

CENTER CITY CONNECTOR



Transit Alternatives Analysis

Goals and Objectives and Evaluation Framework –
WORKING DRAFT

January 16, 2013



GOALS AND OBJECTIVES AND EVALUATION FRAMEWORK

The Seattle Center City Connector Alternatives Analysis (AA) project is a study of transit improvements in Seattle’s Center City, focused specifically on connecting north and south downtown and existing and planned streetcar lines – South Lake Union and First Hill. This document proposes goals and objectives for evaluating whether potential alternatives achieve the defined purpose and need for the project. It then proposes the process by which project alternatives will be evaluated and a set of criteria that will be used at each stage of evaluation. The study is planned to take approximately 14 months and will result in the recommendation and selection of a Locally Preferred Alternative (LPA). The process will include extensive input from the public, stakeholders, and local, regional, state, and federal agencies. Public input on the proposed goals and objectives and alternatives evaluation criteria outlined in this document will be gathered at the first public open house in February 2013.

GOALS AND OBJECTIVES

The stated needs for the Center City Connector project are captured in the following five themes: Connect, Develop, Thrive, Sustain, and Enhance, illustrated in Figure 1 and listed below with supporting objectives that have been developed based on the Purpose and Need for the Center City Connector.

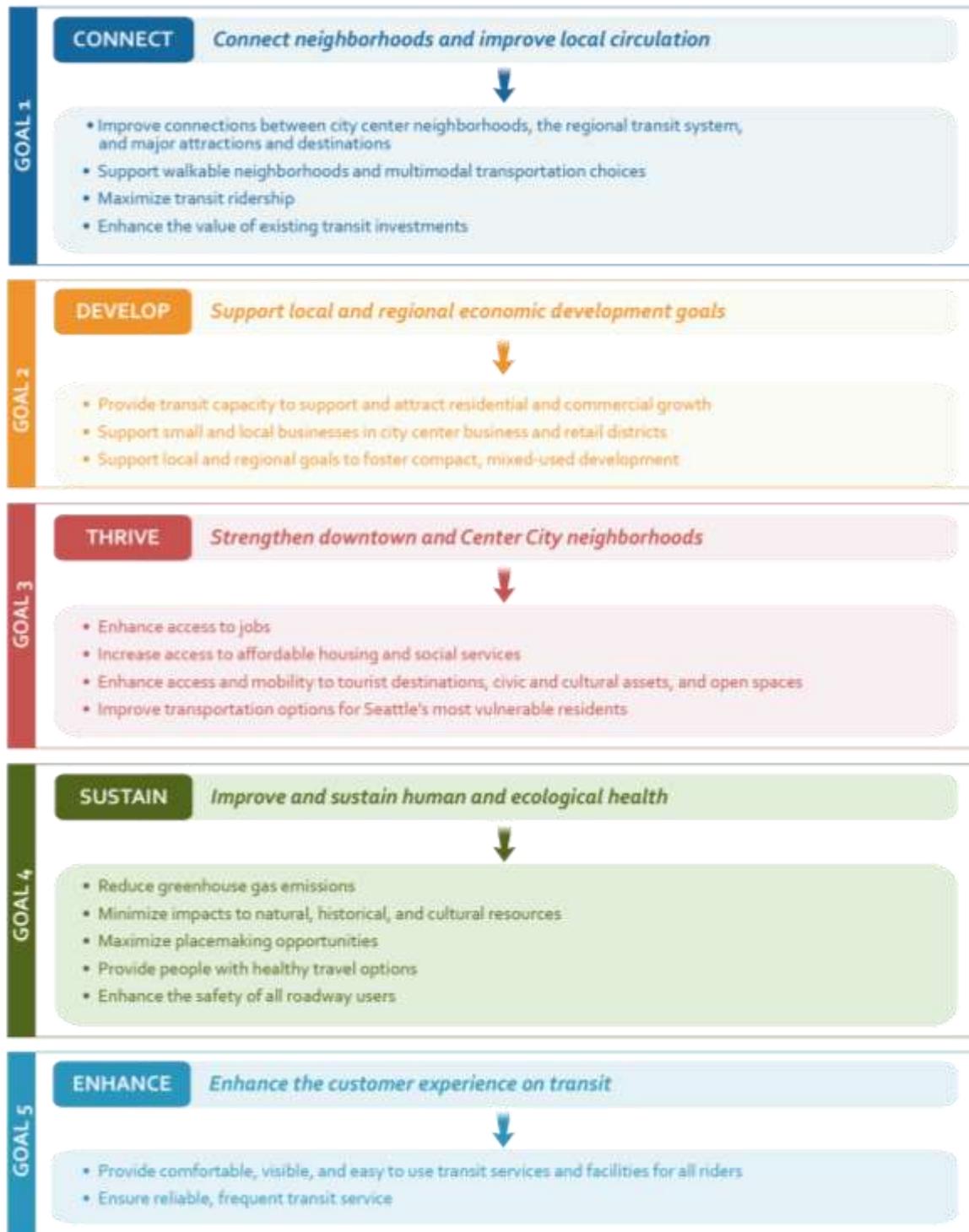
Figure 1 Project Goals



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Goals and Objectives



EVALUATION FRAMEWORK

Overview of Alternatives Evaluation Process

This document describes the evaluation process that will be used to select the Locally Preferred Alternative (LPA) for the Center City Connector Alternatives Analysis. This AA is being conducted consistent with Federal Transit Administration (FTA) guidance, which describe a process to narrow all reasonable options into a Locally Preferred Alternative (LPA). In summary, this consists of:

- **Initial Screening:** Identifying a broad range of potentially promising alternatives and screening them against the project Purpose and Need.
- **Tier 1 Screening:** Screening a range of potentially promising alignment alternatives (Tier 1 alternatives) into a short-list of alternatives. At this stage, it is assumed that the alignments can be served by either streetcar or bus modes.
- **Tier 2 Screening:** Detailed evaluation of the short-list of alternatives (Tier 2 alternatives) and mode options.
- **Selection of LPA:** Selection of the draft LPA based on the results of the detailed evaluation.

For this study, all of the Center City Connector service alternatives that will be examined as part of this AA would operate within existing roadways and no physical features of any of the anticipated alternatives should influence the selection of streetcar or bus modes. As a result, any potential alignment could be used by streetcar or any form of enhanced bus service. Therefore, to expedite the screening process, it is proposed that this study use a process in which the Tier 1 screening focuses on the selection of a short-list of alignment alternatives.¹ Once the alignments have been selected, Tier 2 alternatives will be developed in which streetcar and/or enhanced bus service would be developed along those alignments.

The screening and evaluation process builds on the Purpose and Need Statement and Goals and Objectives by focusing on the five themes and project goals identified based on the draft Purpose and Need:

- **Connect:** Enhance connections between and access to Center City neighborhoods
- **Develop:** Support local and regional economic development goals
- **Thrive:** Strengthen downtown and Center City neighborhoods
- **Sustain:** Improve and sustain human and ecological health
- **Enhance:** Enhance the customer experience on transit

The project Goal statement includes a series of objectives. Draft Tier 1 and Tier 2 criteria were developed that address each of the objectives. The draft criteria are intended to further define each objective and support evaluation of the alignments against the stated goals in a transparent and understandable manner.

¹ This type of process was recently accepted by FTA for the Providence Core Connector Study, which examined the development of streetcar service in Providence, RI, and led to a successfully adopted LPA.

Initial Screening Against Purpose and Need

This early phase screening provides a qualitative review of a broad range of potential transit alternatives against the project Purpose and Need. This initial list of mode and alignment alternatives will be developed based on the previous assessment prepared for the Transit Master Plan and on input received from Center City stakeholders and the general public through the Center City Connector AA outreach processes. Alternatives that do clearly do not meet the stated project purpose and need will be removed from further consideration. The key questions that will be used in screening each potential alternative against the Purpose and Need include:

- Is the alternative consistent with local and regional plans (summarized above)?
- Does the alternative meet the identified transportation needs (mobility and connectivity)?
- Does the alternative serve the key destinations and attractions identified?
- Is there public and stakeholder support for the alternative?

Tier 1 Screening (Alignments)

As described above, all of the Center City Connector alternatives that will be examined as part of this AA will be developed to operate within existing roadway right-of-ways, and any potential alignment could be used by streetcar or any form of enhanced bus service. Therefore, to expedite the screening process, the Tier 1 screening has been designed to focus on the selection of a short-list of alignments rather than on combinations of alignments and modes.

As presented in Figure 2, the Tier 1 screening criteria consist of a variety of qualitative and quantitative measures that will be examined at varying levels of detail. An overall single-page summary matrix will include highlights from each performance measure, and the summary matrix will be supported by a “fact sheet” for each criterion that includes more details in the form of an annotated map or a table. The fact sheet will include a map with numerical icons on one sheet, and an indexed description of specific impacts/concerns on a second sheet.

We propose to inventory and measure each alignment against each individual criterion. Each criterion will be measured using a common, easily communicated scoring system (e.g., poor, fair, better, and best). This approach will allow for fair consideration of important criteria that support the project purpose and goals, but are not easily quantified, along with measures that are quantifiable through our technical evaluation. We propose this approach because we want to use the process to weigh each alignment’s merit based on its overall ability to meet the entire spectrum of criteria, recognizing that some alignments may support some goals more strongly than others. As a result, the process is intended to be collaborative and iterative. The SDOT Steering Committee and the High Capacity Transit Executive Committee will consider each alignment and its performance against the Tier 1 criteria. We anticipate that after the initial round of evaluation, several alignments may be fairly easily discarded. We will then return to the screening criteria to consider the remaining pool of alignments and evaluate their performance to select two or three of the strongest performing options.

Tier 2 Evaluation

Once the alignments have been shortlisted, we will develop the Tier 2 alternatives, which will consist of a No-Build and up to two "Build" alternatives. For this study, the Build alternatives will consist of streetcar service along each alignment.

To support the Tier 2 evaluation, the alternatives will be fully developed in terms of:

- **Station Locations:** Identify the potential station locations on each candidate alignment. Station locations will be determined using existing transit ridership, land use data, and activity center locations together with typical stop spacing practices.
- **Operating Plans and Costs:** Develop conceptual operating scenarios for how the Center City Connector service would operate on each of the candidate alignments and for each of the potential modes. This analysis will also consider how the new service would integrate with the existing service and realize cost savings or increases. These conceptual operating plans will also support other aspects of the evaluation process such as system operating costs, ridership and potential system benefits.
- **Conceptual Engineering:** Assess how the Center City Connector could be developed on each of the candidate alignments and modes. The engineering and design assumptions will be developed in sufficient detail to support accurate capital cost estimates, right-of-way requirements, and operating procedures and facility design. The engineering estimates will be produced at a conceptual level in order to identify fatal flaw and order-of-magnitude impacts or benefits. Cost estimates will be developed employing industry standard unit cost measurements.
- **Capital Costs:** Build on the conceptual engineering design analysis to create an estimate of the capital costs associated with development of each of the selected alternatives. Capital cost estimates will be developed using quantities and technology definitions in accordance with the FTA standardized cost categories.
- **Ridership and Cost Effectiveness:** Using the station location and conceptual operating plans, the study team will develop ridership forecasts for each candidate corridor and operating mode. These ridership estimates will be used to develop cost effectiveness measures based on the latest FTA direction.
- **Transportation Impacts:** Assess how the potential alternatives will affect downtown traffic and transportation infrastructure, such as traffic circulation, parking, and bicycle and pedestrian systems.
- **Utility Coordination:** Assess the known and potential risks associated with subsurface utilities by looking for conflicts with existing utilities.
- **NEPA Compliance:** Identify any significant potential impacts on the natural environment (i.e., GhG emissions and air quality) and historic and cultural resources
- **Funding Potential:** Determine potential funding strategies, and determine whether certain alternatives may be more easily fundable than others.

Once defined, the Build alternatives will then undergo the Tier 2 evaluation, and the results of this evaluation will be used to recommend a locally preferred alternative (LPA).

As with the Tier 1 screening, the Tier 2 evaluation will be based on the project goals and objectives and will consist of a combination of qualitative and quantitative measures. In some cases, the Tier 2 measures will be the same as the Tier 1 measures, but in many cases, additional criteria will be used (for example, ridership, operating and capital costs, cost-effectiveness, and impacts on

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natural and historic resources and the environment). Also, in most cases, the Tier 2 evaluation will be more detailed than the Tier 1 screening. The proposed Tier 2 criteria are also presented in Figure 2, with additions or modifications from the Tier 1 criteria shown in the right part of the table.

The evaluation process will be iterative; if some of the alternatives perform poorly on specific criteria, the alternative(s) may be refined to see if it/they can be reasonably changed to better meet project goals. In some cases, measurement methodologies may be further developed in order to more accurately distinguish the advantages and disadvantages between alternatives. Ultimately, the candidate alternatives will be analyzed carefully in comparison with one another and their ability to meet project goals and function as an effective part of Seattle's local and regional transportation system.

Evaluation Documentation

The evaluation methodology and the findings of both phases of the two-tier evaluation screening will be included in a final Evaluation Summary report, along with the quantifiable data and qualitative input used to support the selection of the LPA. The evaluation measures presented are consistent with the new regulatory framework for FTA's evaluation and rating of major transit capital investments through the New Starts/Small Starts program.

In many cases Tier 2 criteria are the same as Tier 1. However, in many cases the level of analysis for Tier 2 will be more detailed and, where appropriate, analysis will be conducted with station locations in mind rather than using a more general assessment of the alignment (buffer analysis). More detailed evaluation methods will be included in subsequent technical memoranda detailing methods for key study technical elements (i.e., ridership forecasting, operating plan development, etc.).

The evaluation framework responds to locally developed goals and objectives as presented in previous sections. The Tier 1 and Tier 2 analysis framework is designed to ensure that the evaluation process is responsive to stakeholder and public interests and identified needs. Substantial public comment was collected as part of the 2012 Transit Master Plan and is considered in this document. Additional input was collected from interviews with over 40 individual stakeholders and organizations from the Center City that were interviewed in November 2012. Further input will be collected through the first public open house meeting for the Center City Connector Transit Alternatives Analysis to be held in February 2013. This draft will be revised to reflect key input from that event.

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Figure 2 Tier 1 and Tier 2 Screening Framework

Objective	Tier 1		Tier 2	
	Screening Criteria	Presentation	Screening Criteria (Additional/Modified)	Presentation (Additional/Modified)
CONNECT: Enhance connections between and access to Center City neighborhoods				
<ul style="list-style-type: none"> Improve connections between Center City neighborhoods, the regional transit system, and major attractions and destinations Enhance the value of existing transit investments Maximize transit ridership 	<ul style="list-style-type: none"> Ability to provide “last mile connectivity” and expandability Connections with existing transit system <ul style="list-style-type: none"> Central Link Light Rail Multimodal Hubs 3rd Avenue Transit Mall Metro Rapid Ride Existing Streetcar (South Lake Union) Travel times Potential connections to future services (First Hill Streetcar, Link extensions) 	<ul style="list-style-type: none"> Map highlighting connections with existing transit services, including “last mile connectivity” and potential connections to future services (i.e. regional rail). Findings will also be summarized in an accompanying table Map highlighting specific effects (positive and negative) related to ease of connections Table of point-to-point transit travel times for key Center City trips in corridor Map showing projected travel times between key points and alignments 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none"> See Tier 1 (within ¼ mile of proposed stations/stops)
<ul style="list-style-type: none"> Improve connections between Center City neighborhoods, the regional transit system, and major attractions and destinations 	<ul style="list-style-type: none"> Number of activity centers and attractions served Activity levels: <ul style="list-style-type: none"> Employees Households Hotel rooms Special event venues Quality of transit connections between activity centers and alignment 	<ul style="list-style-type: none"> Map showing alignment and activity centers and attractions within ¼ mile of proposed alignments Table showing numbers for each type of activity with ¼ mile Map highlighting strengths and weaknesses of pedestrian environment and connections to alignment and activity centers. 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none"> See Tier 1 (within ¼ mile of proposed stations/stops)
<ul style="list-style-type: none"> Support walkable neighborhoods and multimodal transportation choices Maximize transit ridership 	<ul style="list-style-type: none"> Quality of pedestrian and bicycle connections Potential for improvement to pedestrian and bicycle infrastructure 	<ul style="list-style-type: none"> Pedestrian and bicycling conditions along each alignment based on PMP and BMP Update analysis Assessment of access for persons with disabilities Qualitative assessment of compatibility with Seattle Bicycle Master Plan Update bike facility routes Qualitative assessment of potential for future improvements 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Maximize transit ridership 	<ul style="list-style-type: none"> Ridership potential Operating costs Capital costs 	<ul style="list-style-type: none"> Ridership: <ul style="list-style-type: none"> Center City Connector service Operating costs: <ul style="list-style-type: none"> Center City Connector alternatives Impacts on existing system Capital cost of Center City Connector alternative 	<ul style="list-style-type: none"> Ridership Operating costs Capital costs Cost effectiveness Operating efficiency 	<ul style="list-style-type: none"> Ridership: <ul style="list-style-type: none"> Center City Connector service Total corridor ridership Operating costs: <ul style="list-style-type: none"> Center City Connector alternatives Impacts on existing system Capital cost of Center City Connector alternative Cost effectiveness: <ul style="list-style-type: none"> Annualized capital and operating cost per trip including extra weight given to transit dependent riders Change in operating and maintenance (O&M) cost per “place-mile”²

² Place-miles are the passenger capacity of a vehicle multiplied by its annual revenue-miles of service and summed over all vehicles in the transit system.

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Objective	Tier 1		Tier 2	
	Screening Criteria	Presentation	Screening Criteria (Additional/Modified)	Presentation (Additional/Modified)
DEVELOP: Support local and regional economic development goals				
<ul style="list-style-type: none"> Promote new development where residents and workers have transportation options 	<ul style="list-style-type: none"> Acres of undeveloped/underdeveloped land within ¼ mile of alignment Square feet of vacant space/surface parking within ¼ mile of alignment Current value of vacant and re-developable land within ¼ mile of route Vacant/re-developable land/projected corridor development rates Ratio of land value to improvement value 	<ul style="list-style-type: none"> Maps and table showing total undeveloped/underdeveloped land, square footage of vacant space and surface parking and current value of vacant and re-developable land within ¼ mile of alignment Table showing ratio of assessed land values to improvement values within ¼ mile of alignment Map of alignments showing existing land use within ¼ mile of alignment and map/table showing development currently being planned/considered relative to alignments 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none"> See Tier 1
<ul style="list-style-type: none"> Support small and local businesses in Center City business and retail districts 	<ul style="list-style-type: none"> Number of small businesses (specific threshold to be determined) with access to Center City Connector (local businesses to be included depending on data availability) 	<ul style="list-style-type: none"> Map showing small business locations (local businesses to be included depending on data availability) 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none"> See Tier 1
<ul style="list-style-type: none"> Provide transit capacity to support and attract residential and commercial growthSupport local and regional goals to foster compact and mixed-use development 	<ul style="list-style-type: none"> Number of projected future workers and residents with access to Center City Connector Projected capacity to accommodate new residential units and employment (jobs) within ¼ mile of proposed alignments (based on DPD Buildable Lands Analysis) Supportiveness of development character 	<ul style="list-style-type: none"> Map of projected 2030 employment within ¼ mile of proposed alignments Map of projected 2030 residents within ¼ mile of proposed alignments Map of projected new residential and employment capacity Map of existing and proposed publicly supported housing within ¼ mile of proposed alignments Assessment of corridor development form and character to support walking and transit travel 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none"> See Tier 1
THRIVE: Strengthen downtown and Center City neighborhoods				
<ul style="list-style-type: none"> Enhance access to jobs 	<ul style="list-style-type: none"> Number of Center City residents with access to Center City Connector alignments (live or work), including connections to other lines Transit supportive plans and policies 	<ul style="list-style-type: none"> Maps showing home and work locations of Center City residents who live or work within ¼ mile of proposed alignment (by block) Assessment of local policy framework 	<ul style="list-style-type: none"> Likelihood of job growth Demonstrated performance of local plans and policies 	<ul style="list-style-type: none"> Projected domestic jobs in corridor Assessment of local data
<ul style="list-style-type: none"> Increase access to affordable housing and social services 	<ul style="list-style-type: none"> Number of affordable housing units with access to Center City Connector Number of social service sites with access to Center City Connector 	<ul style="list-style-type: none"> Map showing affordable housing units within ¼ mile of proposed alignment Number of social service sites within ¼ mile of proposed alignment 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Enhance access and mobility to tourist destinations, civic and cultural assets, and open spaces 	<ul style="list-style-type: none"> Number of visitor attractions within ¼ mile of alignment Number of convention events served and attendance at those events Number of special event activities within ¼ mile of corridor 	<ul style="list-style-type: none"> Map showing alignments with ¼ mile buffer and attraction/venue locations and associated facts (attendance, usage patterns, etc.) Table showing corridors together with number of partial and full day street closures and total days a closure occurs Discussion of compatibility with visitor and special events (including partial and full day street closures) 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> Improve transportation options for Seattle's most vulnerable residents 	<ul style="list-style-type: none"> Number of low income, zero-vehicle households, minority, elderly and persons with disabilities with access to Center City Connector 	<ul style="list-style-type: none"> Maps and tables of relative transit propensity, a measure that considers transit-related characteristics of key transit dependent populations 	<ul style="list-style-type: none"> See Tier 1 	<ul style="list-style-type: none">

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Objective	Tier 1		Tier 2	
	Screening Criteria	Presentation	Screening Criteria (Additional/Modified)	Presentation (Additional/Modified)
SUSTAIN: Improve and sustain human and ecological health				
<ul style="list-style-type: none"> Reduce greenhouse gas emissions 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> Reduction in GhG emissions Monetized value of changes in GhG emissions, energy use and air quality criteria pollutants³ 	<ul style="list-style-type: none"> Changes in GhG emissions
<ul style="list-style-type: none"> Minimize impacts to natural, historical, and cultural resources 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> Impacts to natural, historical, and cultural resources 	<ul style="list-style-type: none"> Inventory and assessment of historical and cultural resources, if any
<ul style="list-style-type: none"> Maximize placemaking opportunities Enhance the safety of all roadway users 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> Number/extent of property and other neighborhood impacts Number of parking spaces (on-street, surface, and structured) within ¼ mile (or XX blocks) of stops/stations and/or on-street spaces eliminated along alignment Monetized value of changes to safety 	<ul style="list-style-type: none"> Map and/or table showing key neighborhood and property impacts Discussion of potential changes in parking requirements
<ul style="list-style-type: none"> Provide people with healthy travel options 	<ul style="list-style-type: none"> Potential pedestrian demand score from Pedestrian Master Plan analysis 	<ul style="list-style-type: none"> Map showing potential pedestrian demand score 	<ul style="list-style-type: none"> Monetized value of changes in human health 	<ul style="list-style-type: none"> TBD
ENHANCE: Enhance the customer experience on transit				
<ul style="list-style-type: none"> Provide comfortable, visible, and easy to use transit services and facilities for all riders 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> None; used for Tier 2 evaluation 	<ul style="list-style-type: none"> Quality, comfort, ease-of-access, legibility of facilities Quality, comfort of vehicle technologies Quality of passenger amenities and infrastructure 	<ul style="list-style-type: none"> Map identifying stations/stops (level of amenities) including key opportunities and constraints Graphical depictions/illustrations of stations and vehicle features Discussion of station accessibility
<ul style="list-style-type: none"> Provide reliable, frequent transit service 	<ul style="list-style-type: none"> Number of congested intersections, based on Synchro analysis Capacity/potential for transit-priority features 	<ul style="list-style-type: none"> Map identifying congested intersections and showing key opportunities/challenges/ 	<ul style="list-style-type: none"> Travel time and travel time reliability based on microsimulation analysis of intersections and potential priority features Service frequency/span based on operating plan 	<ul style="list-style-type: none"> Travel time savings (peak vs. off-peak) at corridor or segment level Service frequency/span at corridor level

³ For monetized measures, values are generally converted from VMT into their native units (e.g., tons of emissions or total accidents) using national-level standard conversion factors. Native units are monetized based on standard dollar values. Monetized values are then summed and compared to the annualized capital and operating cost of the proposed project.