Draft Purpose and Need Technical Report

Kimball Junction Environmental Impact Statement

Lead Agency:
Utah Department of Transportation

December 15, 2022

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Acronyms and Abbreviations

AM	morning
Area Plan	*Kimball Junction and SR-224 Area Plan*
ATSPM	Automated Traffic Signal Performance Measure (online database)
BRT	bus rapid transit
CVMA	Canyons Village Management Association
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
I-80	Interstate 80
ITS	Intelligent Transportation Systems
LOS	level of service
LRP	UDOT's Statewide Rural Long-range Transportation Plan 2019–2050
MAG	Mountainland Association of Governments
MOU	Memorandum of Understanding
MP	milepost
NEPA	National Environmental Policy Act
PM	afternoon
SR	State Route
Summit County model	Summit County/Wasatch County travel demand model
UDOT	Utah Department of Transportation
USC	United States Code
WFRC	Wasatch Front Regional Council

1.0 Introduction

The Utah Department of Transportation (UDOT) is preparing an Environmental Impact Statement (EIS) to evaluate proposed transportation improvements at the Interstate 80 (I-80) and State Route 224 (SR-224) interchange at Kimball Junction in Summit County, Utah. The EIS will be prepared according to the provisions of the National Environmental Policy Act (NEPA) and other laws, regulations, and guidelines of the Federal Highway Administration (FHWA). This document conforms to the requirements of UDOT, the project sponsor and lead agency.

FHWA has assigned its responsibilities under NEPA and other federal environmental laws to UDOT for highway projects in Utah, pursuant to 23 United States Code (USC) Section 327, in a Memorandum of Understanding (MOU) dated May 26, 2022. In accordance with the assignment MOU, UDOT is carrying out the environmental review process for the Kimball Junction Project in lieu of FHWA and serves as the lead agency in the NEPA process. The assignment MOU does not change the roles and responsibilities of any other federal agency whose review or approval is required for the project.

1.1 Description of the Needs Assessment Evaluation Area and Logical Termini

1.1.1 Needs Assessment Evaluation Area

The needs assessment evaluation area includes the I-80 and SR-224 interchange at Kimball Junction and SR-224 from Kimball Junction through the two at-grade intersections on SR-224 at Ute Boulevard and Olympic Parkway. The evaluation area also extends from milepost (MP) 143.2 to MP 145.6 on I-80 (Figure 1 and Figure 2).

SR-224 is a four-lane arterial road and a major north-south route that connects the Park City community, including Main Street, Deer Valley Resort, and Park City Mountain Resort, with key Snyderville basin destinations such as Canyons Village at Park City and Kimball Junction as well as I-80 and the Salt Lake Valley. In addition to SR-224 and I-80, the main roads in the evaluation area are Ute Boulevard and Olympic Parkway.

Figure 1. Needs Assessment Evaluation Area

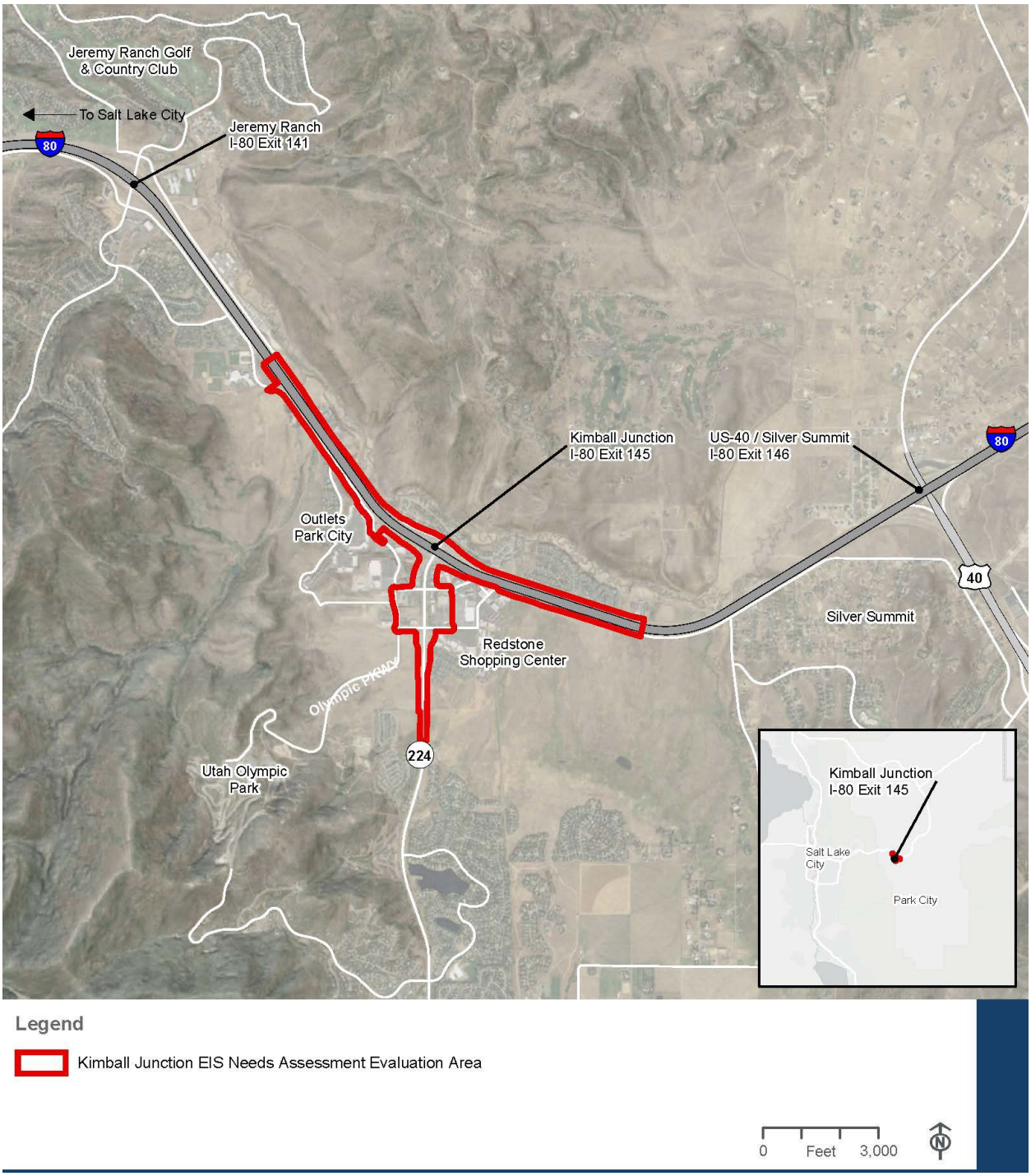


Figure 2. Needs Assessment Evaluation Area Close-up

1.1.2 Logical Termini

For the Kimball Junction Project, the north terminus is Rasmussen Road and SR-224, the south terminus is the Olympic Parkway intersection on SR-224, the west terminus is the Jeremy Ranch interchange on I-80, and the east terminus is the U.S. Highway 40 (U.S. 40) interchange on I-80.

What are logical termini?

Logical termini are the rational end points for evaluating proposed transportation improvements. Generally, they are the points of major traffic generation such as intersecting roads.

For the north and south termini, UDOT concluded that improvements from the I-80 interchange through Olympic Parkway would be reasonable and would allow both the I-80 interchange and SR-224 through Kimball Junction to operate efficiently, even if no additional improvements were made.

Because there is enough separation between Kimball Junction and the next traffic signal to the south (at Bobsled Boulevard), UDOT would not need to make additional improvements on SR-224 to alleviate traffic issues in the Kimball Junction area. Moreover, improving this segment of SR-224 and the I-80 interchange would not restrict alternatives for other reasonably foreseeable transportation projects along SR-224 south of Olympic Parkway.

For the west and east termini, UDOT selected the Jeremy Ranch and U.S. 40 interchanges, respectively, to satisfy FHWA's Interstate Access Change Request requirements. Similarly to the proposed project improvements on SR-224, the proposed project improvements at the Kimball Junction interchange would not force additional improvements on points east and west of this interchange on I-80.

In addition to considering traffic generation and traffic effects when developing the logical termini, UDOT also considered influencing factors (such as access, travel demand, and type of use on SR-224) from surrounding communities, businesses, and future developments.

1.1.3 Evaluation Area Context

The needs assessment evaluation area contains a mix of highly developed, mixed-use residential, commercial, and retail businesses as well as open space and conservation easement lands bordering the commercial zone. Kimball Junction is the designated town center in the Snyderville Basin and is the focal point for living, working, shopping, and entertainment.

According to the *Snyderville Basin General Plan* (Summit County 2015), Kimball Junction serves as a vital hub and employment center of the area. Kimball Junction is the arrival point for the greater Snyderville Basin–Park City region. Among the neighborhood's strengths are its proximity to several primary transportation corridors, its economic vitality, and the nearby open space and recreation amenities.

1.2 Background

1.2.1 Kimball Junction and SR-224 Area Plan

UDOT used its Solutions Development process to study the unique context of the Kimball Junction area and developed a set of preliminary solutions to meet identified transportation needs. The solution sets that UDOT identified included elements such as roadway improvements for motor vehicles, transit and/or active transportation, travel demand management, Intelligent Transportation Systems (ITS) improvements, and land use and other policy changes that would be implemented by local government partners.

An area plan—the *Kimball Junction and SR-224 Area Plan* (Area Plan; UDOT 2021)—was developed to summarize the needs in the Kimball Junction area and establish an initial range of improvements to reduce congestion and improve multimodal travel and connectivity, including at the two at-grade intersections on SR-224. In developing the Area Plan, UDOT also coordinated with agencies, stakeholders, and the public to identify transportation needs, preliminary alternatives, and potentially significant environmental issues. The Area Plan identified the following mobility concerns, which established the foundation for the Purpose and Need Statement for the current EIS process (the Kimball Junction EIS).

What is travel demand?

Travel demand is the expected number of transportation trips in an area. Travel demand can be met by various modes of travel, such as automobile, bus, walking, and bicycling.

- Traffic congestion during peak hours limits mobility to and from I-80 through Kimball Junction.
- Vehicles on the I-80 interchange ramps back up onto the I-80 mainline, and vehicles on SR-224 back up south of Kimball Junction for over a mile.
- Travel time on SR-224 through the Kimball Junction area is unreliable.
- Residences and businesses along SR-224 through the Kimball Junction area are often difficult to access.
- The increase in travel demand from forecasted job, residential, and recreational growth will lead to decreased mobility.
- East-west mobility is lacking on SR-224 through the Kimball Junction area for all travel modes.

1.2.2 Previous Planning Studies

Many plans and studies completed over the last 15-plus years discuss the growing traffic congestion in the Kimball Junction area—plans and studies including local transportation plans, plans for the development of adjacent land use, and regional and statewide plans. Table 1 presents the relevant regional plans and studies that were used to inform the purpose of and need for the Kimball Junction Project.

Table 1. Previous Studies

Plan or Study	Year(s)
S.R. 224 Bus Rapid Transit Categorical Exclusion	2022
Park City Forward Transportation Plan	2022
Park City Short Range Transit Plan	2022
Summit County Long-range Transportation Plan	2022, 2019 & 2015
Kimball Junction and SR-224 Area Plan	2021
Kimball Junction and SR-224 Area Plan Incorporating FHWA Health in Transportation Corridor Planning Framework	2021
Park City and Summit County Short-range Transit Development Plan	2020 & 2016
Kimball Junction Master Plan	2019
Kimball Junction Neighborhood Plan	2019
Summit County Active Transportation Plan	2019
SR-248 Environmental Assessment	2019
Valley to Mountain Alternatives Analysis	2018
Let's Go Summit County Transportation Sales Tax Initiative	2016
Downtown and Main Street Parking Plan	2016
Snyderville Basin General Plan	2015
Abridged Snyderville Basin Long-range Transportation Plan	2015
Park City General Plan	2014
SR-224 Corridor Study	2012
Park City Traffic and Transportation Plan	2011
Park City Transportation Demand Management Plan	2011
SR-248 Corridor Plan	2009
Entry Corridors Management Strategic Plan	2006

2.0 Summary of Purpose and Need

2.1 Need for the Project

For the Kimball Junction Project, UDOT looked at the expected transportation mobility needs in the evaluation area in 2050. These mobility needs are related primarily to traffic delay during morning (AM) and afternoon (PM) peak hours due to projected growth in population, employment, tourism, and development in the Kimball Junction area, in surrounding areas, and regionally.

This projected growth in the area will lead to the following issues:

- Future (2050) failing conditions at the intersections of SR-224 and I-80, Ute Boulevard, and Olympic Parkway will create delay and unreliable travel times.
- Vehicle queues on the I-80 off-ramps will extend back onto mainline I-80, resulting in unsafe travel conditions.

What are the AM and PM peak hours?

The AM and PM peak hours are the 1-hour periods of the morning and afternoon, respectively, during which there is the greatest number of vehicles on the roadway system. The peak hours that were modeled in the analysis were 8:00 to 9:00 AM and 4:00 to 5:00 PM. Peak hours are looked at by transportation officials when examining the need for a project.

In addition, UDOT looked at expected active transportation mobility needs in the evaluation area, also during 2050. The active transportation mobility needs are related in part to future upgrades in transit service in the evaluation area, as well as to growth of the regional trail system, community interest in walking and bicycling in the evaluation area and to access local recreational amenities, and developing land uses in the evaluation area. These factors will lead to:

- Growing east-west active transportation (walking and bicycling) demand across SR-224.

Finally, due to projected growth in the area, Summit County has proposed transit improvements to alleviate vehicle travel demand and improve transit mobility and reliability as part of a separate project along the SR-224 corridor. While the proposed S.R. 224 Bus Rapid Transit Project has independent utility from this project, considerations will be made to integrate any approved transit upgrades within this project.

2.2 Purpose of the Project

The project purpose is to address transportation-related safety and mobility for all users of the Kimball Junction area by:

- Improving operations and travel times on SR-224 from the I-80 interchange through Olympic Parkway;

What is the Kimball Junction area?

The Kimball Junction area includes the I-80 and SR-224 interchange through the two at-grade intersections on SR-224 (Ute Boulevard and Olympic Parkway).

- Improving safety by reducing vehicle queues on I-80 off-ramps;
- Improving pedestrian and bicyclist mobility and accessibility throughout the evaluation area; and
- Maintaining or improving transit travel times through the evaluation area.

3.0 Planning for Future Conditions in the Evaluation Area

3.1 Projected Growth

The Kem C. Gardner Policy Institute at the University of Utah produces long-term demographic and economic projections for the state of Utah and its counties. As shown in Table 2, Wasatch and Summit Counties are projected to have large increases in population, employment, and households by 2050. These projected increases are included in UDOT's *Statewide Rural Long-range Transportation Plan 2019–2050* (UDOT 2019) and are expected to result in additional travel demand on the transportation network in the Kimball Junction area.

Table 2. Projected Regional Population, Employment, and Household Growth in Wasatch and Summit Counties

County	Population		Employment		Households	
	2020	2050 Projection (Percent Change from 2020)	2020	2050 Projection (Percent Change from 2020)	2020	2050 Projection (Percent Change from 2020)
Summit	42,394	56,493 (33%)	38,852	59,582 (53%)	15,688	25,379 (62%)
Wasatch	34,933	69,493 (99%)	17,609	28,752 (63%)	11,040	26,856 (143%)

Source: Kem C. Gardner Policy Institute 2022a, 2022b

3.2 Future Land Development

The needs assessment evaluation area is within the Kimball Junction neighborhood boundaries as defined in the *Kimball Junction Neighborhood Plan*, which is included in Summit County's *Snyderville Basin General Plan* (Summit County 2015). The zoning in the Kimball Junction neighborhood is a combination of Rural Residential (RR), Community Commercial (CC), and Town Center (TC). According to the neighborhood plan, existing development agreements establish project-specific development standards that are unique and supersede the underlying base zoning requirements.

Several ongoing and emerging land-development activities are approved or planned near the evaluation area that will contribute to the anticipated future demographics.

Park City Tech Center. The Park City Tech Center is **planned** in the Kimball Junction area on the west side of SR-224. This 51-acre site is currently planned for about 1.3 million square feet of mixed-use development. Summit County expects to review the plan in 2023 (Park Record 2022).

Canyons Village Management Association. The Canyons Village Management Association (CVMA) is located at Park City Mountain's Canyons Village base side. This development is the SR-224 corridor's largest employer, even though it is only about 35% built out. The CVMA area ramped up **approved** development in 2017 and in 2021 broke ground on employee housing accommodations on 7.7 acres adjacent to the Canyons Village Transit Hub. It will accommodate over 1,100 employees (CVMA 2022). The first phase is under construction, and the final completion date is expected to be December 2023. Based on existing development rights, the CVMA area is forecasted to grow substantially over the next 10 years.

Park City Arts and Culture District. Toward Park City's Old Town, where SR-224 meets SR-248, an emerging district known as Arts and Culture is being **planned** as a major arts and entertainment district that would include residential and office units. The district would occupy the quadrant between Kearns Boulevard, Bonanza Drive, and Munchkin Road (ImaginePCArts.org 2021).

Park City Mountain Resort Base Area Redevelopment. Park City Municipal Corporation is currently working with a developer regarding plans to redevelop the base of Park City Mountain Resort, including its parking lot area. The **planned** development encompasses 10 acres and calls for a hotel, residences, restaurants, retail shops, community plazas, and above-grade parking garages.

Deer Valley Snow Park Village Redevelopment. In November 2022, Deer Valley Resort submitted applications to the Park City planning department to redevelop the existing Snow Park Village parking lots and base area. The applications seek to redevelop the base area in three phases. The planning department is expected to meet regarding this **anticipated** redevelopment on December 19, 2022.

3.3 Long-range Transportation Plan

In addition to the needs identified in the local and regional plans listed above in Table 1, *Previous Studies*, UDOT's *Statewide Rural Long-range Transportation Plan 2019–2050* (LRP; UDOT 2019) identifies a need for improvements to the Kimball Junction interchange. This section evaluates that need based on projected population, employment, and recreational growth and travel demand data; the existing transportation system and planned improvements; and the identified mobility issues in the evaluation area.

What is a fiscally constrained LRP?

Fiscally constrained means that an LRP demonstrates that the listed projects can be implemented using committed, available, or reasonably available revenue sources, with reasonable assurance that the federally supported transportation system is being

adequately operated and maintained.

UDOT's LRP was used to establish the planning horizon (2050) for the Kimball Junction EIS. The LRP is a fiscally constrained 30-year plan of anticipated projects that would be needed to meet future travel demand. Transportation needs are based on projected socioeconomic factors and planned land use in a region. UDOT updates the LRP every 4 years to ensure that it remains consistent with the land use and transportation planning in areas outside metropolitan centers.

The planning horizon for a project is used to assess how well the project alternatives would support future travel demand. A no-action condition is used to inform the needs assessment. For the Kimball Junction EIS, the no-action condition is the condition of the transportation operations of the transportation system without the improvements that are part of the Kimball Junction Project. As shown in Figure 3, there are currently two planned projects on the LRP in the evaluation area: the I-80 Interchange Upgrade at Kimball Junction and an unfunded study of SR-224 between I-80 and SR-248.

Figure 3. Planned Projects in the Evaluation Area

The 2019–2050 LRP identifies three timeframes, or phases, for construction:

- Phase 1: 2019 to 2030
- Phase 2: 2031 to 2040
- Phase 3: 2041 to 2050

The LRP provides a comprehensive overview of planned projects on highways and state routes. State routes are major roads that are under UDOT's jurisdiction. Locally planned projects are also shown in the LRP in order to provide a better understanding of all planned improvements in an area. Fiscally constrained projects in the LRP are on state routes and can be constructed with anticipated funding available to UDOT through 2050. These projects are phased based on when they are needed. Local projects are not included in UDOT's list of fiscally constrained projects because they would likely be constructed using local or other funds. Improvements in the Kimball Junction area are identified as a Phase 2 project (2031 to 2040).

4.0 Current and Future Mobility

Transportation improvements are needed to address existing and future mobility challenges and improve multimodal travel and connectivity through the Kimball Junction area. *Mobility* refers to the ease with which people can move from place to place using a transportation system. Impediments to mobility for vehicles can include traffic congestion, numerous accesses to properties, higher accident rates, and other factors. Impediments to mobility for pedestrians and bicyclists can include a lack of overpasses and/or underpasses, a lack of sidewalks, inadequate separation between motorists and nonmotorists, and a lack of lighting, signs, and/or crosswalks.

SR-224 has many mobility challenges today because it has a high average daily traffic (about 37,000 vehicles per day) and seasonal fluctuations. In addition, many pedestrians and bicyclists cross this corridor. The future mobility concerns in the evaluation area are based primarily on (1) existing operational deficiencies, including traffic backups at off-ramps and intersections that experience heavy turning movements; (2) potential impacts to the existing system caused by a changing level and type of travel demand associated with projected growth in population, employment, tourism, and development in Summit County; and (3) failures in the existing system with regard to mobility, congestion, access, and travel time reliability.

4.1 Traffic and Mobility

Typically, travelers will use a combination of arterial, collector, and local roads for their trips. Each type of road has a specific purpose or function. Arterials provide a high level of mobility for traffic passing through and provide limited access to adjacent properties, while local roads provide a high level of access to properties but a low level of mobility. Local roads are typically used for access to residential neighborhoods and have low speed limits. Collector roads provide a balance between mobility and property access. For a transportation system to operate efficiently, all three types of roads are needed. UDOT further classifies arterials and collectors as shown in Table 3.

Table 3. Highway Functional Classifications

Functional Classification	Characteristics
Arterials	
Interstates	Highest classification of arterials designed and constructed with mobility and long-distance travel in mind.
Freeways and expressways	Similar to interstates, they are designed to maximize mobility. Directional travel lanes are typically separated by some type of physical barrier, and access is limited to on- and off-ramp locations.
Principal arterials	Serve major centers of metropolitan areas with a high degree of mobility. In rural areas, provide a high degree of mobility with trip length and travel density characteristics indicative of substantial statewide or interstate travel. Can provide access to at-grade intersections with other roads and driveways to specific parcels. Provide similar service in both urban and rural areas, the primary difference being that there are usually multiple arterial routes in an urban area.
Minor arterials	Provide service for trips of moderate length and offer connectivity to the higher arterial system. In rural settings, minor arterials are typically designed to provide relatively high overall travel speeds, with minimum interference to through movement.
Collectors	
Major collectors	Serve primarily intra-county travel (rather than statewide) and constitute those routes on which predominant travel distances are shorter than on arterial routes.
Minor collectors	Similar to major collectors but are usually shorter in length, have fewer travel lanes and driveways, and have lower posted speeds. Provide more access and less mobility compared to major collectors.
Local roads	
Local roads	Provide direct access to adjacent land and are not intended for use in long-distance travel, except at the origin or destination end of the trip. They are often designed to discourage through traffic.

Source: FHWA 2013

The evaluation area includes the I-80 and SR-224 interchange at Kimball Junction and SR-224 from Kimball Junction through the two at-grade intersections on SR-224 at Ute Boulevard and Olympic Parkway. The evaluation area also extends from MP 143.2 to MP 145.6 on I-80. I-80 is used primarily for east-west travel to and through the evaluation area, while SR-224 is a principal arterial from I-80 to Park City. SR-224 serves as a primary artery into Park City's Old Town and to two of the major economic drivers in the region: Park City Mountain Resort and Deer Valley.

Other key destinations are reached via SR-224, including Canyons Village at Park City, the Utah Olympic Park, the Swaner EcoCenter, and the Kimball Junction commercial centers. SR-224 serves as a commuter corridor from residential areas primarily north of the evaluation area, including Salt Lake City and the Jeremy Ranch and Summit Park areas, as well as for rural communities in Summit and Wasatch counties.

Ute Boulevard is currently classified as a major collector on the east side or SR-224 and a minor arterial on the west side of SR-224. Olympic Parkway (New Park Boulevard) is classified as a major collector. Bitner Road, which is on the north side of I-80, is also a major collector.

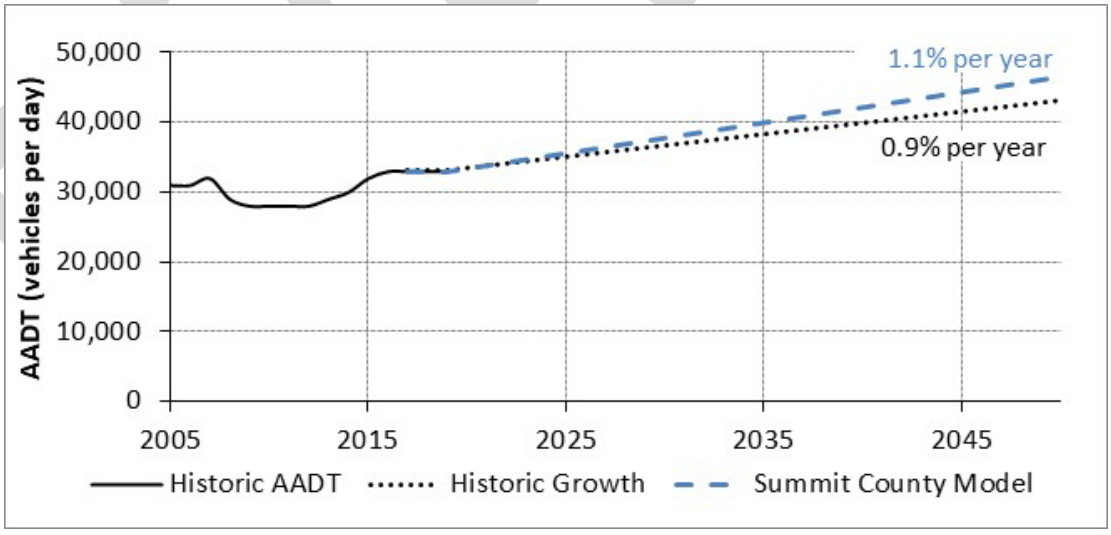
4.1.1 Travel Demand and 2050 No-action Conditions

The traffic modeling conducted for the 2050 no-action conditions used the Summit County/Wasatch County travel demand model (version 1, dated June 10, 2022; Summit County model). The model includes assumptions about future land uses as developed by the Mountainland Association of Governments (MAG), Summit County, Wasatch County, and the Kem C. Gardner Policy Institute at the University of Utah. These assumptions are guided by existing and approved development plans, land use plans, and statewide demographic projections. In addition, the traffic modeling included the planned SR-224 bus rapid transit (BRT) service.

Traffic volume is expected to increase within the Kimball Junction area by 2050. Traffic volumes on SR-224 during the weekday AM and PM peak hours are anticipated to increase by up to 30% to 40% by 2050 under the no-action conditions. This increase in traffic volumes on SR-224 includes growth in the number of vehicles traveling between I-80 and Park City and within the Kimball Junction area as more development occurs.

The Summit County model was used to generate forecasts of traffic under the no-action conditions in 2050. As shown in Figure 4, both the historic growth trends in traffic and the traffic modeling conducted for the 2050 no-action conditions predict an average daily traffic volume of over 40,000 vehicles per day in 2050, or just over a 30% increase over the existing conditions in 2022. The following sections discuss the level of service at key intersections on SR-224 and the travel times resulting from the overall traffic growth forecasted for the Kimball Junction area.

Figure 4. Traffic Growth Projections



AADT = annual average daily traffic

4.1.2 Traffic Volumes and Distribution

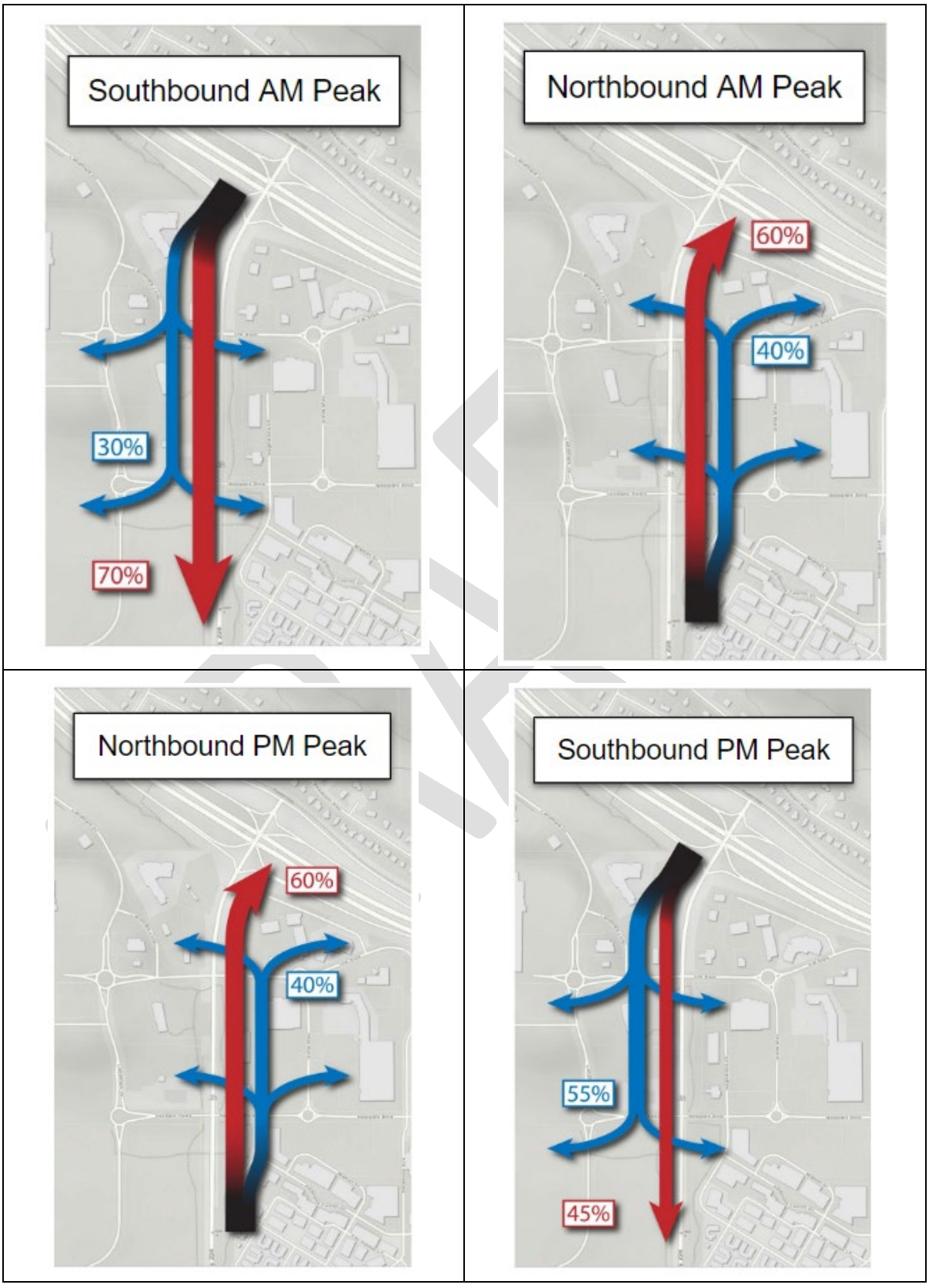
The existing traffic distribution in 2022 is a mix of through traffic and traffic destined to Kimball Junction businesses and residential areas. Most through traffic is traffic originating from I-80 (primarily during the AM hours) headed to areas south of the evaluation area and traffic (primarily during the PM hours) originating from areas south headed for I-80. Traffic headed to the Kimball Junction area during the AM and PM hours coincides with the peak through traffic. Figure 5 presents the approximate traffic distribution during the AM and PM peak hours.

During the morning (AM) hours, the predominant traffic direction on SR-224 is southbound. As shown in Figure 5, the AM peak hours show a strong through pattern; 70% of the southbound traffic continues south and passes through the Kimball Junction area, and 30% stops at area restaurants, grocery stores, or other retail businesses. Although the existing peak AM northbound traffic (about 775 vehicles per hour as modeled at Olympic Parkway) is overall less than the AM peak southbound traffic (about 1,750 vehicles per hour), a higher percentage (40%) of that traffic is accessing areas surrounding SR-224 in Kimball Junction.

The afternoon (PM) traffic distribution is different. The predominant traffic movement is northbound (about 1,695 vehicles per hour northbound and 975 vehicles per hour southbound as modeled at Ute Boulevard); about 60% is through traffic, and 40% of the traffic accesses areas in Kimball Junction. At the same times, 55% of the southbound traffic is accessing areas in Kimball Junction and 45% is through traffic.

The overall traffic distribution percentages for the AM and PM peak hours are not expected to change substantially by 2050. Given that the overall traffic volume is expected to increase by just over 30% on SR-224 and on both sides of the Kimball Junction neighborhood by 2050, severe congestion is anticipated. The following sections explain the effects of this traffic growth on mobility.

Figure 5. Traffic Distribution during the AM and PM Peak Hours in 2022



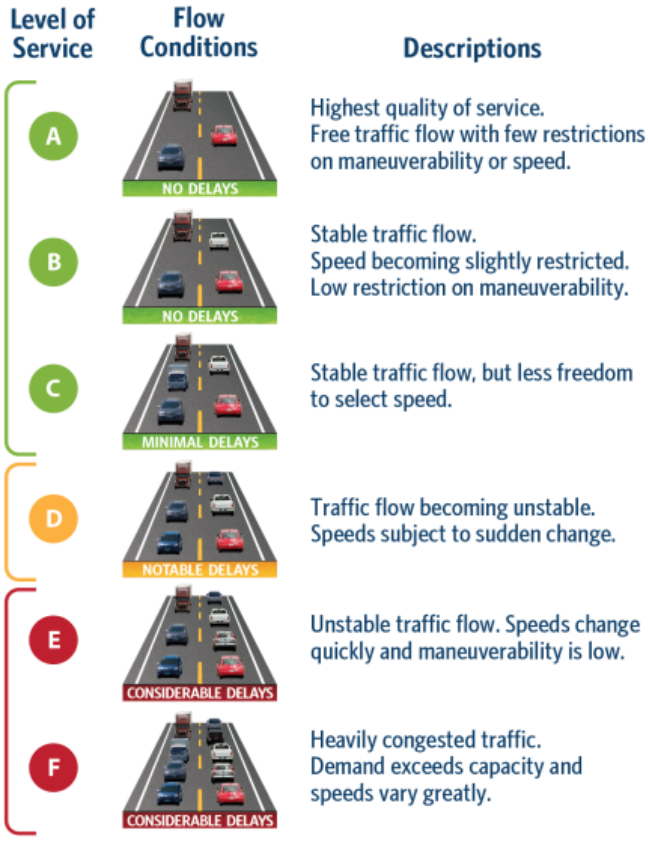
4.1.3 Level of Service

Traffic conditions were analyzed at key intersections on SR-224 during the AM and PM peak hours for a representative day during the winter season. This section summarizes the existing (2022) and future (2050) traffic and safety conditions in the Kimball Junction area.

Level of service (LOS) is measure of the vehicle-carrying capacity and performance of a street, freeway, or intersection (Figure 6). When the capacity of a road is exceeded, the result is congestion, delay, and a poor level of service. Level of service is represented by a letter "grade" ranging from A for excellent conditions (free-flowing traffic and little delay) to F for failure conditions (extremely congested, stop-and-go traffic, and excessive delay). LOS B through LOS E describe progressively worse traffic conditions.

UDOT has set a goal of maintaining urban roads at LOS D or better during peak travel periods. Typically, in urban areas, LOS E and F are considered unacceptable operating conditions, and LOS A through D are considered acceptable operating conditions.

Figure 6. Levels of Service



A level of service analysis was completed for the Kimball Junction area that evaluated the traffic conditions during the peak hours under current conditions in 2022 and under the no-action conditions in 2050. Analyzing weekday peak hours is standard practice for a traffic analysis, but this study reviewed all days of the week before determining a representative day. For this project, the peak hour during the morning is 8:00–9:00 AM, and the peak hour during the afternoon is 4:00–5:00 PM. The PM peak hour is typically the more congested

travel period because, during the afternoon hours, people tend make trips to run errands and attend activities in addition to making work-based trips. Table 4 shows the level of service for key SR-224 intersections in the needs assessment evaluation area under current and 2050 no-action conditions.

The level of service at intersections is based on the average vehicle delay at each traffic signal. It is possible for an intersection as a whole to have an acceptable level of service even if the traffic movement in one direction is operating at unacceptable conditions (LOS E or F).

As shown in Table 4, several intersections during the AM and PM peak hours operate at LOS E or F. During the AM peak hour, traffic exiting eastbound I-80 to proceed south on SR-224 results in a level of service of LOS F at the I-80 interchange signal. This limits the flow rate at which vehicles reach Ute Boulevard and Olympic Parkway. During the PM peak hour, the Ute Boulevard and Olympic Parkway intersections experience delay from northbound SR-224 traffic. Northbound traffic on SR-224 is congested at Olympic Parkway, which produces long northbound queues and intersection delay at Ute Boulevard and SR-224/I-80 interchange Both conditions indicate heavy vehicle delays with long vehicle queues and extended travel times.

Table 4. Level of Service at Key SR-224 Intersections during the Weekday AM and PM Peak Hours (Current and 2050 No-action)

SR-224 Intersection	Current (2022)		2050 No-action	
	Average Vehicle Delay (seconds/vehicle)	LOS	Average Vehicle Delay (seconds/vehicle)	LOS
AM Peak Hour				
I-80 interchange	>100	F	>100	F
Ute Boulevard	29	C	37	D
Olympic Parkway	30	C	36	D
PM Peak Hour				
I-80 interchange	25	C	>100	F
Ute Boulevard	53	E	63	E
Olympic Parkway	>100	F	>100	F

4.1.4 Travel Times

Vehicle travel times are expected to increase from the existing conditions in 2022 to the 2050 no-action conditions. The travel time from the eastbound I-80 off-ramp to southbound SR-224 at a point about 1,100 feet south of Olympic Parkway is about 5:30 minutes during the existing AM peak hour. For context, during midday, off-peak hours, the southbound travel time is about 2:30 minutes. This peak-hour travel time is projected to increase to about 11:00 minutes under the 2050 no-action conditions. Similarly, the travel time on northbound SR-224 from a point just north of Canyons Resort Drive to the I-80 interchange is about 12:00 minutes during the existing PM peak hour (compared to 4:15 minutes during off-peak hours). This is projected to increase to 23:30 minutes under the 2050 no-action conditions. Table 5 summarizes the travel time comparison. Also see Figure 7 and Figure 8.

Table 5. Travel Times during the Weekday AM and PM Peak Hours (Current and 2050 No-action Conditions)

Segment	Travel Time (minutes)	
	Existing (2022)	2050 No-action
AM Peak Hour		
Eastbound I-80 off-ramp to southbound SR-224 at a point about 1,100 feet south of Olympic Parkway	5:30	11:00
PM Peak Hour		
Northbound SR-224 from a point just north of Canyons Resort Drive to the I-80 interchange	12:00	23:30

Figure 7. Travel Times for the Existing and 2050 No-action Conditions during the AM and PM Peak Hours

Figure 8. Vehicle Queue Lengths for the Existing and 2050 No-action Conditions during the AM and PM Peak Hours

4.1.5 Vehicle Queue Lengths on the I-80 Off-ramp and SR-224

The long vehicle queue lengths during the existing peak hours on weekdays reflect the poor level of service and long travel times currently experienced on SR-224 during the AM and PM peak hours. These vehicle queue lengths are projected to increase substantially by 2050 (Table 6).

What is the 95th percentile?

The 95th percentile is a value at which 95% of the numbers in a data set are less than the reported value. It is considered a statistical maximum and is often used in transportation engineering for measuring performance. For comparison, the 50th percentile is the mean value at which 50% of numbers are higher and 50% are lower.

During the AM peak hour, a location of concern for vehicle queuing is the eastbound I-80 off-ramp to SR-224. Under existing conditions, the 95th-percentile vehicle queue length at this off-ramp during the AM peak hour is about half a mile. This line of vehicles results in slow speeds and vehicles backing up onto the I-80 mainline. During the winter of 2022 (through November 2022), queues of vehicles on this off-ramp backed onto the I-80 mainline on 49 mornings. Under the 2050 no-action conditions, the 95th-percentile vehicle queue length at this off-ramp is projected to exceed 3 miles which, if not mitigated, would be long enough to back up onto the I-80 mainline to the Jeremy Ranch interchange.

During the PM peak hour, a location of concern for vehicle queuing is northbound SR-224 starting at Olympic Parkway. Under existing conditions, the 95th-percentile vehicle queue length in the northbound direction is about 1.8 miles, or a line of queued vehicles extending from the I-80 interchange past Bear Hollow Drive. During the winter of 2022 (through November 2022), a vehicle queue length of 2 miles occurred on 25 afternoons. Under the 2050 no-action conditions, the 95th-percentile queue is projected to increase to more than 2.3 miles, or past the Canyons Resort Drive intersection.

Table 6. Vehicle Queue Lengths during the Weekday AM and PM Peak Hours (Current and 2050 No-action Conditions)

Location	95th-percentile Queue Length	
	Existing	2050 No-action
AM Peak Hour		
Eastbound I-80 off-ramp queue	2,600 feet (0.5 mile)	19,400 feet (>3 miles)
PM Peak Hour		
SR-224 northbound queue starting at Olympic Parkway	1.8 miles	>2.3 miles

4.1.6 Traffic Summary

Several of the intersections in the evaluation area currently operate at LOS E or LOS F, which indicates heavy vehicle delays with long vehicle queues and long travel times. Traffic is expected to increase on SR-224 and on both sides of the Kimball Junction neighborhood by 2050. Under the 2050 no-action conditions, severe congestion is anticipated to occur, particularly for the I-80 eastbound off-ramp during the weekday AM peak hour and on northbound SR-224 during the weekday PM peak hour. Average vehicle delay, vehicle travel times, and vehicle queue lengths are all anticipated to increase from the existing conditions to 2050 no-action conditions. Travel times during peak hours for key travel movements are anticipated to nearly double from existing conditions for vehicles traveling northbound on SR-224 to I-80.

4.2 Transit

4.2.1 Transit Service in the Evaluation Area

The Kimball Junction area is well-served by local and regional transit (Figure 10) and is reached via connecting service from Park City Transit's and High Valley Transit's regional routes. The Kimball Junction Transit Center is on the west side of SR-224 and is accessed via either Ute Boulevard or Olympic Parkway. Four bus routes currently operate on SR-224 in the evaluation area.

- High Valley Transit Route 101 (Spiro) operates along the full distance of SR-224 from the Jeremy Ranch park-and-ride lot through the Old Town Transit Center and into Deer Valley Resort.
- High Valley Transit Route 103 (Kimball Junction Shuttle) circulates on SR-224 within the Kimball Junction area between the Kimball Junction Transit Center and Park City Outlets.
- High Valley Transit Route 104 (Bitner Shuttle) operates between the Kimball Junction Transit Center and areas northeast of the evaluation area including the Canyon Creek Condos.
- Park City Transit Route 10 (White, Kimball Junction Main Street Express) operates the full distance of SR-224 between the Kimball Junction Transit Center and the Old Town Transit Center.

High Valley Transit and Park City Transit are planning to convert the Route 10 White into BRT service by adding a dedicated transit lane in each direction on most of SR-224. The transit lanes would begin and end south of the Olympic Parkway intersection and would provide some capacity improvements to the intersection. This project is planned to be completed in 2025.

In addition, on December 11, 2022, High Valley Transit assumed operation of the regional commuter service between Salt Lake City and Park City (the PC-SLC Connect). The PC-SLC Connect provides a minimum of nine round trips each day between Park City and Salt Lake City, which helps alleviate congestion and reduce the demand for employee and guest parking at area ski resorts and in Park City's Old Town. The PC-SLC Connect terminates at the Kimball Junction Transit Center.

Figure 9. Existing Transit Service in the Needs Assessment Evaluation Area

4.2.2 Transit Ridership

Regionally, nearly 2.3 million trips were made in 2018 on Park City Transit buses, a 10% increase over 2017. This number includes more than 1 million riders during the peak winter months. Ridership grew again in 2019, when the system provided about 2.8 million trips. Between January and July 2022, High Valley Transit, the transit operator predominantly serving the Kimball Junction area, carried nearly half a million riders.

Transit ridership is expected to increase dramatically by 2050, especially during the winter months. Projected boardings at the Kimball Junction Transit Center in 2035 are estimated at 270 boardings per day. By 2050, boardings are expected to approach 1,700 peak winter daily boardings, a 529% increase. Therefore, maintaining or improving transit travel times through the evaluation area is an important element of the project purpose and will be considered in the conceptual design and screening of the alternatives selected for detailed evaluation in the EIS.

4.3 Active Transportation

4.3.1 Active Transportation Facilities

The Kimball Junction area includes active transportation infrastructure to enable people to walk and bicycle to, from, and within the area (Figure 10). A buffered, multi-use trail for commuters and recreationists runs on the east side of SR-224 along the entire length of the highway. Trail users can cross under SR-224 from the Kimball Junction Transit Center area and travel all the way to Park City via the 10-foot-wide paved Basin Express trail along the east side of SR-224. The Basin Express trail connects to other regional trails.

On the west side of SR-224, a similar multi-use trail buffered by landscaping from the roadway runs continuously throughout the Kimball Junction area. To the north, this trail provides connections to a pedestrian bridge crossing of I-80 as well as trails paralleling both sides of I-80 toward the east and west. South of Kimball Junction, the multi-use trail extends to Bear Hollow Drive which provides access to unpaved recreation trails south and west of the Kimball Junction area and to the vast trail regional trail network (Figure 11).

Intersection crossings for the multi-use trails in the Kimball Junction area are typically provided via people-actuated crosswalks at existing traffic signals. At-grade crosswalks are located at the signalized intersections of SR-224 with Ute Boulevard and Olympic Parkway. There is also a sidewalk and crosswalks for four I-80 ramps along the east side of SR-224 as the road crosses over I-80 to Rasmussen Road.

Figure 10. Active Transportation Facilities in the Evaluation Area

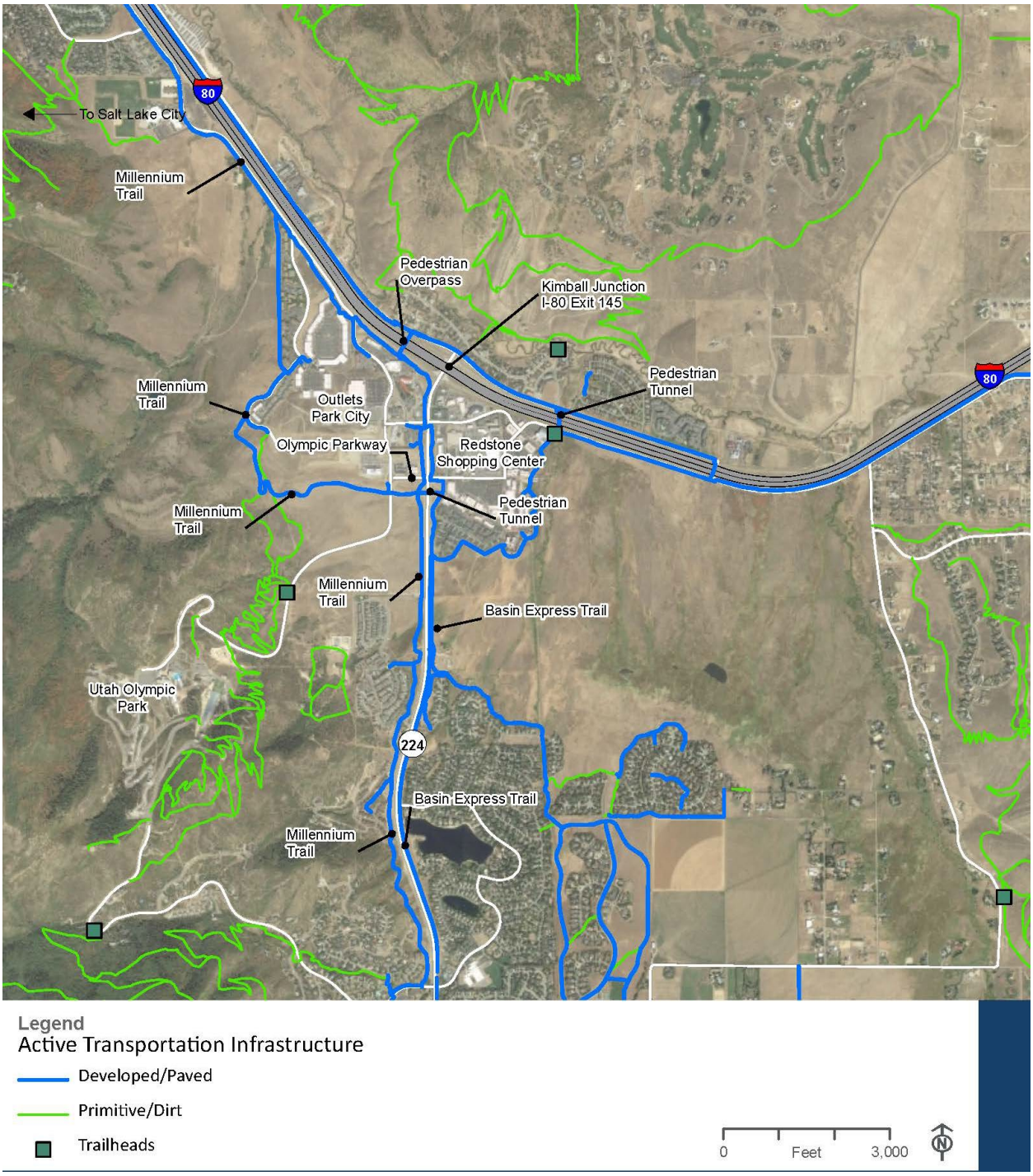
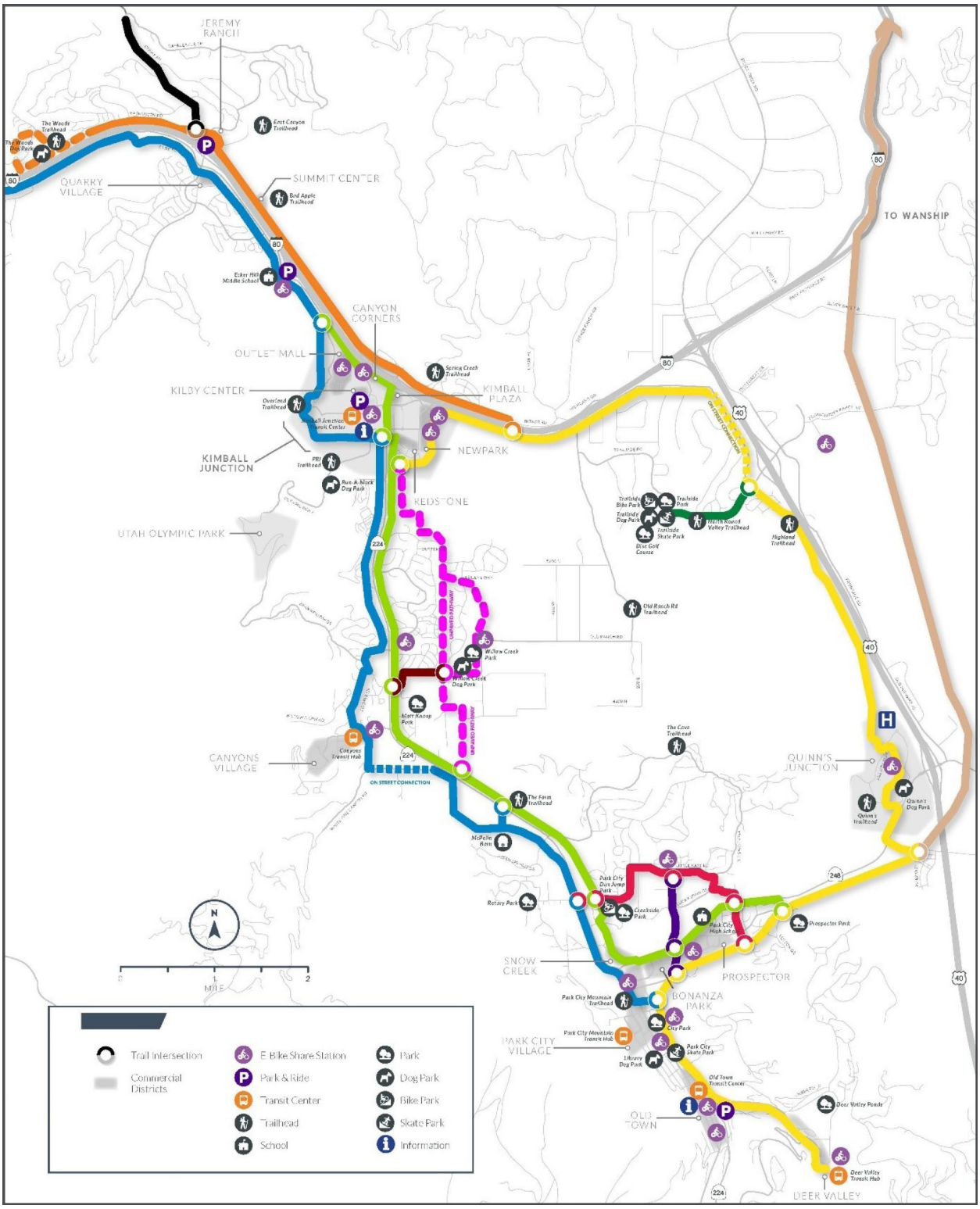


Figure 11. Regional Trails in the Evaluation Area



Three grade-separated crossings in the evaluation area help facilitate safe movements for people who are walking or bicycling across the major highways.

- A pedestrian bridge crosses I-80 about 800 feet west of the I-80 and SR-224 interchange. This bridge connects the retail and commercial space on the south side of I-80 to the neighborhoods on the north side of I-80 and Rasmussen Road.
- An undercrossing passes under I-80 about 0.5 mile east of the I-80 and SR-224 interchange.
- An undercrossing passes under SR-224 about 200 feet south of the Olympic Parkway intersection. This undercrossing connects to trails along Bitner Road to Highland Road adjacent to the Swaner Nature Preserve. This undercrossing also connects the retail and residential uses on the south side of the Redstone Center to the trails and open space on the west side of SR-224. This undercrossing tunnel is highly utilized; use of the tunnel has increased from 245 daily pedestrians and cyclists in 2016 to 580 in 2020, a 137% increase.

4.3.2 Active Transportation Conditions

Pedestrian and bicycle crossing data for the Ute Boulevard and Olympic Parkway intersections as well as the SR-224 undercrossing south of Olympic Parkway were collected and synthesized. The data came from the following sources:

- AM and PM peak-hour pedestrian crossing data from the January 2021 intersection turning movement volume counts
- Pedestrian push-button data from UDOT's Automated Traffic Signal Performance Measure (ATSPM) online database
- Daytime pedestrian and bicycle counts at both signals and the undercrossing from October 2022
- A 7-month count summary of the SR-224 undercrossing from 2016

By comparing the daytime and peak-hour count data to corresponding daily ATSPM push-button data at Ute Boulevard and Olympic Parkway, an estimate of the number of summer daily pedestrian crossings was developed. Then, the daytime October 2022 pedestrian and bicycle counts at the undercrossing were factored to determine a summer daily crossing count using the 7-month count data from 2016.

Table 7 summarizes the daily crossing estimate for each location.

Table 7. Estimated Summer Crossings at Key SR-224 Intersections and Undercrossing in 2020

Location	Metric	Estimated Summer Crossings	East-West Crossings	Percent of Crossings that are East-West Crossings
Ute Boulevard intersection	Daily pedestrian crossings (all directions)[a]	250	200	80%
Olympic Parkway intersection	Daily pedestrian crossings (all directions)[a]	50	15	25%
SR-224 undercrossing south of Olympic Parkway	Daily pedestrian and bicycle crossings (east-west)	580	580	100%

[a] Cyclists riding on the sidewalk and crosswalk are counted as pedestrians.

As shown above in Table 7, the SR-224 undercrossing south of Olympic Parkway experiences the highest estimated daily use at nearly 600 crossings per day. The Ute Boulevard intersection has consistent use, whereas the Olympic Parkway intersection has the fewest crossings. Additionally, east-west crossings comprise 80% of the total at-grade crossings at the Ute Boulevard intersection (20% are north-south) and 25% of the total crossings at the Olympic Parkway intersection (75% are north-south). Both of these patterns are likely due to each intersection's proximity to the SR-224 undercrossing to Olympic Parkway and fewer developed destinations on the west side of SR-224 accessed by Olympic Parkway.

As the Kimball Junction area continues to develop and densify, and as upgrades are made to transit in the evaluation area, it is likely that walking and bicycling to different destinations will become a more attractive transportation option. There will likely be more crossings of SR-224 by pedestrians and bicyclists at both the undercrossing and the signalized intersections.

5.0 Public and Agency Involvement in Developing the Purpose and Need Statement

As part of the environmental review process, the lead agency is required to identify and involve cooperating and participating agencies, develop coordination plans, provide opportunities for the public and participating agencies to be involved in defining the purpose and need statement and determining the range of alternatives, and collaborate with cooperating and participating agencies to determine methodologies and the level of detail for analyzing alternatives.[1]

A public outreach effort was conducted during the Area Plan study process. This outreach was structured to ensure that all relevant factors were considered, including the community's concerns and issues related to mobility in the study area. Partner and public outreach included six project partner meetings or workshops, updates to the Summit County Council, and two public surveys.

UDOT organized a steering committee which consisted of representatives from the following entities:

- Mountainland Association of Governments (MAG)
- Park City
- Summit County
- Utah Department of Transportation (UDOT)
- Wasatch Front Regional Council (WFRC)

The first steering committee workshop developed guiding themes and goals, and the participants agreed on the problems and opportunities in the study area. Two workshops were held at the beginning of two alternatives screening processes to review the screening results and discuss preliminary refinements to alternatives. Three other study partner workshops were held at key milestones during the Area Plan study process.

Public engagement targeted local and regional residents, businesses, and commuters that use the Kimball Junction area. The first public meeting and survey covered the planning process, existing transportation problems, opportunities, and goals for the study area. The comments received generally indicated that traffic congestion is the top issue in the Kimball Junction area. The second public meeting and survey reviewed initial screening results and asked the public for feedback on alternatives moving into a second level of screening. In addition, ongoing coordination with the study partners and other stakeholders occurred at key milestones during the course of the Area Plan study process.

UDOT gathered meaningful feedback during the Area Plan process and will continue public and agency outreach as part of the EIS process. This Draft Purpose and Need Statement will be made available during early 2023 scoping process in order to gather additional feedback on the mobility needs in the evaluation area and any refinements necessary to the project purpose to address those needs.

[1] These steps are required by 23 USC Section 139, which establishes an environmental review process that must be used when preparing an EIS for a highway or transit project.

6.0 References

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