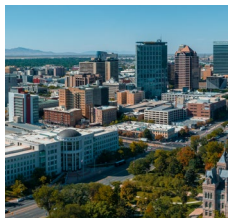
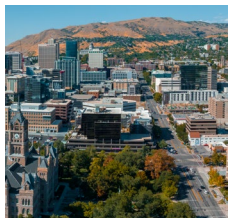
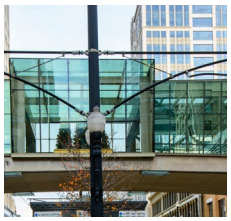
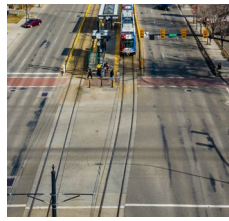
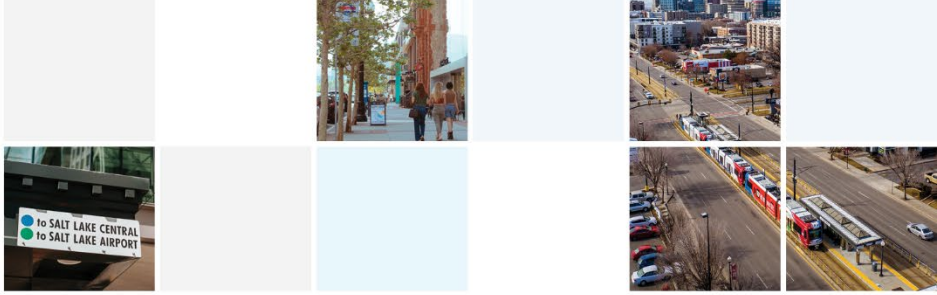


APPENDIX E:
ALTERNATIVES DEVELOPMENT REPORT





TechLink TRAX Study

Alternatives Development Report
July 2024

Prepared for

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Table of Contents

Attachment List

Attachment E1: 400 South Viaduct TRAX Alignment Memorandum

List of Figures

List of Acronyms

FOLR	Future of Light Rail Study
HCT	High-Capacity Transit
LRT	Light Rail Transit
RDA	Redevelopment Agency of Salt Lake City
ROW	Right-of-Way
SLC	Salt Lake City
SLCPU	Salt Lake City Public Utilities
TAC	Technical Advisory Committee
UDOT	Utah Department of Transportation
UTA	Utah Transit Authority
WFRC	Wasatch Front Regional Council

1 Introduction

1.1 Overview

The Utah Transit Authority (UTA) in collaboration with the Redevelopment Agency of Salt Lake City (RDA), Salt Lake City (SLC), the University of Utah, Wasatch Front Regional Council (WFRC), and the Utah Department of Transportation (UDOT) has initiated the TechLink TRAX Study to analyze additional light rail (TRAX) service between the Salt Lake City International Airport and the University of Utah, including a potential new service into Research Park and into the Granary District south of downtown Salt Lake City connecting into the Ballpark Station. The analysis will also include potential operational changes with the existing Blue and Green TRAX Lines termini.

1.1.1 Study Goals

The goals of the TechLink TRAX Study are to:

- Develop and evaluate transit improvements that provide connections between key areas of growth and development and support partner agencies to meet their transit, land use, and economic development goals.
- Recommend strategies that improve connections and capacity in response to future growth.
- Select a Locally Preferred Alternative that can seamlessly transition to a National Environmental Policy Act (NEPA) study.
- Provide a transparent and collaborative process between study partners and stakeholders.
- Thoughtfully incorporate equity and sustainability in the planning and public engagement process and develop recommendations that enhance transportation accessibility and equity.

The purpose of this study is to determine a Locally Preferred Alternative to advance into the next phase of project development, which includes environmental study and preliminary engineering. A range of alternatives has been identified to advance into evaluation and refinement, primarily stemming from previous studies. Section 2 below identifies what alternatives were developed during previous analyses and how they were used to inform the narrower range of alternatives advancing through the TechLink TRAX Study process.

Study partners were engaged throughout the alternative development process. The Technical Advisory Committee (TAC) and the Steering Committee were convened several times throughout the early phases of this process to coordinate with jurisdictions and agencies, drive alternatives development, and garner a better understanding of opportunities and constraints for each alternative.

1.2 Study Area

The TechLink study area extends from the Salt Lake City International Airport on the west side of Salt Lake City through the downtown area and east to the University of Utah (Figure 1). This study will focus on the implementation of additional light rail transit (LRT) service utilizing existing infrastructure, providing a more direct connection between these two destinations. The study will also evaluate new light rail infrastructure along 400 South, a new rail extension south into the Granary District neighborhood and eventually connecting to the existing Ballpark TRAX Station, and a new spur into Research Park.

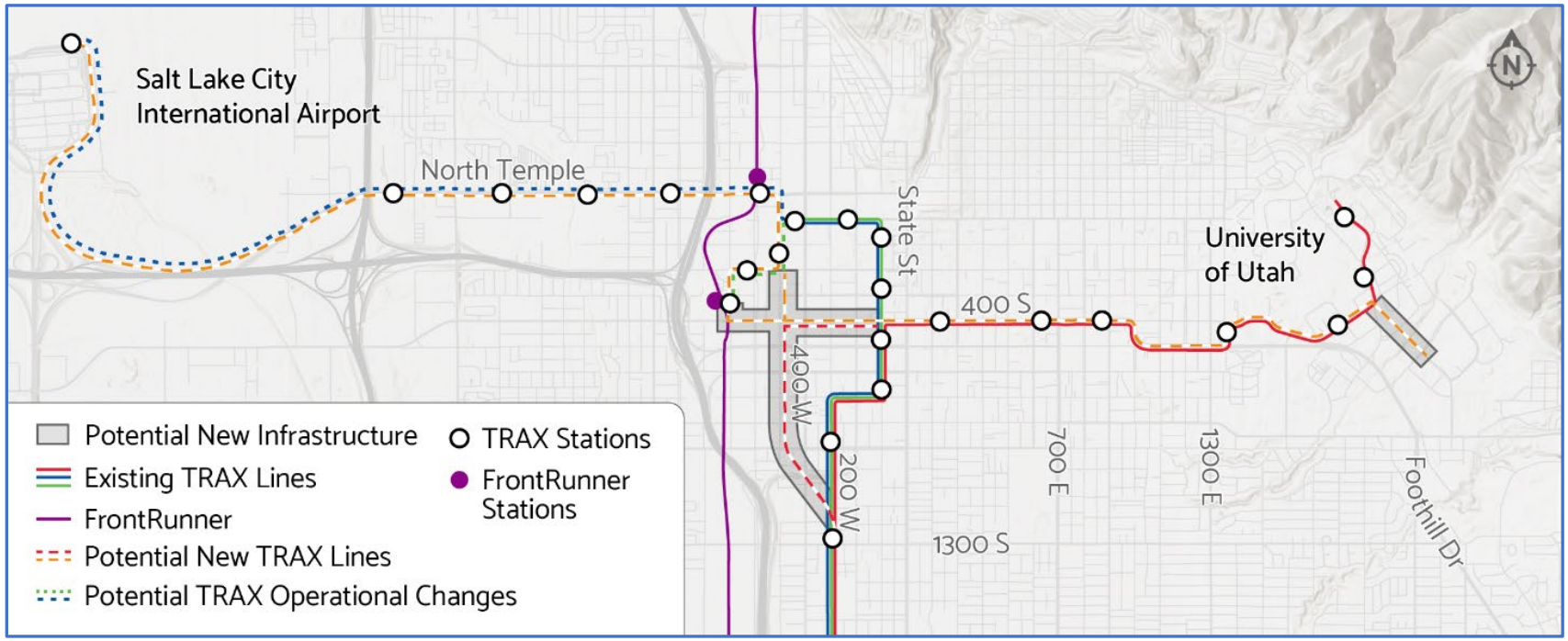


Figure 1. TechLink TRAX Study Area

1.3 Report Purpose

The purpose of this Alternatives Development Report is to document the process used to identify alternatives that will next be advanced into the alternatives evaluation phase. It describes:

- **Previously Considered Alternatives (Section 2)** – including a summary of previous planning work and key findings that are relevant to alternatives advanced into the TechLink TRAX Study.
- **Alternatives Development (Section 3)** – including the full range of alternatives considered during this study, alternatives advanced, and alternatives considered but not advanced.

2 Previously Considered Alternatives

Several studies have been conducted to analyze and consider potential adaptations of the TRAX light rail system to better serve downtown Salt Lake City and the region. A brief synopsis of these studies, including key findings and relevant information related to the development of alternatives for the TechLink TRAX Study, is included below. The TechLink TRAX Study alternatives are a refinement of the following efforts:

2.1 Salt Lake City Downtown Streetcar Alternatives Analysis (2014)

Salt Lake City, the Redevelopment Agency of Salt Lake City (RDA), and UTA initiated this study, which identified a Locally Preferred Alternative for a streetcar alignment to serve downtown Salt Lake City with a focus on connecting the Salt Lake Central Station with southern downtown (the Granary District) and the University of Utah (Figure 2). The analysis consisted of two phases:

Phase 1 identified an east-west corridor sharing the existing TRAX running way and station at Salt Lake Central, with continued service east on South Temple to 500 East. Potential future University of Utah extension options were identified at a high level, utilizing either South Temple or 100 South.

Phase 2 identified a connection between the Depot District downtown with the Granary District to the south. The Locally Preferred Alternative identified operations **on 400 West from 400 South to 900 South as the preferred alignment**, with connections to Salt Lake Central Station and to the Red, Green, and Blue Lines at the Ballpark Station. Alignments along 300 West, 500 West, and 600 West were evaluated and ultimately eliminated because they did not meet the transit needs or provide direct connections that would improve circulation in the developing areas of downtown.

Of Note: This study formalized the recommendation for a transit route along 400 West into the Granary District.

The routing described in this study is most relevant to the TechLink TRAX Study proposed Red Line realignment.

- 300 West Alternative (eliminated): This alignment was eliminated primarily due to roadway characteristics; high speeds, number of lanes, and limited pedestrian activity made it a less viable alternative than some others.
- 500 West Alternative (eliminated): The alignment along 500 West was eliminated because of potential impacts to the I-15 freeway ramps at 500 South and 600 South.

- 600 West Alternative (eliminated): The alignment along 600 West was eliminated because of its location on the western edge of the Granary District, adjacent to I-15 and the shared Union Pacific Railroad/UTA rail corridor. The west side of 600 West is not currently developable land and therefore limits redevelopment opportunities along this corridor. A 600 West alignment would leave a large portion of the Granary District to the east underserved by rail transit and would not serve as an effective pedestrian accelerator.

The Locally Preferred Alternative determined that the streetcar would operate as a double-tracked through-routed line from the southern terminus at 900 South, through Salt Lake Central Station, and continuing to the eastern terminus on 500 East. The study also determined that much of this service could operate in mixed traffic on 400 West between 900 South and 400 South, with stop platforms in the median. This study differentiated streetcar services from TRAX light rail service and did not determine if the Locally Preferred Alternative streetcar service would operate in mixed traffic or in shared operation with light rail on a future TRAX line envisioned for the 400 West corridor.

FIGURE S-1: RECOMMENDED LOCALLY PREFERRED ALTERNATIVE

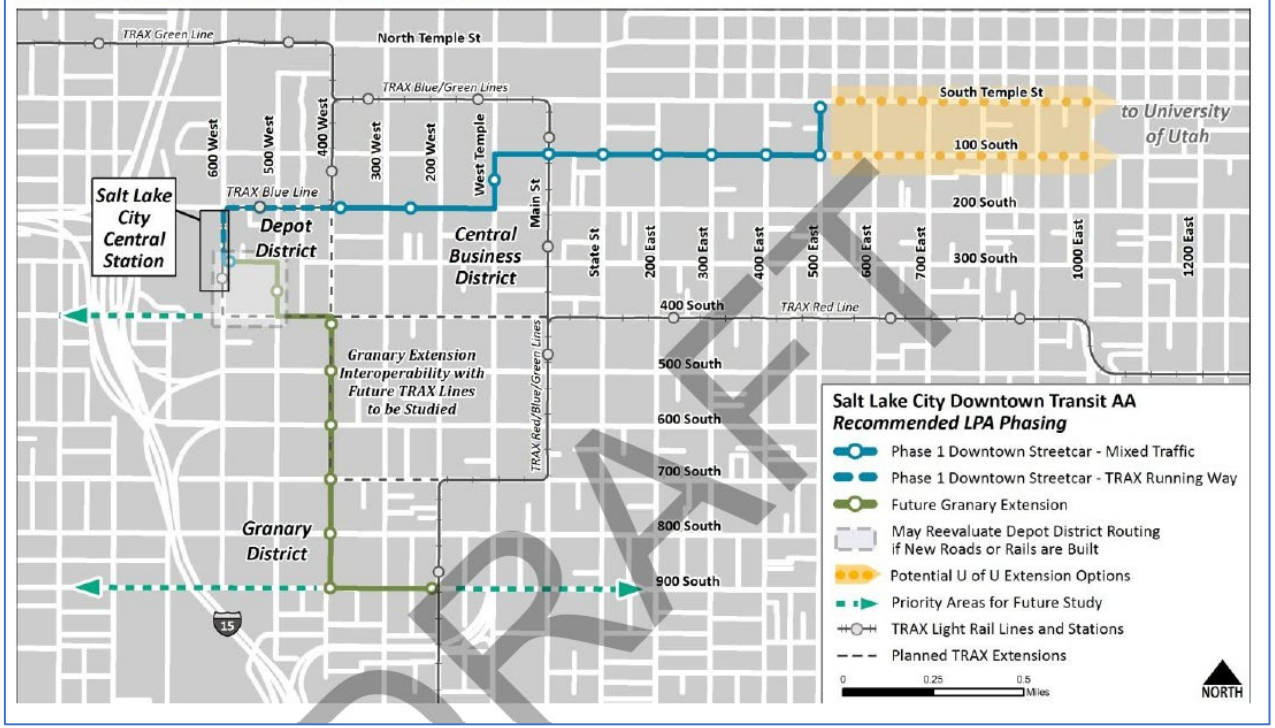


Figure 2. Salt Lake City Downtown Streetcar Alternatives Analysis Recommended Alignment

This Locally Preferred Alternative offered opportunities to improve regional connectivity, reduce transit travel times, support planned development, and add redundancy to the system. Some additional considerations from the report include:

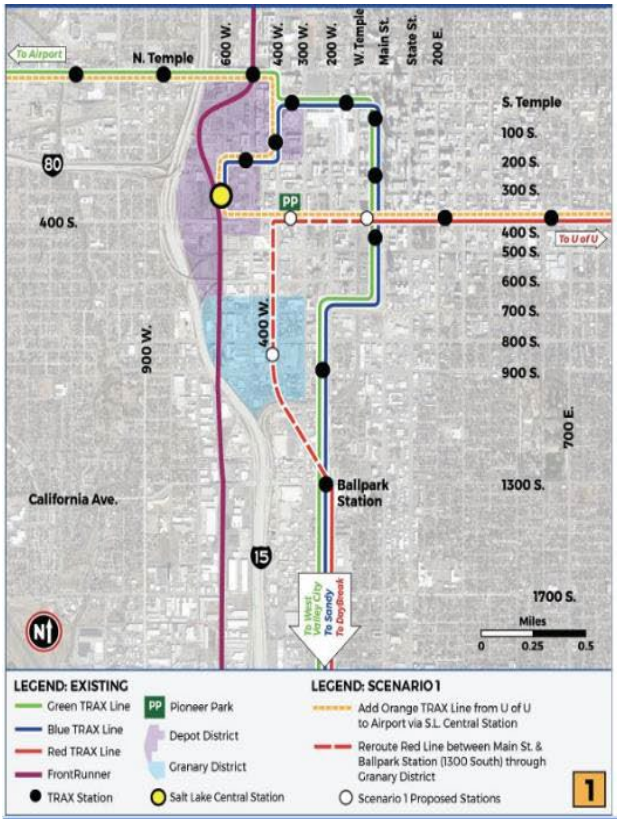
- *Salt Lake Central Station Connectivity*: Four routing alternatives were considered to connect the Phase 2 (Granary Extension) line into Salt Lake Central Station. Most were eliminated due to the number of turns required, the ability to serve major destinations, the quality of access to Salt Lake Central Station, and forward-compatibility with a future University of Utah extension.
- *Costs and funding*: Preliminary capital costs were developed for a 2014 year-of-expenditure (YOE) for Phase 1 of the Locally Preferred Alternative (between the Depot District and 500 East); costs ranged from $90 M to $95 M. Capital costs were not estimated for Phase 2 of the Locally Preferred Alternative.

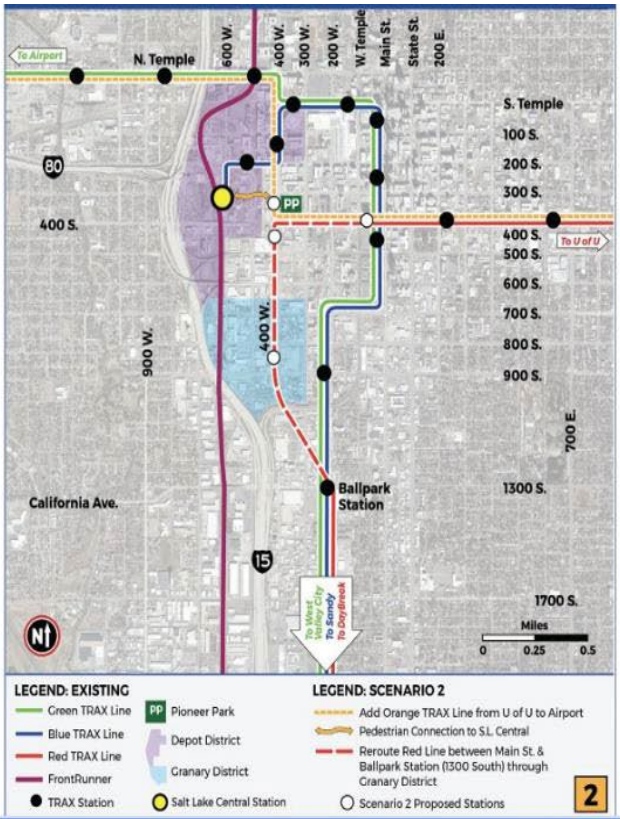
2.2 Downtown Salt Lake City Rail Extension & Connections Feasibility Study (2021)

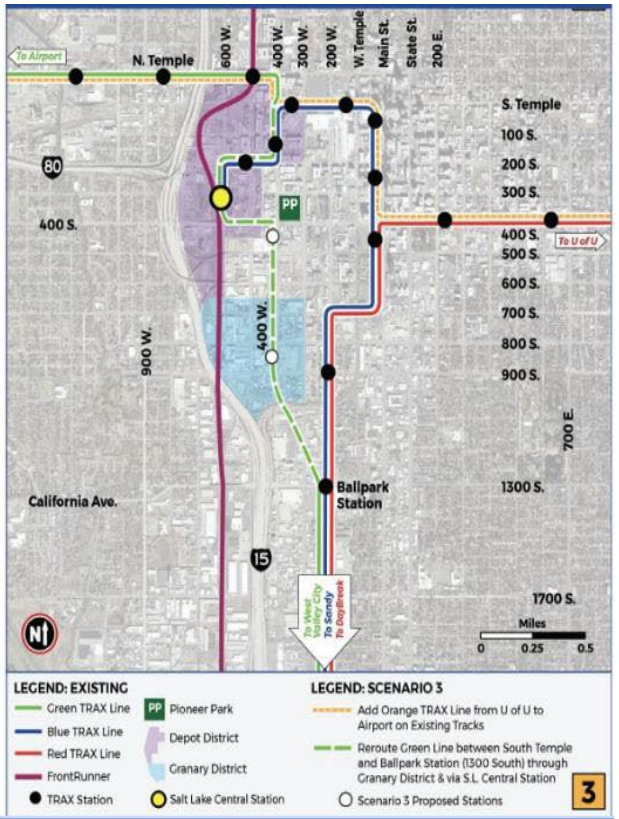
Led by UTA, this study identified and assessed opportunities to improve regional connectivity and serve growing areas on the west side of downtown Salt Lake City with light rail. Specific areas identified for growth included 400 South and the areas to the south and west of the downtown core, including the Granary and Depot Districts. This study presented an initial evaluation of TRAX routing alternatives within the study area (defined by North Temple, I-15, 2100 South, and 300 East) with the intention of integrating results into the concurrent UTA Future of Light Rail Study (described below in Section 3.4).

Of Note: This study formalized the benefits of an Orange Line connection, providing direct service between the Salt Lake International Airport and the University of Utah.

Three unique scenarios for transit routing were explored that each included various configurations of a new TRAX Orange Line providing direct service between the Salt Lake City International Airport and the University of Utah utilizing existing rail or rerouting the TRAX Green or Red Line through the Granary District to the Ballpark Station. This study also explored pedestrian connections to Salt Lake Central Station from the Granary District. Figure 3 below highlights the three scenarios analyzed in this study. The scenarios are summarized below.







Scenario 1	Scenario 2	Scenario 3
Red Line extension via Granary & new east-west (Orange Line) connection via Salt Lake Central.	Red Line extension via Granary plus new east-west connection to Salt Lake Central via walking/rolling link.	Green Line extension via Granary and Salt Lake Central plus new east-west connection via Downtown

Figure 3. Scenarios Analyzed for Salt Lake City Rail Extension & Connections Feasibility Study

- A new Orange Line between the Salt Lake City International Airport and the University of Utah providing a direct connection through Salt Lake Central Station and the Granary District
- A realignment of the Red Line to continue west on 400 South
    - The Red Line would then service the Granary District via 400 West and on the Ballpark Spur to the Ballpark Station
- In addition to Scenario 1 depicted in Figure 3, three alternative routes were explored with options on 500 West to bring the realigned Red Line closer to Salt Lake Central; however, they were not advanced due to poor performance during analysis

Scenario 2 retained the two elements from Scenario 1, with some additions:

- A rerouting of the proposed Orange Line along 400 West, with no direct transit connection to Salt Lake Central Station
- Additionally, five alternative routing options for both the Red and Orange Lines along 500 West were also considered to shorten the walking distance to transfer from the Orange and Red Lines to Salt Lake Central Station

Scenario 3 identified the following:

- Allow the Orange Line to utilize the existing TRAX infrastructure through downtown
- Realign the Green Line west to 400 West, stopping at Salt Lake Central Station before continuing to the airport
- Eliminate transfers between the airport, downtown Salt Lake City, and the University of Utah via the Orange Line
    - FrontRunner passengers heading to the University of Utah would likely transfer to the Orange Line at the North Temple Bridge/Guadalupe Station
- In addition to the Scenario 3 depicted in Figure 3, one other alternative considered rerouting the Green Line to 600 West to avoid an at-grade crossing of 500 South and 600 South
    - However, like the Downtown Streetcar Alternatives Analysis from 2014, specific challenges were noted to this alignment, including requirement of significant amounts of right-of-way (ROW) and reduced opportunity to support planned development in the Depot District

All three scenarios offered opportunities to improve regional connectivity, reduce transit travel times, support planned development, and add redundancy to the system. These opportunities are outlined below.

- *Regional Connectivity*: The three scenarios offered better connection to FrontRunner and served important regional destinations like downtown Salt Lake City, the University of Utah, and Salt Lake City International Airport with more frequent and direct connections.
- *Transit travel times*: Each scenario improved transit travel times to key regional origins and destinations by providing more direct routes, fewer transfers, and the added service of the Orange Line.
- *Ridership*: Each scenario offered an opportunity for increased service coverage, increased frequency, and reduced transit travel time to aid in developing transit as a more attractive alternative than it is today, with the added goal of increasing transit ridership on TRAX.
- *Support for development*: Each scenario offered improved light rail access and more frequent service to growing parts of Salt Lake City – such as the Granary District, the Depot District, 400 South, and North Temple – making those areas more attractive for redevelopment and bolstering the potential for adaptive reuse of land and existing buildings.
- *Operational redundancy*: This study indicated that providing additional light rail infrastructure and service between the downtown area and the Ballpark Station would give UTA some redundancy in service in the event of an incident or emergency by providing a parallel route to bypass the segment north of the Ballpark Station. This would offer service and system resiliency, reduce delays or blocked track, and aid in maintenance and repairs in this section of track. This is a foreseen benefit of all scenarios defined in this study.

All three scenarios present tradeoffs that create challenges and issues to operations, transfers and walking distances, ridership, ROW constraints, and traffic impacts. The challenges to the scenarios are outlined below.

- *Operations*: Scenarios 1 and 3 offered connections directly to Salt Lake Central; however, this resulted in longer and more circuitous routes and an increase in the number of 90-degree turns for service, therefore reducing operating speed and increasing travel time. Additionally, 90-degree turns add wear and tear to the tracks, potentially requiring more maintenance and increasing the noise in the area.
- *Transfers and walking distances*: Scenario 2 reduced transit travel time; however, it added walking distance between Salt Lake Central and a new Orange Line station in the event of a transfer. In Scenarios 1 and 2, transfer times were expected to increase between the Red Line and the Green or Blue Lines due to the distance between the Main Street and 400 South station platforms.

- *Ridership*: Increases in walking distances and complexity of transfers had the potential to reduce ridership. In Scenario 2, the increase in walking distance between Salt Lake Central and the Orange Line Stations was expected to deter riders. In Scenario 3, ridership was expected to decrease on the Green Line because it would no longer serve downtown Salt Lake City.
- *ROW constraints*: Significant ROW takes were not expected in any of the scenarios. However, for Scenarios 1 and 2, new TRAX stations on 400 South could require the acquisition of ROW to accommodate the platforms if lane reductions for single-occupancy vehicles are not pursued. An alternative route for Scenario 3, taking the Green Line down 600 West, would require significant ROW takes or an easement from Union Pacific Railroad.
- *Traffic impacts*: None of the scenarios were expected to significantly impact traffic on arterial roadways. In Scenario 3, alternative routes were considered to avoid at-grade crossings of 500 South and 600 South by routing the Green Line alignment along 600 West. However, the weaknesses of this alignment are described in the Salt Lake City Downtown Streetcar Alternatives Analysis above.
- *Costs and funding*: Preliminary capital costs for the three scenarios, in 2020 dollars, range from $205.2 M to $261.8 M. As of 2021, the date of this report, funding had not been secured to advance any of these scenarios.

A formal recommendation was not made in this study, nor was there an in-depth quantitative analysis of the scenarios. However, the design and alignment considerations were utilized as inputs into the Future of Light Rail Study (FOLR), discussed below. In addition, these key tradeoffs guide more detailed and quantitative analysis as part of the TechLink TRAX Study.

2.3 Research Park Strategic Vision Plan (2021)

Finalized in 2021 by the University of Utah, this plan focused on new land use patterns for the campus including adding density, a better-connected transportation network with a more defined grid network and multimodal connections, bicycle and pedestrian infrastructure, new mobility hubs strategically placed around campus, and a general commitment to developing more transportation fluidity between the University of Utah and Research Park Campuses and west to the Salt Lake Central Station.

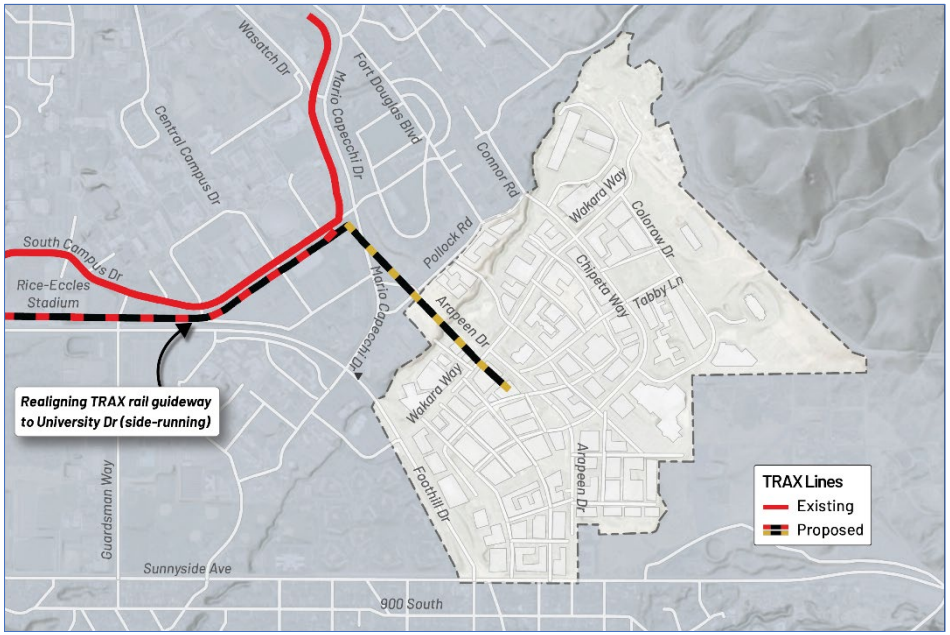


Figure 4. Proposed Realignment and Extension of TRAX Lines at the University of Utah from the Research Park Strategic Vision

A High-Capacity Transit (HCT) Mode Share Technical Memo (Figure 4) was prepared for this plan for the 2030 and 2040 transit network improvement horizons. For the 2040 planning horizon (Phase 3 of this plan), realignment of the TRAX Red Line from South Campus Drive (from its current alignment behind the Rice-Eccles Stadium) to 500 South (south of the stadium) is proposed to provide direct light rail service into Research Park. Additionally, a TRAX extension along the future Arapeen Drive Connector, from South Campus Drive and Mario Capecchi Drive into Research Park and terminating at a new mobility hub, was also proposed. The University of Utah is currently underway with a master plan update (as of summer 2024). Land use changes developed in this planning effort plus concerns over operational capacity at the South Campus Drive/Guardsman Way roundabout were the drivers of the 500 South track realignment alternative.

2.4 Future of Light Rail (2023)

Led by UTA and finalized in 2023, the Future of Light Rail (FOLR) study evaluated a range of short- and long-term improvements related to TRAX fleet modifications, headways and span of service, alignments of track extensions, planned and potential station locations with consideration to projects identified in regional transportation plans, and other potential enhancements. Inputs to the FOLR Study were derived primarily from the studies summarized above. This study focused on addressing key needs for UTA TRAX service, including:

- Addressing service flexibility and introducing redundancies in the system to become more operationally resilient.
- Defining considerations for future fleet replacements.
- Understanding challenges related to providing more reliable service.
- Determining operating changes and capital investments to be pursued in the future.

Of Note: The FOLR Study provided the baseline alternative (Alternative 1) for the TechLink TRAX Study.

During **Phase 1**, the FOLR Study looked at six scenarios which continued evaluation on major investments, including the added TRAX infrastructure through the Granary District and development-rich opportunities around Salt Lake Central as well as smaller-scale service and operational improvements that would improve travel times and make the service more competitive with other modes of transportation.

Phase 2 of the FOLR Study refined the six scenarios down to four scenarios and provided more robust and quantitative analysis. The key features and key findings of each of the four scenarios for Phase 2 are outlined below.

2.4.1 Overview of FOLR Study Scenarios

Scenario 1 – Improved Frequency

Key Features (Figure 5):

- The proposed transit services would offer 12-minute frequencies
- The Blue Line would be realigned through the Granary District
- The Orange Line, providing direct service between the airport and the University of Utah/Research Park, would bypass Salt Lake Central Station
- The Green Line and Blue Line would undergo a termini switch, meaning the Green Line would terminate at Salt Lake Central Station, and the Blue Line would provide service to the airport instead

Key Findings:

- Scenario 1 indicated much higher operating costs with minimal ridership improvements compared to other scenarios
- The Main Street and 400 South intersection operations failed due to new turning movements and phases for the Orange Line service, coupled with the existing Red Line operational needs
- This scenario would not connect the University of Utah with the Granary District, which has been defined as a key origin-destination pair

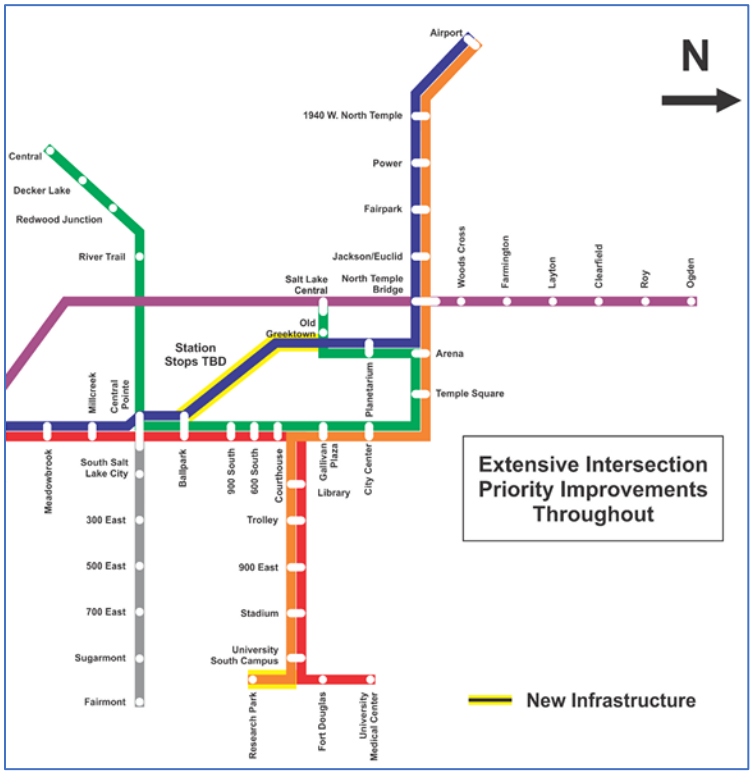


Figure 5. FOLR Study Scenario 1 - Improved Frequency

Scenario 2 – Improved Span of Service

Key Features (Figure 6):

- This scenario recommended earlier and later hours of operation for service
- The Orange Line, providing direct service between the airport and the University of Utah/Research Park, would connect to Salt Lake Central Station
- No new service to the Granary District was recommended with this scenario

Key Findings:

- This scenario would not improve transit service resiliency, as no operational redundancy would be created in the mainline without additional routing through the Granary District
- Limited ridership improvements were seen with this scenario
- Operational challenges at the Main Street and 400 South intersection were still identified in this scenario, similar to Scenario 1

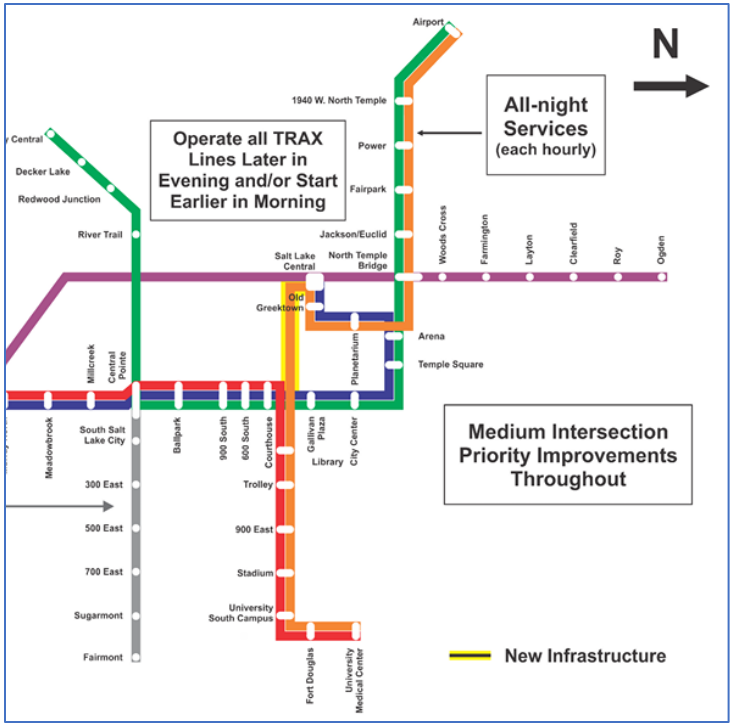


Figure 6. FOLR Study Scenario 2 - Improved Span of Service

Scenario 3 – Greater Access

Key Features (Figure 7):

- This scenario recommended realigning the Red Line through the Granary District between the Ballpark Station and north to connect back into the system at 400 South
- The Orange Line was defined to operate between Salt Lake Central and the University of Utah/Research Park, but would not connect west to the airport
- This scenario also recommended earlier and later hours of operation for service

Key Findings:

- This scenario eliminated turning movements at the Main Street and 400 South intersection, which reduced some of the operational burden on this intersection that previous scenarios identified
- This scenario offered riders a “one-seat ride” from the University of Utah to the Granary District (a major origin-destination pair) without requiring a transfer

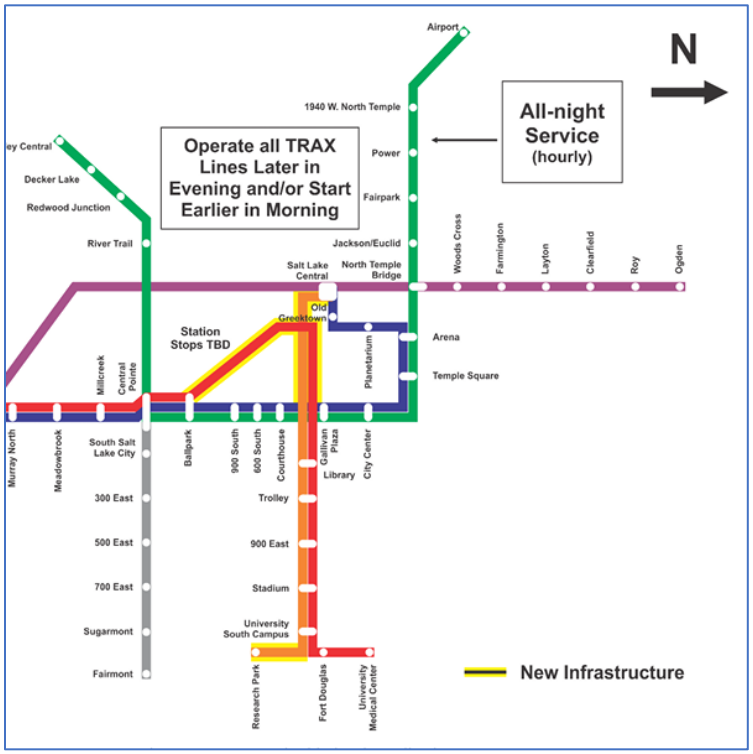


Figure 7. FOLR Study Scenario 3 - Greater Access

Scenario 4 – Improved Travel Time

Key Features (Figure 8):

- This scenario defined earlier and later operating hours for transit service
- The Green Line was recommended to realign into and through the Granary District between North Temple and the Ballpark Station
- A proposed new standalone streetcar service from Salt Lake Central Station to the University of Utah was developed for this scenario, using corridors north of the existing service along 400 South

Key Findings:

- This scenario yielded the lowest ridership improvements of all four scenarios
- This scenario indicated the standalone streetcar service that did not connect into the TRAX system was not preferred

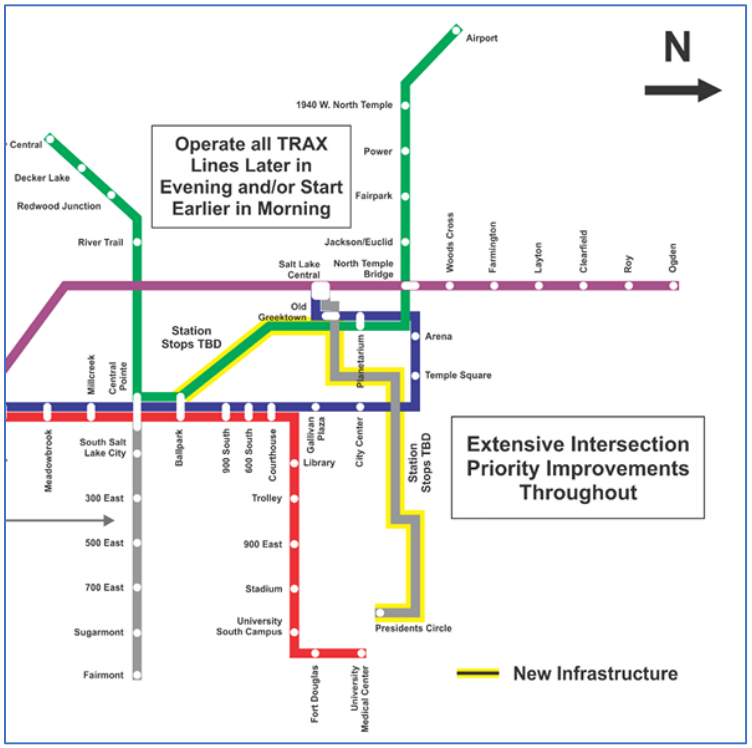


Figure 8. FOLR Study Scenario 4 - Improved Travel Time

2.4.2 FOLR Study Strategic Plan Recommendation

The final Strategic Plan Recommendation from the FOLR Study blended the best-performing attributes of the four scenarios considered based on ridership, rail operation simulations, and reliability analysis (Figure 9). The key features and benefits of the FOLR Strategic Plan recommendation are:

- **Realign the Red Line through the Granary District. Key benefits:**
  - Adds system capacity through additional stations and added service in a high-growth area
  - Adds system redundancy and therefore resiliency through new track infrastructure in the Granary District
  - Allows for increases to system capacity by adding a straight east-west movement through the Main Street and 400 South intersection
  - Connects the Granary District to the University of Utah (a key origin-destination pair)
- **Connect the Orange Line from the Airport to the University of Utah/Research Park through Salt Lake Central Station. Key benefits:**
  - Adds capacity through additional stations and added service on 400 South
  - Extends TRAX into Research Park, which provides a necessary and additional transit connection
  - Allows for increases to system capacity by adding a straight east-west movement through Main Street at 400 South
- **Recommends a Blue Line and Green Line termini switch. Key benefits:**
  - Increases TRAX system ridership by connecting the Blue Line to the airport and terminating the Green Line downtown
- **Adds a 400 West Non-Revenue Connector. Key benefits:**
  - Provides system resiliency in the event of a blockage by adding a non-revenue TRAX line along 400 West between 400 South and 200 South
  - Provides the ability to stage non-revenue trains awaiting the end of a special event at the arena or Temple Square
  - Would serve as a location to store a disabled train in the event of an incident

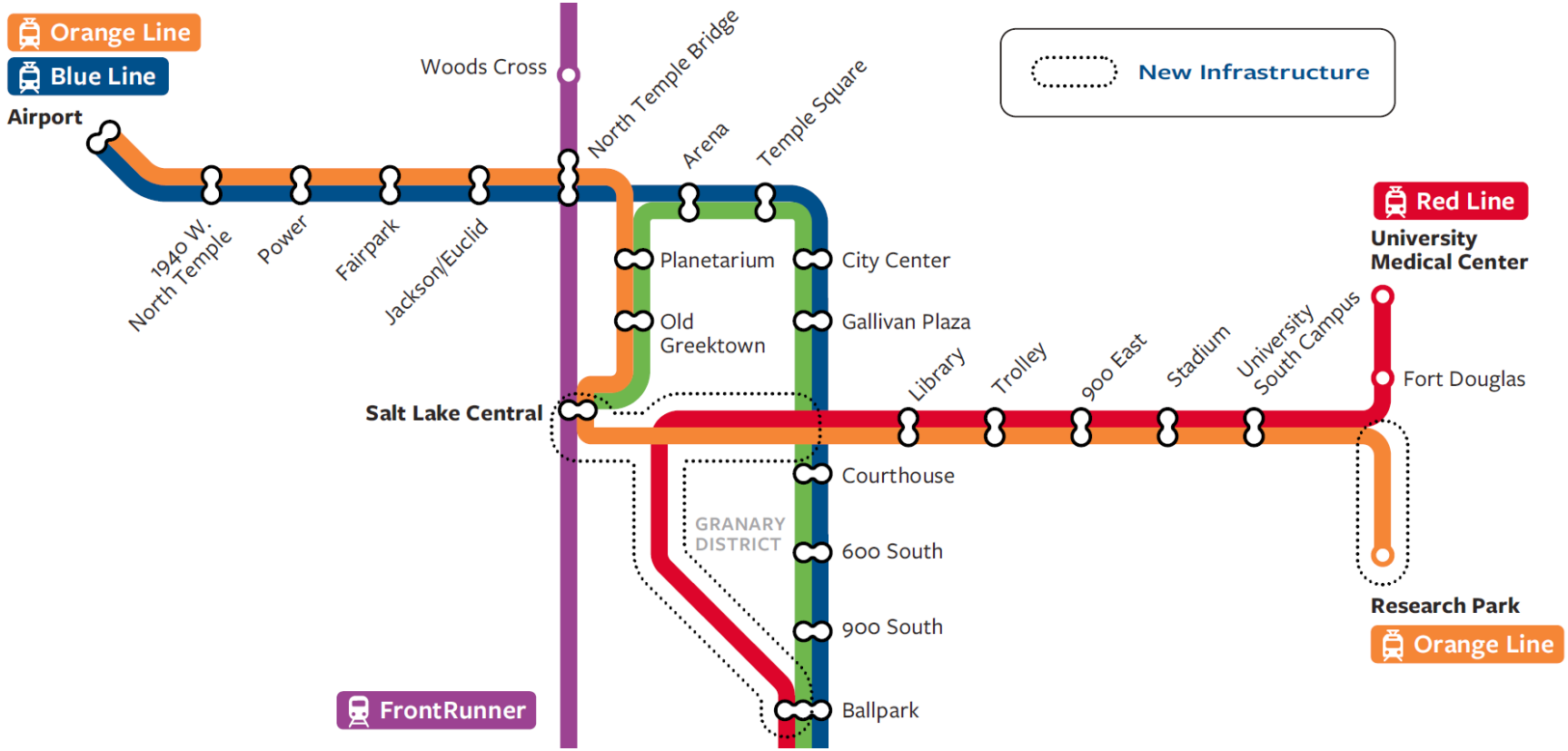


Figure 9. FOLR Study Strategic Plan Recommendation

3 Alternatives Development

This section provides a description of the alternatives developed for the TechLink TRAX Study, primarily using the foundational work from the FOLR Study (discussed in Section 2.4.1). Alternatives were considered in this study based on what scenarios 1) performed well in the FOLR Study, and 2) ensured that new transit connections meet the goals developed by the study team. The focus on alternatives includes evaluating transit scenarios in Salt Lake City that provide connections to the University of Utah and the airport, Salt Lake Central Station, and the Granary District, as well as supports the current and future development on campus, and in the Depot and Granary Districts.

The alternatives development process (Figure 10) builds on previous findings; refines potential corridors and station locations; and defines typical cross sections to better inform the alternatives evaluation phase. Additionally, refinements and modifications to the alternatives will continue as this project moves from the planning phase and into the environmental phase.

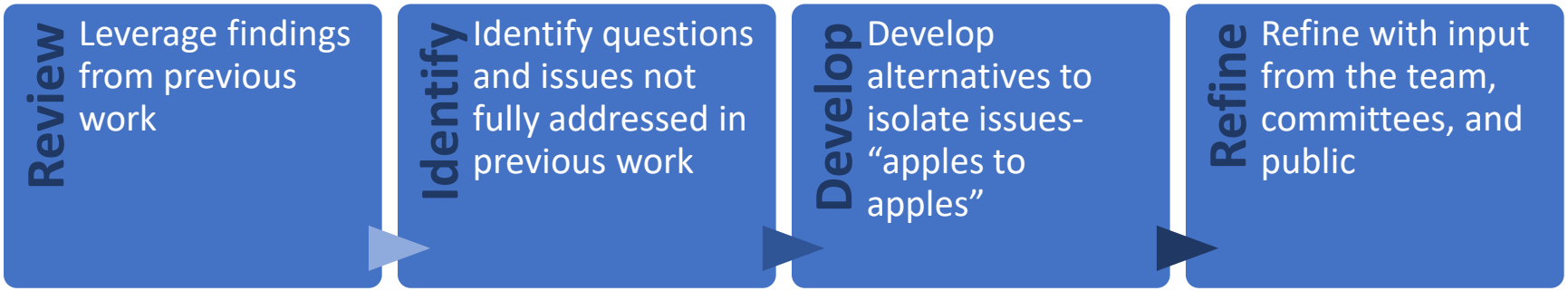


Figure 10. Alternatives Development Process

This section describes the alternatives advancing into evaluation, alternatives considered but not advancing into evaluation, and options explored around the 400 South viaduct.

3.1 Definitions for Alternatives Advancing into Evaluation

The FOLR Study set the framework for the TechLink TRAX Study, providing initial analysis and evaluation of alternatives, with a general understanding of the best-performing alignments and connections. Because of this, the alternatives developed for this study offer minor nuances

between alternatives, as the general preferred scenarios have been vetted through that previous work. The alternatives discussed in the following sections primarily share the same alignment, with some exceptions as discussed below. Alternative 1, also called the Baseline Alternative for the TechLink TRAX Study, is the Strategic Plan Final Recommended from the FOLR Study, with some minor modifications. All alternatives defined for this effort and detailed below recommend realigning the Red Line service through the Granary District, adding a new direct connection from the Salt Lake City International Airport to the University of Utah with an extension into Research Park called the Orange Line, and switching the termini of the Blue and Green Lines.

The advancement of these alternatives into further evaluation was approved by the Technical Advisory Committee (TAC) on January 16, 2024, and the Steering Committee on January 31, 2024.

3.1.1 Alternative 1 – Future of Light Rail Baseline

Alternative 1 is the alternative derived from the FOLR Study (Figure 11). In this baseline alternative, the **proposed Orange Line would directly connect the airport to the University of Utah** without requiring a transfer and include a spur into Research Park connecting along Arapeen Drive. The Orange Line would use the existing TRAX infrastructure from the airport, currently the Green Line, to 400 West and continue along existing track to connect to Salt Lake Central Station. From Salt Lake Central Station, the Orange Line would then continue on new infrastructure along 600 West, turning east onto 400 South, traveling on the north side of the 400 South viaduct (see Section 3.3, below), and continuing to travel east on 400 South to connect into the existing TRAX infrastructure at the Main Street and 400 South intersection. The Orange Line would continue eastbound along the existing tracks to South Campus Drive and Mario Capecchi Drive, where it would turn southeast on new infrastructure and travel southeast to connect into Arapeen Drive. The Orange Line would serve the following new stations, two of which would be shared with the realigned Red Line:

- West Temple (75 West/400 South) Station (would also serve the proposed Red Line realignment)
- Pioneer Park (325 West/400 South) Station (would also serve the proposed Red Line realignment)
- Mario Capecchi Station
- Arapeen Station

The Red Line would be realigned to 400 West, using the existing inactive rail corridor with new track infrastructure, to serve the Granary District and provide a direct connection between the Granary District and the University of Utah. The realigned Red Line would utilize the new connection along 400 South as mentioned above, turn south at 400 West, and then connect to the Ballpark Station, using the inactive Ballpark Spur (historically

also called the American Spur) near 900 South. The new Red Line service on 400 West would include approximately five new stations, two shared with the Orange Line service:

- West Temple (75 West/400 South) Station (would also serve the proposed Orange Line)
- Pioneer Park (325 West/400 South) Station (would also serve the proposed Orange Line)
- 600 South Station
- 800 South Station
- 300 West Station

The Blue and Green Line northern termini would switch in this alternative, as recommended in the FOLR Study scenarios. This is an operational change and would not require new infrastructure. At South Temple and 400 West, the Blue Line would turn north and follow the existing track to the airport, and the Green Line would turn south and follow the existing tracks to terminate at Salt Lake Central Station.

Additionally, a new two-block non-revenue connector on 400 West between 400 West and 200 South, adjacent to Pioneer Park, would be constructed to serve as a "pocket" to stage a potentially disabled train or extra trains for special events. Currently, the Ballpark Spur serves as this "pocket," but with the Ballpark Spur becoming operational, the system would need a replacement. The connector would also provide additional redundancy for the system.

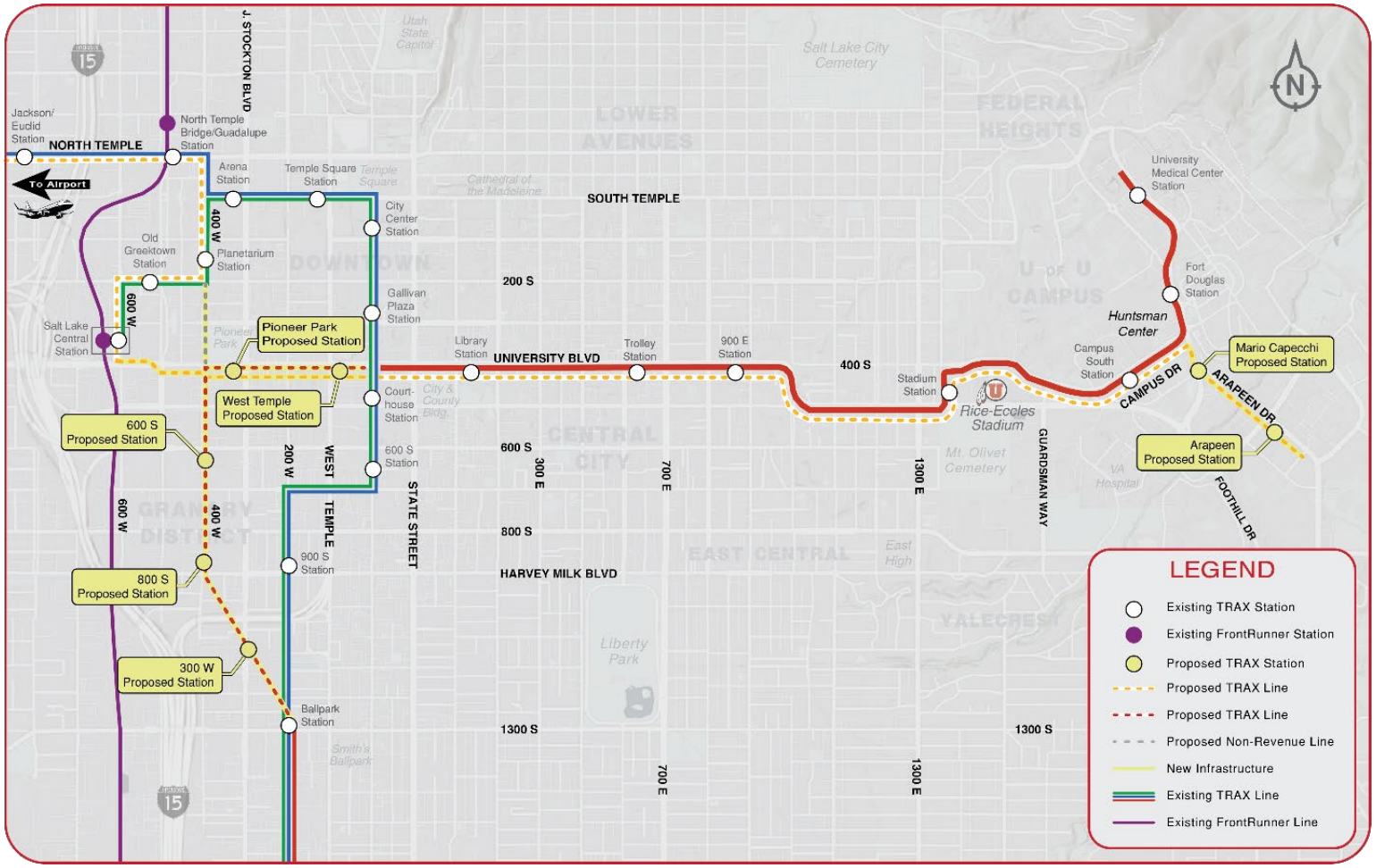


Figure 11. Alternative 1 – Future of Light Rail Baseline

3.1.2 Alternative 2 – Elevated on 400 West

Alternative 2 follows the same alignment and service recommendations as Alternative 1. This alternative explores elevating the track on 400 West over 500 South and 600 South to avoid at-grade crossings of these two major UDOT arterials that connect to the on-and off-ramps of I-15 that carry heavy commuting traffic loads at peak times of the day (Figure 12). Figure 13, below, shows the proposed alignment and elevated section for Alternative 2. **For Alternative 2, the only deviation from Alternative 1 is the elevated light rail section from 400 South to 700 South along 400 West and an elevated station at 600 South.**

Figure 12. Alternative 2 – Elevated Red Line on 400 West

To support the development of the Granary District as a walkable neighborhood, an elevated track could include additional space for pedestrian and bicycle connections. Elevated track could have the potential to improve transit time efficiencies as well as maintain intersection and corridor operations for access to and from I-15. Elevating the structure also opens possibilities for various uses underneath the viaduct, such as parking, greenspace, or multi-use paths. However, elevating the TRAX alignment could also substantially increase cost, increase potential visual impacts, and reduce potential pedestrian activity from street-level activities associated with an at-grade alignment.

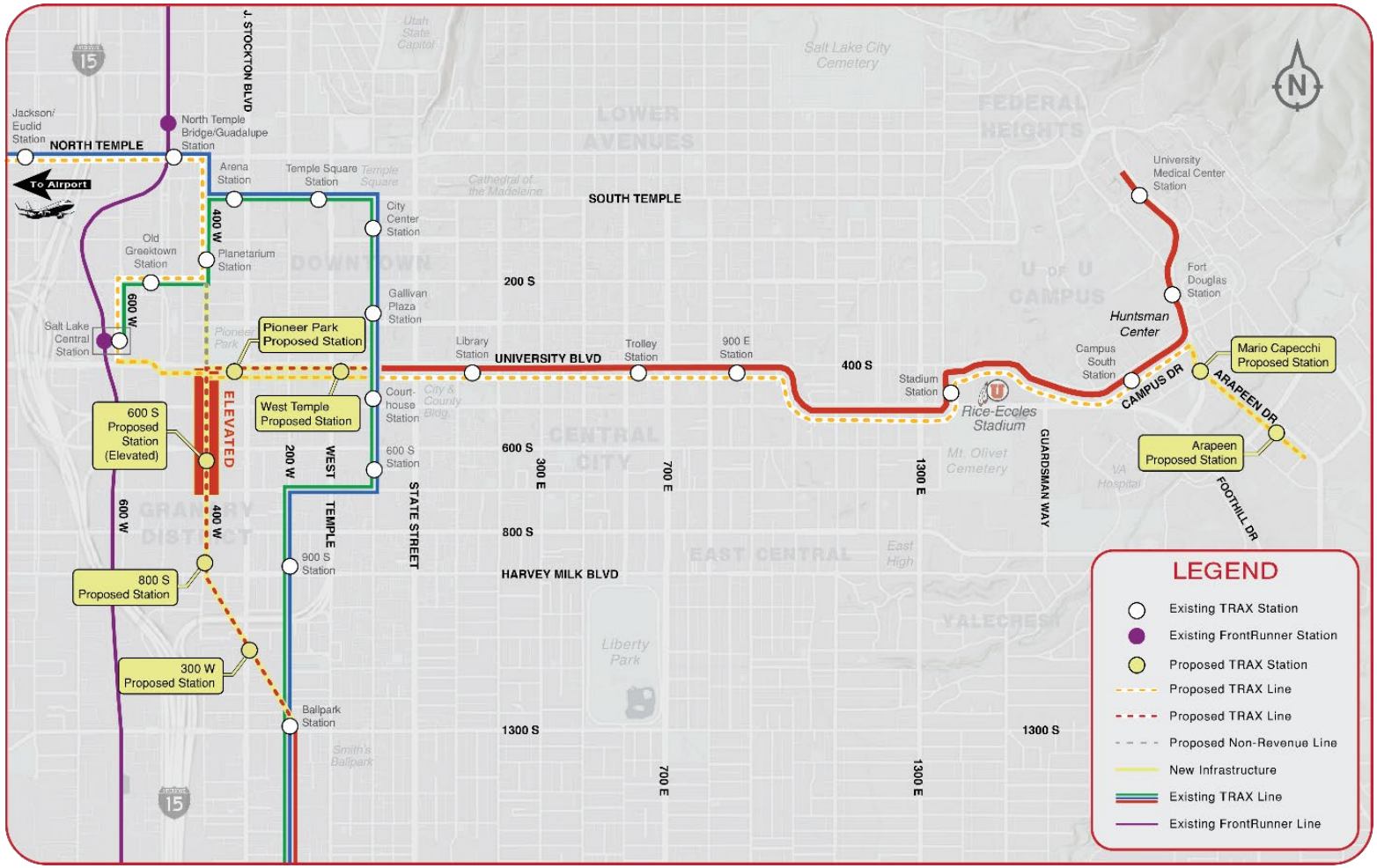


Figure 13. Alternative 2 – Elevated on 400 West

3.1.3 Alternative 3 – Direct on 400 West

Alternative 3 includes similar elements from Alternative 1, with the exception of the Orange Line alignment through the downtown area. **This alternative proposes to turn north at 400 West, providing a more direct connection to existing infrastructure and reducing the number of 90-degree turns in the light rail alignment** (see Figure 14).

The Orange Line would still directly connect the airport to the University of Utah and include the extension into Research Park. The proposed Orange Line would follow the existing tracks from the airport, currently the Green Line, to 400 West, where it would follow the existing track for two blocks and then continue on 400 West for an additional two blocks where new track and an additional station near Pioneer Park is proposed. The new connector along 400 West between 200 South and 400 South would no longer function as a non-revenue connector, but as a full-service TRAX line. The new track would then turn east onto 400 South, connecting and continuing to the existing Red Line tracks at Main Street and 400 South. The Orange Line would continue along the existing tracks and would diverge from the Red Line at Arapeen Drive and serve one new station at the heart of Research Park. In addition to the new stations noted above for Alternative 1, there would be an additional station (300 South Station) to be served by the Orange Line, south of 300 South on 400 West.

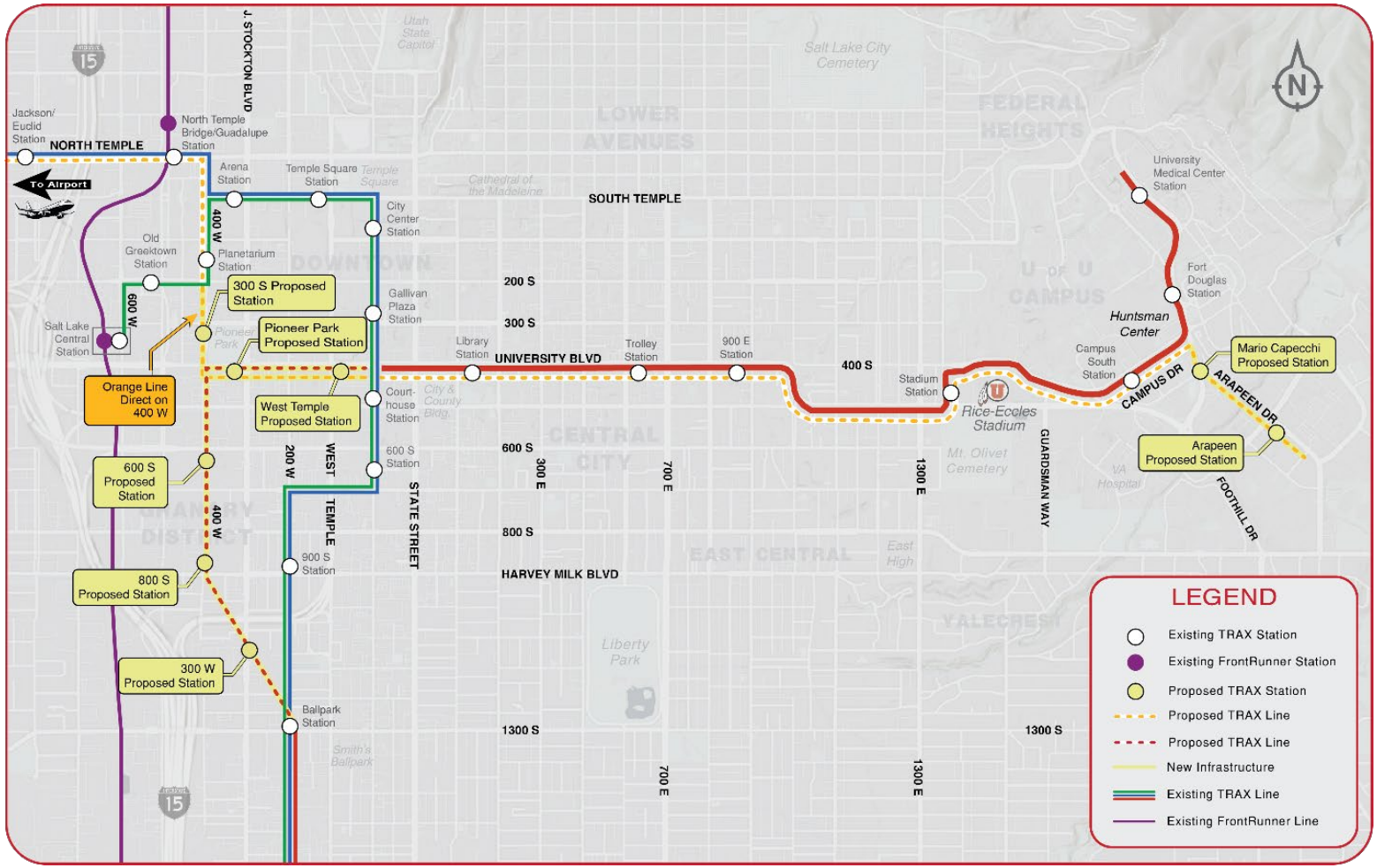


Figure 14. Alternative 3 – Direct on 400 West

3.1.4 Alternative 4 – University of Utah Realignment

Alternative 4 has all the same elements from Alternative 1 with one exception: a realignment of the **existing TRAX line at the University of Utah from South Campus Drive (on the north side of the Rice-Eccles Stadium) to the south side of the stadium, along 500 South.** See Figure 15.

The Orange Line and Red Line would follow the existing Red Line tracks from downtown Salt Lake City along 400 South, through the S-Turn west of the stadium, and then directly onto 500 South. The realignment would have the Red Line and Orange Line stay on 500 South and would shift from center-running to side-running, shifting the tracks to the north side of 500 South and relocating the Stadium Station to the southwest side of the stadium. The Red Line and Orange Line would then connect back onto South Campus Drive east of the stadium and reconnect with the existing Red Line tracks. The Orange Line would continue along the existing alignment and then connect into Research Park via the proposed Arapeen Drive Connector. This realignment could be included as an element for Alternatives 1, 2, or 3, but is considered explicitly as part of Alternative 4.

No previous planning work had been completed prior to this study that defined the alignment and potential station relocation in this area. Therefore, development of this alternative included an exploration of a wide range of alignment and station location options in collaboration with the University of Utah, Salt Lake City Public Utilities (SLCPU), and UDOT. The proposed alignment and station location advanced as Alternative 4 were developed to:

- Minimize impacts to elements of the built environment along 500 South, including the SLCPU drinking water reservoir, well, and related water utilities; the Rice-Eccles Stadium; and the Mount Olivet Cemetery and Reservoir
- Provide a relocated Stadium Station location that is safe and accessible for high volumes of riders during events
- Maintain single-occupancy vehicle capacity along 500 South (a UDOT-owned facility)
- Minimize challenges associated with the steep grades along 500 South

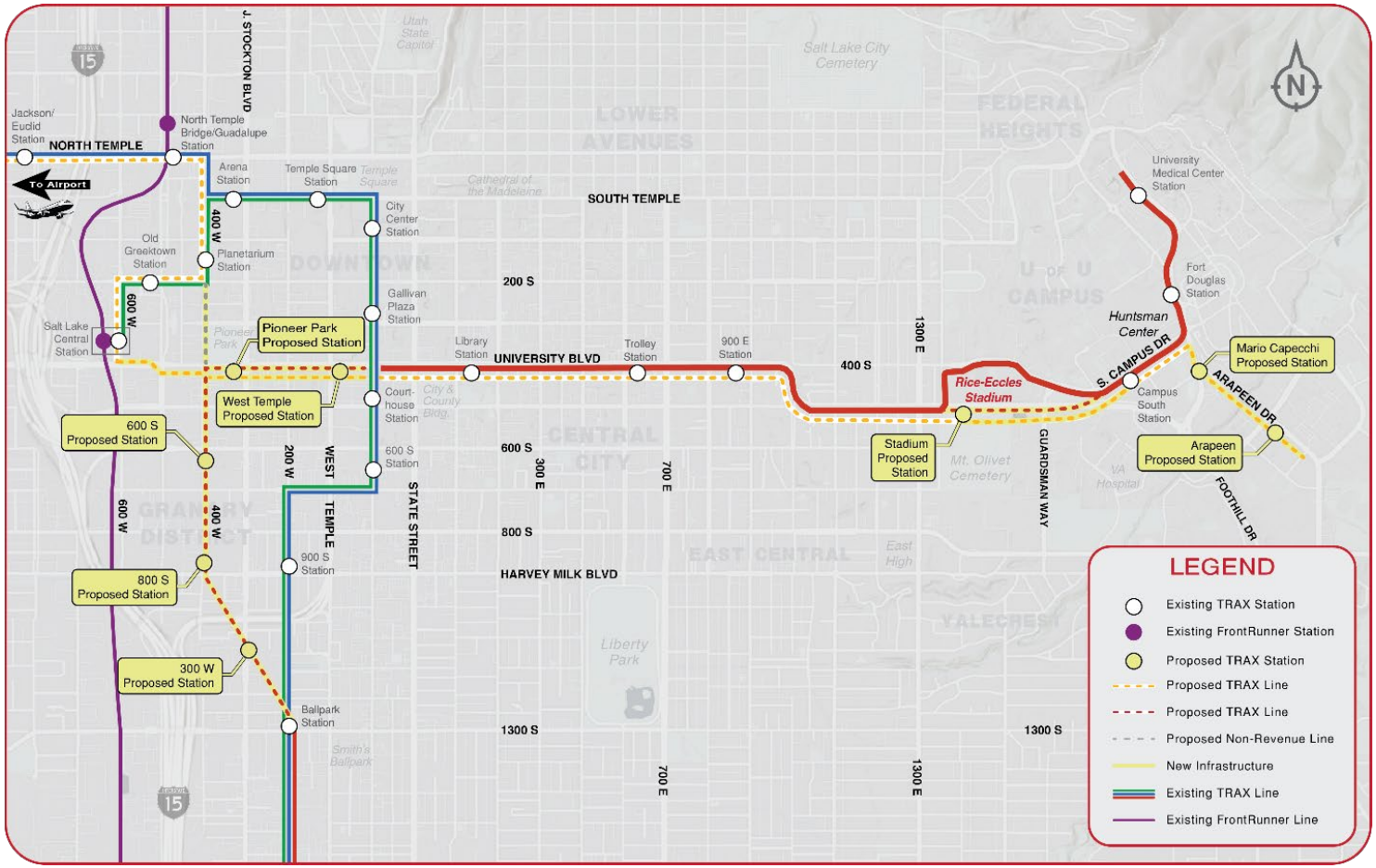


Figure 15. Alternative 4 - University of Utah Realignment

3.2 400 South Viaduct Options

This study also explored various alternative alignment options for potential future TRAX light rail to traverse along the 400 South viaduct between 500 West and 600 West and to connect into the Salt Lake Central Station (applicable to Alternatives 1, 2, and 4). The FOLR Study investigated several alternative alignment options (north of the viaduct, south of the viaduct, and split – one track on each side of the viaduct) in this area but did not select an alignment for how TRAX will traverse along the viaduct. As part of the TechLink TRAX Study, the team considered a range of options, including:

Of Note: The North Viaduct Option was selected as the preferred alignment option to traverse the 400 South viaduct and is used in all alternatives, as applicable.

- North Viaduct Option
- South Viaduct Option
- Split Viaduct Option
- Rebuild Viaduct Option

Based on initial analysis, the team further refined and explored design tradeoffs for the North and South Viaduct options and removed the Split and Rebuild Viaduct Options from additional consideration. The study team determined that the Split Viaduct Option would result in property impacts to both sides of the viaduct, whereas with the North and South Viaduct Options, impacts would be limited to one side. To reduce total property impacts, the Split Viaduct Option was not considered as a potential alignment concept. Due to the substantial upfront capital cost and inefficient use of resources to replace a structure that still has approximately 50 years of useful life, the team is not advancing the Rebuild Viaduct Option for further consideration.

From a review of tradeoffs for the North and South Viaduct Options, the North Viaduct Option was selected as the preferred alignment option to traverse the 400 South viaduct. This recommendation was advanced for the following reasons:

- Lower cost
- Minimizes impacts to private property and businesses on the south side of the viaduct by utilizing currently undeveloped parcels owned by the University of Utah and the RDA. A portion of these parcels has been preserved for potential future use as part of this project.[1]

[1] The RDA applied for and received a corridor preservation grant from Salt Lake County in 2021 to preserve 23 feet along the north side of the viaduct (north of the existing 400 South Frontage Road).

- Avoids potential safety concerns with light rail crossing the planned 400 South multiuse trail on the south side of the viaduct

Alternatives 1, 2, and 4 assume the North Viaduct Option as part of their alternative definition. **Additional detailed information on the consideration of options in this area is provided in Attachment E1, 400 South Viaduct TRAX Alignment Memorandum**.

3.3 Alternatives Considered but Not Advanced

3.3.1 Red Line Realignment on 600 West

Several agencies and stakeholders have historically expressed interest in evaluating 600 West as an alignment for new service into the Granary District. A potential alignment along 600 West was considered in previous studies (Salt Lake City Downtown Streetcar Alternatives Analysis [2014] and Downtown Salt Lake City Rail Extension & Connections Feasibility Study [2021]) and described in greater detail in Section 2, above.

This concept of providing an alignment on 600 West was explored initially as part of this study. The concept maintains the same elements from Alternative 1 but shifts the Red Line realignment from 400 West to 600 West between 400 South and 700 South. The goal was to utilize the existing grade separation of the 500 South and 600 South viaduct on- and off-ramps at I-15 to avoid at-grade crossings that could potentially disrupt peak traffic demand (Figure 16).

This concept was considered in the previous studies outlined above and was evaluated in this study with similar results as the previous findings. Realigning the Red Line along 600 West would skirt the Granary District, resulting in reduced ridership potential and poor performing economic development potential compared to 400 West, which would allow redevelopment along both sides of the corridor. To reiterate, as mentioned previously, the west side of 600 West (with over a dozen railroad tracks and I-15 to the west) is not developable land and therefore limits redevelopment opportunities along this corridor. This alignment would also likely increase transit travel times by increasing the distance travelled (approximately 1 additional mile of track would be required), introducing additional 90-degree turns which would slow travel times, and add to overall project costs. For these reasons, the study's project team, TAC, and Steering Committee recommended to not advance this concept into the evaluation phase.

3.3.2 500 South and 600 South Roadway Grade Separation

During coordination with project partners, the concept of grade separating (below grade) 500 South and 600 South in the Granary District was suggested as an option to provide enhanced operational efficiencies for light rail traveling in this area and avoid potential impacts to vehicular

traffic accessing I-15 from these arterials. The large capital costs significant construction impacts and potential groundwater challenges make this a highly complex and impactful project. The large capital investment required was determined to be outside of the scope of this project.

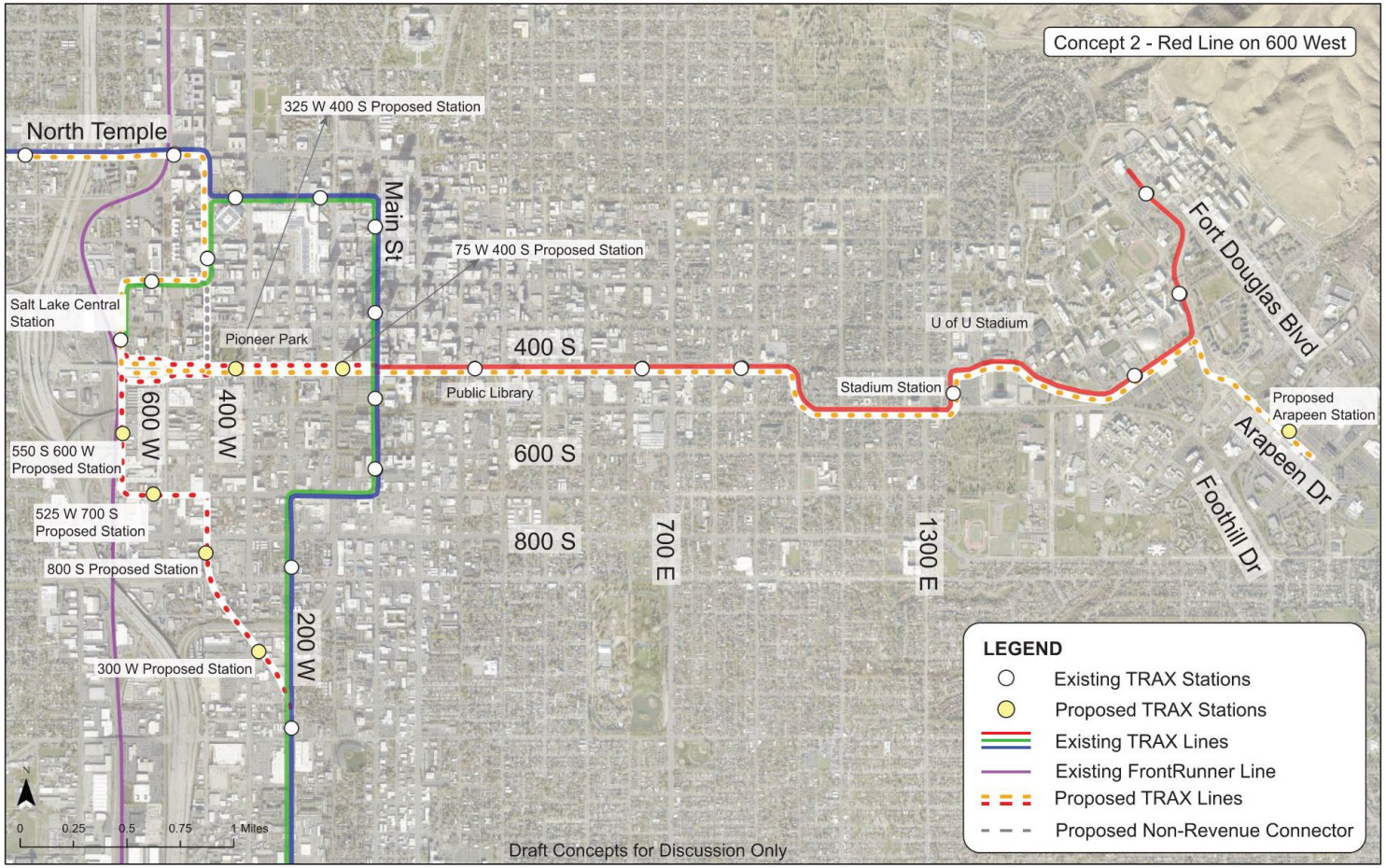


Figure 16. Considered but Not Advanced – Red Line Realignment on 600 West

Attachment E1: 400 South Viaduct TRAX Alignment Memorandum

TechLink TRAX Study

400 South Viaduct TRAX Alignment Memorandum

Overview

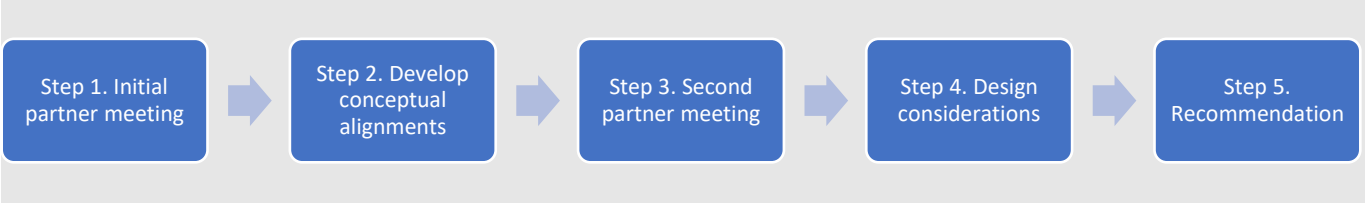
This memorandum documents the consideration and preliminary analysis of alternative alignment options for the potential future TRAX light rail to traverse along the 400 South viaduct between 500 West and 600 West to connect into the Salt Lake Central Station.

The UTA Future of Light Rail (FOLR) Final Report (January 2023) investigated several alternative alignment options (north of the viaduct, south of the viaduct, and split – one track on each side of the viaduct) in this area but did not select an alignment for how TRAX will traverse along the viaduct if this alignment is advanced as part of the TechLink TRAX Study.

The TechLink TRAX Study team has furthered this discussion by meeting with agency partners, developing conceptual alignment options, describing tradeoffs between alignment options, and ultimately making a recommendation on the alignment option to be used in the TechLink TRAX Study and future phases of project development if an alignment is advanced in this area. This memorandum describes these process steps and the viaduct alignment recommendation being advanced as part of the TechLink TRAX Study.

Process

The process for reaching a recommendation occurred through the following steps, which are detailed throughout the memorandum.



Step 1. Initial Partner Meeting – July 17, 2023

UTA and the study team held a meeting with key affected project partners – Salt Lake City (SLC), SLC Redevelopment Agency (RDA), and the University of Utah – to introduce the TechLink TRAX Study and understand each partner's perspectives on the interests and challenges in this area. The following topics were discussed (full meeting notes are provided at the end of this memorandum):

- Overview of the TechLink TRAX Study and findings from the previously completed FOLR Study
- UTA operations considerations
    - Potential non-revenue service needed on 400 West between 200 South and 400 South (unrelated to the viaduct conversation).
    - Would like a crossover south of the Salt Lake Central Station platform (note that a crossover would be required to operate revenue service and avoid having to hold trains outside the station if there is already a train at the station).
    - Potential for using Cereal Foods/Mariana tracks for the extended tail track if needed.
    - Suggested potential option of reconstructing the viaduct so light rail can remain in the center of the road at-grade with the structure raising on both sides (this would eliminate crossing conflicts).
- SLC RDA considerations
    - There is planned future development on the north side of the viaduct (would likely require closing the frontage road).
    - TRAX alignment would take precedence, just need to understand where the alignment would go. Would like to understand the estimated property needed (previous estimates indicated 25 feet needed for both tracks).
- SLC transportation considerations
    - SLC is building a 10-foot shared-use trail on the south side of the viaduct that will continue along 400 South to the new bike lanes along 300 West, to be constructed in 2025.
- UTA Transit-Oriented Community (TOC) considerations
    - The TOC Department is in the process of redeveloping the Salt Lake Central Station and currently has 10% plans. Plans include an office building and changes to how buses circulate.

- Would like to understand if the TechLink TRAX Study team will make recommendations on moving the TRAX platform or any other potential changes that would impact the redevelopment.
- There was discussion on potential changes to the TRAX platform location and to 600 West. No changes were identified.

Step 2. Development of Conceptual Alignment Alternatives

Following the initial meeting, the study team developed two conceptual alignment options: North Viaduct and South Viaduct (Figure 1).

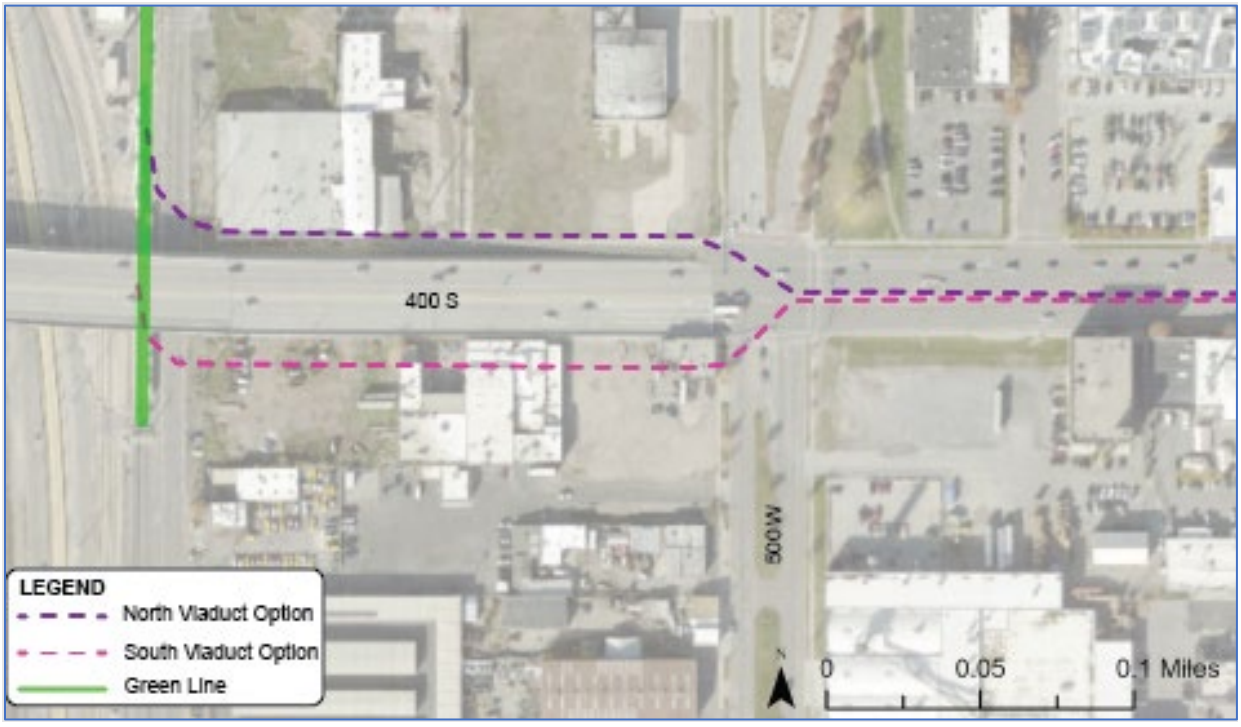


Figure 1. Proposed Alignment Options – North Viaduct and South Viaduct

North Viaduct Option

The North Viaduct potential conceptual design and cross-section is shown in Figure 2 and Figure 3. The North Viaduct Option would cross the intersection of 500 West/400 South and run along the north side of the 400 South viaduct. The configuration could allow for either a 12-foot fire lane alongside the proposed concept for emergency access (if no vehicular access is desired) or an 11-foot one-way road with a 4-foot shoulder (if vehicular access is desired). This concept also includes 10 feet of separation from the viaduct wall.

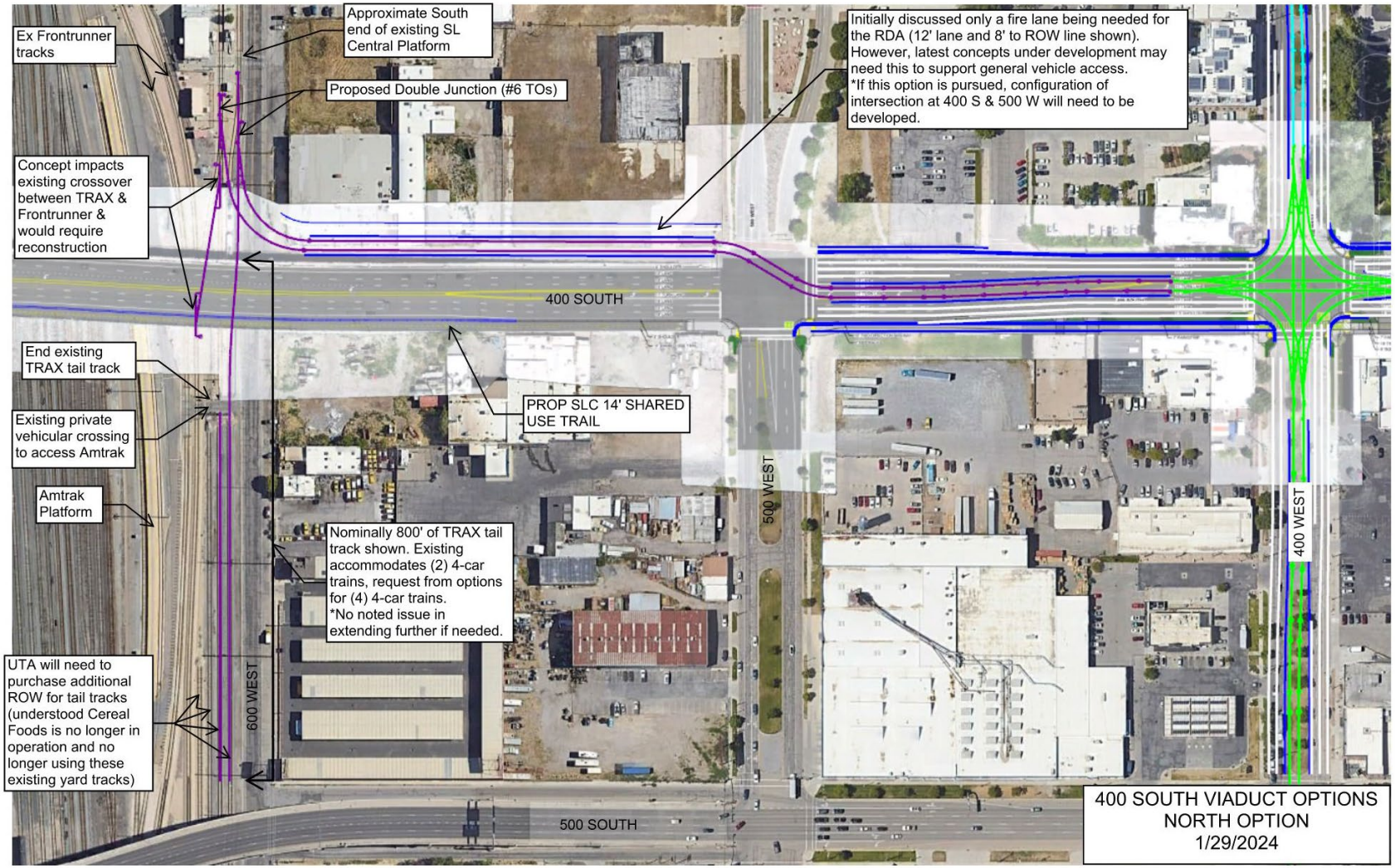


Figure 2. North Viaduct Option

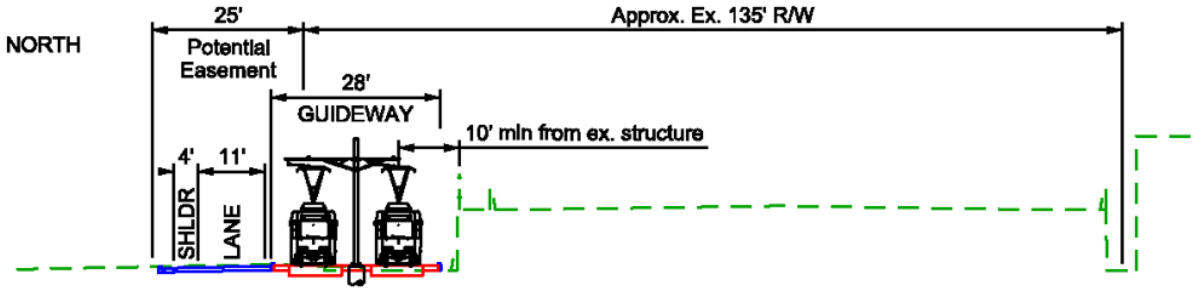


Figure 3. North Viaduct Option Cross Section

South Viaduct Option

The South Viaduct potential conceptual design and cross-section is shown in Figure 4 and Figure 5. The South Viaduct Option would cross from the center of 400 South to the south side of 400 South at the 500 West intersection and run along the southern edge of the viaduct. It includes 10 feet of separation from the viaduct wall.

Options Considered but Not Advanced

Split Viaduct

The FOLR Study considered a "split viaduct" concept where one track was aligned on the north side of the viaduct and the other track was aligned on the south side of the viaduct. **The study team determined that a split viaduct option would result in property impacts to both sides of the viaduct, whereas with the North and South Viaduct options, impacts would be limited to one side. To reduce total property impacts, the split viaduct concept was not considered as a potential alignment concept.**

Rebuild Viaduct Option

During the partner meetings discussed above, the option of continuing the light rail alignment in the center of 400 South from 500 West to 600 West instead of to one side of the viaduct) and rebuilding the viaduct around the center-running light rail was proposed. The benefit of this proposed concept was to reduce the number of curves in this section and therefore provide savings over the long term with reduced maintenance costs to replace the curve in the future. However, the 400 South Viaduct was constructed in the early 2000s, and the useful lifespan of the structure is estimated to be approximately 75 years. **Due to the substantial upfront capital cost and inefficient use of resources to replace a**

structure that still has approximately 50 years of useful life, the team is not advancing this option for further consideration. In the future, as the structure approaches its useful life and requires replacement, this could be an option to pursue at that time.

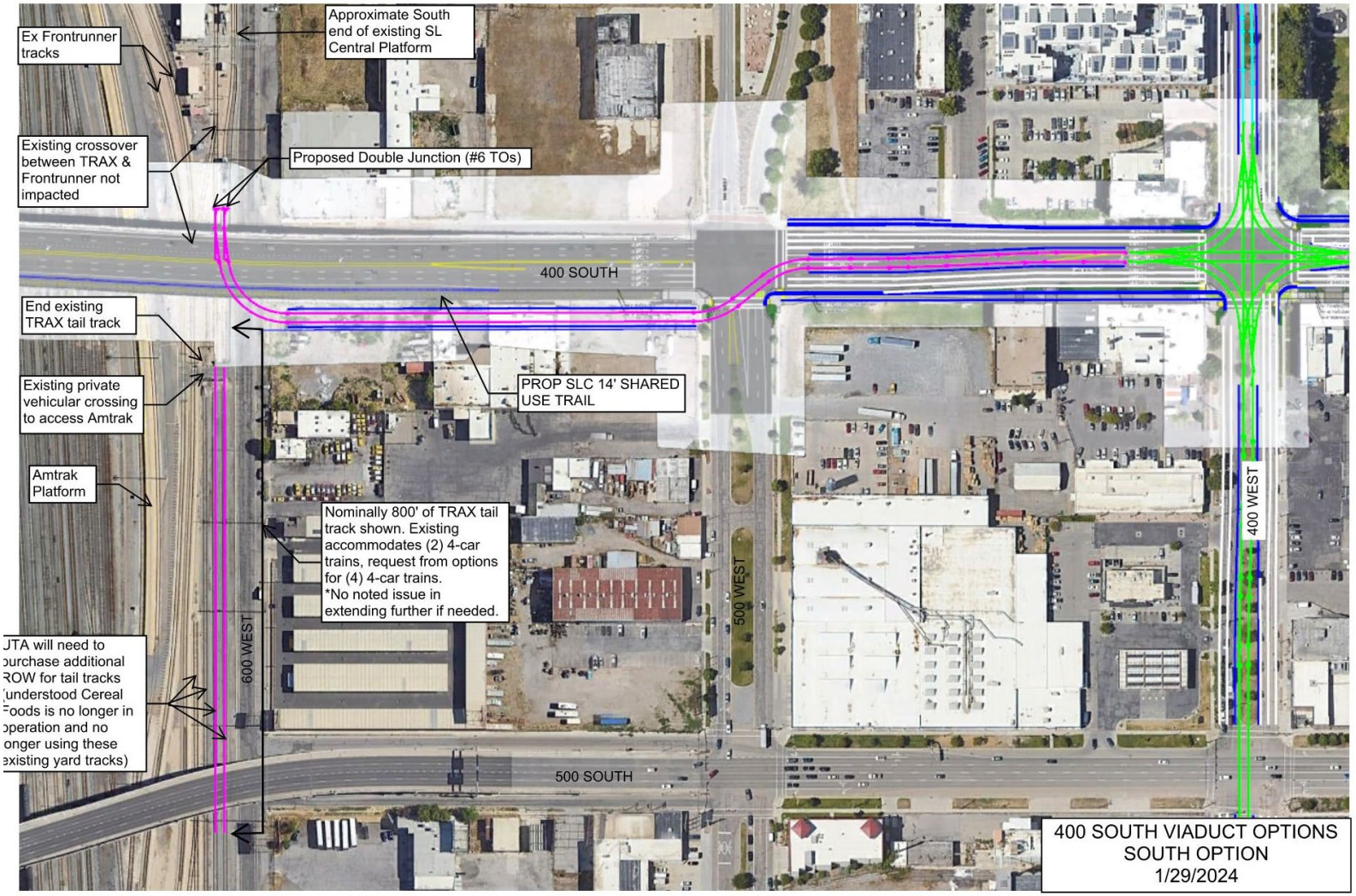


Figure 4. South Viaduct Option

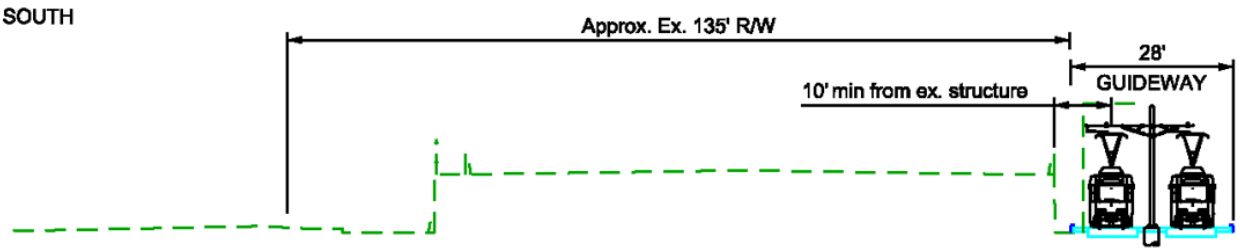


Figure 5. South Viaduct Option Cross Section

Step 3. Second Partner Meeting – January 30, 2024

A second meeting was held to discuss the two viaduct alignment options on January 30, 2024. Representatives from UTA (Operations, Service Planning, TOC, and Environmental) attended, in addition to RDA and SLC Transportation staff. The following summarizes the discussion (full meeting notes are provided at the end of this memorandum):

Of note: Both the RDA and the University of Utah own parcels adjacent to the viaduct (north side) and have plans to redevelop them into a technology and innovation-focused district with convenient transit access to the University of Utah campus. Parcels on the south side of the viaduct are owned by two private property owners.

North Viaduct Option

- The study team presented an overview of the North Viaduct Option (Figure 2).
- UTA Operations discussed some needs for operations for future service as alignments are considered and designed. Tail track on 600 West, south of 400 South, would be needed to execute service for both the existing Green Line and proposed Orange Line. The opportunity to extend longer tail track may be to purchase the now-defunct Cereal Foods track to the south.
- The RDA has developed more detailed plans for their parcels on the north side of 400 South since the July meeting; currently, the frontage road is proposed to become a two-way street, providing access to a covered parking garage. Frontage road cross sections show space allocated for the 23-foot easement onto RDA property; however, with this latest design, a northern TRAX alignment would impact their planned development. Concerns over how the 500 West and 400 South intersection would operate with a two-way frontage road were also raised. A new

midblock street, Woodbine Road, is also proposed on this block and would utilize the frontage road for access.

- SLC mentioned a desire for clarity on the requirements and parameters behind the Corridor Preservation Grant award through Salt Lake County.

South Viaduct Option

- The study team presented an overview of the South Viaduct Option (Figure 4).
- The design team noted this alignment offers a cleaner design connection to the Salt Lake Central Station than routing on the north side. The track alignment through the 500 West and 400 South intersection would involve fewer turns for the train but would require bicyclists using the 400 South mixed-use path to cross tracks at an angle, potentially causing a safety hazard.
- UTA noted that this alignment would not impact existing crossovers but would require realignment of the vehicle access to Amtrak and a longer distance to travel for drivers at end-of-line facilities.
- The team noted that a south side alignment would encroach into and impact private parcels and buildings on the south side. A further right-of-way discussion on potential relocations or acquisitions will be needed.

Step 4. Option Considerations

For the purposes of understanding tradeoffs between the North and South Viaduct options, a summary table was prepared (Table 1):

Table 1. Summary of Design Considerations

Topic	North Viaduct Option	South Viaduct Option
Property Impacts	• Both property owners are public agency partners – the University of Utah (six unique parcels) and Salt Lake City RDA (three unique parcels). • RDA applied for and received a corridor preservation grant from Salt Lake County in 2021 to preserve 23 feet along the north side of the viaduct	• Would likely require full property acquisition on 11 parcels (two unique owners) on the south side of the viaduct.[1] • There are two buildings on the south side of the viaduct that may need to be acquired for the project. Compliance with the Uniform

[1] This is an assumption made during the planning stage with limited information. These assumptions would be refined if this option were advanced.

	(north of the existing 400 South Frontage Road).	Relocation Act is required for all acquisitions.
Cost	• Costs for track infrastructure would likely be similar between both alignments. • University of Utah has agreed to be a willing seller of 0.174 acres at an estimated price of $642,000 (2021 value). That value is now estimated to be approximately $1.13 M,[2] of which UTA would need to make up the difference of approximately $500,000. Local match used was the RDA property.	• Costs for track infrastructure would likely be similar between both alignments. • Acquisitions and potential relocations could be more costly compared to the North Viaduct Option. • Total property value for the parcels/buildings on the south side of the viaduct from the Salt Lake County Assessor website values is approximately $6.7M. Note that actual cost is likely to exceed what is provided by the Salt Lake County Assessor values. • Acquisition with private property owner may also extend overall project timeline.
Design Considerations	• Potential intersection functionality concerns at 400 South and 500 West. • Special trackwork in proximity to the TRAX platform (just barely meets UTA design criteria).	• Would need to purchase additional tail track to the south.
Development Impacts	• Light rail alignment would not change the RDA's developable area. • Alignment would need to be planned in coordination with the one-way access road heading west between 500 West and 600 West.	• Currently used for industrial type uses. • Planned development or redevelopment south of the viaduct is unknown.
Active Transportation Impacts	• Planned 10-foot viaduct trail on south side of the viaduct would be unaffected.	• Planned 10-foot viaduct trail likely not impacted; however, bicyclists would need to cross the tracks at a skewed angle, causing a potential safety hazard.

[2] This value was provided verbally to the project team based on a 2023 assessment.

Step 5. Recommendation

From a review of tradeoffs for the North and South Viaduct options, the North Viaduct Option was selected as the preferred alignment option to traverse the 400 South viaduct. This recommendation was advanced for the following reasons:

- Lower cost.
- Minimizes impacts to private property and businesses on the south side of the viaduct by utilizing currently undeveloped parcels owned by the University of Utah and the RDA. A portion of these parcels has been preserved for potential future use as part of this project.
- Avoids potential safety concerns with light rail crossing the proposed 400 South multi-use trail on the south side of the viaduct.

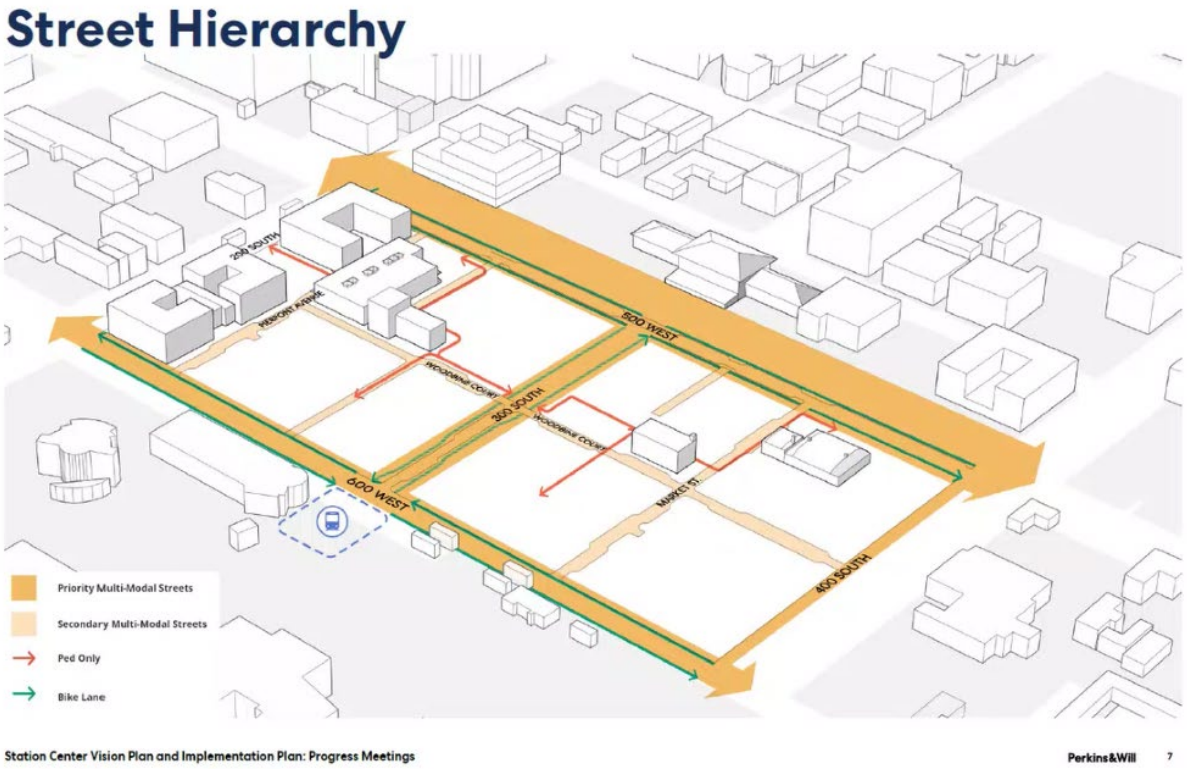
July 17, 2023 - Meeting Notes

Attendees

UTA: Patti Garver, Alex Beim, Grey Turner, Paul Wells, Dave Steadman, Spencer Burgoyne, Sean Murphy, Clint Campbell, Doug Malmborg, Kayla Kinkead, Paul Drake, Chad Taylor
Salt Lake City: Julianne Sabula, Cara Lindsley, Lara McLellan, Ashely Ogden
Consultant Team: Claire Woodman (Horrocks), Katie Kourianos (Horrocks), Brooke Dempster (Parsons), Bill Lipfert (Hatch)

- **Welcome and Intros**
- **TechLink Study**
    - Brief overview and purpose, based largely on findings from the Future of Light Rail (FOLR) Study. Will look at more detailed information on:
        - Extending Red Line farther west to Ballpark spur, and taking to Ballpark Station
        - Looking at new Orange Line which would provide a direct connection between Research Park and SL Central along 400 South
    - TechLink is advancing conceptual design during this planning phase and hoping to head into environmental at the conclusion of this study; some design will happen at this phase, but no survey/utilities, etc. (additional design will happen during environmental)
    - Will not be able to make a "final" decision during this planning process
    - Previous options considered for making a connection to SL Central from 400 South:
        - North side of viaduct
        - South side of viaduct
        - Split on north/south of viaduct (FOLR)
    - Bill Lipfert noted the planned complex operation of Orange Line running through and Green Line (switched with Blue Line) terminating at SL Central. Green Line trains will need to proceed to one of two tail tracks south of the station (in current disused freight yard) to layover before turning back.
        - Need two turn-back tracks that both have to be accessible to run the Orange Line through and run Green Line back
    - An interim phase shows Orange going to the U but not the airport
- **UTA Operations Considerations**
    - Douglas Malmborg - no rail between 400 South and 200 South on 400 West is concerning for emergency situations and re-routing
        - Alex explained non-revenue service could be there as per final recommendation in FOLR

        - Douglas mentioned they could use that part for staging events and other needs
    - Dave Steadman – south side viaduct challenges
        - Would like an added left-hand crossover (forming a diamond) immediately south of the platform, even if that connection does not connect with the tail tracks.
        - Bill mentioned this was looked at during FOLR, and had a challenge with geometry in this location
        - No. 6 crossover – looked at making it universal with right and left-handed; but it did not fit; left-hand could be put in as diamond, but can't extend to tail track with the space there
        - Going south - need access to both mainline tracks out of SL Central
    - Brooke Dempster – crossover track on north end, do we need that track?
        - Utilized very little, but is the only connection between TRAX and FrontRunner (maintenance equipment, etc. would need to be in that area)
        - Link considered vital
        - The link could be moved farther south to maintain the usage
        - Discussion about disused freight yard that would be partly taken for the tail tracks in the FOLR concept design. Was built by UTA as part of FrontRunner when there was freight activity in the Granary District. Cereal Foods and Mariani were the largest user but appear to no longer be in business at this location. **UTA will check on ownership/lease agreements. Spencer check with Shelly on this.**
- **Salt Lake City RDA Considerations**
    - Patti Garver – future development plans on north side of viaduct?
        - City would close the road on the north side if rail went there
        - Innovation District (not happening now); but would anything in the future conflict there?
    - Ashley Ogden – shared RDA development plans
        - Anticipated street network for the two blocks to the north
        - High-level, early **DRAFT** layout below



- TRAX alignment would take precedence; just need to know where things would go if alignment ends up on north side (south side would be more feasible)
- RDA property impacts for north side
  - It was previously estimated that if TRAX were on the north side of the viaduct it would take 25' of RDA property (both tracks)

- David Steadman - Would it be feasible for the TRAX alignment to go straight and have the viaduct redesigned?
  - TRAX could be in the middle at-grade, then viaduct would be redesigned to rise up and straddle on both sides. This would eliminate crossing conflicts.

- **SLC Transportation Considerations**
  - City is building a 10-foot shared-use trail on the viaduct (RFP out now)

        - Along the south side on the viaduct with a barrier between traffic (would narrow the lanes to do this)
        - Plan is to extend this east to 300 West's new bike lanes
        - Claire and Grey both noted that the trail and rail intersection would be difficult
        - **Julianne to share conceptual plans with team**
- **UTA TOC Considerations**
    - Sean Murphy – major project looking at redesigning SL Central
        - Work is currently proceeding with 10% concept design; working on transit layout right now
            - FrontRunner platform won't move (how people access it may)
            - TRAX platform could potentially move based on TechLink study Preferred Alternative
                - Moving the TRAX platform to the north has a large impact on what type of bus circulation goes in (in addition to UTA HQ building and other commercial buildings that are being planned onsite)
            - 10% Concepts going to board by end of 2023; if greenlit, 60% design will advance in 2024 and be completed by May 2025
            - WSP is working on alternatives for bus circulation through this area. There was discussion about other potential changes at the station.
    - Bill Lipfert noted that if the TRAX platform moves north, it would ideally be reconfigured with a certain turnback track for the Green (or Blue) Line. This means three station tracks with two island platforms. This would eliminate the supervision and security issues with a turnback occurring at a remote tail track location. It would be more customer-friendly.
        - There was discussion about the feasibility of closing the two blocks on 600 West in this area to support such a concept. Patti asked Julianne about the feasibility of this and she responded that this was more of an RDA decision. Sean indicated that moving the station north was net neutral in terms of site bus flow.
    - Patti – can 600 West be closed to traffic here?
        - Cara explained there will be a lot of challenges already to getting around (500 West planned for Green Loop); 300 South is pedestrian-focused shared street concept (Festival Street)
        - Ashley – hoping to minimize getting vehicles into his area; 600 West would be contemplated as a point for parking (on the west side)

- Paul Wells asked about a TRAX connection on 400 West in the Granary. Patti and Alex responded that a two-block non-revenue connector was part of the FOLR recommendations. Paul asked about the track configuration at Main Street/400 South. Bill Lipfert answered that a full grand union was assumed at this location under FOLR. However, there are trade-offs, including cost, maintenance complexity and constraints on where Courthouse (existing - South) and Courthouse (future - potential West) platforms are located. TechLink will focus on this location as well. Paul expressed a desire to reconfigure TRAX wherever possible to avoid roadways ending at track locations. This is a place where motorist confusion can result in a car hung up on the tracks, blocking light rail and requiring a tow truck for extrication.

- **Wrap-up/Next Steps**
  - Claire presented next steps/action items
    - UTA (Spencer) to check with Shelly to pull the Cereal Foods agreement for ownership and freight rights
    - SLC Transportation (Julianne) to ask Suze about the timing for the trail and share conceptual drawings with the study team
    - UTA (Sean) to share anything possible for SL Central redesign
      - Can do this over a call rather than sending out
    - TechLink team to talk internally; will follow up in next few weeks/month on plan to move forward and/or reconvene group for further discussion

January 30, 2024 - Meeting Notes

Attendees

UTA: Patti Garver, Alex Beim, Gray Turner, Paul Wells, Dave Steadman
Salt Lake City: Julianne Sabula, Cara Lindsley, Mary Sizemore, Lara McLellan, Heather McLaughlin-Kolb, Andy Kitchen (Civil Science; Consultant to SLC on 400 South Bike/Ped Project), Jenna Jaye (Civil Science; Consultant to SLC on 400 South Bike/Ped Project)
Consultant Team: Claire Woodman (Horrocks), Alexis Verson (Horrocks), Audrey Edney (Horrocks), Brooke Dempster (Parsons), Chelsea Farnsworth (Hatch)

1. Discussion on north versus south alignment
    a. Splitting the alignments to both north and south was in the FOLR, this team determined not to advance that design because it was impactful to both north and south side properties
    b. Alex – three different alternatives (north of viaduct, south of viaduct, and split) were considered in Future of Light Rail, no final decision was made.
    c. The north side of the viaduct is an existing one-way westbound lane that connects between 500 and 600 W
    d. **North alignment discussion**
        i. Concerns over how well this alignment will work at the 500 W intersection with the proposed RDA redevelopment that includes a lane for traffic and access to a parking structure
        ii. Track can make the turn up 600 W and tie in by the existing TRAX platform, with some track realignments. There would be impacts to the crossover track between FrontRunner and TRAX which would require reconstruction.
        iii. Tail tracks would need to be extended to the south
        iv. Potential to purchase Cereal Foods abandoned track to extend the tail track for storage
        v. Dave - Would be ideal to move the private vehicle crossing to access Amtrak (which is just past the south end of the existing TRAX tail track) south past the end of the extended tail tracks. This would help minimize walking for operators who would need to access the stored trains in short windows to get operational.

vi. Dave – Currently UTA can store 5 cars on one tail track and 4 cars on the other. Ideal would to be able to store four 4-car trains. Currently, some cars are stored elsewhere because there isn't room here.

vii. Discussion about airport operations:
   1. Siding at airport is too far from the end of line to use effectively, operations are less efficient because they can't do cuts and adds there.
   2. Alex – assumption was running two lines to the airport could be done with what is already built, but do we need to reevaluate that? What additional infrastructure would be needed if Orange line is added?
   3. Golf course option? That would be a good place to store
   4. Julianne – platform capacity is something to consider too.

viii. Claire – As a reminder, either viaduct option assumes that the SL Central TRAX platform would not move as a result of this project.

ix. Alex – with FOLR, was there a discussion about a layover at SL Central based on the simulation (Orange Line essentially interlines and Green Line terminates) and the Orange Line would have to sit at SL Central for 5 minutes before moving forward.
   1. Chelsea - Because Orange Line is running through SL Central, if you're trying to hold for schedule, and the Green Line tries to come in/out, it is more of an issue – terminal station for the Green Line, but a passthrough for the Orange. The Green Line would already be sitting there on the track. Could Green Line stage on tail track until ready to make departure to help avoid hold? This should be discussed further.

x. Dave – would also like a cross-over on 400 W
   1. A cross-over every two stations is needed, this is how the rest of the system is built (with the exception of airport line, which they are feeling the constraints from)
   2. There is a cross over north side of SL Central, and one to the south would be needed
   3. There is some verbiage in the FOLR at the end about cross overs, but it does need to be talked about more in TechLink

e. **North of viaduct ROW discussion - SLC**

i. Cara – yes, originally north of viaduct would only be used for emergency access, but they now have plans for a parking structure on that block that they would need to enter and exit from the frontage road

ii. Grey – is it one way (right in, right out)?
    1. Cara – not sure they have that detail yet
iii. Brooke – The conceptual LRT alignment is set 10 feet from viaduct, would need 28' for rail, and 12' lane width to the north
iv. Dave – crossing gate would be needed on southbound 500 West at 400 S and 500 W intersection
v. Grey – this would be similar to 400 W and North Temple, SLC signal staff say it is an issue with trains on the track
vi. RDA is planning for two way traffic on 400 South (north of viaduct)
vii. The 25' easement is something the RDA assumes they would utilize if TRAX goes in on the north side
    1. Grey – where would you go if you came out of the parking structure and head eastbound to 500 West on the frontage road?

f. **South alignment discussion**
i. Cleaner design for tie-in to SL Central
ii. Two turnouts for double junction
iii. Don't impact cross over that exists between TRAX and FrontRunner
iv. Longer path for drivers who are EOLing
v. The rail would cross the new 400 S trail at a skew (in the 500 West intersection) to get to the south side of the viaduct
vi. No major intersection/traffic issues
vii. Would have private property impacts, include potential relocations. Two private property owners on the south side with numerous parcels.
    1. Cara – has communicated with the NW property (south of viaduct) to inquire what was going on – John Seastrand
viii. Julianne – corridor preservation grant (~$370K) and could probably use it here. Can double match as well, not to conflict with Federal.
ix. This may be more on the environmental process side and how UTA operates
    1. UTA's preference is to not take buildings if we don't have to.
        a. If eminent domain that would go through UDOT
x. Skewed angle bike/track crossing not ideal for safety, some lawsuits about that previously
xi. 400 S trail is a partnership with UDOT, and ready to go to construction later this year

xii. Interchange conflicts was one reason it's on the south, same with trail widths, you can get wider trail on the south

g. Dave proposed a concept of reconstructing the viaduct around light rail (light rail would stay in the center of 400 South to minimize curves and have better operations through the 400 South/500 West intersection.

h. Julianne – if the safety issues on the south side with the trail, would UTA explore flangeway fillers of some kind? Often used in other communities
   i. Grey – have not been able to find ones that work

i. **Team will develop a pros-cons matrix to summarize key tradeoffs**

j. Any additional info we should know for this conversation?
   i. Cara asked if the project team can share cross sections and design
   ii. Understand some differences with property impacts
      1. Seems like a con would be buying out properties on the south
      2. From a NEPA standpoint, it'll be less impactful on the north side
      3. SLC RDA estimates $6.5M per acre (roughly) in this area
      4. Cara – not totally opposed to north alignment, but we need to ask the U of U also
      5. Note: value of the land here is much higher when the application was done, RDA knows they will have to come up with the additional funds for this