

UTA Future of Light Rail Study

Stakeholder Meeting

In Association With:

HDR • Fehr & Peers • Avenue Consultants

Presentation Agenda

- Span of Service – How Can We Improve Span of Service Flexibility?
- Fleet – What Are the Key Considerations in Fleet Replacement?
- Current Operations – What Are the Significant Challenges to Reliable Service?
- Future Baseline – How Will 650 South and Airport Station Relocations Affect Service?
- Future Scenarios – Which Operating Changes and Capital Investments Provide the Greatest Service Improvements?



Span of Service – How Can We Improve Span of Service Flexibility?



Why Does Span of Service Matter?

- Early and late shift workers including medical personnel, airport workers, warehouse, and service industry jobs
- Flexibility and assured returns from entertainment or sporting events
- Latest trains to downtown leave before 10:30 p.m., latest trains from downtown leave before 11:15 p.m.

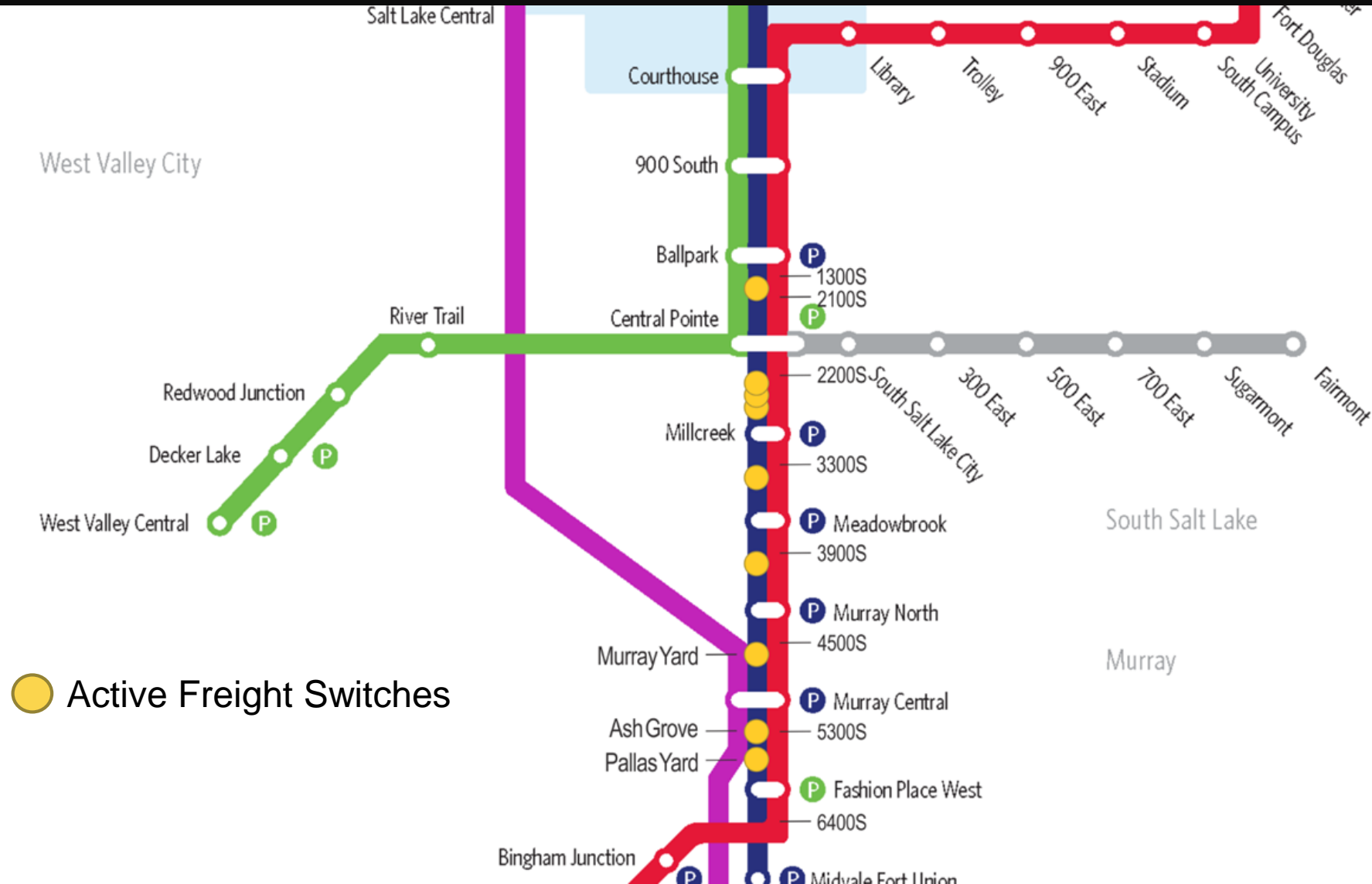


Why Is TRAX Span of Service Constrained?

- UTA acquired the TRAX rights of way subject to time-based separation agreements with freight railroads
 - Green/Red/Blue Trunk Line - 1700 S to 6400 S
 - Red Line – Fashion Place W to 5600 W Old Bingham Highway Station
- FRA requires time-based separation for LRT vehicles operating on freight lines that do not meet crash (“buff”) strength and many other FRA regulatory requirements



TRAX Span of Service Constraints – North-South Line Active Freight Switches



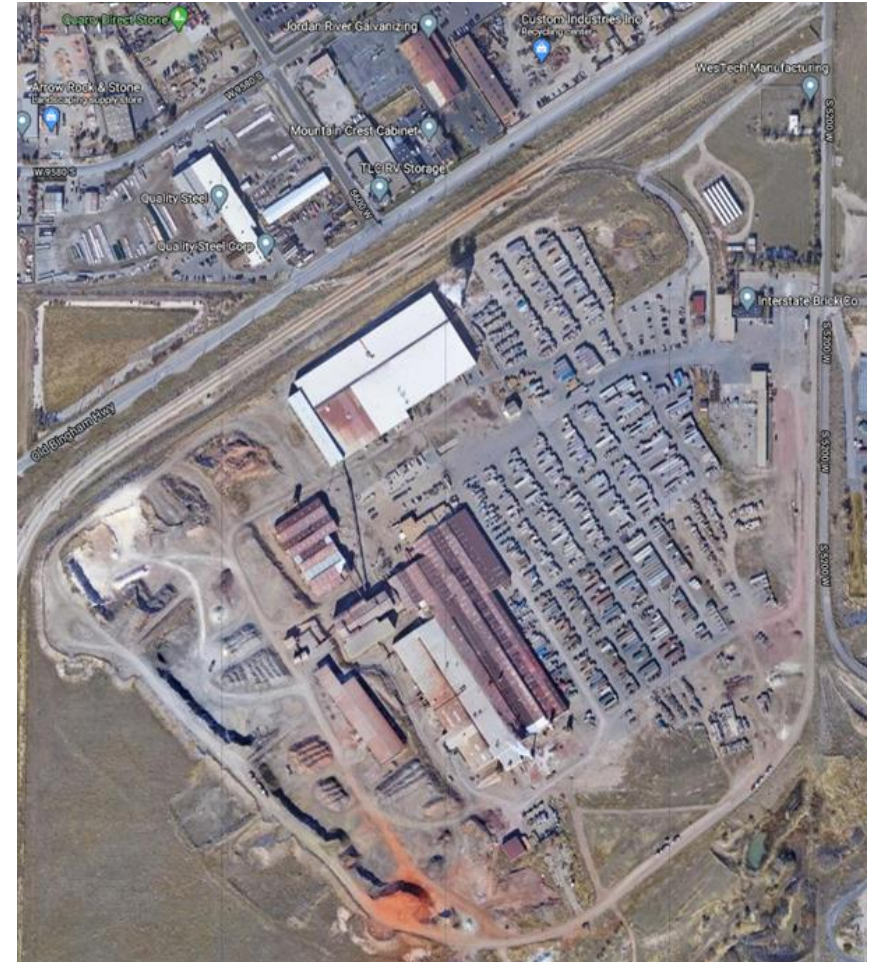
TRAX Span of Service Constraints – North-South Line Freight Activity

- UTA provided 106 days of freight dispatch data from late 2019 and early 2020:
 - Freight operated on the North-South Trunk Line only 22 out of the 106 days – generally Mondays and Wednesdays
 - The freight railroad has a 5-hour window but:
 - Minimum time: 0:35
 - Average time: 1:54
 - Maximum time: 3:24



TRAX Span of Service Constraints – Red Line Freight Activity

- 170 freight trains on Red Line during this 106-day time period – generally 2 trains per weeknight
 - Freight customers -- Interstate Brick, Butterfield Lumber, BMC, SME Steel, and Frito-Lay
 - Access to two spurs -- Bagley and Garfield
 - Savage, Bingham and Garfield Railroads
 - Garfield provides access to Kennecott Copper
 - Garfield Spur can have two different trains (operated by separate companies) at the same time



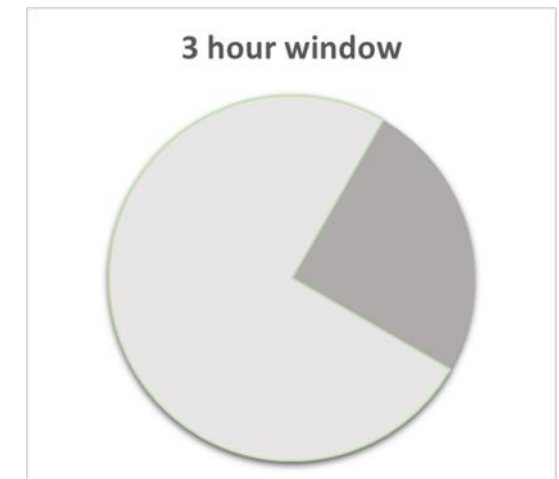
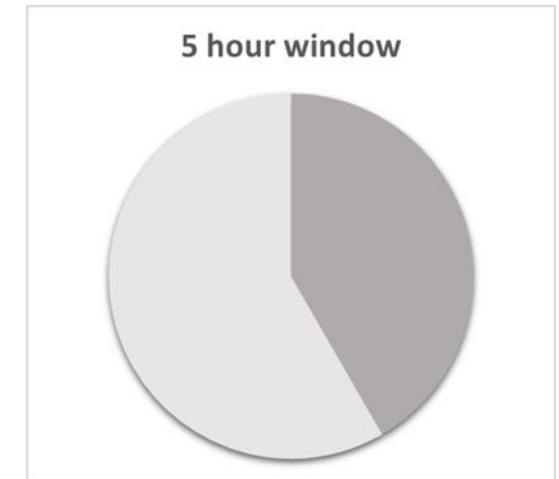
How Can These Span of Service Constraints Be Eliminated?

- “Buy out” of all freight customers on a line
- AND
- Pay the shortline railroad for loss of income and forced abandonment of investments such as sidings and yards
- AND
- Petition for formal abandonment of the line and obtain approval by the Surface Transportation Board
- OR
- Construct a rerouted light rail line with the existing line reverting to full-time freight operation



TRAX Span of Service – Recommended Paths Forward

- Focus on North-South Trunk Line
- Negotiate to reduce North-South Line freight window from 5 hours to 3 hours
 - Red, Blue & Green Line light rail service could operate later and potentially start earlier
 - May impact TRAX maintenance efficiencies in non-temporally separated segments
- The freight carrier will expect to be compensated for any such renegotiation
- Provides opportunity for reinforcing the role of TRAX in regional transportation by serving third shift jobs and late-night entertainment





Fleet – What Are the Key Considerations in Fleet Replacement?



TRAX Fleet Plan - Current Fleet Age and Composition

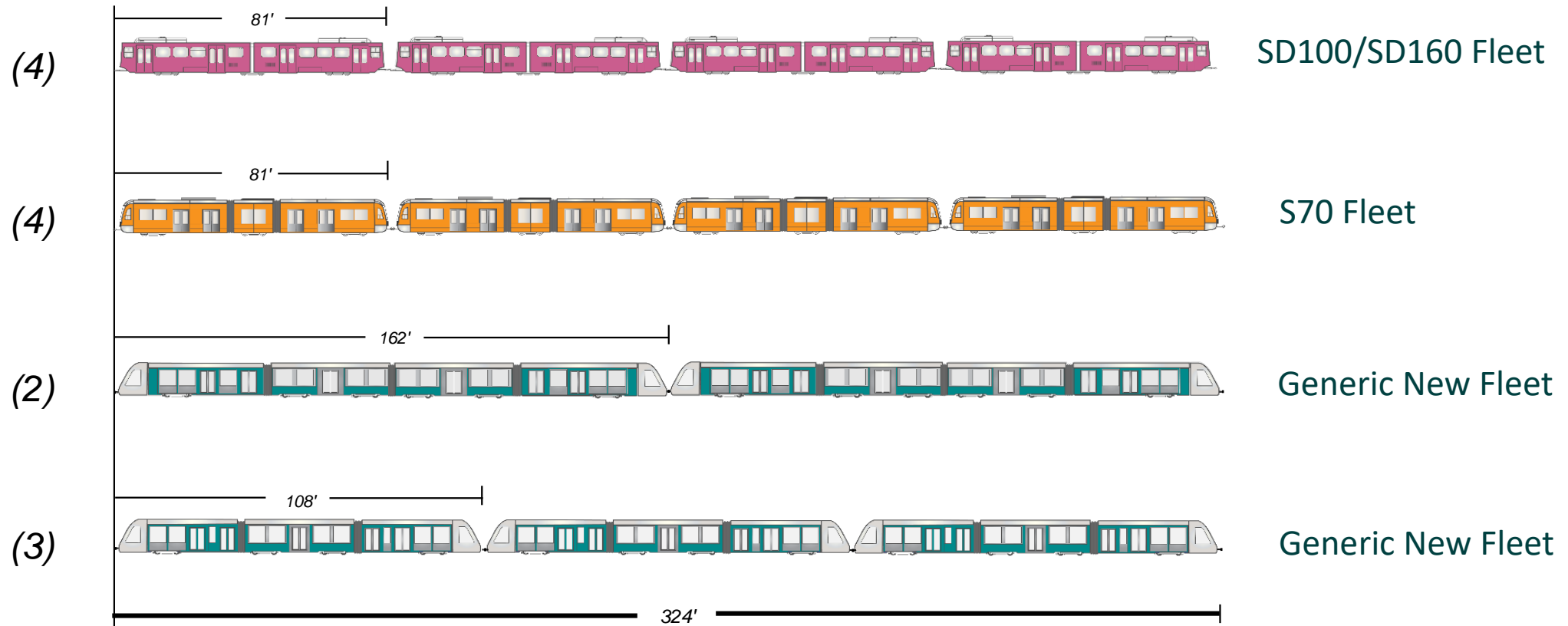
Car Type	Quantity	Placed in Service	Age	Maximum Speed (MPH)	Service
SD100*	23	1999	21	55	Blue Line
SD160*	17	2001	19	65	Blue Line
S70	74	2011	9	65	Red/Green Lines
S70 Streetcar	3	2011	9	65**	S Line



** Requires High Blocks*
***Maximum operating speeds are lower*



UTA Equivalent Train Consists – Maximum Length Train (324')



Longer LRV's – Peer Examples

Edinburgh



Toronto



NJ Transit



Dallas



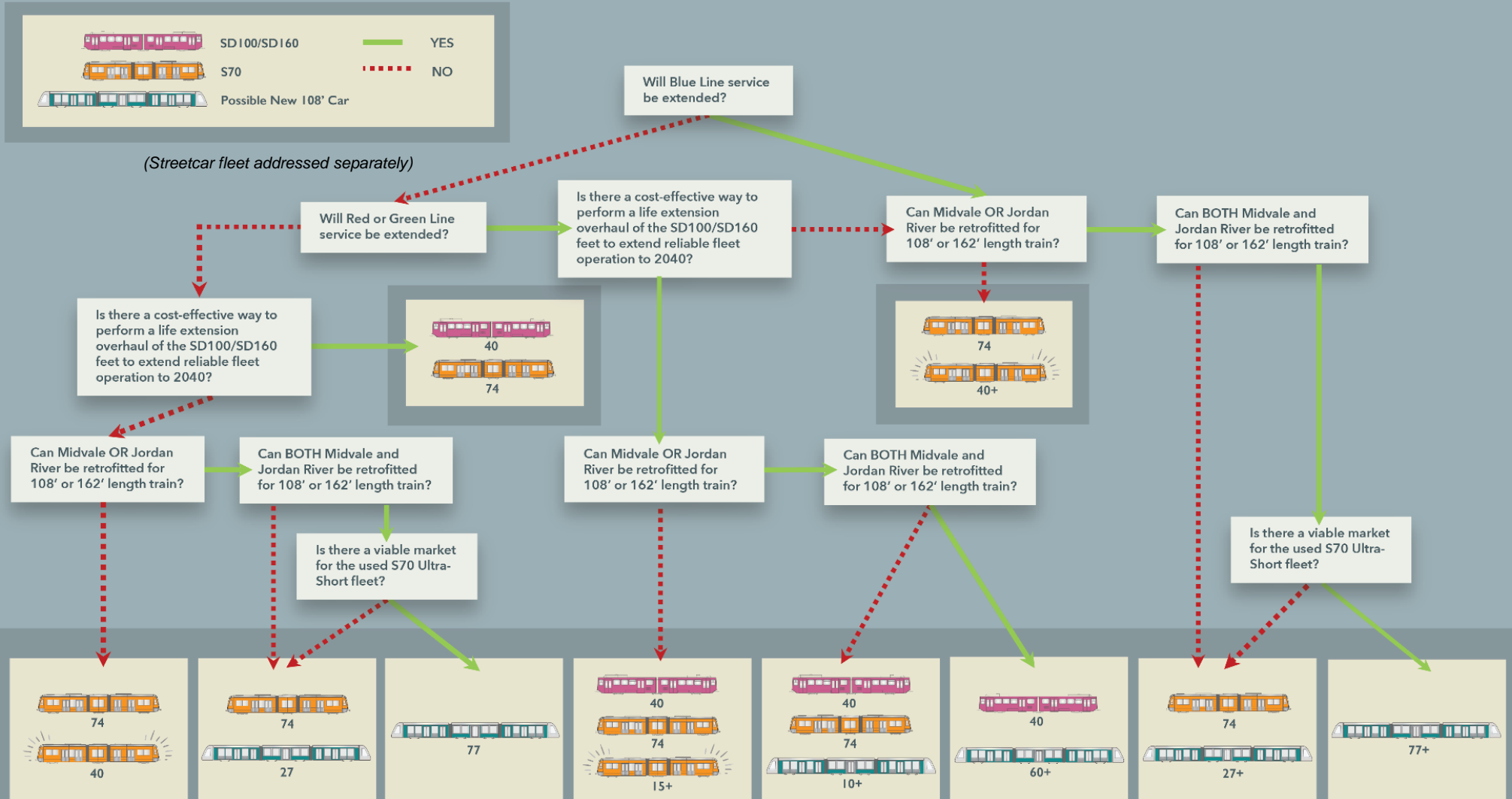
Melbourne Australia



Ottawa

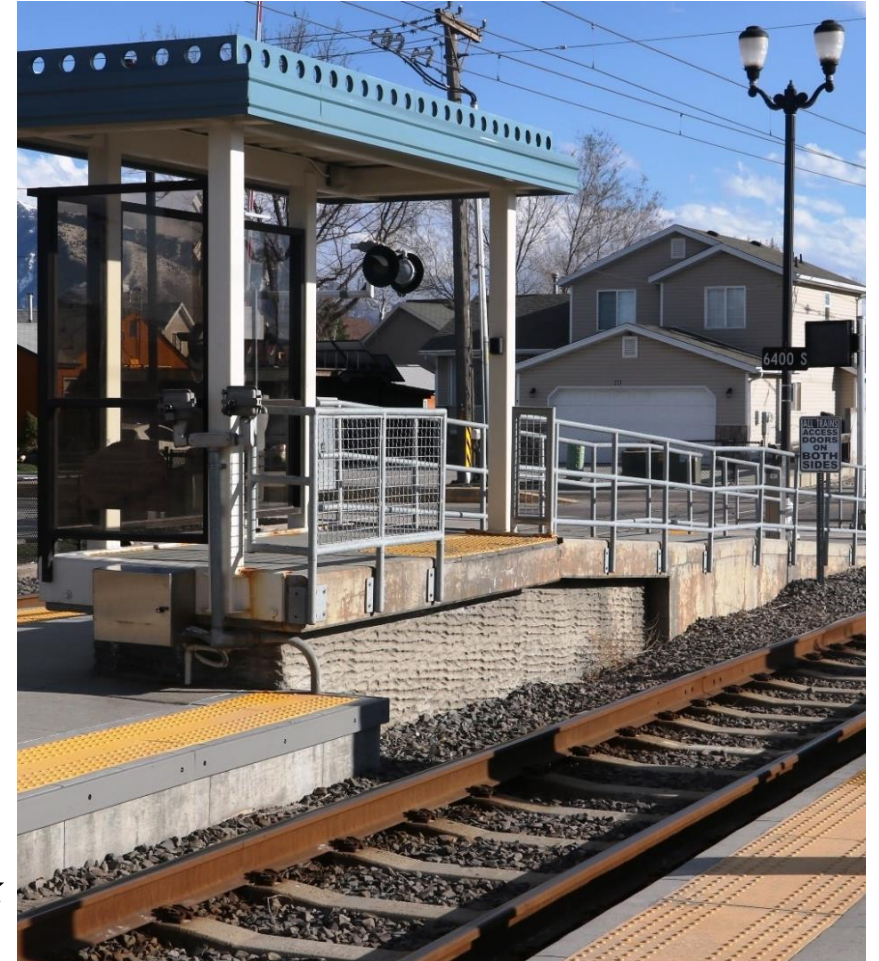


Fleet Plan Decision Tree



TRAX Light Rail Fleet Recommended Path Forward

- Replace original fleet with new low floor cars in 2029-31, remove high blocks
- Consider longer car length
 - Combine to match existing platforms
 - Fewer cars needed to deliver equivalent capacity
- Options to support potential service expansions



*Typical TRAX High Block
for Level Boarding*

TRAX Streetcar Fleet

- UTA's current Streetcars
 - 20+ years of life remaining
 - Not designed for tight curves
- Future projects in the street
- Other models are available
 - Better tight curve support
 - USA – CAF, Brookville, Stadler
 - European designs



Detroit (Brookville)



Cincinnati (CAF)



***UTA Sugar House
Streetcar (Siemens Super
Short S70)***



Current Operations – What Are the Significant Challenges to Reliable Service?



Operations – Locations of Delay in TrainOps Simulation Model



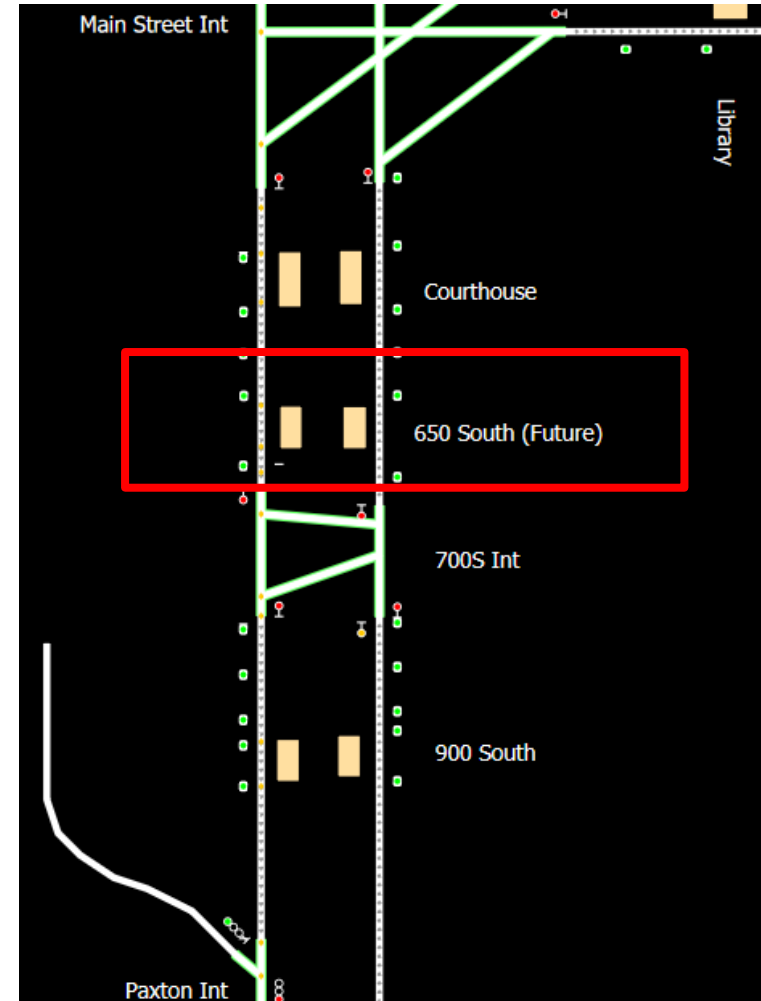


Future Baseline – How Will 650 South and Airport Station Relocations Affect Service?

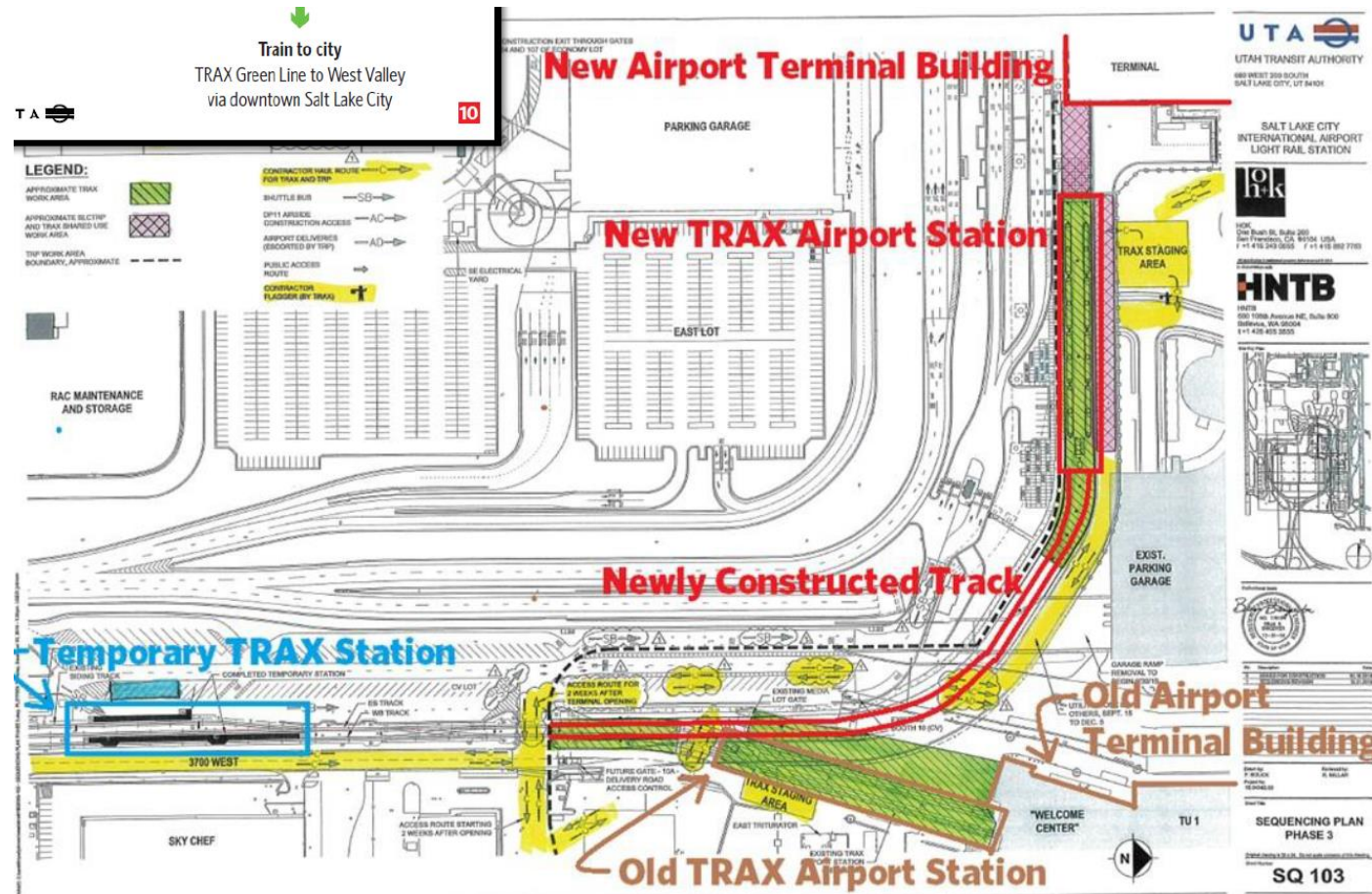


Future Station – 650 South

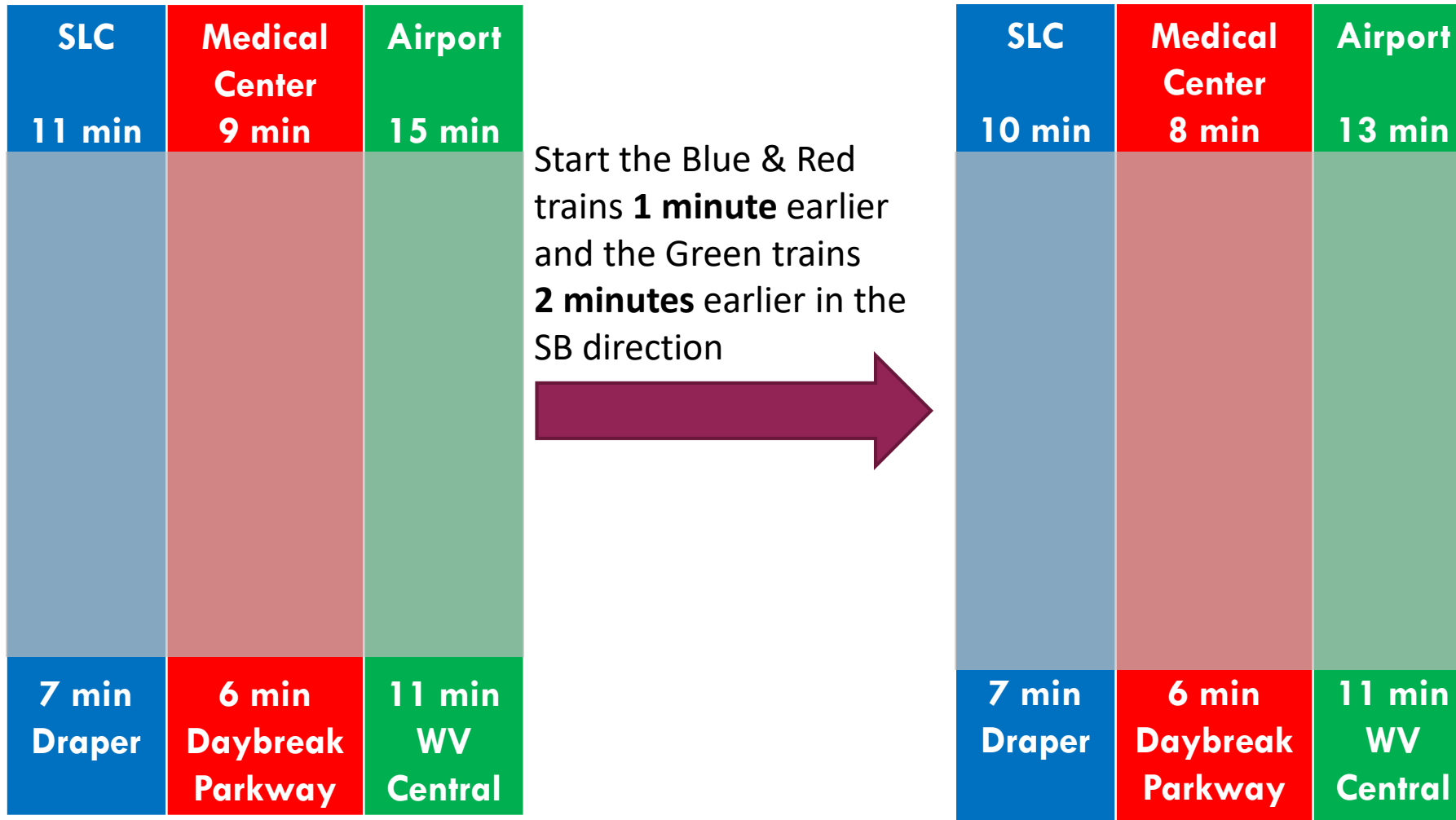
- Requires 1 minute of additional schedule time in each direction
- Potential to boost ridership by collocating with planned development



Future Station – Relocated Airport Station



Future Terminal Turn Times



Percent of Trains Arriving Within 5 Minutes of Schedule (All Stations)

	Baseline (%)	Future Baseline – 650 S (%)	Future Baseline – 650 S and Airport (%)
Blue Line	94.7%	95.8%	96.0%
Red Line	92.0%	86.5%	89.1%
Green Line	86.4%	91.1%	92.6%
Combined	91.5%	91.0%	92.5%

Target is 95% on each TRAX line



Future Scenarios – Which Operating Changes and Capital Investments Provide the Greatest Service Improvements?



Future Build – Scenario 1 – Increase TSP

- Increase TSP – Transit Signal Priority
- Built off Future Baseline Model - which includes 650 South Station and the New Airport Station
- Intersection Priority Changes at 2 Levels:
 - Locations likely to be acceptable based on traffic engineering professional judgment
 - “UTA Priority” intersections which may required additional engineering analysis



Intersection Priorities – UTA Assessment of Priority

Signal ID	Intersection	Agency	Priority	Weekday Signal Operation	Potential for Additional Priority Based on Initial Review	UTA Assessment of Priority	Notes
Green Line (Airport to North Temple & 400 W)							
1213	2400 W & North Temple	SLC	Enabled	Free	Medium		
7086	Redwood Rd & North Temple	UDOT	Disabled	Coordinated	High	High	
Blue Line (Salt Lake Central to North Temple & 400 W)							
1178	300 S & 600 W	SLC	Enabled	Free	Medium		
1177	200 S & 600 W	SLC	Enabled	Free	Low	High	90 deg. turn location where TRAX was originally served after every traffic phase.
Blue and Green Lines (North Temple & 400 W to 400 S & Main St)							
7126	300 W & South Temple	UDOT	Enabled	Coordinated	Low	Medium	Change to UTA High Priority if Orange Line service is implemented
7243	400 S & Main St	UDOT	Enabled	Peer-to-Peer	Low	High	May not be an issue of traffic signal controller but rather better connectivity between ATMS and Main Street Interlocking calls

Intersection Priorities – UTA Assessment of Priority

Signal ID	Intersection	Agency	Priority	Weekday Signal Operation	Potential for Additional Priority Based on Initial Review	UTA Assessment of Priority	Notes
Red Line (University Medical Center to 400 S & Main St)							
7224	500 S & 1300 E	UDOT	Enabled	Coordinated (AM/PM) Free (Off-peak)	Medium		
7253	500 S & 1100 E	UDOT	Enabled	Free	Medium		
7250	400 S & 900 E	UDOT	Enabled	Coordinated	Low	High	
7180	400 S & 700 E	UDOT	Enabled	Coordinated	Low	High	
Blue, Green and Red Lines (400 S to Central Pointe Station)							
7252	500 S & Main St	UDOT	Enabled	Coordinated	Medium		
7255	600 S & Main St	UDOT	Enabled	Coordinated	Medium		
1045	700 S & Main St	SLC	Enabled	Free	Low	High	90 deg. turn location where TRAX was originally served after every traffic phase.
1027	700 S & 200 W	SLC	Enabled	Free	Low	High	90 deg. turn location where TRAX was originally served after every traffic phase.

Intersection Priorities – UTA Assessment of Priority

Signal ID	Intersection	Agency	Priority	Weekday Signal Operation	Potential for Additional Priority Based on Initial Review	UTA Assessment of Priority	Notes
Green Line (Central Pointe Station to West Valley Central Station)							
4525	2320 S & 1070 W	WVC	Enabled	Free	High		
4526	2455 S & 1070 W	WVC	Enabled	Free	High		
4528	2770 S & 1935 W	WVC	Enabled	Free	High		
4529	2900 S & 1935 W	WVC	Enabled	Free	High		
4530	3025 S & 2210 W	WVC	Enabled	Free	High		
4522	3100 S & 2210 W	WVC	Enabled	Free	High		
4502	3100 S & 2700 W	WVC	Enabled	Free	High		
4533	3360 S & 2700 W	WVC	Enabled	Free	High		
7287	3500 S & 2700 W	UDOT	Enabled	Coordinated	High	High	

Results – Scenario 1

Percent of Trains Arriving Within 5 Minutes of Schedule (All Stations)

	Baseline	Future Baseline	Future Build Scenario 1 (Intersection Priority)
Blue Line	94.7%	96.0%	97.1%
Red Line	92.0%	89.1%	91.6%
Green Line	86.4%	92.6%	97.2%
Combined	91.5%	92.5%	95.0%

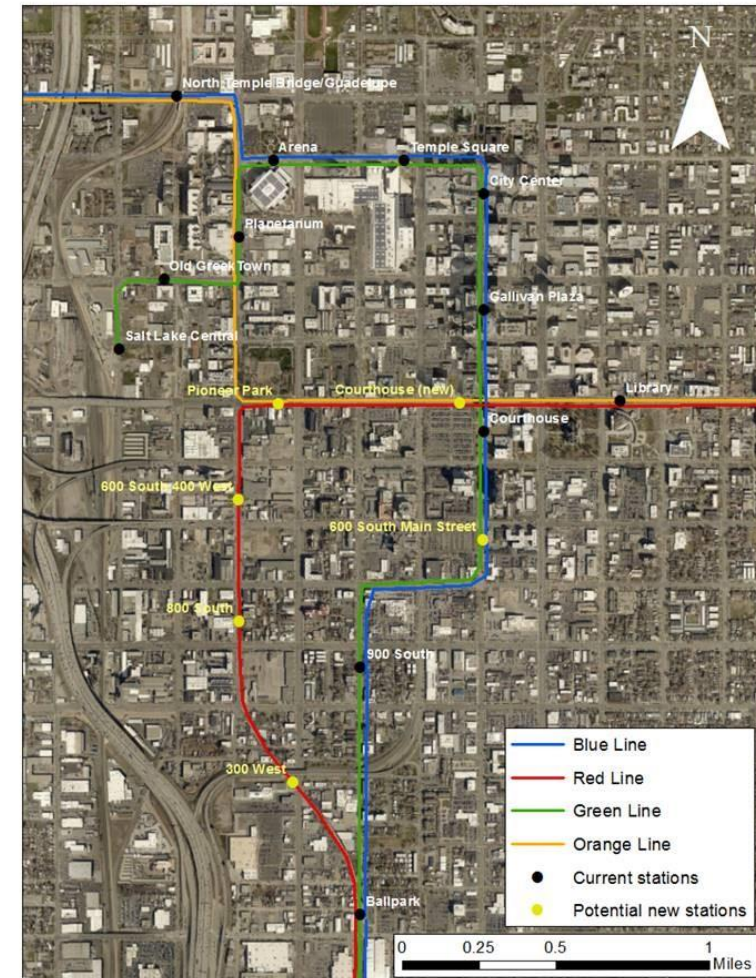
Additional Possible Operating Changes

- Trunk Line
 - Increase speed where possible
 - Improve frequency from 15 minutes to every 12 minutes on all three lines
 - Likely requires capital investment
- Implement new Orange Line from the University to the Airport



Additional Possible Capital Investments

- Siding track near Central Pointe – helps operations to support failures/staging for special events
- Implement Granary District improvements along 400 S and 400 W – service routing TBD
- University Research Park terminus served by new Orange Line or existing Red Line



Discussion

- What have we not mentioned but should consider in the Study?
- What is the most important existing system service attribute for increasing ridership?
 - Better passenger amenities
 - Better passenger sense of security
 - Better multimodal connections
 - Faster travel times
 - More reliable service
 - More service with less waiting time

