

Appendix C

Mitigation Commitments

Mitigation Commitments

Mitigation is an important mechanism federal agencies can use to minimize potential adverse environmental impacts associated with project actions. Agencies can use mitigation to reduce environmental impacts in several ways:

- Avoid an impact by not taking a certain action or parts of an action.
- Minimize an impact by limiting the degree or magnitude of the action and implementation.
- Rectify an impact by repairing, rehabilitating, or restoring the affected environment.
- Reduce or eliminate an impact over time, through preservation and maintenance during the life of the action.

Many of the project's potential impacts have already been eliminated or mitigated by elements that are now included in the definition and design of the project.

Table C-1 lists the mitigation measures that SDOT will implement to avoid, minimize, rectify, or compensate for impacts identified in previous chapters. For each resource, mitigation measures are provided for operational impacts, construction impacts, and cumulative impacts.

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
General Construction			
Construction	<p>To avoid and/or minimize impacts during construction, SDOT will develop a construction management plan that would require the contractor to follow industry best practices and specific construction mitigation measures as outlined herein for each resource. The construction management plan will be structured as follows:</p> <ul style="list-style-type: none"> ▪ A transit and traffic control plan ▪ An air quality control plan ▪ A noise and vibration control plan ▪ A business retention during construction plan ▪ A public information plan ▪ Visual nuisance screening plan ▪ A temporary erosion and sediment control plan and a stormwater pollution prevention plan ▪ A utility relocation plan ▪ A standard, project-specific geotechnical investigation ▪ A spill prevention plan ▪ Emergency route plan ▪ An archaeological monitoring and inadvertent discovery plan <p>SDOT will minimize the duration of construction impacts:</p> <ul style="list-style-type: none"> ▪ Through construction phasing and scheduling that provides the most efficient schedule opportunities for a given segment. ▪ Through coordination with other projects in the area (see cumulative impacts coordination) 	SDOT and Contractor	Construction
Transportation			
Operational	Regional Roadways		
	No mitigation will be required beyond the project design to improve intersection operations and general traffic operations with the LPA.	SDOT	Final Design

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<p>Transit</p> <p>To mitigate conflicts with bus operations:</p> <ul style="list-style-type: none"> ▪ Continue coordinating plan review with King County Metro, Sound Transit and Community Transit through final design through circulation of plans at the 60 percent and 90 percent design milestones and comment resolution. Plan bus service changes and stop locations to help alleviate passenger confusion. ▪ Design Streetcar and electric trolley bus interface electrical systems consistent with the existing South Lake Union and First Hill streetcar segments. ▪ Consult and coordinate with King County Metro to facilitate rerouting Route 62 to Third Avenue. ▪ Develop a joint use stop on First Avenue between Madison and Spring Streets to serve Route 12. This would be completed as part of the Madison Street BRT project. Prior to implementation of the BRT, Route 12 would be accommodated through design of the Center City Connector. Alternatively, SDOT is examining the option of early implementation of the joint use stop. ▪ Use coordinated signal timing developed as part of SDOT's The Next Generation ITS project to provide reliable north-south travel times along First Avenue and limit special streetcar signal phases to those that are required for a streetcar-only movement. ▪ Eliminate the inefficiencies of "permissive" left-turn movements along the First Avenue alignment and provide protected left-turn signal phases in locations where left turns are not restricted. <p>To mitigate conflicts with Solid Ground circulator:</p> <ul style="list-style-type: none"> ▪ Before removing buses from First Avenue, the SDOT project manager will engage the Solid Ground Circulator's contract manager (King County Metro) and Solid Ground staff to develop an alternative route that maintains access to human service providers located along the First Avenue corridor. 	<p>SDOT, Contractor, King County Metro, Sound Transit, Community Transit</p>	<p>Final Design</p>

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<p>To mitigate conflicts with electric trolley buses OCS systems and the Center City Connector:</p> <ul style="list-style-type: none"> ▪ Maximize the use of battery drive to operate the streetcars through the Stewart Street and First Avenue segments. ▪ Amend the existing inter-local agreement with King County that provides funding for the inspection and maintenance of joint use streetcar and electric trolley bus OCS system crossing hardware to incorporate Center City Connector project. ▪ Provide special crossing hardware and/or shift the electric trolley bus wires to allow movement of both the streetcar and electric trolley bus systems through the intersection. ▪ Shift or replace existing electric trolley bus crossing to accommodate new streetcar crossing hardware. 		
Arterial and Local Roadways			
	<p>To manage traffic impacts at Marion and Alaskan Way:</p> <ul style="list-style-type: none"> ▪ During operation of the Project, First Ave/S Jackson St and Alaskan Way/Marion St intersections will be monitored and adjusted along with other signals in the corridor as part of SDOT’s Center City Dynamic Signal Timing Program, which has been established to manage the functionality of all intersections west of I-5. The Center City Dynamic Signal Timing Program reviews dynamic signal timing patterns, which can be adjusted to respond in real time to accommodate changing demand. <p>To maintain safe access to adjacent properties:</p> <ul style="list-style-type: none"> ▪ Modify the first driveway south of Pike Street on the east side of First Avenue to right-in/right-out access (due to the proposed streetcar station located in the median at Pike Street). ▪ Provide signage and striping to the four remaining driveways to modify access to right-in/right-out movements to avoid left turns across the exclusive streetcar lane. 	SDOT	Final Design

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	Freight		
	No mitigation will be required.	Not applicable	Not applicable
	Nonmotorized Facilities		
	<p>To help ensure pedestrian safety at crosswalks near stations:</p> <ul style="list-style-type: none"> ▪ Locate crosswalks accessing the streetcar station median platforms at signalized intersections with signal phases provided for pedestrians. ▪ Add curb extensions and pedestrian signal improvements, such as leading pedestrian interval. Existing and future bicycle lane facilities would cross the streetcar tracks at a 90 degree angle (i.e., at Fifth, Fourth, and Second Avenues on Stewart Street). <p>To avoid conflicts between streetcars and bicycles:</p> <ul style="list-style-type: none"> ▪ Plan and implement existing and future bicycle lane facilities to cross the streetcar tracks at a 90 degree angle (i.e., at Fifth, Fourth, and Second Avenues on Stewart Street). ▪ Direct bicyclists from Stewart Street and Olive Way via the existing bikeway at Seventh Avenue to the proposed Pike Street protected bike lane between Broadway and First Avenue, via the existing bikeway at Seventh Avenue. ▪ Update bicycle wayfinding signage. 	SDOT	Final Design
	Parking		
	<p>To mitigate reduced on-street parking:</p> <ul style="list-style-type: none"> ▪ Expand e-Park participation and implement additional e-Park wayfinding signage in the study area to help drivers navigate to off-street parking garages, including to garages participating in the parking programs sponsored by Commute Seattle (where garages offer low or flat-rate parking options). <p>To mitigate for the reduced availability of commercial vehicle and passenger loadings zones:</p> <ul style="list-style-type: none"> ▪ Maintain existing all-day loading zones where possible. 	SDOT	Construction and Operation

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<ul style="list-style-type: none"> ▪ Create new all-day, on-street loading zones close to the corridor. ▪ Provide loading zones on side streets. ▪ Allow businesses to use alleys for deliveries or loading zone access. ▪ Allow on-street loading access during early morning and late evening hours. 		
Construction	Regional Roadways		
	No mitigation will be required.	Not applicable	Not applicable
	Transit		
	<p>To avoid conflicts between streetcar construction and bus operations:</p> <ul style="list-style-type: none"> ▪ Coordinate in advance with King County Metro and Community Transit to plan bus service changes and stop locations during the construction of the project. ▪ Provide advanced notice to passengers, signs at bus stops, and signs along sidewalks that redirect passengers to the correct stops to help alleviate passenger confusion. <p>To mitigate conflicts with Solid Ground shuttle service:</p> <ul style="list-style-type: none"> ▪ Before buses are removed from First Avenue, SDOT engage the Solid Ground circulator’s contract manager (King County Metro) and Solid Ground staff to develop an alternative route that maintains access to human service providers located along the First Avenue corridor. <p>To minimize impacts to electric trolley buses,</p> <ul style="list-style-type: none"> ▪ Install infrastructure at strategic locations (to be developed with King County Metro) that will allow King County Metro to use battery power when these deadheading buses are following a detour route around the construction zone. ▪ Limit construction primarily to weekends to limit the need for de-energization outside standard King County Metro de-energization windows, along Stewart Street and Olive Way and consult with the King County Metro Construction Coordination Office to determine the best times for de-energizing. 	SDOT, King County Metro, Community Transit, and Contractor	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<ul style="list-style-type: none"> ▪ Apply best practices for temporary de-energizations, bus reroutes, and temporary bus stop closures/relocations that the City and King County Metro’s Construction Coordination office have applied and refined through construction of the City’s downtown paving program and First Hill Streetcar project. 		
	Arterials and Local Roadways		
	<p>Contractor will develop a traffic control plan to be approved by SDOT. In addition, to address event traffic during construction, SDOT will:</p> <ul style="list-style-type: none"> ▪ Coordinate with the City’s Special Events Committee and Seattle Police Department traffic control to provide enhanced public awareness of congestion and alternative modes for accessing events in addition to posting travelers advisories on the SDOT Blog and Website (‘On the Move’) and include special events on the City Traveler’s Map. ▪ Provide signing and wayfinding to help travelers access key destinations ▪ Provide flaggers and/or uniformed police officers at key intersections when needed to facilitate the movements of freight and general-purpose traffic and expedite emergency vehicles. ▪ Coordinate traffic management through the SDOT HUB program during events traffic. ▪ During construction, SDOT, working with RFFA lead agencies, will initiate additional routing and signal changes and divert traffic to other routes, where possible, to meet LOS E at the intersection of Marion Street and Alaskan Way. 	SDOT and Contractor	Construction
	Freight		
	No mitigation will be required.	Not applicable	Not applicable

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	Parking		
	Measures to mitigate loss of parking during construction will be the same as those listed under operational impacts. Also, temporary loading zone designations could be used on a case-by-case basis to maintain commercial vehicle and passenger loading zones in reasonable proximity to businesses along the alignment, although this would lead to a reduction in paid parking spots.	SDOT and Contractor	Construction
	Nonmotorized facilities		
	To avoid conflicts with nonmotorized facilities: <ul style="list-style-type: none"> ▪ Divert bicyclists from Stewart Street and Olive Way bikeways to one block north to Eighth Avenue and connect with the Bell Street bikeway and place detour signage in advance of the existing bikeway and along all decision points on the detour route. ▪ Place warning and detour signs will be placed without obstructing the pedestrian and bicyclist flow. 	SDOT and Contractor	Construction
Cumulative	To mitigate against the potential for multiple construction projects to overlap in affecting similar areas of downtown Seattle, SDOT will: <ul style="list-style-type: none"> ▪ Require that the Center City Connector project manager will participate in the One Center City public/private partnership planning effort to address near and long-term transportation plans (Note: the One Center City effort is an extension of and replaces the Center City Mobility Plan effort referred to in the EA). To address multiple changes to the roadway network and transit systems and make better regional connections in downtown Seattle, SDOT is working with King County, Sound Transit, and the Downtown Seattle Association. The plan will establish a transportation vision for 2035 and create a near-term transit operations and transportation management plan by mid-2016, along with a public realm plan for enhancing the right-of-way to better serve residents, employees, shoppers and visitors. ▪ Convene a project coordination committee consisting of representatives of SDOT, the Washington State Department of 	SDOT, Contractor with other construction managers (capital improvement managers and private developers wherever construction project overlap occurs)	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<p>Transportation, King County Metro, Washington State Ferries, Sound Transit, the Port of Seattle, and Community Transit (agencies that participated in the Regional Transit Coordination for Downtown Seattle Committee). This committee will be responsible for resolving potential schedule conflicts between major public projects. As necessary, private development contractors will be included in coordination and construction phasing strategies. Coordination issues for this committee include traffic circulation, detour routes, or staggered construction sequencing in efforts to avoid concentrations of congestion, overlap in transit detours, and relocated stops, and managing loss of parking and changes to bike routes during construction, as warranted.</p> <ul style="list-style-type: none"> ▪ Coordinate construction activities through the SDOT Street Use Construction HUB Coordination Program. The HUB team consists of project and on-site coordinators who assess work throughout construction in areas where multiple, simultaneous construction projects (both public and private) are occurring. The HUB team also coordinates with other City departments. <p>Specific impacts due to construction of the Pioneer Square segment from the northbound detour route would be mitigated by SDOT:</p> <ul style="list-style-type: none"> ▪ Conducting an updated traffic evaluation of construction period-specific detours and implementing the potential traffic diversions identified below, ▪ Collaborating with other construction projects leaders to review how detour routes for Center City projects are collectively functioning for best traffic flow. Additional detours for northbound traffic flow around Pioneer Square and the Waterfront could include the following: ▪ Alaska Way viaduct (SR 99) via Dearborn Avenue (for traffic coming from south Seattle) and exit at First Avenue and Seneca. Wayfinding signage would be placed at S Holgate Street or S Atlantic Street in order to provide drivers enough time to use these detours ▪ Alaskan Way to Marion Street for trips into downtown ▪ Alaskan Way to Yesler Way or Western Avenue for shorter trips to the north end of Pioneer Square 		

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Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<ul style="list-style-type: none"> ▪ South on Jackson Street and northbound on Second Avenue, or south on Washington Street and northbound on Occidental Avenue when the construction zone is limited to the area between Jackson Street and Yesler Way 		
Air Quality and Greenhouse Gas			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	<p>During construction, impacts on air quality will be reduced and controlled in accordance with the City’s Standard Specifications for Road, Bridge, and Municipal Construction (Section 1-07.5(3) and dust control BMPs described in the City’s Construction Stormwater Control Technical Requirements Manual – Volume 2 (Seattle Public Utilities, 2009).</p> <p>To reduce air quality impacts during constructions, BMPs will include:</p> <ul style="list-style-type: none"> ▪ Spray exposed soil with water or other suppressants to reduce emissions of PM10 and deposition of particulate matter during dry periods. ▪ Use phased development to minimize disturbed areas. ▪ Use wind fencing to reduce disturbance to soils. ▪ Minimize dust emissions during transport of fill material or soil by wetting down or by providing adequate freeboard (i.e., space from the top of the material to the top of the truck bed) on trucks. ▪ Promptly clean up spills of transported material on public roads. ▪ Schedule work tasks to minimize disruption of the existing vehicle traffic on streets. ▪ Restrict traffic on the site to reduce soil upheaval and the transport of material to roadways. ▪ Locate construction equipment and truck staging areas away from sensitive receptors as practical and in consideration of potential impacts on other resources. ▪ Provide wheel washers to remove particulate matter that will otherwise be carried off the site by vehicles to decrease deposition of particulate matter on area roadways. 		

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Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<ul style="list-style-type: none"> ▪ Cover dirt, gravel, and debris piles as needed to reduce dust and wind-blown debris. ▪ Minimize odors on the site by covering loads of hot asphalt. <p>Emissions of PM2.5, PM10, VOCs, NOX, SO2, and CO will be minimized by maintaining machinery engines in good mechanical condition to minimize exhaust emissions, which will be verified through yearly maintenance records. In addition, contractors will reduce idling time of equipment and vehicles and use newer construction equipment or equipment with add-on emission controls, to be defined prior to issuing construction permits.</p>		
Cumulative	No additional mitigation is required.	Not applicable	Not applicable
Noise and Vibration			
Operations	Noise		
	No mitigation is proposed at this time. However, to mitigate potential impacts, the streetcar bell noise levels at stations will be verified with final operating parameters and if noise impacts result, the City will reduce the bell sound levels, or relocate the bells, to reduce noise to below FTA impact levels.	SDOT	Final Design
	Vibration		
	Physical vibration impacts may occur at one property (401 Terry Avenue), which has existing South Lake Union streetcar track and crossover tracks adjacent to the building. The Center City Connector is not expected to increase this existing condition. If determined necessary, SDOT will conduct a more detailed vibration assessment during final design to confirm the results of the initial modeling. If it confirms the existing impact, SDOT will reduce the vibration to acceptable levels by relocating the crossover, using spring-loaded frogs to reduce the gap size between rails, or using resilient track fasteners.	SDOT	Final Design

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
<p>Construction</p>	<p>Noise</p> <p>To satisfy Seattle Municipal Code for construction activities, a noise control plan will be developed and implemented to reduce community annoyance. This plan will include, but not be limited to, the following:</p> <ul style="list-style-type: none"> ▪ Maintain a 1-foot-thick layer of muck or dirt in the bottom of haul truck beds. ▪ Use only ambient-sensing broadband backup alarms and minimize backing up. ▪ Limit engine idling to 5 minutes or less. ▪ Use radios for long-range communication; only use raised voices and public address systems in an emergency. ▪ Use upgraded engine exhaust mufflers, engine shrouds, or sound enclosures on noisier equipment. ▪ Install portable sound barrier around noisier equipment. ▪ Use electric and hydraulic equipment instead of diesel or pneumatic equipment. ▪ Require the contractor to develop a noise control plan to identify and mitigate noise impacts based on specific means and methods. ▪ Develop noise limits, address complaints, and monitor noise levels during construction. ▪ Obtain a noise variance for work performed at night 	<p>SDOT and Contractor</p>	<p>Construction</p>
	<p>Vibration</p> <p>To minimize annoyance from construction-related vibration, develop and implement a vibration control plan. The plan will require that the contractor:</p> <ul style="list-style-type: none"> ▪ Select haul routes to avoid areas with higher residential density, as feasible. ▪ Phase vibration-producing activities so they do not occur simultaneously, as feasible. ▪ Schedule vibration-producing activities outside time periods where sensitive receptors are most sensitive to vibration, as feasible. For example, execute vibration-producing work near residential buildings 	<p>SDOT and Contractor</p>	<p>Construction</p>

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<p>during daytime hours and commercial buildings during nighttime hours.</p> <ul style="list-style-type: none"> ▪ Minimize the use of impact tools, such as hoe rams and jackhammers; use lower-vibration equipment, such as concrete saws, for demolishing existing pavement. ▪ Use lower power settings on vibratory rollers or large static rollers, as feasible. <p>To completely avoid risk of cosmetic damage to areaways, heavy/strong vibratory construction equipment will maintain a buffer around the areaways of 8 feet to 15 feet, depending on the equipment being used. This buffer will limit vibration in areaways to 0.2 PPV (inches/second).</p>		
Cumulative	Construction activities will comply with applicable noise regulations. SDOT will coordinate with the Department of Planning and Development to identify and work with private development contractors who will be working in the project area.	SDOT and Contractor	Construction
Land Use/ Property Acquisition			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	No mitigation will be required.	Not applicable	Not applicable
Cumulative	No mitigation will be required.	Not applicable	Not applicable
Economics			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	<p>SDOT will work directly with affected businesses to develop a business mitigation plan. At a minimum, this plan will include:</p> <ul style="list-style-type: none"> ▪ Provide signage alerting potential customers that businesses are open during construction, and clearly mark detours as appropriate. ▪ Provide the public with construction updates, alerts, and schedules through informational meetings, a project website, and other forms of communication. 	SDOT and Contractor	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<ul style="list-style-type: none"> ▪ Develop a promotion and sponsor a marketing plan to help affected businesses maintain their customer base during construction. ▪ Maintain access to each business as much as possible during construction and coordinate with businesses during times where access might be limited. ▪ Coordinate construction activities with other capital improvement projects to minimize construction impacts and competing needs for detour routes. ▪ Implement parking and access mitigation strategies described in the Transportation, Parking Operations Mitigation section above. ▪ SDOT has entered into a Memorandum of Agreement with the Pioneer Square Alliance to develop and sponsor a coordinated business (marketing) outreach plan focused on the area business community. A draft plan will be available during the first quarter 2017, in advance of utility work. 		
Cumulative	<p>To avoid overly straining retail, restaurant, and other businesses during construction periods, SDOT will coordinate through a project coordination committee made up of construction project managers and agencies with jurisdiction over the projects to provide a robust construction mitigation plan to address the needs of the businesses by implementing construction measures (these augment those economics construction mitigation measures listed above):</p> <ul style="list-style-type: none"> ▪ Coordinate two-way communication between collective construction projects and businesses on schedule, changes, and potential detour routes, among other potential impacts on businesses. ▪ Stagger projects and construction staging to maintain continued access and directional signage that clearly directs visitors to businesses in the study area. ▪ Communicate and coordinate with public and private entities that own and operate various retail establishments and tourist activities in and around the study area to develop incentive programs or advertisements that encourage local residents and visitors to continue to visit and patronize the businesses. 	SDOT, Contractor with other construction managers (capital improvement managers and private developers wherever construction project overlap occurs)	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
Social and Community Effect			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	SDOT will develop and implement a Public Information Plan, which would include the following elements: <ul style="list-style-type: none"> ▪ Build routine communication programs with community organizations and service providers in the project area to make them aware of construction activities that may affect the community and service providers. ▪ Provide targeted outreach to businesses and individuals directly affected (fronting construction areas) by the project. ▪ Hold regular coordination meetings with project team and public outreach staff so that messages to the public are accurate, timely, and, to the extent possible, provide advanced warning of construction activities that may affect routine daily activities. 	SDOT and Contractor	Construction
Cumulative	SDOT will coordinate through a project coordination committee made up of construction project managers and agencies with jurisdiction over the projects to manage conflicting construction schedules, as well as a collective communication program, including routine updates on construction sequencing and short-term utility interruptions and/or detours that may affect their transportation routines, and provide a one-point hotline where local businesses and neighborhoods can inquire about multiple construction issues regardless of which project the issue concerns.	SDOT, Contractor with other construction managers (capital improvement managers and private developers wherever construction project overlap occurs)	Construction
Visual and Aesthetic Resources			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	Temporary visual impacts during construction will be mitigated by screening construction zones and staging areas. Nighttime lighting will be directed downward to reduce the impacts of light on adjacent residences.	SDOT and Contractor	Construction
Cumulative	SDOT will coordinate with simultaneous construction projects to shield staging areas, stagger construction periods when possible, and provide distractions in the form of community art or learning opportunities.	SDOT and Contractor	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
Stormwater/Water Quality			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	SDOT will obtain a National Pollutant Discharge Elimination System Program General Permit for Stormwater Discharges Associated with Construction Activities prior to commencing construction. One of the permit requirements is a project-specific Stormwater Pollution Prevention Plan and Sediment Control Plan, which would comply with the NPDES permit and employ BMPs during construction to minimize the potential for soil erosion and sediment to enter the stormwater system.	SDOT and Contractor	Final Design Construction
Cumulative	No mitigation will be required beyond measures listed for construction period.	Not applicable	Not applicable
Utilities, Energy, and Electromagnetic Fields (EMF)			
Operations	No mitigation required for utilities, energy or EMF.	Not applicable	Not applicable
Construction	No mitigation required for energy or EMF. To mitigate risk of disrupting utilities during construction, SDOT will develop a utility relocation plan prior to construction, which will include: <ul style="list-style-type: none"> ▪ Coordination with utility providers to minimize potential disruptions through detailed construction schedules and sequencing. ▪ Contingent temporary connections to businesses and residences when more than a short service disruption is anticipated. 	SDOT and Contractor	Construction
Cumulative	No mitigation will be required beyond measures listed for construction period.	Not applicable	Not applicable
Hazardous Materials			
Operations	No mitigation will be required.	SDOT	Final Design

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Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
Construction	Avoidance or minimization through implementing BMPs (site avoidance, clean-up prior to construction) and development of a spill prevention plan and emergency response procedures to guide the characterization, management, and disposal of contaminated materials, if encountered, will be employed. A Spill Prevention Plan will be developed meeting City standards to control spills on site (Standard specifications A 1-07.15(1)8-01.3(2)C), and a waste management plan will be developed, following City Standard Specification 1-07.3 Discoveries of Contaminated Materials, Dangerous Waste(s) and TSCA Waste(s), which includes procedures for identifying and characterizing unanticipated hazardous materials.	SDOT and Contractor	Construction
Cumulative	No mitigation will be required beyond measures listed for construction period.	Not applicable	Not applicable
Geology and Soils			
Operations	No mitigation will be required	Not applicable	Not applicable
Construction	No mitigation is required.	Not applicable	Not applicable
Cumulative	No mitigation will be required beyond measures listed for construction period.	Not applicable	Not applicable
Public and Emergency Services			
Operations	Potential operational impacts on public service and emergency service will be mitigated with the following measures: <ul style="list-style-type: none"> ▪ To minimize effects of delay in emergency response, the streetcar exclusive-transit lane will include a mountable curb for emergency vehicles to use or cross over at their discretion. ▪ To mitigate for loss of commercial loading zones, SDOT will provide all-day loading zones along the corridor where additional right-of-way is available and on side streets. Additionally, SDOT will allow on-street loading/unloading during early morning or late evening hours (outside of streetcar operating hours), and designate alleys for deliveries or loading zone access. ▪ Solid waste removal will be limited to access via alleyways and side streets; where curbside service is the only option, solid waste 	SDOT	Final Design

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Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
	<p>removal will be limited to hours when the streetcar is not operating and nonoperational hours.</p> <ul style="list-style-type: none"> ▪ To address safety and emergency response coordination with the addition of the Streetcar service, the Seattle Streetcar System Safety Program Plan (Seattle, 2013) will be expanded for the Center City Connector with input from public service providers. It will address procedures relevant to fire and emergency medical services, including a fire/life safety committee; safety, security, and emergency plans; and emergency preparedness (i.e., exercises and drills) to provide a safe environment for passengers, employees, and persons interacting with the streetcar, in addition to adhering to the required City’s Disaster Readiness and Responsiveness Plan. ▪ To adequately respond to fires on either side of the streetcar track, final design will review whether hydrants may have to be added so that both sides of the roadway are served. 		
Construction	<p>Potential construction impacts on public service and emergency service will be mitigated with the following measures:</p> <ul style="list-style-type: none"> ▪ Prior to construction, applicable agencies will review and approve construction activities and traffic control plans. ▪ Emergency service providers will be provided with information on lane closures, detour routes, and construction schedules. ▪ SDOT will coordinate with SPD and SFD to maintain reliable access for emergency services during construction and to minimize delays in response times from construction activities and detours. ▪ Relocation of access for deliveries and pick-up services will be implemented prior to construction. Relocation strategies for access and delivery include using alleyways, allowing early and late delivery periods that avoid construction periods, and making special provisions for nearby loading zones outside of construction areas. 	SDOT and Contractor	Construction
Cumulative	<p>SDOT will coordinate through a project coordination committee made up of construction project managers and agencies with jurisdiction over the projects to discuss circulation as it relates to emergency service routes and confirm that adequate accessibility can be maintained throughout construction.</p>	SDOT, Contractor with other construction managers	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
Parks and Recreational Resources			
Operations	To mitigate locating a TPSS on Westlake Square, the TPSS enclosure will be designed to provide a point of interest consistent with Seattle’s design plans for the Square. Placement of the TPSS will not inhibit pedestrian circulation on the Square.	SDOT	Final Design
Construction	No mitigation will be required.	Not applicable	Not applicable
Cumulative	No mitigation will be required	Not applicable	Not applicable
Historic, Cultural, and Archaeological Resources/Section 106			
Operations	Historic Resources		
	SDOT will offer one or more of the 1895 hydrants to the Museum of History and Industry (MOHAI) instead, as examples of early fire hydrants from the time period around the 1889 fire. Areaway modification will undergo pre-construction review by SHPO and the Pioneer Square Historic Preservation Board and Landmarks Board to assess the potential for adverse effects on structures.	SDOT	Final Design
	Archaeological Resources		
	No mitigation will be required.	Not applicable	Not applicable
Construction	Historic Resources		
	No mitigation will be required.	Not applicable	Not applicable
	Archaeological Resources		
	To mitigate the potential for archaeological site discovery during ground disturbance, a draft Archaeological Monitoring and Inadvertent Discovery Plan has been prepared, in consultation with the SHPO. SDOT and FTA will consult with the SHPO, interested Indian tribes, and other interested parties, as appropriate, regarding eligibility for listing in the NRHP, project impacts, necessary mitigation, and other treatment measures.	SDOT, FTA, and Contractor	Construction

Table C1 Mitigation Measures by Discipline

Impact Type	Mitigation Measure	Responsibility	Phase of Implementation
Cumulative	No mitigation will be required.	Not applicable	Not applicable
Environmental Justice			
Operations	No mitigation will be required.	Not applicable	Not applicable
Construction	<p>SDOT will implement the City’s Race and Social Justice Initiative (RSJI) requirements by updating the project’s RJSI Toolkit which identifies the effect of a project on traditionally underrepresented populations.</p> <p>The City is developing an integrated and robust outreach program for the Center City Connector project, in partnership between SDOT, Department of Neighborhoods, and Office of Economic Development, to reach the diverse community and neighborhoods affected by and served by the Project.</p> <p>SDOT will update the project’s inclusive outreach and public engagement (IOPE) plan that outlines how the City provides outreach to traditionally underrepresented populations, including low-income, minority, homeless, and LEP individuals during Final Design. Materials, including project notices, will be translated into Chinese, Vietnamese, and Spanish, and distributed at social service agencies and at affordable housing sites and offices throughout downtown. No other mitigation specific to Environmental Justice would be required.</p>	SDOT and Contractor	Final Design and Construction
Cumulative	No mitigation will be required.	Not applicable	Not applicable