Category	Type	Measure	Measure Description	Objective	Target	2011 Performance	2012 Performance
		ST Express			<15.0	13.88	14.78
		Tacoma Link			<15.0	0.88	0.12
Environmental Performance	Sustainability (Capability to Meet Environmental Commitments)	**Percent of Fleet meeting emissions standards**	Percent of fleet meeting emission standards	Operate a fleet that meets sustainability and environmental commitments established by the agency			
		Central Link					
		Sounder					
		ST Express					
		Tacoma Link					
		Energy Use	Reduce energy consumption at Sound Transit properties (units in MMBTU)	Promote environmental stewardship by conserving natural resources			
						707,462	
		Agency				707,462	
		Greenhouse gas emissions	Reduce greenhouse gas emissions by source and line of business (units in tonnes CO2e)	Promote environmental stewardship by reducing carbon emissions and/or by consuming energy from no-carbon generating sources			
						49,214	
		Agency				49,214	

12 Condition Assessment

12.0 Overview

12.0.1 Version Control/Document History

Document Owner	**TBD, TITLE**
Original Release Date	Jan. 1, 2014
Current Release Date	Jan. 1, 2014

12.0.2 Policy

An accurate, up-to-date assessment of all agency assets will be maintained. The AMP will establish assessment methodology and schedules.

Roles and Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Condition Assessment Element of these policies and associated AMP.

12.0.3 Scope

Sound Transit is committed to tracking the condition of all assets in its asset portfolio through its asset inventories. Having a strong data-collection infrastructure and accurate asset inventory in place is an important element of condition and performance monitoring and is a critical foundation for transit asset management. Condition assessment is the process of inspecting an asset to collect information to measure condition and performance. Condition assessment procedures vary by asset type. Basic condition assessments may consist of regular visual inspections that evaluate an asset for physical deterioration and wear or for evident structural issues or damage. Advanced inspections for assets like rolling stock involve more special testing (e.g., of fluids) and probing examination of asset component systems.

The condition assessment process ensures that an asset can meet its service level (see Section 6) requirements and provides information from which assets can be managed across its lifecycle. Effective implementation of condition assessment helps give the agency the ability to proactively identify any predictive and preventive maintenance or rehabilitation deemed necessary for an asset. Additionally, data retrieved from condition assessments can be used for scenario evaluation and performance modeling.

This section describes the Agency's general asset condition assessment approaches for rolling stock and for facilities and infrastructure. It also describes the Agency's condition rating scales used, the standard condition assessment reporting form, and the use of TERM Lite to make overall condition projections for facilities assets.

12.0.4 Organization

Responsibility for developing and updating asset condition assessment procedures is the responsibility of the asset owner. [TBD] is responsible for overseeing implementation of the condition assessment program including data collection, quality control, and reporting. The Asset Management Steering Committee is responsible for ensuring consistent application of factors to determine an asset's specific condition assessment strategy.

12.1 Condition Assessment

Sound Transit is putting in place a standardized condition assessment reporting process to ensure the quality and comparability of condition data collected. The reporting process relies on a general asset condition rating scale applied across all asset classes, a standard data collection form (the Sound Transit's Condition Assessment Report field form) to ensure the completeness and formatting of data collected, and a guideline for action in response to maintenance issues identified as part of the condition assessment. Note that for assets whose condition is assessed as part of standard preventive maintenance inspections, data are entered into the appropriate asset management information system in addition to collection through the standard data collection form. It is planned that all condition data will be collected through the EAMS in the future.

Industry standards and guidelines with regard to inspection and monitoring condition vary among different transit agencies. Some condition assessment and inspection procedures are mandatory because they may be required by the law or performed to fulfill obligations from federal or other funding agencies. In other instances, only a sampling of the asset class is required and inspected. In most cases, the size of the sample and the frequency of inspection are directly related to the level of risk associated with the asset class.

Some of the key implementation principles that Sound Transit has integrated in to the asset management condition assessment program include the following:

- The extent to which condition assessments are conducted depends on the costs and risk factor associated with the asset;
- Condition inspections can be adapted to emphasize particularly complex components or modified to be based on the condition and age of the asset. However, the manufacturer's recommended preventive maintenance program forms the basis of the inspection program;
- Condition is assessed in an established and consistent manner. Approaches to obtaining condition data include periodic assessment of all assets, statistical sampling based on asset attributes, and ad hoc data collection to support miscellaneous needs and unforeseen issues. Consistency in evaluating the assets can be attained by utilizing the same condition assessment process and definitions for all inspections;
- The condition rating assigned to an asset's condition is intended to inform investment decisions that affect asset performance;

- The assessment of the overall physical condition for individual asset is as comprehensive as possible, covering each of the asset's major components and subcomponents; and
- Other data sources may be used as a proxy measure of an asset's condition that will ultimately be used as a predictor for an asset's performance. Examples of this include total asset usage, asset age, and subcomponent maintenance and replacement data.

12.1.1 Rolling Stock (Revenue Fleet)

Currently, the condition assessment approach for the agency's rolling stock is based on annual condition inspections for State reporting purposes. At this time, partner agencies perform all maintenance of the agency's revenue fleet, except for Tacoma Link. Condition data is captured but not yet stored in a a shared enterprise asset management system for condition and performance monitoring. In the future, the agency hopes that all data from scheduled inspections will be available for analysis and synthesis into a more comprehensive condition and performance monitoring program or module. The performance data and failure trend analysis would be based upon preventive maintenance and repair of discrete systems and components used to supplement the overall condition assessment of the asset. Other data collection activities can include daily maintenance data from a vehicle maintenance management system, and additional data from onboard vehicle systems, diagnostics, stand-alone sensor systems, and ad hoc testing and inspections. In the future, such data may be better integrated to varying extents through the maintenance management system and collected to support specific business needs such as safety monitoring, reliability, asset condition, customer-readiness, and other factors related to operational performance.

12.1.2 Facilities and Infrastructure Assets

For facilities and infrastructure assets, an optimal capital maintenance and rehabilitation program focuses on timing capital projects based on observed asset condition. Minor planned maintenance follows a predetermined cycle while major maintenance and rehabilitation activities are based on actual inspections, condition history of the asset and prescribed manufacturer's maintenance recommendations when applicable. Because there is significant variability in the optimal timing for major maintenance and rehabilitation activities, condition assessment is a critical asset management tool that yields high-value information. The agency's condition assessment program covers all agency owned facilities assets and maps to the agency's transit asset inventory. Effective implementation of condition assessment and performance monitoring enables the agency to do the following:

- Prioritize and address immediate issues by completing reactive maintenance activities;
- Proactively identify cost-effective programs for any necessary preventive maintenance or rehabilitations;
- Assess the quality and effectiveness of maintenance activities; and
- Collect condition and performance data for scenario evaluation and performance modeling and improvement.

Seeking to meet the challenges of preserving and maintaining its transit assets, the agency began completing facilities asset condition assessments in 2011. A findings report was provided summarizing the overall condition of the agency facilities assets as well as the projected annual investment needs to maintain and preserve the transit infrastructure.

For facilities assets, data collection often focuses on asset condition or monitoring performance. However, this process does not necessarily help the agency directly identify root causes of performance issues or directly indicate appropriate response strategies. While the agency's condition assessment program and performance monitoring covers all facilities assets to a reasonable level of detail, the agency must ensure in the future that there are effective processes in place to follow up on identified performance issues, identify root causes, and develop, implement, and monitor corrective actions.

Inspections are often the most cost-effective method to assess the condition of and identify facilities issues that include defects, deterioration, and damage. The frequency of inspections, inventory, and condition assessment currently performed by the agency are shown below:

Exhibit 21: Inventory, Inspection, and Condition Assessment Frequencies by Asset Class

Asset	Inventory	Inspection	Condition Assessment
Small & Attractives	Annually, led by Departments	N/A	N/A
Rolling Stock	Annually, led by agency partners	Annually, led by agency partners	Aged based, led by agency partners
Facilities	Annually, led by Operations	Annually, led by Project Manager, Facilities	Every 3 years, led by Project Manager, Asset Control

The assessment approach of the overall physical condition for individual assets is comprehensive and covers each of the asset's major components and subcomponents. The condition inspections can be adapted to emphasize particularly complex components or modified to be based on the condition and age of the asset. To the extent possible, the agency strives to use the manufacturer's recommended preventive maintenance program to form the basis of the inspection program.

As an example of an asset-specific condition assessment program, Sound Transit has a separate Bridge Safety Management Program to manage bridge safety compliance for all of the Agency's bridge and aerial guideway assets based on various regulatory requirements for inspection, maintenance, and capacity rating. The Bridge Safety Management Program is documented in [Document Reference], and includes planning for bridge inspection, maintenance, rating, record keeping, issue identification, and issue response, as well as quality control measures

Sound Transit's goal is perform an inventory and condition assessment for all assets at least every three years. Exceptions may be made as long as an asset warrants it or certain circumstances arise such as satisfying data requirements in the acquisition of grant funding. [TBD] will be responsible for the

ongoing maintenance of the asset inventory and condition assessment data. Inventories and condition assessments are performed by personnel capable of conducting such activities, which may include employees already responsible for physical maintenance of the transit assets.

12.1.3 Condition Rating

Sound Transit applies two general condition rating scales to compare asset condition across asset classes. Exhibit 22 shows the general condition rating scale used for reporting condition data to the FTA and for use of TERM Lite and Exhibit 23 shows the general condition rating scale used for reporting condition data to the State. Note that the condition rating do not necessarily map directly based on different definitions. The condition ratings are primarily intended to support overall capital needs analysis and planning.

Exhibit 22: FTA General Asset Condition Rating Scale

Condition Rating	Description	Comments
Excellent (+2)	Greatly exceeds required condition	Asset like new; no visible defects
Good (+1)	Somewhat exceeds condition	Asset showing minimal signs of wear; some (slightly) defective or deteriorated component(s), but no functional impact
Fair (0)	Meets required condition	Some moderately defective or deteriorated component(s) with limited functional impact
Poor (-1)	Partially meets required condition	Increasing number of defective or deteriorated component(s) and increasing maintenance needs, with asset function no longer at acceptable levels
Unsatisfactory (-2)	Does not meet required condition	Asset is past its useful life and is in need of immediate repair or replacement; may have critically damaged component(s); asset no longer fit for service

Exhibit 23: State General Asset Condition Rating Scale

Condition Rating	Description	Comments
100	Requires routine preventive maintenance	Negligible if any corrective maintenance required
80 to 90	In good working order, requiring only nominal or infrequent minor repairs	Infrequent means more than 6 months between repairs
50 to 70	Requires frequent minor repairs or infrequent major repairs	Frequent means less than 6 months between repair
20 to 40	Requires frequent major repairs	Asset is marginal
10	Continued use presents excessive repair costs and/or potential service interruption	Asset is not cost-effective to operate

This general condition rating scale is applied in the Sound Transit's Condition Assessment Report field form. The form ensures that the Agency collects condition data that is complete, accurate, and formatted to support compliance with federal asset condition data reporting requirements.

12.1.4 Condition Reporting Form

Sound Transit's Condition Assessment Report field form [Document Reference] shown in Exhibit 24 is used by staff in completing a direct asset inspection. The form was developed to include the estimated asset condition rating for reference by the field inspector. The observed condition rating is accomplished through visual field inspection and is typically subjective in nature. For this particular exhibit example, a deficiency checklist that includes severity of defects and maintenance priority for the asset class was used to assist the field inspector in determining the observed condition rating score. In this example, the observed asset condition rating is lower than the estimated asset condition rating. The asset should have a theoretical condition rating score of 4.7, however, the asset appears to be decaying quicker than anticipated based on visual field inspection.

Exhibit 24: Sound Transit Condition Assessment Report (field form)

SOUNDTRANSIT **Condition Assessment Report**

Inspection Date:	5/23/2012 - 5/25/2012		Asset Name (Parent):	Station Parent-Stadium
Inspected By:	J. Gonzales		Asset Number:	668001.00.00
Inspection Type:	Annual		Observed Overall Condition Rating:	4.35
Cycle:	Every 3 Years		Estimated Overall Condition Rating:	4.52

GENERAL COMMENTS:	Condition Ratings based on Federal Transit Administration's (FTA) Transit Economic Requirements Model (TERM)
Condition Ratings	**Description**
Excellent 5.0 to 4.8	New asset; no visible defects
Good 4.7 to 4.0	Asset showing minimal signs of wear; some (slightly) defective or deteriorated component(s)
Adequate 3.9 to 3.0	Asset has reached its mid-life (condition 3.5); some moderately defective or deteriorated component(s)
Marginal 2.9 to 2.0	Asset reaching or just past the end of its useful life; increasing number of defective or deteriorated component(s) and increasing maintenance needs
Poor 1.9 to 1.0	Asset is past its useful life and is in need of immediate repair or replacement; may have critically damaged component(s)

ASSET CLASS: PLATFORM

Property:	Stadium Station	Estimated Asset Condition Rating:	4.7	Observed Asset Condition Rating:	4.5
Asset Tag:	668001.01.00 Platform	In-service Year:	2009	Estimated Life (yrs):	30
Grid Location:		Inspection Year:	2012	Remaining Useful Life (yrs):	27
Coordinates:				Observed Remaining Useful Life (yrs):	25

Deficiency Class (1, 2, or 3) (what to look for first)	Deficiency Checklist	Severity of Defects (minor, moderate, major, or none)	Qty.	U/M	Maintenance Priority (emergency, urgent, routine, deferred) E	U	R	D	Total	Grid Location	Additional Comments
1	Sheared or broken sections	minor						x			
1	Uneven sections (greater than 1/2")	none						x			
1	Wide cracks or gaps (greater than 1/2")	none						x			
2	Uneven sections (between 1/4" to 1/2")	none						x			
2	Cracks or gaps (less than 1/2")	minor						x			
2	Surface spalling or raveling	minor						x			
2	Grout or filler material deterioration	moderate					x				
2	Water ponding	minor						x			
2	Moss or algae buildup	minor						x			
3	Vandalism - marker, paint, or etched	minor						x			
3	Cosmetic stains	moderate					x				
					0	0	2	9	11		
					0%	0%	18%	82%	100%		

12.1.5 TERM Lite Projections

As part of condition assessments, the Project Manager, Asset Control uses FTA's Transit Economic Requirements Model (TERM and TERM-Lite) and deterioration schedules to determine remaining useful life of assets and overall state-of-good-repair. TERM is designed to provide an assessment of the current physical condition of existing transit assets based on the assets' types, ages, maintenance histories and past utilization. The Rehabilitation and Replacement module within TERM Lite possesses the capability of assessing both the current and potential future physical condition of each transit asset under analysis. To perform the assessment, the model relies on deterioration schedules that capture the ongoing decay of a particular transit as it passes through its total life cycle. TERM Lite uses over 100 deterioration schedules, the majority of which were estimated using empirical asset condition data obtained from on-site rail and bus transit asset condition inspections at more than 50 different transit properties. The resulting output illustrating the existing condition of transit assets is included in the following reports: Condition Distribution of the twenty-year forecast period and Percent of Assets in Marginal or Poor Conditions. Both reports come standard in the TERM Lite model. Refer to Appendix [insert here] for the facilities asset condition assessment summary reports retrieved from TERM Lite by the agency.

TERM Lite uses asset age and useful life along with deterioration curves that is standard in the model to help predict an asset's condition. The agency developed a similar supplementary rating process to evaluate the condition of the agency's facilities asset inventory. The agency rating process, however, includes direct asset inspections based on the TERM condition rating scale.

The two features of the condition rating process developed by the agency include the following: estimated asset condition rating and observed asset condition rating.

- The estimated asset condition rating is the theoretical condition rating score of an asset based on the assets' age and useful life correlated with the TERM Condition Rating Scale. In general, most of the agency assets have a useful life between 10 to 30 years. The age of the asset determines the estimated asset condition rating based on the condition rating decay curves developed by the agency. This theoretical condition rating serves as the baseline during actual asset inspections. Refer to Appendix [insert here] for the facilities estimated asset condition rating decay curves used by the agency.
- The observed asset condition rating relies on actual inspections performed on agency facilities assets. Using the estimated asset condition rating as a point of reference, visual inspections are performed to evaluate and confirm an assets' theoretical condition rating. The observed condition rating is assessed against the estimated condition rating score to determine whether it meets, exceeds, or should be rated lower than the estimate. Whereas the TERM Lite model generally relied on useful life and asset age as predictors of asset condition, the rating process developed by the agency adds direct inspection of assets to confirm the theoretical condition rating of a particular asset.

Process Owner:

- Asset Planning and Programming Manager

Responsible	• Asset Owners
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Annual condition assessment

Inputs:

I.1 Asset Planning and Programming Work Plan
I.2 Condition assessment guidelines
I.3 Condition Assessment Report Form

Process Steps:

S.1 Asset owner details appropriate condition assessment strategy in the condition assessment guidelines
S.2 Condition assessments are carried for all rolling stock and for higher level facilities and infrastructure assets (e.g., overall system, not subsystems)
S.3 Rolling stock asset owners conduct condition assessment annually for each vehicle, according to a standard checklist and report results by vehicle
S.4 Asset Planning and Programming team conducts condition assessment for facilities and, as needed, for infrastructure assets with the support other Operations staff
S.5 Condition Assessment Report Form is completed and submitted to the Project Manager, Asset Control
S.6 Project Manager, Asset Control compiles condition data and summary statistics for the Agency
S.7 Project Manager, Asset Control inputs data to TERM Lite for state-of-good repair projections and performance measures as appropriate
S.8 Project Manager, Asset Control compiles data for State and FTA reporting and submits to [TBD]
S.9 Asset owners are responsible for conducting maintenance and making capital investment requests as necessary based on assessment findings
S.10 Project Manager, Asset Control is responsible for storing condition assessment records as appropriate

Outputs:

O.1 Completed Condition Assessment Report Form
O.2 TERM Lite projects

Sound Transit applies one of three general condition assessment strategies to each asset type:

- Age-based: the asset's condition is estimated based on its age. The condition rating is based on the expected asset condition at a particular age. Note that these assets are still subject to a periodic inventory for accounting and data quality control purposes.
- Observed: the asset's condition is directly observed through visual inspection and/or measurement.
- Sample-based: only a subset of the asset population is observed, and the results are used to estimate condition for the remaining population of the asset type.

For each asset where Sound Transit applies the observed or sample-based condition assessment strategy, the asset owner is responsible for developing the detailed condition assessment procedures to apply.

Sound Transit uses four factors to select an asset's condition assessment strategy:

- Asset criticality: the criticality score assigned by the Agency's criticality framework helps understand the level of risk associated with deteriorating condition. Assets with high and very high criticality scores typically need an observed or sample-based condition assessment procedure and may have relatively more frequent inspections.
- Value of information: observed and sample-based asset condition assessments vary in frequency by asset type and location to optimize the value of the information collected. Assets which typically experience slower or more predictable deterioration need less frequent assessment than assets with rapid or random deterioration. In addition, the Risk Management Plan [Document Reference] may specify monitoring requirements for specific assets as a risk mitigation strategy.
- Condition assessment cost: assets that are more expensive to inspect may be inspected less frequently or use a sample-based condition assessment approach.
- Inventory information quality control: assets where there is greater concern about the data integrity of the capital and operational data inventories may require more frequent assessments.

The asset owner must integrate these four factors in selecting the condition assessment strategy and developing a detailed condition assessment procedure to support it. A procedure template is provided in Exhibit 25 below to support development of condition assessment procedures.

Condition assessments are an opportunity to identify and report immediate maintenance issues. The standard condition assessment data collection form supports identification and communication of such issues, even where they are not directly related to the asset but only occur in its environment.

Exhibit 25: Asset-Specific Condition Assessment Procedures Template

Procedure Element	Description

Procedure Element	Description
Asset class and components	Definition of the specific assets covered under the scope of the procedure from the asset class to the lowest indenture level applied
Inspection frequency	Identification of the condition assessment strategy used and definition of the inspection frequency for various asset types
Asset information collected	Definition of the detailed asset information collected, included OEM, serial number, location, etc.
Condition rating methodology and scoring	Description of the condition scoring and assessment methodology for each asset type and component
Maintenance issue reporting	Description of various types of general types of maintenance issues to record and guidelines for reporting them/follow-up actions
Capital planning estimates and recommendations	Definition of methodology for developing capital planning recommendations including estimates of remaining useful life, need for rehabilitation or replacement, order-of-magnitude cost estimates
Follow-up	Scheduling of next inspection, tracking of identified issues/recommendations

Sound Transit applies a standard guideline for action and notification for immediate maintenance issues identified by condition assessment staff. The guideline is summarized in Exhibit 26 and applied in the standard data collection form. Note that Priority 1 and 2 issues require immediate verbal notification to the asset owner and/or the Maintenance Control Center.

Exhibit 26: Action Requirements for Identified Maintenance Issues

Issue Urgency	Description	Action Required
Priority 1	Highest priority: safety critical issue; critical asset with imminent risk of failure	Immediate notification and action required
Priority 2	High priority: critical asset with high risk of failure; other asset with imminent risk of failure	Immediate notification required, action required within 1 week
Priority 3	Medium priority: no risk of imminent failure, but likely deterioration of condition if issue not addressed	Action required within 1 month
Priority 4	Low priority: minor issue with low likelihood of deterioration of condition in the short term	Action required within 1 year, note for future inspection
Priority 5	Lowest priority: minimal impact on the asset's functional performance or	Complete action if possible, note for future inspection

	reliability, but good practice to address	

In the future, the agency will have more precise procedures for both higher frequency routine inspections and more detailed infrastructure inspections. The protocols shall be kept up to date as practices evolve and new tools and technology become available. For example, use of portable handheld devices can increase the efficiency of inspection by allowing an inspector to access and enter data in the field. Additionally, these inspection histories shall be made available electronically to allow for easy comparison of asset condition over time.

Quality control measures should be in place to verify maintenance activity effectiveness. Inspections must be completed carefully with instruments used properly and protocols followed dutifully. Quality control measures may include inspections accompanied by experienced staff or third-party inspectors for comparison of data. Third-party facility audits can provide quality control of the agency's practices, greater expertise for non-routine inspections, and identify investment needs with the benefits quantified. Lastly, third-party audits can validate the agency's operations and maintenance practices to identify opportunities for improved efficiency.

13 Criticality, Risk Assessment, and Risk Management

13.0 Overview

13.0.1 Version Control/Document History

Document Owner	TBD, TITLE
Original Release Date	Jan. 1, 2014
Current Release Date	Jan. 1, 2014

13.0.2 Policy

Sound Transit shall establish, implement and maintain documented process(es) and/or procedure(s) for the ongoing identification and assessment of asset-related and asset management-related risks, and the identification and implementation of necessary control measures throughout the life cycles of the assets.

Roles and Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Criticality and Risk Assessment Element of these policies and associated AMP.

13.0.3 Scope

This section addresses Sound Transit's processes for determining asset criticality and for identifying and documenting asset-related risks in an asset risk registry. An asset criticality score reflects the asset's contribution to the Agency's ability to provide service, conduct business, and achieve primary goals. An asset-related risk identifies an event that leads to asset failures with serious consequences and their associated frequency or likelihood. The determination of asset criticality and identification of asset risks helps Sound Transit to:

- Allocate resources more efficiently to asset management activities such as maintenance, renewal, and improvement
- Implement risk management measures to cost-effectively improve the transit system's resiliency and its ability to withstand asset-related hazards with economic, safety, and service consequences.

13.0.4 Organization

Determining the criticality of assets and identifying and monitoring asset-related risks is the responsibility of [TBD Operations staff]. [TBD] coordinates with asset owners and DECM to document criticality and risk and apply criticality and risk assessment frameworks to support decision-making. [TBD in Operations] and the Director of Risk Management work together to ensure risk management planning covers asset-related risks and risk management measures are implemented effectively and reviewed regularly. Sound Transit's Design, Engineering and Construction Management(DECM) Department, in

collaboration with the Risk Management Division, is responsible for evaluating and addressing the risks and exposures of each capital project.

13.1 Criticality Analysis [To-Be Process]

Overview:

Sound Transit's criticality analysis process assigns each asset a score based on its impact on the Agency's overall strategic goals. The score helps to allocate scarce resources more effectively in the maintenance planning, capital planning, and condition assessment processes. Asset criticality also determines in part the level of response to asset-related risks and resources dedicated to risk mitigation, as well as the need for a contingency plan in case an asset's level of service is affected. A criticality analysis is performed on each asset as it is entered into the operational asset inventory of record. The asset owner works together with [TBD] to apply the criticality analysis framework. The EAMS System Administrator is responsible for entering the criticality score into the inventory of record as part of the asset commissioning process.

Note that an asset's criticality depends not only on its function within the transit system but also its location. Therefore, the criticality analysis framework is tied not only to Sound Transit's standard asset hierarchy but also to its location naming convention. A given asset type's criticality is scored based on each of the criteria in the criticality framework, and then, depending on the asset type, its may scores for each criterion, weighted by its physical location in the system. For example, a light rail vehicle and a commuter rail car with similar capacity might have different scores based on the relative demand levels of the two services. Likewise, an elevator in a busy station has a higher criticality score than an elevator in a less busy station. Because of the influence of changing technology and demand factors, the Agency is committed to updating asset criticality scores [regularly]. The Agency's [draft criticality analysis framework] is documented in [Document Reference] and summarized in Exhibit 27 below.

Exhibit 27: Summary of Sound Transit's Draft Asset Criticality Analysis Framework

Business Impact	Low (Score 0)	Medium (Score 0.33)	High (Score 0.67)	Very High (Score 1)	Weight
Core Criteria					
Asset Loading (based in part on location)	Low use	Average expected usage	Consistent high volume usage	Highest volume usage in system	
Safety Consequences of Failure	None	Lost time injury / hospitalization/ litigation	Possible fatality/ serious litigation	Possible multiple fatalities/ existential impact on the agency	

Business Impact	Low (Score 0)	Medium (Score 0.33)	High (Score 0.67)	Very High (Score 1)	Weight
System-Level Consequences of Failure	Very isolated: no impact on overall impact	Somewhat isolated: local/ related assets impacted	Connected: significant impacts in multiple areas of the system	Integral: major system-level impacts	
System Redundancy	Multiple alternatives	Single alternative	Imperfect alternative	No alternative	
Ease of Procurement (whole asset or critical parts)	< 1day	< 1 month	<1 year	>1 year	
Expected Downtime	<1 Hour	<1day	<1week	>1 week	
Secondary Criteria					
Customer interface (based in part on location)	Low visibility to passengers/ public			High visibility to passenger/ public	
Replacement Cost	< $25,000			>$25,000	
Obsolescence	Standard technology/ within product lifecycle			Obsolete technology or product	
Environmental Impact (Of failure)	None to local small scale pollution			Significant environmental contamination	
Security consequences of failure	No security impact			Security compromised	

Core criteria reflect the criticality criteria with the most impact on overall Agency goals, reflected in their higher scoring weights. Secondary criteria have less impact and are included in the criticality framework to help differentiate assets. These criteria have low weightings are not intended to define an asset as critical alone. The criticality framework is applied to the operational and financial asset inventories based on the standard asset hierarchy and the location naming convention. With respect to the latter,

an asset's criticality might vary based on differences in asset loading and customer interface among locations.

The final criticality score... [Identify the criticality scoring scheme (percentage, 1 to 5 scale, etc.)].

The criticality score becomes an asset attribute in the operational and financial asset inventories that aids decision-making in a variety of other processes including:

- Condition assessments,
- Contingency planning,
- Capital planning,
- Maintenance planning,
- Corrective maintenance prioritization, and
- Risk management planning and implementation.

Process Owner:

- [TBD]

Responsible	• [TBD] • Asset Owners
Accountable	• [TBD]
Consulted	• Asset Management Steering Committee
Informed	• [TBD]

Triggers:

T.1 Updated Agency goals/objectives/strategic plan
T.2 Annual review as part of the capital planning process
T.3 Commissioning of new assets

Inputs:

I.1 Existing criticality framework
I.2 Existing standard asset hierarchy
I.3 Existing asset location naming convention
I.4 Existing agency strategic objectives
I.5 Existing operational asset inventory

Process Steps:

S.1 [TBD] develops the draft criticality analysis process
S.2 [TBD] reviews the criticality analysis framework annually as part of the capital planning process

S.3 [TBD] updates the criticality analysis framework and process as necessary

S.4 The Asset Management Steering Committee and other stakeholders review and comment on the updated framework

S.5 [TBD] updates and finalizes the criticality framework

S.6 The Steering Committee Chair and Executive Team approve the final criticality analysis framework and process

S.7 [TBD] works with asset owners to apply the criticality analysis to the existing asset inventory

S.8 [TBD] works with the EAMS System Administrator to update the criticality analysis and scores in the operational asset inventory of record

S.9 [TBD] consider asset criticality in asset-related risk management processes, including contingency planning

S.10 [TBD] supports the EAMS System Administrator's and asset owners' application of the criticality analysis process as part of the asset information capture process overseen by DECM (see Section 4.2)

S.11 Asset owners, process owners, and other stakeholders review asset inventory as part of the maintenance planning, capital planning, and other processes to understand assets' current criticality score

S.12 Asset owners, process owners, and other stakeholders update their application of maintenance planning, capital planning, and other processes as necessary to reflect updated criticality scores

Outputs:

O.1 Updated criticality framework and analysis process

O.2 Updated asset criticality scores/asset inventory

13.2 Asset-Related Risk Analysis [To-Be Process]

Overview:

While asset criticality focuses on the consequences of an asset's function failure to the Agency's business requirements and goals, asset-related risk analysis focuses on the identification of the specific conditions or events that can cause asset functional failure, impact an asset's ability to meet expected levels of service, or a variety of other negative consequences for the Agency, its customers, or third parties. Sound Transit seeks to identify and characterize risks related to the Agency's asset portfolio[5] in an agency-wide risk registry (which also records other types of identified risks). The update of the asset-related risk registry involves the identification, analysis, and evaluation of asset-related risks through the asset-related risk analysis process. The asset risk analysis framework is applied to the asset inventory to

[5] Note that construction-related risks are addressed through a separate risk assessment process overseen by DECM. In general, contractors carry asset-related risks through the project lifecycle until Sound Transit's acceptance.

identify and characterize specific risks. The identified risks are then addressed through the contingency planning and risk management planning processes. The overall risk identification and risk management processes are detailed in the Agency's Risk Management Plan [Document Reference].

Risks are hazards which can possibly lead to negative consequences for the Agency, its customers, or third parties in the course of a risk event. Asset-related risks can be identified through a wide variety of methods including:

- Review of historical operations at the Agency,
- Review of maintenance and other related Agency records,
- Use of third party risk identification tools,
- Brainstorming workshops, and
- Review of peer experiences.

Exhibit 28 below defines six general areas of risk consequences with which to organize and understand identified asset-related risks. The table provides examples in each area, with both the hazard triggering the event and the event's consequences.

Exhibit 28: Example Risks by General Risk Area

General Risk Consequences	Example Hazard	Example Consequence
Level of Service: the hazard has potential negative impacts on service delivery to customers	Contractor cannot meet fleet reliability performance target	Poor fleet reliability impacts quality of service
	Station area has drainage issues that could lead to flooding	Station flooding leads to service disruptions on a high demand line and the need for a bus bridge
Economic: the hazard has potential costs to the Agency	Climate change raises frequency of extreme weather events with increased flooding frequency and severity	Rail service experiences more frequent and more costly outages with substantial asset damage and system downtime
	Poor quality assurance in the design phase leads to later change orders on a critical construction project	Project is delayed, and the project experiences major cost overruns
Safety: the hazard has the potential to harm employees, customers, or members of the general public	Track safety regulations are not properly followed by a contracted maintenance crew	Failure to follow procedures leads to untimely repowering of track and electrocution of a worker
	Lift equipment preventive maintenance is not scheduled and lift falls into disrepair	Lift fails and causes serious injury to a mechanic
Environmental: the hazard could lead to the harm of natural resources	A major rainstorm causes failure of stormwater management measures at a maintenance facility	Contaminated stormwater inflicts lasting damage on an ecologically sensitive waterway
	A contractor improperly disposes of used vehicle fluids on-site	The fluids contaminate the site and require clean-up

General Risk Consequences	Example Hazard	Example Consequence
Reputation / Customer Satisfaction: the hazard has potential negative impacts on customers' and the public's perception and patronage of the Agency	Aging power line insulation causes power outages	Service reliability deteriorates with noticeable impacts on ridership
	A major construction project runs well over budget	The overrun attract a high level of negative public attention
Regulatory: the hazard involves potential adverse action by a public regulatory authority	The State enacts more stringent environmental liability laws	The Agency is responsible for new remediation requirements on some of its properties
	The State enacts new requirements for clean propulsion technology	The new requirements represent a major conflict with the Agency's existing fleet management strategy

Once the risks are categorized, their impact on the agency is analyzed in terms of likelihood of occurrence and severity of outcomes. Exhibit 29 details the Agency's likelihood measurement scale.

Exhibit 29: Risk Likelihood Analysis Scale

Likelihood Level	Description	Probability
Almost certain to occur	Occurs consistently at the agency	>75%
Likely	Has occurred previously at the agency, with some likelihood it could occur again	25 - 75%
Possible	Has occurred often among other agencies or similar businesses	5 – 25%
Unlikely	Has occurred anecdotally among other agencies or similar businesses	0.5 – 5%
Rare	Few examples of its occurrence in the industry, some examples from other industries	<0.5%

The severity of risks is classified according to scales for each of the risk areas identified in Exhibit 28. The final severity score is a weighted average of the scores in each category. Exhibit 30 defines the Agency's risk severity measurement scale.

Exhibit 30: Risk Severity Analysis Scale

Severity	Level of Service	Economic	Safety	Environmental	Reputation/ Customer Satisfaction	Regulatory	Scoring
Weight	30%	20%	20%	10%	10%	10%	
Catastrophic	Line down, Massive/ 40% loss of system capacity, >1 week downtime	>$10M	Fatalities	Unconfined, mobile, and/or persistent pollution Unrecoverable damages Massive remediation Major penalties from enforcement authorities Major 3rd party impact	Massive negative attention Massive impact on approval/ satisfaction Major impact on ridership >1 year of sustained media attention	Extremely adverse ruling by FTA, FRA, PUC, legislature, etc. Critical audit findings	100%
Major	Major service disruption, 20% loss of system capacity, <1 week downtime	<$10M	Major injuries Hospitalization Irreversible injury	Unconfined pollution impacting 3rd parties with residual damage Major remediation Significant action by enforcement agencies Moderate 3rd party impact	Major negative attention Major impact on approval/ satisfaction Significant impact on ridership <1 year of sustained media attention	Moderately adverse ruling by regulator Serious audit findings	75%

Severity	Level of Service	Economic	Safety	Environmental	Reputation/ Customer Satisfaction	Regulatory	Scoring
Moderate	Major delays, 10% loss of system capacity, <1 day downtime	<$500K	Medical treatment Lost time/workers' comp incident	Pollution confined near source Moderate remediation required Limited impact on 3rd parties	Moderate negative attention Moderate impact on approval/ satisfaction Minor impact on ridership <1 month of sustained media attention	Serious inquiry/attention from regulator Significant negative audit findings	50%
Minor	Minor delays, 5% loss of system capacity, <3 hours downtime	<25K	Minor (first aid, etc.)	Pollution very locally confined Minor remediation required No 3rd party impact	Minor negative attention Minor impact on approval/ satisfaction Insignificant impact on ridership <1 week of sustained media attention	Special inquiry/attention from regulator Minor negative audit findings	25%
Insignificant	No noticeable service impact, No loss of system capacity, <20 minutes downtime	<$5K	Insignificant (no injury)	Pollution very locally confined Fully reversible impact No 3rd party impact	Insignificant negative attention Insignificant impact on approval/ satisfaction No impact on ridership <1 day of sustained media attention	Routine regulatory oversight	0%

The final step of the risk analysis process is the evaluation of risks in the risk registry. Asset-related risks are evaluated through the product of their likelihood and severity scores to create an overall risk score, which is an attribute of the risk in the registry. Based on the type of risk and the overall risk score, the Agency's risk management planning process defines an appropriate course of action (see Section 13.3). Note that higher likelihood risks typically require mitigation while lower likelihood risks are better candidates for risk transfer.

Process Owner:

- [TBD]

Responsible	• [TBD] • Asset Owners
Accountable	• [TBD]
Consulted	• Asset Owners • Asset Management Steering Committee
Informed	• [TBD]

Triggers:

T.1 Annual update of the risk registry and Risk Management Plan [Document Reference]
T.2 Updated Agency goals/objectives/strategic plan
T.3 Major risk event
T.4 Acquisition of new assets

Inputs:

I.1 Existing asset-related risk analysis framework
I.2 Existing risk registry
I.3 Existing Risk Management Plan

Process Steps:

S.1 [TBD] develops the draft risk analysis framework and process
S.2 Asset Management Steering Committee reviews and comments on the draft process
S.3 [TBD] updates and finalizes the draft process
S.4 Executive Director of Operations approves the final risk analysis framework and process
S.5 [TBD] works with asset owners and other stakeholders to apply the risk analysis framework to the existing asset inventory to develop a risk registry
S.6 [TBD] reviews the risk analysis process annually as part of the risk management planning process (see Section 13.3)
S.7 [TBD] updates the risk analysis framework and process as necessary

S.8 The Steering Committee and the Executive Director of Operations review and approve the updated process as necessary

S.9 [TBD] reviews and updates the risk registry with asset owners and other stakeholders annually as part of the risk management planning process

S.10 [TBD] works with asset owners to apply the risk analysis framework to newly acquired assets

S.11 Updated risks are communicated to stakeholders as appropriate

S.12 The risk registry is used to support identification of assets needing contingency plans, development of condition assessment strategies, and development of an Agency Risk Management Plan to prevent, respond to, and mitigate asset-related and other types of risks

Outputs:

O.1 Updated asset-related risk analysis framework

O.2 Updated Risk Management Plan

13.3 Asset-Related Risk Management [To-Be Process]

Overview:

Sound Transit uses a structured risk management process and systematic methodology to address loss exposures, which can mitigate the adverse effects of accidental and/or undetermined loss. Risk and loss exposures are evaluated on a continuous basis throughout Sound Transit agency and transit operations and projects. The risk management process follows defined steps and associated procedures, which include:

1. Risk Management Planning
2. Risk Identification
3. Risk Analysis, (analyzing risks & loss exposures)
4. Risk Assessment (examining and selecting risk management techniques)
5. Risk Response Planning (implementing selected risk management techniques)
6. Risk Monitoring, and
7. Risk Control.

The Risk Management process is a sequential process, and by following these steps establishes a sound framework for effective risk control. The Risk Management process is not static, but is a continuous process to address dynamic conditions. Therefore, the process needs to be monitored, evaluated and periodically modified, in order to produce a successful result.

The execution of the Risk Management process is the responsibility of the Director of Risk Management, who oversees the formation of insurance & risk financing program structure, insurance claims administration, and coordination with the Director of Safety and the Security Manager on a variety of risk management issues. The Director of Risk Management is directly responsible for the Sound Transit Risk Management Division (RMD) and for the implementation of the risk management process and

associated RMP. The primary responsibilities include risk identification, risk prevention, risk control, and risk financing.

The Risk Management process and formation of a Risk Management Plan (RMP) is to:

- Provide guidance to advance the use of a more systematic approach to risk management;
- Contribute to building a workforce and environment that allows for innovation and responsible risk-taking while ensuring legitimate precautions are taken in order to protect Sound Transit's assets, maintain public trust, and ensure due diligence; and
- Propose a set of risk management practices that Sound Transit can apply – and adapt if necessary – to specific circumstances and functional areas throughout the agency.

The purpose of a RMP is to strengthen Sound Transit's management practices, decision-making, and priority setting to better respond to a variety of requirements with a RMP framework that:

- Supports Sound Transit's governance responsibilities by ensuring that significant risk areas associated with policies, plans, programs and operations are identified and assessed, and that appropriate measures are in place to address any potential impacts;
- Improves results through more informed decision-making, by ensuring that competencies, tools and a supportive environment form the foundation for responsible risk-taking, and by encouraging learning from experience while respecting program controls;
- Strengthens accountability by demonstrating that levels of risk associated with policies, plans, programs and operations are explicitly understood, and that investment in risk management measures and stakeholder interests are optimally balanced; and
- Enhances stewardship of resources and fiscal responsibility by strengthening Sound Transit's public service capacity to safeguard people, public property and other stakeholder interests.

The RMP builds on core public service values. Outcomes of applied risk management practices are ethical, honest and fair; respect laws, government authorities and departmental policies; and result in the prudent use of resources.

With respect to asset-related risks, Sound Transit's risk management planning process is set up to identify and address risk on an asset-by-asset basis. Asset owners and operators have primary responsibility for identifying and addressing asset-related risks that the Agency controls directly through mitigation, preparation, and response.

For each identified risk, the management actions are based on the final risk score of the risk assessment in the risk registry and the selection of general risk management strategies appropriate to the specific risk. Based on the final risk score, there may be required actions and notifications, as summarized in Exhibit 31.

Exhibit 31: Summary of Risk Management Actions and Notifications

Risk Score Range	Risk Acceptability	Action	Notification

50-100% (Extreme)	Intolerable	Immediately halt existing business practices and do not resume without adequately addressing risk	Appropriate Executive Director
25-50% (High)	Unacceptable	Identify specific, immediate actions to reduce risk to the "medium" level and apply enhanced monitoring and controls to existing business practices	Appropriate Executive Director
10-25% (Medium)	Acceptable with continuous review	Continue current business practices with enhanced monitoring and ongoing evaluation of opportunities for improved controls	Appropriate area managers
1-10% (Low)	Acceptable with periodic review	Continue current business practices with annual review of risk by appropriate manager	Appropriate area managers
<1%	Acceptable	None	None

Extreme and high asset-related risks require specific mitigation actions through the Risk Management Plan. Medium risks are addressed in the Plan as practical and appropriate. In the annual risk management planning process, the [Process Owner TBD] works with asset owners and other stakeholders to review and update existing actions to address medium, high, and extreme risks and to identify new potential actions. The update process evaluates whether appropriate actions exist that fall into the four general risk management strategies:

- Risk Prevention: Eliminate sources of risk or substantially reduce the likelihood. Examples may include engineering and/ or design changes, quality assurance procedures, operations and use changes, and regular asset inspections.
- Impact mitigation: Minimize the consequences of risk. Some risks such as weather cannot be avoided. Risk Management should therefore be directed at coping with their impacts. Examples may include contingency planning, regular asset inspections, and in some instances design changes (for example increased weather protection).
- Risk Transfer: Shift the responsibility for the risk to another party, who ultimately bears the consequences if the risk arises. Examples include insurance, procurement, and contracting. Risk transfer often requires evaluation of options early in the asset lifecycle before the completion of procurement.
- Risk Acceptance: Defer action until action becomes more feasible or risk likelihood or severity increases. Occurs when risks cannot be avoided or transferred or the cost benefit would not be worthwhile. Risks must then be accepted but not ignored. A program of monitoring should be put in place.

The risk management planning process translates these strategies into specific actions appropriate to the risk level and resources available for risk management.

Process Owner:

- Director of Risk Management

Responsible	• [TBD] • Asset Owners
Accountable	• Director of Risk Management
Consulted	• Asset Management Steering Committee
Informed	• [TBD]

Triggers:

T.1 Annual update of the risk registry and Risk Management Plan [Document Reference]
T.2 Major risk-related event

Inputs:

I.1 Existing Risk Management Plan
I.2 Updated risk registry
I.3 Existing division work plans

Process Steps:

S.1 Review existing and new risks in the risk registry together with planned risk management actions
S.2 Updates risk management action plans for each risk as necessary
S.3 Review extreme and high-level risks and related-action plans with the Asset Management Steering Committee
S.4 Update and finalize the Risk Management Plan
S.5 Review and approval of the Risk Management Plan by [TBD]
S.6 Communication of the updated Risk Management Plan as appropriate
S.7 Update of division work plans as necessary to implement action plans and other Risk Management Plan elements

Outputs:

O.1 Updated Risk Management Plan
O.2 Updated division work plans

13.4 Capital Project Risk Management

Overview:

DECM Project Control staff assists PEPD during the preliminary engineering stage of project development to develop risk registers for managing risk that might occur during planning, including asset-related risks. Once a project proceeds to final design, DECM staff conducts field risk assessments for the project or contract through final design, construction, and acceptance. These field risk assessments are concluded at the completion of construction and rail activation. In general, Sound Transit's policy is transfer responsibility for project-related to contractors to the maximum extent possible and to use owner-controlled insurance programs to manage liability on a project- or program-specific basis through project acceptance and transfer to Operations. Sound Transit has special project-specific risk management planning requirements for capital projects. These requirements are defined in Sound Transit's [TBD- Document Reference]. Exhibit 32 summarizes the capital project risk management planning requirements.

Exhibit 32: [Example] Capital Project Risk Management Planning Requirements

Capital Project Budget	Risk Management Planning Requirement
>$2,000,000	Development of a project-specific risk management plan, to be reviewed and approved by Sound Transit
$200,000 to $2,000,000	Application of the Agency's project risk management plan template for medium-sized projects, to be reviewed and approved by Sound Transit
<$200,000	No formal requirement

The capital project risk management procedures ensures the Agency addresses asset-related risks related to capital projects. While capital projects face a broad set of risks including worker safety, asset-related risks are an important component of project risk. A critical example is the potential impacts on or disruption to ongoing transit operations when construction is taking place in or adjacent to the right-of-way or a support facility. It is especially important to manage asset-related risks as part of rehabilitation and replacement projects, since such projects can impact ongoing transit operations. Vendor risks include the ability to successfully deliver the asset as designed and ability to provide ongoing support through the asset lifecycle (for instance, having the financial stability to ensure future manufacture of spare parts). For projects with complex technology systems, systems integration can be a significant risk area and threat to project success, requiring additional mitigation measures. Note that many quality-related risks are typically addressed through separate quality assurance and quality control measures, detailed in Section 15.3.

Process Owner:

- [TBD]

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]

Informed	• [TBD]

Triggers:

T.1 Initiation of a capital project >$2M expected value
T.2 Initiation of a capital project <$2M expected value
T.3 Entry of capital project into a new Phase Gate phase

Inputs:

I.1 Project risk management plan template
I.2 Existing Project-Specific Risk Management Plan

Process Steps:

S.8 Project Manager works with the project team to develop an initial project-specific risk management plan
S.9 Project Manager populates project risk management plan template for the project
S.10 Project Manager is responsible for oversight of the plan's implementation in collaboration with stakeholders
S.11 As project enters a new project development phase, the project manager updates the risk management plan with the project team to reflect changes in scope and additional detail in scope of the project

Outputs:

O.1 Updated Project-Specific Risk Management Plan

14 Insurance Risk Management Program

14.0 Overview

14.0.1 Version Control/Document History

Document Owner	**TBD, TITLE**
Original Release Date	Jan. 1, 2014
Current Release Date	Jan. 1, 2014

14.0.2 Policy

Sound Transit will maintain insurance and loss control programs for the agency's assets. All assets will have commercial insurance, self-insurance, or a combination for loss coverage or an identified risk management plan. The agency may also implement self-insurance programs.

Roles and Responsibilities: The Executive Director FIT, or his/her designee, in collaboration with the Director of Risk Management will be responsible for development, maintenance and execution of the Risk Management Element of these policies and associated AMP.

14.0.3 Scope

A comprehensive risk management planning process identifies six overall risk areas addressed by the overall risk management planning process:

- Asset-related,
- Project-related,
- Employee-related,
- Operational,
- Financial, and
- Strategic.

This section addresses Sound Transit's process for managing asset-related risks through its insurance and risk management planning process. While this section focuses only on transfer of asset-related risks for purposes of the AMP, note that these are addressed as part of the Agency's general operational risk management program.

14.0.4 Organization

The overall risk management planning process is the responsibility of the Director of Risk Management who manages and supervises the activities and operations of the Risk Management Division for the Agency, with a focus on the Agency's insurance program. The Director of Risk Management ensures Agency lines of business have established risk and insurance plans to manage all assets and operations

and develops risk transfer and risk financing mechanisms and the formation of insurance program structures. The Risk Management Team provides safety and loss control, claims management, litigation support, and various levels of risk management reporting structure for the Risk Management Information System (RIMS). The Director of Risk Management also supports the development and implementation of the Agency's risk management strategy, including: risk management planning, risk identification, risk assessment, risk analysis, risk response planning, monitoring and control.

Sound Transit's Risk and Insurance Manager, under the direction of the Director of Risk Management, is responsible for Sound Transit's overall insurance program which includes asset-related elements. The Risk and Insurance Manager is responsible for the insurance program structure, its procurement, and maintenance of the Agency's risk and insurance coverage programs. The Risk and Insurance Manager coordinates development, implementation, management and administration of commercial insurance programs, including interfacing with the Agency's brokers; identifies Agency operations risk and develops contractual and risk financing solutions; and provides recommendations for developing programs to keep pace with evolving construction and mass transit industry trends and growth of the Agency's capital improvement and rails operations.

The Risk and Claims Analyst, under the direction of the Director of Risk Management, is responsible for management of the insurance claim administration activities for the Agency; provides ongoing property and liability claims administration; communicates claims procedures to all Agency internal and external customers; manages collection of documentation related to commercial insurance and tort liability claims; responds to information s requests from third-party adjusters; provides claim analyses on commercial property and liability risk; and provides claim administration support to the Director of Risk Management.

14.1 Asset-Related Insurance Program

Overview:

Sound Transit's insurance programs are divided into two major program categories; (1) Operations; focused on Sound Transit's transit operations and facilities operations, and (2) Capital Development; focused of Sound Transit's design, engineering and construction projects. Operations programs are comprised of the Agency Operations Insurance Program (AOIP) and the Rail Operations Insurance Program (ROIP). Capital Development programs are comprised of the various Owner Controlled Insurance Programs (OCIPs). Sound Transit uses OCIPs on specific major construction projects, such as the Central Link Light Rail Project, the University Link Light Rail Project and Northgate Link Extension Light Rail Project, when it is necessary to retain certain project risk than to risk transfer all of the project risk to contractors engineering and constructing projects on Sound Transit's behalf.

Agency Operations Insurance Program (AOIP): The following is a list and description of the asset-related insurance coverages within Sound Transit's Agency Operations Insurance Program for Sound Transits assets. Each insurance coverage addresses an asset-related risk's economic consequences. In some cases, insurance coverages can also address environmental consequences of risks. It should be noted however, that these insurance coverages do not have a direct impact on level-of-service, safety,

reputation, or regulatory risks, except where policy conditions require Sound Transit to take preventive actions. Coverageare risk-specific under each of the AOIP insurance policies and are subject o the limitations, terms and conditions contained within the policy.

- Property – First-party insurance that indemnifies Sound Transit for loss of property, or the loss of its income-producing ability, when the loss or damage is caused by a covered peril, such as fire or explosion, including coverage for earthquake and flood. (noted below.)
- Commercial Automobile – Insurance that pays for damages resulting from a loss to Sound Transit automobiles caused by an accident, maintenance or use of a covered auto.
- Inland Marine – Insurance that pays for damages resulting from a loss to Sound Transit Covered Property from a Covered Cause of Loss. Covered Property includes: 1) Listed/Scheduled Contractors Equipment 2) Unlisted Contractors Equipment, and 3) Computerized Business Equipment.
- Crime and Fidelity – Coverage for employee theft of money, securities, or property, including computer fraud, written on a per loss limit, a per employee limit, or a per position limit.
- Property – (sublimit) Earthquake and Earthquake "Occurrence" – Coverage for quaking, trembling, vibratory or undulating movement of a portion of the earth's crust, produced by underground volcanic forces or other pressures that produce a breaking, shifting or other movement of the earth's crust, including resulting Tsunami losses or damages to Sound Transit property.
- Property – (sublimit) Flood and Flood "Occurrence" – Coverage for a general and temporary condition of partial or complete inundation of normally dry land area from (1) the overflow of inland or coastal waters (2) the unusual and rapid accumulation or run off of surface waters, or (3) the spray from any of them, all whether driven by wind or not resulting in damage to Sound Transit property.

See Appendix A.1 for a listing of these policies included within Sound Transit's Agency Operations Insurance program, including insurers, policy numbers, effective dates, limits of insurance, and deductible or self-insured retentions. This list is updated annually after AOIP renewal.

Rail Operations Insurance Program (ROIP): The following is a list and description of some of the insurance coverages within Sound Transit's Rail Operations Insurance Program for Sound Transits assets for rail property / rolling stock. Each coverage is subject to the limitations, terms, and conditions within the individual insurance policy.

- Property – Rolling Stock – First-party insurance that provides coverage for Sound Transit or the interest of Sound Transit property consisting of locomotives, railroad passenger cars, and light rail vehicles. Coverage is also provided for property that Sound Transit has interest in that are held under rules of interchange, operating, and right-of-way/trackage agreements.
- Excess Property – Rolling Stock – Provides secondary coverage to Sound Transit for direct physical loss or damage to the property in the underlying Rolling Stock policy schedule, while located or contained as described in the schedule. Coverage applies when the Ultimate Net Loss exceeds the "Primary and Underlying Limits".

See Appendix A.1 for a listing of these policies included within Sound Transit's Rail Operations Insurance Program, including insurers, policy numbers, effective dates, limits of insurance, and deductible or self-insured retentions.

Owner Controlled Insurance Program (OCIP): An OCIP is a single insurance program that insures Sound Transit, the General Contractor, all Enrolled Contractors, Enrolled Subcontractors, Enrolled Construction Managers doing "At-Risk" work, and other parties included as additional insureds , or designated by Sound Transit by contract to add as an additional insured or an additional named insured. Certain Contractors and Subcontractors are ineligible for this program. The following is a list and description of some of the insurance coverages within Sound Transits Owner Controlled Insurance Programs for Sound Transits assets.

- Builders Risk – Provides coverage to Sound Transit for damage to materials, equipment, and fixtures to be permanently incorporated into the work. Coverage provides protection against physical loss or damage subject to normal policy conditions and exclusions. Contractors and their subcontractors are solely responsible for any loss or damage to their personal property including, without limitation, property acquired or provided until installed at the project site, Contractors' tools and equipment, scaffolding and temporary structures, whether owned, leased, or rented by Contractor.

See Appendix A.1 for a listing of these policies included within Sound Transit's Owner Controlled Insurance Programs, including insurers, policy numbers, effective dates, limits of insurance, and deductible or self-insured retentions.

Process Owner:

- Director of Risk Management

Responsible	• Risk and Insurance Manager
Accountable	• Director of Risk Management
Consulted	• [TBD]Insurance Broker(s)
Informed	• [TBD]FIT Executive Director

Triggers:

T.1 Annual Agency Operations Insurance Program (AOIP) renewal/planning
T.2 Annual Rail Operations Insurance Program (ROIP) renewal/planning
T.3 New construction project/program
T.4 Annual Risk Management Plan and risk registry update

Inputs:

I.1 Existing Agency Operations Insurance Program/new or renewed policies
I.2 Existing Rail Operations Insurance Program/new or renewed policies

I.3 Updated statements of values and other necessary property schedules and supporting documentation

I.4 Existing risk registry

Process Steps:

S.1 Risk and Insurance Manager leads preparation for insurance program renewal

S.2 Risk and Insurance Manager works with stakeholders and broker to update insurance requirements

S.3 Risk and Insurance Manager works with stakeholders and broker to develop project-specific insurance requirements

S.4 Director of Risk Management ensures planned insurance program aligns to overall risk management plan

S.5 Risk Management staff submit statements of values and other documentation to broker

S.6 Broker submits insurance specification requirements to insurance underwriters for quotes

S.7 Broker presents quotes to Risk and Insurance Manager and other stakeholders

S.8 Risk and Insurance Manager and Director of Risk Management evaluate and select quote

S.9 Risk and Insurance Manager gives broker the bind order from Director of Risk Management

S.10 Risk and Insurance Manager processes broker invoices from selected insurers and coverages are in force on for policy term as of the policy effective dates

S.11 Risk and Insurance Manager communicates coverage conditions to key stakeholders to ensure compliance with policy coverage AND claim handling requirements

S.12 Internal Sound Transit staff and external third-parties report potential claims to the Risk and Claims Analyst for processing, investigation, adjusting and disposition

S.13 Risk and Insurance Manager works with Risk and Claims Analyst tender and process potential claims through insurance companies or third-party claims administrators

Outputs:

O.1 Updated Agency Operations Insurance Program/new or renewed policies

O.2 Updated Rail Operations Insurance Program/new or renewed policies

O.3 Project-specific Owner-Controlled Insurance Program new or endorsed policies

O.4 Insurance claims and supporting documentation for claim investigation, adjusting, disposition

15 Continuous Improvement and Audit

15.0 Overview

15.0.1 Version Control/Document History

Document Owner	**TBD, TITLE**
Original Release Date	Jan. 1, 2014
Current Release Date	Jan. 1, 2014

15.0.2 Policy

Corrective Action & Prevention: Sound Transit shall establish, implement and maintain process(es) and/or procedure(s) for initiating:

- Corrective action(s) for eliminating the causes of observed poor performance and nonconformities identified from investigations, evaluations of compliance and audits to avoid their recurrence;
- Preventive action(s) for eliminating the potential causes of nonconformities or poor performance.

Any corrective or preventive actions taken and their timings shall be commensurate with the risk(s) encountered. Where a corrective or preventive action identifies new or changed risks, or the need for new or changed process(es), procedure(s) or other arrangements to control asset life cycle activities, the proposed actions shall be risk assessed following the agency configuration control and configuration review board policies and procedures as applicable prior to implementation.

The organization shall keep records of the corrective and preventive actions taken and communicate these to relevant stakeholders. The organization shall ensure that any necessary changes arising from corrective and/or preventive actions are made to the asset management system.

Continuous Improvement: Sound Transit shall establish, implement and maintain process(es) and/or procedure(s) for identifying opportunities and assessing, prioritizing and implementing actions to achieve continual improvement in:

- The optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle;
- The performance of the asset management system toward meeting its goals to operate and maintain its assets in state of good repair that meets regulatory requirements, environmental requirements, safety and security standards and high customer service standards.

The organization shall actively seek and acquire knowledge about new asset management-related technology and practices, including new tools and techniques, and these shall be evaluated to establish their potential benefit to the organization.

Departments involved in asset management will also utilize the agency's Lessons Learned program to identify way of repeating success and avoiding failures in management of the agency's asset base.

Audit: The organization shall ensure that audits of the asset management program are conducted to determine whether the program conforms to planned arrangements for asset management, has been implemented and is maintained and is effective in meeting the organization's asset management policy, strategy and objectives.

Audit program(s) for elements of the asset management program shall be planned, established, implemented and maintained by the Director of Internal Audit, based on the results of risk assessments of the organization's activities and the results of previous audits.

Roles and Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance, and execution of the Continuous Improvement & Audit Element of these policies and associated AMP.

15.0.3 Scope

Continuous improvement, compliance, and quality assurance are all important goals of this AMP and are reflected in many of the Agency's asset management processes. This section focuses on asset management processes intended specifically to ensure that Sound Transit's asset management system accomplishes the following:

- Functions effectively,
- Complies with Agency and external requirements,
- Responds effectively to new challenges, and
- Continually improves its effectiveness.

The Agency relies on its process management, engineering investigation and change, construction quality assurance, maintenance quality assurance, and audit processes to maintain the integrity and responsiveness of its asset management system.

A multimodal transit system requires a dynamic organization to respond to evolving asset requirements as the system grows, ages, and updates its assets. This section describes the Agency's process management and engineering investigation and change processes to responding to emerging asset management issues impacting Sound Transit's day-to-day operations.

In an agency that depends highly on contractors for the development, operation, and maintenance of its assets, quality assurance is an important asset management function. This section also describes the Agency's construction and maintenance quality assurance process.

Finally, this section describes Sound Transit's internal audit process for asset management as well as its response process for external audits (such as by the Federal Transit Administration). Sound Transit has numerous external audits. Federal Transit Administration triennial audits, State Controller audits, and State performance audits may all address aspects of Sound Transit's asset management practices. In

order to effectively respond to these audits, Sound Transit has a point of contact designated to coordinate and respond to external audits. The point of contact for an external audit coordinates with asset management related issues with the Asset Management Steering Committee Chair.

15.0.4 Organization

The Executive Director of Operations has overall responsibility for corrective action and improvement related to asset management and continuous improvement. However, these activities require the participation of managers in each asset management function and the support of specialist engineering and quality assurance staff, as well as the broad participation of Sound Transit's functions and its partners including vendors, consultants, and contractors.

The Director of Internal Audit is responsible for all internal audits. The timing of asset management audits is coordinated with the Steering Committee Chair and the Executive Director of Operations, who can also provide suggestions for focus areas of particular interest to Operations.

The coordinator for external audits typically depends on the type of external audit. Federal Transit Administration triennial audits are typically coordinated by the Grants Manager. General State audits are typically coordinated by the Controller. State performance audits are typically coordinated by the Director of Audit.

15.1 Engineering Investigation and Change [To-Be Process]

Overview:

Engineering investigation and change focuses on improving the reliability and maintainability of assets with "high" and "very high" criticality or other assets with relatively poor performance. Maintenance records allow maintenance supervisors to understand which assets with "high" and "very high" criticality have reliability and repair cost issues that impact asset level of service. The engineering investigation and change process consists of developing modifications to technology or procedures to improve asset reliability and maintainability. Likewise, the engineering investigation and change process is an important response to serious asset failure incidents to improve reliability and safety.

Process Owner:

- [TBD]

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Poor reliability of an asset with "high" or "very high" criticality

T.2 Poor maintainability of an asset with "high" or "very high" criticality
T.3 Identified technical risk for an asset with "high" or "very high" criticality
T.4 Chronic performance issues with a lower criticality asset
T.5 Serious asset failure incident

Inputs:

I.1 Asset inventory (including criticality scores)
I.2 Risk registry
I.3 Maintenance records

Process Steps:

S.1 Sound Transit engineering staff, together with supporting consultants if necessary, reviews identified asset performance issues and identifies assets for engineering investigation
S.2 Investigations are prioritized and approved by the [Executive Director of Operations]
S.3 Approved engineering projects proceed as resources are available, with an engineering team organized to support the task
S.4 Engineering investigation applies an reliability-centered maintenance or another appropriate engineering approach to understand asset safety, reliability, and maintainability
S.5 Engineering team identifies possible engineering changes to better time maintenance, prevent failure causes, or make maintenance more efficient
S.6 Engineering team selects the most promising engineering changes to pilot
S.7 If no there is no cost-effective engineering change, the engineering investigation is tabled until the issue increases in priority or new potential engineering changes emerge
S.8 Engineering change is piloted and effectiveness measured
S.9 If engineering change is not successful, engineering investigation continues
S.10 Engineering team documents engineering change and obtains OEM sign-off
S.11 Engineering change is fully implemented
S.12 Asset owner provides ongoing monitoring of change's effectiveness

Outputs:

O.1 Documentation of implemented engineering change

15.2 Process Management [To-Be Process]

Overview:

This AMP documents asset management-related processes and assigns a process owner to each one. The process owner is responsible for process management, recommending adjustments to the process and coordinating their development and implementation. Asset management processes are not intended to be static to improve over time, supporting increased efficiency and improved asset

management practices and outcomes. Note that some asset management process changes may only be applied on initiation of a new capital project, maintenance contract, or procurement. Planning process changes must account for situations where phasing in of new practices is appropriate.

Process Owner:

- Steering Committee Chair

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Audit findings and corrective action plan related to the process
T.2 Analysis of process performance results related to the process
T.3 Changing business requirements and practices
T.4 Other feedback received by process owner

Inputs:

I.1 AMP
I.2 Asset management process documentation

Process Steps:

S.1 Process owner documents recommendations/requirements for process modification/improvement
S.2 Process owner drafts proposed updates
S.3 Process owner circulates proposed updates to stakeholders for review
S.4 Stakeholders review and comment
S.5 Process owner updates and finalizes proposed changes
S.6 Asset Management Steering Committee reviews and approves process changes
S.7 Process owner maps changes and plans implementation
S.8 Process owner tests implementation if possible
S.9 Process owner updates documentation (including in the AMP) and communicates change
S.10 Process owner implements changes as approved
S.11 Process owner monitors process for success of changes
S.12 Process owner makes further modifications to the process as necessary
S.13 Process owner provides ongoing monitoring of the process

Outputs:

O.1 Update process documentation
O.2 Updated AMP

15.3 Construction Quality Assurance

Overview:

Quality assurance is a critical function for ensuring the appropriate level of quality for a new asset is achieved during the design and construction. Construction and Sound Transit Quality Assurance inspections occur throughout a construction project with the goal of identifying quality issues early and working with DECM's engineering staff and the contractor to correct identified issues cost-effectively. Sound Transit's construction management consultants and Quality Assurance staff are together responsible for carrying ongoing quality assurance inspections through the construction process. For major construction projects, the contractor develops a Quality Program Plan in accordance with the contract requirements and as approved by Sound Transit. For small construction projects, the specifications outline the quality requirements for inspection by Sound Transit construction management staff or on-call construction management consultants.

The Quality Program Plan covers:

- Identification of contractor QA/QC staffing and organization,
- Documented quality system,
- Design control,
- Document control and submittal management,
- Subcontractor, consultant, and supplier control,
- Receiving, handling, storage, and control of materials and equipment,
- Process control and control of special fabrication processes,
- Inspection and test plans,
- Control of measuring and test equipment,
- Inspection and test status,
- Identification, control and correction of non-conforming conditions,
- Corrective actions,
- Quality records,
- Contractor internal audits and audits of subcontractors and suppliers, and
- Training.

Process Owner:

- DECM

Responsible	• DECM
Accountable	• DECM

Consulted	• SQA
Informed	• DECM

Triggers:

T.1 Project enters construction phase

Inputs:

I.1 Project Management Plan
I.2 Sound Transit Quality Program Plan

Process Steps:

S.1 Major construction project: review of specifications for Quality Program Plan for each contract
S.2 Contractor submits Quality Program Plan for ST review and approval
S.3 Minor construction project: review technical specifications for quality requirements
S.4 Construction management consultants monitor and document quality during construction
S.5 SQA staff conduct periodic surveillances and audits
S.6 Non-conforming work is documented and monitored through resolution
S.7 MRB members approve the resolved Non-conforming resolutions

Outputs:

O.1 Contractor Quality Program Plans
O.2 Quality control records
O.3 Material Review Board records of resolution of Non-Conformance Reports

15.4 Maintenance Quality Assurance

Overview:

Quality assurance helps ensure asset lifecycle management activities are carried out effectively. Maintenance quality assurance involves sampling standard preventive maintenance, cleaning, repair, and other maintenance tasks to verify the work was completed and meets acceptable standards. The asset owner is responsible for including quality assurance measures in each maintenance contract and for developing an inspection and testing plan to oversee contractors' maintenance or maintenance completely directly by Agency staff.

Process Owner:

- [TBD]

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Ongoing asset operation

Inputs:

I.1 Existing asset maintenance plan
I.2 Existing maintenance testing and inspection plan
I.3 Asset-specific quality assurance guidelines/procedures (if not in testing and inspection plan)

Process Steps:

S.1 Asset owner includes quality assurance requirements in the maintenance plan and maintenance testing and inspection plan
S.2 For critical assets with a preventive maintenance plan, the asset owner defines a quality assurance inspection guideline, including sampling focus and frequency, quality assurance inspectors, a quality assurance inspection form or checklist, and a follow-up procedure
S.3 According to the quality assurance inspection guidelines or procedure, each of the Agency's designated quality inspector selects maintenance tasks (preventive maintenance inspections, cleaning, repair jobs, etc.) for review
S.4 The quality inspector follows the inspection guideline, noting any quality issues such as work not completed, work completed poorly, or visible but unrelated issues not addressed
S.5 The quality inspector logs the inspection in the asset management information system to maintain records of its completion and results
S.6 The quality inspector completes the follow-up procedure to address issues logged, including maintenance to complete and corrective action for the employee conducting the original work
S.7 The quality inspector submits the follow-up form to the appropriate maintenance supervisor or contractor manager
S.8 The maintenance supervisor/contractor manager reviews the quality assurance inspection results and ensures actions on the follow-up form are completed
S.9 Maintenance manager monitors that issues are addressed and closed out

Outputs:

O.1 None

15.5 Internal Audit

Overview:

The division creates an annual work program based on an assessment of potential risks that could impact Sound Transit's ability to achieve its objectives. The risk assessment considers the size of each activity and other audit experience with the program. Since asset management practices are a critical ongoing component of Sound Transit's risk and performance, the Agency's asset management practices shall be the subject of recurring audits to assess adherence by the Agency to its asset management policies, the conformity of actual asset management practices with documented practices, as well as the Agency's asset management performance and application of industry best practices. The Director of Internal Audit defines, organizes, and oversees internal audits and will coordinate their timing with the Executive Director of Operations. The Director of Audit will also take into account input from the Asset Management Steering Committee in defining the scope of internal audits related to asset management, as the Steering Committee may have certain areas of concern or issues it wishes to be reviewed as part of an internal audit.

The annual audit work program is presented to the Audit and Reporting Committee in a public meeting at the beginning of each year. The status of all planned audit activities is reported to this committee throughout the year. All audits are formally reported, and include responses from management. The division reports quarterly to the Audit & Reporting Committee regarding the status of the work plan. Audits completed during the preceding quarter are presented at this open public meeting, and management representatives are generally in attendance to field questions from board members. Any audits removed from the work plan must also be reported to the committee with an explanation of the rationale for removal. The status of prior audit recommendations is also reported at each quarterly meeting. Significant audit issues are also reported directly to the Asset Management Steering Committee for response.

All audits are performed formally. When audits are assigned, staff auditors perform an in-depth risk assessment to evaluate the specific audit objectives, and determine the nature, timing and extent of testing that will be required to address each objective. Audit communications are also formal, beginning with an entrance meeting with management to discuss the preliminary audit objectives. This meeting is critical to ensure the engagements are focused toward areas most likely to be valuable to management. Following fieldwork, audit results are communicated in draft form to management for technical review of the accuracy of the report. Finally, the revised report is submitted to management for their formal response. Management responses are included within the body of the published report, and are required to specify whether they agree with the report's recommendations, and provide a brief description of their planned corrective action, including approximate timing of implementation.

The value of Sound Transit's capital infrastructure recently surpassed $5 Billion, and the agency continues to expand. Planned light rail extensions north, south and east are under way that will double or even triple the value of this infrastructure. As a new agency, the development of formal policies, procedures and information systems is critical to monitor the infrastructure condition (including

vehicles) and maintenance needs. The agency has nearly completed implementation of an asset management information system. Internal Audit focus over the next few years will be to audit the accuracy of inputs to the new system (completeness, asset valuations, condition ratings). Focus will also be placed on the agency's procedures to verify the accuracy and completeness of this system data, such as physical inventory verification and independent appraisal of condition ratings. Light rail vehicle maintenance and inventory was included in the 2012 work program and facility maintenance is included in the 2013 work plan, but will be performed following acceptance of the Enterprise Asset Management System. Additionally, an audit of Information Technology infrastructure acquisition and maintenance is planned for 2013. The internal audit annual plan will use its established risk-based focus to ensure significant elements of the asset management program are implemented as planned.

Process Owner:

- Director of Internal Audit

Responsible	• Director of Internal Audit
Accountable	• Director of Internal Audit
Consulted	• Audit and Reporting Committee • Asset Management Steering Committee • Executive Director of Operations • Executive Team
Informed	• Executive Committee • Audit and Reporting Committee

Triggers:

T.1 Asset management identified in the annual audit work program
T.2 Asset management-related items identified in the annual audit work program

Inputs:

I.1 Annual audit work program
I.2 Existing AMP
I.3 Existing Asset Management Performance Assessment Framework
I.4 Asset management process documentation and records
I.5 Third parties' asset management standards and best practices

Process Steps:

S.1 Initiation of the audit as a formal audit process
S.2 Definition of audit objectives with stakeholders
S.3 Definition of standards to apply in the audit

S.4 Interviews and collection of related documentation and records from asset management process owners and asset owners
S.5 Evaluation of collected information against the standards applied in the audit
S.6 Documentation of audit findings
S.7 Development of audit responses and corrective action plan by the Executive Director of Operations with the support of asset management process owners, asset owners, and other stakeholders as necessary
S.8 Submission of findings and recommendations to the Audit and Reporting Committee, the Executive Team, and other stakeholders as necessary
S.9 Monitoring of the corrective action plan's implementation, with oversight by the Audit and Reporting Committee
S.10 Close out of recommendations as they are addressed

Outputs:

O.1 Audit findings and recommendations
O.2 Response to findings and corrective action plan

15.6 External Audit

Overview:

Sound Transit is subject to the oversight of other government agencies and must periodically respond to external audits. The point of contact for the Agency depends on the type of external audit and the scope of the audit. The point of contact is responsible for coordinating the Agency's participation in the audit and its response to audit findings. When these audits cover asset management-related subjects, the audit coordinator informs the Steering Committee Chair and relies on the asset management process owners identified in the AMP as well as asset owners to provide documentation and records of asset management-related activities.

Process Owner:

- Director of Internal Audit

Responsible	• Director of Internal Audit (Performance Audit) • Controller (State Audit) • Grants Manager (FTA Triennial Audit)
Accountable	• [TBD]
Consulted	• Asset Management Steering Committee Chair • Executive Team

Informed	• Audit and Reporting Committee • [TBD]

Triggers:

T.1 Notice of external audit received

Inputs:

I.1 Asset management documentation
I.2 Asset management records

Process Steps:

S.1 Determination of audit coordinator
  - Federal Transit Administration Triennial Audit - Grants Manager
  - State Audit - Controller
  - State Performance Audit – Director of Internal Audit

S.2 Identification of asset management-related elements within the scope of the external audit
S.3 Identification of related asset management processes and assets
S.4 Coordination with process and asset owners to provide input information to the audit
S.5 Coordination of response to audit findings, recommendations, and corrective actions required with the Executive Director of Operations and the Asset Management Steering Committee, asset management process owners, asset owners
S.6 Monitoring of audit response and implementation of corrective actions, with oversight by the Audit and Reporting Committee
S.7 Close out of recommendations as they are addressed

Outputs:

O.1 Audit findings and recommendations
O.2 Response to findings and corrective action plan

16 Training

16.0 Overview

16.0.1 Version Control/Document History

Document Owner	TBD, TITLE
Original Release Date	Jan. 1, 2014
Current Release Date	Jan. 1, 2014

16.0.2 Policy

Sound Transit shall ensure that any person(s) under its direct control undertaking asset management related activities has an appropriate level of competence in terms of education, training or experience. The agency will provide training opportunities for all staff involved in asset management.

Roles and Responsibilities: The Human Resource Director, or his/her designee, will be responsible for development, maintenance and execution of the Training Element of these policies and associated AMP.

16.0.3 Scope

This section defines the processes to ensure that Sound Transit has the skills development and training capabilities to ensure its workforce can carry out its asset management program effectively. One element is to identify required skill sets and corresponding gaps in the existing workforce. A second element is to put in place a general asset management curriculum to ensure a basic level of knowledge among Sound Transit staff with asset management-related functions and employees' individual roles supporting overall asset management efforts and goals. Finally, there are processes to manage asset-specific and function-specific training materials related to asset management.

16.0.4 Organization

The Executive Director of Human Resources oversees the skills assessment process. The Executive Director of Human Resources works with the Asset Management Steering Committee Chair to put in place a general asset management training curriculum. Asset owners are responsible for ensuring that an appropriate asset-specific training program is in place for maintenance contract oversight staff, design, engineering, and construction staff, and Sound Transit maintenance staff that meets asset-specific training needs and addresses any asset-specific skills gap. [Team] managers are responsible for ensuring an appropriate function-specific training program is in place for asset management-related functions including design, engineering, and construction, materials management, and information systems use.

Asset owners are responsible for the identification of assets approaching the end of their useful lives. If the asset's disposal is part of a capital project, then the project manager is responsible for overseeing

the disposal process. Otherwise, the asset owner will designate a staff member to oversee the process as appropriate.

16.1 Skills Assessment [To-Be Process]

Overview:

The [Executive Director of Human Resources] is responsible for conducting a skills assessment focused on asset management to identify needed skills for asset management and corresponding gaps in Sound Transit's workforce. The Human Resources department coordinates with the Asset Management Steering Committee to develop and maintain an asset management skills matrix. As part of the periodic skills assessment process, Steering Committee members are responsible for identifying skills gaps based on the skills matrix. The Steering Committee then works with the Human Resources Department to address the skills gaps, based on their priority.

Process Owner:

- [TBD]

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Asset Management Steering Committee requests a skills audit

Inputs:

I.1 Existing asset management skills matrix
I.2 List of existing staff

Process Steps:

S.1 Human Resources Department coordinates development of an asset management skills matrix, corresponding to job descriptions
S.2 Asset Management Steering Committee provides support to populate the matrix
S.3 Human Resources Department coordinates carrying out of the skills assessment
S.4 Steering Committee members use skills matrix and list of existing staff to identify skill gaps
S.5 Steering Committee members prioritize gaps
S.6 Steering Committee members work with Human Resources Department to identify actions for high priority skill gaps
S.7 Human Resources Department works with stakeholders to carry out skills gap action plan
S.8 Human Resources Department provides updates to the Steering Committee about progress

Outputs:

O.1 Updated asset management skills matrix
O.2 Skills gap action plan

16.2 General Asset Management Curriculum [To-Be Process]

Overview:

Sound Transit faces increased accountability for its asset management practices and outcomes and must manage both system expansion and a maturing core system. Therefore, it is important that staff with roles related to asset management have awareness of these challenges together with an understanding of asset management's role in agency performance and Sound Transit's vision for asset management. The general training curriculum is intended to establish awareness of asset management principles, establish understanding of Agency asset management responsibilities, provide a vision for asset management at Sound Transit, and connect asset management principles to each employee's individual role at the Agency. [TBD] is responsible for establishing a general asset management curriculum aligned to industry standards and identifying employees who should participate in the training.

Process Owner:

- [TBD]

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Asset Management Steering Committee requests establishment of a general asset management curriculum
T.2 Asset Management Steering Committee requests update to the curriculum

Inputs:

I.1 Existing general asset management curriculum or individual, related trainings

Process Steps:

S.1 Asset Management Steering Committee Chair designates a manager to lead development/update of a general asset management training curriculum
S.2 Steering Committee identifies curriculum requirements

S.3 Designee develops/updates training curriculum materials based on identified curriculum requirements
S.4 Steering Committee reviews and comments on curriculum
S.5 Designee finalizes curriculum
S.6 Steering Committee Chair approves curriculum
S.7 Curriculum is implemented and priority employees informed of its availability
S.8 Designee tracks training participation

Outputs:

O.1 Updated general asset management curriculum

16.3 Function-Specific Asset Management Curriculum [To-Be Process]

Overview:

Sound Transit's asset management system relies on the support and implementation of diverse functions. Training is critical to ensure each function's workers have the knowledge and critical technical skills to carry out their asset management responsibilities. Critical expertise may be asset-specific or field specific and should be identified the Agency's asset management skills assessment. To maintain this expertise based on evolving asset management requirements, workforce management challenges, and succession planning needs, the Agency either develops internal curriculums or uses outside vendors following recognized curriculums. In both cases, the Agency emphasizes the application of knowledge management practices to maintain high quality documentation and training materials for ongoing use by the Agency. Function-specific curriculums might involve subject matter expertise covering project management, quality assurance, performance improvement methods (such as Six Sigma and Reliability-Maintenance), or well recognized craft-specific certifications (e.g., for electrical or HVAC work).

Process Owner:

- [TBD]

Responsible	• [TBD]
Accountable	• [TBD]
Consulted	• [TBD]
Informed	• [TBD]

Triggers:

T.1 Asset Management Steering Committee directs development of a function-specific asset management curriculum

T.2 A Sound Transit manager requests development of a function-specific asset management curriculum

Inputs:

I.1 Existing function-specific asset management curriculum or individual, related trainings

Process Steps:

S.1 Asset Management Steering Committee or functional area manager designates a staff member to lead development/update of a function-specific asset management training curriculum
S.2 Designee identifies curriculum requirements
S.3 Designee develops/updates training curriculum materials based on identified curriculum requirements and input from stakeholders
S.4 Or, designee reviews third party curriculum options and works with stakeholders to select an appropriate curriculum to adopt or have vendor administer
S.5 [TBD] and Steering Committee or functional area manager review curriculum and approve if appropriate
S.6 Designee finalizes curriculum and works with managers to implement/administer training curriculum/program
S.7 Functional area manager tracks participation and reports to [TBD] and the Steering Committee

Outputs:

O.1 New/updated function-specific asset management curriculum

A.1 Asset Management Administrative Policy

Approved By: Joni Earl Chief Executive Officer Administered By: Brie McGath 7/1/13 Executive Director, FIT	ADMINISTRATIVE POLICIES & PROCEDURES	NO 44
	Asset Management Policy	
	Original Release Date: Current Release Date:	7/3/13 7/3/13

1. Purpose & Scope

This document establishes an asset management policy for the enterprise wide life-cycle management of all agency assets. It applies to all assets owned by Sound Transit. Assets are any physical assets costing more than $5,000 and having a useful life greater than 2 years.

2. Overview

2.1. Policy

Sound Transit will invest in, maintain, and manage its physical assets and infrastructure to ensure safe, cost-effective and sustainable on-going provision of regional high capacity transit services to the citizens of the Puget Sound. The agency will operate and maintain its assets in state of good repair that meets FTA *State of Good Repair* and other regulatory requirements, environmental requirements, safety and security standards and high customer service standards.

2.2. Guiding Principles

Sound Transit's asset management program will be developed and managed consistent with three guiding principles – lifecycle asset management, total cost of ownership and sustainability. These guiding principles form an orientation that informs the specific processes and procedures that constitute enterprise asset management. As such, the principles are not themselves discrete, separate processes but are instead infused into all agency asset management processes. The Asset Management Plan will incorporate these principles.

2.2.1. Lifecycle Asset Management

Sound Transit will establish, implement and maintain process(es) and/or procedure(s) for the implementation of its asset management plan(s) and control of activities across the whole asset lifecycle, including planning and design of assets, construction and acquisition, operation and maintenance and disposal.

2.2.2. Total Cost of Ownership (TCO)

Agency decisions on asset acquisition (planning, design & construction),

operations, maintenance, renewal and disposal will be made based on a total cost of ownership that establishes the direct and indirect cost of an asset. TCO examines direct and indirect lifecycle costs of a product or service – from the initial capital investment to any costs involved in operations, maintenance, replacement and disposal. Indirect expenses or benefits such as environmental and social costs can be incorporated into TCO.

2.2.3. Sustainability

The agency strives to operate and maintain its assets in a state of good repair to meet the voluntary commitments of the Sound Transit Sustainability Plan and annual Environmental and Sustainability Management System (ESMS) targets.

Sound Transit's commitment to life-cycle asset management and total cost of ownership provides a sustainable approach to guide its decisions related to the planning, design, construction, operation, maintenance, renewal and disposal of agency assets.

- Lifecycle management supports the agency's Sustainability Plan priorities to promote stewardship by conserving natural resources (save energy, protect ecosystems and use less, buy green) and integrating sustainability into decision making processes.
- Total Cost of Ownership (TCO) enables the agency to require that environmental, social and other indirect costs are included in financial assessments.

2.3. Asset Management Plan (AMP)

Sound Transit shall establish, implement and maintain an Asset Management Plan (AMP) that will document how the agency will manage its assets consistent with this policy. The AMP will be consistent with practices as established under FTA *State of Good Repair* program. The AMP will in turn be supported by more detailed department level procedures. The AMP will:

- be derived from, and be consistent with, this asset management policy;
- be consistent with other organizational policies and strategies;
- identify and consider the requirements of relevant stakeholders;
- consider the life cycle management requirements of the assets;
- take account of asset-related risks and system criticalities;
- identify the function(s), performance and condition of existing asset;
- clearly state the approach and principal methods by which assets and asset systems will be managed;
- provide sufficient information, direction and guidance to enable specific asset management objectives to be produced;
- include criteria for optimizing and prioritizing asset management objectives and plans;
- be communicated to all relevant stakeholders, including contracted service provider; and

- be reviewed periodically to ensure that it remains effective and consistent with the asset management policy and organizational strategic plan and with other organizational policies and strategies.

3. Asset Management Elements

To effectively execute the goals of this policy, the agency will manage its asset systems within 15 Asset Elements (3.1-3.15). These elements are core competencies for lifecycle asset management which form the framework for this policy and the AMP.

3.1. Planning, Design, Construction & Acquisition

The agency will plan, design and construct its capital infrastructure to achieve long-term cost effective, sustainable operations and maintenance. The agency will utilize a life cycle cost approach in planning, design and construction, evaluating operating and maintenance cost over the useful life of the asset. When analyzing alternative design asset components and approaches, the agency will use the guiding principles of lifecycle asset management, TCO and sustainability. The agency will maintain comprehensive design standards that incorporate guiding principles of lifecycle asset management, TCO and sustainability. To the maximum extent possible, design criteria will standardize agency asset components to minimize on-going maintenance costs. Construction plans and execution will be coordinated with the Operations Department, through the agency's phasegate system and other processes, to insure smooth transition from build to operate. Asset repair or maintenance issues that arise in the immediate post construction period will be resolved with the active participation of both DECM and Operations Departments.

Roles & Responsibilities: The Executive Director DECM, or his/her designee, will be responsible for development, maintenance and execution of the Design, Construction and Acquisition Element of these policies and associated AMP.

3.2. Service Levels

Measurable levels of service shall be established for major agency asset classes, ideally at the time of design and construction. Assets will be designed and constructed to meet these service parameters. Service measures will subsequently be used to determine maintenance and replacement requirements. Service level goals will also be used as an input in the capital budget prioritization process.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Service Levels Element of these policies and associated AMP.

3.3. Asset Inventory

All agency assets will be cataloged and tracked within a consistent agency wide hierarchy, and consistent with the fixed asset system within the agency's enterprise system (E1). Parent /child relationships will be built to allow proper aggregation and consolidation of asset information. Inventory cycles will be established in the AMP.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Asset Inventory Element of these policies and associated AMP.

3.4. Condition Assessment

An accurate, up-to-date assessment of all agency assets will be maintained. The AMP will establish assessment methodology and schedules.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Condition Assessment Element of these policies and associated AMP.

3.5. Criticality and Risk Assessment

Sound Transit shall establish, implement and maintain documented process(es) and/or procedure(s) for the ongoing identification and assessment of asset-related and asset management-related risks, and the identification and implementation of necessary control measures throughout the life cycles of the assets.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Criticality and Risk Assessment Element of these policies and associated AMP.

3.6. Maintenance Plans

Sound Transit shall establish, implement and maintain detailed maintenance plans for all asset classes that provide necessary schedules, maintenance guidelines and protocols to ensure assets meet their functions within defined service parameters. Plans will be developed and maintained by the Department that has on-going management control and responsibility for the asset.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Maintenance Plans Element of these policies and associated AMP.

3.7. Performance Indicators

Sound Transit shall establish, implement and maintain process(es) and/or procedure(s) to monitor and measure the performance of the asset management system and the performance and/or condition of assets and/or asset systems.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Performance Indicators Element of these policies and associated AMP.

3.8. Contingency Planning

Sound Transit shall establish, implement, and maintain plan(s) and/or procedure(s) for identifying and responding to incidents and emergency situations, and maintaining the continuity of critical asset management activities.

The organization shall periodically review, test and, where deemed necessary, revise its plan(s) and/or procedure(s) for incident and emergency preparedness and response to ensure the continuity of important asset management activities.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Contingency Planning Element of these policies and associated AMP.

3.9. Asset Disposal

Sound Transit will establish, implement and maintain procedures and practices to dispose of assets that have reached the end of their useful lives through the most cost-effective and environmentally sustainable manner. Asset disposal will be conducted consistent with the agency's surplus asset policy and any relevant federal requirements.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Asset Disposal Element of these policies and associated AMP.

3.10. Governance & Communications

3.10.1. Governance

The agency will maintain an Asset Management Steering Committee made of senior management representatives from Planning, Construction, Operations, Procurement, Finance and Information Technology. Representation should be provided for the agency's Sustainability Program. Other functional areas will participate as needed and requested. The Steering Committee is charged with the overall maintenance of the agency's enterprise asset management program, including Administrative Policy, Asset Management Plan (AMP), and 3-Year

Strategic Work Plan. The Steering Committee will regularly report progress to the CEO and if appropriate the Board.

3.10.2. Policy Framework

Sound Transit will establish and maintain an effective policy framework for asset administration including Board policy, administrative policy, Asset Management Plan (AMP), 3-Year Strategic Workplan and departmental policies and procedures. This framework will include:

- Board Policy: Establishes overall strategic objectives
- Administrative Policy: Establishes strategic objectives for all elements of asset management
- AMP: Details how the agency will be organized to meet the objectives of the board and administrative policies.

3.10.3. 3-Year Strategic Workplan: Based on continual improvement assessment, evaluate existing agency competences for all asset elements and goals for same. Detail a three-year work plan to reach targets, including ST FTEs necessary to develop and maintain the Asset Management Plan.

3.10.4. Roles and Responsibilities: The Asset Management Policy establishes clear roles and responsibilities for all elements of agency asset management. The Executive Director, Finance and Information Technology is responsible for maintenance of this policy and its successors.

3.10.5. Communications

Sound Transit shall ensure consultation with stakeholders that is relevant and appropriate to their involvement in the development of the asset management strategy, objectives and plan(s); the development of functional policies, engineering standards, process(es) and/or procedure(s); risk assessments and determination of controls; incident investigation; and the continual improvement of the asset management system. In addition, the agency will develop and maintain strong internal communication across functional areas to ensure effective asset management.

3.10.6. Legal

Sound Transit shall establish, implement and maintain process(es) and/or procedure(s) for identifying and accessing the legal, regulatory, statutory and other applicable asset management requirements. Sound Transit shall ensure that the applicable legal and other external obligations or requirements are identified and incorporated into the corresponding elements of its asset management system. The agency shall keep this information up-to-date. The

organization shall communicate information on legal and other requirements to all relevant stakeholders.

Roles & Responsibilities: The Executive Director FIT, or his/her designee, will be responsible for development, maintenance and execution of the Governance Element of these policies and associated AMP.

3.11. Data, Records & Information Systems

3.11.1. Data

Sound Transit shall identify, establish and maintain data structures and management information necessary to meet the requirements of this policy considering all phases of the asset life cycle. The information shall be of a quality appropriate to the asset management decisions and activities it supports. Data structures and definitions shall be to the greatest extent possible consistent across agency asset types and classes.

3.11.2. Records

Sound Transit shall establish, implement and maintain up-to-date documentation to ensure that its asset management program can be adequately understood, communicated and operated. The asset management program documentation shall include: a description of the main elements of the asset management system and their interaction, and direction to related documents; the asset management policy, strategy and objectives. Records shall be maintained in accordance with the requirements of RCW 40.14 as outlined in the Records Management policy and procedures, and best practices.

3.11.3. Information Systems

Sound Transit shall design, implement and maintain a system(s) for managing asset management information and reporting that provides employees and other stakeholders, including contracted service providers, access to the information relevant to their asset management activities or responsibilities. The agency will maintain IT systems that integrate financial, asset systems and provide consistent accurate reporting and ensure consistent asset management information across systems. The agency will also maintain systems to support the agency's AMP, including enterprise asset management system (Asset Works). Information systems shall be secure with appropriate disaster recovery systems sufficient to meet business recovery requirements.

Roles & Responsibilities: The Executive Director FIT, or his/her designee, will be responsible for development, maintenance and execution of the Information Systems Element of these policies and associated AMP.

3.12. Financial

3.12.1. Budget

Sound Transit will maintain accurate budgeting for capital acquisition and replacement including effective capital budgeting systems to prioritize the agency's resources to most effectively maintain the agency's asset base and support required service levels.

3.12.2. Accounting

Sound Transit will maintain accurate financial reporting and budgeting related to fixed assets and on-going maintenance and replacement of agency assets. The fixed asset hierarchy will be tied to the on-going asset hierarchy used for maintenance.

3.12.3. Funding

As established by R2007-26, the agency will maintain a Capital Asset Replacement Reserve (CRR) to fund the capital replacement and major maintenance necessary to maintain the agency assets in a state of good repair, consistent with available funding. The agency will maintain a strategic funding plan that indicates current funding for maintenance and replacement, requirements for same, and plans to address any funding gaps.

Roles & Responsibilities: The Executive Director FIT, or his/her designee, will be responsible for development, maintenance and execution of the Financial Element of these policies and associated AMP.

3.13. Risk Management

Sound Transit will maintain insurance and loss control programs for the agency's assets. All assets will have commercial insurance for loss coverage or an identified risk management plan. The agency may also implement self-insurance programs.

Roles & Responsibilities: The Executive Director FIT, or his/her designee, will be responsible for development, maintenance and execution of the Risk Management Element of these policies and associated AMP.

3.14. Continuous Improvement & Audit

3.14.1. Corrective Action & Prevention

Sound Transit shall establish, implement and maintain process(es) and/or

procedure(s) for initiating:

- corrective action(s) for eliminating the causes of observed poor performance and nonconformities identified from investigations, evaluations of compliance and audits to avoid their recurrence;
- preventive action(s) for eliminating the potential causes of nonconformities or poor performance.

Any corrective or preventive actions taken and their timings shall be commensurate with the risk(s) encountered. Where a corrective or preventive action identifies new or changed risks, or the need for new or changed process(es), procedure(s) or other arrangements to control asset life cycle activities, the proposed actions shall be risk assessed following the agency configuration control and configuration review board policies and procedures as applicable prior to implementation.

The organization shall keep records of the corrective and preventive actions taken and communicate these to relevant stakeholders. The organization shall ensure that any necessary changes arising from corrective and/or preventive actions are made to the asset management system.

3.14.2. Continuous Improvement

Sound Transit shall establish, implement and maintain process(es) and/or procedure(s) for identifying opportunities and assessing, prioritizing and implementing actions to achieve continual improvement in:

- the optimal combination of costs, asset related risks and the performance and condition of assets and asset systems across the whole life cycle;
- the performance of the asset management system toward meeting its goals to operate and maintain its assets in state of good repair that meets regulatory requirements, environmental requirements, safety and security standards and high customer service standards.

The organization shall actively seek and acquire knowledge about new asset management-related technology and practices, including new tools and techniques, and these shall be evaluated to establish their potential benefit to the organization.

Departments involved in asset management will also utilize the agency's Lessons Learned program to identify way of repeating success and avoiding failures in management of the agency's asset base.

3.14.3. Audit

The organization shall ensure that audits of the asset management program are conducted to determine whether the program conforms to planned arrangements for asset management, has been implemented and is maintained and is effective in meeting the organization's asset management policy, strategy and objectives.

Audit program(s) for elements of the asset management program shall be planned, established, implemented and maintained by the Director of Internal Audit, based on the results of risk assessments of the organization's activities and the results of previous audits.

Roles & Responsibilities: The Executive Director of Operations, or his/her designee, will be responsible for development, maintenance and execution of the Continuous Improvement & Audit Element of these policies and associated AMP.

3.15. Training

Sound Transit shall ensure that any person(s) under its direct control undertaking asset management related activities has an appropriate level of competence in terms of education, training or experience. The agency will provide training opportunities for all staff involved in asset management.

Roles & Responsibilities: The Human Resource Director, or his/her designee, will be responsible for development, maintenance and execution of the Training Element of these policies and associated AMP.

4. References

Resolution 2007-26 establishing a capital replacement reserve
Environmental Policy, ESMS, Sustainability Plan
Surplus Asset Policy No.14

Related Administrative Policies:

No. 14 Surplus Asset Policy
No. 24 Capital Project Execution & Delivery – Phase Gate Policy
No. 26 Construction to Operations and Service – Transition Plan
No. 28 Project Close-Out – Administrative and Financial
No. 29 Lessons Learned Policy
No. 32 Small and Attractive Assets Policy
No. 34 Bicycle Policy
No. 37 Agency Configuration Control
No. 38 Configuration Review Board

A.2 Asset Management Steering Committee Chart

SOUNDTRANSIT

Agency Asset Management Program

Asset Management Steering Committee Charter

Original Release: 02/25/14
Rev. 01 Release: 2/25/14

Project Name: Asset Management Steering Committee
Project Purpose: Provide agency leadership to manage agency asset management program.

Committee Goals: Per section 3.10.1 of Admin Policy #44, "Asset Management Policy": "The agency will maintain an Asset Management Steering Committee made of senior management representatives…charged with the overall maintenance of the agency's enterprise asset management program."

Committee Role: Objective

- Review and revision of the Asset Management Policy as required
- Oversight of the AMPlan's annual review and update
- Oversight of the AM Strategic Work Plan
- Oversight of communication of asset management policy, vision, initiatives, and priorities to key internal stakeholders, the Sound Transit workforce generally, and external stakeholders as appropriate
- Oversight of regulatory compliance with respect to asset management-related legal requirements at the federal, state, and local government levels
- Management of specific projects identified and defined by the Steering Committee or the Strategic Work Plan
- Cross-functional coordination to support effective planning and implementation of asset management processes.
- Ensure that AM Program is staffed appropriately.
- Overseecompliance with the requirements of the National Transit Asset Management (TAM) System to ensure state of good repair of ST's assets.

Sponsorship	
Initiating Sponsor Joni Earl, CEO	• Establishes priorities among all direct reports that hold a role in the Asset Management Steering Committee As necessary, makes or supports decisions where ExecutiveSponsors cannot agree
Executive Sponsors Brian McCartan, FIT Bonnie Todd, Operations	• Takes overall responsibility for agency asset management program, as delegated by CEO • Chairs Committee
Committee Members Standing Members: • PEPD/DECM: Christy Sanders Meena • Procurement; Ted Lucas • FIT: Brian McCartan • Ops: Bonnie Todd Other members: as designated by standing members	• Work with Implementers and Executive Sponsors to accomplish committee goals
Single Point of Accountability Brian McCartan, FIT	• Ensures Committee meets policy goals and goals established in Agency Asset Management Plan

A.3 Asset Management Maturity Assessment Framework

Exhibit 33: Asset Management Maturity Scoring Scale

Maturity Score	Maturity Scale
0	Business practices do not exist.
1	Business practices are only partially in place, only partially formalized, and inconsistently applied.
2	Business practices are mostly in place, mostly formalized, consistently applied, and partially integrated throughout the agency.
3	Business practices are fully in place, fully formalized, consistently applied, consistently monitored, mostly integrated throughout the agency, and inconsistently reviewed and updated.
4	Business practices are fully in place, fully formalized, consistently applied, consistently monitored, fully integrated throughout the agency, and consistently reviewed and updated.

Exhibit 34: Asset Management Maturity Scores by Process

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
2	Governance and Communications	Asset Management Policy	Asset Management Policy is in place and is aligned to the organization's overall goals and strategy. The Policy is regularly reviewed and updated and reflects the input of the organization's board and executive leadership. The Policy reflects and is in harmony with other existing organization policies such as its safety and risk policies. The Policy is communicated to stakeholders within the organization who in turn apply it to set direction for their own strategy for, planning of, and implementation of their asset management-related functions.	
2	Governance and Communications	Asset Management Plan Update	The Agency's AMP is aligned to its Asset Management Policy, as well as other policies and critical planning documents. The Agency has a formal update process for its AMP, which includes direction from executive leadership and input from diverse asset management stakeholders. The AMP emphasizes a lifecycle-based and risk-based approach to asset management, with a focus on continuous improvement. The asset management planning process establishes the organization's specific asset management objectives and performance measures and targets. The AMP defines the organization's asset management system (its asset management organizational roles and responsibilities, business practices, and tools).	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
2	Governance and Communications	Strategic Work Plan Update	The Agency regularly revises and updates its Asset Management Strategic Work Plan based on input from executive leadership and diverse stakeholders. The Asset Management Strategic Work Plan defines specific implementation actions aligned to the AMP's objectives and performance targets. The implementation actions are aligned to the gaps identified in the Agency's asset management performance assessment framework scoring. The Strategic Work Plan's implementation actions reflect improvements and updates to the Agency's existing asset management system (its asset management organizational roles and responsibilities, business practices, and tools).The Strategic Work Plan identifies specific responsibilities, resources, and milestones for each implementation action. The Strategic Work Plan is aligned to the Agency's budget and work plans.	
2	Governance and Communications	Communications	The Agency has identified key asset management stakeholders and ensures they are consulted in important decision-making related to asset management strategy, planning, and improvement. Updates to the AMP and Strategic Work Plan and changes to the Agency's Asset Management Policy and asset management system (its asset management organizational roles and responsibilities, business practices, and tools) are communicated to stakeholders together with implications, actions, and responsibilities. Asset-related performance, financial, and risk data are easily available and distributed in a timely and targeted manner to empower asset management stakeholders and functions.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
2	Governance and Communications	Regulatory Compliance	Specific employees are designated to liaise with regulators and industry groups and monitor changes in regulatory requirements both for enterprise-wide asset management practices and for specific asset classes (rolling stock, bridges, rail systems, etc.). The Agency tracks key requirements and compliance actions. The Agency periodically audits its asset management system (its asset management organizational roles and responsibilities, business practices, and tools) to ensure conformity with applicable regulations. The Agency's information systems and records management processes ensure documentation supporting compliance with regulatory requirements. The Agency's training programs and asset management system ensure awareness among critical employees of regulatory requirements related to asset management.	
3	Finance	Accounting Requirements	The Agency's accounting framework is aligned to the Agency's asset management business requirements, including: cost accounting to support asset-specific cost histories, whole lifecycle cost estimation, detailed tracking of resource costs (including materials, services, labor, facilities, utilities, and equipment), asset retirement and disposal. The Agency has a standard process for determining current asset replacement values and remaining useful lives.	
3	Finance	Annual Budget	The budget process systematically addresses the trade-offs among service planning, funding levels, fare policy, operations and maintenance costs, preventive maintenance requirements, and the capital investment program. The O&M budget reflects departmental work plans and "bottom up" estimates of resource requirements for the forth coming year. The O&M budget includes full funding of the preventive maintenance program. The Agency systematically tracks deferred preventive maintenance and overhauls and tracks its overall maintenance and capital backlogs.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
3	Finance	Capital Project Prioritization	Capital projects are differentiated based on whether they are renewal, enhancement, or expansion projects (or some combination thereof). The Agency has a standard process for identifying capital needs, based in part on the Agency's condition assessment and risk assessment processes. The Agency has guidelines in place to establish standard measures of project benefits, comparable across projects, especially in terms of levels of service and customer experience. The Agency has guidelines in place to estimate the probable ongoing O&M costs attributable to a capital project. For each project, the Agency evaluates relevant alternatives including "do nothing." The Agency uses an objective scoring process to prioritize projects. Scoring criteria are tied to overall organizational strategic goals. The Agency considers sustainability in its capital project scoring criteria. The Agency considers asset criticality in its capital project scoring criteria. The Agency evaluates tests alternate scoring weights and funding levels and compares the resulting alternate capital planning scenarios' outcomes in terms of state-of-good repair measurements.	
3	Finance	Financial Planning	Long term financial planning reflects current assumptions of levels of service and expansion and realistic maintenance, renewal, and funding assumptions. The Agency forecasts asset renewal requirements over its full financial planning horizon. Long term maintenance and capital funding levels reflect the Agency's objectives for system state-of-good-repair. Financial plan expectations are used included in the decision-making process for capital programming and budgeting.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
4	Asset Inventory	Asset Definition, Hierarchy, and Naming Convention	The Agency has precise asset definitions in place for purposes of the Agency's asset management business practices and information systems and for accounting purposes. The Agency has a standard asset hierarchy in place which maps to its financial asset categorizations and to TERM and/or any other hierarchy specific to NTD. The asset hierarchy includes all least maintainable units. The hierarchy includes clear asset names and precise definitions to support accurate categorizations. Assets are also defined by a location naming convention that makes it easier to find assets and differentiate among an asset type's criticality and O&M requirements based on location. The Agency uses a tagging system to uniquely identify assets and tie them to their electronic records.	
4	Asset Inventory	Asset Information Capture	The Agency has a process in place to systematically identify new assets and captured required information as part of each capital project. This information is collected, verified, and then input into the asset inventory system of record. Information includes asset attributes such as type, quantity, cost, date of acquisition/installation, manufacturer, model, serial number, expected design life, material requirements/parts, preventive maintenance and inspection program, and associated documentation such as invoice and manuals. The Agency has policies and procedures in place that identify responsibilities for asset information capture and verify that all information capture requirements, both general and asset-specific, are met.	
4	Asset Inventory	Asset Inventory Quality Control	The Agency has in place processes to ensure the integrity of its asset-related data over time. Processes to maintain asset inventory and other asset management-related information include regular field inventories to verify assets and protocols to flag and correct errors upon identification through normal asset-related work. Other asset-related information is checked through regular audits by managers and quality assurance staff. The Agency identifies and systematically addresses recurring data quality issues.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
4	Asset Inventory	Asset Inventory, Condition, and Performance Data Reporting	The Agency has established a consistent process to gather all necessary data to support its state and federal inventory, condition, and performance data reporting requirements. The Agency has integrated all necessary data collection into existing business processes and information systems wherever practical. The Agency has quality assurance and quality control measures to verify the accuracy of the data prior to its submittal. The Agency uses standard data reports to consistently compile the information with minimal analytical effort.	
5	Records, Data and Information Systems	Asset Management Documentation and Records	The Agency has detailed guidelines for maintaining asset-related documentation and records. The Agency has systematically identified regulatory and operational requirements for documentation and records and maintains policies and processes to support these. Asset-related documentation and records are maintained with both appropriate security and accessibility. Documentation and records are maintained electronically to the extent practical and are easily identifiable and searchable. The Agency clearly identifies responsibilities for maintaining documentation and records. The Agency identifies controlled documents and maintains version history and control. Documentation is shared in a timely manner with stakeholders across functions. The Agency systematically identifies documentation and records for disposal and disposes of them appropriately.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
5	Records, Data and Information Systems	Asset Management Information Systems Architecture	The Agency has information systems in place to accurately track maintenance performed, inspection results, asset operation and performance, asset-records, asset-related resources consumed, and asset status. The information systems maintain historical data that are easily queryable. The Agency systematically maps information systems functions to asset management critical business requirements and ensures that information systems meets required functionality for the Agency's asset management business practices, including work order management, maintenance dispatch, materials management, risk management, and capital planning. Information collection and flows supporting asset management are clearly documented, including interfaces among discrete information systems. The Agency uses SCADA systems to monitor and control critical systems assets continuously, especially safety systems. The Agency regularly reviews and plans its IT architecture, including its asset management information systems.	
5	Records, Data and Information Systems	Information System of Record	The Agency has an integrated electronic record-keeping system for assets and asset management-related business process. The Agency designates the system of record for all critical asset information, minimizes the fragmentation of recordkeeping, and ensures that business processes maintain the most up-to-date and accurate asset information in the system of record. Downstream business processes and management and other reports draw information from the designated system of record. The system of record for critical asset information is reflected in the Agency's IT systems architecture.	
5	Records, Data and Information Systems	Asset Management Data Configuration	The Agency systematic evaluates its asset management data requirements. Asset management information systems reflect critical data collection and reporting requirements. The Agency has a standard process for incorporating new data requirements into its asset management information systems. Asset management information systems apply the Agency's standard asset hierarchy, criticality framework, and location naming convention as well as other relevant data frameworks and definitions. The asset management information systems'	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
			data configuration is fully documented and the documentation is easily available to system users.	
6	Service Levels	Service Level Definition for Capital Projects	The Agency defines service level goals for major capital projects in the early project planning phase. Service level goals are closely tied to expected service demand, as well as asset lifecycle costs. The Agency models and evaluates alternative scenarios for asset levels of service, especially for project elements which especially drive costs. The Agency evaluates lifecycle costs of alternatives to ensure assets and levels of service are sustainable under expected funding levels. Project plans and specifications are aligned to the overall project service level outcome goals. Levels of service are translated into the maintenance plans developed for assets and finalized in the asset acceptance process.	
6	Service Levels	Service Level Definition for Existing Assets	The Agency develops service demand forecasts to understand daily, seasonal, and long-term demand on each separate transit service. The Agency incorporates updated demand forecasts to revise its asset strategies and level of service requirements. Target service levels are stated in asset maintenance plans together with other performance measures. Service levels are regularly reviewed and updated for assets to understand asset performance requirements and to align asset service levels to current service planning. The Agency aligns its asset management improvement efforts to target asset levels of service. Levels of service are accounted for in capital planning and O&M budgeting. Levels of service are measured through regularly collected performance data, including condition data, and records are stored in the asset management information systems.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
7	Planning, Design, Construction, and Acquisition	Project Development and Delivery	The agency has formal project development and delivery policies, processes, and procedures for project control, project management and organization, risk management, initial feasibility and environmental planning, design and engineering, procurement, contract management, and quality assurance and quality control. The agency has measures to support cross-functional coordination across the project development lifecycle and to maintain a consistent governance and approach to the project. Project development processes and procedures align to recognized industry standards. Projects are reviewed and audited to evaluate their adherence to project development policies and procedures.	
7	Planning, Design, Construction, and Acquisition	Design Criteria Manual	Design reviews are scheduled to maximize their value in the project development process. Participants in the review process reflect stakeholders having high levels of expertise related to the asset under design, using or operating the asset, maintaining the asset, participating in the design, operation, or maintenance of systems integrating with the asset, or having other operational responsibilities related to the asset. The design review process specifically focuses on (among other items) issues related to asset reliability, safety, cost of operation and maintenance, and compatibility/integration with existing and related systems. The design review process is structured to enable effective input from participating stakeholders. The design review process tracks, prioritizes, and responds to input from stakeholders. Input from the design review process is considered and reflected in the update of design standards.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
7	Planning, Design, Construction, and Acquisition	Design Review	The Agency applies design standards developed to manage costs, ensure a consistent service level for critical assets, and effectively manage asset quality including compatibility, reliability, design life, maintainability, and safety. Design standards have a process for regular review, update, and approval that includes input from subject matter experts in operations, maintenance, and safety, as well as other appropriate stakeholders. Design standards reflect all current, relevant regulatory requirements. Design standards rely on independent, recognized standards wherever possible. Design standards are consistently applied to capital projects and purchases and their application is verified.	
7	Planning, Design, Construction, and Acquisition	Total Cost of Ownership	The Agency has in place guidelines for applying total cost of ownership analysis detailing when such analyses are necessary and/or appropriate, what standard methodology and assumptions to use, and what stakeholders to include in the analysis and decision-making. The total cost of ownership guidelines ensure consistency and comparability in the analysis approach. The Agency's use of total cost of ownership analysis ensures long-term financial and asset performance is considered in critical decisions in capital project development.	
7	Planning, Design, Construction, and Acquisition	Project Acceptance	The Agency has procedures in place directing the transfer of assets from the construction division to operations. The procedures address testing and acceptance, training of operations staff, transfer of documentation and records including technical and design documents, configuration and entry of data into appropriate information systems, and warranty management. The acceptance process also includes identification of asset maintenance requirements and development and finalization of an asset maintenance plan in collaboration with operations. Engineering and construction staff work with operations and other staff to update and/or institute policies and procedures as necessary. There is a systematic process for tracking both standard and project-specific acceptance requirements and ensuring responsibility for their fulfillment or resolution if criteria are not met.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
8	Maintenance Planning	Sounder Fleet Maintenance Planning	Maintenance plan covers all critical fleet assets. Maintenance plan is aligned to IS)55001/2 "asset management plan" scope, including organizational roles and responsibilities, summary of the asset inventory (types, quantities, ages, costs/values, locations, etc.), definition of asset levels of service and performance measures and targets, preventive maintenance and inspection program, corrective maintenance strategy, expected design lives, expected overhaul and rehabilitation cycles, condition inspection program, engineering support, quality assurance measures, required maintenance resources, major programs or procurements, and performance improvement processes and initiatives, including asset management-related trainings. Maintenance plan is developed with input from stakeholders in related functions. Maintenance plan addresses coordination with related asset management functions, including operations, safety, procurement, and design and construction. Maintenance plan is updated annually to align to budgets and planned service. Also maintenance conducted is recorded in an enterprise asset management system, together with all resources used to support maintenance, inspection, and overhaul and rehabilitation activities. Quality assurance processes in part verify fidelity of implementation to the plan, including through review of records in the enterprise asset management system or a contractor's equivalent. Capital planning to address expected renewal, expansion, and level of service requirements with expected available resources are detailed in a fleet management plan aligned to the fleet maintenance plan and financial planning assumptions.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
8	Maintenance Planning	Sounder Right-of-Way Maintenance Planning	Maintenance plan covers all critical fleet assets. Maintenance plan is aligned to IS)55001/2 "asset management plan" scope, including organizational roles and responsibilities, summary of the asset inventory (types, quantities, ages, costs/values, locations, etc.), definition of asset levels of service and performance measures and targets, preventive maintenance and inspection program, corrective maintenance strategy, expected design lives, expected overhaul and rehabilitation cycles, condition inspection program, engineering support, quality assurance measures, required maintenance resources, major programs or procurements, and performance improvement processes and initiatives, including asset management-related trainings. Maintenance plan is developed with input from stakeholders in related functions. Maintenance plan addresses coordination with related asset management functions, including operations, safety, procurement, and design and construction. Maintenance plan is updated annually to align to budgets and planned service. Also maintenance conducted is recorded in an enterprise asset management system, together with all resources used to support maintenance, inspection, and overhaul and rehabilitation activities. Quality assurance processes in part verify fidelity of implementation to the plan, including through review of records in the enterprise asset management system or a contractor's equivalent.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
8	Maintenance Planning	ST Express Fleet Maintenance Planning	Maintenance plan covers all critical fleet assets. Maintenance plan is aligned to IS)55001/2 "asset management plan" scope, including organizational roles and responsibilities, summary of the asset inventory (types, quantities, ages, costs/values, locations, etc.), definition of asset levels of service and performance measures and targets, preventive maintenance and inspection program, corrective maintenance strategy, expected design lives, expected overhaul and rehabilitation cycles, condition inspection program, engineering support, quality assurance measures, required maintenance resources, major programs or procurements, and performance improvement processes and initiatives, including asset management-related trainings. Maintenance plan is developed with input from stakeholders in related functions. Maintenance plan addresses coordination with related asset management functions, including operations, safety, procurement, and design and construction. Maintenance plan is updated annually to align to budgets and planned service. Also maintenance conducted is recorded in an enterprise asset management system, together with all resources used to support maintenance, inspection, and overhaul and rehabilitation activities. Quality assurance processes in part verify fidelity of implementation to the plan, including through review of records in the enterprise asset management system or a contractor's equivalent. Capital planning to address expected renewal, expansion, and level of service requirements with expected available resources are detailed in a fleet management plan aligned to the fleet maintenance plan and financial planning assumptions.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
8	Maintenance Planning	Tacoma Link Maintenance Planning	Maintenance plan covers all critical fleet assets. Maintenance plan is aligned to IS)55001/2 "asset management plan" scope, including organizational roles and responsibilities, summary of the asset inventory (types, quantities, ages, costs/values, locations, etc.), definition of asset levels of service and performance measures and targets, preventive maintenance and inspection program, corrective maintenance strategy, expected design lives, expected overhaul and rehabilitation cycles, condition inspection program, engineering support, quality assurance measures, required maintenance resources, major programs or procurements, and performance improvement processes and initiatives, including asset management-related trainings. Maintenance plan is developed with input from stakeholders in related functions. Maintenance plan addresses coordination with related asset management functions, including operations, safety, procurement, and design and construction. Maintenance plan is updated annually to align to budgets and planned service. Also maintenance conducted is recorded in an enterprise asset management system, together with all resources used to support maintenance, inspection, and overhaul and rehabilitation activities. Quality assurance processes in part verify fidelity of implementation to the plan, including through review of records in the enterprise asset management system or a contractor's equivalent.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
8	Maintenance Planning	Central Link Maintenance Planning	Maintenance plan covers all critical fleet assets. Maintenance plan is aligned to IS)55001/2 "asset management plan" scope, including organizational roles and responsibilities, summary of the asset inventory (types, quantities, ages, costs/values, locations, etc.), definition of asset levels of service and performance measures and targets, preventive maintenance and inspection program, corrective maintenance strategy, expected design lives, expected overhaul and rehabilitation cycles, condition inspection program, engineering support, quality assurance measures, required maintenance resources, major programs or procurements, and performance improvement processes and initiatives, including asset management-related trainings. Maintenance plan is developed with input from stakeholders in related functions. Maintenance plan addresses coordination with related asset management functions, including operations, safety, procurement, and design and construction. Maintenance plan is updated annually to align to budgets and planned service. Also maintenance conducted is recorded in an enterprise asset management system, together with all resources used to support maintenance, inspection, and overhaul and rehabilitation activities. Quality assurance processes in part verify fidelity of implementation to the plan, including through review of records in the enterprise asset management system or a contractor's equivalent. Capital planning to address expected renewal, expansion, and level of service requirements with expected available resources are detailed in a fleet management plan aligned to the fleet maintenance plan and financial planning assumptions.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
9	Contingency Planning	Asset Contingency Planning	The Agency has guidelines in place for determining which assets require contingency plans and what elements must considered and included in contingency planning. The contingency planning process is based in part on the Agency's risk management process and asset criticality framework. Contingency plans especially dress critical assets impacted by frequent, low severity risks such as weather impacts on the transit system. The contingency planning process involves all appropriate cross-functional stakeholders from maintenance, engineering, safety, operations, etc. Contingency plans establish clear roles and responsibilities, timelines, protocols, and actions. Contingency plans have a clear decision-making process including for deciding to activate them. The Agency evaluates plan performance after triggering events and reviews and updates the plan as necessary based on historical experience. Contingency plans are tested and prepared for as necessary.	
10	Disposal	Asset Disposal	The Agency has a standardized asset disposal process. The asset disposal process identifies and ensures compliance with critical regulations relevant to asset disposal. The disposal process is aligned to the Agency's accounting requirements and processes. The disposal process includes the creation and storage of records to demonstrate compliance. The disposal process clearly identifies responsibilities for determining whether an asset should be retired and necessary approvals. The disposal process emphasizes the recovery of assets' residual value. The disposal process emphasizes responsible disposal of assets. The disposal processes includes systematic updates of information systems to reflect the asset's retirement.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
11	Performance Indicators	Asset Management Performance Framework	Asset management performance measures have clear line-of-sight to the overall asset management strategy and objectives. Each asset management objective has associated performance measures which a reasonably comprehensive definition of performance. Performance measures cover level of service provided by assets and asset reliability, availability, maintainability, safety, and sustainability. Performance reporting is tailored by asset class, function, and organizational level. Performance measures and targets are aligned to operational performance measures. The Agency sets a performance target for each measure that represents a reasonable definition of success. Specific employees have responsibility for ensuring the organization meets each performance target. Performance targets are tied to specific actions in the overall asset management strategy, the capital planning process, and each specific maintenance plan. The Agency has established clear review and correction guidelines to follow when asset management-related performance targets are not met. Performance measures include are aligned to MAP-21 asset management performance measurement requirements. Performance reports are tailored and targeted to specific audiences and provided in a timely manner. Asset management-related performance measures and targets are regularly reviewed by managers and stakeholders as part of asset management planning processes, including strategy development, capital planning, and maintenance planning.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
12	Condition Assessment	Condition Assessment	The Agency has a clear policy in place to determine assets' condition assessment regimes. Factors considered in the policy include, asset criticality, asset-related risks, and historical asset reliability. Asset condition monitoring regimes are summarized in maintenance plans. Condition assessment procedures are asset-specific and are based in part on industry practice and on their value to determine appropriate maintenance actions, maintenance effectiveness, capital investment needs, and asset failure and safety risks. Condition assessment results are also used to support performance improvement, including improved timing of maintenance interventions and reliability engineering to improve asset technology and maintenance procedure effectiveness. Asset-specific condition assessment procedures also prescribe the frequency of inspection, which may depend in part on the asset's current condition. The Agency's enterprise asset management system is used to schedule condition inspections and record results. Historical condition assessment records are maintained throughout an asset's useful life and are easily accessible to users in an electronic location and format. The Agency uses a standard condition assessment scale to compare condition across asset types and classes.	
13	Criticality, Risk Assessment, and Risk Management	Criticality Analysis	The Agency has an objective process for systematically assigning criticality scores to assets based on their business value and role in delivering transit system levels of service. Asset location is considered as a factor in criticality. Asset criticality is used to set condition assessment regimes, determine risk management strategies including contingency planning, security rules and policies, maintenance prioritization, condition assessment regimes, and capital project prioritization.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
13	Criticality, Risk Assessment, and Risk Management	Asset-Related Risk Analysis	The Agency has a systematic process in place to consistently identify and evaluate asset-related risks, based on the asset inventory. Identified risks are tracked over time in a unified risk registry and regularly reviewed and updated. The Agency has a process in place help ensure asset-related risks are comprehensively characterized and that quality control is performed on the Agency's asset risk registry. The Agency uses accepted risk assessment methodologies to determine event probability or recurrence and severity. Risk levels, based on risk probability or recurrence interval and severity, are considered as part of maintenance planning, condition assessment procedures, and capital planning.	
13	Criticality, Risk Assessment, and Risk Management	Asset-Related Risk Management	The Agency has established policies for the selective application of risk management strategies to maximize risk management program cost-effectiveness. The Agency has a dedicated risk management function to carry out the Agency's risk management program, ensure a systematic approach, analyze cost-effectiveness, and verify implementation effectiveness and program effectiveness. Asset-related risk management strategies include do nothing, risk prevention or mitigation, risk transfer, and improved event response. Risk management strategies are coordinated across asset systems. Events causing asset failure or damage or disrupting asset operation are reviewed after the fact. Risk assessments and risk management strategies are updated as appropriate after events.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
13	Criticality, Risk Assessment, and Risk Management	Capital Project Risk Management	The Agency has a process to systematically identify asset-related project risks, especially for renewal and replacement capital projects. The risk assessment process takes into account the Agency's experience with asset-related risks in past capital projects. The Agency has guidelines in place for the consideration of asset-related risks in capital project risk management plans. Capital project risk management plans address identified asset-related risks including impacts on current operations, vendor risk (including competency to complete the project and long-term viability), systems integration risk, and risks related to asset acceptance (including incomplete knowledge transfer, failure to meet tests, etc.). Asset-related project risk management strategies include do nothing, risk prevention or mitigation, risk transfer, and improved event response. Project risk management strategies are coordinated as necessary with functions outside of DECM (e.g., operations, IT, safety, etc.).	
14	Insurance Risk Management Program	Asset-Related Insurance Program	The Agency has an insurance strategy in place to transfer asset-related risks that cannot be effectively prevented or mitigated, especially low-frequency, high severity risks that cannot be systematically characterized because of their essentially random nature. The Agency has guidelines in place for addressing asset-related risk captured in its assessment process through its insurance program. The Agency coordinates its asset-related risk management planning with its asset-related insurance program. The Agency's insurance program has coverage limits that reflect industry risk experience and the extent of the Agency's operations. The Agency's capital project-specific insurance programs address asset-related risks where possible.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
15	Continuous Improvement and Audit	Engineering Investigation and Change	The Agency maintains on-staff engineering and analyst support for all of its critical assets. The Agency maintains access to outside engineering and analyst expertise for its critical assets where appropriate. The Agency has an engineering investigation process in place to identify and review asset-related risks, asset failures, and maintainability issues. The review process includes guidelines for identifying when investigations are required and for approving and prioritizing candidate improvement projects, based on asset criticality, identified risks, and potential project benefits. The Agency has an established engineering change process for developing, testing, implementing, and documenting engineering improvements. The engineering change process emphasizes the involvement the Agency's own subject matter experts and other staff closely related to the business process. The Agency's engineering-based performance improvement approach is based on best-in-practice approaches such as Lean and Reliability-Centered Maintenance.	
15	Continuous Improvement and Audit	Process Management	The Agency has a designated process manager for key asset management-related processes. The process manager has subject matter expertise related to the process. The process manager is responsible for documenting and updating policies, procedures, and training related to the process and ensuring their quality, including accuracy and readability. The process manager undertakes regular review of the process and works with process stakeholders to identify and test improvements.	
15	Continuous Improvement and Audit	Construction Quality Assurance	The Agency has a dedicated construction quality assurance function to ensure that capital projects are built as designed, with technical specifications applied and designs followed. The quality assurance function has in place inspection guidelines to test materials, audit construction practices, ensure records are in place, and conduct other related inspections to ensure the end quality of the project. Quality assurance staff identifies project-specific inspection needs. Quality assurance inspections occur sufficiently frequently to ensure significant quality issues are identified and addressed.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
15	Continuous Improvement and Audit	Maintenance Quality Assurance	The Agency has a maintenance quality assurance function in place for all critical assets. Quality assurance staff ensure maintenance work is performed correctly according to prescribed and documented standards. Quality assurance staff ensure that maintenance work performed corresponds to electronic maintenance records. The Agency has a procedure to follow up on and resolve all identified quality issues, including skill upgrade for staff as necessary. The Agency has a documented quality assurance plan in place that specifies inspection procedures and frequencies. The Agency regularly updates its quality assurance planning based on trends in failures and maintenance outcomes. Quality assurance audits and inspections are documented and tracked in the Agency's asset management information systems.	
15	Continuous Improvement and Audit	Internal Audit	Internal Audit regularly reviews the Agency's asset management program. Audits are aligned to typical internal audit best practices for public agencies. Audits compare the overall asset management program or its individual elements to industry best practices. Audit rely in particular on auditable standards such as ISO 55000/1/2. Audit recommendations are tracked by Internal Audit until their final resolution.	
15	Continuous Improvement and Audit	External Audit	The Agency has designated points of contact responsible for coordinating the Agency's participation in various external audits related to asset management. The Agency has policies and procedures in place for audit response and maintains records based on anticipated audit requirements. The Agency tracks all asset management-related recommendations made by external auditors and addresses them through existing asset management governance where possible.	

AMP Sec#	Section Name	Process Name	Maturity Assessment Standard	Maturity Score
16	Training	Skills Assessment	The Agency tracks asset management-related skill requirements for both asset-specific needs and general functional needs. The Agency also tracks existing employees skills and the Agency's competence in key skill areas. The Agency has a process to systematically identify skill gaps and ensure mitigation measures are in place, including training and other knowledge transfer strategies, changes to job descriptions, matching of skills needs to employees across the organization, identification of new positions, and use of outside expertise and capabilities if necessary. Skills assessments are also tied to business planning to identify new skills needs and ensure that the Agency's workforce has the capability to carry out its asset management strategy and support future changes in its asset portfolio.	
16	Training	General Asset Management Curriculum	The Agency has a general asset management curriculum in place, emphasizing knowledge and skill development to support asset management organizational awareness and critical competencies. The curriculum aligns to independent standards for asset management workforce capabilities, MAP-21 transit asset management requirements, and Sound Transit's organizational framework for asset management. The Agency has identified critical staff who are required to complete the training.	
16	Training	Function-Specific Asset Management Curriculum	The Agency has identified curriculums to support critical asset management functions to support an improved level of knowledge of and competency in asset management best practices. The function-specific curriculums are aligned to recognized industry practices. Curriculums support the Agency's improvement efforts by aligning to the Agency's asset management improvement program. Curriculums emphasize recognized third-party professional certifications relevant to critical asset management functions.	

A.4 Asset Inventory and Condition Assessment Summary

[PLACEHOLDER]

A.5 Agency Asset-Related Insurance Program Summary

Exhibit 35: Agency Operations Insurance Program Details

AGENCY OPERATIONS INSURANCE PROGRAM (AOIP)					
Type of Insurance	**Renewal Date**	**Insurer**	**Policy Number**	**Limits of Insurance**	**Policy Deductible / SIR**
Primary Liability [Includes R.O.W. Properties]	Nov 1, 13 to Nov 1, 14	Zurich	SCO 5834022-01	$1 MM / Occurrence	$25,000 / Occ
Fleet Vehicle Liability & Physical Damage	May 1, 13 to May 1, 14	Travelers Indemnity Company	BA533D2548IND13	$ 1-million / Accident Repair or Replace	$ -nil- Liability $ 500 Comp; $ 1000 Coll
Excess Liability - Layer 1 (Excess over AL Only)	May 1, 13 to May 1, 14	St. Paul Fire & Marine Insurance Company	ZUP-14N95839-13-NF	$25MM Agg xs. Primary	$ - nil -
Excess Liability - Layer 2 (Excess over AL Only)	May 1, 13 to May 1, 14	Navigators Insurance Company	CH13EXR717251IV	$25MM Agg xs. $25MM	$ - nil -
Inland Marine - Contractors Equipment	May 1, 13 to May 1, 14	Travelers Indemnity Company	QT-660-0996M026-TIL-13	$956,429; $100,000 Unscheduled Equipment	$2,500/Loss - Unscheduled Equip; $5,000/Loss all other
Inland Marine - Physical Damage for Buses	Oct 1, 12 to April 1, 13	Travelers Indemnity Company	QT-660-9A155396-TIL-12	$10,894,117 Buses stored in Everett, Wa	$25,000 / Occ
Pollution Legal Liability	May 1, 13 to May 1, 14	ACE - Illinois Union Insurance Company	PPL G24639332 005	$25 MM Aggregate	$100,000 / Claim (SIR)
Excess Pollution Legal Liability	May 1, 13 to May 1, 14	Great American - E&S Insurance Company	EEL 1849619 02	$25MM Agg. xs. $25MM	$ - nil -
Public Officials and Employment Liability	May 1, 13 to May 1, 14	ACE - Illinois Union Insurance Company	G24871058 005	$15 MM Aggregate	$250,000 / Claim
Excess Public Officials and Employment Liability	May 1, 13 to May 1, 14	Ironshore Specialty Insurance Company	000877202	$10 MM Aggregate	$ - nil -
Crime & Fidelity	May 1, 13 to May 1, 14	Great American Insurance Company	GVT 554-42-01-10	$5 MM / Claim	$25,000 / Claim
Fiduciary Liability	May 1, 13 to May 1, 14	ACE American Insurance Company	G 24872208 004	$10 MM Aggregate	$ - nil -
Property [Includes Beacon Hill Tunnel]	May 1, 13 to May 1, 14	Lexington Insurance Company	003691994	$400MM Loss Limit $100MM Flood Limit $25MM Quake Limit Sublimit Per Policy	$100K Per Occurrence; $250K Beacon Hill Tunnel; $250K minimum / $2.5MM max; 100-yr flooding limited to $25MM

AOIP > PROPERTY - DIC (Earthquake Coverage)					
$25M x $25M Limit Excess Layer					
Alterra Excess & Surplus - 13.33%	May 1, 13 to May 1, 14	Alterra Excess & Surplus	MAX4XP0063096	$25M x $25M - 13.33%	$ - nil -
Maxum Indemnity Company - 5.67%	May 1, 13 to May 1, 14	Maxum Indemnity Company	SPO6017859-02	$25M x $25M - 5.67%	$ - nil -
Houston Casualty Company (UK) - 7.5%	May 1, 13 to May 1, 14	Houston Casualty Company (UK)	B080114230U13	$25M x $25M - 7.5%	$ - nil -
First Specialty Insurance Corp. - 40%	May 1, 13 to May 1, 14	First Specialty Insurance Corp.	03000463	$25M x $25M - 40%	$ - nil -
James River Insurance Co. - 20%	May 1, 13 to May 1, 14	James River Insurance Co.	00051348-1	$25M x $25M - 20%	$ - nil -
Ironshore Specialty - 13.5%	May 1, 13 to May 1, 14	Ironshore Specialty	001252901	$25M x $25M - 13.5%	$ - nil -
$50M x $50M Limit Excess Layer					
Alterra Excess & Surplus - 13.33%	May 1, 13 to May 1, 14	Alterra Excess & Surplus	MAX4XP0063096	$50M x $50M - 13.33%	$ - nil -
Maxum Indemnity Company - 5.67%	May 1, 13 to May 1, 14	Maxum Indemnity Company	SPO6017859-02	$50M x $50M - 5.67%	$ - nil -
Arch Specialty Insurance Co. - 17.75%	May 1, 13 to May 1, 14	ARCH Specialty Insurance Co.	ESP0047866-01	$50M x $50M - 17.75%	$ - nil -
Lexington Insurance Co. - 50%	May 1, 13 to May 1, 14	Lexington Insurance Co.	014498253	$50M x $50M - 50%	$ - nil -
Ironshore Specialty - 13.25%	May 1, 13 to May 1, 14	Ironshore Specialty	001254701	$50M x $50M - 13.25%	$ - nil -

Exhibit 36: Rail Operations Insurance Program Details

RAIL OPERATIONS INSURANCE PROGRAM (ROIP) [Sounder, Tacoma Link, and Central Link]					
Type of Insurance	**Renewal Date**	**Insurer**	**Policy Number**	**Limits of Insurance**	**Policy Deductible / SIR**
Primary Liability	Nov 1, 13 to Nov 1, 14	Zurich / Steadfast	SCO 3571328-14	$25 MM / occ - $50MM agg	$2MM per Occurrence; $750K per Central Link; $1MM Premises Liability
Excess Liability - Layer 1	Nov 1, 13 to Nov 1, 14	XL [60%] Apollo [26%] · Aegis [14%]	RRX 0038936-01 WE1300611 WE1300611	$25 MM / occ - $50MM agg	$ - nil -
Excess Liability - Layer 2	Nov 1, 13 to Nov 1, 14	Lexington (AIG)	15438251	$25 MM / occ - $50MM agg	$ - nil -
Excess Liability - Layer 3	Nov 1, 13 to Nov 1, 14	Catlin	WE1300612	$25 MM / occ - $50MM agg	$ - nil -
Excess Liability - Layer 4	Nov 1, 13 to Nov 1, 14	XL Europe [60%] Argo Insurance [25%] Torus [15%]	XLEUMB557332 WE1300618 WE1300617	$100 MM / occ - $100MM agg	$ - nil -
Property - Rolling Stock	Nov 1, 13 to Nov 1, 14	Steadfast / Zurich	IM 9826936-02	$10 MM / occ	$50,000 Per Claim; $500,000 Collision / Derailment
Excess Property - Layer 1	Nov 1, 13 to Nov 1, 14	RSUI Indemnity Co	NHD 384465	$15 MM / occ	$50,000 Per Claim; $500,000 Collision / Derailment
RR Protective Liability	Nov 1, 13 to Nov 1, 14	Zurich	SCO 3610271-15	$5 MM / occ - $10 MM Agg.	$ - nil -

Exhibit 37: Owner Controlled Insurance Program Details

CENTRAL LINK - OWNER CONTROLLED INSURANCE PROGRAM (OCIP) [Initial Segment, Airport Link, and Designated Capitol Projects]

Type of Insurance	Renewal Date	Insurer	Policy Number	Limits of Insurance	Policy Deductible / SIR
Primary Liability* Policy Extension 1/1/07 to 12/31/09	Jan 1, 03 to Dec 31, 09	AISLIC (AIG)	GL 179-04-22	$2 MM / occ - $4 MM agg Comp Ops to 12/31/12	$500,000 per occ
Excess Liability - 1st Excess Layer	Jan 1, 03 to Dec 31, 09	AISLIC (AIG)	3101509	$25 MM / occ & $25 MM agg. Comp Ops to 12/31/12	$ - nil -
Excess Liability - 2nd Excess Layer	Jan 1, 03 to Dec 31, 09	The Insurance Co of the State of PA	4701-2944	$23 MM / occ & $25 MM agg. Comp Ops to 12/31/12	$ - nil -
Excess Liability - 3rd Excess Layer	Nov 27, 01 to Dec 31, 09	Starr Excess Liability Insurance Co.	639-4145	$50 MM / occ & $50 MM agg. Comp Ops to 12/31/12	$ - nil -
Professional Liability & Contractors Pollution	Jan 01, 09 to Dec 31, 16	Lexington (AIG)	647 72 17	$50 MM / claim & agg.	$250,000 / claim (SIR) $3.5 million agg.
~~Pollution Legal Liability Policy Extension 1/1/09 - 1/1/10~~	~~Jan 31, 09 EXPIRED~~	~~AISLIC (AIG)~~	~~PLS 19542-45~~	~~$50 MM / claim & agg. EXPIRED~~	~~$ 500,000 / claim $5.5 million agg.~~
~~Property - Builder's Risk Policy Extension for C710, C735, C755 to 7/1/2009~~	~~Jul 31, 07 EXPIRED~~	~~Allianz~~	~~ATO 300#167~~	~~$ Per Project Value EXPIRED~~	~~$500K above ground $1 MM below ground 2% loss Quake & Flood~~
*Primary Liability Loss Fund	Dec. 31, 09 Comp Ops to 12/31/12	AIG Trust Fund	DBP 08-44-29	$ 6,500,000 (loss fund deductible @ $500k / claim) Comp Ops to 12/31/12	*Not Coverage Policy. Risk Fund.

UNIVERSITY LINK - OWNER CONTROLLED INSURANCE PROGRAM (OCIP) [U-Link "Project-Specific" OCIP]

Type of Insurance	Renewal Date	Insurer	Policy Number	Limits of Insurance	Policy Deductible / SIR
Primary Liability (CGL)	Oct 20, 08 to Sep 30, 16	Westchester	G24044105 001	$1 MM / occ - $2 MM agg	$100,000 per occ
Excess Liability - 1st Excess Layer	Oct 20, 08 to Sep 30, 16	Westchester	G24043885 001	$25 MM / occ & agg.	$ - nil -
Excess Liability - 2nd Excess Layer	Oct 20, 08 to Sep 30, 16	Aspen Insurance UK	K0A08YP08A0A	$25 MM / occ & agg.	$ - nil -
Excess Liability - 3rd Excess Layer	Oct 20, 08 to Sep 30, 16	AIG Cat Excess	949-7079	$50 MM / occ & agg.	$ - nil -
Builders Risk	Oct 20, 08 to Sep 24, 16	Lexington	003691902	$100 MM / occ & agg.	$500,000 per occ
BR - 1st Excess Layer	Oct 20, 08 to Mar 27, 14	AXIS Surplus	ENM743508/01/2008	$100 MM / occ & agg.	$ - nil -
					$ - nil -
BR - 2nd Excess Layer	Oct 20, 08 to Mar 27, 14	North American Specialty	H2X0000180-00	$200 MM / occ & agg.	$ - nil -
Contractor's Pollution Liability	Oct 20, 08 to Sep 30, 16	ACE	CPY G24893649 001	$50 MM / occ & agg.	$250,000 S.I.R. Per Loss

NORTHGATE LINK EXTENSION - OWNER CONTROLLED INSURANCE PROGRAM (OCIP) [Northgate-Link "Project-Specific" OCIP]

Type of Insurance	Renewal Date	Insurer	Policy Number	Limits of Insurance	Policy Deductible / SIR
Primary Liability (CGL)	Jan 1, 13 to Dec 31, 21	Westchester	G24347941 001	$1 MM / occ - $2 MM agg	$100,000 Per Occ
Excess Liability - 1st Excess Layer	Jan 1, 13 to Dec 31, 21	Westchester	G24347953 001	$10MM / occ - $50MM agg	$ - nil -
Excess Liability - 2nd Excess Layer	Jan 1, 13 to Dec 31, 21	Axis	EAU770950/01/2012	$10MM / occ - $50MM agg	$ - nil -
Excess Liability - 3rd Excess Layer	Jan 1, 13 to Dec 31, 21	Westchester	G24347990001	$15MM / occ - $75MM agg	$ - nil -
Excess Liability - 4th Excess Layer	Jan 1, 13 to Dec 31, 21	Swiss Re	H2X0000662-00	$15MM / occ - $75MM agg	$ - nil -
Excess Liability - 5th Excess Layer	Jan 1, 13 to Dec 31, 21	CV Starr / ACE (Quota Share)	B080114974U12 XCQG27049758	$25MM / occ - $ 50MM agg	$ - nil -
Excess Liability - 6th Excess Layer	Jan 1, 13 to Dec 31, 21	Swiss Re	H2X0000663-00	$10MM / occ - $20MM agg	$ - nil -
Excess Liability - 7th Excess Layer	Jan 1, 13 to Dec 31, 21	Arch	UFP0052737-00	$5MM / occ - $10MM agg	$ - nil -
Excess Liability - 8th Excess Layer	Jan 1, 13 to Dec 31, 21	Admiral	EX000013249-01	$5MM / occ - $10MM agg	$ - nil -
Excess Liability - 9th Excess Layer	Jan 1, 13 to Dec 31, 21	RSUI Indemnity Company	NHA061984	$5MM / occ - $10MM agg	$ - nil -
Builders Risk (Quota Share)	Jan 1, 13 to Dec 31, 21	ACE (50%)	I2108671A 001/002	$200 MM / occ & agg.	$500,000 Per Occ
Builders Risk (Quota Share)	Jan 1, 13 to Dec 31, 21	Munich Re (12.5%)	58-A3-EI-0000254-00	$50 MM / occ & agg.	$ - nil -
Builders Risk (Quota Share)	Jan 1, 13 to Dec 31, 21	Hiscox (12.5%)	UNS2521992.12	$50 MM / occ & agg.	$ - nil -
Builders Risk (Quota Share)	Jan 1, 13 to Dec 31, 21	XL (25%)	US00064586CA12A	$100 MM / occ & agg.	$ - nil -
Contractor's Pollution Liability	Jan 1, 13 to Dec 31, 21	ACE	UCPG27063883 001	$50 MM / occ & agg.	$250,000 S.I.R. Per Loss

A.6 Terms and Definitions

This appendix defines key terms and acronyms used throughout this Asset Management Plan.

Term	Definition
Asset(s)	In the context of this asset management plan, an asset is considered to be rolling stock, infrastructure, and facilities as defined in Section 4 of this Plan.
Asset Class	A high-level grouping of asset types because of a shared general function and functional interdependence, such as "infrastructure assets" and "rolling stock."
Asset Class-Level	Any management or decision-making activities or business processes that apply to only to a specific asset class.
Asset Hierarchy	An organizational framework for the asset portfolio to identify functional relationships among assets. The lowest level in the asset hierarchy is the least maintainable unit for which specific preventive maintenance requirements exist.
Asset Management	Systematic and coordinated activities and practices through which an organization optimally and sustainably manages its assets and asset systems to deliver business value, accounting for their associated performance, risks, and expenditures over their life cycles.
Asset Management Information System	System for the storage, processing, and distribution of asset management-related information.
Asset Management Plan (AMP)	Document that identifies specific asset management objectives and specifies the activities, resources, responsibilities, and timescales for implementing the asset management strategy and delivering the asset management objectives.
Asset Management System	An organization's asset management policy, asset management strategy, asset management objectives, asset management plan(s) and those activities, processes, and organizational structures required for their development, implementation, and continuous improvement. A management system is a set of interrelated elements used to establish policy, strategy, and processes to implement the strategy and realize organizational vision and objectives. It includes organizational structure, roles and responsibilities, planning activities, standards, information systems, practices, processes, procedures, and resources.
Asset Owner	The employee designated as responsible for overseeing and coordinating a specific asset type's lifecycle management processes and for knowledge management for that asset type.
Asset Portfolio	Complete range of assets and asset systems owned by an organization, typically organized by an asset hierarchy or classification.
Asset System	A set of assets that interact and/or are interrelated so as to deliver a required business function or service.

Term	Definition
Asset Type	A specific set of assets that all serve an identical function and share attributes such as maintenance regimes and asset owners.
Enterprise-Level	Any management or decision-making activities or business processes that apply across the entire organization or across all asset classes.
Indenture Level	The level of an asset classification in the overall asset hierarchy defining its level of complexity as an asset. Indenture levels can cover asset classes, asset systems, discrete assets, and various levels of asset components down to the least maintainable unit.
ISO 55000/55001/55002	The International Organization for Standardization's management framework for asset management. It defines the elements of a management system to implement asset management within an organization.
Lifecycle Management	An asset-specific management approach that enables agencies to make better investment decisions across the lifecycle of an asset by using management processes and data specific to each asset as the basis for predicting its remaining useful life, which includes age, condition, historic performance, and level of usage.
Lifecycle/life cycle	Time interval beginning with the identification of the need for an asset and terminating with the decommissioning of the asset or associated liabilities; principal stages of an asset's life cycle include: create/acquire, use/operate, maintain, rehabilitate, and dispose/reconstruct.
Performance Management	The American Association of State Highway and Transportation Officials (AASHTO) defines performance management as an ongoing process that translates strategic goals into relevant and detailed measures and targets that, along with resources, are continuously monitored to ensure achievement of published institutional goals.
Policy – Administrative	An enforceable document officially adopted by an executive that identifies specific requirements and processes for completing specific business activities. An administrative policy may even outline high-level procedures for a process.
Policy – Board	An enforceable document officially adopted by the Board of Directors which provides the vision and principles for a specific aspect of the Agency's business activities and guides the actions of all employees, especially upper managers. It provides the framework for developing administrative policies and implementation strategies.
Procedure	A specified way of carrying out an activity or process that is typically documented to some extent.
Process	An organized set of interrelated or interacting business activities that transforms inputs into outputs.
Risk Management	A process through which risks – potential events that impact the Agency's objectives – are identified, assessed, and addressed through various strategies.
Service Levels	Asset performance requirements based on the outcomes that the Agency is committed to deliver, such as service quality and capacity needs.

Term	Definition
Transit Asset Management (TAM)	The application of asset management applied to the transit sector. MAP-21 includes distinct asset management requirements for various modes.
Total Cost of Ownership	The total estimated capital and O&M costs associated with an asset over its entire lifecycle, including the cost to design/procure, use/operate, maintain/monitor, rehabilitate, and dispose/reconstruct/replace.