



February 22, 2012

Joni Earl
Chief Executive Office
Sound Transit
401 South Jackson Street
Seattle, WA 98104

RE: Funding and Cooperative Agreement between the Central Puget Sound Regional Transit Authority and the City of Seattle for the Implementation of the First Hill Streetcar Connector:
City Certification of Project Capital & Operating Scope

Dear Ms. Earl:

As provided for in the Funding and Cooperative Agreement between the Central Puget Sound Regional Transit Authority and the City of Seattle for the Implementation of the First Hill Streetcar Connector (the Agreement), I am pleased to submit the City of Seattle's certification that the Project meets the minimum capital and operating requirements of the Agreement.

As described further in the attached Operations and Maintenance Plan, the First Hill Streetcar links First Hill employment centers to the regional transit system via connections on Capitol Hill and in the International District. The First Hill Streetcar also connects diverse and vibrant neighborhoods on Capitol Hill, First Hill, the Central Area, the Chinatown/International District and Pioneer Square, while serving medical centers (Harborview, Swedish, and Virginia Mason) and higher education (Seattle Central Community College and Seattle University). The route, approximately 2.5 miles long, will operate primarily on Broadway, E Yesler Way, and S Jackson Street, with ten proposed stop locations in the vicinity of Broadway and E Denny Way, Broadway and Pike/Pine Streets, Broadway and Marion Street, Broadway and E Terrace Street, E Yesler Way and Broadway, 14th Avenue S and S Washington Street, S Jackson Street and 12th Avenue S, S Jackson Street and 7th Avenue S, S Jackson Street and 5th Avenue S, and S Jackson Street and Occidental Avenue S. The project facilities incorporate public art, administered through the City's Office of Arts and Cultural Affairs.

Consistent with the Agreement, the streetcar will operate Monday thru Saturday, 5 AM to 1 AM, and Sundays/Holidays, 7 AM to 7PM. Daytime headways (before 7PM) will be 10 minutes; before 6AM, after 7 PM, and on Sundays/Holidays, headways will be 15 minutes. The City anticipates entering into an agreement with King County for operation of the First Hill Line, similar to the operating agreement for the South Lake Union Streetcar. King County Metro has provided analysis and support for the development of the operating plan. King County Metro is also working with the regional fare collection system vendor on the software modifications necessary to provide on-board ORCA fare payment. We will notify King County that we have completed the certification milestone of the Agreement and would like to proceed with development of a term sheet for operation of First Hill Streetcar. We understand that Sound Transit also may be interested in future installation of ORCA ticket vending



machines at appropriate locations along the First Hill alignment, and we look forward to working with Sound Transit in expanding the availability of the ORCA fare system .

The City has reached agreement in principle with its General Contractor/Construction Manager (GC/CM) for construction of the project, and has completed a procurement process for the supply of six modern streetcar vehicles. We anticipate starting construction in the second quarter of 2012, after authorization by the Seattle City Council, and beginning operations in the 2nd quarter of 2014. The City has developed a total development cost estimate and budget of \$134 M, inclusive of GC/CM and unallocated contingencies of over \$13M. Project funding includes the \$132.78M in Sound Transit 2 total funding authorized by the Agreement, and additional City funds for utility and roadway betterments that have been incorporated into the project.

We appreciate the assistance that Sound Transit has provided throughout the planning and design process for the project, including: review and comment on the outreach plan; the environmental documentation; the design at the 30%, 60%, 90% and 100% design milestones; in selection of the GC/CM; and in development of the Request for Proposals for the vehicle procurement. As we move in to construction, we look forward to continued Sound Transit input and interagency coordination of outreach and communications.

The project has been designed consistent with Sound Transit's recommended scope interface limits between the University Link Capitol Hill Station project and the First Hill Streetcar. The two project teams are continuing to coordinate this interface, and we are committed to ongoing construction coordination to ensure that the streetcar project does not impede construction of U-Link. Additionally, we welcome Sound Transit's input as we manage construction and operational startup to ensure that the project meets all safety and accessibility requirements.

Sincerely,



Peter Hahn, Director

Seattle Department of Transportation

Cc: Mayor Mike McGinn

Seattle City Councilmember Tom Rasmussen, Chair, Transportation Committee

SEATTLE STREETCAR FIRST HILL LINE

Operations & Maintenance Plan

v 03 February 2012

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EXECUTIVE SUMMARY

The First Hill Streetcar links First Hill employment centers to the regional transit system via connections on Capitol Hill and in the International District. The First Hill Streetcar also connects diverse and vibrant neighborhoods on Capitol Hill, First Hill, the Central Area, the Chinatown/International District, and Pioneer Square while serving medical centers (Harborview, Swedish, and Virginia Mason) and higher education (Seattle Central Community College and Seattle University). The route, approximately 2.5 miles long, will operate primarily on Broadway, E Yesler Way, and S Jackson Street, with ten proposed stop locations in the vicinity of Broadway and E Denny Way, Broadway and Pike/Pine Streets, Broadway and Marion Street, Broadway and E Terrace Street, E Yesler Way and Broadway, 14th Avenue S and S Washington Street, S Jackson Street and 12th Avenue S, S Jackson Street and 7th Avenue S, S Jackson Street and 5th Avenue S, and S Jackson Street and Occidental Avenue S. The streetcar trackway is at-grade operating primarily in mixed flow with general purpose traffic, with exclusive streetcar trackway segments along 14th Avenue S (southbound between Yesler Way and S Jackson Street) and at the terminal locations.

The streetcar will operate Monday thru Saturday, 5 AM to 1 AM, and Sundays/Holidays, 7 AM to 7PM. Daytime headways (before 7PM) will be 10 minutes; before 6AM, after 7 PM, and on Sundays/Holidays, headways will be 15 minutes. Daily patronage is expected to reach 3000 passengers in the opening year of service, with potential for 6,000 to 9,000 daily passengers.

The fleet consists of six 66-foot modern streetcar vehicles to be supplied by Inekon, a Czech Republic Corporation. The cars draw traction power from an overhead catenary system providing 750 volts DC, and also operate with power from an On-Board Energy Storage System (OESS). Each car seats 30 passengers, two wheelchair passenger locations can accommodate approximately 40 standees for a capacity of 70 passengers.

The Operations and Maintenance Facility (OMF) is located on the City of Seattle's Charles Street Service Center campus, at 7th Avenue S and S Charles Street. The OMF provides storage for up to seven streetcars, a two-bay, three-car position maintenance shop featuring an overhead bridge crane, maintenance mezzanine, undercar maintenance pit, traction power substation and power supply stations, and other features typical of a rail vehicle light maintenance facility. The OMF also provides offices for administration, employee locker rooms, training rooms, a break room, and parts storage areas. Network communications for an Automatic Passenger Counting system and for the ORCA automatic fare collection system are also provided at the OMF.

The City anticipates entering into an agreement with King County for operation of the First Hill Line, similar to the operating agreement for the South Lake Union Streetcar. King County Metro has provided analysis and support for the development of this preliminary operating plan.

1 PURPOSE AND SCOPE

The Operations and Maintenance Plan (O&M Plan) describes the First Hill Streetcar, including:

- System characteristics
- Planned service levels
- Organization and staffing plan
- Normal operations
- Maintenance plans
- Travel times and headways
- Traction power system
- Operational safety and security plan
- Traffic signal operations

The O&M Plan represents a level of detail appropriate for support of all fixed facilities and systems and the preventive maintenance plans for support staffing. The O&M Plan sets the criteria for the standard response for emergencies and failure management. The O&M Plan is a dynamic living document that will be evaluated and updated periodically. The O&M Plan is supplemented by more detailed operational documents such as standard operating procedures, standard maintenance procedures, a fleet management plan, and an operating rulebook, each of which will be adapted from similar documents which guide the operation and maintenance of the Seattle Streetcar—South Lake Union line.

2 SYSTEM DESCRIPTION

2.1 Alignment & Streetcar/Traffic Operations Summary

The route, approximately 2.5 miles long, will operate primarily on Broadway, E Yesler Way, and S Jackson Street, with ten proposed stop locations in the vicinity of Broadway and E Denny Way, Broadway and Pike/Pine Streets, Broadway and Marion Street, Broadway and E Terrace Street, E Yesler Way and Broadway, 14th Avenue S and S Washington Street, S Jackson Street and 13th Avenue S, S Jackson Street and 7th Avenue S, S Jackson Street and 5th Avenue S, and S Jackson Street and Occidental Avenue S. The streetcar trackway is at-grade operating primarily in mixed flow with general purpose traffic, with exclusive streetcar trackway segments along 14th Avenue S (southbound between Yesler Way and S Jackson Street) and at the terminal locations. Movements through intersections are controlled either by the traffic signal system, or by train signals, as described below.

Streetcar/Traffic Operations Summary-Inbound from Capitol Hill to International District/Pioneer Square

Inbound trips from the Capitol Hill station at Broadway/Denny will begin after a scheduled layover (dwell time).

After the scheduled dwell time has been exhausted at the Broadway/Denny platform/exclusive streetcar tail, the operator will switch cab ends, lower the pantograph and switch to On-Board Energy Storage System (OESS) operation mode.

The operator will place a call for a train signal to progress through the signal at Broadway/Howell. Train to wayside communications will require that the pantograph be in the lowered position before the operator will receive the train signal. When signaled, the operator will proceed through the intersection and switch onto the inbound (southbound) track, operating in a general purpose traffic lane. The streetcar will then operate in mixed flow with general purpose traffic, following conventional traffic signals as it proceeds southbound on Broadway, with side platform station stops at Pike, Marion, and Terrace.

At Broadway and Boren and Broadway and Yesler, the streetcar will receive signal priority.

At Yesler and 14th, the streetcar will operate with a free right-hand turn southbound onto the exclusive streetcar track on 14th Avenue S, with a station stop at 14th/Washington. (Bicycle and pedestrian traffic will be routed to a perpendicular crossing of the tracks, with a TWC-activated blank out sign activated when the train is approaching.) The streetcar will stop at the stop controlled intersections of 14th / Washington.

At 14th/Rainier/Jackson, the streetcar will receive a TWC-activated train signal phase to progress through the intersection to westbound Jackson. The streetcar will then operate in mixed flow with general purpose traffic, following conventional traffic signals as it proceeds

westbound on Jackson, with center platform station stops at Jackson / 13th, Jackson /7th, and Jackson /5th. When approaching the 5th and Jackson platform, the streetcar will pass over a TWC loop that will activate a “Streetcar Ahead” blank-out sign mounted over the mixed flow westbound lane. This sign is advisory such as other drivers may choose to merge right, as the streetcar will make an in-lane stop on the far side of the intersection of 6th and Jackson, and other vehicles in the left lane will have to queue at the near side of the intersection of 6th and Jackson if they do not choose to merge to the right. (The right lane provides adequate capacity for existing and projected westbound traffic volumes.)

In regular service, streetcars will continue westbound on Jackson from the 5th / Jackson station stop to the Occidental / Jackson terminus stop, in mixed flow with general purpose traffic from to 2nd Avenue S. East of the intersection of 2nd Avenue S, the streetcar will operate in a streetcar-only segment as it pulls into the Occidental platform and exclusive streetcar tail track.

For schedule recovery, streetcars may turnback at the 5th and Jackson platform. The streetcar will pull into the platform as an in-lane stop. The operator will switch cabs; raise the pantograph, and place a TWC call for an streetcar signal phase to allow the vehicle to initiate an eastbound run from this location.

Streetcar/Traffic Operations Summary-Outbound from International District/Pioneer Square to Capitol Hill

For trips originating from Pioneer Square, the operator will raise the pantograph and switch cab ends upon arrival and progress eastbound with the traffic signals into a streetcar-only lane segment.

The streetcar will continue eastbound, powered via the Overhead Contact System, operating in mixed flow with general purpose traffic, following conventional traffic signals as it proceeds eastbound on Jackson, with center platform station stops at 5th, 7th and 12th. A TWC loop will detect the departure of the streetcar from the 12th / Jackson station, and a second loop will detect the streetcar at the nearside of the Jackson/Rainier/14th intersection, activating a streetcar signal phase for the eastbound to northbound streetcar movement.

The streetcar will also receive a TWC-activated streetcar signal phase for the northbound 14th Avenue S to westbound Yesler Way movement, and then will progress with general purpose traffic and conventional traffic signals to the Yesler and Broadway side platform station stop.

The streetcar will then operate in mixed flow with general purpose traffic, following conventional traffic signals as it proceeds northbound on Broadway, with side platform station stops at Terrace, Marion and Pine and signal priority at Broadway and Boren.

The streetcar will pull into a streetcar-only lane on the approach to the intersection of Broadway and Howell, and a TWC loop will activate a streetcar signal phase for the streetcar to progress through the intersection and switch to the Denny tail track/platform.

2.2 Traction Power, Overhead Contact System & On-Board Energy Storage System Summary

Trains receive power through an overhead contact system (OCS) and from an On-Board Energy Storage System (OESS).

Traction Power Substations

There are four mainline traction power substations (TPSS) that supply 750 Vdc power to the OCS; namely, King Street Station TPS, Main Street TPS, E James Street TPS, and E Howell Street TPS. Each substation is approximately three quarters of a mile apart from its adjacent substation with a power capacity of 350 kilowatts each.

Main, E James, and E Howell TPSS are factory assembled and tested prefabricated substations installed on concrete pads near the alignment. These substations are fed from a 480 Vac 3-phase utility power supply by Seattle City Light. King Street Station substation is built-in-place located in the lower floor of the facility. The substation utilizes a 208 Vac 3-phase utility power source from the building by SCL. All substations have step-up rectifier transformers to convert the ac voltage to 750 Vdc.

In addition to the mainline substations, there is a shop substation in the Operation and Maintenance Facility. The 100 kW built-in-place substation is co-located in the OMF electrical room and powers the auxiliary power supply (APS) station, also called the “stinger”, for the vehicles. The substation currently does not supply power OCS, but has provisions to provide in the future.

Overhead Contact System (OCS)

The overhead contact system is a Fixed Termination Single Contact Wire (FTSCW) system, which consists of contact wire only (no catenary with messenger wire) suspended by cross-spans and cantilevers. The contact wire is a 350 kcmil copper wire tensioned to 3000 lbs.

The OCS is sectionalized, such that each section is powered by two of the TPSSs with the exception of the area between King Street and Occidental. This minimizes the chance of service interruptions should a TPSS lose power, and also facilitates TPSS maintenance.

2.3 Stations

First Hill Streetcar stations will typically be furnished with a shelter consisting of a powder-coated steel frame, with a cantilevered tempered glass roof and windscreen, consistent with the shelters in the existing streetcar system. All shelters will have a map case (for route and/or

wayfinding information), and a digital display, providing real-time transit arrival information. Some shelters will also be equipped with an integral bench with Ipe wood slats (a highly fire and vandal resistant material). Blade signs based on King County Metro standard blade sign design will be installed at all stations. The three of the stops will serve streetcar and buses.

Platforms widths vary from 10-12 feet wide. Stainless steel barrier railings will be provided at several stations, to provide a clear separation of transit patrons from adjacent bicycle or vehicular traffic. Stainless steel leaning rails will be provided at some stops, adjacent to landscaped areas. Detectable warning pavers will be installed at all unprotected curb side edges where there are no stainless steel protective barrier railings.

2.4 Vehicles

The First Hill Streetcar fleet consists of six vehicles. The supplier of the car is Inekon, a Czech Republic corporation; final assembly is performed in Seattle, Washington by subcontractor Pacifica.

These are modern streetcar vehicles similar to those operating on the South Lake Union line in Seattle, Tacoma LINK line, Portland Streetcar line, and in numerous European cities that have retrofitted heritage streetcar lines with modern, low-floor vehicles. For the First Hill Streetcar, these vehicles feature an On-Board Energy Storage System as described further below.

Vehicles—Basic Configuration

The First Hill Streetcar vehicles are electrically powered and approximately 66 feet in length. They are double ended and double-sided (i.e., an operating cab at each end of the car and doors on both sides) enabling each vehicle to be operated in both directions and to serve stations with any form of platform (i.e., center, single side, split platform). The cars have two articulation joints enabling the vehicles to negotiate tight curves as narrow as 60-foot radius.

The center section of the car has two sets of double doors on each side. This section has a low-floor configuration to enable level boarding from station platforms. ADA boarding criteria are satisfied with the aid of a vehicle-mounted bridgeplate. In addition to limited passenger seating, two spaces are designated for wheelchair and/or bicycle accommodation.

The two end sections of the articulated streetcar are situated above the two powered truck ends. Passenger seating in these sections are accessible by stepping up from the center section. There is an additional side door provided for operator use on either end.

The vehicles meet all current ADA requirements.

Vehicles are equipped to tow or push a disabled streetcar, but are not equipped to operate in multiple units in passenger service.

Vehicles—Propulsion Control & On-Board Energy Storage System

The propulsion system will include power modulation devices, traction motors, drive gear units, control logic, friction brake blending logic, wheel spin-slide correction, circuit protection devices, and all accessories necessary to meet the specified requirements of propulsion and dynamic braking. Power modulation in both propulsion and dynamic braking will be accomplished by microprocessor-controlled, IGBT (insulated-gate, bipolar-transistor) inverters as is common in the industry.

Each streetcar will have two motor trucks, and each truck will be provided with a propulsion system functionally independent of, but coordinated with, the other truck. Each propulsion system will be able to operate independently of the other, including dynamic braking, in the event of a failure in one system. The trucks are conventional bi-motor trucks with one motor per axle and one inverter driving both axles.

The vehicle will also incorporate an onboard energy storage system (OESS) which will be capable of providing propulsion and auxiliary power during wireless operation. The OESS is essentially bank of batteries on the roof of one car section plus associated electronics which interface with the propulsion system and other car equipment and permit electrical transitions from OESS power to OCS power, and vice-versa.

In the outbound direction, operating on OCS power, the batteries will be charging whenever the pantograph is connected to the energized overhead contact system (OCS) or the car is in regenerative braking. In the wireless segment (inbound), the OESS will be charging whenever the car is in regenerative braking.

The OESS will interface with the TWC at specific locations along the right of to provide pantograph security at transitions from wireless to OCS segments. The system will include automatic controls to drop and isolate the pantograph circuit from the car high voltage bus before entering areas where wireless operation is required and to automatically raise the pantograph and reconnect it to the car high voltage bus when on wire operation is to be restored. A Wireless Operation Switch on the operator console will also permit manual control of wireless operation by the train operator, in the event that automatic operation malfunctions, or wireless operation is required at other locations. Wireless operation will be interlocked with the pantograph such that wireless operation can only be activated or deactivated if the pantograph is down. Wireless operation mode will be annunciated on the driver's console.

2.4 Operations and Maintenance Facility

A facility for storing, cleaning and maintaining the First Hill Streetcar vehicles will be located on the City of Seattle's Charles Street Service Center campus, at 7th Avenue S and S Charles Street. The OMF provides storage for up to seven streetcars, a two-bay, three-car position maintenance shop featuring an overhead bridge crane, maintenance mezzanine, undercar maintenance pit, traction power substation and power supply stations, and other features typical of a rail vehicle light maintenance facility. The OMF also provides offices for administration, employee locker rooms, training rooms, a break room, and parts storage areas.

Network communications for an Automatic Passenger Counting system and for the ORCA automatic fare collection system are also provided at the OMF.

The facility will serve as the center for First Hill Streetcar operations, reporting, dispatch, streetcar maintenance, system maintenance and administration. The shop building can accommodate three streetcars inside on the shop tracks, and up to four vehicles in the yard. Vehicle maintenance activities performed at this location include interior and exterior cleaning, daily and periodic inspections, preventive maintenance and running repairs. The facility is not equipped to perform heavy maintenance and body repair. The adjacent City of Seattle fleets maintenance shop includes a full metal working shop, paint booths, and other facilities associated with heavier maintenance and body repairs. Some heavy maintenance and repair will be contracted out.

In addition to operations and maintenance functions, some maintenance-of-way activities may also be served from the OMF.

3 SERVICE PLAN

3.1 Service Policy

The First Hill Streetcar provides an alternative connection between the First Hill Urban Center, a significant population and employment center, and Link Light Rail regional transit service. The 1996 Sound Move regional transit plan proposed a Link Light Rail station on First Hill as part of the University Link segment. The service policy objective is provide streetcar connections at adequate frequency to provide a convenient transfer for linked trips to First Hill from the regional transit system, as well as convenient frequencies for local streetcar trips. To meet these objectives, ten minute headways will be provided during peak travel periods, which may be extended throughout the day to reflect the travel patterns of significant First Hill trip generators such as medical centers and higher education. The service policy for reliability is 95% on-time trips.

3.1.1 Hours of Service

The streetcar will operate Monday thru Saturday, 5 AM to 1 AM, and Sundays/Holidays, 7 AM to 7PM. Monday through Friday, 6 AM to 9 AM and 4 PM to 7 PM are considered “peak” service periods.

3.1.2 Service Frequency

Mon-Sat <u>Day</u>	10 Minute Headways (6 AM-7PM)
Mon-Sat <u>Early Morning/Night</u>	15 Minute Headways (5AM-6AM; 7PM-1 AM)
Sundays/Holidays	15 Minute Headways (7AM-7PM)

3.1.3 Schedule Recovery

The service plan and schedule assume the use of an extra operator for “seat slides” to minimize layover requirements. (The extra operator takes the operating position when the streetcar arrives at the terminus, relieving the prior operator). Should peak period headways be impacted by traffic congestion, two measures will be available to Streetcar Operations to recover the scheduled headway:

1. Fifth-car Overlay Service During PM Peak Periods: The staffing plan provides sufficient operators and “extrabords” to add a fifth car to service during PM peak periods if necessary to maintain headways. The initial operating schedule assumes that the fifth-car overlay service will be required during PM peak periods. The span of the overlay service will be confirmed during start-up testing.

2. The First Hill Streetcar is design to accommodate turn-back operations at 5th and Jackson. If necessary, some cars could be turn back at 5th and Jackson during peak periods to maintain headways for connections to the regional transit system. Turnback operations would reduce frequency to the Pioneer Square segment

3.1.4 Special Service

Special service may be operated to accommodate additional passenger demand anticipated for special events. The operating budget includes an allowance for special service; the service plan will be amended prior to the start of operations to establish a policy for the provision of special service.

3.1.5 Bus Bridge

Should streetcar service be interrupted for due to unforeseen disruptions or for planned maintenance activities, a “bus bridge” service will be provided to bridge the gap in streetcar service. Bus bridge service may be comprised of a dedicated bus service provided along the First Hill alignment, or service notices identifying the alternate King County Metro bus service routes and transfers to use during the service disruption, depending on the length of the disruption and day of week. The service plan anticipates that bus bridge service will be provided on up to four Sundays annually to allow for major maintenance activities along the streetcar alignment that cannot effectively be provided during streetcar operations or in the hours outside of the span of streetcar service.

3.2.1 Operating Rules

The operations plan assumes that the City will contract with King County Metro to provide streetcar operations; an operations planning group has been formed with Metro to develop the agreement. Streetcar operations, including operating speeds, auxiliary track operations, radio communications, signals, and switches will follow the provisions of the King County Metro Streetcar Handbook, as modified to incorporate details specific to the First Hill Line. Reference the May 31, 2011, Revision 5 to this Streetcar Handbook, as well as the Standard Operating Procedures and Standard Maintenance Procedures, as modified to incorporate details specific to the First Hill Line. (Available from SDOT or King County Metro).

3.2.2 Fleet Requirements

The service plan will require four vehicles in operation, with a fifth car added during weekday PM peak periods. A six-car fleet is proposed, to provide a 50% spare ratio during four-car operations; the spare ratio will be 20% during five-car operations.

3.2.3 Paratransit

The City will coordinate with King County Metro for the provision of paratransit services as may be needed within the First Hill Streetcar service area. It is expected that paratransit will be addressed in the operating agreement with King County, similar to the provisions of the City-County agreement for operations of the South Lake Union line. King County currently provides transit service, including paratransit, within the entire service area of the First Hill Streetcar and South Lake Union Streetcar lines.

4 OPERATIONS

4.1.6 Fare Policy & Collection

Payment of a fare will be required of all passengers on the First Hill Streetcar. Sound Transit will establish fares through action of its Board. The City of Seattle will recommend that streetcar fare policy follow the precedent of the South Lake Union line. The South Lake Union streetcar line features three fare categories—Adult, Senior/Disabled/Medicare Cardholders, and Youth. Fares during all service hours are equal to the Metro peak hour fares for each of these categories; there are no peak/off peak fare categories for the streetcar.

The primary means of fare collection will be via automated fare transaction processors (FTP) located on board the streetcars. Patrons with ORCA smart cards will tap the FTP upon boarding; no tap-off will be required as all streetcar trips will be within a single fare zone.

Visitors or other patrons wishing to use the streetcar, who do not have the time or opportunity to purchase a smart card, will be able to purchase a single-ride ticket, using wayside ticket vending machines.

Fare supervision will be provided by King County Metro. Fare checkers will be equipped with hand-held ORCA card readers.

4.1.7 Communications and Control

O&M supervisors will use radios to communicate with operators and with maintenance personnel on the line. Managers, supervisors and technicians have company supplied cell phones to keep in communication on issues and events.

4.2.1 Vehicle Failures

Standard Operating Procedures (SOPs) are used to guide responses to in-service failures of vehicles. SOPs and a checklist enable the operator to diagnose whether the problem will permit the train to continue in service without delay or if the failure is safety critical and will require the train to be taken out of service. The SOPs include response actions to minimize any such delays.

If a train is unable to move, a second train or a non-revenue vehicle can be used to push or pull the disabled train using a tow bar hitch. Single tracking can be implemented on the double-tracked segments of the line, but this requires flagging of traffic on the affected intersections and will require more time and staff to manage this form of alternate service.

4.2.2 Traction Power Failure

The traction power system is generally adverse to failure. Each traction power substation is monitored by a Supervisory Control and Data Acquisition (SCADA) system. In addition to a blue light outside each TPSS which indicates failures within each traction power substation, monitoring of the SCADA system is via an indication panel in the central location. Since the traction power system is basically redundant, the failures are a result of a massive SCL power outage or power problem with the OCS.

In the event of a power outage maintenance crews will be dispatched to the substation or area to affect repairs. During the outage, streetcars operating on the mainline will typically be operated with power from the On-Board Energy Storage System until they reach a location where they will not impact general traffic operations (such as the Denny Terminus, Occidental Terminus, 8th Avenue S at Jackson, or southbound 14th Avenue S, all of which provide exclusive streetcar lanes) and dwell at these locations until OCS power is restored.

5 MAINTENANCE

5.1 MAINTENANCE REQUIREMENTS

All vehicles, fixed facilities and equipment require ongoing service and maintenance. This section briefly describes the kinds of activities that will be performed.

5.1.1 Vehicles

Inspection and preventive maintenance of streetcars occur at regular intervals. A preventive maintenance program is used to ensure high reliability and availability. Preventive maintenance is defined as those maintenance tasks performed to minimize the possibility of future equipment failure, reduce or minimize wear rates, replace consumable parts and satisfy warranty requirements. Recommended levels of cleaning, inspection and preventive maintenance are:

(Where applicable, manufacturer's recommended preventive maintenance cycle will be utilized in place of the following inspection and maintenance cycles)

A. Pre-Shift Inspection: Check safety-related systems, correct defects found by technicians and those reported by train operators (defect reports). Check interior and exterior cleaning, remove graffiti. Check the sand boxes, ADA ramp deployment, CCTV, communications systems and lighting.

B. Weekly Preventive Maintenance Inspection: Place STREETCAR VEHICLE over the pit. Inspect components for wear and damage. Check friction brake systems, resistors, lights, traction motors and auxiliary motors, pantograph shoes, and lube sticks. Check control functions, door operators, and fluid levels; perform lubrication where necessary; change filters; check interior and exterior cleaning, and lighting. Log into CCTV and view all cameras are functional.

C. 5,000 Mile Preventive Maintenance Inspection: Perform weekly maintenance inspection and include the following additional practices: inspect, lubricate and adjust, as appropriate, the brake actuators, air or hydraulic valves, door mechanisms. Inspect wheels for profile and wear and ground straps and axle carbons. Open all overhead enclosures, inspect, lubricate, and clean with alcohol and lint free rags. Remove and clean all HVAC filters, and clean and inspect HVAC containers. Test Pantograph for proper tension and clean away carbon buildup from pantograph frame. Open, clean and inspect the high speed circuit breaker and its enclosure. Open, inspect, clean, lubricate and test the ADA ramps, deployment (electrical and manual emergency lever), and stowage enclosures. Adjust and megger test the track brake magnets. Inspect the fenders, wheel rim lubrication, sanding hoses and their guiding, condition and adjustment of the track brakes, including guiding and suspension, car-body longitudinal and lateral guides in the truck, and truck frame, including suspension. Check the

gear box fluid level.

D. 10,000 Mile Preventive Maintenance Inspection: Perform 5,000 mile preventive maintenance inspection and include the following additional practices; Open, clean, inspect and lubricate the master controller and its enclosure. Clean, inspect and lubricate the operators seat adjustment track and controls. Clean and lubricate the operators cab door track and key lock tumbler. Open, clean, lubricate and inspect the door controller assemblies and enclosures. Open, empty, clean, inspect and lubricate the sand boxes and actuator assemblies.

E. 125,000 Mile Preventive Maintenance Inspection: Perform 10,000 mile preventive maintenance inspection and include the following additional practices: inspect and service traction motor bearings, couplings and mounts, gear boxes, truck car body connections and articulation journal bearings. Inspect the shock absorbers and suspension components. Remove the truck and wash thoroughly. Open, clean, inspect and lubricate as necessary, all knife switches, lighting fixtures, resistors and insulators. Lubricate motor bearings and change coupling oil per manufacturer's instructions. Remove and renew anti-corrosive coatings.

F. 350,000 Mile Preventive Maintenance Inspection: Perform the 125,000 Mile Preventive Maintenance Inspection, and include the following additional practices: The truck is to be disassembled into different parts - sets, to be overhauled during a major repair. Depending on the condition, dismantle the gear unit, and replace the bearings or gears. Inspect the axle. Inspect and repair the truck frame as required. Inspect the bearing condition in the articulation joint of the car body sections. After dismantling electric boxes on the roof and other components and repairing there-of, renew their coatings and anticorrosive protection. The dismantled equipment and devices are disassembled into separate parts as required, and after their repair, re-assembled. Check and repair the cabling.

G. 600,000 Mile Preventive Maintenance Inspection: Perform the 350,000 mile preventive maintenance inspection and include the following additional practices: Dismantle all the car equipment and out fittings up to a level of the primary construction. Remove the protective coatings from the car-body and truck frame. Perform an overall radiographic inspection and renew the coatings and anticorrosive protection only after a thorough repair. Use the new or refurbished parts and components to restore the car interior, and use the overhauled or new equipment and devices when reassembling the car equipment. Depending on its technical condition, the car wiring is left unchanged or made completely new. The truck is also disassembled into parts, including the gear unit. Replace the axle bearings, gearbox bearings, and all gears. During a general overhaul, the car is usually refurbished in accordance with the then existing technical trends.

Heavy overhaul-type work is done approximately every five to eight years and includes traction motors, gearboxes, control groups, trucks, door mechanisms, brake calipers, brake EHU's, air compressors and HVAC systems. Spare units are provided so that the STREETCAR

shop can perform unit change-outs and rebuilding in-house or by contractors.

5.1.2 Track

Operators observe the rail and track structures as they operate trains along the alignment. These ongoing observations are logged on Right-of-Way Defect Reports and are supplemented by the Duty Supervisors and/or Maintenance Department's daily sweep, a driving visual pre-shift inspection of the entire track and all of its components. Along with these inspections and good maintenance practice, the following work is performed in adherence to the following schedule:

A. Pre-Shift Right-of-Way Sweep: Perform a driving visual inspection of the entire length of track, ensuring the right-of-way is clear of obstructions and safe for passenger operation. Identify any barricades, obstructions or narrow lanes of passage, and relay any necessary warnings to the Duty Supervisor and operators. Clean or remove any large debris from inside or near the flange way.

B. Right-of-Way Weekly Inspection: Physically inspect the rail at common points of heavy wear. Visually inspect the concrete, tiles and other coverings. Check that the drains are clear and free of debris. Inspect the condition of frogs, points, throats and stock rails, looking for unusual or heavy wear, cracking, pitting or shelling. Ensure the axle detector enclosures are clean and free of debris, and verify proper operation of the axle detection system.

C. Weekly Switch Maintenance: Open the switch enclosures, clean, inspect, adjust and lubricate as necessary the switch pads, points, stock rail and all moving interior switch components. Test the switch and signal correspondence for proper operation using the track feeler gauge.

D. Quarterly Right-of-Way Cleaning and Walking Inspection: Clean the entire length of track using an environmentally approved method of debris removal, being careful to contain or control dust or liquid run-off. A contractor may be used to perform the cleaning duties. In conjunction with the cleaning of the entire track, a walking visual inspection of the entire length of track must also be performed. The track is embedded, so the grounds and bonds are not visible for integrity inspection. The integrity of the return ground circuit will be verified through the process of stray current testing, as described in the Corrosion Control segment 6.1.5. Visual inspection will be performed on the rail itself. The condition of frogs, points, throats and stock rails will also be inspected, looking for unusual or heavy wear, cracking, pitting or shelling.

E. Annual Switch Inspection and Maintenance: Use the steam cleaner to pressure wash the switch pads, rail, points and stock rail to clean it of debris and excess lubrication build-up. Open each switch enclosure and clean, inspect, adjust and re-lubricate as

necessary the switch pads, points, stock rail and all moving interior switch components. Test the switch and signal correspondence for proper operation using the track feeler gauge.

Heavier track maintenance is performed by licensed contractors using specialized equipment and certified welders, and will be done in coordination with the City of Tacoma. If routine maintenance is performed as scheduled, the track structure should not require replacement during the life of the project, except for high-wear curve rail and switch components.

5.1.3 Traction Power

The traction electrification system (TES) consists of three elements: Substations (TPSS) converting utility AC service to 750 VDC; the OCS comprised of poles and wires to distribute power to streetcars; and the tracks that function as the return circuit.

Operators observe overhead line defects and improper power system operation, and report these so that corrective action can be taken. To facilitate the location of defects, poles will carry pole numbers visible to train operators. In addition to the daily observations of the operators, supplemental periodic inspections will be performed by maintenance personnel or by contractors on the following schedule:

A. Weekly Traction Power Substation Inspection and Maintenance: A visual inspection and general housekeeping of the substation(s), inside and outside, is performed weekly. The integrity of the alarm systems, temperature monitoring systems and emergency lighting systems are verified. The battery back-up system for the DC control power is inspected for integrity and proper charging operation. If an indication of a single diode failure or diode fuse opening per leg is noted, this is scheduled for repair at a time when it is convenient to take the substation offline. If more than one such failure or “open” condition exists, the substation is immediately taken off-line and repaired. All failures should be investigated to determine cause.

B. Visual Overhead Line Inspection and Maintenance: Visual inspection of the overhead line is performed on rolling 1/3 of the alignment, on a monthly basis, such that the entire alignment is visually inspected every three months, a total of four times annually. All hangers, wire connections, insulators, pull-offs, cantilevers, banding, wire heights, stagger and general pole conditions are recorded on OCS inspection forms, specific to each pole number, and logged into the OCS Visual Inspection Log for the appropriate month and segment. These logs are also backed up online, via the Agency SharePoint site.

C. Quarterly Traction Power Substation Inspection and Maintenance: The traction power substations are powered down and function tested on a quarterly basis. The trip, charge and reset functions are tested and calibrated. All enclosures are opened, cleaned,

inspected and lubricated according to the manufacturers' specifications. All air filters are changed, and rear door seals are inspected for water intrusion. Both battery banks are broken down and each battery is tested individually and replaced as necessary. The operation of the AC charging system and automatic transfer switch are tested.

D. Dynamic Overhead Line Inspection and Maintenance: Dynamic inspection of the overhead line is performed on a rolling 1/3 of the alignment on a quarterly basis, such that the entire alignment is dynamically inspected once annually, and the fourth quarter the yard OCS is dynamically inspected. All hangers, wire connections, insulators, pull-offs, cantilevers, banding, wire heights, stagger and general pole conditions are viewed through the thermal imaging camera and findings are recorded on OCS inspection forms, specific to each pole number and logged into the OCS Visual Inspection Log for the appropriate quarter and segment. These logs are also backed up online, via the Agency SharePoint site.

E. Semi-Annual Stray Current Testing: The integrity of the insulated negative return circuit for the OCS (track) is verified on a semi-annual basis. This verification is accomplished via stray current test, and is performed by a licensed corrosion control contractor. The track must be dry and free of debris for the test, so it is to be performed in conjunction with dry weather and the quarterly track cleaning. A report is generated by the contracted firm, indicating the results of each section tested and an average resistance to ground, per 1000 ft. of track. The average resistance to ground per 1000 ft. of track must meet the minimum requirement of 200 Ohms. Any sections of rail causing this number to dip beneath the minimum requirement will be isolated and repaired according to the information contained in the stray current test report. Stray current test reports are logged in the Stray Current Test Report Manual.

F. Annual Traction Power Substation Inspection and Maintenance: An annual functional check and calibration are performed on all protective devices, switches and breakers per manufacturer's recommendations, as well as all other applicable standards. Electrical insulation tests are made on all major equipment such as transformers, rectifiers and AC and DC feeder breakers. The condition of the grounding mat is checked and cleaning performed. Contact tips are checked and dressed, or if necessary, replaced. All moving parts of breaker assemblies are lubricated using the manufacturers' lubrication schedule and instructions. Substation batteries are checked, cleaned and serviced. Air filters are changed on all enclosures. Test results and findings are recorded on Annual TPSS Inspection and Maintenance forms that can be printed from the Agency SharePoint site.

G. Annual Hands-On Overhead Line Inspection and Maintenance: A "hands-on" inspection of the OCS is performed annually that includes checking the integrity and tightness of all hardware and fittings, checking insulators mechanically and cleaning them as required, checking freedom of movement of bracket arm, and checking contact

wire running surface condition, alignment and height.

H. Bi-Annual Insulator Testing: The electrical and UV integrity of the overhead line insulation is tested bi-annually. A sample of used insulators are removed and replaced with new insulators. The used insulators are tested for UV and flash-over either in-house or by contractors, and the flash-over points are recorded in the test report. The results of the testing are recorded and tracked by the maintenance information system.

After a major overhead line problem, such as a downed contact wire or a line pole is damaged or moved by a collision, the OCS may need to be rigged with a temporary wiring arrangement in order to permit resumption of train operations. In such cases, the height and alignment of the contact wire beyond the immediate area of the problem is also checked.

5.1.4 Signals, Communications, Electronic Equipment

Maintenance of traffic signals and controllers are expected to be performed by the City of Seattle. First Hill Streetcar Maintenance personnel will track noted defects of this signal system, and associated work requests in the maintenance information system. King County Metro Rail Section personnel will maintain TWC equipment, switch machines and indicators, using either in-house staff or maintenance contractor. Two-way radio equipment will be maintained under a service contract with a qualified radio maintenance contractor. Preventive maintenance of signal systems includes periodic tests of switch machines and indicators per the track and switch maintenance schedule described in section 6.1.2. No preventive maintenance is required for either the communications or TWC systems.

5.1.6 Stations, Platforms & Wayside Landscape

First Hill Streetcar has dedicated light rail stations for boarding the train along the alignment. Maintenance services required for stations fall into two categories: Custodial and Repairs.

A. Custodial Functions: Custodial functions are concerned with keeping station platform areas clean and safe. They occur on a set routine schedule, and also include response to incidents as needed. The platforms are inspected for general housekeeping on a daily basis “in-house” by means of the daily right-of-way sweep. Spot cleaning, lamp replacement and graffiti removal may take place under this envelope. The contracted portion of the custodial program includes general cleanup of each station once weekly. This includes platform sweeping and graffiti removal. The platforms, walkways and furniture will be pressure washed on a monthly basis by the contractor. The contractor will also perform annual pressure washing of the canopies, furniture, equipment, and all station glass.

B. Platform & Wayside Landscape: Landscaping is provided at selected platform and adjacent wayside locations along the First Hill Streetcar line as space allowed. Landscape maintenance will occur on a set routine schedule, and also include response to incidents as needed.

C. Major Station Repair Work: Major station repair work is related to general electrical and facility repairs such as lighting and platform paving. These activities will typically occur on an incident response basis.

5.2 Maintenance Facility and Equipment

A shop and yard is provided to store and service light rail vehicles. It is sized to accommodate the initial fleet. Three cars can be stored within the OMF overnight.

5.2.1 Shop Building, Equipment and Vehicle Storage Tracks

A shop and yard is provided to store and service light rail vehicles. It is sized to accommodate the initial fleet. Three cars can be stored within the OMF overnight.

5.2.1 Shop Building, Equipment and Vehicle Storage Tracks

The building accommodates up to three STREETCARs. Facilities to work beneath the vehicle and on the vehicle roof are provided. Personnel reporting to the site for work include operators, technicians, supervisors, managers and support personnel. Parking on the site accommodates those assigned to that location. The drains, electrical, lighting, compressor and other small gas engines, and shop equipment is inspected on a monthly schedule, and tracked in the maintenance information system.

A. Activities in the Yard: Yard activities may include interior and exterior cleaning of the streetcars, daily walk-around inspections of streetcars, and circulation of streetcars to and from the mainline and shop. Since some of the activities may occur during hours of darkness, site lighting is provided for safe access and circulation. Lighting levels are similar to that of a commercial parking lot.

B. Activities in the shop: Shop activities may include daily and routine maintenance and running repairs of the streetcars. Major components can be removed, repaired or rebuilt at the facility, or removed and sent out to original equipment manufacturers, or other facilities for repair. Removal and replacement of components require jacks for lifting the Streetcar, a Fork Lift, and a crane. The crane may be used for lifting trucks or running gear components, and for removal of roof mounted components. Wheels in need of truing or replacement are removed and sent out to another a machine shop, or other truing facility. A full complement of electronic and other special power tools is provided at the shop, including welders, machine shop equipment (lathe, drill press; power saws and milling machine), hand-tools, cleaning tools, oscilloscopes, thermal imagers, hi-pot testers and other special devices.

C. Maintenance-of-way activities: Maintenance-of-way activities are based out of the OMF. Equipment and specialized vehicles for maintenance of track and traction power are housed at the facility, including a scissor lift, bucket truck, and other machinery for cleaning and maintaining the system.

D. Inventory: A supply of spare parts is held on site in support of the maintenance function. Spare parts are needed to ensure operational safety and on-time performance. The spare parts inventory is tracked within the maintenance information system. Information is added to the system regarding usage and lead-time, to ensure that sufficient levels of spare parts are on hand to support passenger service. The system tracks each item by part number, use class, location, quantity, vendor, and cost. The maintenance staff documents all spare parts usage within the maintenance information system by means of charging against work orders. This information will be used to help identify the usage and purchase levels for the future. Cycle counts of one inventory staging locations are performed each month, and culminate with an annual Audit of the entire spare parts inventory.

E. Test Bench: The maintenance facility also includes a designated area for testing and maintenance of electronic equipment. Scope meters, power supplies, test leads, and function generators are among the devices located in this area. These tools may be used to diagnose malfunctioning equipment, or to verify the integrity of spare parts as they are received from the vendor, before placing on the shelf.

5.2.2 Support Facilities

Office space is provided for managers, supervisors and administrative staff, as are staff restrooms, a training area, break room, a storeroom for parts and tools, and areas for mechanical and electrical equipment.

6 STAFFING & OPERATING BUDGET

The City anticipates entering into an agreement with King County for operation of the First Hill Line, similar to the operating agreement for the South Lake Union Streetcar. King County Metro has provided analysis and support for the development of this preliminary operating plan.

6.1 Operations

Operations will be provided by streetcar operators, with support from a streetcar operations chief and supervisors.

6.2 Maintenance

The supervisors and other personnel perform routine visual inspections of the facilities and wayside equipment. Contract personnel perform more in-depth inspection and maintenance.

O&M technicians work in two overlapping shifts during passenger service hours perform vehicle maintenance. Track, power, signal, electronic, station and other maintenance on the line and facilities normally occur during the day shift if they can be accomplished without disrupting scheduled train service. All repairs not safety critical that require service disruption will be performed after passenger service hours. Emergency maintenance may be required outside normal working hours and is performed as needed to ensure that the system is restored to operation as quickly as possible.

All maintenance inspection and repair activities will be documented through the use of a maintenance information system. Work orders will be used to document repairs performed and resources allocated.

The O&M supervisors are responsible for overseeing all operations and maintenance activity occurring during their shift.

6.3 Training

Streetcar Operators – Are initially trained when hired with annual recertification, monthly operator evaluation and weekly operational and safety checks performed by O&M Supervisors. Training is documented in the operators training file & electronic database.

O&M Supervisors – O&M Supervisor training expands on the classroom and field training that operators receive that include orientation with the facilities, ROW, security and ST administration divisions. Training is documented in training file and tracked in electronic database.

System Technicians – Training for the technicians come from a combination of in-house course training, hands on demonstration, on the job training and classes taken at other agencies or vendor training. The initial training and annual training is documented in their training file and tracked in electronic database.

6.4 Support and Administration

Through an interlocal agreement similar to the Seattle-King County agreement for operation of the South Lake Union Streetcar, various administrative support functions will be provided by King County Metro Transit Division to support to the First Hill Streetcar Operations Chief and staff as required. King County Metro will provide all safety functions to First Hill Streetcar as required by law. King County Metro will provide all employee staff support functions required by First Hill Streetcar.

6.5 OPERATING STAFFING & BUDGET

To support the service plan described in Section 4, the operations will be staffed by an Operations Chief, Supervisors, Operators and Maintainers, and supported by the Metro Transit Light Rail Section and Metro Transit Power & Facilities Section. Some staff resources will be allocated exclusively to First Hill Streetcar operations, others will be allocated to other activities as well, with time spent on First Hill Streetcar activities billed to the appropriate activity codes. Key elements of the staffing plan include:

- 1 Streetcar Operations Chief, 1 Administrative Assistant (Shared Resources with South Lake Union Line).
- Eight Supervisors (Shared resources with South Lake Union Line; four Full-Time Equivalent allocated to First Hill Line).
- Three Maintainers (Fully Allocated to First Hill Line)
- 18 Operators/6 Extrabord Operators (Full-Time Equivalent, fully allocated to First Hill Line)
- Power & Facilities (Shared resources with Metro Transit (bus) and South Lake Union streetcar, allocated to First Hill Line on an actual time and materials basis)
- Maintenance Facility (Performed by City Facilities Department, on a space allocation basis to be determined).

The preliminary operating budget is attached as Exhibit 1.

7 SAFETY

Safety is a primary concern in the operation of the First Hill Streetcar. All phases of system design addressed issues related to safety of the system. Specific elements of the program include the following:

A. Prior to system opening, the safety program includes development and implementation of the following elements:

1. A System Safety Plan to include fire/life safety hazards identification and resolution and safety certification.
2. Operating rules, standard operating procedures, emergency procedures, and maintenance procedures.
3. A test program developed and implemented as part of systems integration, including emergency drills conducted in cooperation with municipal and emergency services agencies.
4. In-house training programs developed for training on equipment, operations, safety procedures and emergency procedures.
5. A traffic and pedestrian safety outreach educational program has been implemented prior to the start of operational testing.

B. Ongoing programs to ensure system safety include:

1. Training for operations, maintenance and support personnel.
2. Certification and annual re-certification program for operators.
3. A rules-enforcement program for operations personnel.
4. Industrial and occupational safety programs to ensure safe conditions and practices in maintenance facilities and at field maintenance locations.
5. State safety oversight audits as mandated by the FTA.

8. CUSTOMER INFORMATION & MARKETING

8.1 Station Names & Sponsorships

Streetcar stations will have a two-name hierarchy as follows:

Station Name: A name that is either granted to a sponsor in exchange for a fee or in-kind contributions such as station maintenance and cleaning, or designated by the City. Used in print materials and on-board audio announcements, and graphically depicted on the station shelter and/or blade sign.

Station Location: A location identified designated by the City, with a standard convention such as, Broadway/Denny, Broadway/Pine, Jackson/7th. Used in print materials and on-board audio announcements, displayed on on-board digital message signs, and graphically depicted on the station shelter and/or blade sign.

The City will develop detailed policies for station naming and sponsorship prior to operational startup.

8.2 Vehicle Branding

Streetcar vehicles will incorporate a vivid color scheme as implemented on the Seattle Streetcar-South Lake Union Line, and Sound Transit logo/logotype. Additionally, vehicles may be wrapped with graphics as follows:

-Neighborhood-identity graphics: some of the streetcars may feature a graphic element that responds to the identity of the neighborhoods served by the First Hill Streetcar.

-Sponsorship graphics: some of the streetcars may be made available for advertising/sponsorship, in exchange for a fee.

The City will develop detailed policies for vehicle branding and sponsorship prior to operational startup.

8.3 Station-Mounted Route & Wayfinding Maps

Stations will feature route and wayfinding maps mounted to the shelters and/or on freestanding signs.

8.4 Streetcar/Route Information Brochures

The City will develop and update streetcar route and information brochures, similar to those developed for the South Lake Union line, for distribution on the streetcars and also available for distribution by neighborhood businesses, institutions, hotels, etc.

8.5 Streetcar Website/Facebook/Twitter

The City will update its Seattle Streetcar website, Facebook page and twitter feed to provide customer information.

8.6 Customer Service Lines

Web and print materials will provide information on customer service telephone lines available to the public, such as the Seattle Department of Transportation's 684-ROAD line and Metro's customer information line.

EXHIBIT 1

**SEATTLE STREETCAR
FIRST HILL STREETCAR- LINK CONNECTOR PROJECT-PRELIMINARY OPERATING BUDGET**

Service Assumptions: 10 Minute Peak Headways/15 Minute Off Peak; 4-Car Operation/5th Car PM Peak As Needed
Revenue Service begins April 2014

PART 1 Streetcar Operations Staffing

Staffing to provide vehicle operators, vehicle maintainers, service supervisors, and management/administrative support to operations staff.

Part 1 Subtotal **2,235,333**

Part 2 Track & Power System Operation & Maintenance

Cost-allocated staff support for maintenance of overhead contact system, traction power substations, track and switches;and power supply rates.

Part 2 Subtotal **360,000**

PART 3 General Administration and Implementation Support

General administrative support (financial management, training, testing, insurance, etc)

PART 3 Subtotal **438,683**

PART 4 Operating Materials/Supplies

Office consumables (printing/copying), vehicle consumables (oil, filters, etc)

Part 4 Subtotal **75,000**

Part 5 Other Cost Allowances

Cost allowances for wheel truing, vehicle body work, signage/customer information, service contracts for automatic passenger counting and real time arrival systems, fare supervision, platform and shelter cleaning and maintenance, extra service for special events.

Part 5 Subtotal **340,000**

PART 6 SDOT Direct Expenses

Maintenance facility maintenance, landscape maintenance, utility services, and program oversight.

Part 6 Subtotal **450,000**

Part 7 Contingency/Major Maintenance Reserve

A contingency which if unused can be deposited in a major maintenance reserve fund.

Part 7 Subtotal **\$ 500,000**

Grand Total-2014 **\$ 4,399,016**

Maximum Funding-2014 **4,910,000.00**

Maximum Funding-2015 **5,080,000.00**