency with planning documents. The alternatives presented in this study were evaluated by the City/Park Streetcar Steering Committee and modified as new information and community input were received.

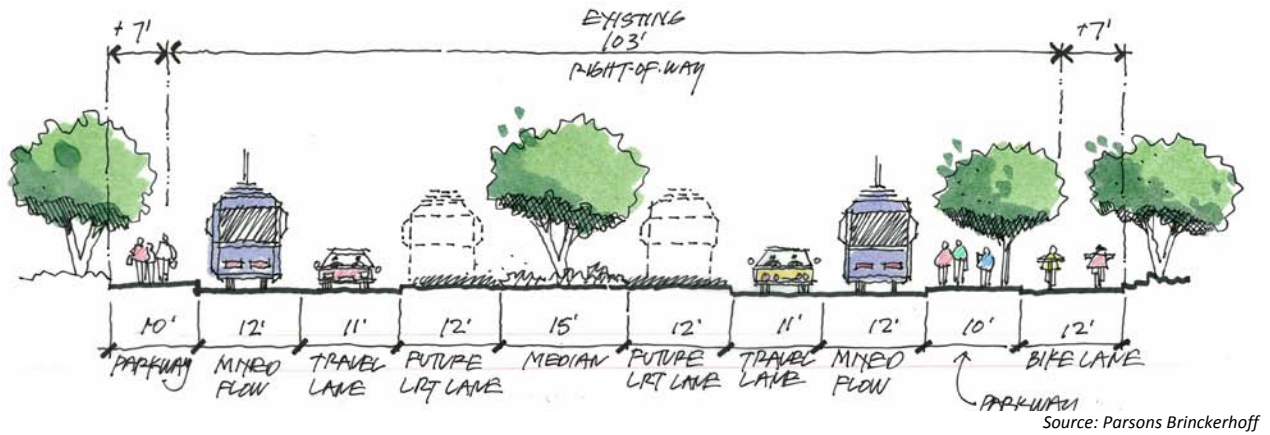
Each alignment concept describes the opportunities to best facilitate the streetcar and other design assumptions, which include the following:

- An "in-street" or mixed flow lanes for streetcars traveling in both directions;
- A new bicycle facility as defined in the City of San Diego Bicycle Master Plan;
- A future LRT right-of-way as described in the 2050 RTP;

- Pedestrian enhancements allowing for the implementation of the “Bay to Park” link on Park Boulevard; and
- Retention of the landscaped median north of Interstate 5 as the alignment travels through Balboa Park.

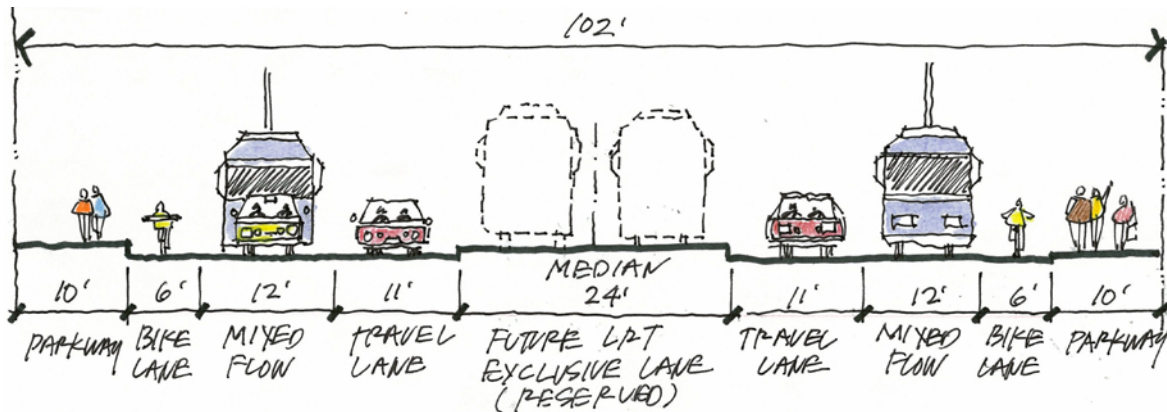
North of Interstate 5: Figure ES-1 shows the Option 4 alignment concept occurring north of the Interstate 5 Bridge. This option attained the highest score in the evaluation matrix. This is due primarily to its reservation of future LRT lanes by expanding the median, placement of a Class 1 bicycle lane on the west side of Park Boulevard (thus eliminating the conflicts between the cyclist and the streetcar), and a right-side running streetcar adjacent to the curb. The concept also provides for all the facilities outlined in the various applicable planning documents, and the additional right-of-way required is minimal, at only an additional seven feet on each side.

Figure ES-1: Option 4 Alignment Concept



South of Interstate 5: The right-of-way width remains consistent and only one alignment concept was defined south of the Interstate 5 Bridge. The cross-section for this portion of the Park Boulevard right-of-way can remain the same without any additional take for the proposed improvements. However, this design does require the elimination of all on-street parking in this portion of the corridor. A typical cross-section is shown in Figure ES-2.

Figure ES-2: South of Interstate 5 Alignment Concept



Section 7: Ridership Estimate – Ridership projections represent a reasonable estimate based on current and existing conditions. There is potential for ridership to increase beyond this level in the future due to the rising cost of car ownership, the adjacent smart-growth initiatives, the general attraction of rail-based transit to the public, and the numerous activity centers in the Downtown and Balboa Park areas. If the streetcar and other alternative-forms of transportation are given priority in the corridor, they have great potential to attract a whole new market of transit riders. Initial ridership projections for the streetcar are:

- Average Daily Ridership, Weekdays: 1,100
- Average Daily Ridership, Weekends: 1,800
- Average Total Ridership, Annual: 377,000

Section 8: Capital Cost – Capital costs for constructing the streetcar line have been estimated using an order-of-magnitude projection for the selected streetcar alignment. Costs were broken down into the following seven categories, corresponding with the Federal Transit Administration (FTA) Standard Cost Category format:

- Guideway and Track;
- Stations and Platforms;
- Support Facilities;
- Site Work and Special Conditions;
- Systems;
- Right-of-way, Land, and Existing Improvements; and
- Professional Services.

The total initial estimate for project construction (not including vehicles) is \$68.2 million, while the estimated unit price of each vehicle (including restoration of historic vehicles) is between \$850,000 and \$3,600,000.

Construction costs are based on the reasonable assumption that the existing MTS LRT facility at 12th and Imperial Avenues has the storage, maintenance, and administrative capacity that the City/Park Streetcar would require. Future expansion of the streetcar system beyond the City/Park Streetcar alignment would require additional facilities to accommodate the additional vehicles and maintenance needs.

At this time, no cost for land acquisition is identified. Land acquisition typically is a major cost driver for rail transit projects due to high price of acquiring right-of-way. However, the City/Park Streetcar's alignment is situated almost entirely within public streets or other publicly owned parcels. In exchange for lower right-of way costs, there may be other administrative and environmental challenges pertaining to the appropriation of public land.

Section 9: Next Steps: Future Activities and Funding Sources – This feasibility study is the very beginning of the process to plan and implement the City/Park Streetcar. To move the project forward to realization, several additional steps will be required. These steps include; the identification of funding sources; further planning, design, and engineering work; environmental clearance; procurement of vehicles; and actual project construction. It is anticipated that this process would require approximately five years.

This section also identifies potential funding opportunities and requirements to prepare for the next steps of project development. Based on the current economic climate as well as the recent experiences of other cities with streetcars, the greatest potential to implement the City/Park Streetcar lies in securing funding from multiple sources. This would mean investigating all potential funding sources: local/regional agencies such as SANDAG and the City of San Diego, state funding programs for transportation, federal funding grants such as the FTA New Starts and Small Starts programs, and public-private partnerships.

In contrast to LRT projects, streetcars typically receive some operational and maintenance funding from diverse local sources, rather than relying solely on the transit agency or regional transit funds (such as revenue from the *TransNet* sales tax). This alleviates the potential conflict of redirecting transit dollars from currently operating transit service to a new streetcar service. Securing operating and maintenance dollars from a variety of sources therefore can increase the feasibility of a new streetcar project, and allow its construction to occur in a shorter timeframe than typical LRT projects.