Point Defiance Bypass Project

Technical Advisory Group

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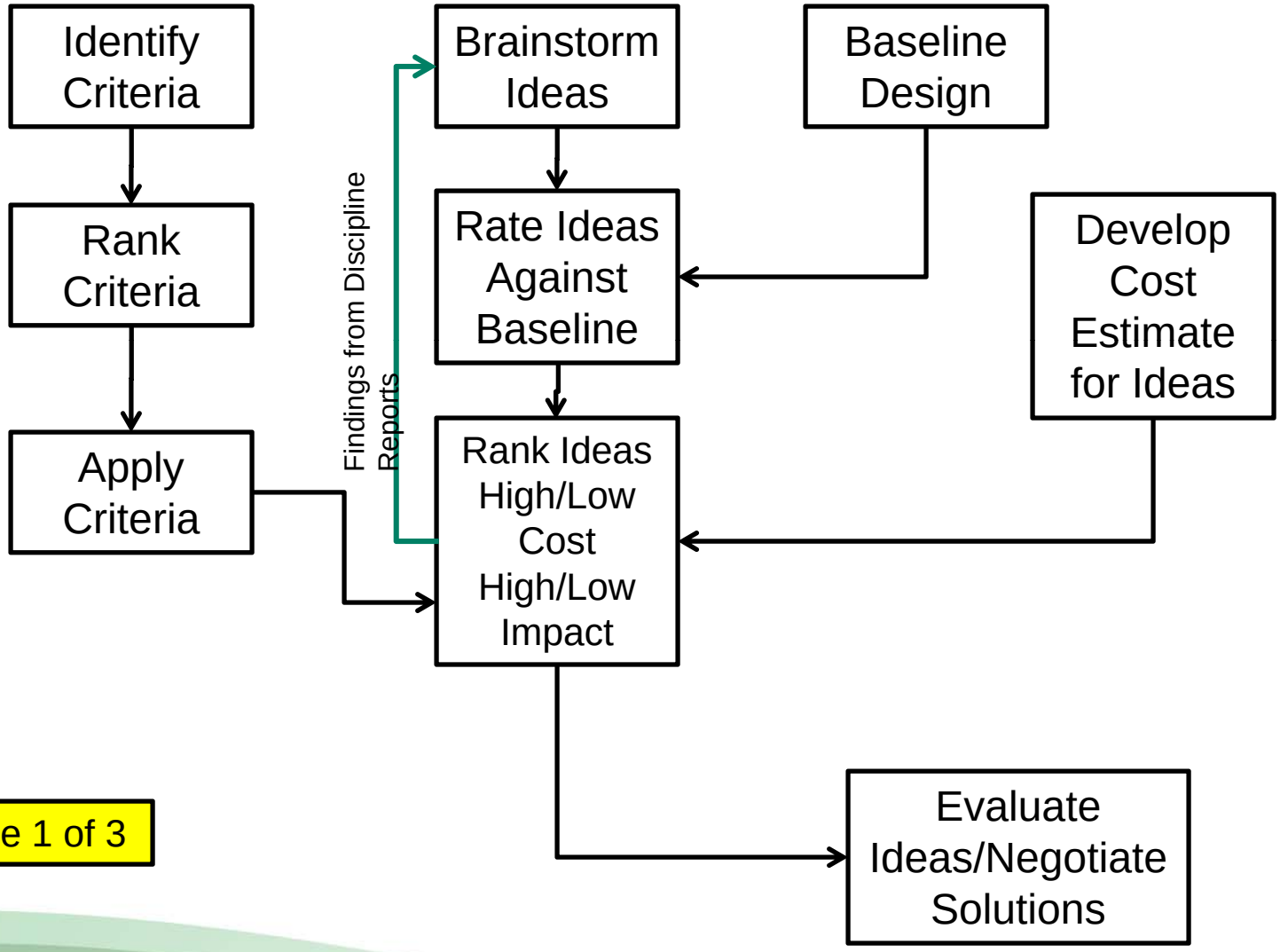
Washington State Department of Transportation

Point Defiance Bypass Technical Advisory Group

- Past
  - Idea Brainstorming – Sept. 2010
- Present
  - Review of Draft Transportation Report
  - Today's ground rules and process
- Future
  - Refined set of ideas

Pt Defiance Advisory Team Idea Evaluation Process

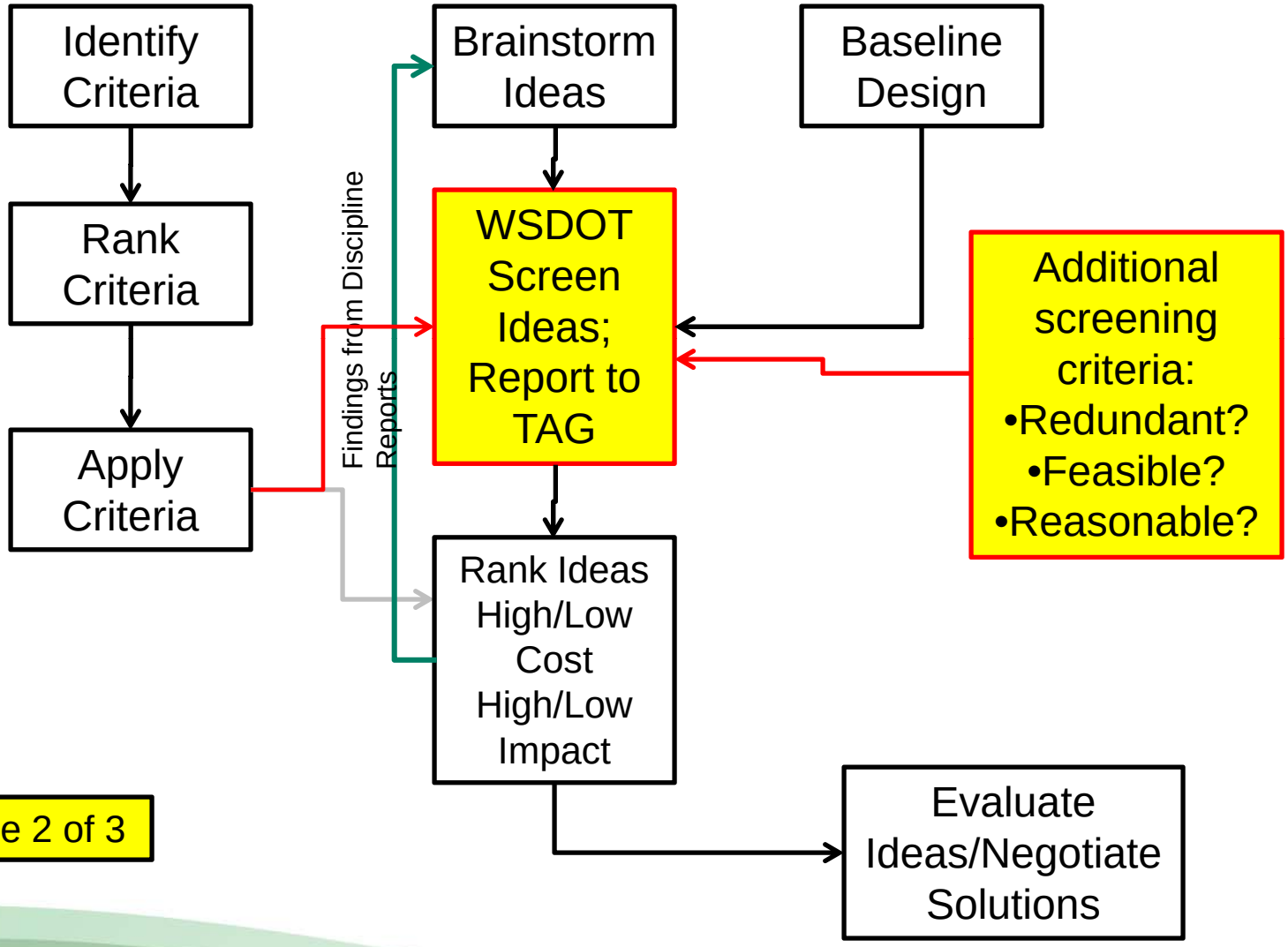
September 2010 TAG meeting



Slide 1 of 3

Pt Defiance Advisory Team Idea Evaluation Process

October – December 2011



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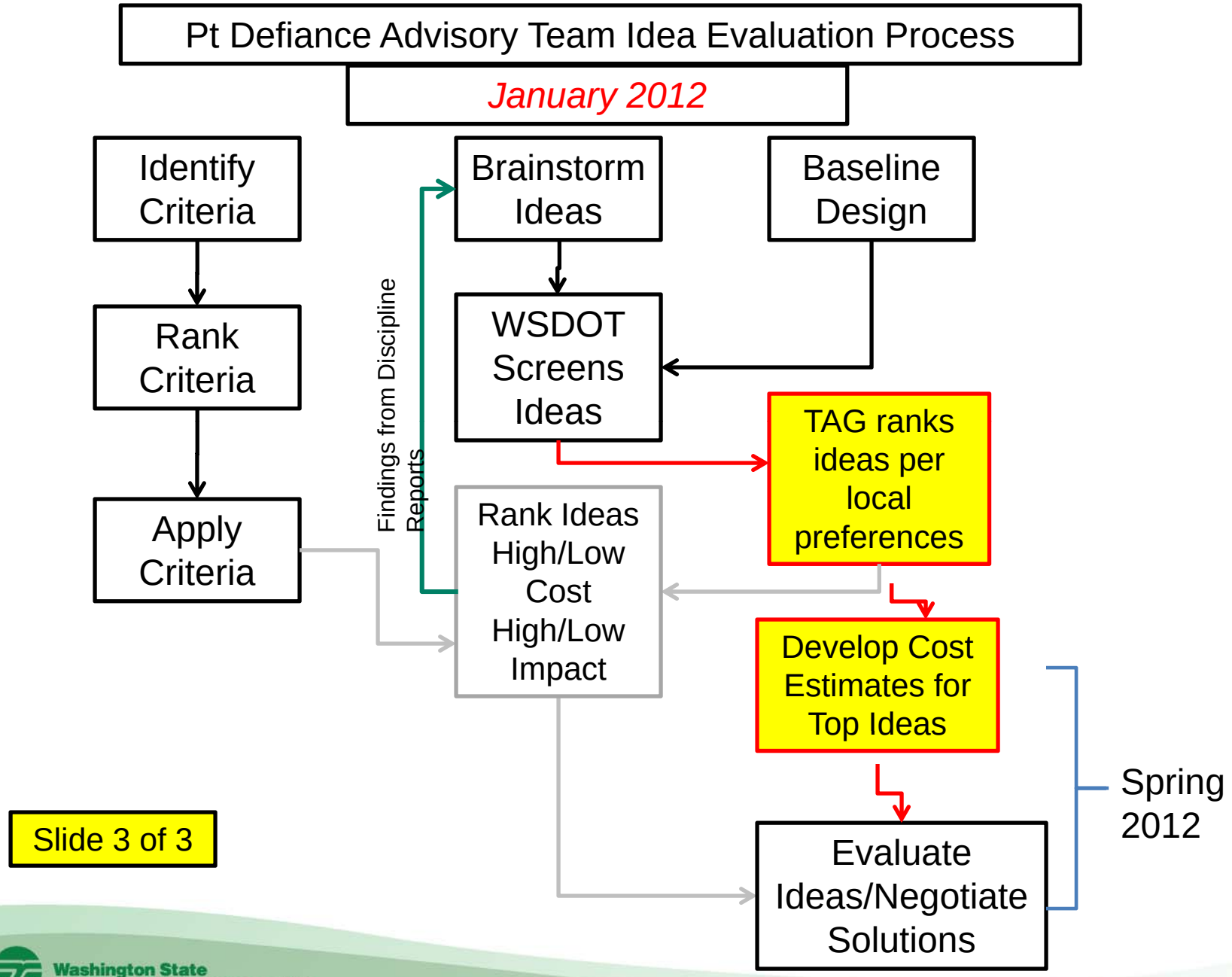

Pt Defiance Advisory Team Idea Evaluation Process
January 2012
Identify Criteria
Rank Criteria
Apply Criteria
Brainstorm Ideas
Baseline Design
WSDOT Screens Ideas
Findings from Discipline Reports
TAG ranks ideas per local preferences
Rank Ideas High/Low Cost High/Low Impact
Develop Cost Estimates for Top Ideas
Evaluate Ideas/Negotiate Solutions
Spring 2012

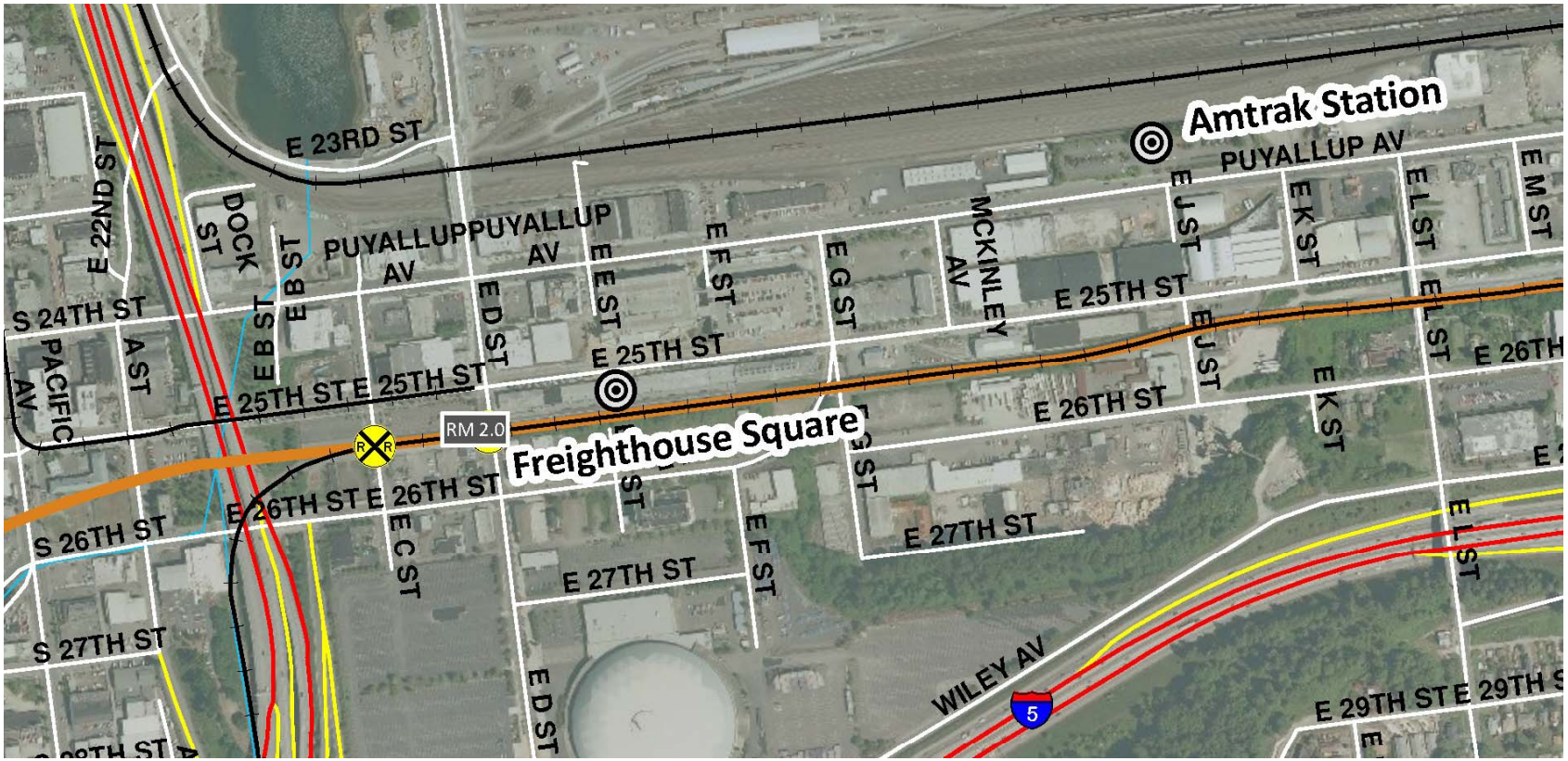
Slide 3 of 3

Transportation Discipline Report Presentation Outline

- Methodology
  - Transportation Impact Analysis
  - Proposed Information
- Design Features
- Effects
  - Direct
  - Construction
  - Cumulative
  - Indirect
- Mitigation
  - Construction

Methodology

- Transportation Impact Analysis
- *Proposed:* Amtrak Station at Freighthouse Square



Methodology: Railroad Crossing Safety

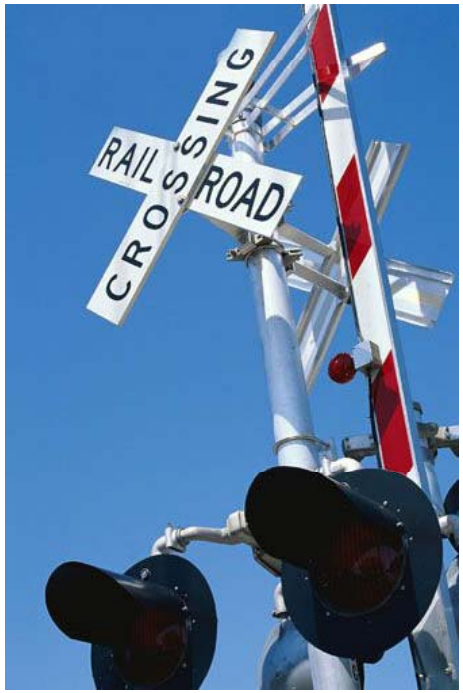
- FRA Data & Procedures
- Affected Environment / Existing Conditions
  - Accident Experience 5-Year History
  - FRA Accident Prediction Model
- Project Effects
  - Accident experience predictions for 2030

Traffic Analysis Methodology

- Traffic volumes
- LOS D used as “Substandard” Threshold
- Maximum queues
- Software Tools – Emme, VISUM, Synchro, VISSIM

Design Features

- Intersection signal control
- At-grade crossings
  - Street sections
  - Non-motorized Rights of Way



Intersection Signal Control

At-Grade Crossings

Crossing	Second Track	Roadway	Warning Devices	Wayside Horns	Sidewalk Improvements	Median Separator	Traffic Signals
E. “D” Street			Existing	Existing	Existing	Existing	Existing
E. “C” Street			Existing	Existing	Existing	Existing	Existing
S. “C” Street			Existing	Existing	Existing	Existing	Existing
S. Chandler Street			Existing		Existing		
S. Alaska Street			Existing		Existing		
S. Wilkeson Street			Existing		Existing		Existing
S. Pine Street			Existing		Existing	Existing	Existing
35th Street SW			Existing		Existing	Existing	Existing
50th Street SW			Existing	Existing	Existing	Existing	
S. 56th Street			Existing	Existing	Existing	Existing	Existing
60th Street SW			Existing	Existing	Existing	Existing	
S. 74th Street	Proposed		Existing	Existing	Existing	Existing	Existing
Steilacoom Blvd SW	Proposed		Existing		Existing	Existing	Existing
100th Street SW	Proposed		Existing	Existing	Existing	Existing	Existing
108th Street SW	Proposed		Existing	Existing	Existing	Existing	Existing
Bridgeport Way SW	Proposed		Existing	Existing	Existing	Existing	Upgrade
Clover Creek Dr SW		Upgrade	Proposed	Proposed		Proposed	
N. Thorne Lane SW		Upgrade	Upgrade	Proposed	Upgrade	Proposed	Upgrade
Berkeley Street SW		Upgrade	Upgrade	Proposed	Upgrade	Proposed	Upgrade
41st Division Dr		Upgrade	Upgrade			Upgrade	Upgrade
Barksdale Ave		Upgrade	Upgrade	Proposed	Upgrade	Upgrade	Upgrade

[1] Separate construction by Sound Transit will result in the conditions described at E. “D” Street, E. “C” Street, and S. “C” Street

Effects

- Direct
- Construction
- Cumulative
- Indirect

Accidents on Point Defiance & Bypass Route

	Observed	Predicted Accidents per Year				% Change Build vs. No Action
Route Alignment	5-Year Accident History (acc/year)	Existing without *Sounder*	Existing with Sounder	No Action	Build	Accident Rate
Point Defiance	0.20	0.25	0.25	0.27	0.26	-3%
Bypass	0.60	0.58	0.71	0.73	0.87	20%
Total	0.80	0.83	0.96	1.00	1.13	13%

Accidents on Point Defiance Route

Point Defiance Route	Observed	Predicted Accidents per Year			% Change Build vs. No Action	
Crossing Name	5-Year Accident History (acc/year)	Existing	No Action	Build	Accident Rate	Train Volume
E "D" St	0.00	0.045	0.049	0.047	-3%	-19%
McCarver	0.00	0.036	0.039	0.038	-4%	-19%
6th Ave	0.00	0.031	0.034	0.032	-4%	-19%
S 19th St	0.00	0.040	0.043	0.041	-4%	-19%
Sunnyside Beach Ped Crossing	0.20	0.051	0.051	0.051	0%	-19%
Steilacoom/Union Ferry Terminal	0.00	0.043	0.046	0.044	-3%	-19%
Solo Point Road	0.00	0.008	0.009	0.009	-6%	-19%

Accidents on Bypass Route in Tacoma

Bypass Route	Observed	Predicted Accidents per Year				% Change Build vs. No Action	
Crossing Name	5-Year Accident History (acc/year)	Existing without *Sounder*	Existing with Sounder	No Action	Build	Accident Rate	Train Volume
E "D" St	0.00	0.018	0.036	0.039	0.043	10%	70%
E "C" St	0.20	0.002	0.079	0.080	0.081	1%	70%
S "C" St	0.00	0.025	0.020	0.021	0.024	13%	70%
S Chandler St	0.00	0.006	0.014	0.015	0.017	15%	70%
S Alaska St	0.00	0.028	0.011	0.012	0.014	15%	70%
S Wilkeson St	0.00	0.025	0.027	0.028	0.032	12%	70%
S Pine St	0.00	0.052	0.041	0.042	0.046	9%	70%
S 35th St	0.00	0.016	0.030	0.030	0.034	11%	70%
S 50th St	0.00	0.027	0.021	0.021	0.024	13%	70%
S 56th St	0.00	0.013	0.047	0.048	0.052	8%	70%
S 60th St	0.00	0.049	0.016	0.017	0.020	14%	70%
S 74th St	0.00	0.022	0.040	0.042	0.052	25%	70%

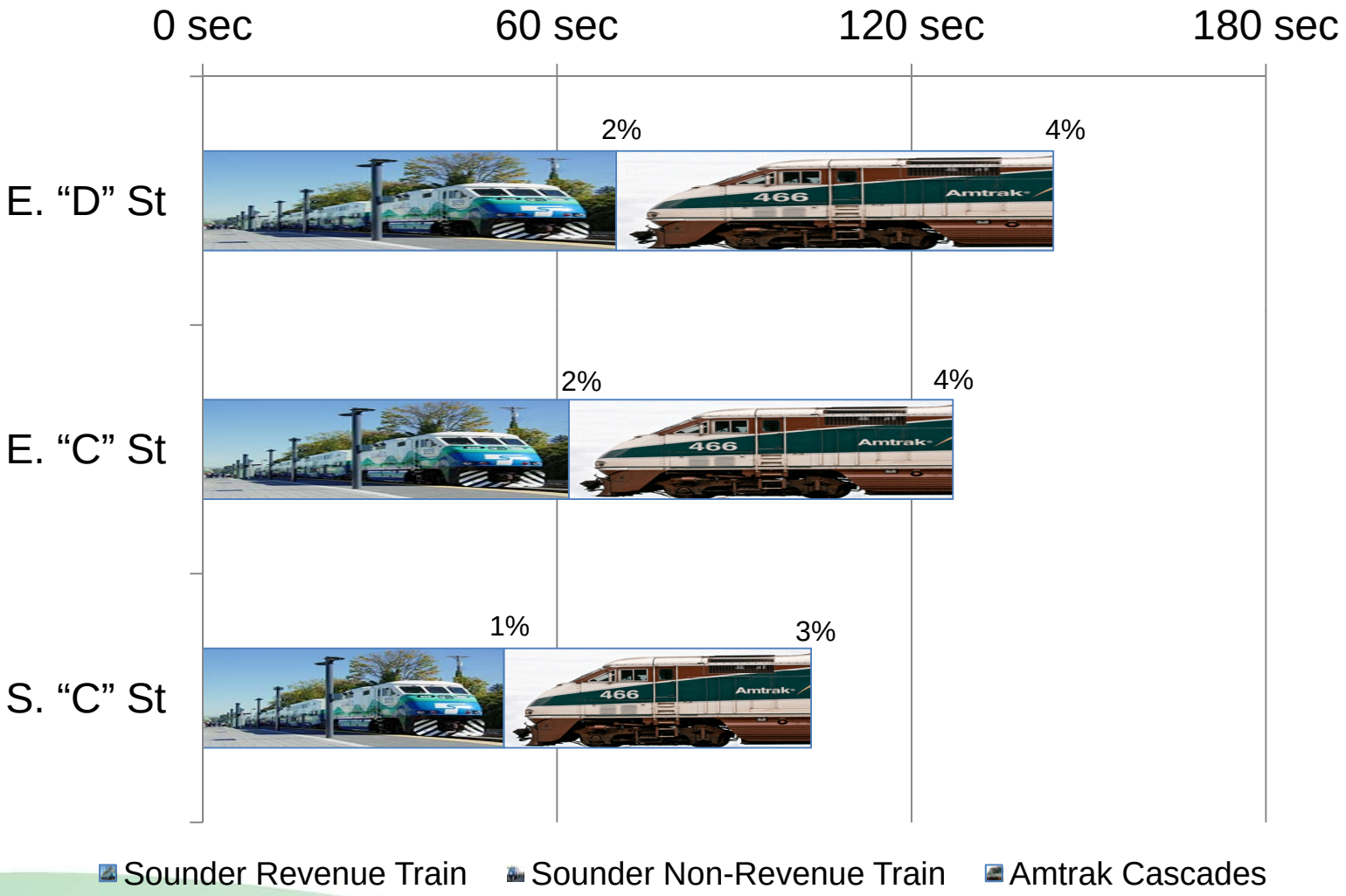
Accidents on Bypass Route Lakewood to DuPont

Bypass Route	Observed	Predicted Accidents per Year				% Change Build vs. No Action	
Crossing Name	5-Year Accident History (acc/year)	Existing without *Sounder*	Existing with *Sounder*	No Action	Build	Accident Rate	Train Volume
Steilacoom Blvd SW	0.00	0.026	0.039	0.040	0.050	26%	70%
100th St SW	0.20	0.017	0.083	0.083	0.085	2%	41%
108th St SW	0.00	0.045	0.035	0.036	0.045	25%	41%
Bridgeport Way SW	0.00	0.036	0.028	0.028	0.045	59%	700%
Clover Creek Dr SW	0.00	0.031	0.015	0.016	0.019	18%	700%
N Thorne Lane SW	0.20	0.040	0.051	0.051	0.080	56%	700%
Berkeley St SW	0.00	0.051	0.022	0.023	0.030	34%	700%
41st Division Dr	0.00	0.043	0.030	0.030	0.041	34%	700%
Barksdale Ave	0.00	0.008	0.021	0.022	0.034	57%	700%

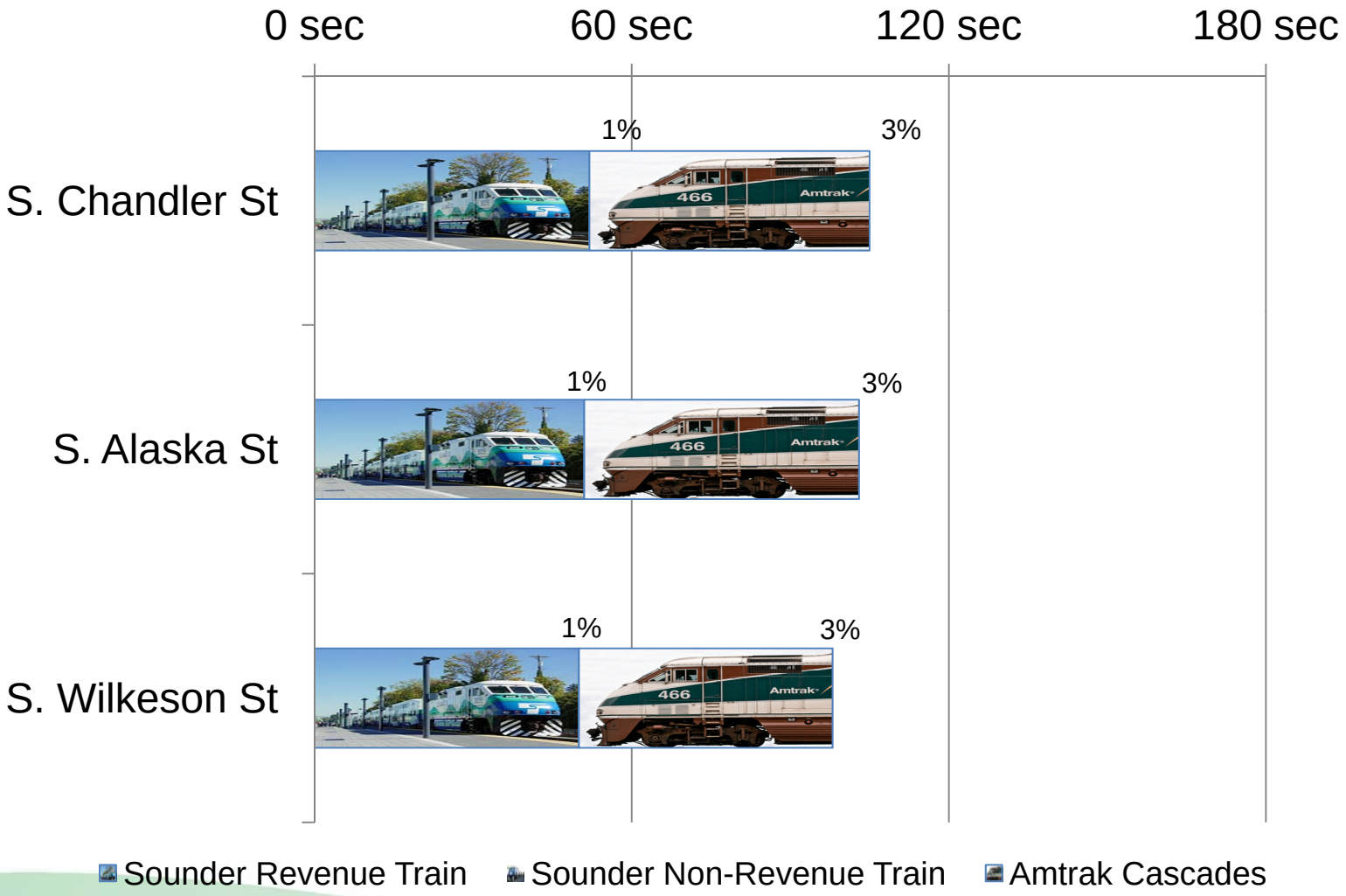
Safety Analysis Conclusions

- Train volumes increase by 41 percent to 700 percent in places.
- Gates are provided at all high-speed rail crossings.
- Some risk is inherent with conflicts in transportation systems.
- If estimated accident rates were based on exposure levels similar to roadway or intersection accidents, accident rates for the Build alternative would be lower than for the No Action alternative.
- Overall safety impacts are not considered to be significant with planned grade crossing improvements at several locations.

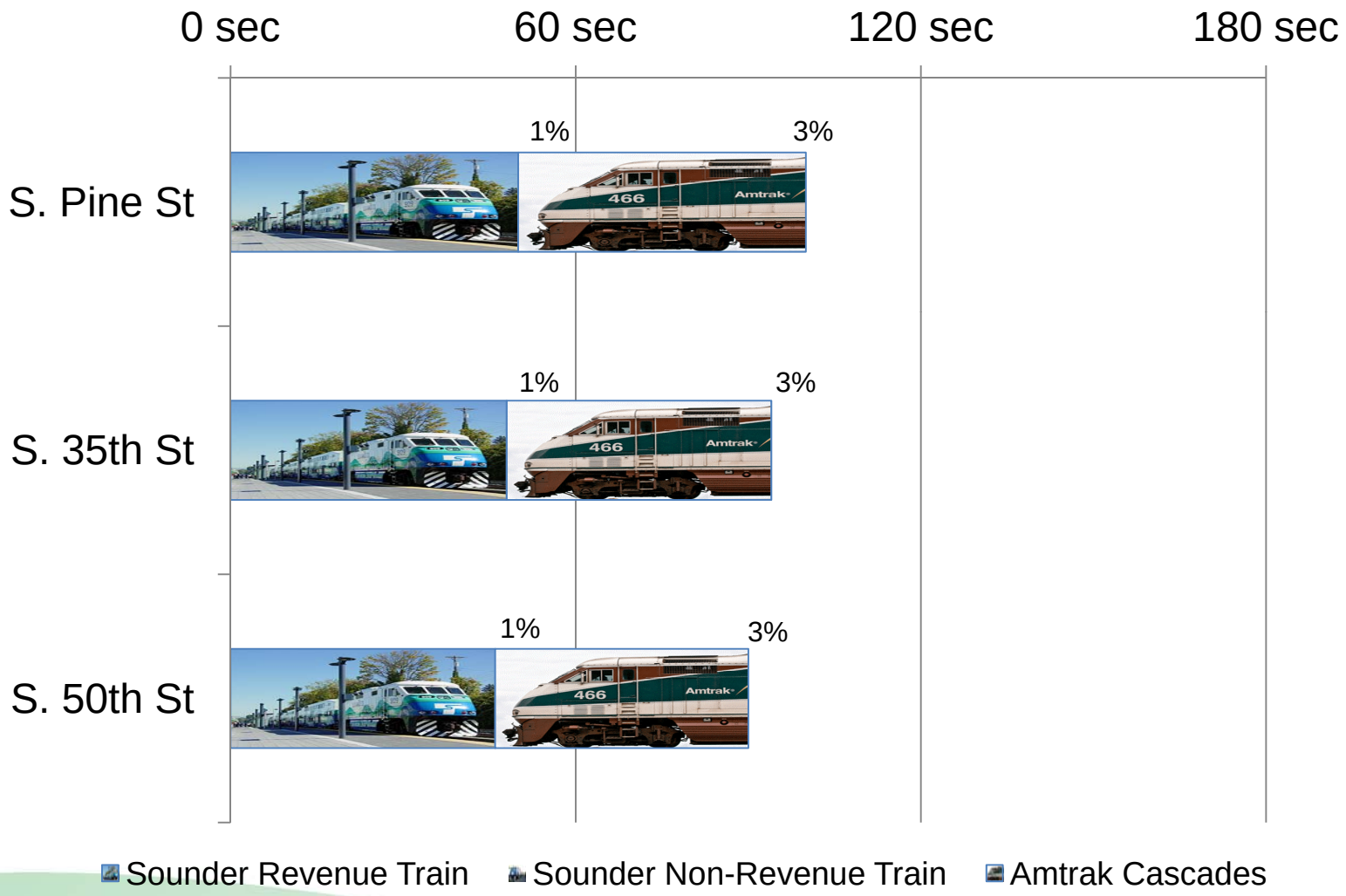
At-Grade Crossings in Tacoma



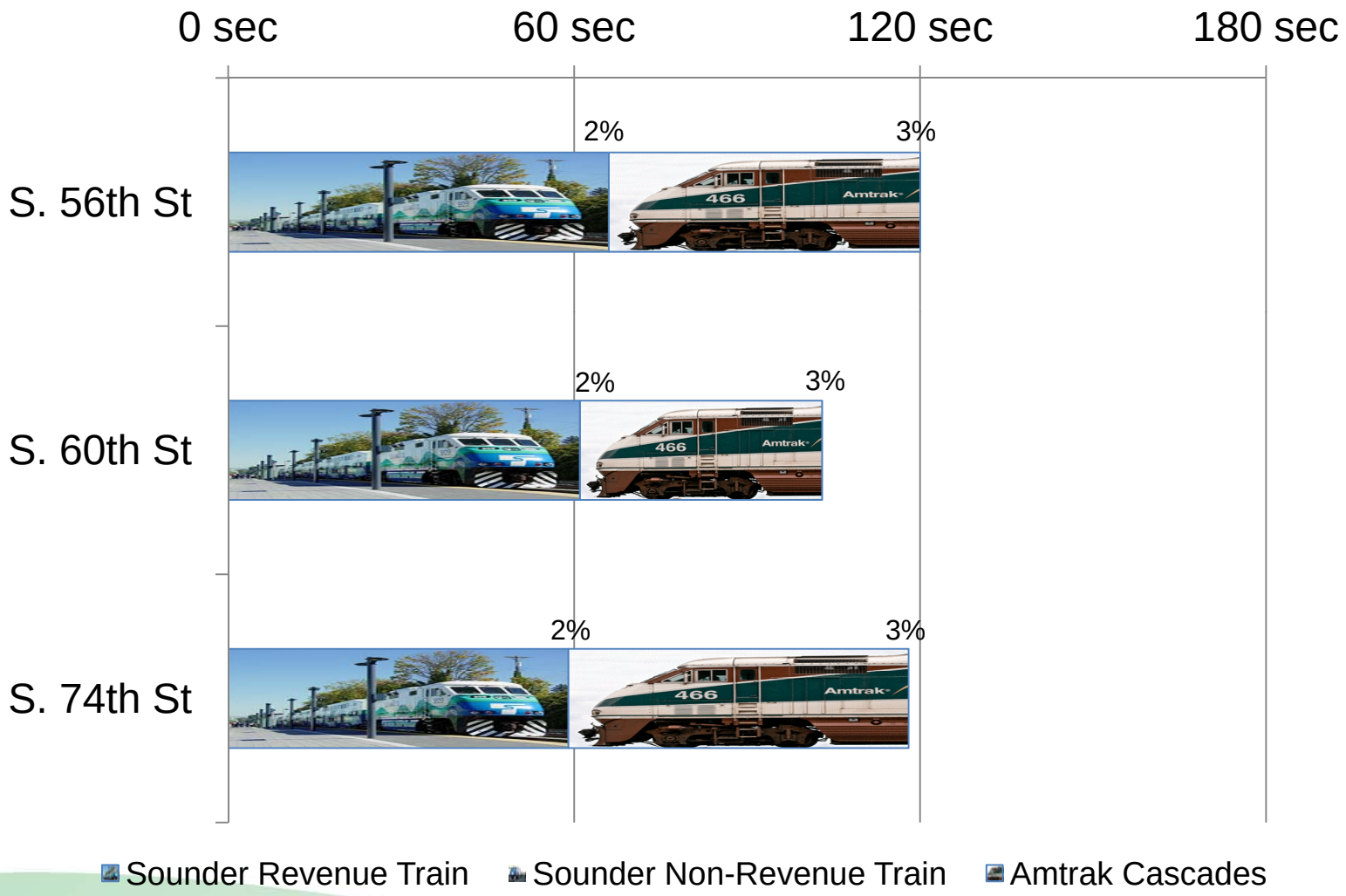
At-Grade Crossings in Tacoma



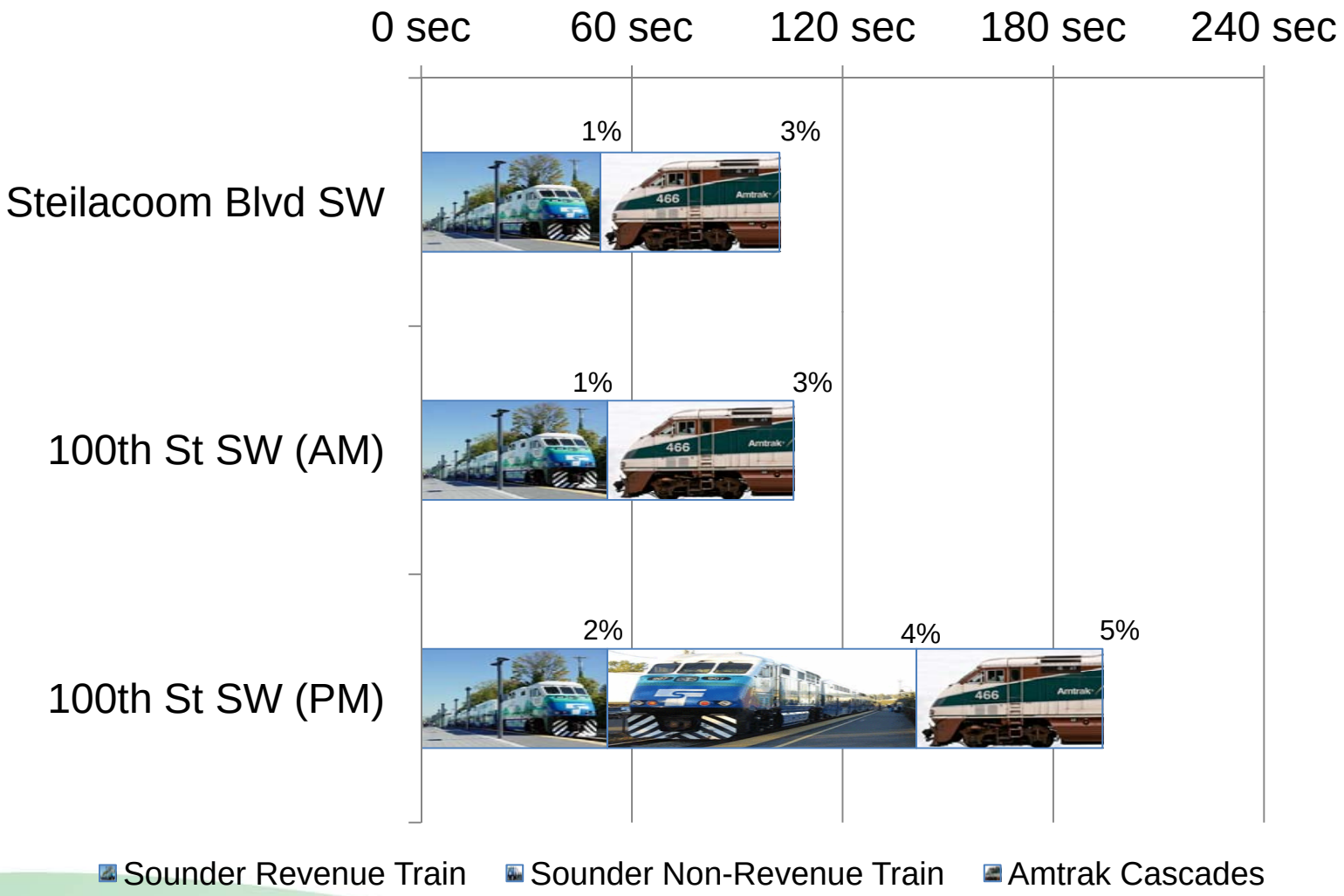
At-Grade Crossings in Tacoma



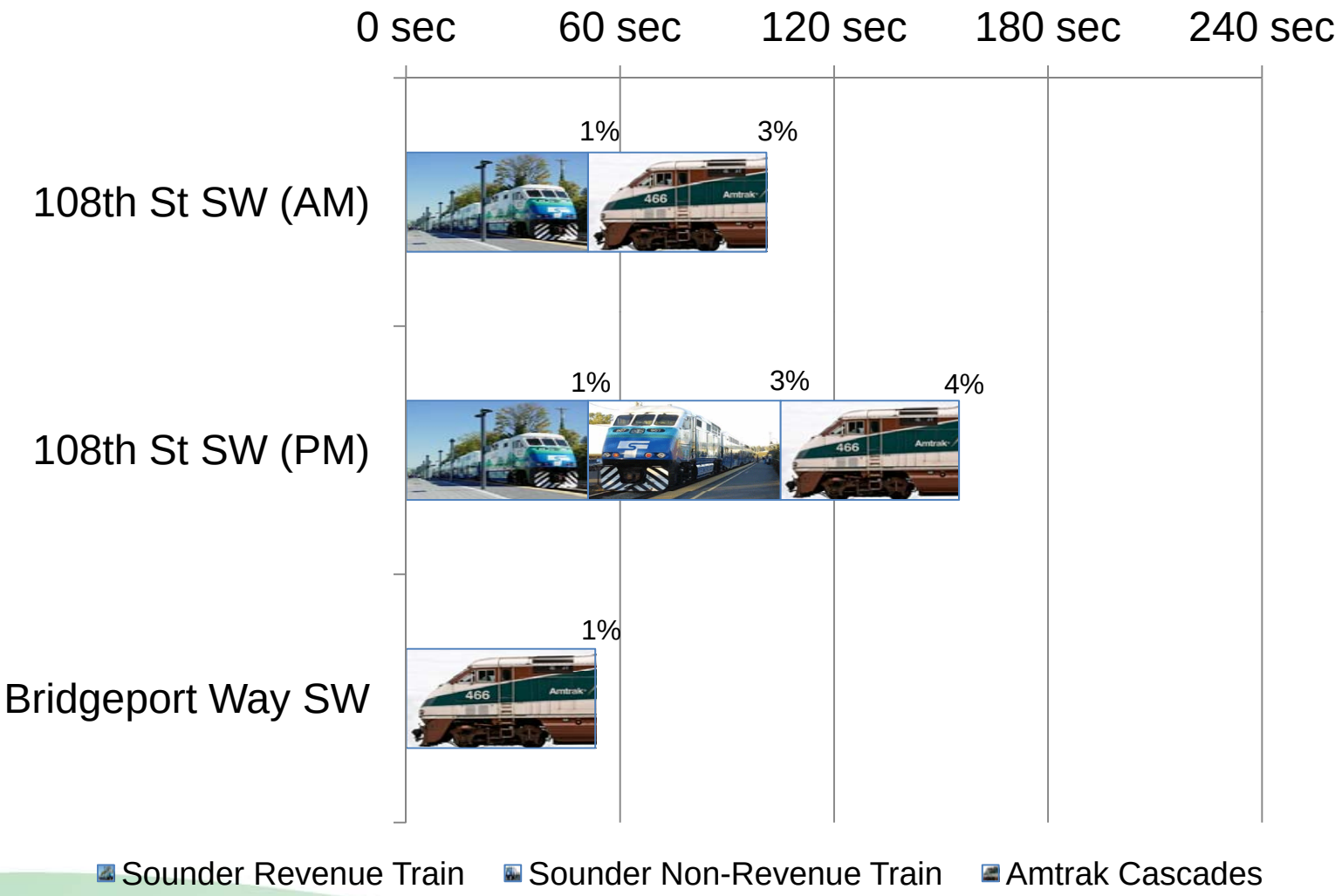
At-Grade Crossings in Tacoma



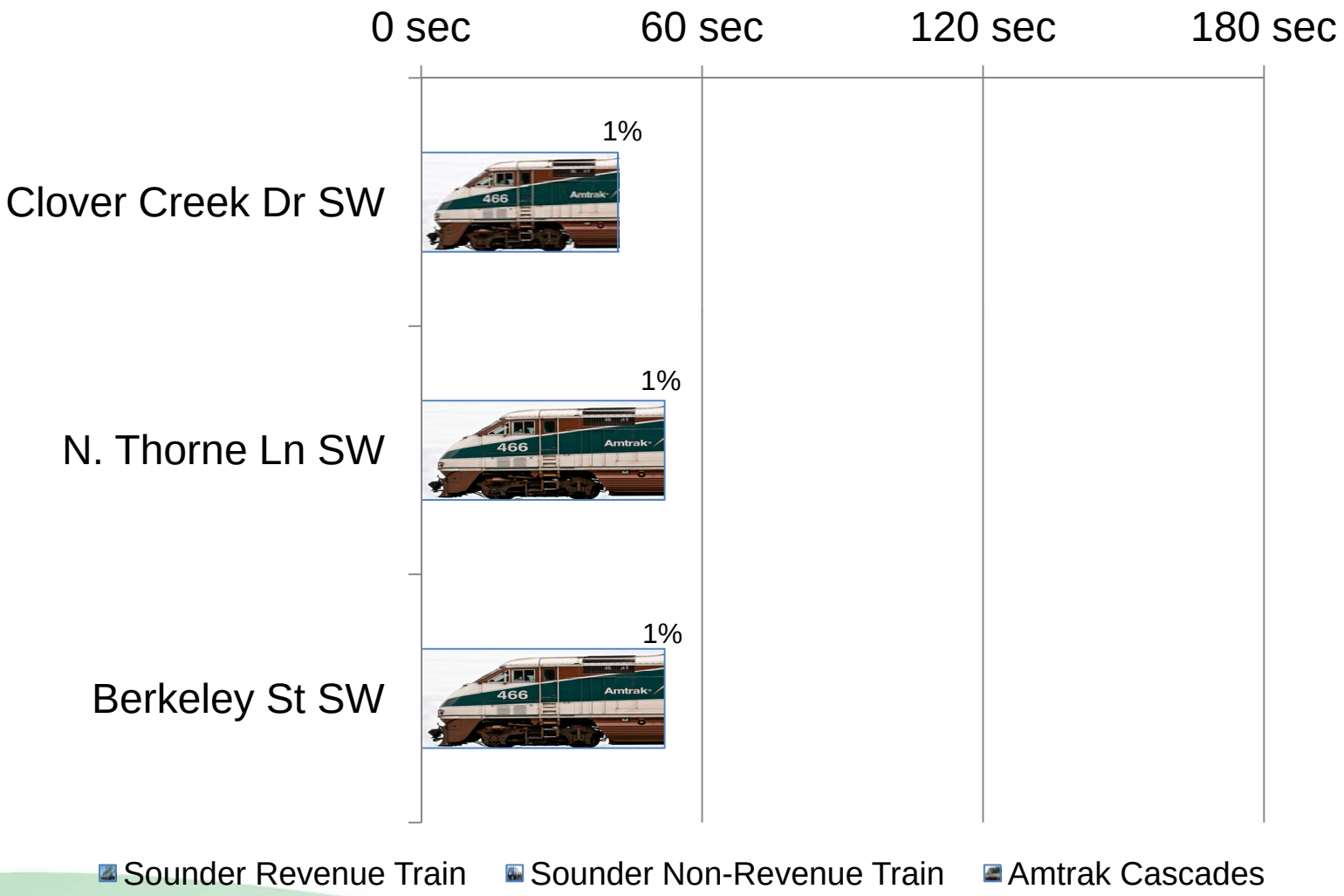
At-Grade Crossings in Lakewood



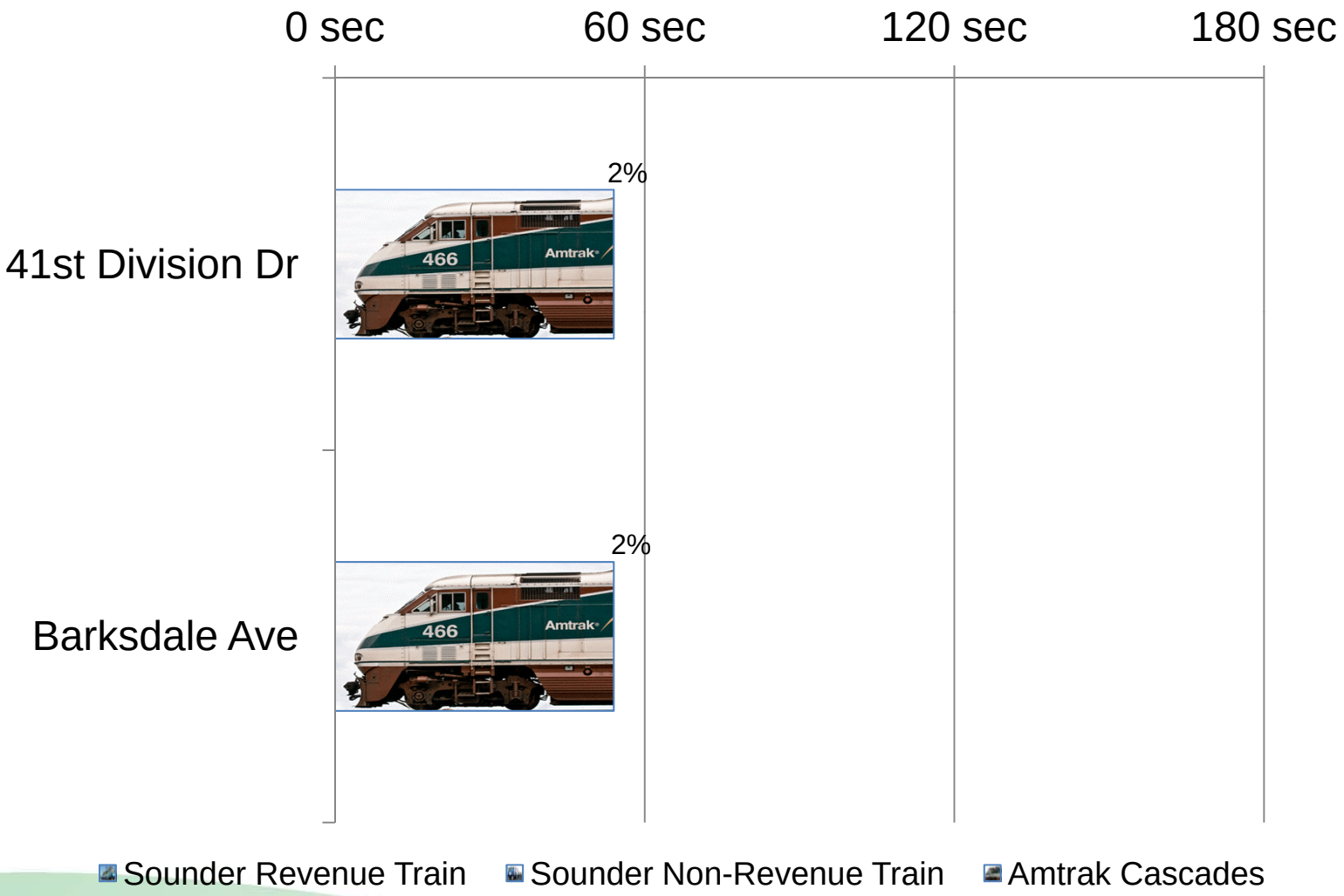
At-Grade Crossings in Lakewood



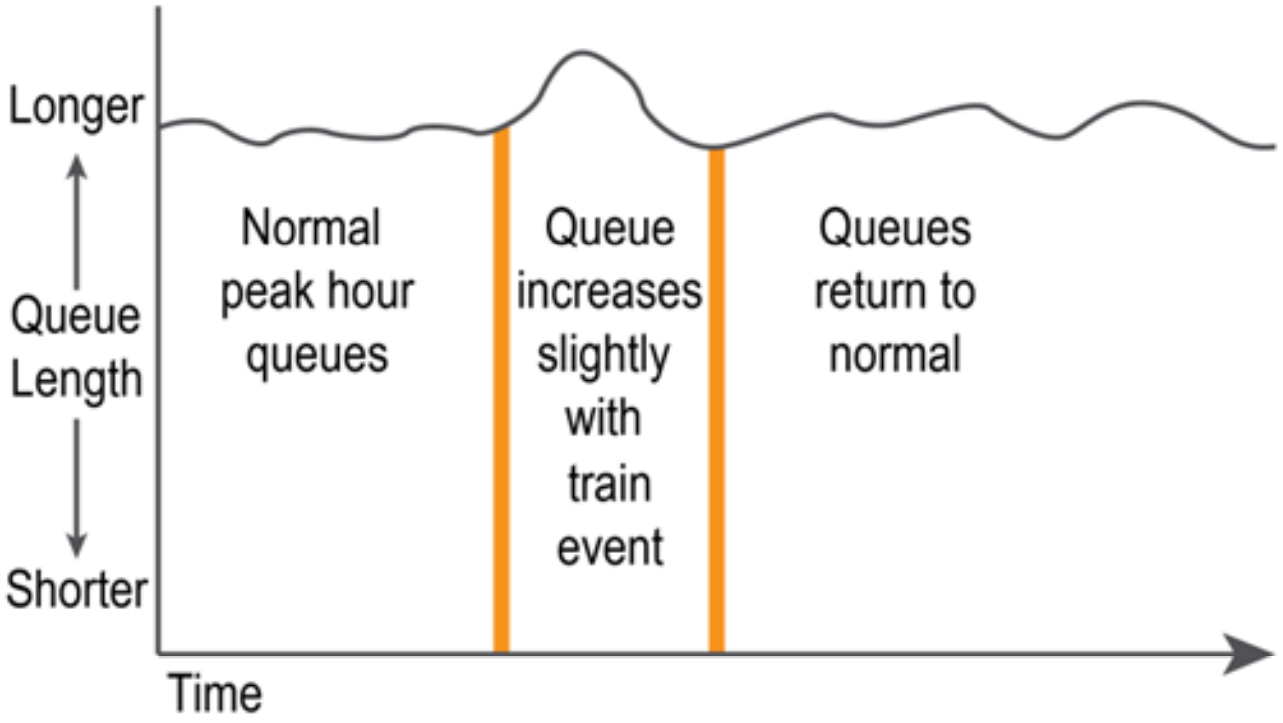
At-Grade Crossings in Lakewood & Camp Murray



At-Grade Crossings in JBLM & DuPont



Direct Effects: Queuing



Direct Effects: Intersection LOS

- Build alternative does not degrade acceptable LOS to unacceptable LOS.
- Build alternative - some improvements at a few locations.

Direct Effects: Intersection LOS

- Minor Negative Impacts
  - occur at intersections where the delay increases
  - do not degrade the LOS to substandard conditions
- In Tacoma, no intersection LOS changes would occur with Build Alternative.

Minor Effects

- South of S. 74th Street, the following locations experience a worsening in LOS with Build but not to substandard levels:
  - Steilacoom Blvd SW & Lakeview Ave SW:
    PM LOS A (9.9 sec/veh) to B (10.2)
  - N. Thorne Ln SW & Union Ave SW:
    AM LOS A (9.6) to C (26.5)
  - Berkeley St SW & I-5 NB Ramps:
    PM LOS C (30.0) to D (42.0)
  - 41st Division Dr & I-5 SB Ramps
    PM LOS A (9.7) to B (11.3)
  - Barksdale Ave & Steilacoom-DuPont Road:
    PM LOS B (18.0) to D (39.7)

Thorne/Union Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: LOS A 9.6 sec/veh
Build: LOS C 26.5 sec/veh

PM Peak Hour LOS, Delay & Maximum Queues
No Action: LOS F 202.7 sec/veh
Build: LOS F 186.2 sec/veh

Thorne/I-5 SB Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: F 96.6
Build: F 87.2

PM Peak Hour LOS, Delay & Maximum Queues
No Action: C 31.9
Build: C 30.7

Thorne/I-5 NB Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: F 85.2
Build: E 71.7

PM Peak Hour LOS, Delay & Maximum Queues
No Action: F 91.8
Build: E 73.5

Berkeley/Union Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: F 108.6
Build: E 66.5 (signalized)

PM Peak Hour LOS, Delay & Maximum Queues
No Action: F 63.2
Build: D 47.7 (signalized)

Berkeley/I-5 SB Ramps Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: D 47.0
Build: D 36.0

PM Peak Hour LOS, Delay & Maximum Queues
No Action: C 26.0
Build: D 21.0

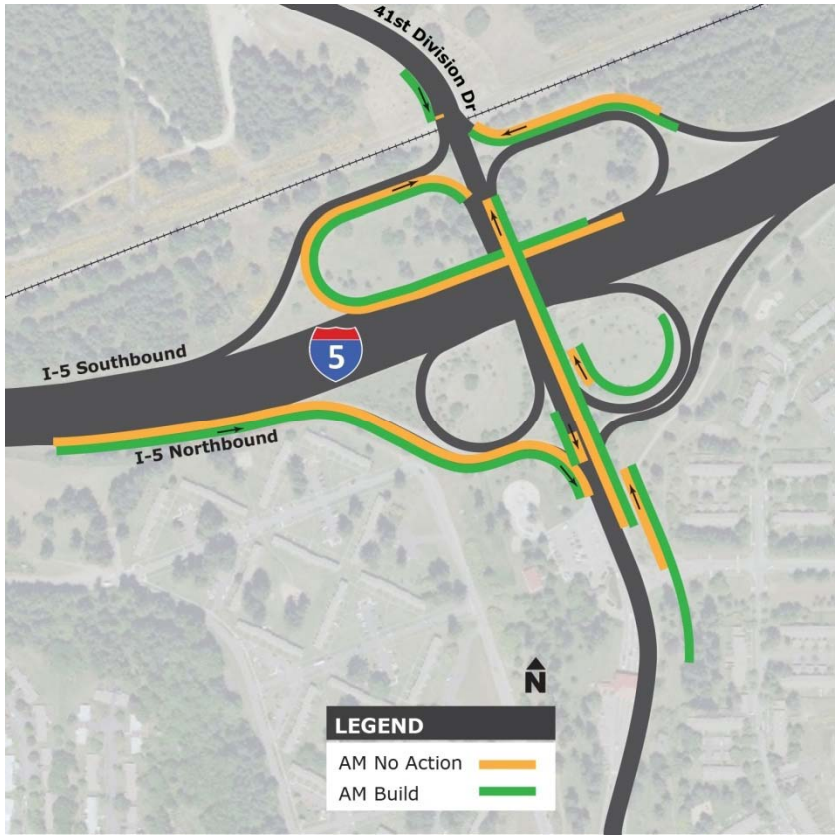
Berkeley/I-5 NB Ramps Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: C 22.0
Build: C 21.0

PM Peak Hour LOS, Delay & Maximum Queues
No Action: C 30.0
Build: D 42.0

41st Division Dr/I-5 Ramps Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: NB C 28.2, SB C 32.5
Build: NB C 21.0, SB C 32.3



PM Peak Hour LOS, Delay & Maximum Queues
No Action: NB F 105.5, SB A 9.7
Build: NB F 103.8, SB B 11.3

Barksdale/Steilacoom/Wilmington Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: C 21.1
Build: C 21.6

PM Peak Hour LOS, Delay & Maximum Queues
No Action: B 18.0
Build: D 39.7

Barksdale/I-5 SB Ramps Operations

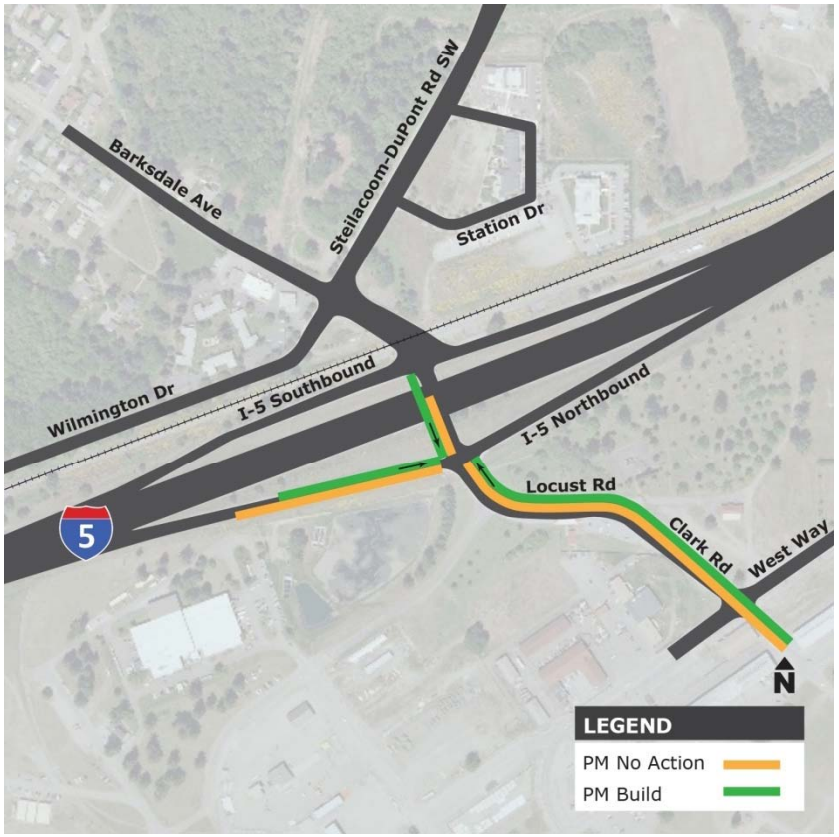
AM Peak Hour LOS, Delay & Maximum Queues
No Action: B 19.6
Build: B 12.8

PM Peak Hour LOS, Delay & Maximum Queues
No Action: B 11.5
Build: A 6.6

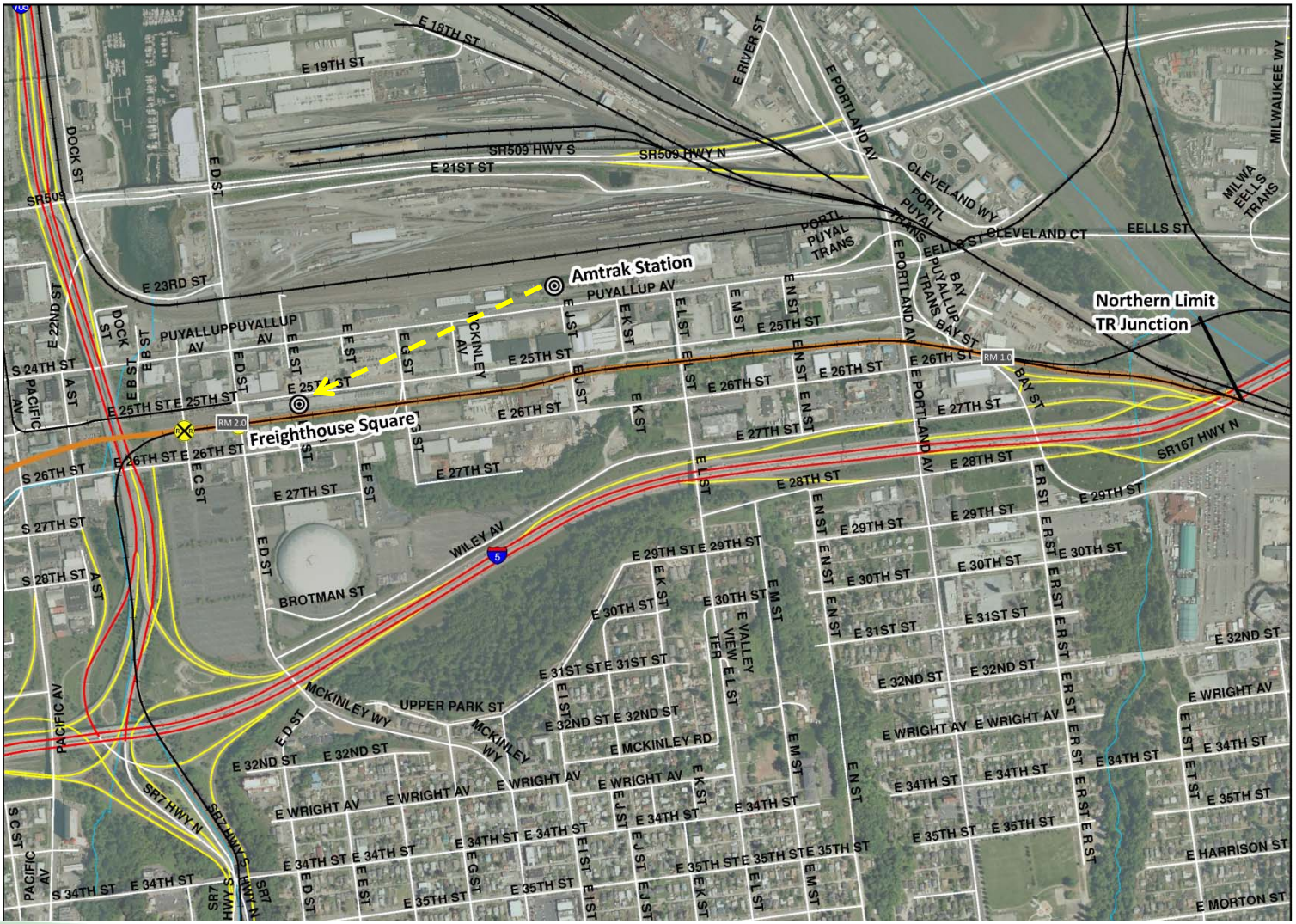
Barksdale/Locust/I-5 NB Ramps Operations

AM Peak Hour LOS, Delay & Maximum Queues
No Action: E 61.3
Build: E 58.2

PM Peak Hour LOS, Delay & Maximum Queues
No Action: F 168.5
Build: E 69.7



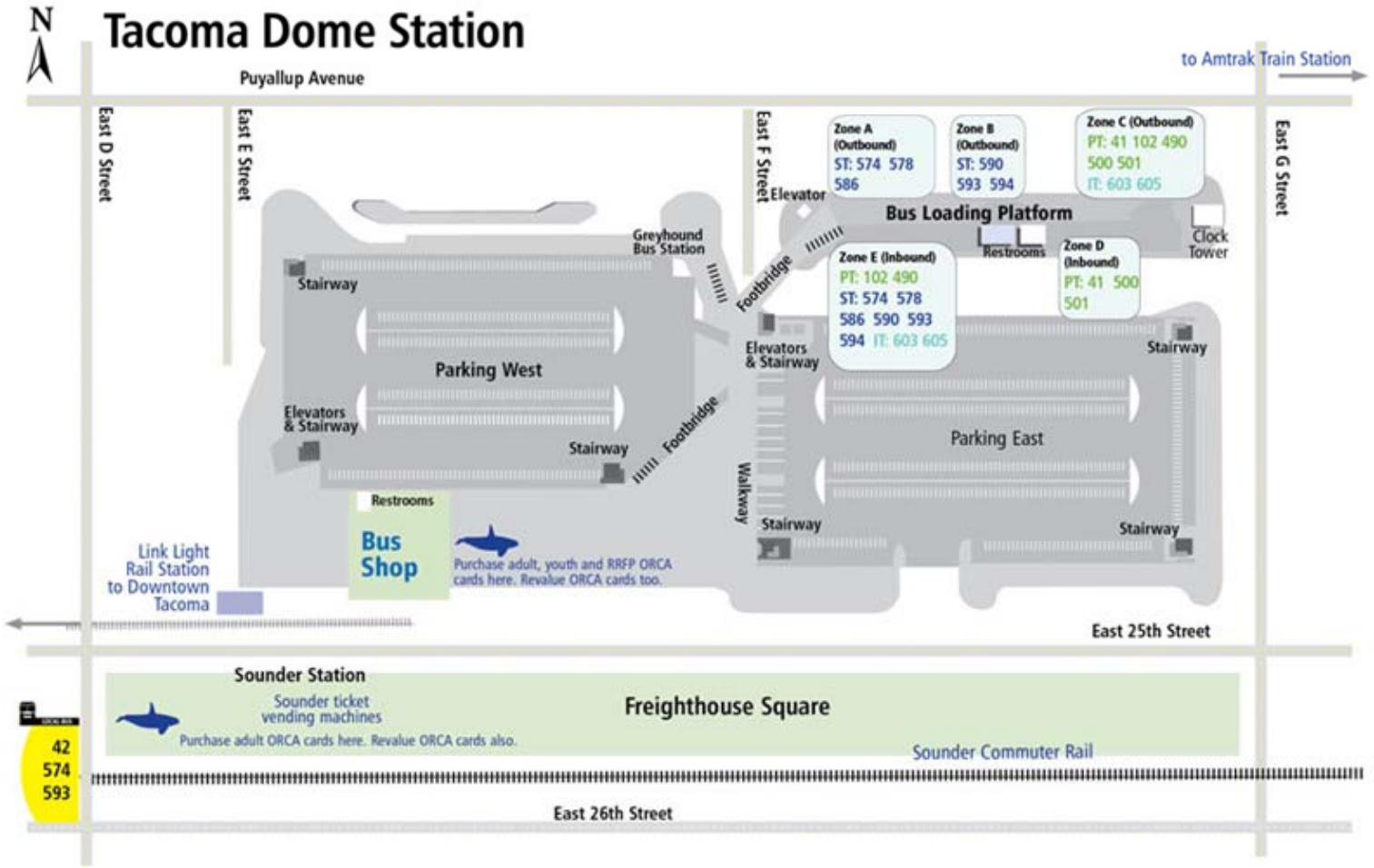
Amtrak Station Relocation



Freighthouse Square Vicinity

Washington State Department of Transportation

Freighthouse Square Multimodal Connections



Construction Effects: Streets

- Temporary lane closures & occasional weekend road closures at:
  - Clover Creek Drive SW
  - N. Thorne Lane SW
  - Berkeley Street SW
  - 41st Division DR
  - Barksdale Avenue

Construction Effects: Railroads

- Out of service up to four days per week up to 15 months on project route.
- Freight trains must stop at crossings when crossing warning systems are out of service.

Cumulative Effects

- Cross-Base Highway
- Camp Murray Gate Relocation

Photo courtesy of Lakewood Patch

Cumulative Effects: Cross-Base Highway

Study Intersection		No Action Alternative PM Peak Hour				Build Alternative PM Peak Hour			
		Without Cross-Base Highway		With Cross-Base Highway		Without Cross-Base Highway		With Cross-Base Highway	
Name	*Traffic Signal*	*LOS*	*Average Delay (sec/vehicle)*	*LOS*	*Average Delay (sec/vehicle)*	*LOS*	*Average Delay (sec/vehicle)*	*LOS*	*Average Delay (sec/vehicle)*
Bridgeport Way SW and Pacific Highway SW	X	C	27.2	N/A	Not studied	C	26.8	C	22.8
Bridgeport Way SW and I-5 Southbound Ramps	X	B	14.5	N/A	Not studied	B	19.8	B	13.9
Bridgeport Way SW and I-5 Northbound Ramps	X	B	16.3	N/A	Not studied	B	17.0	B	17.5
Berkeley Street SW and Union Avenue SW	In 2030 Build	F	63.2	F	179.9	D	47.7	D	42.4
Berkeley Street SW and I-5 Southbound Ramps	X	C	26.0	C	24.3	C	21.0	B	18.1
Berkeley Street SW and I-5 Northbound Ramps	X	C	30.0	C	22.9	D	42.0	C	29.9
41st Division Drive and I-5 Southbound Ramps		A	9.7	B	12.3	B	11.3	B	14.8
41st Division Drive and I-5 Northbound Ramps		F	105.5	F	100.7	F	103.8	F	101.3
Barksdale Avenue and DuPont-Steilacoom Road	X	B	18.0	C	23.1	D	39.7	D	41.0
Barksdale Avenue and I-5 Southbound Ramps	X	B	11.5	B	16.9	A	6.6	A	7.6
Barksdale Avenue/Locust Road and I-5 Northbound Ramps	X	F	168.5	D	52.9	E	69.6	E	57.9

Cumulative Effects: Camp Murray Gate Relocation

- Less traffic at I-5 Berkeley interchange
- More traffic at I-5 N. Thorne Lane interchange
- Build Alternative signal systems at N. Thorne Lane improve queue management over No Action.

Mitigation: Construction

- Traffic control plans
- Coordination with agencies

For more information

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