Alternatives Evaluation Criteria – Draft 3

April 2018

SoundTransit

Table 1 Level 1 Screening Evaluation Criteria, Measures and Methods (by segment)

Purpose and Need (1)	Evaluation Criteria (2)	Measure (3)	Quantitative (no.) or Qualitative (high/med/low) (4)	Methods (5)
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the ~~West Seattle and Ballard~~project corridors defined in ST3	Reliable Service	Potential service interruptions and recoverability	Qualitative	Number of service interruptions during peak and off-peak travel periods (e.g., number of moveable bridge openings, at-grade crossings, etc.) and redundancy and ability to re-route service
	Travel Times	LRT travel times	Quantitative	Estimated travel times from Ballard and Alaska Junction to Downtown Seattle based on alignment characteristics
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand	Regional Connectivity	Network integration and operational flexibility to meet future demand	Qualitative	Regional LRT system connectivity and operational flexibility to meet future demand
	Transit Capacity	Passenger carrying capacity in downtown	Qualitative	Combined carrying capacity of downtown transit tunnels
	Projected Transit Demand	Ridership potential	Quantitative	Future 2040 total population and employment within 0.5-mile buffer of WSBLE Project stations
Connect regional ~~growth~~ centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan	Regional ~~Growth~~ Centers Served	Station proximity to PSRC-designated regional ~~growth~~ centers	Quantitative	Number of PSRC-designated regional growth centers and manufacturing/industrial centers served by stations
	Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Qualitative	Ability to accommodate expansion potential of future LRT extensions identified in *Sound Transit Long-Range Plan*
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain	ST3 Consistency	Mode, route and general station locations per ST3	Qualitative	Consistency of mode, route and general station locations per ST3
		Potential ST3 operating plan effects	Qualitative	Integration of WSBLE Project into existing LRT spine and overall system (e.g., spine segmentation, moveable bridge implications, etc.)
	Technical Feasibility	Engineering constraints	Qualitative	Compliance with *Sound Transit Design Criteria Manual*, design criteria from agencies with jurisdiction and federal regulations
		Constructability issues	Qualitative	Major constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.)
		Operational constraints	Qualitative	Consideration of operational constraints (e.g., interim terminus, interim operational impacts due to temporary construction phasing, access to maintenance facility, headways, moveable bridge, etc.)
	Financial Sustainability	~~Order-of-magnitude~~Qualitative capital cost comparison	Qualitative	ST3 cost consistency based on identification of major capital cost drivers (e.g., route miles, route configuration, bridge type, etc.)
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations	Historically Underserved Populations	Opportunities for historically underserved populations	Qualitative	Assessment of improved access to opportunities (i.e., employment, housing and transit) for historically underserved populations (i.e., environmental justice populations) within station areas, as well as along the frequent transit network that would serve the station
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies	~~Local~~ Station Area Land Use Plan Consistency	General station locations consistent with local land use plans	Qualitative	Compatibility and consistency of station locations with local land use plans
		Station proximity to Seattle-designated Urban Centers and Villages	Qualitative	Proximity of station locations to centroid of defined urban centers and villages as identified in *City of Seattle Comprehensive Plan*
	Modal Integration	Bus/rail and rail/rail integration	Qualitative	Potential ability to integrate with bus and rail service and ease of transfers for transit customers
		Bicycle, pedestrian and persons with limited mobility connectivity	Qualitative	Accessibility of station locations to major existing and planned bicycle and pedestrian facilities and identification of major physical barriers to walking and biking within general station areas for bicyclists and pedestrians, including persons with limited mobility
	Station Area Development Opportunities	Development potential	Qualitative	Likelihood of land potentially available for future development within station areas based on zoning composition
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, ~~and~~ built and social environments through sustainable practices	Environmental Effects	Protected natural resources	Qualitative	Impacts to known natural resources (e.g., waterbodies, wetlands, etc.)
		Protected built and social environment	Qualitative	Impacts to known built and social resources (e.g., parks, historic properties/districts, Section 4(f)/6(f), construction impacts, etc.) and potential for residential and business displacements
		Burden on historically underserved populations	Qualitative	Assessment of how potential acquisitions and displacements would affect historically underserved populations (i.e., environmental justice populations) relative to other communities and displacement risk from station area redevelopment
	Traffic Operations	Traffic circulation and access	Qualitative	Effects on traffic and transit (i.e., bus and streetcar) operations ~~for both automobiles and freight~~, including potential lane restrictions, turn restrictions, and parking
	Economic Effects	Freight movement and access on land and water	Qualitative	Effects on freight mobility and future freight capacity expansion opportunities, including both on land and water
		Business and commerce effects	Qualitative	Effects on local businesses, as well as commercial and industrial areas

Notes:
(1) Based on Draft Purpose and Need Statement (dated January 24, 2018), with revisions incorporated from feedback received during early scoping.
(2) Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.

(3) Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.

(4) ~~Qualitative~~ Mmeasures ranked from high to low based on ~~anticipated ability to achieve evaluation measure~~comparison to ST3 Representative Project; “High” = higher performance ~~ability to achieve measure~~, “~~Medium~~Comparable” = ~~moderate ability to achieve measure~~comparable performance, “Low” = lower ~~ability to achieve measure~~ performance.

(5) Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.

Table 2 Level 2 Screening Evaluation Criteria, Measures and Methods (by segment)

Purpose and Need [1]	Evaluation Criteria [2]	Measure [3]	Quantitative (no.) or Qualitative (high/med/low) [4]	Methods [5]
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the ~~West Seattle and Ballard~~project corridors defined in ST3	Reliable Service	Potential service interruptions and recoverability	Quantitative	Number of service interruptions during peak and off-peak travel periods (e.g., frequency and duration of moveable bridge openings, at-grade crossings, etc.) and redundancy and ability to re-route service
	Travel Times	LRT travel times	Quantitative	Estimated travel times from Ballard and Alaska Junction to Downtown Seattle based on alignment characteristics, including interim terminus effects
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand	Regional Connectivity	LRT network integration	Qualitative	Regional LRT system connectivity and operational flexibility to meet future demand
	Transit Capacity	Passenger carrying capacity in downtown	Qualitative	Combined carrying capacity of downtown transit tunnels
	Projected Transit Demand	Ridership potential	Quantitative	Future 2040 total population and employment within 10-minute walkshed of WSBLE Project stations
Connect regional ~~growth~~ centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan	Regional ~~Growth~~ Centers Served	Station proximity to PSRC-designated regional ~~growth~~ centers ~~served~~	Quantitative	Percent of PSRC-designated regional growth centers and manufacturing/industrial centers within 10-minute walkshed of stations
		Population and job densities	Quantitative	Population and job densities within 10-minute walkshed of stations
	Sound Transit Long-Range Plan Consistency	Accommodates future LRT extension beyond ST3	Qualitative	Ability to accommodate expansion potential of future LRT extensions identified in *Sound Transit Long-Range Plan*
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain	ST3 Consistency	Mode, route and general station locations per ST3	Qualitative	Consistency of mode, route and general station locations per ST3
		Potential ST3 implementation schedule effects	Quantitative	Constructability, environmental or other issues that may cause schedule delays (e.g., ROW acquisition needs, in-water work restrictions, etc.)
		Potential ST3 operating plan effects	Qualitative	Integration of WSBLE Project into existing LRT spine and overall system (i.e., spine segmentation, moveable bridge implications, etc.)
	Technical Feasibility	Engineering constraints	Quantitative	Compliance with *Sound Transit Design Criteria Manual*, design criteria from agencies with jurisdiction and federal regulations; incorporate conclusions of engineering feasibility studies
		Constructability issues	Quantitative	Constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.); incorporate conclusions of engineering feasibility studies
		Operational constraints	Quantitative	Assessment of operational constraints (e.g., interim terminus, access to maintenance facility, headways, moveable bridge, etc.); incorporate conclusions of engineering feasibility studies
	Financial Sustainability	Capital costs	Quantitative	ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and current Sound Transit unit pricing
		Operating cost impacts	Qualitative	Assessment of operations and maintenance (O&M) cost impacts, including annual and lifecycle costs
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations	Historically Underserved Populations	Opportunities for historically underserved populations	Qualitative/Quantitative	Assessment of improved access to opportunities (i.e., employment, housing and transit) for historically underserved populations (i.e., environmental justice populations) within station areas, as well as along the frequent transit network that would serve the station
		Low-income population	Quantitative	Low-income population within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Minority population	Quantitative	Minority population within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Youth population (under 18)	Quantitative	Youth population (under 18) within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Elderly population (65 and over)	Quantitative	Elderly population (65 and over) within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies	~~Local~~ Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	Quantitative	Percent of Seattle-designated Urban Centers and Villages within 10-minute walkshed of stations
		Activity nodes served	Quantitative	Number of activity nodes, including public and private destinations, within 10-minute walkshed of stations
	Modal Integration	Major transfer hubs	Quantitative	Number of major bus and rail service transfer hubs and ease of transfers for transit customers
		Bus/rail and rail/rail integration	Quantitative	Number of rail stations and bus stops within 0.25-mile buffer of stations operating at 15-minute or better service frequencies during peak and off-peak periods
		Bicycle accessibility	Quantitative	Number of existing bike routes or trails within 20-minute bikeshed of stations and distance to existing and planned regional bike facilities
		Pedestrian and persons with limited mobility accessibility	Quantitative	Intersection density within 10-minute walkshed of stations

Purpose and Need (1)	Evaluation Criteria (2)	Measure (3)	Quantitative (no.) or Qualitative (high/med/low) (4)	Methods (5)
	Station Area Development Opportunities	Development potential	Quantitative	Likelihood of developable or re-developable parcels within station areas; downtown stations will have a smaller geographic area
		Equitable development opportunities	Qualitative	Assessment of compatibility with Seattle's equitable development goals
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, ~~and~~ built and social environments through sustainable practices	Environmental Effects	NRHP-eligible properties	Quantitative	Number of adjacent NRHP-eligible property impacts
		Parks and recreational resources	Quantitative	Number of adjacent parks and recreational resource impacts
		Water resources	Quantitative	Estimated square feet of in-water impacts
		Hazardous materials	Quantitative	Number of adjacent listed hazardous material site impacts
		Visual	Quantitative	Proximity to residential areas or protected views
		Noise and vibration	Quantitative	Number of potentially affected sensitive receivers
		Property acquisitions and displacements	Quantitative	Number of potentially affected properties, including potential residential and business displacements
		Burden on historically underserved populations	Qualitative	Assessment of how potential acquisitions and displacements would affect historically underserved populations (i.e., environmental justice populations) relative to other communities and displacement risk from station area redevelopment
		Construction impacts	Qualitative	Assessment of temporary construction impacts to community, including potential for transportation, noise, vibration, and visual effects that could disrupt the community
	Traffic Operations	Traffic circulation and access	Quantitative	Effects on traffic transit (i.e., bus and streetcar) operations ~~for both automobiles and freight~~, including potential number of lane restrictions, turn restrictions, driveways impacted, and parking taken
		Existing transportation facilities	Quantitative	Effects on transportation, including bicycle lanes, sidewalks, and other infrastructure as warranted
	Economic Effects	Freight movement and access on land and water	Quantitative	Effects on freight mobility and future freight capacity expansion opportunities, including both on land and water
		Business and commerce effects	Quantitative	Effects on local businesses, as well as commercial and industrial areas

Notes:
(1) Based on Draft Purpose and Need Statement (dated January 24, 2018), with revisions incorporated from feedback received during early scoping.
(2) Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
(3) Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
(4) Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; "High" = high ability to achieve measure, "Medium" = moderate ability to achieve measure, "Low" = low ability to achieve measure.
(5) Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.

Table 3 Level 3 Screening Evaluation Criteria, Measures and Methods (corridorwide)

Purpose and Need [1]	Evaluation Criteria [2]	Measure [3]	Quantitative (no.) or Qualitative (high/med/low) [4]	Methods [5]
Provide high quality rapid, reliable, and efficient peak and off-peak light rail transit service to communities in the ~~West Seattle and Ballard~~project corridors defined in ST3	Reliable Service	At-grade crossings	Quantitative	Number of at-grade signalized intersections traversed
		Potential service interruptions and recoverability	Quantitative	Number of service interruptions during peak and off-peak travel periods. (e.g., frequency and duration of moveable bridge openings, at-grade crossings, etc.) and redundancy and ability to re-route service
	Travel Times	LRT travel times	Quantitative	Estimated travel times from Ballard and Alaska Junction to Downtown Seattle based on alignment characteristics, including interim terminus effects
		Transit travel time savings	Quantitative	Change in transit travel times during peak compared to No Build Alternative based on select trip pairs
Improve regional mobility by increasing connectivity and capacity through downtown Seattle to meet projected transit demand	Regional Connectivity	LRT network integration	Qualitative	Regional LRT system connection and operational flexibility to meet future demand
	Transit Capacity	Passenger carrying capacity in downtown	Quantitative	Combined carrying capacity of downtown transit tunnels (e.g., headways and vehicle passenger carrying capacities)
	Projected Transit Demand	Ridership forecasts	Quantitative	Average weekday riders for West Seattle and Ballard Link Extensions, including passenger transfers
Connect regional ~~growth~~ centers as described in adopted regional and local land use, transportation, and economic development plans and Sound Transit's Long-Range Plan	Regional ~~Growth~~ Centers Served	Station proximity to PSRC-designated regional ~~growth~~ centers ~~served~~	Quantitative	Percent of PSRC-designated regional growth centers and manufacturing/industrial centers within 10-minute walkshed of stations
		Population and job densities	Quantitative	Population and job densities within 10-minute walkshed of stations
	Regional Plan Consistency	Accommodates future LRT extension beyond ST3	Qualitative	Ability to accommodate expansion potential of future LRT extensions identified in *Sound Transit Long-Range Plan*
Implement a system that is consistent with the ST3 Plan that established transit mode, corridor, and station locations and that is technically feasible and financially sustainable to build, operate, and maintain	ST3 Consistency	Mode, route and general station locations per ST3	Qualitative	Consistency of mode, route and general station locations per ST3
		Potential ST3 implementation schedule effects	Quantitative	Constructability, environmental or other issues that may cause schedule delays (e.g., ROW acquisition needs, in-water work restrictions, etc.)
		Potential ST3 operating plan effects	Qualitative	Integration of WSBLE Project into existing LRT spine and overall system (e.g., spine segmentation, moveable bridge implications, etc.)
	Technical Feasibility	Engineering constraints	Quantitative	Compliance with *Sound Transit Design Criteria Manual*, design criteria from agencies with jurisdiction and federal regulations; incorporate conclusions of engineering feasibility studies
		Constructability issues	Quantitative	Major constructability issues based on potential conflicts and technical challenges (e.g., utility conflicts, existing infrastructure, geotechnical, tunnel portals, etc.); incorporate conclusions of engineering feasibility studies
		Operational constraints	Quantitative	Assessment of operational constraints (e.g., interim terminus, access to maintenance facility, headways, moveable bridge, etc.); incorporate conclusions of engineering feasibility studies
	Financial Sustainability	Capital costs	Quantitative	ST3 cost consistency and conceptual capital cost comparison based on conceptual design quantities and current Sound Transit unit pricing
		Operating costs	Quantitative	Annual O&M costs
Expand mobility for the corridor and region's residents, which include transit dependent, low income, and minority populations	Historically Underserved Populations	Opportunities for historically underserved populations	Qualitative/Quantitative	Assessment of improved access to opportunities (i.e., employment, housing and transit) for historically underserved populations (i.e., environmental justice populations) within station areas, as well as along the frequent transit network that would serve the station
		Low-income population	Quantitative	Low-income population within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Minority population	Quantitative	Minority population within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Youth population (under 18)	Quantitative	Youth population (under 18) within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Elderly population (65 and over)	Quantitative	Elderly population (65 and over) within 10-minute walkshed and/or 10-minute ride on connecting high frequency transit
		Affordable housing accessibility	Quantitative	Number of affordable housing units within 10-minute walkshed of stations and/or 10-minute ride on connecting high frequency transit
Encourage equitable and sustainable urban growth in station areas through support of transit-oriented development, station access, and modal integration in a manner that is consistent with local land use plans and policies	~~Local~~ Station Area Land Use Plan Consistency	Compatibility with Seattle designated Urban Centers and Villages	Quantitative	Percent of Seattle-designated Urban Centers and Villages within 10-minute walkshed of stations
		Activity nodes served	Quantitative	Number of activity nodes, including public and private destinations, within 10-minute walkshed of stations
	Modal Integration	Major transfer hubs	Quantitative	Number of major bus and rail service transfer hubs and ease of transfers for transit customers

Purpose and Need [1]	Evaluation Criteria [2]	Measure [3]	Quantitative (no.) or Qualitative (high/med/low) [4]	Methods [5]
		Bus/rail and rail/rail integration	Quantitative	Number of rail stations and bus stops within 0.25-mile buffer of stations operating at 15-minute or better service frequencies during peak and off-peak periods
		Bicycle accessibility	Quantitative	Number of existing bike routes or trails within 20-minute bikeshed of stations and distance to existing and planned regional bike facilities
		Pedestrian and persons with limited mobility accessibility	Quantitative	Intersection density and number of existing sidewalks, ADA-accessible slopes and curb ramps within 10-minute walkshed of stations
	Station Area Development Opportunities	Development potential	Quantitative	Inventory of developable or re-developable parcels within station areas; downtown stations will have a smaller geographic area
		Equitable development opportunities	Qualitative	Assessment of compatibility with Seattle's equitable development goals
Preserve and promote a healthy environment and economy by minimizing adverse impacts on the natural, ~~and~~ built and social environments through sustainable practices	Environmental Effects	NRHP-eligible properties	Quantitative	Number of adjacent NRHP-eligible property impacts
		Parks and recreational resources	Quantitative	Number of adjacent parks and recreational resource impacts
		Water resources	Quantitative	Estimated square feet of in-water impacts
		Hazardous materials	Quantitative	Number of adjacent listed hazardous material site impacts
		Visual	Quantitative	Proximity to residential areas or protected views
		Noise and vibration	Quantitative	Number of potentially affected sensitive receivers
		Property acquisitions and displacements	Quantitative	Number of potentially affected properties, including potential residential and business displacements
		Burden on historically underserved populations	Qualitative	Assessment of how potential acquisitions and displacements would affect historically underserved populations (i.e., environmental justice populations) relative to other communities and displacement risk from station area redevelopment
		Construction impacts	Qualitative	Assessment of temporary construction impacts to community, including potential for transportation, noise, vibration, and visual effects that could disrupt the community
	Traffic Operations	Traffic circulation and access	Quantitative	Effects on traffic and transit (i.e., bus and streetcar) circulation and access ~~for both automobiles and freight~~, including potential number of lane restrictions, turn restrictions, driveways impacted, and parking taken
		Traffic level of service	Quantitative	Assessment of intersection level of service (LOS)
	Economic Effects	Freight movement and access on land and water	Quantitative	Effects on freight mobility and future freight capacity expansion opportunities, including both on land and water
		Business and commerce effects	Quantitative	Effects on local businesses, as well as commercial and industrial areas

Notes:
(1) Based on Draft Purpose and Need Statement (dated January 24, 2018), with revisions incorporated from feedback received during early scoping.
(2) Criteria are subject to change as alternatives are refined and screened at each level, as well as to incorporate stakeholder input.
(3) Screening criteria and associated measures get progressively more detailed and quantitative as the alternatives are screened through Level 1, Level 2 and Level 3.
(4) Qualitative measures ranked from high to low based on anticipated ability to achieve evaluation measure; "High" = high ability to achieve measure, "Medium" = moderate ability to achieve measure, "Low" = low ability to achieve measure.
(5) Agency and stakeholder input will be considered in the overall alternatives evaluation and screening process.