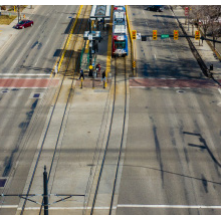
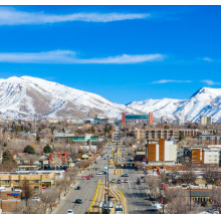
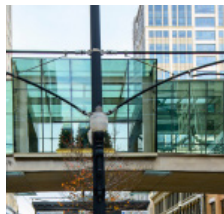
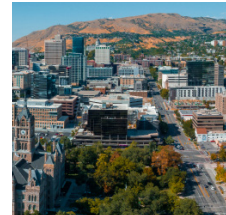
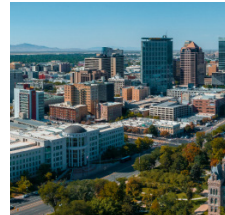
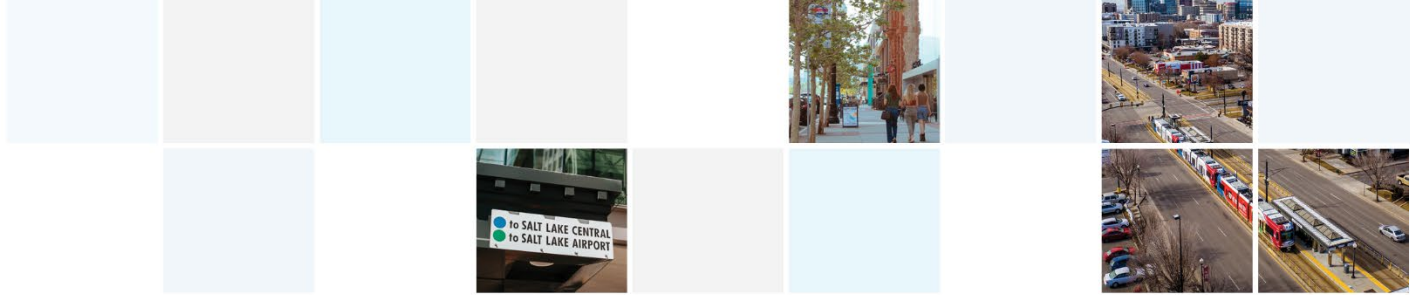




# APPENDIX C: PURPOSE AND NEED REPORT





# TechLink TRAX Study

## Purpose and Need Report

### February 2024

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## List of Acronyms

ATO	Access to Opportunities
CO	Carbon Monoxide
EPA	Environmental Protection Agency
FOLR	Future of Light Rail
GHG	Greenhouse Gas
HTRZ	Housing and Transit Reinvestment Zone
LRT	Light Rail Transit
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NoTE	North Temple District
PM	Particulate Matter
RTP	Regional Transportation Plan
TAZ	Traffic Analysis Zone
TSP	Transit Signal Priority
UDOT	Utah Department of Transportation
UTA	Utah Transit Authority
V/C	Volume over Capacity
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, the University of Utah, Wasatch Front Regional Council (WFRC), and the Utah Department of Transportation (UDOT), has initiated the TechLink TRAX Study to analyze an additional light rail (TRAX) service between the Salt Lake City International Airport and the University of Utah, including a spur into Research Park and a spur south into the Granary District that connects into the Ballpark Station. Analysis will also include potential operational changes with the Blue and Green TRAX line termini. This study will follow a transparent and collaborative process that includes the following steps (also shown in Figure 1 below).

1. **Establish Project and Community Context** – Collecting data and documenting existing and future conditions within the study area, with a pointed emphasis on understanding past and current inequities for disadvantaged populations and opportunities to promote sustainability.
2. **Determine Study Goals and Purpose and Need** – Investigating and documenting the Purpose and Need for the proposed project to define why the project is being considered, particularly for those diverse populations with varying transit needs.
3. **Identify Project Alternatives** – Developing different ways the Purpose and Need for the project can be achieved.
4. **Perform Screening and Preliminary Environmental Analysis** – Qualitatively and quantitatively evaluating factors to understand how the alternatives meet the Purpose and Need. This step will also include a preliminary environmental analysis of built and natural resources within the study area.
5. **Prepare Final Report and National Environmental Policy Act (NEPA) Initiation** – Documenting the rest of the process above in a Final Report and preparing materials for NEPA initiation.

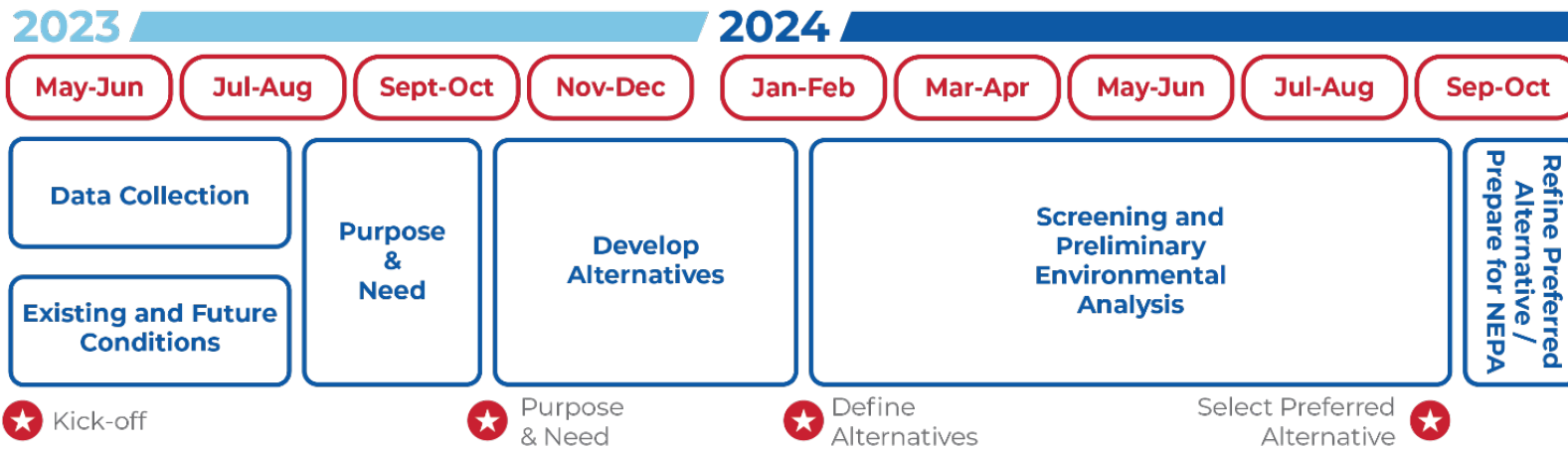


Figure 1. Steps and Timeline for the TechLink TRAX Study

The purpose of this report is to document the findings that support the definition of the project Purpose and Need. The report builds upon and highlights the review of existing and future conditions and coordination with project partners.

### 1.2 Study Goals

Study goals are different than the project Purpose and Need and define the desired outcomes for this phase of planning work. The TechLink TRAX Study goals have been defined in the Project Charter. 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 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.

### 1.3 Study Area

The TechLink TRAX study area extends from the Salt Lake City International Airport on the west side of Salt Lake City through the downtown area and east into the University of Utah (approximately 7.75 miles in direct point-to-point distance). This east-west section of the study area has existing TRAX service with several lines in operation. 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 a new rail extension south into the Granary District area of Salt Lake City and eventually connecting to the Ballpark Station (Figure 2), as well as a spur into Research Park. Much of this report will focus on highlighting specific areas (e.g., the Granary District, the University of Utah, or North Temple [NoTe] District) to report on key information that is unique to the study area and that will better inform the project Purpose and Need.



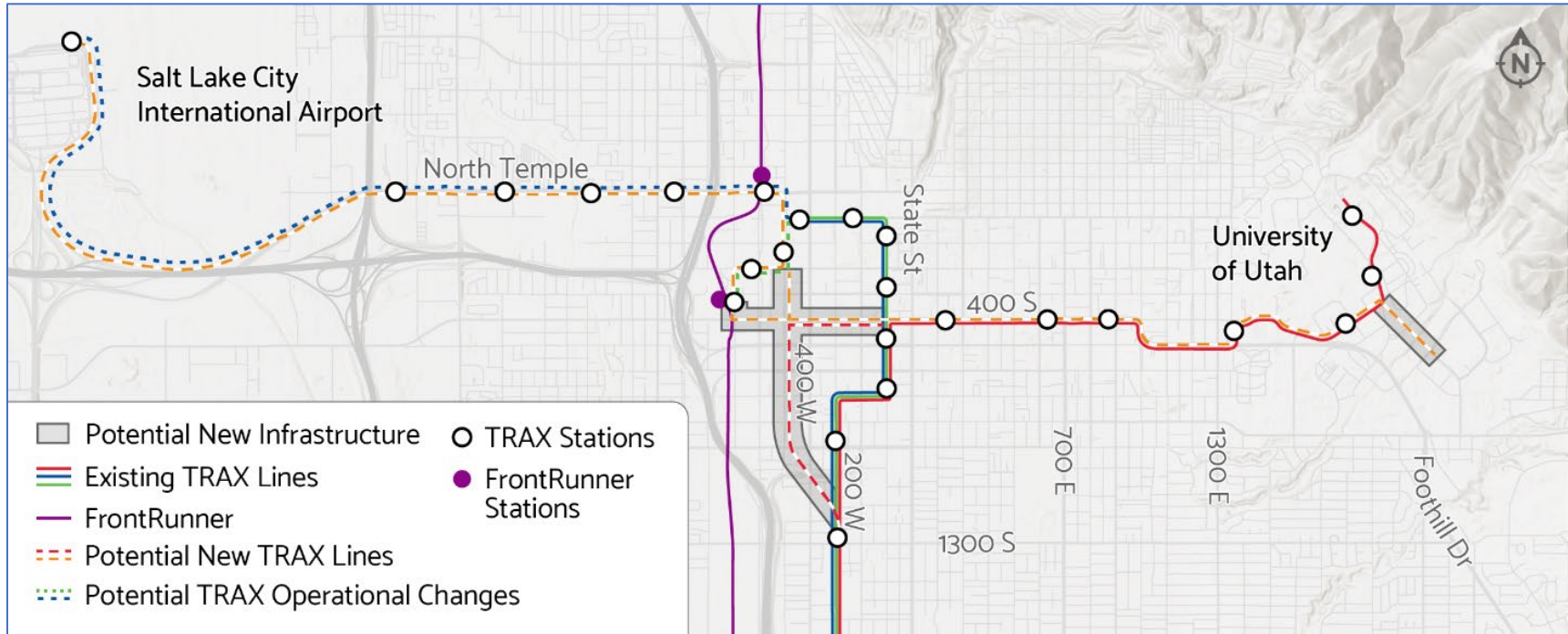


Figure 2. TechLink TRAX Study Area



## 2 Project Purpose and Need

If a major transit project seeks potential federal or state funding, a Purpose and Need statement is required under federal or state environmental regulations. The statement is used to help guide decisions about alternatives that should be considered and helps measure their performance. The project Purpose and Need was developed through an iterative and collaborative process and informed by an understanding of the study area context (documented in the Existing and Future Conditions Report) and ongoing agency coordination and input.

### 2.1 Project Purpose

The following purpose statements describe the objectives to be achieved by this project.

The project purpose is to:

- Support the long-range transportation growth demand for local and regional trips with origins and destinations in Salt Lake City.
- Improve TRAX operational reliability and capacity throughout the region.
- Enhance access and mobility between existing and emerging areas of economic development, including technology and innovation centers in Salt Lake City.
- Increase access to opportunities (e.g., education, employment, and resources) for disadvantaged populations.
- Provide sustainable transportation options that minimize impacts to the environment.

### 2.2 Project Need

The project needs for the TechLink project justify the project purpose and can be broken down into five different categories: local and regional travel demand, TRAX operations and capacity, access and connectivity, equity, and sustainability. Each category is broken down into specific needs as described below.

#### 2.2.1 Local and Regional Travel Demand

**Need: At a regional level, the Wasatch Front is rapidly growing, with Salt Lake City remaining a dense urban center attracting commuters and visitors from throughout the region.**

---

**Key Definitions:** A project's **purpose** defines the objectives to be achieved. A project's **need** describes the underlying problems or conditions that the project should address.

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Between 2020 and 2050, Salt Lake City’s population is expected to increase by 34%, with additional regional transportation demand pressures from neighboring commuting populations. For example, Salt Lake County is expected to grow in population by 30%, from approximately 1.18 million people to 1.53 million people. Employment in Salt Lake City is also projected to grow rapidly by 52% as the city densifies and attracts high-tech and innovation companies into the downtown, Granary District, and University of Utah areas. While Salt Lake City’s population growth is lower and more stable than the rest of the state, the percentage of change expected by 2050 is still higher than Salt Lake County as a whole. Table 1 presents growth projections.

*Table 1. Population and Employment Growth*

Location	Population			Employment		
	2020	2050	% change	2020	2050	% change
State of Utah	3,325,425	5,017,232	<b>51%</b>	2,163,867	3,214,743	<b>49%</b>
Salt Lake County	1,181,471	1,531,282	<b>30%</b>	970,805	1,341,790	<b>38%</b>
Salt Lake City	199,000	266,748	<b>34%</b>	348,177	530,185	<b>52%</b>

Sources: Kem C. Gardner Policy Institute; WFRC Travel Demand Model, WFRC Regional Transportation Plan

Total trips on key roadways in the study area are also expected to increase, therefore creating additional travel demand. This is generally attributed to the future growth in housing availability with added densification and redevelopment primarily in the Granary District and around the Salt Lake Central Station as well as substantial job growth in the Granary District and at the University of Utah. Like the rest of the Wasatch Front, the existing built urban environment and other geographic constraints like the Wasatch Mountains pose challenges to adding new transportation facilities, and focusing on expanding transit service and coverage will be critical to enhancing mobility.

Of particular interest are the 500 South and 600 South corridors near the I-15 interchanges just north of the Granary District. Operational capacity is expected to decrease on select segments by 2050. The volume over capacity (v/c) analysis for AM and PM peak periods shows a decrease in operational stability. (The v/c ratio compares the volume of traffic to the theoretical capacity of the facility to accommodate traffic. A ratio of less than 1.0 means the corridor is under capacity, equal to 1.0 means the corridor is at capacity, and greater than 1.0 means the corridor is over capacity.) The AM peak is less impacted than the PM peak, but 500 South still sees a v/c increase from 0.63 in 2023 to 0.84 in 2050, and

600 South sees a v/c increase from 1.10 to 1.34 (Figure 3). During the PM peak, 500 South sees v/c increase from 1.18 in 2023 to 1.33 in 2050, and 600 South sees an increase from 0.98 in to 1.36 (Figure 4).

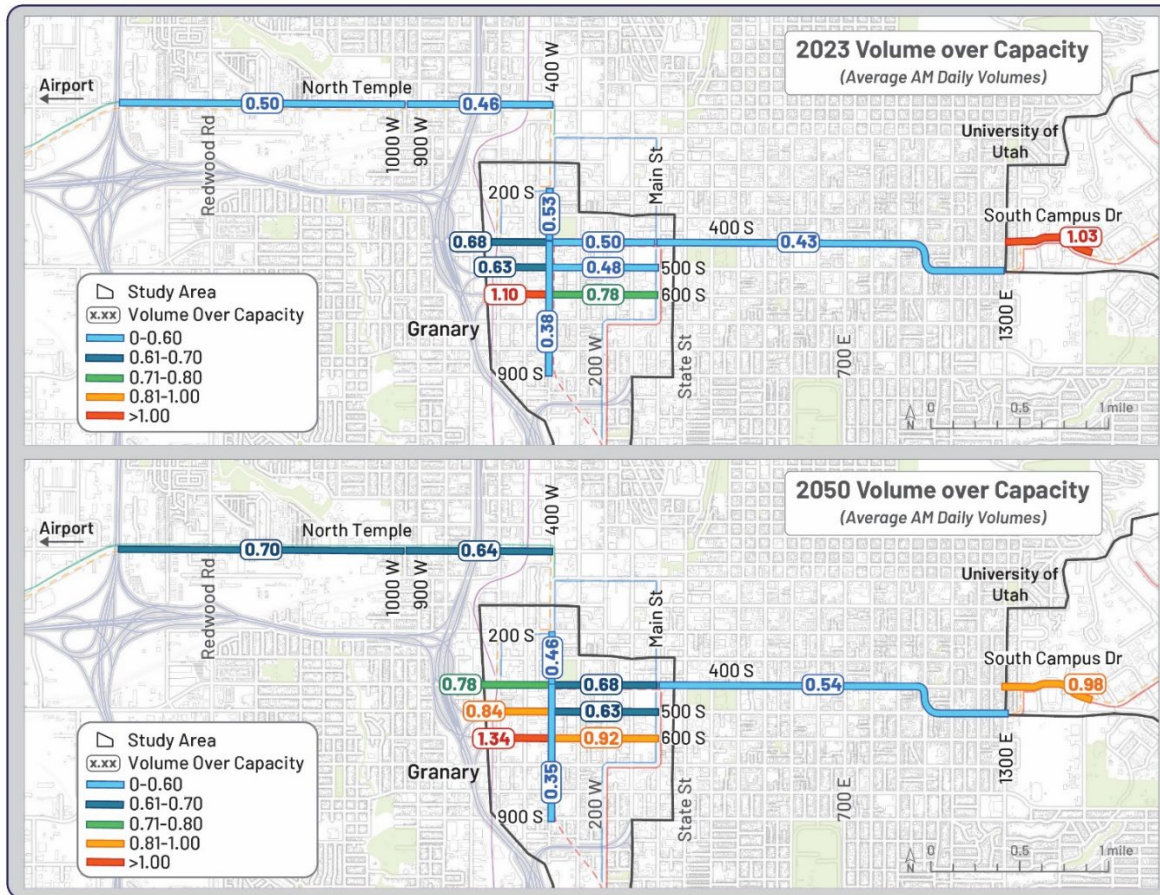


Figure 3. 2023 and 2050 Volume over Capacity (V/C) AM Peak for Key Study Area Corridors

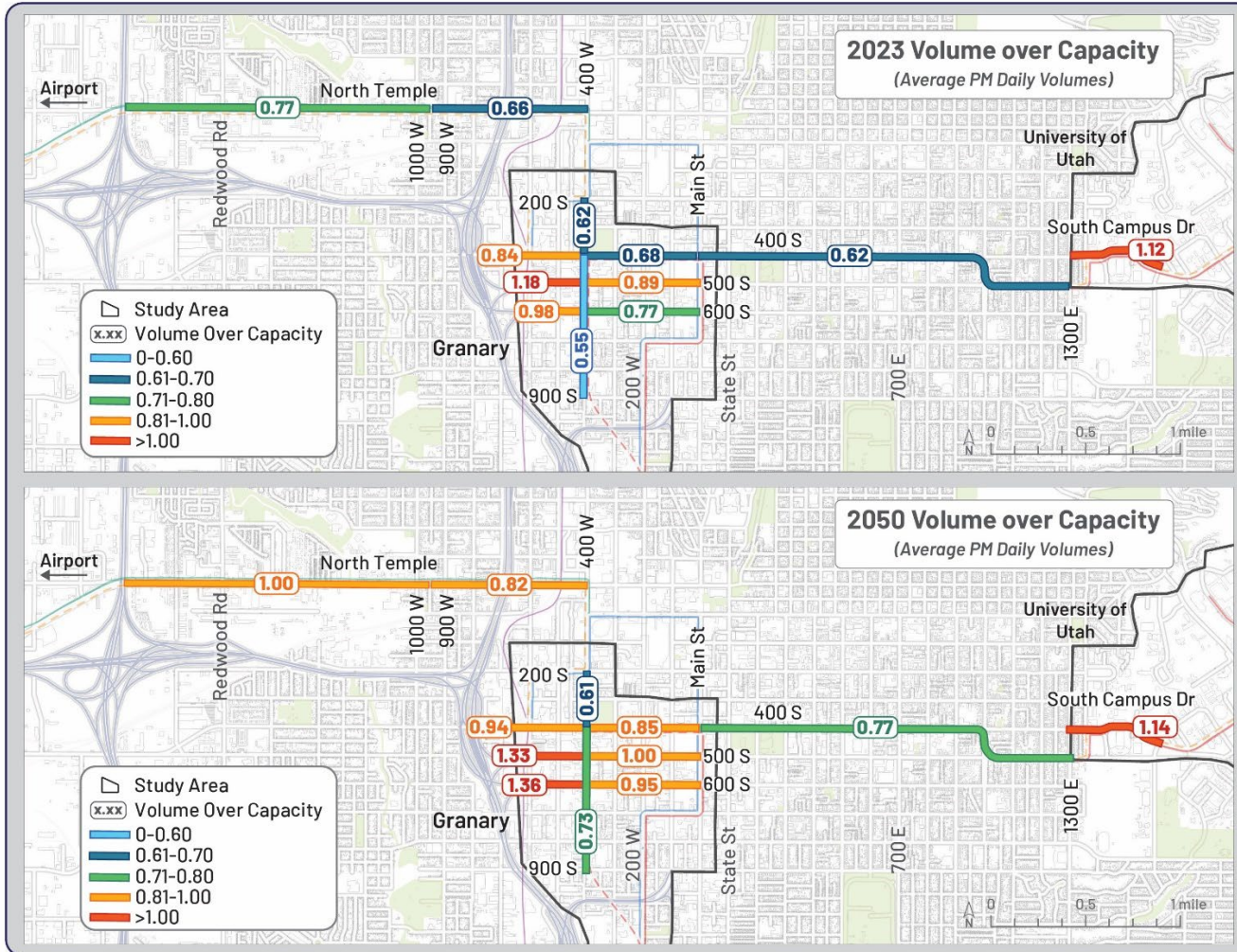


Figure 4. 2023 and 2050 Volume over Capacity (V/C) PM Peak for Key Study Area Corridors



**Need: At a local level, roadway infrastructure in Salt Lake City is largely built out and additional transportation options are needed for residents, commuters, and visitors alike.**

Salt Lake City's urban center is almost entirely constrained with existing infrastructure for land uses and the roadway network. Therefore, growth will be seen in the forms of redevelopment and infill to add density for both housing and employment (see section 2.2.4 for more detail). The influx of additional residents and employees in the study area will create increased demand on existing transportation infrastructure with limited opportunity to expand roadways to accommodate single occupancy vehicles. WFRC's Regional Transportation Plan (RTP) indicates that all programmed roadway projects in the TechLink TRAX study area are exclusively operational improvements. In addition, Salt Lake City and the University of Utah have aggressive transportation goals to elevate nonmotorized modes of transportation and reduce dependency on single occupancy vehicles. This further solidifies the need for alternative modes of transportation, including added transit frequency and coverage to accommodate future travel needs.

The WFRC Regional Travel Demand Model (version 9) shows that demand for transit will increase substantially between 2023 and 2050 in the study area. Origin and destination patterns were analyzed for transit trips only. Geographic areas on the maps provided in this section represent the predefined "small districts" established in the model, and the color intensity correlates to how many of the trips end in each district from the specified origin location (e.g., Granary District, University of Utah, etc.). The darker color represents a higher number of trips that end in that small district.

Transit trips originating in the Granary District are forecasted to increase by over 500%; trips beginning in the Granary District and ending at the airport will increase by 192% (Figure 5). There is also strong transit trip growth forecast for trips starting in the Granary District and ending in other parts of downtown, the University of Utah, and throughout the region as a whole.

A strong origin and destination pair will also be activated between the University of Utah and the Granary District in 2050, with transit trips increasing 279-530% to the Granary District from districts within the University of Utah as well as downtown and throughout the region (Figure 6).

Lastly, in 2050 transit trips from the airport to the Granary District are expected to increase by 193%, trips downtown are expected to increase 420%, and trips are expected to generally increase throughout the region (Figure 7).

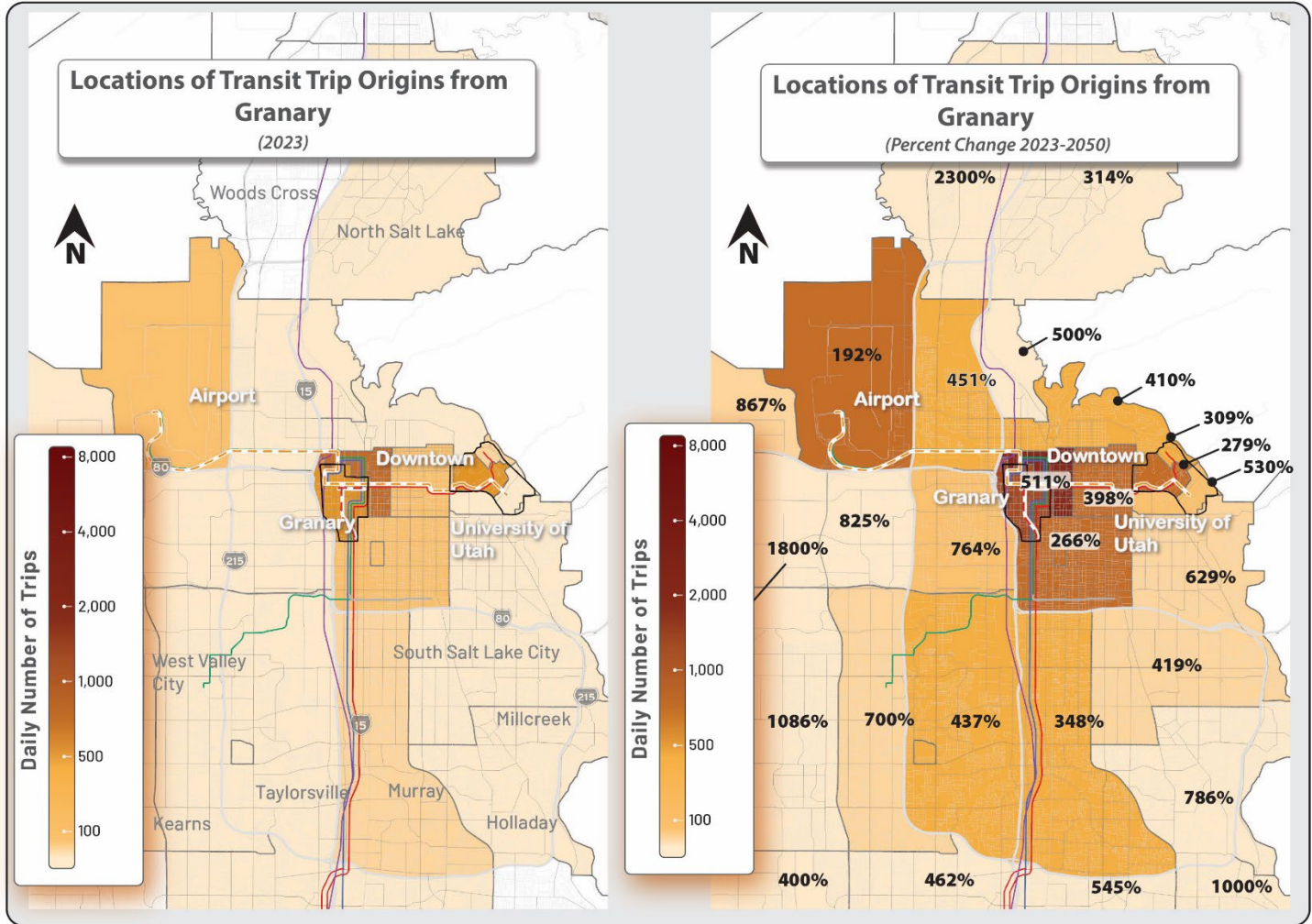


Figure 5. Distribution of Transit Trips Beginning from the Granary District in 2050

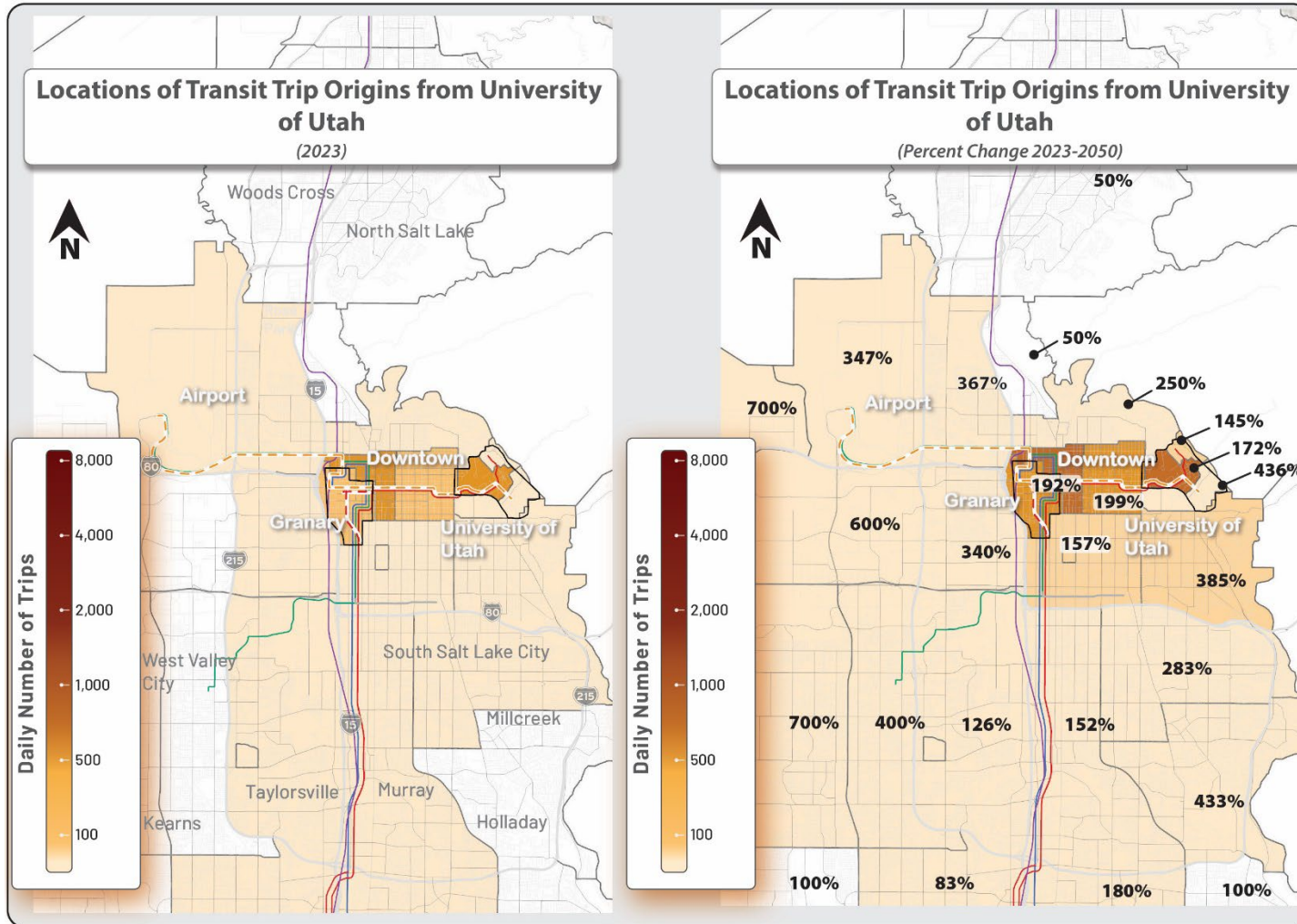


Figure 6. Distribution of Transit Trips Beginning from the University of Utah in 2050



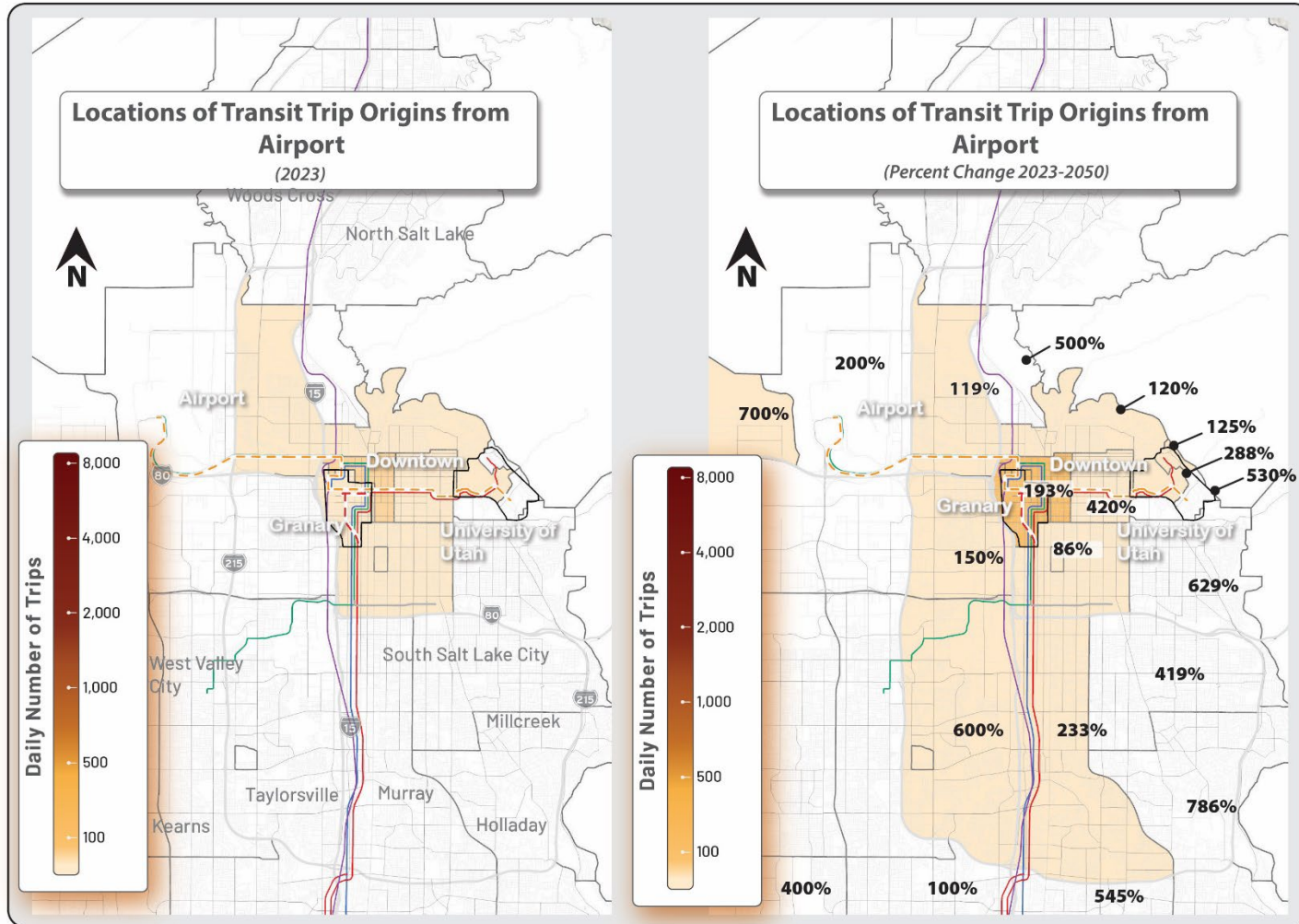


Figure 7. Distribution of Transit Trips Beginning at the Airport in 2050



### 2.2.2 TRAX Operations and Capacity

**Need: TRAX Red Line, Green Line, and Blue Line share track in the heart of downtown, which can cause operational challenges that increase travel times and degrade reliability.**

The TRAX Red Line, Green Line, and Blue Line share track downtown from Courthouse Station to Central Pointe Station, and the TRAX Blue Line and Green Line share track from Arena Station to Gallivan Plaza Station. The shared track can lead to delays within the system when trains are bunched or there is heavy demand from other intersection users such as motor vehicles and pedestrians. These delays can cascade through the entire TRAX network should an operating incident occur along any of those shared sections of track.

Proposed improvements that create additional redundancy within the system could potentially alleviate those concerns and increase reliability, as measured by on-time performance for all trains at all stations within the TRAX network. The UTA Future of Light Rail (FOLR) Strategic Plan (January 2023) summarizes the investigation of numerous rail system improvement and expansion scenarios and compares these to a Future Baseline Scenario<sup>1</sup> that does not include any TRAX system improvements. Relevant to TechLink, FOLR is projected to have higher on-time performance compared to the Future Baseline Scenario (Table 2). These findings reflect the collective on-time performance benefits of implementing Transit Signal Priority (TSP), making changes in train patterns at the capacity-constraining 400 South/Main Street intersection, and expanding the TRAX network in both the Granary District and Research Park.

*Table 2. Future Baseline Scenario vs. Future of Light Rail Strategic Plan - On-time Performance*

Combined Average	TRAX Train Line				Combined Average
	Blue Line	Red Line	Green Line	Orange Line	
<b>Future Baseline Scenario</b>	96.0%	89.1%	92.6%	--	92.5%
<b>Light Rail Strategic Plan</b>	95.0%	99.0%	93.5%	97.3%	96.4%

The FOLR also identified the need to provide for additional system resiliency in the event of a blockage at Salt Lake Central Station or on Main Street by allowing trains to be routed around closed or blocked tracks and would also allow for staging of non-revenue trains for special events. Currently, the Ballpark Spur is a location to “pocket” a disabled train or train being staged for special events service, but if that track becomes a

<sup>1</sup> The Future Baseline Scenario includes existing light rail infrastructure plus a relocated Airport Terminal Station and a new 650 South Station.



mainline track as proposed by the FOLR, an alternate storage location is needed. The FOLR proposed 400 West (Pioneer Park) as being a potential location for a Non-Revenue Connector that has access from the Ballpark Spur, 400 South, and Main Street.

**Need: Capacity is limited in the existing TRAX system, and capital improvements are needed to increase capacity to accommodate future growth.**

To increase capacity in the system to meet projected demand, specific expansion improvements were identified in the FOLR. Furthermore, the FOLR emphasized strategically sharing key pieces of infrastructure and only adding where the network is at capacity. The specific challenges that will be addressed and their corresponding proposed strategic improvements include:

- **Challenge:** The turning movement at 400 South and Main Street consumes capacity and requires a dedicated traffic signal phase, and additional service expansions cannot be accommodated within the existing track alignment.
  - **Proposed improvement:** Implementing a straight running service (heading straight east/west along 400 South instead of turning at Main Street) via the Red Line realignment and as part of the new Orange Line would avoid that specific turning movement. The improvement would also add capacity to the system by serving a new market (Granary District via Red Line) and providing additional service via the Orange Line. These service expansions would not be possible without the addition of a straight running service at the intersection, allowing all four future TRAX lines to operate in parallel with pedestrian and motor vehicle movements. This change at the Main Street and 400 South intersection would likely require a full grand union.
- **Challenge:** A surge in ridership demand at the start and end of major sporting and entertainment events at the University of Utah.
  - **Proposed improvement:** The extension into Research Park, in addition to supporting the new Orange Line service between the University of Utah, Salt Lake Central Station, and the airport, would provide important special events service capabilities, allowing UTA to better serve the surge ridership demands at the start and end of major sporting and entertainment events at the University of Utah's Stadium Station.
- **Challenge:** Ridership along 400 South maintains some of the highest daily boardings in the TRAX system (Figure 8).
  - **Proposed improvement:** An additional TRAX service running on this corridor's existing track and continuing to the airport would help meet the capacity needs along this vital corridor by doubling all-day frequencies.

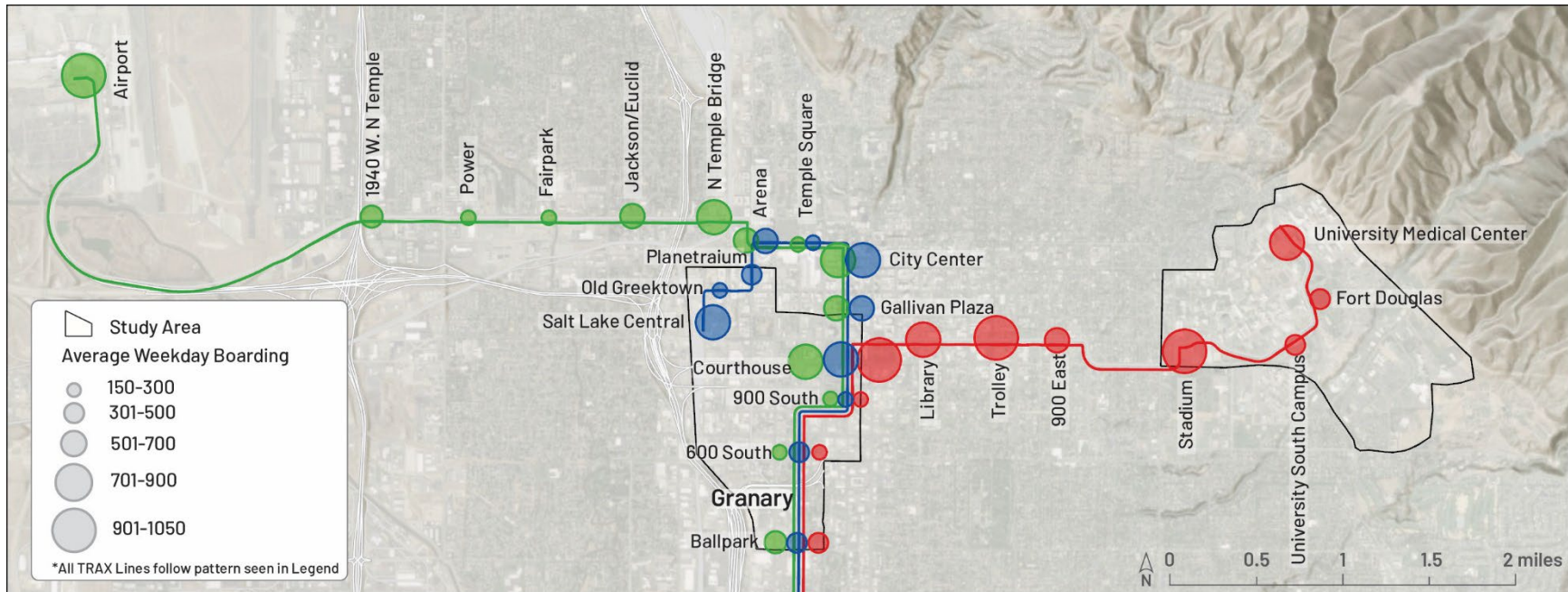


Figure 8. Average Weekly TRAX Boardings in the Study Area

### 2.2.3 Access and Connectivity

**Need:** Land use conditions are rapidly changing along the corridors in the study area, triggering additional trip generation and demand for non-vehicular mode choices.

Salt Lake City is seeing industrial areas being redeveloped as mixed-use, existing residential areas densifying, and high-tech and institutionally related employment opportunities increasing their presence in the city. Specifically, as the NoTe District, Depot District, Granary District, Ballpark Neighborhood, Central Business District, and University of Utah continue to densify and housing and mixed-use developments are added,



connectivity for nonmotorized modes will be in higher demand. The recently approved Housing and Transit Reinvestment Zone (HTRZ)<sup>2</sup> overlay in the Granary District will mandate that 51% of developing land must be housing, which estimates approximately 10,000 new housing units. Housing in the Research Park portion of the University of Utah is also expected to see up to 11,000 new units by 2050. Figure 9 shows increases in population by Traffic Analysis Zone (TAZ), which is a geographic unit of the Travel Demand Model that contains socioeconomic data such as population and employment.<sup>3</sup> Density brings an increase of people walking, bicycling, and accessing transit.

The existing gridded street network in Salt Lake City provides good connectivity for all modes. However, comfortable and safe facilities for nonmotorized modes are often lacking. The proposed TRAX spurs into the Granary District and Research Park, along with increases in service frequency throughout the study area, would help facilitate transit ridership from the increase of mixed-use development (Figure 10) and warrant the development of additional first/last mile connections.

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<sup>2</sup> In 2021, the State of Utah established the Housing and Transit Reinvestment Zone (HTRZ) Act. This legislation allows for municipalities to capture tax increment revenue around certain public transit facilities to promote transit-oriented development.

<sup>3</sup> Note that TAZ sizes vary throughout the study area as shown on Figure 9. For instance, in the Granary District, there are several TAZs that add up to over 10,000 new housing units and these individual TAZs are shown as a lighter color. However, cumulatively these TAZs add up to over 10,000 new units instead of showing all 10,000 units in one TAZ.

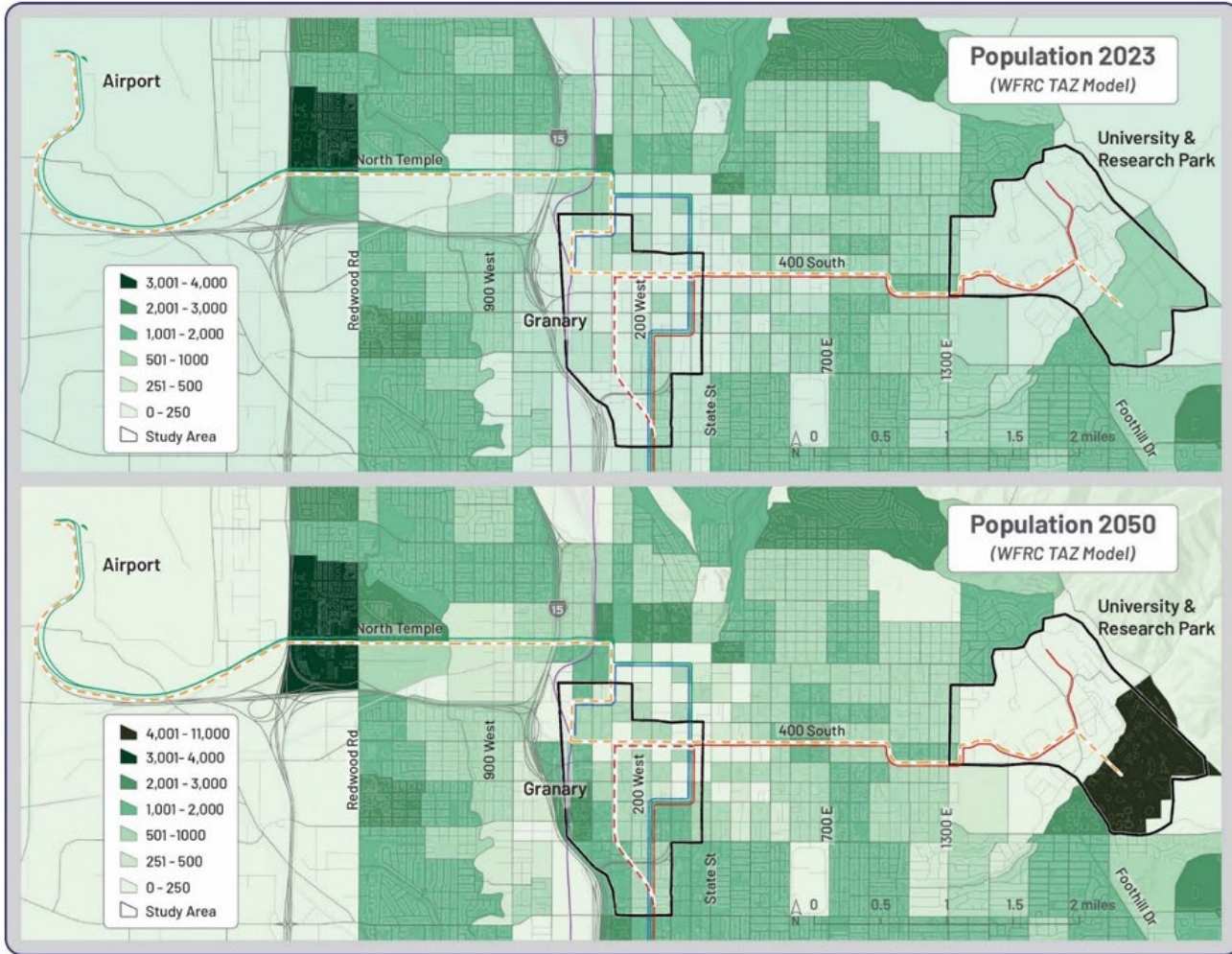


Figure 9. 2023 and 2050 Population Densities by TAZ

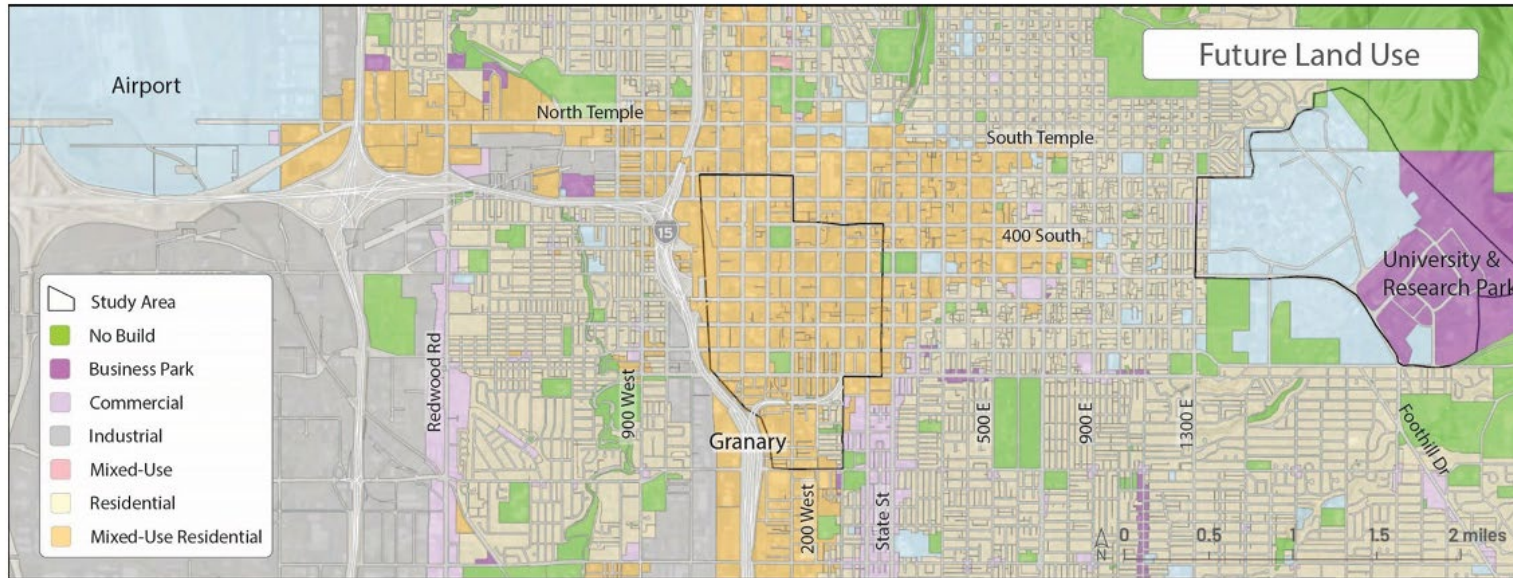


Figure 10. Future Land Use 2050

**Need: Additional connections are needed to improve/east west connectivity, specifically between the Salt Lake City International Airport, NoTe District, Depot District, Granary District, Ballpark Neighborhood, Central Business District, and the University of Utah.**

Salt Lake City has been proactive in planning the densifying of communities through land use planning and the development of various transportation studies, including the Salt Lake City Street Typologies Guide (2021). The Street Typologies Guide offers aspirational guidance for roadway cross sections throughout Salt Lake City but does not mandate these as requirements. The gridded street network provides adequate coverage for transportation mobility in general, except for some of the circuitous roadways through the University of Utah campus. However, existing roadways are primarily vehicle-focused and lack comfortable connected networks for walking and biking. Additionally, transit services to the University of Utah are in high demand, with some of the highest boardings in the study area seen on 400 South (see Figure 8, above). To that end, the Street Typologies Guide should be applied within the study area as it relates to alternatives development and refinement to adequately



accommodate nonmotorized travelers and improve east-west connectivity. Alternatives should reflect the high origin and destination patterns highlighted in Figure 5, Figure 6, and Figure 7 above and provide opportunities for connectivity, particularly in disadvantaged areas.

#### 2.2.4 Equity

**Need: High proportions of low-income and minority populations are present throughout the study area.**

Compared to Salt Lake County as a whole, there are disproportionately high percentages of underserved communities, including minority and low-income<sup>4</sup> populations, within the study area. According to the [UTA Title VI Program, updated in 2022](#), the UTA service area population is 74.1% non-minority and 25.9% minority, which falls between the range of Salt Lake County and the State of Utah. The UTA service area population is 66.3% not low-income and 33.7% low-income, which is substantially higher than both Salt Lake County and the State of Utah.

Table 3 below shows minority and low-income populations of each census tract within the study area compared to Salt Lake County and the State of Utah. For the purposes of interpreting Table 3, minority includes the following categories: Black or African American, American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, some other race, and two or more races. The U.S. Census includes Hispanic or Latino as an ethnicity and is not included as a specific race that is a subset of the minority populations.

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<sup>4</sup> Per Executive Order 12898 and FTA Circular 4703.1, low-income residents are defined as households with an income level at or below the federal poverty level for a four-person household as determined by the Department of Health and Human Services (\$26,200 for a family of four in 2020).



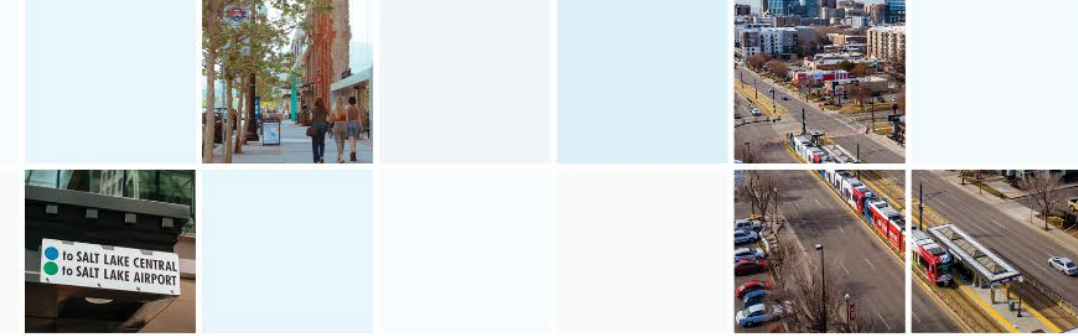
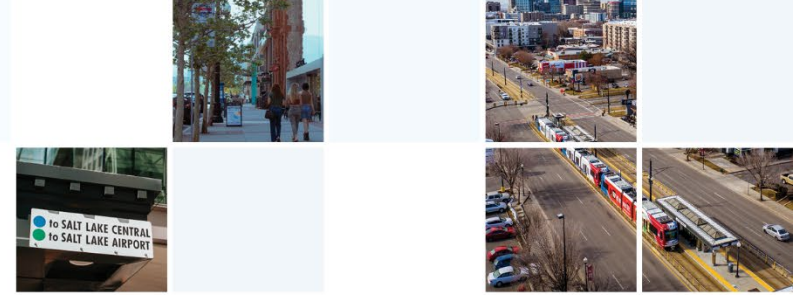


Table 3. Demographics by Census Tract, County, and State

Characteristic	Census Tract 1001	Census Tract 1003.06	Census Tract 1006	Census Tract 1014.01	Census Tract 1014.02	Census Tract 1015	Census Tract 1016	Census Tract 1017	Census Tract 1018	Census Tract 1019	Census Tract 1020	Census Tract 1021	Census Tract 1023	Census Tract 1025.01	Census Tract 1025.02	Census Tract 1026	Census Tract 1027.02	Census Tract 1029	Census Tract 1140	Census Tract 9800	Salt Lake County	State of Utah
Population	2,987	6,043	6,699	2,171	4,339	3,288	3,742	3,582	3,347	3,103	2,837	2,378	3,153	3,134	2,062	4,391	3,704	5,768	4,344	16	1,185,238	3,271,616
<b>Housing and Vehicle Access:</b>																						
No Vehicle Available	18.7%	9.5%	13.9%	15.3%	20.2%	13.2%	17.4%	9.6%	11.5%	26.8%	16.2%	27.4%	39.1%	34.3%	29.0%	6.9%	11.5%	23.2%	15.6%	n/d	5.2%	4.0%
One Vehicle Available	36.3%	39.7%	41.2%	77.9%	46.6%	46.0%	44.4%	58.1%	45.6%	61.2%	49.1%	58.0%	35.4%	53.6%	60.5%	29.4%	39.5%	49.8%	58.7%	n/d	27.4%	23.6%
Housing Units Occupied by Renters	78.8%	63.2%	30.2%	100.0%	100.0%	76.4%	69.6%	82.5%	74.3%	92.5%	76.4%	80.4%	81.6%	88.0%	74.4%	43.3%	52.5%	84.2%	59.4%	n/d	32.6%	29.5%
Gross Rent 30% or More of Household Income	32.9%	33.1%	52.8%	47.3%	71.4%	67.0%	57.1%	56.6%	31.6%	55.5%	42.5%	43.0%	47.6%	55.0%	52.2%	57.6%	60.7%	58.6%	47.3%	n/d	46.3%	45.4%
Median Income	\$48,875	\$29,990	\$32,962	\$10,292	\$7,879	\$22,019	\$29,414	\$30,202	\$38,013	\$35,147	\$34,437	\$43,762	\$33,885	\$36,345	\$46,913	\$29,545	\$27,500	\$30,404	\$53,378	n/d	\$39,715	\$35,921
Percent of Population Below the Poverty Level	11.1%	7.3%	32.6%	65.2%	59.9%	34.4%	30.5%	28.8%	17.4%	32.8%	18.1%	18.7%	31.4%	23.1%	14.7%	19.5%	24.5%	27.7%	16.8%	n/d	8.4%	8.8%
With Cash Public Assistance Income or Food Stamps/SNAP	15.6%	7.9%	19.3%	11.5%	17.8%	4.2%	6.3%	2.8%	6.4%	4.6%	15.1%	12.7%	21.8%	7.8%	29.8%	13.0%	9.5%	24.0%	12.2%	n/d	6.6%	6.8%
<b>Race and Ethnicity:</b>																						
Minority	34.7%	55.2%	45.6%	41.9%	39.4%	21.4%	21.9%	26.9%	24.1%	28.5%	28.1%	32.5%	39.5%	43.1%	29.3%	53.9%	63.6%	43.0%	27.5%	31.2%	28.5%	21.3%
Non-minority (white)	65.3%	44.8%	54.6%	58.1%	60.6%	78.6%	78.1%	73.1%	75.9%	71.5%	71.9%	67.5%	60.5%	56.9%	70.7%	46.1%	36.4%	57.0%	72.5%	68.8%	71.5%	78.7%
<b>Demographic Breakdown of Minority Populations</b>																						
Black or African American	4.5%	6.3%	3.9%	1.9%	5.1%	1.6%	2.4%	2.0%	1.4%	3.1%	2.5%	8.1%	6.1%	6.0%	4.3%	2.9%	3.2%	8.5%	3.7%	0.0%	2.0%	1.2%
American Indian or Alaskan Native	1.3%	1.7%	2.8%	0.8%	0.2%	0.9%	0.8%	1.1%	1.1%	1.0%	1.5%	2.2%	2.9%	2.7%	1.9%	3.3%	1.9%	2.9%	1.5%	0.0%	1.1%	1.3%
Asian	6.0%	6.7%	2.2%	28.5%	15.8%	8.4%	6.7%	10.8%	7.9%	11.8%	6.3%	5.0%	8.8%	8.2%	9.2%	3.8%	5.3%	4.2%	6.1%	0.0%	4.3%	2.5%
Native Hawaiian or Other Pacific Islander	1.7%	5.6%	3.3%	0.7%	0.8%	0.3%	0.2%	0.6%	1.0%	0.5%	1.3%	0.6%	1.0%	0.7%	0.7%	5.7%	5.2%	1.7%	1.4%	0.0%	1.8%	1.1%
Some Other Race	9.0%	22.4%	20.7%	2.4%	13.1%	2.6%	3.4%	4.0%	4.6%	4.2%	5.6%	6.7%	10.2%	11.3%	4.6%	23.6%	35.1%	12.6%	5.8%	0.0%	9.4%	6.7%
Two or More Races	12.2%	12.4%	12.4%	7.6%	4.5%	7.7%	8.3%	8.3%	8.1%	7.8%	10.9%	9.9%	10.7%	14.1%	8.6%	14.4%	12.9%	13.2%	9.0%	31.3%	9.9%	8.5%
Hispanic or Latino (any race)	21.0%	45.3%	41.5%	6.0%	13.9%	7.8%	9.3%	10.0%	11.0%	12.4%	15.1%	19.5%	20.7%	23.5%	12.0%	44.5%	60.4%	27.5%	14.6%	18.8%	19.6%	15.1%
Shading indicates the percentages are 10% higher than the Salt Lake County percentages.																						
Shading indicates the percentages are higher than the Salt Lake County percentages.																						
Shading indicates the percentages are 10% lower than the Salt Lake County percentages.																						

Sources: U.S. Census Bureau. Decennial Census 2020. Accessed October 2023 at <https://data.census.gov>

U.S. Census Bureau. American Community Survey 5-Year Estimates 2021. Accessed October 2023 at <https://data.census.gov>



The study area contains numerous Census Tracts that have higher percentages of minority populations compared to Salt Lake County and the State of Utah as a whole. Census Tracts with higher proportions of minority populations are present in the NoTe District, Ballpark Neighborhood, and University of Utah (Figure 11). Low-income populations identified in the study area geographically follow the same patterns as the minority populations (Table 3 above and Figure 11). Often, minority populations also have other socioeconomic indicators that indicate disadvantages, including low income. However, it is important to note that the University of Utah area houses many student populations which are racially and culturally diverse and can fall under low-income categories in Census reporting. Addressing the challenges of transportation access, affordability, and connectivity in this region becomes imperative to ensure equitable mobility solutions for all residents.

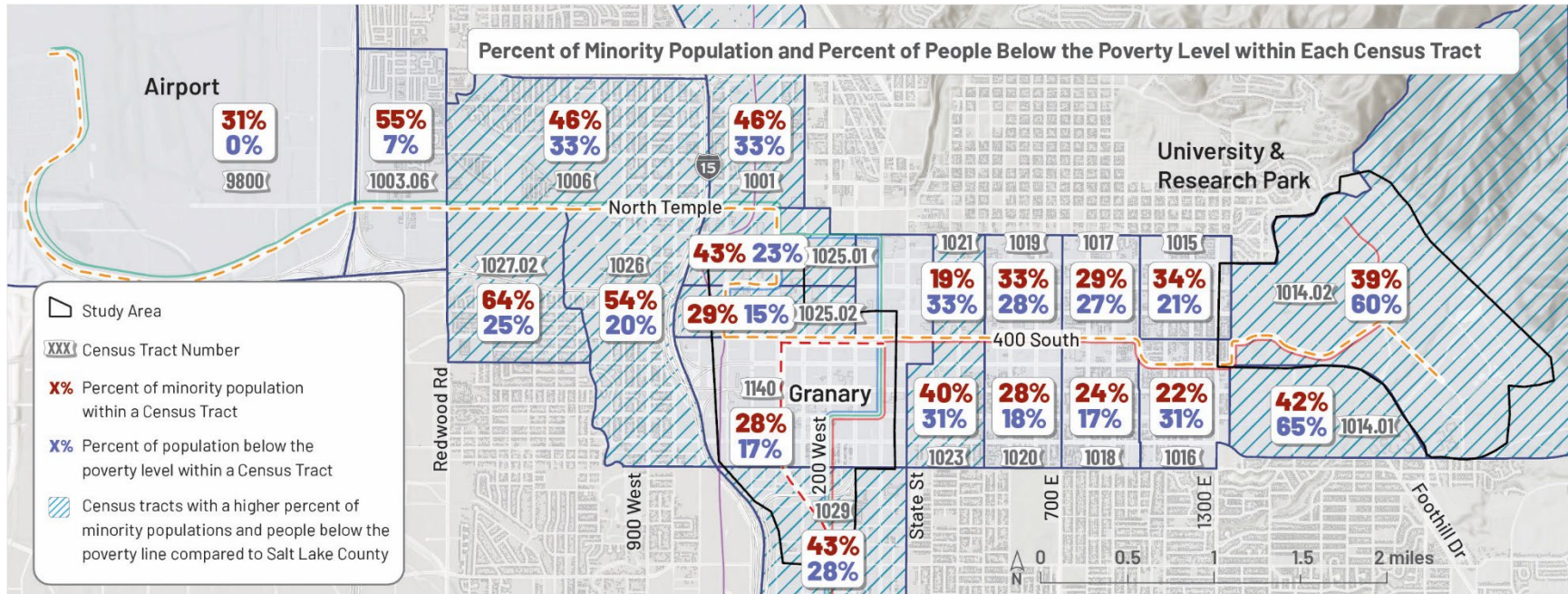
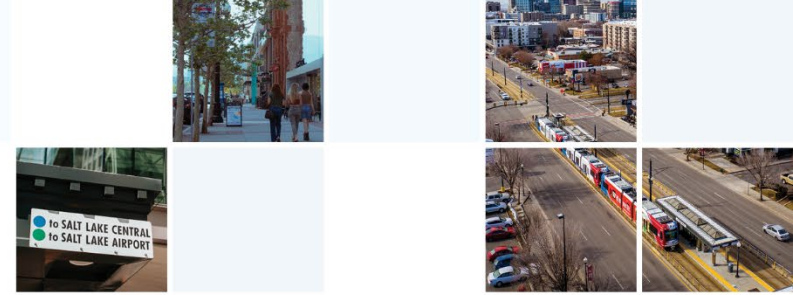


Figure 11. Percent of Minority Population and Population Below the Poverty Level by Census Tract





**Need: Low-income and minority populations in the study area also coincide with areas of higher rent burden and limited access to vehicles.**

Within the study area, there are varying levels of rent burden across different neighborhoods, highlighting the potential disparities in transportation access and choices among residents (Figure 12). The University of Utah is located within an area that shows residents are in the 51-60% and 61-70% percentile range for rent burden, likely an indicator of dense student housing on or near campus. However, it is important to note that no housing currently exists within Research Park.<sup>5</sup>

On the other hand, the downtown area and the NoTe District fall within the 41-50% percentile of rent burden. Although slightly lower than the University of Utah, this percentile still indicates a significant number of households facing rent burden challenges in the downtown area. As a result, residents in this region might also experience limitations in their transportation choices and mobility options, which could impact their ability to access employment centers, educational institutions, and other crucial amenities within the city.

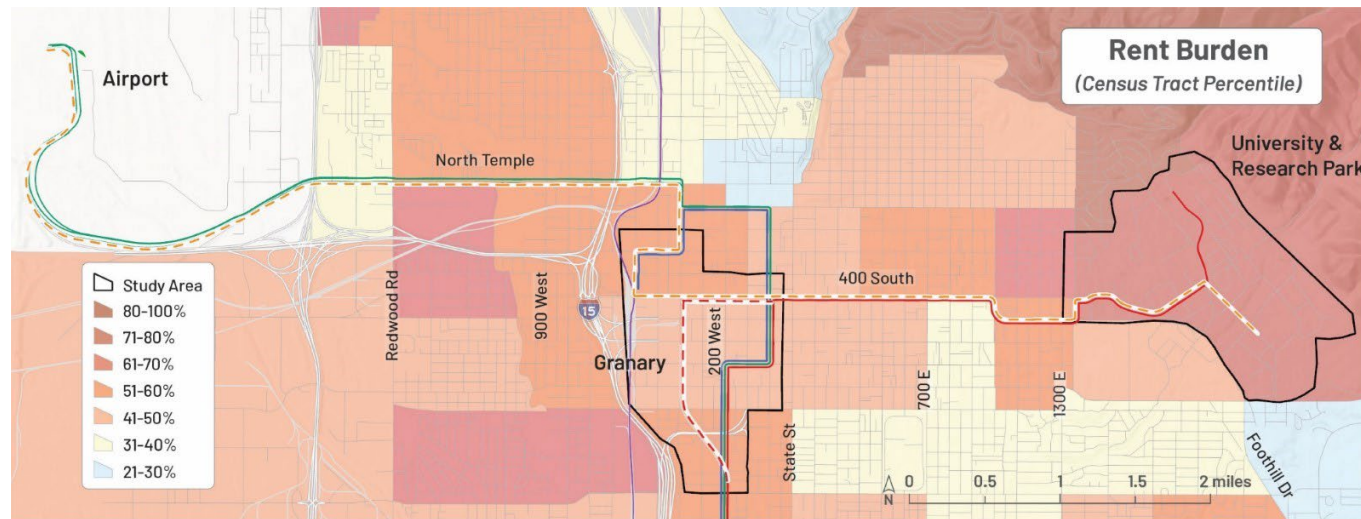
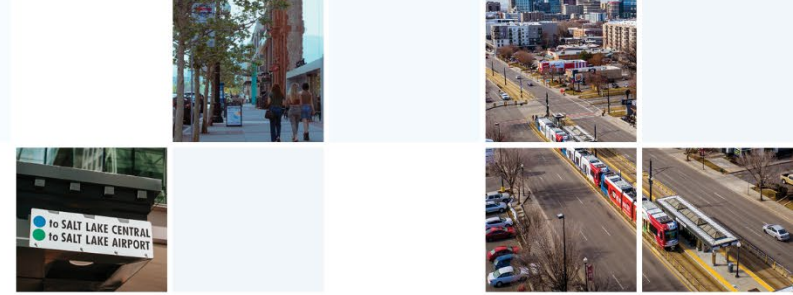


Figure 12. Rent Burden by Census Tract

<sup>5</sup> In the Travel Demand Model, the TAZ that includes Research Park also includes areas within the University of Utah that have housing, so on Figure 12, it appears there is housing in the Research Park portion of the University of Utah where there currently is none.





The reliance on public transportation among minority and low-income populations can be attributed to various socioeconomic factors and historical patterns of urban development. Many minority communities, especially in urban areas, have limited access to personal vehicles due to financial constraints. Lower income levels often make owning and maintaining a car financially unfeasible, leaving public transportation as the primary means of affordable mobility. The NoTe District, east downtown, and the Ballpark Neighborhood house high concentrations of zero-car households (Figure 13).

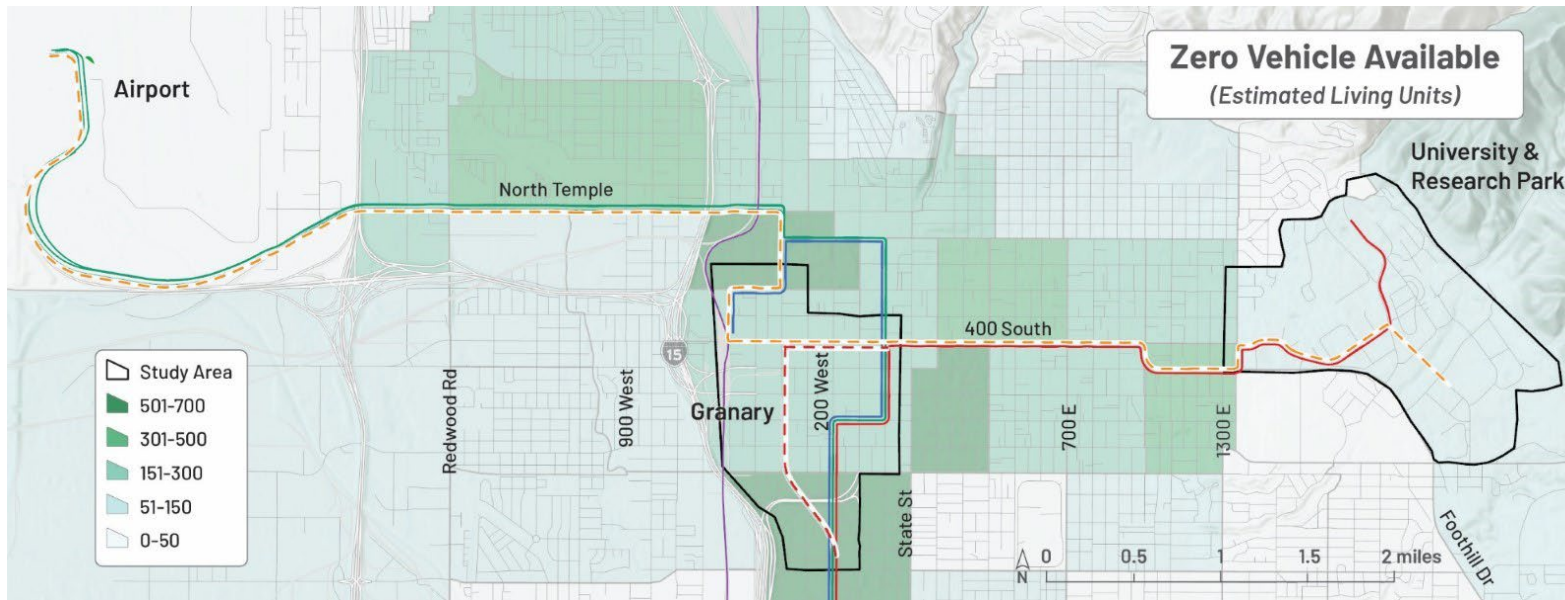
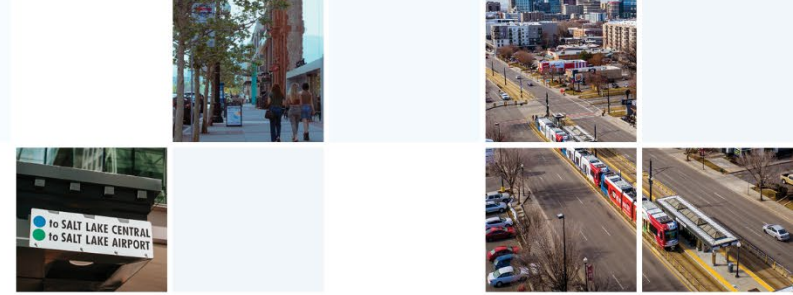


Figure 13. Zero Vehicle Households

**Need: There is limited transportation access to opportunities (employment, education, and services) for populations within the study area that are traditionally underserved.**

UTA's FrontRunner, TRAX light rail, and various types of bus routes (regular, limited, and frequent) service the study area, and there are strong multimodal networks that exist in the downtown Salt Lake City core (Figure 14). The TRAX Red Line, Blue Line, and Green Line will be most





pertinent to this study as increased use of shared rail lines is explored. Currently, these three services share the same track from Courthouse Station to Central Pointe Station in downtown Salt Lake City, causing operational and reliability concerns that can strongly affect service systemwide if there is an issue on or near the track. In addition, the Blue Line and Green Line share track from Salt Lake Central Station to Gallivan Plaza Station in downtown Salt Lake City.

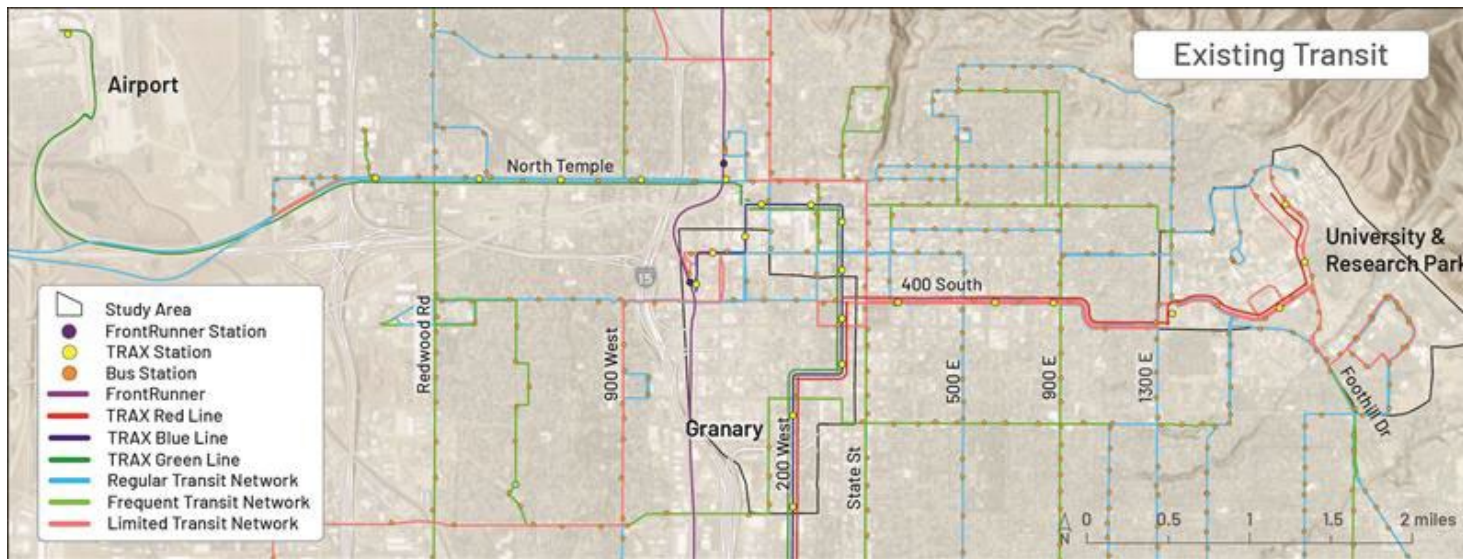
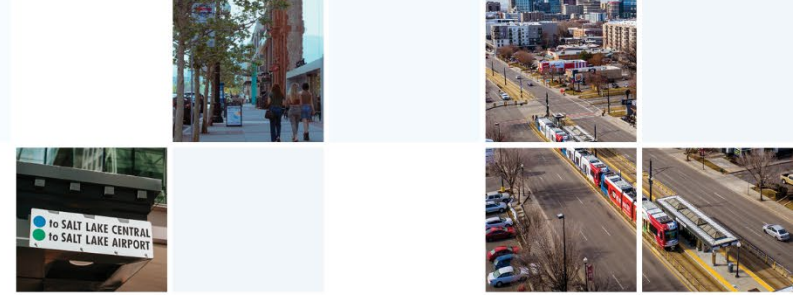


Figure 14. Existing Transit Network

On the University of Utah campus, a gridded road network does not exist, and buses are limited to circuitous routes and long travel times. The University of Utah also services a campus shuttle with five lines in addition to an on-demand shuttle (Figure 15). The Blue Detour, Orange (different from the proposed TRAX Orange Line), and Wasatch Express lines service the main campus area while the Circulator Route travels the entire campus, encompassing Research Park. Most of the routes run between 6 a.m. and 6 p.m. with the Wasatch Express and Orange lines running until 10 p.m. and 7 p.m., respectively. The University of Utah also provides shuttles to specifically travel from the main campus area to





the university medical facilities. UTA also services the University of Utah, with an emphasis on connecting people to and from campus and to and from the University of Utah Medical Center.

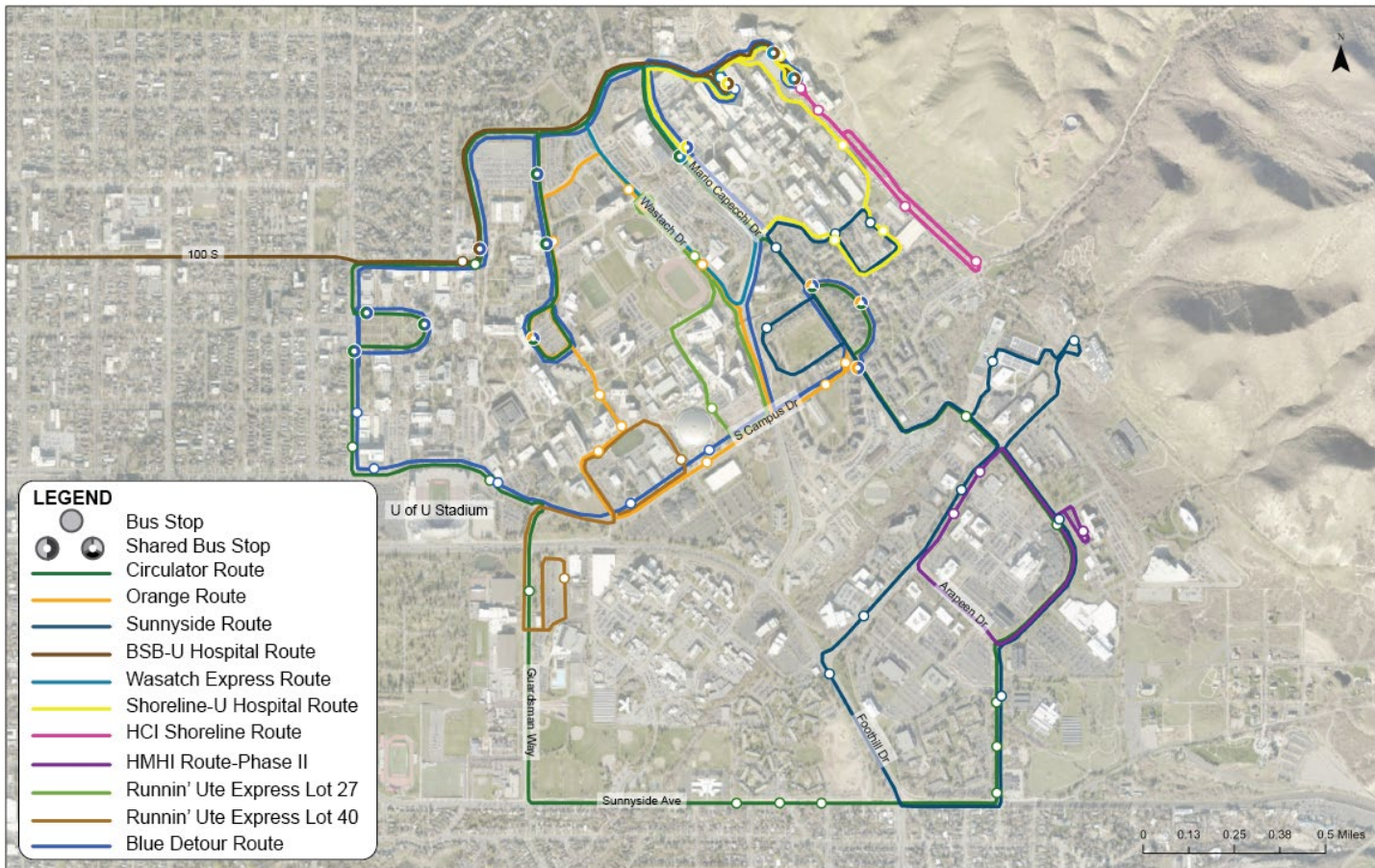
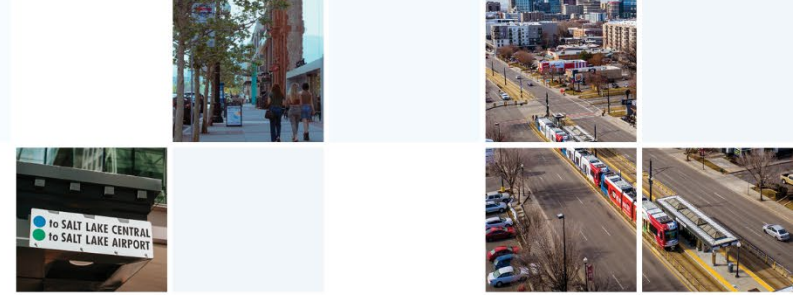


Figure 15. University of Utah Existing Transit Network





WFRC and partner organizations use Access to Opportunities (ATO) to pursue the most effective transportation plans and land use decisions. ATO is a way to measure how well people can connect via transit to basic needs and amenities including jobs, schools, health care centers, grocery and other retail, parks, community centers, recreation, and entertainment. When ATO is used in partnership with Equity Focus Areas, defined as census tracts with greater than 25% low-income, greater than 40% persons of color, and greater than 10% zero-car households, agencies can effectively increase the quality of life for underserved populations that may benefit most from alternate forms of transportation to access key needs.

In Figure 16, red areas indicate that demand is high, not necessarily that access is good. ATO demand remains high in the downtown, Granary District, and east 400 South corridor areas. ATO demand remains low west of I-15 and along North Temple, which is indicative of a strong correlation of lacking ATO and high populations of disadvantaged communities.

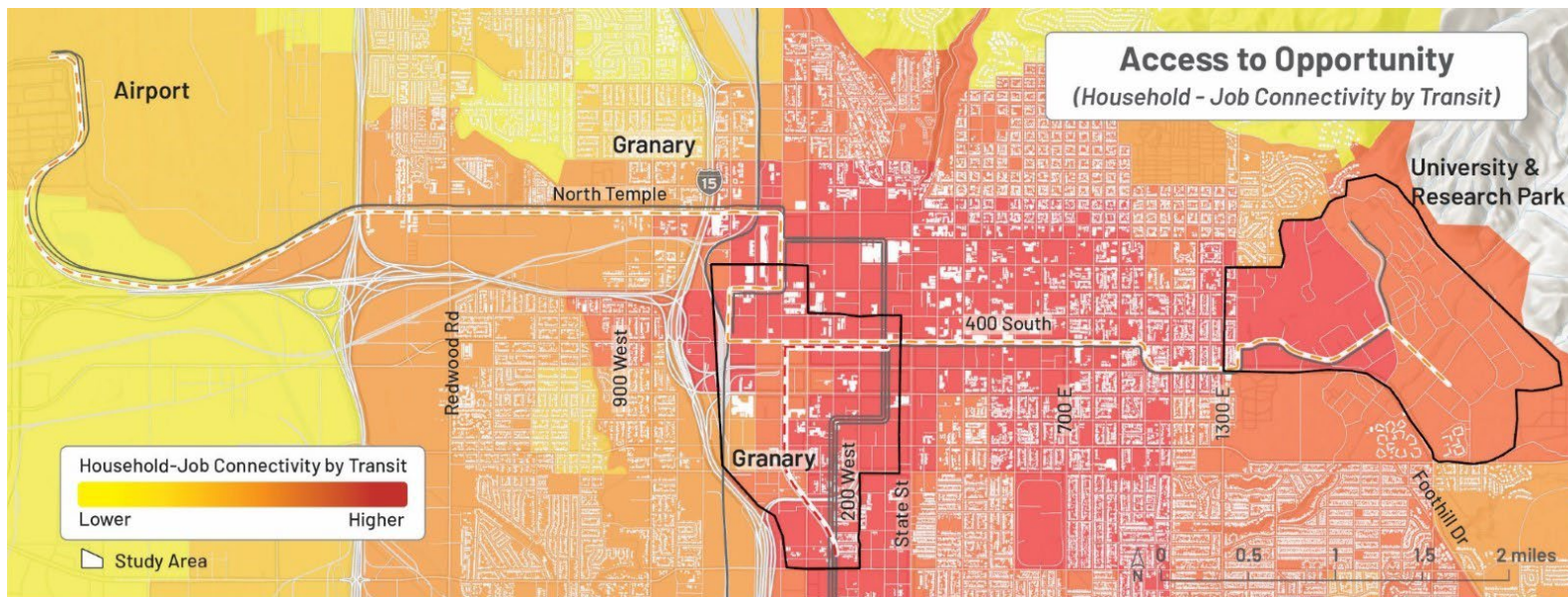
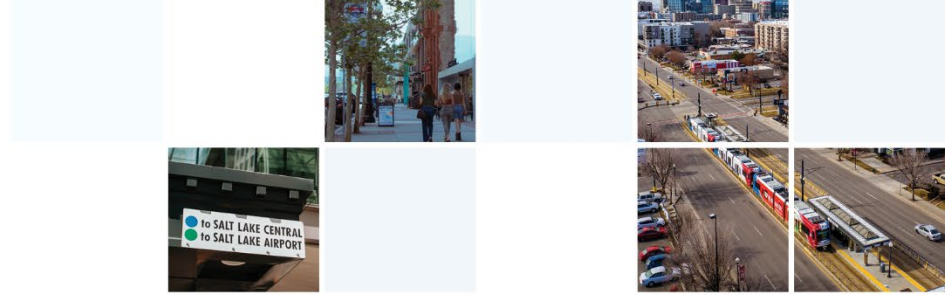


Figure 16. Access to Opportunity





### 2.2.5 Sustainability

**Need: Poor air quality is an area of concern within the study area. Greenhouse gas (GHG) and vehicle emissions are key drivers of poor air quality.**

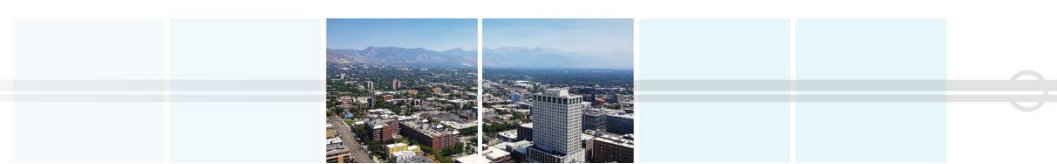
The National Ambient Air Quality Standards (NAAQS) define limits for ambient concentrations of regulated air pollutants. Areas that exceed the NAAQS for a certain pollutant are considered nonattainment areas. If a nonattainment area begins to comply with NAAQS limits, it is redesignated as a maintenance area. The TechLink TRAX study area falls within the Northern Wasatch Front nonattainment area for the 8-hour average ozone standard. Listed as a marginal nonattainment area in 2018, the Northern Wasatch Front area was raised to moderate nonattainment status after failing to attain the 8-hour ozone NAAQS by 2021. If the nonattainment area does not meet the NAAQS limit by 2025, it will be raised again in 2025 to a serious nonattainment area. The TechLink TRAX study area is also located within maintenance areas for carbon monoxide (CO), Particulate Matter (PM10), and 1-hour ozone.

**Need: Climate change will exacerbate existing air quality and urban heat island effects, and low-income and minority populations will likely be disproportionately affected.**

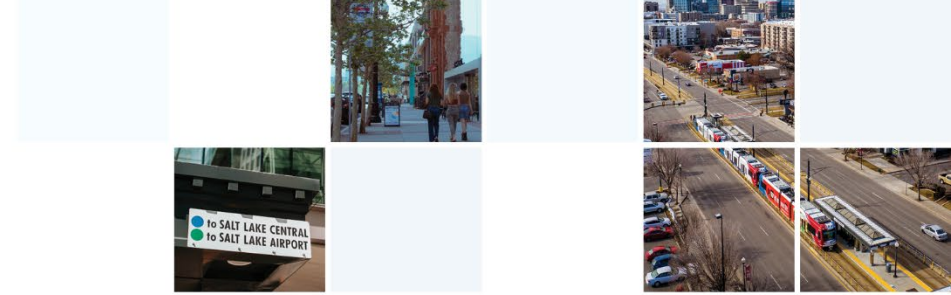
Another significant element aiding climate change is the urban heat island effect. This effect is when an urban area is significantly warmer than the surrounding rural area due to urban surfaces, urban geometry, anthropogenic heat, and the urban greenhouse effect. The Environmental Protection Agency (EPA) reports that peak temperatures of unshaded areas in a city can be up to 20-45°F hotter than shaded areas. Trees and vegetation lower surface and air temperatures by providing shade and through evapotranspiration, the process by which water is transferred from the land to the atmosphere by evaporation. Evapotranspiration, alone or in combination with shading, can help reduce peak summer temperatures by 2-9°F. Strategically placed vegetation in a city is shown to reduce energy usage, lower GHG emissions, improve air quality, enhance stormwater management, reduce pavement maintenance, and improve quality of life.

**Need: There is a regional commitment to implementing sustainable strategies to improve air quality and reduce energy consumption.**

UTA, Salt Lake City, University of Utah, and WFRC all have statements of commitment to sustainability:







- UTA – [2014 Sustainability Report](#)<sup>6</sup>: UTA’s vision is to help conserve the diminishing fossil fuel resources while planning and preparing for the energy demand, increased population growth, and the mounting need to conserve water and improve the air quality within an EPA designated nonattainment area.
- Salt Lake City – [Climate Positive 2040](#): Salt Lake City is committed to protecting the public health and safety of its residents, including ensuring access to clean air, clean water, and a livable environment. Climate Positive 2040 highlights the transformational changes needed for Salt Lake City to reach long-term climate and energy goals. Salt Lake City is prioritizing a near-term transition to clean, renewable energy to remove carbon pollution from electricity generation that makes up over half of the community carbon footprint.
- University of Utah – [University of Utah - Sustainability Commitment](#): The University of Utah has committed to achieving carbon neutrality and to integrating sustainable practices that foster new, clean energy; local food; better transit; and responsible living through innovations that are prosperous for the campus and community.
- WFRC – [Air Quality and the Wasatch Choice Vision](#): The choices we make in building our infrastructure and designing our communities have a direct impact on Utah’s quality. By giving people more transportation choices to take transit, bike, and walk, we reduce auto emissions. By designing walkable communities with a mix of housing types, jobs, and shopping – bringing key destinations together in neighborhood centers – we reduce the length and need for auto trips and reduce per capita emissions.

**Need: Climate change will exacerbate existing air quality and urban heat island effects, and low-income and minority populations will likely be disproportionately affected.**

- Studies have found that urban heat islands disproportionately affect low-income and minority populations.<sup>7</sup> In addition, a recent mapping of Salt Lake City urban heat islands shows that a substantial portion of the study area experiences an increased temperatures up to 8 degrees due to this effect, including in census tracts that have a larger proportion of low-income and minority populations.<sup>8</sup>

<sup>6</sup> Note that UTA is currently drafting an updated sustainability plan which is likely to be adopted by the end of 2024.

<sup>7</sup> Islands of Illness, Melba Newsome, Nature, September 2023.

<sup>8</sup> Urban Heat Hot Spots in 65 Cities, July 2024, <https://www.climatecentral.org/climate-matters/urban-heat-islands-2024>

