



# SOLVING

THE PUZZLE OF SALT LAKE CITY'S  
EAST-WEST CONNECTIONS



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Below: High school students head home across the railroad tracks to Salt Lake City’s Westside neighborhoods.





## SECTION I

## PROJECT DESCRIPTION.

## 1.1 Overview

**Solving the Puzzle of Salt Lake City's East-West Connections** (the Study) is a focused and comprehensive planning, project development, and environmental review process to expedite solutions for safe, comfortable, reliable, and efficient access across a defining north-south rail and interstate corridor, especially for people walking, bicycling, or taking transit. This corridor is an east-west dividing line and physical barrier that has isolated the Westside of Salt Lake City for the past 150 years.

Salt Lake's Westside neighborhoods were historically redlined and today are home to the city's most ethnically, racially, and linguistically diverse populations, who experience higher levels of traffic-related air pollution than Eastside neighborhoods. Seven of the nine census tracts along the east-west divide meet the definition of areas of persistent poverty. All nine tracts are historically disadvantaged communities.

The study area experiences the brunt of local climate change impacts including increased flooding from intense summer severe rainstorm events as well as sweltering summer heat, exacerbated by the urban heat island from a lack of mature trees. The Westside's environmental injustices are magnified by the Salt Lake valley's seasonally-impaired



Walking or bicycling between the Westside and downtown? Some crossings are regularly blocked by a train (above); others have a harrowing freeway interchange (below).

airshed – often with worst air quality in the nation and sometimes the world - from particulate pollution emissions and harmful ozone levels. The Study presents a pressing opportunity to mend community divisions through equity-informed surface transportation solutions.

Connections to Salt Lake City's Westside, originally defined by the railroad tracks constructed in 1870, are a topic that galvanizes the community because this divide affects so many people's daily lives. Rail has evolved to include separate freight and commuter lines, with trains regularly blocking at-grade street crossings, including roadway, sidewalk, bike lane, and trail crossings. Interstate 15 (I-15) parallels



the tracks and presents an additional barrier. At each freeway interchange, an auto-centric east-west bridge has been constructed over the railroad tracks. This alleviates the train barrier for motorists, while presenting challenging and unsafe travel environments for those walking, bicycling, skateboarding, or scootering. Transit service is limited to four corridors with grade separation over the tracks, as train traffic at grade crossings severely impacts bus schedule reliability.

East-West connections are the most persistent transportation challenge for Salt Lake City, the capital and economic engine of Utah, the fastest-growing state in America, the “Crossroads of the West.” The topography of the Wasatch Mountain Range dictates the dominant north-south travel patterns for the movement of goods and people at the expense of an effective east-west transportation network.

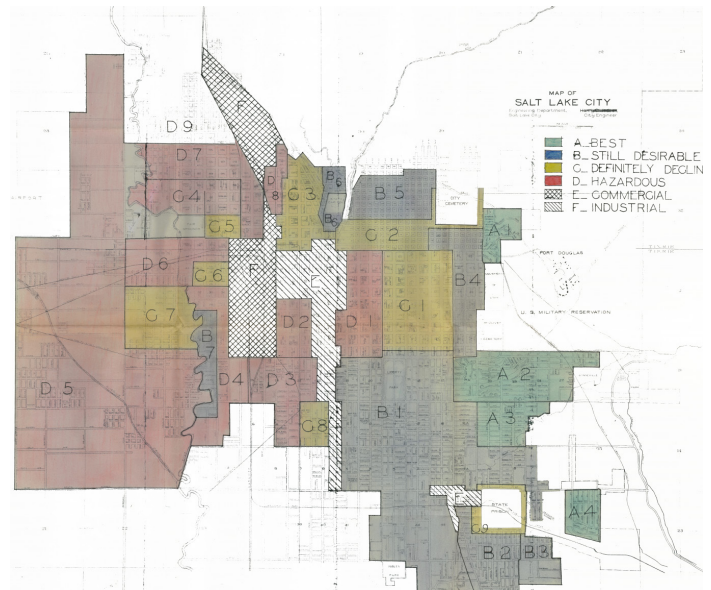
Freight, commuter travel, and other transportation needs are anticipated to grow as the region’s economy and population expands. The requested \$5 million RAISE Planning grant will accelerate a comprehensive approach of east-west connections toward a subsequent construction phase. This is the first step to reverse decades of harm inflicted on Salt Lake City’s most disadvantaged residents while opening future paths of regional connectivity and mobility and greater economic equity.

## 1.2 Surface Transportation Setting

The corridor that now divides Salt Lake City originated as an explorer’s route paralleling the Jordan River and predating the wagon trains of the pioneers. This eventually grew into a north-south road. Soon after the pounding of the Golden Spike in 1869 completing the Transcontinental Railroad, a short line railroad spur was constructed south to Salt Lake City in 1870. Within 50 years, Salt Lake City was connected to the south by the Salt Lake and Los Angeles Railroads and to the west by Western Pacific Railway and Salt Lake Garfield & Western. Industrial land uses followed the rails separating

early Westside homesteads and farms from the eastern side of the valley.

With the advent of the automobile, the regional north-south road became an improved “auto trail” – the Arrowhead Trail - and was numbered as Route 91 in 1926 as part of the newly designated national highway system. The grade-separated freeway, constructed in the 1960s as part of the national interstate system, exacerbated the east-west division with



Redlining map of Salt Lake City, 1940. The rail corridor runs down the F-rated industrial area.

the Westside becoming less-desirable for its isolation, proximity to industry, and exposure to a deeply polluted Jordan River. Meanwhile, the Eastside, including downtown Salt Lake City and the Sugar House Business District, thrived.

Most Westside neighborhoods were red-lined by the Home Owners’ Loan Corporation in 1940. Westside development languished until housing was needed for laborers supporting the World War II effort and later by troops returning home to start families. More recently, the





Westside has seen an influx of immigrants and refugees, drawn by housing affordability. Environmental justice issues persist as impacts of poor air quality, polluting land uses, and urban heat island effects are prevalent on the west side of the rails and freeway.

### 1.3 Transportation Challenges to Be Addressed

The project aims to address transportation challenges with critical impacts to safety, connectivity, travel time, environmental sustainability, environmental justice, and equity within a dense urban and industrial area.

**Safety.** The I-15 and rail east-west crossings have a documented track record of fatal and serious injury crashes, particularly for people walking and bicycling. Increasing development, population growth, a multi-family housing construction boom, and new urban trail facilities are adding further pressure on the existing east-west connections. Crossings that accommodate longer, slower-moving freight trains and shorter, faster commuter trains present a unique safety challenge.

**Connectivity.** Striking a balance between local connectivity needs and connectivity for regional and national commercial and industrial sectors is an essential aspect of *the Study*. Locally, limited multi-modal crossing infrastructure creates challenges for all travelers, while regionally and nationally, the interstate, regional commuter train, and Union Pacific Railroad (UPRR) are critical to the movement of people and goods. Westside residents traversing the east-west divide identify lack of connectivity, isolation and difficult access

to educational, employment, recreation, or service opportunities.

**Travel Time.** The at-grade rail crossings are plagued by irregular travel time delays due to trains blocking road, bike lane, sidewalk, and trail crossings;



Aerial view of the divide.



Salt Lake City has some of the worst air in the country -- often worse on the Westside.

corridors that offer a viaduct over the rails often become congested during peak travel periods. Unpredictable travel time is a significant inconvenience for on-time scheduled arrivals to an appointment, social occasion, or a job site and has a potentially deleterious impact on emergency vehicle access.



**Environmental Sustainability.** A sea-change mode shift away from fossil fuel-based motorized transportation is needed to address seasonal poor air quality impacts to the Salt Lake Valley magnified by climate change-related rising temperatures. Tailpipe emissions are responsible for over half the fine particulate pollution ( $PM_{2.5}$ ) emissions. Shifting to cleaner and/or renewable travel modes (walking, bicycling, and electrification of vehicles) is a key strategy to address the environmental sustainability of the valley air shed and increase resiliency to economic impacts of spiking gas prices.

**Environmental Justice and Equity.** The east-west divide is emblematic of longstanding inequity, redlining, and environmental injustice clustered on the Westside, contrasted with greater access to education centers, economic hubs, and recreation opportunities in the Wasatch Mountains on the east side of the corridor. A system-level change that fosters equity, health, and creates neighborhoods where people can live, work, and play is critical for Salt Lake City. Alleviating environmental justice impacts for underserved disadvantaged communities is a foundational goal of *the Study*.

## 1.4 Statement of Work

Eight multi-modal east-west crossings of the I-15 and UPRR freight line corridors with the greatest challenges or opportunities for improvement are identified for *the Study*. A prioritized list is detailed in the figure on page 6.

**Summary.** For each crossing, the Study will consider safety, environmental impact, community context and in-put, economic opportunity, technical feasibility, and potential for making a safe, welcoming, comfortable, positive transportation experience. The desired outcome is to reach readiness – including a benefit-cost analysis – to secure funding for full engineering, design, and construction, potentially from a future round of RAISE or other federal funding programs, to solve entrenched safety, community, and environmental justice impacts.

**Stage 1.** The project begins with collecting background information for each crossing, gathering community input, and conducting an alternatives analysis in tandem with an equity analysis. The community engagement initiated in Stage 1 will be sustained throughout the planning and review process to afford iterative changes that are responsive to public input, equity concerns, and environmental justice. At least two primary options will be considered among the alternatives:

**Option #1.** An analysis of at-grade and/or grade-separated improvements to the eight individual crossings is likely to recommend new bridges, tunnels, or re-configured freeway interchanges. These approaches are consistent with past infrastructure investments at crossings outside of the study area led by Salt Lake City (City), Utah Department of Transportation (UDOT), and Utah Transit Authority (UTA) to mitigate the I-15/rail line divide. Where feasible, designs may be incorporated into existing infrastructure, such as adding a multi-use trail with barricades on an existing bridge deck.



Option #1 is likely to result in a series of bridge / tunnel crossings similar to the bridge currently under construction at 300 North (rendering above).





**Option #2.** A train trench or train box, as recently constructed in Reno, Nevada, is an example of a high-cost, high-impact alternative with significant changes to the rail lines, including grade separation and operational changes. This option will be evaluated for technical feasibility, benefit-cost impact, community connectivity, opportunity for creative financing, impacts to rail companies and rail-based businesses, and challenges for public utilities, groundwater, and floodplain.

Cameron Blakely, *The Rio Grande Plan*

RENO | Train Box Under Construction

A second option, should it turn out to be feasible, is a train trench similar to the one recently constructed in Reno, NV.

**Transit Considerations.** The train trench approach, as proposed by citizen advocates in [The Rio Grande Plan](#), has sparked the imagination of elected officials and community leaders. The attraction includes the potential to solve multiple east-west connection challenges, restore an historic train station, make rail transit more proximate to downtown job centers, and open approximately 150 acres of valuable land adjacent to downtown for redevelopment. However, the train trench represents a marked departure from rail transit investments over the past 25 years – a departure *the Study* will evaluate carefully. The historic Rio Grande Depot was taken out of service

in 1999, and now Salt Lake Central Station serves as the passenger rail station for Frontrunner commuter rail, TRAX light rail, and AMTRAK. Ironically, the former depot has since become a barrier to downtown transit access. Development of downtown has finally reached as far west as the current Central Station, and the Redevelopment Agency of Salt Lake City (RDA) is poised to implement its Station Area Plan, revitalizing the two blocks between the Rio Grande Depot and the Central Station with economic, financing, and housing opportunities.

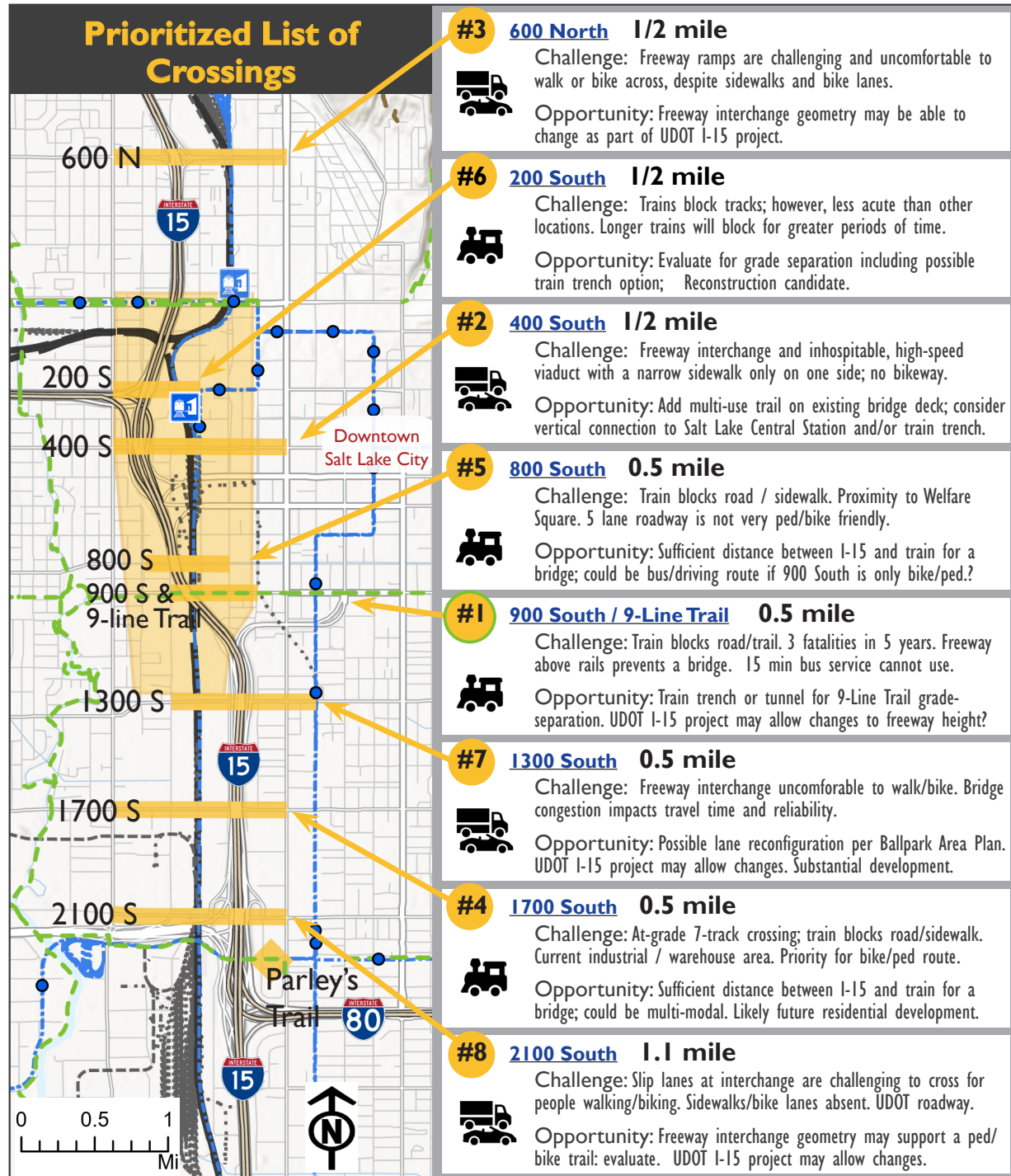
**Freight Rail Considerations.** Freight rail questions factor hugely into the prospect of a train trench. The UPRR main line has three railyards and multiple spurs serving freight rail customers located in the area proposed for analysis. An assessment of undergrounding the freight line in its current configuration will be evaluated against an analysis of potential economic incentives, opportunities, and impacts for freight-oriented businesses to relocate to the Utah Inland Port, which is designed with rail at the core of its sustainability-focused approach. The UTA commuter train track is immediately adjacent and parallel to the freight rails, which adds further complications to corridor modifications to improve east-west connectivity, particularly as double-tracking of the commuter train comes into focus in the next few years. These pressing complexities underscore exactly why a RAISE Planning project of this magnitude is needed to enable a holistic and comprehensive study approach.

**Stage 2.** Upon completion of the alternatives analysis, the appropriate federal modal agency(s) will guide the environmental determination and direct the environmental review and documentation process under the National Environmental Policy Act (NEPA) which may be as substantial as a robust Environmental Impact Statement, or as minor as a series of documented Categorical Exclusions. The implementation strategy will synthesize the public engagement, equity analysis, alternatives analysis, and environmental review into a cohesive defined plan of action.



**Stage 3.** The complexity and results of Stage 2 will determine where and to what level engineering efforts are focused for cost estimations and the benefit cost analysis. UPRR is prepared to conduct engineering review to address standards for a Class

1 railroad capacity project. An emphasis will be placed on preparing prioritized aspects of the preferred solutions to seek additional funding for a final set of design plans and for construction.





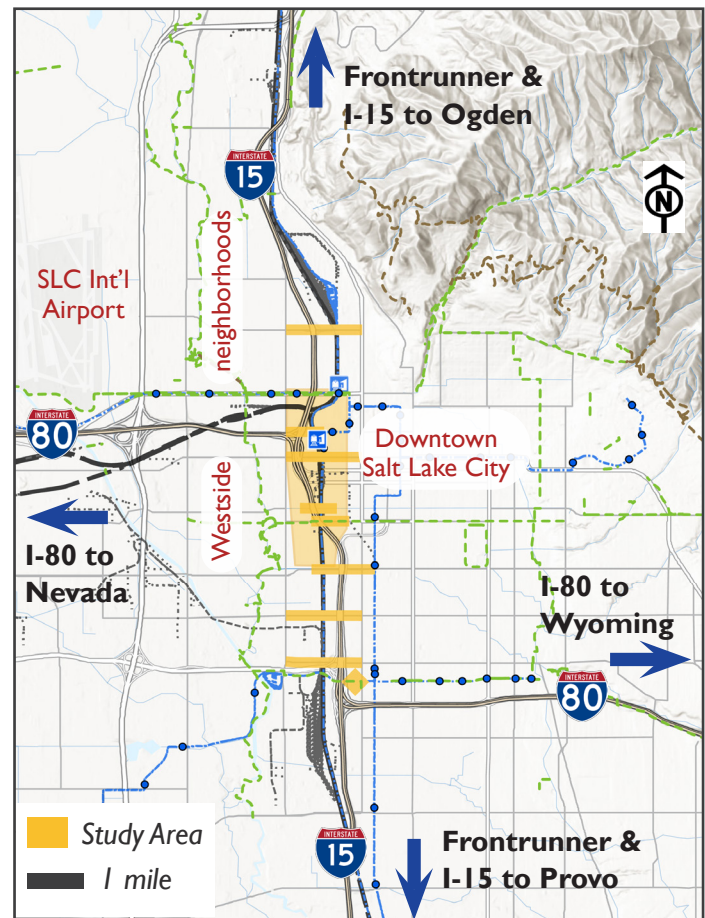
## SECTION 2

PROJECT  
LOCATION.2.1 Project Location &  
Geographic Description

The project is in the Salt Lake City-West Valley Urbanized Area and Utah Congressional Districts 2 and 4. The study area totals 5.5 miles of street corridor and a 1.3 square mile area for a train trench, including the western portion of the Salt Lake City downtown business district. A specific pinch point along the east-west non-motorized Parley's Trail in the neighboring City of South Salt Lake is included in the study area.

Salt Lake City is a travel corridor juncture for I-80, I-15, Utah Inland Port, and the UPRR Intermodal Terminal. UPRR is Utah's dominant rail carrier owning most of Utah's 1,343 miles of freight railroad. These transportation facilities provide direct connections to the entire national freight network. Those who live or work in Salt Lake City enjoy a robust public transportation system with 135 miles of commuter and light rail that connects the city to surrounding Wasatch Front communities and the Salt Lake City International Airport, which is a major international hub for Delta Airlines and located a 20-minute transit ride from downtown.

The study area bridges the industrial, light industrial, and big-box retail corridor that surrounds the freeway and rails – connecting to the more human-scale residential and mixed-use neighborhoods to the east and west.

**Persistent Poverty and Historically Disadvantaged Communities.**

The Westside is home to a clustering of low-income and racially diverse neighborhoods disenfranchised from the education and employment opportunities on the Eastside generated by downtown Salt Lake City, the University of Utah, and Research Park. The project area spans nine census tracts, detailed in the table on the next page.

**Environmental Justice.** Data compiled using the Environmental Protection Agency EJSCREEN tool indicates that communities of color, low income, and linguistic isolation reside predominantly in the Westside and experience increased levels of  $PM_{2.5}$  and ozone exposure. Data from the American Community Survey 5-year estimates reported in the [Salt Lake City Westside Transportation Equity Study](#) highlight the equity disparities of the Westside compared to all of Salt Lake City.



## Location & Equity Data

### CENSUS TRACTS:

Census Tract	Meets Definition?		East-West Divide	Pop. (2019)	Minority Pop. (%)	Children in Poverty (%)	Housing Cost, Excessive (%)	Ozone (parts per billion)
	Area of Persistent Poverty	Historically Disadvantaged Community						
1005	Yes	Yes	West	6,379	58.4	37.1	31.8	21.4
1006	Yes	Yes	West	6,556	57.4	61.7	36.8	21.4
1026	Yes	Yes	West	4,678	65.4	28.0	38.7	21.4
1028.01	Yes	Yes	West	5,917	63.5	49.4	33.9	23.6
1028.02	Yes	Yes	West	4,900	71.1	22.5	35.8	23.6
1001	No	Yes	East	3,896	31.1	21.4	26.6	21.4
1025	Yes	Yes	East	5,017	43.8	44.3	38.1	21.4
1029	Yes	Yes	East	5,788	42.6	48.0	46.0	21.4
1140	No	Yes	East	3,083	17.9	<1.0	33.7	21.4
Salt Lake City	N/A	N/A	N/A	199,678	34.6	20.4	31.8	21.9

### EQUITY CONSIDERATIONS:

	Equity Category							Average Equity Score
	Minority	Below Poverty Level	Speak English Less Than 'Very Well'	Households Without a Vehicle	Age Over 65	Age Under 18	People with Disabilities	
Westside Average	55.1%	25.8%	10.5%	8.3%	8.9%	30.7%	22.7%	26.3%
Salt Lake City	34.6%	17.9%	9.4%	4.1%	9.1%	19.6%	10.5%	20.8%

### OPPORTUNITY ZONES:

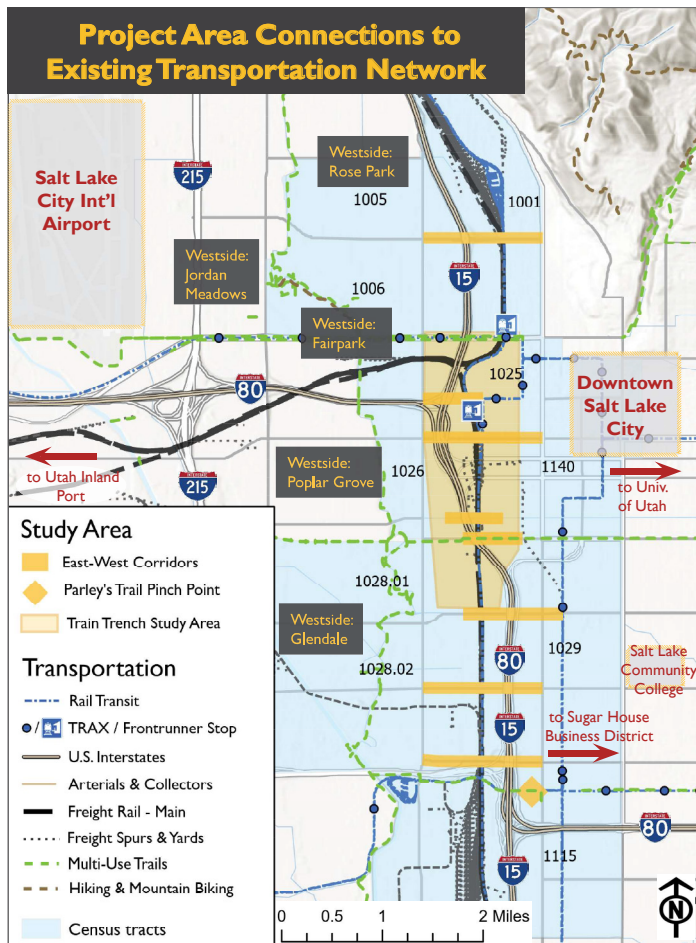
Opportunity Zone (OZ)	Location	East-West Divide	Median Household Income	Below Poverty Level	Education High School	Median Home Value
49035102600	Salt Lake City	West	\$41,000	21%	71%	\$171,000
49035100600	Salt Lake City	West	\$45,000	33%	73%	\$224,000
49035114000	Salt Lake City	East	\$54,000	13%	97%	\$383,000
49035102500	Salt Lake City	East	\$45,000	28%	95%	\$258,000
49035111500	City of South Salt Lake	East & West	\$38,000	20%	84%	\$171,000
OZ Average	Utah	N/A	\$50,000	21%	81%	\$224,000





This journey, too, is a challenge for some Westside residents who are unhoused, living in parks or along the Jordan River, and may need to walk or bike to the community services on the Eastside. East of the divide, Salt Lake City has two homeless resource centers, a youth shelter, and the Fourth Street [medical] Clinic.

**Opportunity Zones.** The project area spans four Opportunity Zones (OZ) in Salt Lake City and one OZ in City of South Salt Lake. The OZ demographics, presented on the prior page, highlight the east-west inequities *the Study* seeks to address.



Connections to Salt Lake City's transportation network by freeway, commuter rail, light-rail, and multi-use path.

## 2.2 Connections to Existing Transportation Infrastructure

The study area is a nexus within the existing transportation network. Motorized travel connections include National Highway System assets I-15; I-80; U.S. 89; 400 South, 500 South, 600 South and eight city arterials and collectors. The study area includes three significant east-west multi-use trails: [9-Line Trail](#), [Parley's Trail](#), and [Folsom Trail](#) – as well as a likely connection to the downtown [300 South Protected Bike Lane](#). Frontrunner commuter rail as well as TRAX Green Line and Bus Routes 1, 2, 4, 9, 21, and 205 provide frequent transit service.

*The Study* will articulate priority infrastructure investments that improve access for Westside neighborhoods, augment regional connectivity of the UTA transit system, and provide access to employment for low income and minority residents. The proposed study provides a path forward to address deep and inequitable impacts to disproportionately underserved residents of Salt Lake City.

## 2.3 Alignment with Recent Transportation Infrastructure Investments

Salt Lake City (City), Salt Lake County (SLCo), UDOT, and UTA have made incremental and large-scale improvements to individual east-west crossings in the past 20+ years. Despite these investments, the public outcry continues for better east-west connections as new residential and mixed-use developments increasingly replace the industrial land uses.

Infrastructure	Investment	Year
UDOT: I-15 Reconstruction / 400 South Viaduct	\$1.6 billion	2000
City, UTA: North Temple Multi-modal Viaduct	\$71 million	2011
UTA: Green Line TRAX / bridge at Roper Rail Yard	\$370 million	2011
SL County: Addition of Parley's Trail on the above	\$1 million	2017
City: 1300 South Multi-modal Viaduct rebuild	\$6.8 million	2015
UTA, City: 300 North Pedestrian Bridge	\$8.6 million	2022



## SECTION 3

## GRANT FUNDS, SOURCES & USES OF ALL PROJECT FUNDING

### 3.1 Costs

The projected cost of *the Study* is \$6,370,000 based on local estimates for professional consultant services to produce *the Study* elements. RAISE planning funds, covering 78% of estimated costs, will complete the public engagement; alternatives and equity analyses; environmental determination, review and documentation; and conceptual or preliminary engineering sufficient to determine a construction cost estimate.

### 3.2 Federal & Non-Federal Funds

Salt Lake City, serving as the project sponsor, has committed \$1,370,000 in local funding, that when combined with the requested \$5,000,000 RAISE planning funds, completes the \$6,370,000 funding package for *the Study*.

Though a request of 100% federal share for planning projects in areas of persistent poverty and historically disadvantaged communities is allowed under the RAISE program guidance, Salt Lake City is proposing a 22% (non-federal) and 78% (federal) cost share. There are no conditions associated with the local funding commitments. No additional federal funds are associated with the project.

#### Project Costs

Item	Total Cost
<i>The Study</i> , including: <ul style="list-style-type: none"> <li>• Technical analysis</li> <li>• Screening of alternatives</li> <li>• Environmental review</li> <li>• Preliminary engineering design and cost estimating</li> <li>• Benefit cost analysis</li> <li>• Public engagement throughout</li> </ul>	<b>\$6,370,000</b>

#### Sources of Funds

Total Cost	Salt Lake City	RAISE
\$6,370,000	\$1,370,000	\$5,000,000
100%	22%	78%

The [project webpage](http://www.slc.gov/east-west) hosts:

- letters of local match commitment;
- Utah congressional delegation support letters
- related plans and studies;
- **over 100 letters of support and public comments** received specifically in support of the grant application.

[www.slc.gov/east-west](http://www.slc.gov/east-west)





## SECTION 4

MERIT  
CRITERIA.

## S A F E T Y

Safety is a primary impetus and core <sup>4.1</sup> foundation for *the Study*. The freeway and at-grade railroad crossings pose safety threats for people walking and bicycling. Commuter rail, freight rail, and light rail have also had safety incidents with those traveling by other modes within the study area.

In the summer of 2018, two fatalities at the rail crossing along the 900 South corridor stunned the Salt Lake City community. One was a bicyclist on an evening social ride using the 9-Line Trail, who, likely weary of waiting for a long slow freight train and attempting to cross the rails, was then hit by the fast-moving UTA Frontrunner train. The other was a pedestrian, who tried to roll under a moving freight train, “like in the movies,” according to a spokesperson for Salt Lake City Police Department.

Crash data presented in the figure on page 12 validate the safety concerns associated with walking or bicycling across the existing crossings and which may factor into a lag in broader mode-shift adoption. Traffic safety for motorized modes is an issue also.

*The Study* will evaluate impacts to the number and severity of crashes by crossing improvement type (corridor separation and grade-separated crossings,

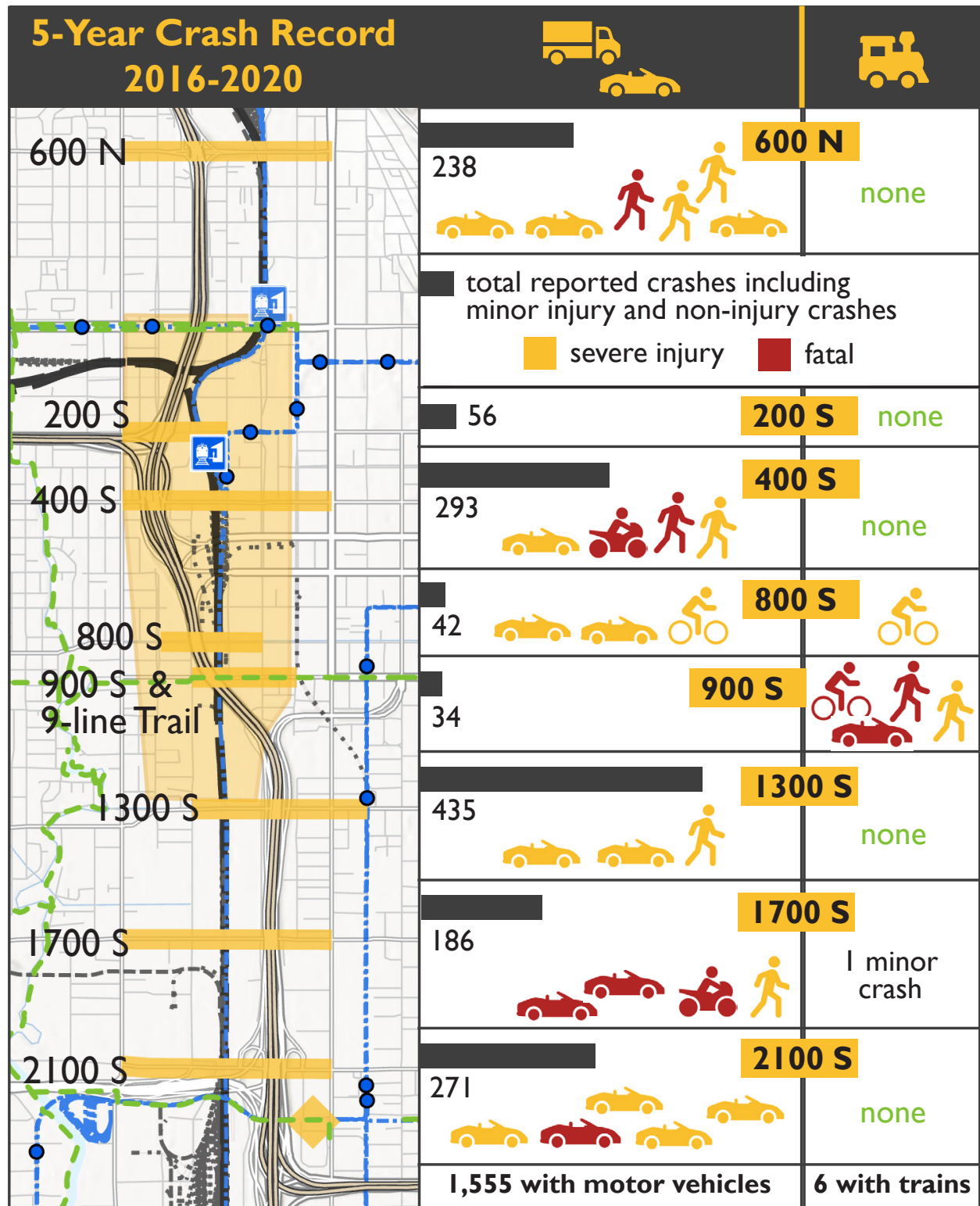


A bicyclist, moments before being struck by UTA's Frontrunner train in July 2018.

pedestrian-scale design, sight line considerations, and lighting) and qualify how alternative improvements balance impacts by travel modes and users. Infrastructure improvements from the National Roadway Safety Strategy for Safer People, Safer Roadways, and Safer Speeds may be adopted to address safety concerns and expand mode choice as well as traffic safety modifications shown by the National Highway Traffic Safety Administration and Federal Transit Administration to lower urban traffic fatalities and support transit ridership and active transportation mode-shift.

*The Study* provides a unique opportunity to analyze data to guide the optimal type of safety protection systems given the high-hazard nature of the corridors and the need for clear, safe choices to minimize judgment calls for people walking or bicycling. Opportunities to provide real-time safety data – such as how long a train will block a crossing or the approach of a high-speed commuter train – that go beyond bland and easily ignored static safety warnings to temper human impatience may be identified with multiple crossings under study.





Public way crashes only, on all legs of intersection. All modes: motor vehicle, bicycle, pedestrian.

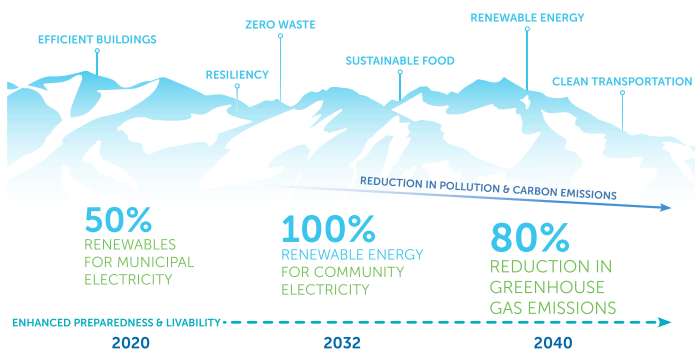




## Environmental <sup>4.2</sup> SUSTAINABILITY

Salt Lake City faces the effects of climate change due to high temperatures, low humidity, severe drought conditions, air quality problems, and natural disasters. These conditions fall acutely on disadvantaged populations concentrated in Westside neighborhoods. *The Study* will address environmental sustainability through mode-shift, equity focused planning and resilience.

**Mode-Shift.** *The Study* will evaluate alternatives that make it easier for travelers to shift from private vehicles to transit, walking, bicycling, or micro-mobility as a function to reduce induced travel demand and reduce greenhouse gas emissions from mobile sources. The [Utah 10-Year Strategic Energy Plan](#) recommends transportation planning that promotes non-motorized and public mass transit infrastructure.



Salt Lake City's goal of an 80% reduction in GHG, as illustrated in Climate Positive 2040.

Salt Lake City has an aggressive Climate Positive goal of an 80% reduction of community greenhouse gas emissions by 2040 compared to 2009 baseline. The [Salt Lake City Climate Positive 2040](#) identifies increasing the use of public

transit and active transportation as part of the transformational changes needed.

[The Salt Lake County Climate Adaptation Plan 2017](#) identifies reducing emissions of carbon dioxide, carbon monoxide, hydrocarbons, and nitrogen oxides as central to improving air quality. as a strategy focused on community health.

**Equity-Focused Planning.** Following the lead of metropolitan planning organization Wasatch Front Regional Council's [Equity Planning and Equity Focus Areas](#), the Salt Lake City Transportation Division has developed an approach that integrates environmental justice as part of prioritizing transportation projects to provide access to opportunity, freedom of human movement, and community dignity to the historically redlined Westside neighborhoods. Strategies to incorporate sustainable choices that are a study priority include:

- Transitioning to walk-bike-transit-*only* connections to discourage driving as a preferred travel mode;
- Consideration in the design process for carbon-sequestering timbers or lower-carbon pavement and construction materials while meeting modern seismic and engineering standards;
- Reducing air pollution and greenhouse gas emissions through filtration/sequestration of exhausts or electrification of freight or commuter rail;
- Minimizing airborne pollutant risk for travelers and reducing degraded air quality;
- Evaluating the effect of the rail lines on energy use, air pollution, and greenhouse gas emissions.

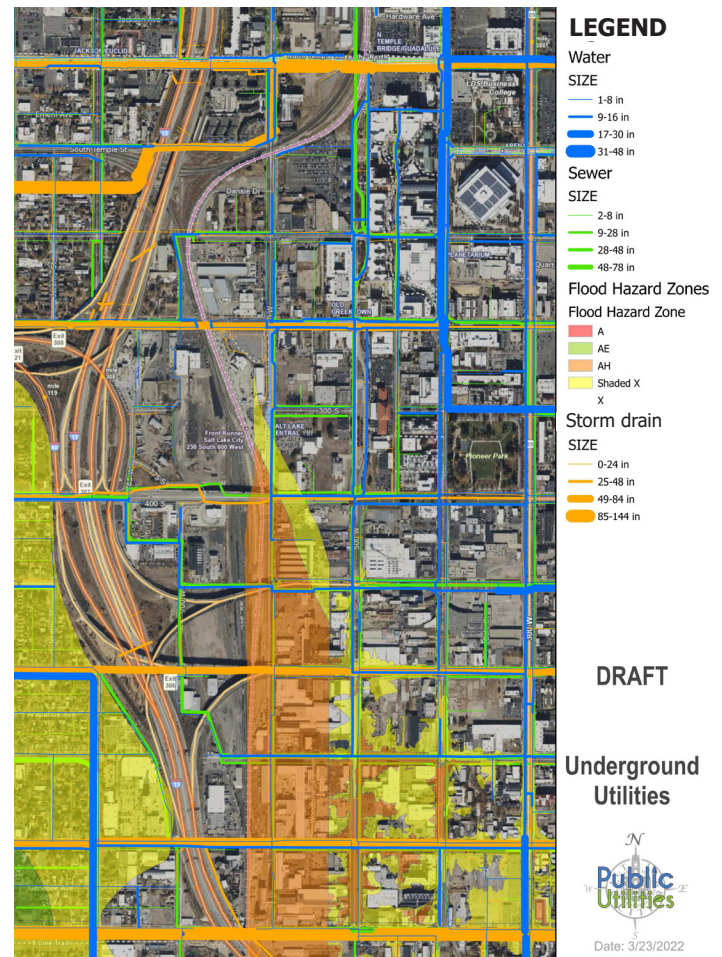




**Resiliency.** The 5.7 magnitude earthquake of March 18, 2020 that damaged the 1300 South Viaduct; the flash flooding that swamped the Ballpark TRAX station in 2017 and East High School in 2021; and a hurricane-force windstorm on September 9, 2020 that toppled as many as 2,000 trees and damaged sidewalks -- together these events heightened the urgency to invest in infrastructure measures that mitigate the vulnerabilities of bridges, rails, and other structures.

Salt Lake City has a general westward downhill grade toward the Jordan River, the historic valley-wide low-point. The rail and freeway disrupt the historic watershed and serve as the western boundary of a Federal Emergency Management Agency (FEMA) designated 100-year floodplain, creating areas prone to flooding in the historically disadvantaged areas of the city.

*The Study* will also assess the cost-benefits of seismic upgrades or retrofits to freeway on/off ramps as well as stormwater infrastructure improvements to Federal Flood Risk Management Standard to help alleviate the floodplain zone; reduce adverse environmental impacts to air or water quality, wetlands, and endangered species; and increase resiliency capacities for Westside communities.



This map showing the complexity of underground utilities and floodplain near the suggested train trench gives pause to the idea of undergrounding the rails.



The 2020 windstorm hit the Westside community of Rose Park particularly hard.



Flooding in 2017 submerged the mainline TRAX near the 1300 South Ballpark Station, at the eastern edge of the study area.



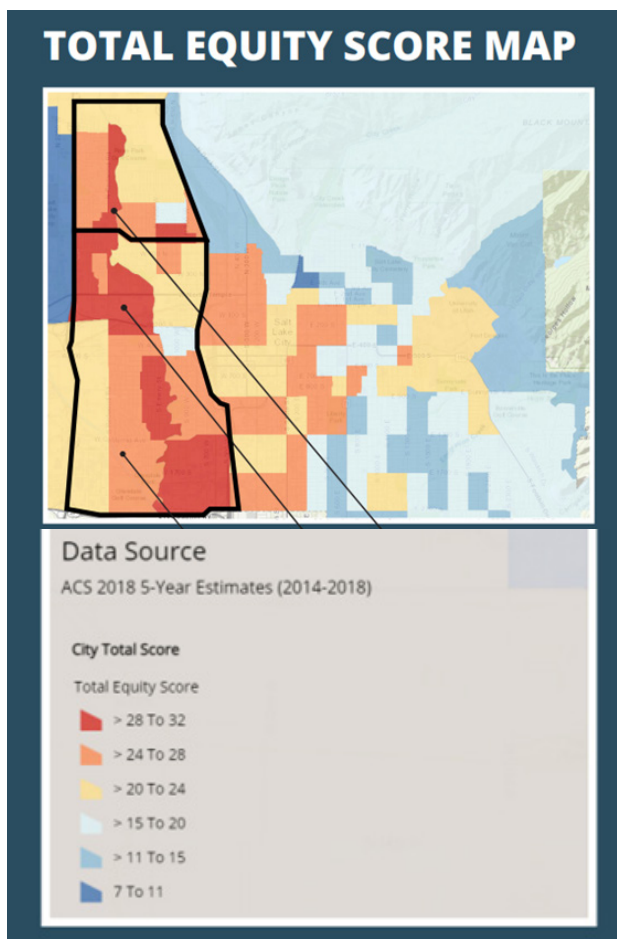


## QUALITY of Life 4.3

Improved quality of life through equitable access and mobility are critical focal points of *the Study*. Construction of the interstate freeway and rail lines was intended to solve major regional transportation problems. The mobility investments were successful, but have reaped unintended consequences in the daily lives of Westside residents through long and unpredictable commutes, unsafe routes to school, historic disinvestment, a clustering of crime, and encampments of unhoused individuals along the Jordan River. In contrast, Eastside residents

enjoy unfettered access to the downtown and central business district, University of Utah, Research Park, foothill and alpine recreation, and many other resources.

Job access for west-to-east commuters can be difficult or unpredictable due to surface freight rail. A stopped or slow-moving freight train can delay passage by vehicles, pedestrians, or bicyclists for a few minutes to over an hour. Most transit trips crossing the east-west divide require at least one transfer and/or a substantial walk on either end of the connection, resulting in a transit trip that is only a few minutes faster than walking. Bus delays in bridge traffic during peak periods throws off the timing of transfers with further delays for commuters. Long commutes interfere with family time and can result in tardy school arrival and late daycare pickup with potential fines to a family's pocketbook.



Westside Transportation Equity Study

*The Study* will use an equity impact analysis, equitable engagement, values-driven planning, and celebration of place as methods to ensure diverse equity perspectives inform the planning process to arrive at solutions that support quality of life values held by the community.

**Equity Impact Analysis.** *The Study* will conduct an equity impact analysis that builds on findings from the [Salt Lake City Westside Transportation Equity Study](#). The Equity Score map (left) illustrates the clustering of socio-economic inequities on the Westside due, in part, to prior transportation infrastructure decisions along the north-south corridor.

**Equitable Engagement.** The public engagement process will capture the lived experience of EJ community residents to gauge the impact of crossing investments to create new connections and opportunities. Westside neighborhoods have 55% non-white residents compared with 34% for the city. Approximately 26% of non-white residents speak with limited English proficiency. *The Study* will use bilingual (English and Spanish) and highly visual outreach materials with universally understood symbology to



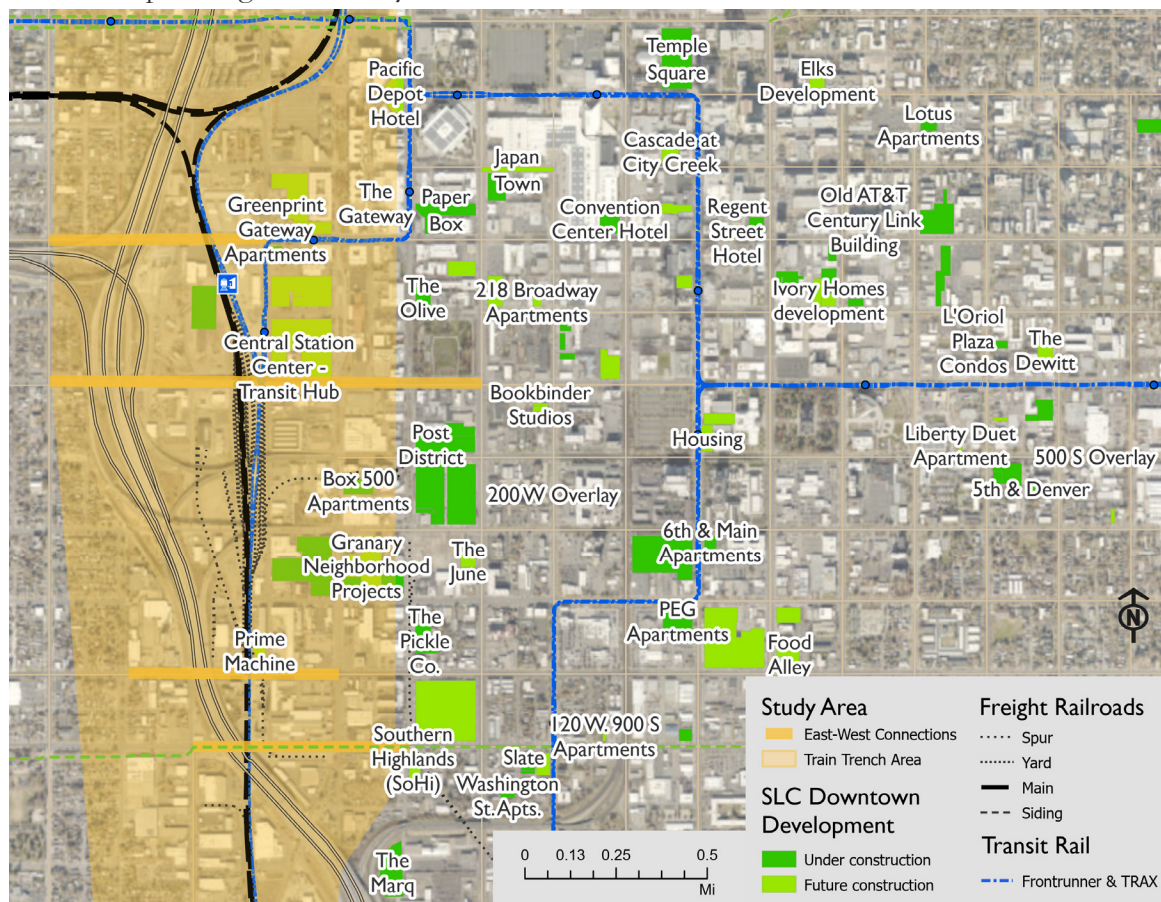
convey transportation concepts for equitable and meaningful engagement.

**Values-Driven Planning.** Transportation and housing cost burdens are increasing for Westside residents. Salt Lake City's median home price increased 26% between February 2021 and February 2022, ranking among the top five of 51 metro areas across the nation for the biggest year-over-year increases in median sales price, according to [RE/MAX's national housing report for February 2022](#). Residents increasingly look to transportation as the only reasonable way to lower cost of living. *The Study* will capitalize on opportunities responding to dense, mixed-use growth patterns that enhance placemaking; increase walking, bicycling, and transit travel modes; reduce automobile dependence; and address barriers to access to opportunity.

The location of freight rail is a factor in the values-driven planning of *the Study*. Consideration

of the impact of proposed changes on UPRR customers is a critical stakeholder concern. The ability to connect to multiple UPRR spurs within the study area is an economic necessity for optimal freight access for UPRR customers and to support a competitive local job market. *The Study* will consider economic impacts comprehensively, including access to jobs, efficiency of freight movement, and how infrastructure supports a rapidly growing metropolitan center.

**Celebration of Place.** *The Study* recognizes the inherent value of high-quality, clean, safe public spaces, of which the largest in the study area are comprised of transportation facilities. Public travel corridors not only provide ways to get from point A to point B, but often are in



Current and planned development, mostly residential, is pushing up against the formerly industrial corridor.





# M O B I L I T Y

## & Community Connectivity 4.4



The Tucson rattlesnake bridge (top) is a fabulous example of public art incorporated with project engineering. A more modest artistic addition is along Salt Lake City's North Temple underpass of I-15 (bottom).

and of themselves a destination and contribute to community pride and a sense of belonging. Disconnecting and isolating these public spaces has taken a toll with the devaluing of the Westside and the insulation of Eastside residents from community diversity and equitable participation. A unique approach to *the Study* is the incorporation of inspired design as part of the outreach conceptualization teams. In partnership with the [Salt Lake City Arts Council](#), the unique characteristics of affected neighborhoods will be expressed in art and design to be integrated with the proposed improvements.

Improved connectivity for those walking, bicycling, scootering, rolling, or taking transit is a primary purpose of *the Study*. East-west connectivity for motorists has been improved over the years. Connectivity and mobility for active transportation have lagged. The RAISE planning project will result in an overdue plan of action that increases west-to-east travel connectivity and mobility for people choosing to walk or bicycle to access Eastside transit, jobs, business opportunities, and services.

**Local/Regional Connectivity.** *The Study* is an opportunity to identify alternatives for east-west crossings that optimize mobility in the regional network and increase non-driving travel options connecting low-income underserved individuals with or without a vehicle to regional and local economic hubs and education centers. When built, the improvements will connect areas of persistent poverty and transportation-disadvantaged populations to opportunities with major regional employers including Downtown Salt Lake City (70,000 jobs), Salt Lake City International Airport (32,000 jobs), University of Utah (20,000 jobs), State of Utah (20,000 jobs), and Utah Inland Port (58,000 jobs).

**Community Connectivity.** The City and RDA are investing in affordable housing on publicly owned parcels (e.g., [Fleet Block](#), [Depot District](#), and Northwest Pipeline sites) and new developments (e.g., the live-work [Granary District](#)) located east of the rail and I-15 corridor. At the same time, increased housing development on the Westside is accelerating in the 900 West corridor. Solutions that connect the two areas will provide people on both sides of the east-west divide with mobility and connectivity to live, work, and play as one community. As illustrated on the next page, currently very few people chose to walk across the east-west divide.

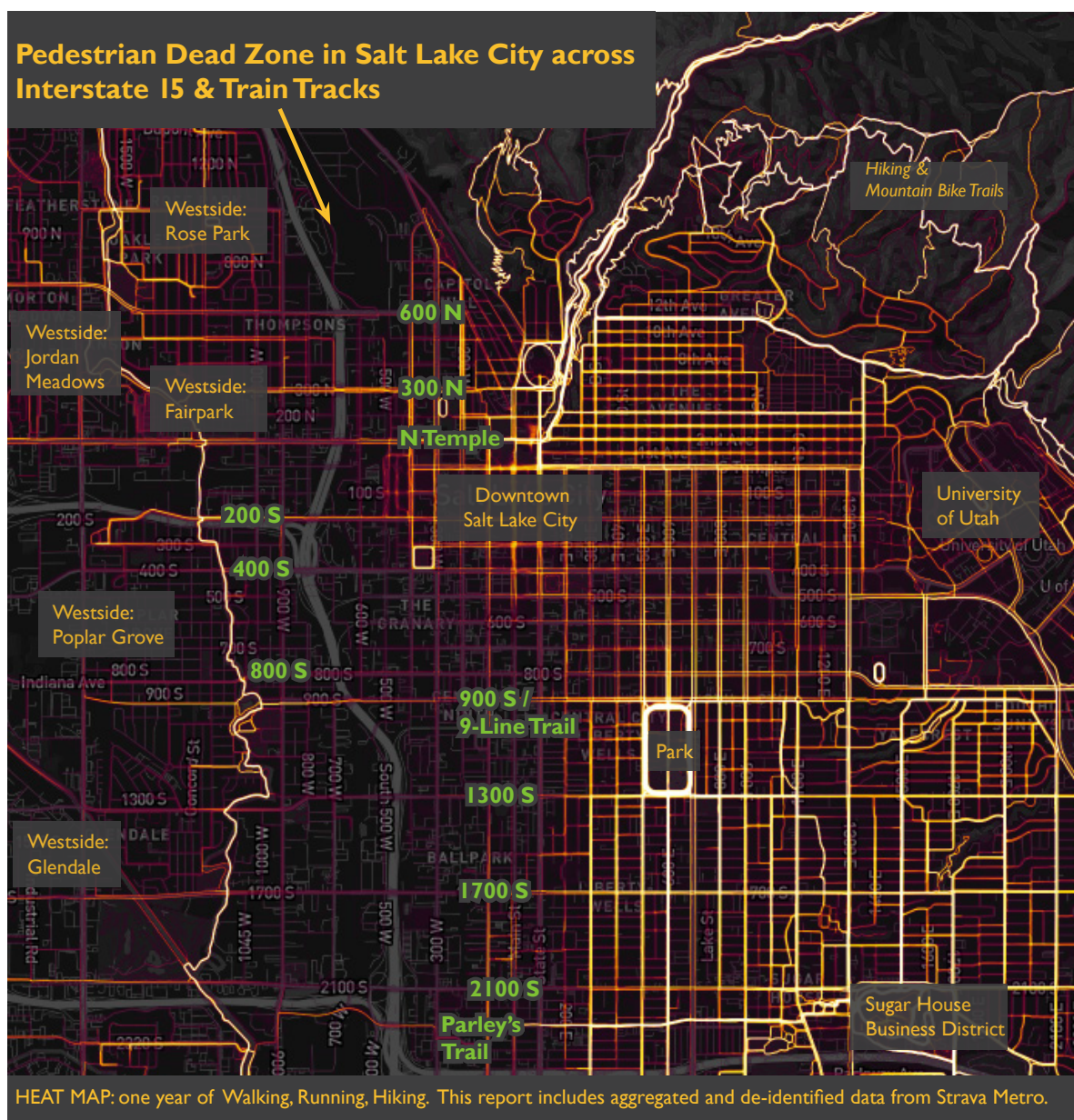




**Mobility and ADA.** Grades will be considered throughout *the Study* for compliance with Americans with Disabilities Act (ADA). Accessibility is challenging for bridge projects that seek to gain a considerable elevation in a short distance when constrained by nearby infrastructure. Several recent pedestrian-scale bridges constructed in the City will serve as model alternatives that increase accessibility for users of all abilities.

**Mobility and Freight.** *The Study* planning process may identify transportation strategies that improve

regional freight mobility and connectivity and resolve the east-west connection challenge. Grade separations may enable freight trains to increase speed and density for routine operations and improve supply chain efficiencies while improving safety – eliminating risks of crashes with roadway users crossing the tracks and the associated delays on the rail line. An infrastructure solution that increases mobility for freight movement and for active transportation users is a win-win.





# ECONOMIC

## Competitiveness & Opportunity <sup>4.5</sup>

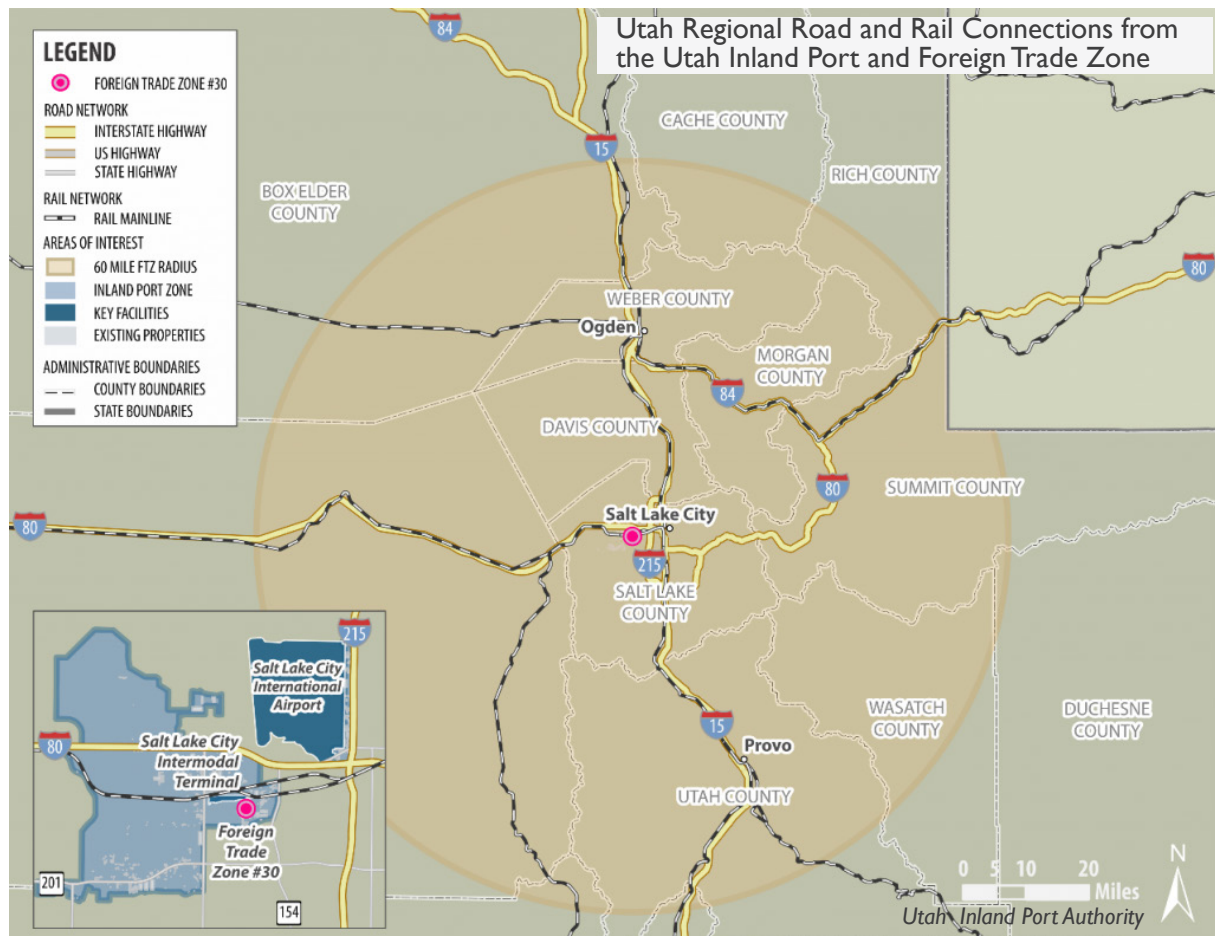
Growing the regional and national economic competitiveness of Salt Lake City and Utah through improved surface transportation infrastructure that increases reliable and efficient movement of goods and people is a primary purpose of *the Study*.

### System Operations Improvements.

Over 90% of Westside trips are solo-occupancy auto trips or carpooling compared to less than 70% of trips by auto

in the adjacent Downtown. As Salt Lake City's rapid growth trends continue, increasing the viability of walking, bicycling, and transit will benefit household budgets and reduce air pollution. Minimizing traffic congestion benefits the shipment of goods, many of which come from the Westside industrial areas that host an Amazon Fulfillment Center, United Parcel Service, Nicholas Foods, and many others making deliveries to points east of the freeway.

**Transportation Cost and Reliability.** Predictability of travel time is a key focus of *the Study*, to ensure that east-west crossings are suitable for transit use, as well as reliable walking and bicycling. Especially with the [HIVE transit pass](#) available at half-cost to Salt Lake City residents, these three modes are the most cost-effective way to travel.



**Economic Strength.** *The Study* will afford a prioritization of improved transportation connections that reduce physical barriers and associated impacts on economic productivity of labor and land. The Salt Lake City economy has remained strong over the past 15 years, including the Great Recession. As the economy continues to grow, concerns about Utah's air quality have been a top reason why some businesses choose not to locate in Salt Lake City, and it is a key challenge in recruiting and retaining a talented workforce. Utah Business notes, "In an Economic Development Corporation survey on Salt Lake City business, air quality ranked as the leading factor to improve to make Salt Lake City more accommodating in terms of the city's value proposition." Altering the crossing infrastructure to accommodate adoption of non-fossil fuel modes by travelers and increase the development potential of vacant and underutilized parcels along the I-15 corridor will build the economic capacity of the City to competitively attract businesses and sustain a strong labor market..

**Freight Reliability.** Improvements to ensure the safe operations of freight rail lines will improve reliability and timely operations, particularly when paired with increasing use of rail facilitated by the Utah Inland Port, which is poised to expand national freight movement capacities. More trains instead of trucks will feed into the north-south rail arterial in Salt Lake City with completion of a new freight rail interchange for the Salt Lake Garfield & Western as part of the recent federal Northwest Quadrant Freight Mobility INFRA grant award. Assuring safe, environmentally and socially beneficial solutions for east-west traffic is critical to assuring growing reliability on freight rail transportation in the Salt Lake region. The Study's vetting of infrastructure investments within a context of maximizing regional economic value and competition in concert with reducing poor air quality levers will serve long-term sustainable growth goals on a local and state level.

**Tourism.** Chief among tourism opportunities that relate to *the Study* is the 100+ miles of the linked "[Golden Spoke](#)" network of bike paths between Ogden and Provo – the longest continuous paved stretch of bike path west of the Mississippi. The route is on the [Jordan River Parkway Trail](#), located in the western side of the crossing divide. Most restaurants, breweries, and lodgings are to the east. Improvements that support safe, pleasant, and memorable connections will help to invite tourists to travel the Golden Spoke, visit Salt Lake City, and tour Utah.



**Growth of Innovation/Technology Sector.** The RDA-led redevelopment of the [Granary District](#) and the [Innovation District](#) is driving the growth of technology and digital innovation sectors for the Utah and regional economy. Mitigating the east-west divide barriers to these economic centers will further elevate Salt Lake City and its [Silicon Slopes](#) as attractive locations for companies developing future innovations and technologies for national and global markets. Should the train trench move forward as a preferred alternative, lands formerly used for rail transportation would be freed up for development by technological or other industries and/or for affordable and mixed-use housing to support economic competitiveness and opportunity.





## State of GOOD REPAIR

4.6

State of good repair is a secondary purpose of *the Study*. However, the alternatives analysis will seek to identify and understand opportunities for safety and multi-modal improvements to dovetail with needed upgrades to asset condition. Long-term maintenance costs of structures and overall life-cycle costs will also be considered. *The Study* may propose new bridges with expected 60-year life span that replace structures closer to the end of their life span or the construction of a train trench structure, which would be maintained by public agencies. With either or both of these representing a significant forward obligation, *the Study* will carefully consider asset ownership within the context of capital maintenance and operations resources.

UDOT has two projects, a planned reconstruction and a planned widening, of I-15 throughout Salt Lake City that are now in early stages of planning. The reconstruction provides key opportunity for integration with a state of good repair project. These and other opportunities will be identified and maximized as part of *the Study*.

As a result of a collaborative design process with UDOT, Salt Lake City has preliminary designs plans to add a multi-use trail on the south side of the 400 South Viaduct in tandem with a polymer overlay which is also needed to extend the bridge deck life. *The Study* will look at ways to further improve 400 South's connection to the Salt Lake City Frontrunner station. The polymer overlay is an example of how Salt Lake City's multi-modal improvements routinely seek to capitalize on win-win opportunities with state of good repair needs.

## Partnership & COLLABORATION

4.7

**Salt Lake City**, as project sponsor and manager, has secured the participation of UDOT, UTA, and UPRR for the project team. The core partners will participate as technical advisors, weigh in on proof of concept for the construction phase, and guide collaborations with stakeholder agencies and community groups for a robust and transparent public engagement process for *the Study*. The City is leveraging expertise from the: Transportation Division to serve as the project manager; Engineering Division to advise on cost estimation; Department of Public Utilities to advise on floodplain, water/sewer, and stormwater coordination; and Salt Lake City Arts Council to liaise with local/regional artists for engagement in design process. Project team agencies and roles include:

- **Salt Lake City:** Salt Lake City: RAISE grant applicant. Study project manager. Local match (\$1,370,000.) Collaborative staff effort from Communities and Neighborhoods / Transportation (lead and match contributor) and Salt Lake City Arts Council, Public Utilities (match contributor), RDA (match contributor) and Public Services / Engineering.
- **UDOT** (public sector): Technical advisor. Legal jurisdiction, design authority, construction and operations agency for interstate system, state highways, and transit capital projects.
- **UTA** (public sector): Technical advisor. Operations agency for the regional transit system, including commuter rail, light rail, and bus.
- **UPRR** (private sector): Technical adviser. Review of 10-30% engineering/design for Class 1 railroad capacity standards.



**Collaborative Precedence.** Utah has a reputation of interagency collaboration and ability to build public-private partnerships. Salt Lake City's work with UDOT, UTA, WFRC and neighboring cities is emblematic of effective collaboration. Initiatives demonstrating the City's stakeholder leverage capacities to deliver *the Study* are reviewed below.

**Westside Express.** UTA is advancing a bus capital project on 5600 West for a 2022 RAISE grant to connect Salt Lake City with four neighbor cities to its south along a major spine along the west side of Salt Lake County. The project has collaboration, coordination, and support from the cities, UDOT, WFRC, and Salt Lake County.

**650 South TRAX Station.** The City's Transportation Division, RDA, and UTA worked with four private developers to jointly fund a new TRAX Station at 650 South Main Street. Construction is nearing completion and commitments from future commercial tenants are secured. The four major projects bringing jobs, retail, and housing that are highly transit-accessible. The partners worked with Salt Lake City Arts Council to solicit and select public art for the TRAX station platform.

**Citizens' Transportation Course.** The University of Utah brought together staff and financial support from Salt Lake City, Utah Governor's Office of Planning and Budget, UTA, and UDOT and academic partnership from Portland State University and a National Institute for Transportation and Communities grant to develop a [citizen's transportation course](#). The pilot class culminated in a variety of student-initiated projects and a tour of the SLC-UDOT-UTA-Salt Lake County-South Salt Lake City [Life on State](#) project, where final design is completed and construction contractor bids imminent.

**TechLink.** UTA was awarded a 2021 RAISE planning grant to study rail connections and

sustainable transportation options for an emerging Innovation District in partnership with Salt Lake City and the University of Utah Research Park. Small transit connections will provide redundancy in a congested area of the light rail network and open up transit access to new redevelopment and hundreds of jobs.



City, state, and transit agency officials regularly collaborate in Utah. Salt Lake City Mayor Mendenhall here announces "Free Fare February" along with UTA and UDOT officials -- a response to poor winter air quality.

**300 North Pedestrian Bridge** Salt Lake City is supporting a UTA-administered project in partnership with UPRR, UDOT and WFRC to construct [pedestrian bridge](#) over the 300 North rail crossing, an aligned east-west crossing to the eight proposed for *the Study*, 300 North is a heavily used crossing by people walking and bicycling, particularly school children attending West High School and Washington Elementary School. The project partners assembled a funding package from multiple sources, including a TIGER grant award that fund construction of the 300 North pedestrian bridge as one of a suite of key [transit first-last mile infrastructure](#) across the region.





**Service Buy-Ups.** Salt Lake City taxpayers are investing approximately \$8 million per year, starting in 2021, to supplement UTA operation of Westside frequent bus routes and on-demand ride services.

**Public Involvement Plan.** *The Study* planning process will develop and execute a Public Involvement Plan (PIP) to mitigate risks of perpetuating inequities experienced by Westside residents and stakeholders. The PIP will comply with federal requirements for environmental justice, language proficiency, and Title VI, and it will integrate recommendations and lessons learned from the *Westside Transportation Equity Study* to generate participation from the diverse Westside communities. The *Westside Transportation Equity Study* was developed in collaboration with UDOT and has generated statewide recognition as the gold standard in advancing the diversity of government outreach efforts to learn how to better meet residents' needs.

The project team will meet affected parties where they are: community events and centers, youth sporting events, grocery stores, and in-field tours. One-on-one interviews with major stakeholders will be used to solicit input that may not emerge in broader public meetings. A strategy of compensating community representatives for their time devoted to *the Study* may have application. The City is using the strategy for its [Transportation Master Plan Update \(Connect SLC\)](#), [Ballpark Station Area Plan](#), and [North Temple Mobility Hub Study](#) to build a bridge between City officials and the general public, many of whom have limited trust in government and limited time to participated in public engagement forums.

A mobile-friendly project website, social media accounts, and digital open houses that mirror in-person events will be used to encourage online engagement, to offer parity for individuals with limited access to transportation or with limited time to engage with the project and provide feedback. Digital tools will allow the project team to nimbly modify outreach strategies and approaches to meaningfully engage a representative cross-section of the public.

Outreach will focus on identifying problems, goals, and community themes to inform evaluation metrics and potential solutions. Rather than asking the public to exercise transportation expertise, *the Study's* approach will tap the community's lived experience: what challenges does the public encounter? What aspirations are most important in advancing people's ability to get around? What are the day-to-day consequences of existing infrastructure? What unforeseen consequences might proposed solutions carry? This approach gives voice to salient issues and perspectives that members of the public *are the experts on*. All outreach materials will be fully produced in Spanish and English.

**Disadvantaged Business Enterprises.** The City is increasing visibility and outreach to disadvantaged, minority, and women-owned firms to expand diverse participation in bid notifications and among awarded contracts. The public engagement process will be an avenue to expand DBEs in selections for consultant services for *the Study*. The City follows best practices in procurement that allow for open and transparent competition across all parties. Local hiring provisions will be incorporated for outreach components of the project.

**Community Support.** *The Study* leverages the support and involvement of public and private sector stakeholders, educational institutions, and community groups to deliver a robust and broadly supported alternatives analysis that is inclusive of all voices.



# INNOVATION

## 4.8

The project sponsor, partners, and supporters are keen on capitalizing on *the Study* to bundle strategies for innovative technology-friendly infrastructure, innovative project delivery, and innovative financing models that garner stakeholder commitment to realize the construction of the PA.

The very concept of a train trench, while it has been done elsewhere, is an innovative proposal for a long-standing challenge in Salt Lake City.

**Innovative Technologies.** A primary need for *the Study* is understanding patterns of travel and movement of freight. Data for people walking and bicycling is most challenging to come by, especially when peak hours of use may vary considerably from traditional motor vehicle travel patterns. New, innovative counters that use infrared technology and travel speeds to distinguish walking, bicycling, motorcycles, and driving will be used to assess travel. This information will be combined with more traditional visual counts as well as phone-based data (Streetlight, Strava, etc.).

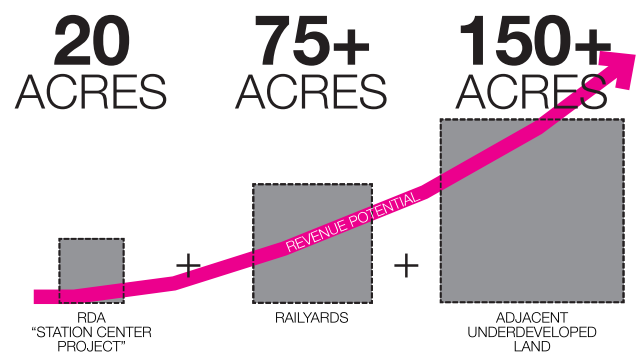
**Innovative Project Delivery.** *The Study* will streamline the preliminary engineering aspects toward more rapid environmental permitting by integrating engineering considerations into the evaluation of alternatives. In addition, the consideration of bridges, tunnels, train trench or other options will engage the community by collaborating with an artist or team of artists through the Salt Lake City Arts Council to aid the community in considering new ideas and a different vision for these east-west passages. The project delivery will request consultant proposals that include one or more local, westside community organizations as a sub-consultant for the engagement and outreach aspects. The Westside community organizations might include

local chapters of labor unions, contractors, or other traditionally blue-collar communities.

**Innovative Financing.** While innovative financing is not part of delivering *the Study*, the City anticipates that funding subsequent construction phases may have opportunities for new financing approaches, including public-private partnerships with developers, leveraged loan funding as a result of considerable number of acres of valuable urban land made available for development if the train trench option is selected, and innovation in combined project delivery with large scale projects such as UDOT planned changes to I-15.

Land Gains for Development

Cameron Blakely, *The Rio Grande Plan*



If tens of acres of downtown land were to become available as a result of undergrounding the rail lines, innovative financing and real estate considerations would come into play in a future construction phase, a follow-up to this Study.





## SECTION 5

PROJECT  
READINESS.

the City will issue a Request for Qualifications/Request for Proposal (RFQ/RFP) for the project. A selection team that includes City staff and project team representatives will review proposals and select the best qualified consultant team for the project. Qualifications will include expertise in the considerations of Class 1 railroads.

## 5.1 Readiness to Proceed

Upon notification of a RAISE award and after finalizing a Grant Agreement with the US Department of Transportation,

## 5.2 Environmental Risk

The Study planning process will advance its recommendations through the federal environmental review in accordance with NEPA to address environmental risk related to future crossing improvements.

## Solving the Puzzle - Study Schedule

		2022		2023				2024				2025	
STAGE	TASK	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
throughout	PROJECT MANAGEMENT												
	Grant Award Notice												
	Grant Obligation												
	Reporting												
	Community Engagement												
1	ANALYSIS OF OPTIONS												
	Purpose and Need												
	Screening Criteria												
	Public Workshops												
	Alternatives Definition / Conceptual Design												
	Artistic Visioning												
	Alternatives Evaluation												
	Equity Analysis												
2	ENVIRONMENTAL REVIEW & DOCUMENTATION												
	Environmental Determination												
	Environmental Review and Documentation												
	Implementation Strategy												
3	PRELIMINARY ENGINEERING & BCA												
	10-30% Design / Structural												
	Artistic Design / Engineering												
	Budget Refinements												
	Benefit Cost Analysis (BCA)												



### 5.3 Project Schedule

The table on the next page presents a 36-month schedule for executing *the Study*. Public involvement will be conducted at multiple stages to secure meaningful community input, in particular engaging with the EJ community concerns and disadvantaged community residents. The schedule assumes obligation of the RAISE Planning grant funds by early 2023 and completion by June 2025 well in advance of the statutory deadline (June 30, 2026).

### 5.4 Required Approvals

**Environmental Permits and Reviews.** There are no permitting nor approvals required to deliver the project. Resource agency concurrence will be sought during the project, of which the NEPA process is a part.

**State and Local Approvals.** Legislative approval of the options recommended by *the Study* will be sought from the Salt Lake City Council, and concurrence will be sought from UDOT, UTA, UPRR, and any relevant state and local resource agencies identified during the scoping process, such as the State Historic Preservation Office, the Utah Division of Indian Affairs, and the Salt Lake City Historic Landmarks Commission.

**Federal Transportation Requirements Affecting State and Local Planning.** East-west crossings are identified for priority improvements in the

**Salt Lake City Pedestrian and Bicycle Master Plan** (2015). The **Salt Lake City Transit Master Plan** (2017) identifies a need for a grade-separated crossing on or near 900 South. Corridors and/or spot improvements, such as bridges or tunnels, are identified in the **Regional Transportation Plan** (RTP). Five crossings are identified in the Salt Lake County **Active Transportation Implementation Plan** (SLCo ATIP).

**5.4.4. Assessment of Project Risks and Mitigation Strategies.** Salt Lake City has a solid reputation for administration of grants across the spectrum of federal, state, and private sources. The City manages multi-million-dollar planning and construction projects in full compliance with NEPA and other federal requirements with a professional staff of civil engineers, landscape architects, architects, surveyors, GIS specialists, planners, water/sewer utility managers and engineers, and stormwater managers. Project manager, Salt Lake City Transportation Division, has the technical expertise and stakeholder leveraging capacity to deliver the project on time and within budget. The City regularly issues requests for competitive bids packages, and risks from procurement delays are minimal. The local match is committed and presents no material risk.

Crossing	SLC Ped Bike Master Plan	SLC Transit Master Plan	SLCo ATIP	RTP	Other Master Plans or Studies
900 South	X	X	X	X	9 Line Trail Extension Study
400 South	X	X	X	X	
600 North	X	X	X	X	600 / 700 North Mobility, Safety and Transit Improvement Study
1700 South	X		X	X	
800 South	X				
1300 South	X	X		X	Ballpark Station Area Plan
200 South					
2100 South / Parleys Trail	X		X	X	

