WSDOT

JUNE 2019

2018 Rail Fixed Guideway Public Transportation System Safety Report

WSDOT STATE SAFETY OVERSIGHT PROGRAM

CONTENTS

Acronyms and abbreviations 3
Websites featured 3
Rail fixed guideway public transportation systems and the State Safety Oversight Program 4
Rail fixed guideway public transportation systems in Washington 5
Sound Transit 5
City of Seattle 8
2018 State Safety Oversight Program updates 10

ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
CFR	Code of Federal Regulations
FTA	Federal Transit Administration
RCW	Revised Code of Washington
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation

WEBSITES FEATURED

In order of appearance:

RCW 81.104.115	app.leg.wa.gov/RCW/default.aspx?cite=81.104.115
49 CFR Part 674	www.gpo.gov/fdsys/granule/CFR-2016-title49-vol7/CFR-2016-title49-vol7-part674
49 CFR Part 659	www.gpo.gov/fdsys/granule/CFR-2012-title49-vol7/CFR-2012-title49-vol7-part659/content-detail.html
49 CFR Part 673	www.govinfo.gov/content/pkg/FR-2016-02-05/pdf/2016-02017.pdf
Washington State Rail Safety Oversight Program Standard	www.wsdot.wa.gov/sites/default/files/2014/09/23/PT-ProgramStandard-WashingtonStateRailSafetyOversight-2018.pdf
WAC 468-550	app.leg.wa.gov/wac/default.aspx?cite=468-550&full=true

WSDOT's State Safety Oversight Program helps to ensure that rail transit agencies in Washington state implement and comply with their safety programs.

As part of this effort, the program oversees that these agencies appropriately track, mitigate and eliminate safety hazards in their systems. The State Safety Oversight Program publishes this report annually to comply with state and federal requirements in RCW 81.104.115 and 49 CFR Part 674.

RAIL FIXED GUIDEWAY PUBLIC TRANSPORTATION SYSTEMS AND THE STATE SAFETY OVERSIGHT PROGRAM

The Federal Transit Administration (FTA) defines rail fixed guideway public transportation systems as any fixed guideway system that:

- Uses rail.
- Operates for public transportation.
- Are within the jurisdiction of a state.
- Are not under the jurisdiction of the Federal Railroad Administration.

Rail fixed guideway public transportation systems include rapid rail, heavy rail, light rail, monorail, and trolley; and inclined plane, funicular, and automated guideway. The systems exclude Amtrak passenger rail and fixed guideway public transportation that is not on rail, such as ferry service.

The State Safety Oversight Program oversees rail fixed guideway public transportation system safety in Washington. To carry out this responsibility, the program publishes the Washington State Rail Safety Oversight Program Standard. The Program Standard establishes policies, procedures, requirements and responsibilities for rail fixed guideway public transportation systems and the State Safety Oversight Program to help ensure safety and comply with state and federal laws and rules. For example, the Program Standard includes procedures for accident investigations, internal and external audits, and annual reviews of agency safety plans by the State Safety Oversight Program.

The State Safety Oversight Program oversees the safety programs at the following rail transit agencies:

- **Sound Transit (agency)**
  - Link Light Rail (system)
  - Tacoma Link (system)
- **City of Seattle (agency)**
  - Seattle Streetcar (system)
  - Seattle Center Monorail (system)

RAIL FIXED GUIDEWAY PUBLIC TRANSPORTATION SYSTEMS IN WASHINGTON

Sound Transit

Link Light Rail

- 2018 accidents and incidents: 10
- 2018 corrective action plans: 4

System description

Sound Transit owns Link Light Rail. Sound Transit contracts with King County Metro for operations and maintenance of Link Light Rail under an interagency agreement. Sound Transit, as the owner of the system, has fiscal and safety performance oversight for the contract.

In July 2009, Sound Transit opened the 13.9-mile initial segment of Link Light Rail. The segment includes sections of aerial, tunnel, and at-grade track. The segment also utilizes the Downtown Seattle Transit Tunnel. The tunnel contains rail stations for level-platform boarding.

In December 2009, Sound Transit opened a 1.7-mile aerial southern extension between Tukwila International Boulevard and SeaTac International Airport, known as the Airport Link.

In March 2016, Sound Transit opened a 3.5-mile northern extension, known as the University Link. The extension includes twin-bored tunnel track and two new underground stations at Capitol Hill and the University of Washington.

In September 2016, Sound Transit opened a 1.6-mile aerial southern extension from the SeaTac Airport Station at the southern end of the Airport Link. This extension, known as the South 200th Street Extension, includes the Angle Lake station.

Sound Transit is planning future extensions of Link Light Rail, including:

- **Northgate Link Light Rail Expansion: North to Lynnwood and Everett**
  Sound Transit plans to open the Northgate Link Light Rail Expansion in April 2021. The extension will add 10 stations and 40 cars to the system.

- **East Link: East to Redmond**
  Sound Transit plans to open East Link in July 2023. The extension will include more than 200 cars.
- **South to Kent, Des Moines, Federal Way, and the Tacoma Dome**
  With this extension, Link Light Rail will connect with Tacoma Link in 2030.

Sound Transit plans to continue to grow Link Light Rail to 116 miles of track by 2040, expanding the system five-fold beyond its current size, at a scale comparable to other systems in the country.

The Link Light Rail trains are 95 feet long and weigh approximately 105,000 pounds. The vehicles are double-articulated with a three-truck (six-axle) configuration. The trains are capable of running up to four cars at a time. An overhead contact wire energized at 1,500 volts DC powers the trains. Each train's total capacity is 200 passengers, with seating for 74 passengers.

Link Light Rail had approximately 24.4 million boardings in 2018.

Tacoma Link

- 2018 accidents and incidents: 1
- 2018 corrective action plans: 2

System description

Sound Transit owns, operates, and maintains Tacoma Link.

Tacoma Link began service in August 2003. The system runs through downtown Tacoma (Tacoma Dome Station to the Theater District/South 9th Street Station), making six stops on 1.6-mile route. Sound Transit added the Theater District Station in 2011. Each station has low-level boarding platforms, shelter canopies, pedestrian and street lighting, benches, and an information kiosk. Sound Transit plans to add 2.4 miles with six new stations by 2022 and a 6-mile extension by 2039.

Tacoma Link light-rail vehicles run every 12 to 24 minutes, depending on the time of day. Rides are free on the system thanks to funding from the Tacoma Business Improvement Area.

Tacoma Link uses three Skoda 10T electric-powered light-rail vehicles. The vehicles travel at street level and receive power from overhead catenary wire energized at 750 volts DC. Each vehicle operates as a single car, with operating cabs at each end so service can reverse direction without turning around. The vehicles have a maximum capacity of 56 passengers.

Tacoma Link Light Rail had approximately 900,000 boardings in 2018.

City of Seattle

Seattle Streetcar

- 2018 accidents and incidents: 6
- 2018 corrective action plans: 1

System description

The Seattle Streetcar is owned by the City of Seattle, and is operated and maintained by King County Metro under an interlocal agreement established in 2007.

The Seattle Streetcar consists of two lines:

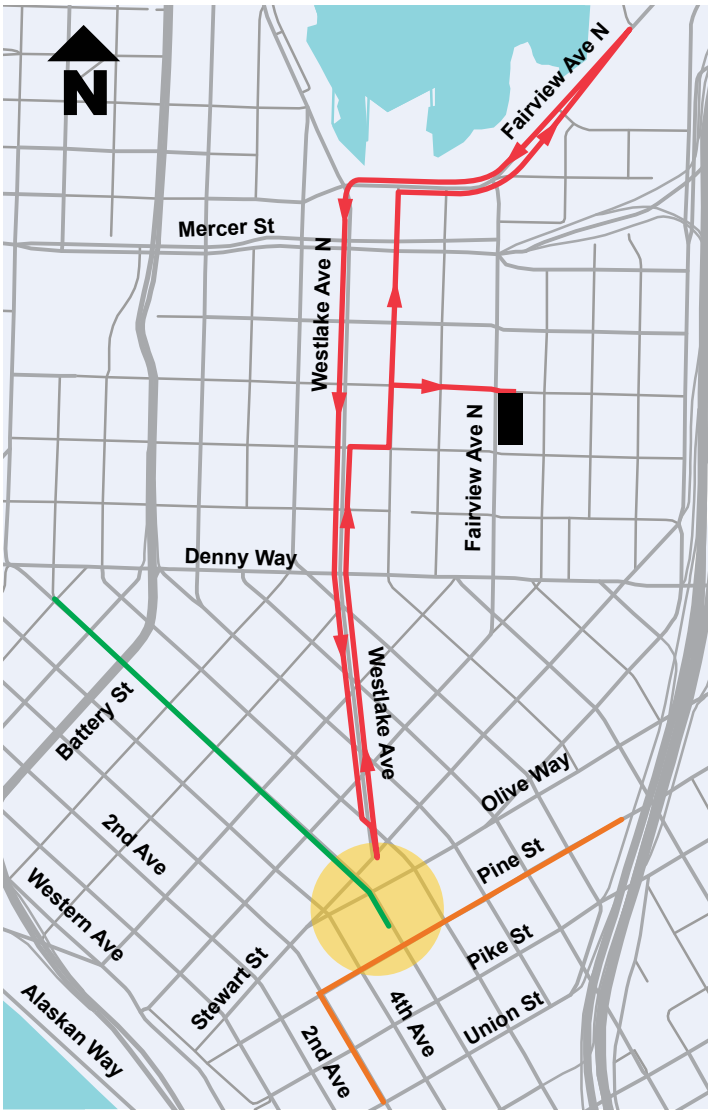
- **The South Lake Union Streetcar**
  A 1.3-mile, seven-stop line connecting the South Lake Union neighborhood to downtown Seattle. The line opened to the public in 2007
- **The First Hill Streetcar**
  A 2.5-mile, 10-stop line connecting Pioneer Square and Capitol Hill via Chinatown, Little Saigon, Yesler Terrace, and First Hill. The line opened to the public in January 2016.

Both routes offer frequent service, with streetcars arriving every 10–15 minutes most of the day, except late at night.

The South Lake Union Streetcar fleet consists of three modern streetcars supplied by Inekon. The streetcars carry up to 140 passengers and are ADA-accessible.

The First Hill Streetcar fleet consists of six, 66-foot-long modern streetcar vehicles supplied by Inekon. The cars draw power from an overhead contact system providing 750 volts DC, as well as an on-board energy storage system. Each car seats 30 passengers and accommodates 40 standees. Two spots for passengers with wheelchairs are included in the standee area.

As of June 2018, South Lake Union Streetcar ridership was approximately 1,500 riders per day. The First Hill Streetcar ridership was approximately 3,500 riders per day.



South Lake Union Streetcar

First Hill Streetcar

Seattle Center Monorail

- 2018 accidents and incidents: 0
- 2018 corrective action plans: 5

System description

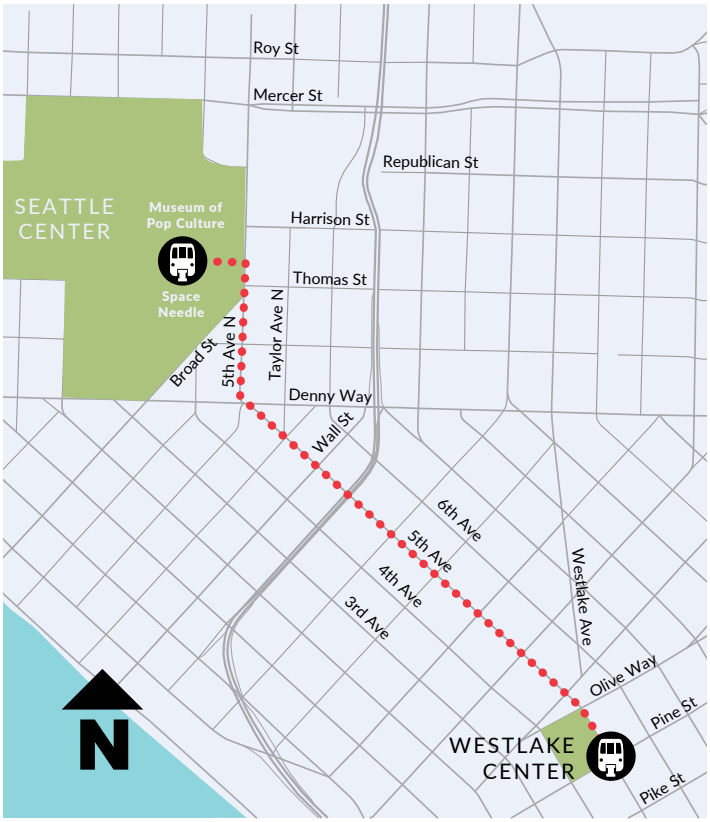
The Seattle Center Monorail is owned by the City of Seattle and has been operated and maintained under contract by Seattle Monorail Services since 1994.

The Monorail was built for the 1962 Seattle World's Fair to link the fairgrounds and downtown Seattle. The Monorail opened for revenue service in March 1962. The system is slightly less than 1 mile in length.

The monorail's elevated track is supported by 62 pre-stressed, 70-foot concrete piers, allowing for minimal interference with vehicle traffic. The system is composed of two trains (Blue and Red). Each train runs on a dedicated beam. The trains were built by ALWEG Rapid Transit Company in West Germany in 1961. The trains operate on 700 volts DC, supplied to the trains through contact rails on each beam.

The Monorail is an important fixture in Seattle for residents and tourists, serving as a link to the light rail at Westlake Center and to tourist destinations in Seattle Center.

The Monorail trains typically run one at a time. The one-way trip departs every ten minutes, with a travel time of approximately two minutes. Each train can carry up to 200 passengers per trip. The trains carry approximately 5,000 to 8,000 passengers per day (between roughly 1.8 million and 3 million passengers per year).



2018 STATE SAFETY OVERSIGHT PROGRAM UPDATES

WSDOT established the State Safety Oversight Program in 1997 to meet requirements in RCW 81.104.115 and 49 CFR Part 659. The program facilitates these requirements through its Program Standard and WAC 468-550.

Federal law established new requirements for the State Safety Oversight Program in 49 CFR Part 674 and 673. The new requirements made several changes to 49 CFR Part 659, including:

- Increasing the program's involvement in the investigation of accidents and hazards.
- Removing a requirement that the program oversee rail transit agencies' security programs.

49 CFR Part 674 also required the State Safety Oversight Program to be certified as complying with the requirement by April 2019. In July 2018, the FTA certified the State Safety Oversight Program as compliant with 49 CFR Part 674.

49 CFR Part 673 requires the State Safety Oversight Program to be certified as complying with the requirement by July 2020. The program is on track to obtain this certification by the deadline.

In 2018, the State Safety Oversight Program devoted 8,350 employee hours to carry out its responsibilities. WSDOT employees involved in administering the program included:

- State Safety Oversight Program manager
- State Safety Oversight Program assistant manager
- Transit safety oversight specialists
- Transit safety oversight intern
- FTA compliance officer
- Legal counsel
- Public Transportation Division Capital Program manager
- Administrative assistant

The State Safety Oversight Program also conducted triennial reviews in 2018 of each rail transit agency's implementation of its safety plan.

Accidents, incidents and corrective action plans

Rail transit agencies report accidents and incidents to the State Safety Oversight Program that meet at least one of the following thresholds:

- Fatality
- Serious injury
- Collision involving a rail transit vehicle
- Runaway train
- Evacuation for life safety reasons
- Derailment
- Property damage that disrupts operations

When an accident or incident occurs, the State Safety Oversight Program may choose to conduct its own investigation or have the rail transit agency conduct an investigation on its behalf using program-approved investigation procedures.

The program's role in every investigation is to ensure that investigators collect and analyze all available evidence, the program has access to the evidence, and investigators examine probable root causes and causal factors. Once the investigation is complete, the program adopts a final investigation report.

For all accidents and incidents, the program ensures that agencies eliminate or adequately mitigate the hazards and deficiencies that caused the event. In some cases, elimination and mitigation require the development of a corrective action plan. The program and the agency track the corrective action plan until the agency completes the plan.

Accidents and incidents

Sound Transit				City of Seattle				Total	
Link Light Rail		Tacoma Link		Seattle Streetcar		Seattle Center Monorail			
2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
13	10	2	1	3	6	0	0	18	17

Accident and incidents rollup*

Threshold(s) reached	Sound Transit				City of Seattle				Total	
	Link Light Rail		Tacoma Link		Seattle Streetcar		Seattle Center Monorail			
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Fatality	2	0	0	0	0	0	0	0	2	0
Serious injury	3	3	0	0	0	0	0	0	3	3
Collision	13	8	2	1	3	6	0	0	18	17
Runaway train†	--	0	--	0	--	0	--	0	--	0
Evacuation	0	0	0	0	0	0	0	0	0	0
Derailment	1	0	1	0	0	0	0	0	0	0
Property damage	2	1	0	0	0	0	0	0	2	1

* A single accident or incident may meet a number of thresholds. As an example, a collision may cause property damage that disrupts operations and result in an injury.

† The FTA did not require tracking of "runaway train" until certifying the State Safety Oversight Program as compliant with 49 CFR Part 674 and 673 in July 2018.

Corrective action plans‡

	Sound Transit				City of Seattle				Total	
	Link Light Rail		Tacoma Link		Seattle Streetcar		Seattle Center Monorail			
	2017	2018	2017	2018	2017	2018	2017	2018	2017	2018
Corrective Action Plans	11	4	4	2	11	1	6	5	32	12

‡ Because some corrective action plans require the mitigation and planning of multiple parties over an extended period, the State Safety Oversight program may track corrective action plans over a number of reporting periods before they are resolved. As such, accident and incident totals may not match annual corrective action plan totals.

Accident and incidents detail: Sound Transit, Link Light Rail

Date	Type	Location	Collision With	Fatalities	Serious injuries	Property Damage	Derailment
5/3/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
6/13/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
6/19/2018	Collision	Trackway	Automobile	0	2 members of the public	< $25,000	No
6/27/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
7/1/2018	Collision	Non-revenue facility	Automobile	0	0	> $25,000	No
7/13/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
7/18/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
10/31/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
12/23/2018	Collision	Trackway	Individual	0	1 member of the public	< $25,000	No
12/27/2018	Collision	Trackway	Automobile	0	0	< $25,000	No

Accident and incidents detail: Sound Transit, Tacoma Link

Date	Type	Location	Collision With	Fatalities	Serious injuries	Property Damage	Derailment
12/21/2018	Collision	Trackway	Automobile	0	0	< $25,000	No

Accident and incidents detail: City of Seattle, Seattle Streetcar

Date	Type	Location	Collision With	Fatalities	Serious injuries	Property Damage	Derailment
1/18/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
4/6/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
4/28/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
9/14/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
10/22/2018	Collision	Trackway	Automobile	0	0	< $25,000	No
12/16/2018	Collision	Trackway	Automobile	0	0	< $25,000	No

Probable Cause	Description
Action of motorist	A motorist made a left turn into the path of light rail vehicle.
Operating rule violation/human factors	A light rail vehicle failed to stop at a light rail signal.
Action of motorist	A motorist attempted to make an illegal left turn.
Action of motorist	A motorist attempted to make an illegal left turn.
Action of motorist	A Seattle Police Department vehicle responding to a call at a high rate of speed lost control and jumped the curb. The vehicle collided with the Link Light Rail operations and maintenance facility's sign, flagpole and fencing, eventually coming to rest in the facility's yard.
Equipment failure	A motorist made an illegal left turn into the path of light rail vehicle.
Action of motorist	A motorist made an illegal left turn into the path of light rail vehicle.
Action of motorist	A motorist made an illegal turn into the path of light rail vehicle and fled the scene.
Pedestrian actions	A pedestrian entered the light rail vehicles right-of-way and appeared to lay deliberately on the track.
Action of motorist	A motorist failed to stop at an intersection and made a left turn into the light rail vehicle

Probable Cause	Description
Action of motorist	A motorist failed to stop at a red light.

Probable Cause	Description
Action of motorist	A motorist attempted to make a right turn across the path of a streetcar without having the right of way.
Action of motorist	A motorist made a maneuver into the right hand lane while a streetcar occupied the lane.
Action of motorist	A motorist failed to stop at a red light.
Action of motorist	A motorist made an illegal right turn from the left hand lane.
Action of motorist	A motorist failed to obey the signal at the intersection.
Action of motorist	A motorist failed to obey the traffic signal at the intersection.

WE NEVER FORGET IT'S YOUR MONEY.
Free Checking + No Hidden Fees
SOUND
CREDIT UNION
SOUND
CREDIT UNION
WE NEVER FORGET
IT'S YOUR MONEY.
soundcu.com
WE NEVER FORGET
IT'S YOUR MONEY.

SOUND
LAKE UNION
ce Branches
301
UND
IT UNION
soundcu.com
WE NEVER FORGET IT'S YOUR MON
soundcu.com
NO
PARKING
ANY
TIME

MORE INFORMATION

Brian Lagerberg

Washington State
Department of Transportation

(360) 705-7878
LagerbB@wsdot.wa.gov

Americans with Disabilities Act (ADA) Information: This material can be made available in an alternate format by emailing the Office of Equal Opportunity at wsdotada@wsdot.wa.gov or by calling toll free, 855-362-4ADA(4232). Persons who are deaf or hard of hearing may make a request by calling the Washington State Relay at 711.

Title VI Notice to Public: It is the Washington State Department of Transportation's (WSDOT) policy to assure that no person shall, on the grounds of race, color, national origin or sex, as provided by Title VI of the Civil Rights Act of 1964, be excluded from participation in, be denied the benefits of, or be otherwise discriminated against under any of its federally funded programs and activities. Any person who believes his/her Title VI protection has been violated, may file a complaint with WSDOT's Office of Equal Opportunity (OEO). For additional information regarding Title VI complaint procedures and/or information regarding our non-discrimination obligations, please contact OEO's Title VI Coordinator at (360) 705-7090.

19-06-0324