# KEARNS 2020

## MASTER TRANSPORTATION PLAN

KEARNS METRO TOWNSHIP

# ACKNOWLEDGMENTS

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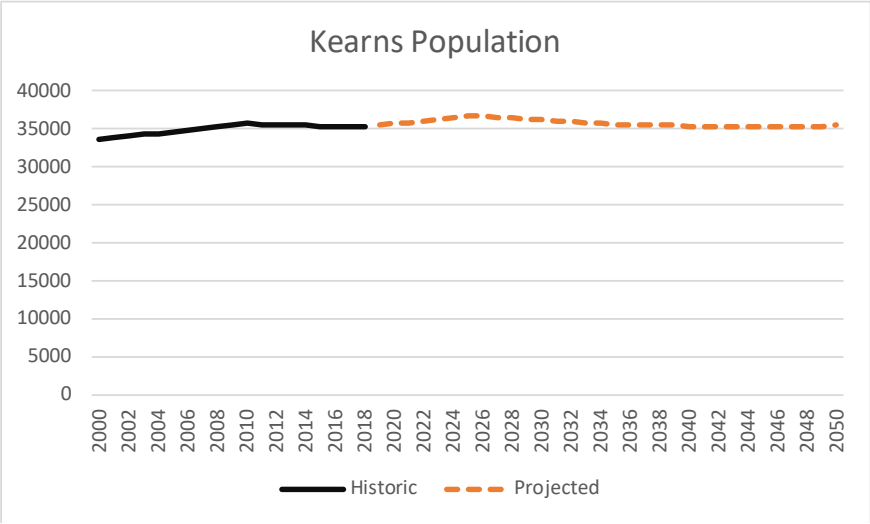
# 1 EXECUTIVE SUMMARY

Kearns Metro Township, named after Utah's U.S. Senator Thomas Kearns, is located in the heart of Salt Lake County and is home to the Kearns Oquirrh Park which hosted Olympic events in 2002. In 2019, its 4.8 square miles of land is near built out and at every part of its Township boundary it borders other municipalities. This makes space for roadway projects increasingly finite and a more challenging endeavor than it has been in the past. For that reason, it is imperative a proper transportation plan be adopted to balance roadways, land use, and growth, far into the future.

**Figure 1-1: Kearn's Population**




Kearns is currently not experiencing rapid population or housing growth, but traffic is still increasing and the transportation system needs to accommodate this with the appropriate improvements. Kearns also needs to expand and improve bicycle facilities, sidewalks and pedestrian pathways to ensure it is serving all members of the community. This transportation plan addresses those needs.

This plan provides a comprehensive analysis of the current and future conditions of Kearns and is organized into six sections, ***Where We Are***, ***Where We Are Going***, ***Areas of concern, What We Heard, Sidewalk Plan,*** and ***What is the Plan***. This document combines data, research and recommendations. Whether discussing specific transportation 'hotspots,' transit, needed capacity, or active transportation, the main goal is to provide the Township with a holistic transportation plan that offers solutions for maintaining and improving the quality of life in Kearns.

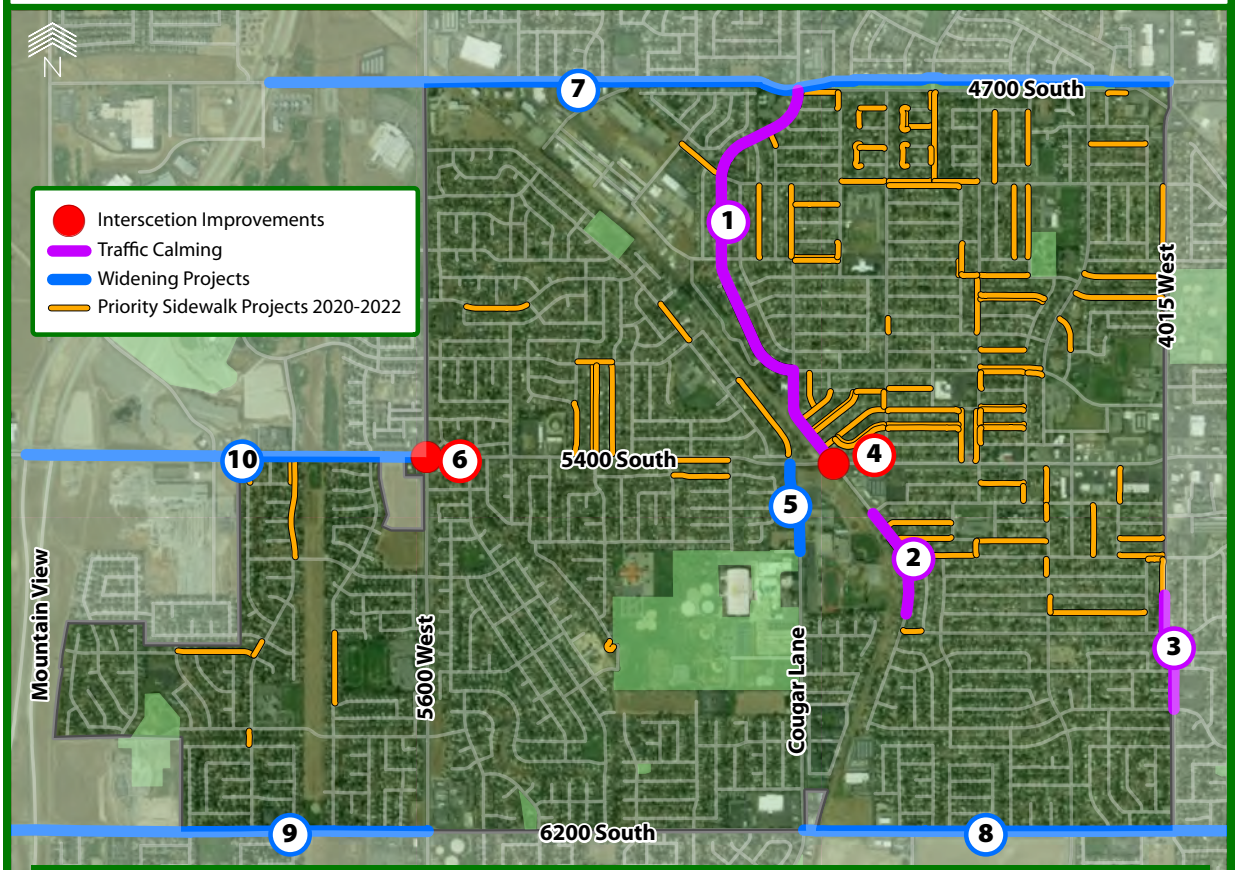
This plan focuses on improving safety and accommodating all modes of transportation. The Township's roads, intersections, and sidewalks were evaluated and considered with the final project recommendations, which are in the table on page 2, with additional details on page 61.

Overall, the transportation system is relatively developed. Ten projects have been identified as 'needed' over the next 30 years, many with grants and other outside resources for funding.

**Kearn's Oquirrh Park and Olympic Oval**

## Figure 1-2: Project List and Map

# Capital Facilities Plan




### 2020-2030 Projects

| Project # | Location | Improvement Type | Total Cost | Funding Source |
|---|---|---|---|---|
| 1 | Westsams Blvd/4580 West/Pieper Blvd/Northwest Ave: 4715 South to 5415 South | Traffic Calming | $367,000 | Kearns |
| 2 | Northwest Ave: 5500 South and 5740 South | Traffic Calming | $141,000 | Kearns |
| 3 | 4015 West: Twilight Dr. and 5700 South | Traffic Calming | $32,000 | Kearns |
| 4 | 5415 South/Northwest Avenue | Intersection Improvement | $1,320,000 | UDOT |
| 5 | Cougar Lane: Niagara Way and Kearns High Dr. | Capacity Improvement | $2,380,000 | Kearns |
| 6 | 5400 South/5600 West | Intersection Improvement | $2,880,000 | UDOT |
| 7 | 4700 South: MVC to 4000 West | Capacity Improvement | $31,140,000 | Kearns/WFRC |

### 2031-2050 Projects

| Project # | Location | Improvement Type | Total Cost | Funding Source |
|---|---|---|---|---|
| 8 | 6200 South: Cougar Lane to Bangerter Highway | Capacity Improvement | $13,990,000 | Kearns/WFRC |
| 9 | 6200 South: MVC to 5600 West | Capacity Improvement | $11,920,000 | Kearns/WFRC |
| 10 | 5400 South: MVC to 5600 West | Capacity Improvement | $7,640,000 | Kearns |
| **Subtotal (Kearns): $2,920,00** | | | | |
| **Subtotal (Kearns/WFRC): $50,05,000** | | | | |
| **Subtotal (UDOT): $11,840,000** | | | | |
| **Total: $71,810,000** | | | | |

# 2 WHERE WE ARE

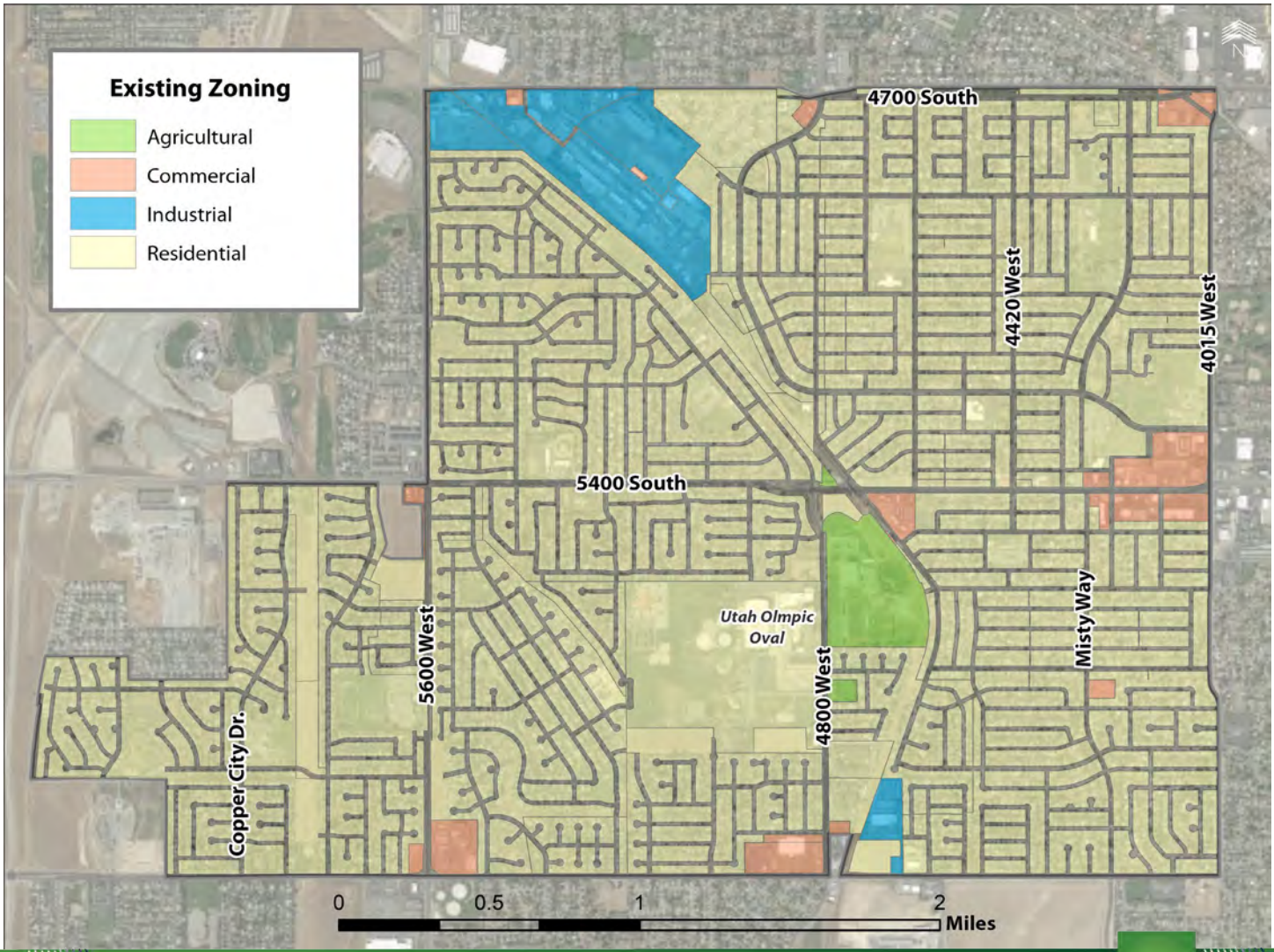
This chapter evaluates the existing transportation system within Kearns Metro Township and establishes the framework for the development of the transportation plan. This analysis includes a description of the land use as well as the demographic profile of Kearns and how these factors affect the transportation system. This chapter details the existing conditions in 2019.

## Zoning and Land Use

In order to analyze the transportation system and plan for future growth, it is essential to understand zoning land use patterns within the area. Travel is a daily requirement for the majority of the public as people travel from their homes to work, to shop, health care, educational, and recreational opportunities. Zoning and land use patterns must function cohesively with the transportation system to support a high quality of life and economic growth in Kearns.

Kearns is mostly a residentially zoned bedroom community with more households than jobs. The distribution of zoning type and land use is consistent with other communities of Salt Lake County. Kearns is predominantly zoned R-1-6 to R-1-8, single family residential. There are several pockets of commercial zoning (C-2), with the major commercial area located at the intersection of 5400 S and 4100 W. Heavy and light industrial zoning (M-1, M-2) is found in the northwest corner of the township along the rail corridor. Small pockets of multi-family residential (RM, RMH) are found scattered throughout the township, mostly in the vicinity of commercial or industrial uses. The existing zoning within Kearns is shown below in Figure 2-1.

**Figure 2-1:Existing Zoning Map**



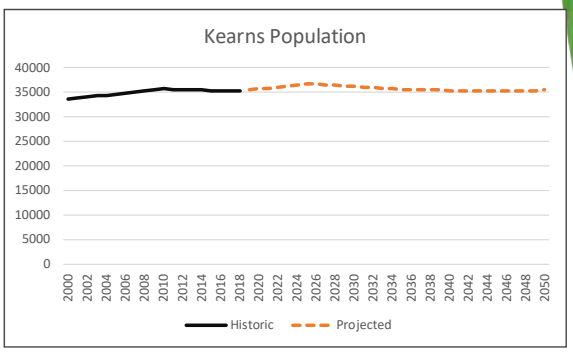
# Demographics

## Population

The population of Kearns has been hovering just above 35,000 residents for the past decade and this trend is predicted to continue into 2050. Estimates from The Kem C. Gardner Institute place the population at 35,242 in 2018, which is just slightly down from 2017 (35,530) and 2010 (35,786). Such a small decline in population over the past decade is evidence of an almost built out community. This trend is unlikely to change if current zoning and land use policy continue into the future.

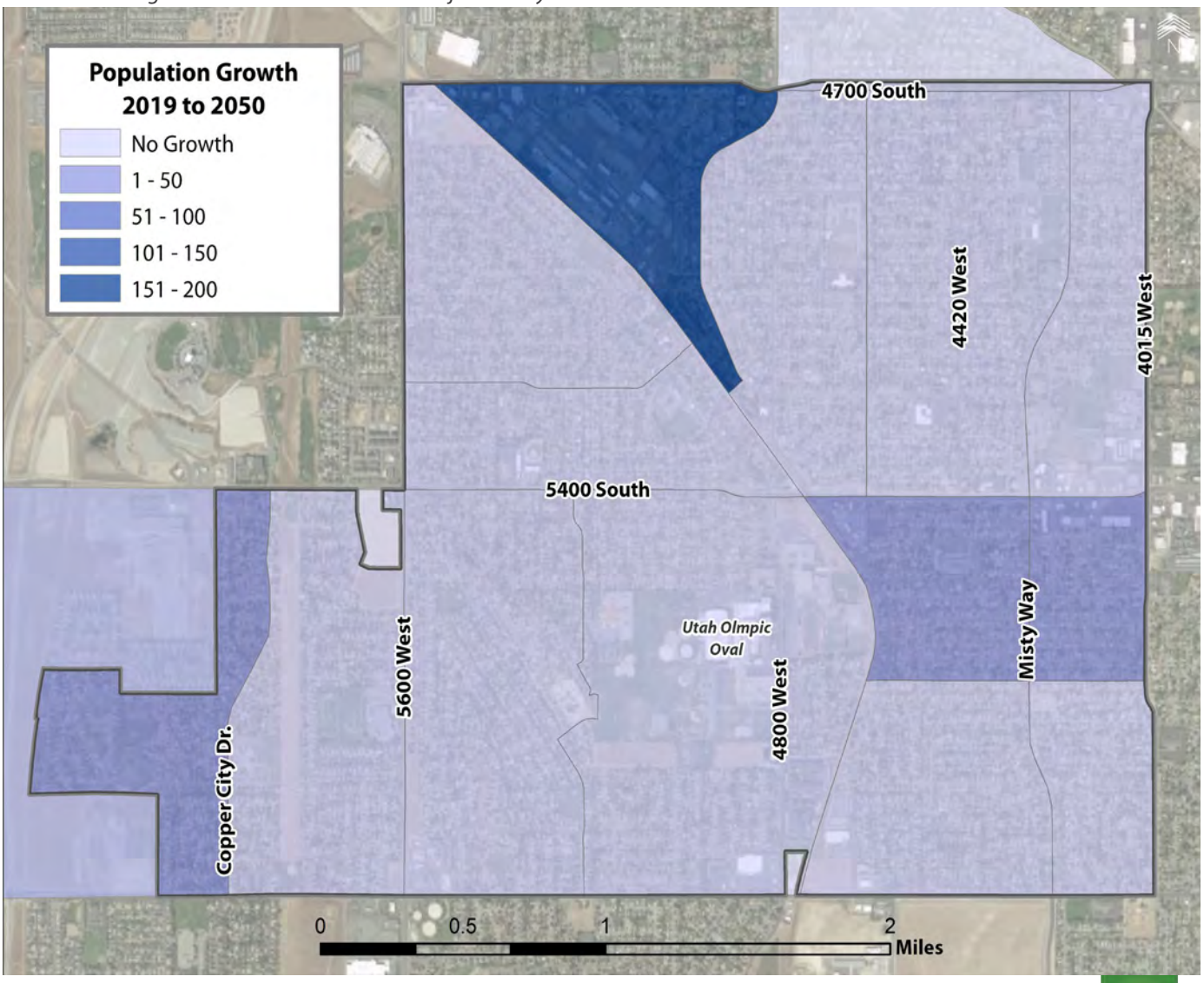
Figure 2-2 shows this steady population from 2010 through 2018. It also shows the population forecast remaining steady, with a future projected population remaining between 35,000 and 40,000 in Kearns.

### Figure 2-3: Historic & Future Population




### Figure 2-2: Population Growth

*Source: WFRC Regional Travel Demand Model Projections by TAZ*



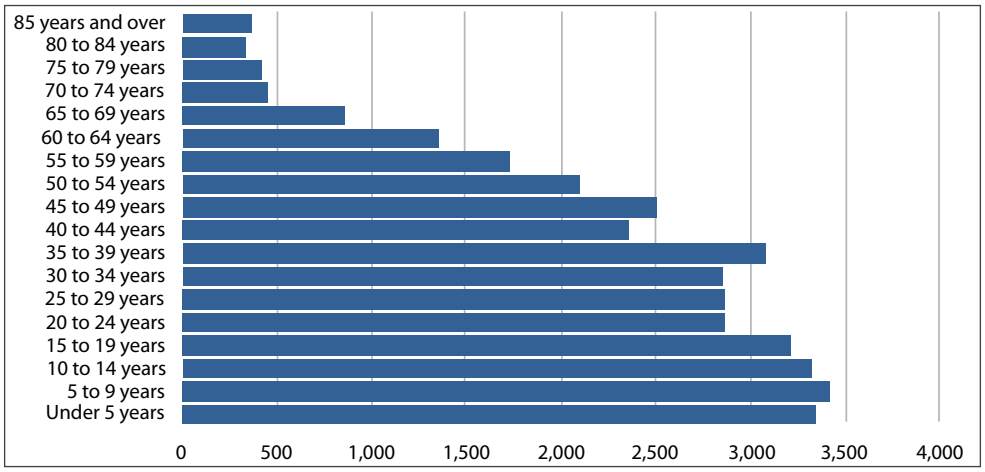
The age of residents also impacts how they interact with the transportation system. Kearns has a relatively high population of children, 32% of the population is under 18. The transportation needs of these younger residents are different than other age-groups since they are reliant on others for car related mobility. Comfortable sidewalk and biking facilities may be their choice way of travel, whether accompanied by adults or not.

While there are fewer residents in older population groups (8% over 65), the mobility needs of these residents will continue to expand as the population grows and ages. As with younger population age groups, the transportation system should support other mobility options for residents that may chose not to, or be unable to drive.

## Housing

Although population is an important indicator in developing a transportation plan, households and housing provide a broader picture of how residential growth will affect transportation demand. The number of trips on the transportation network is estimated largely on the number and size of households. Table 2-1 summarized the household size in Kearns. The average size is 3.5 persons per household.

### Figure 2-4: Population Age Distribution




*Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates*

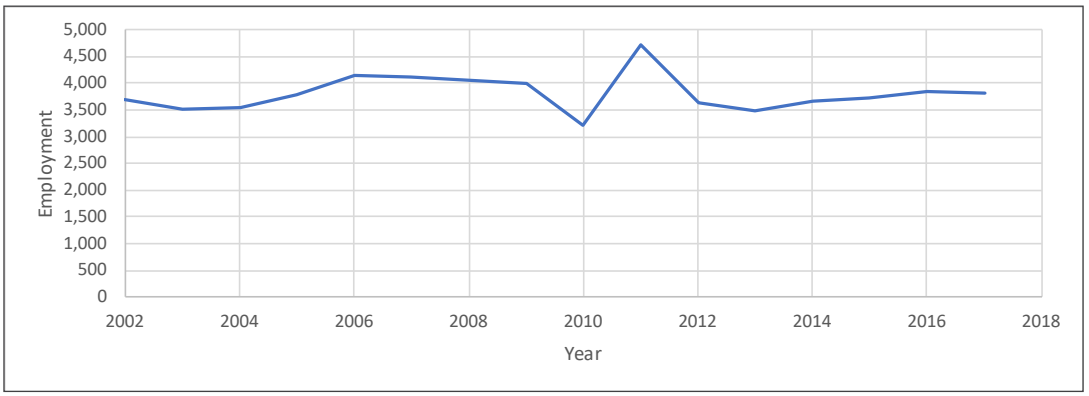
### Table 2-1: Population and Households over time

| | POPULATION | HOUSEHOLDS | HH SIZE |
|---|---|---|---|
| **2000** | 33,659 | 9,413 | 3.58 |
| **2010** | 35,731 | 10,169 | 3.51 |
| **2019** | 36,330 | 10,190 | 3.46 |

# Employment

There were approximately 3,800 jobs within the Kearns Metro Township of in 2017. The number of jobs within Kearns from 2002 to 2017 is summarized in Figure 2-5. Since 2002 about 120 jobs have been added within the township, representing annualized growth of 3.2% per year.

### Figure 2-5: Total Jobs within Kearns



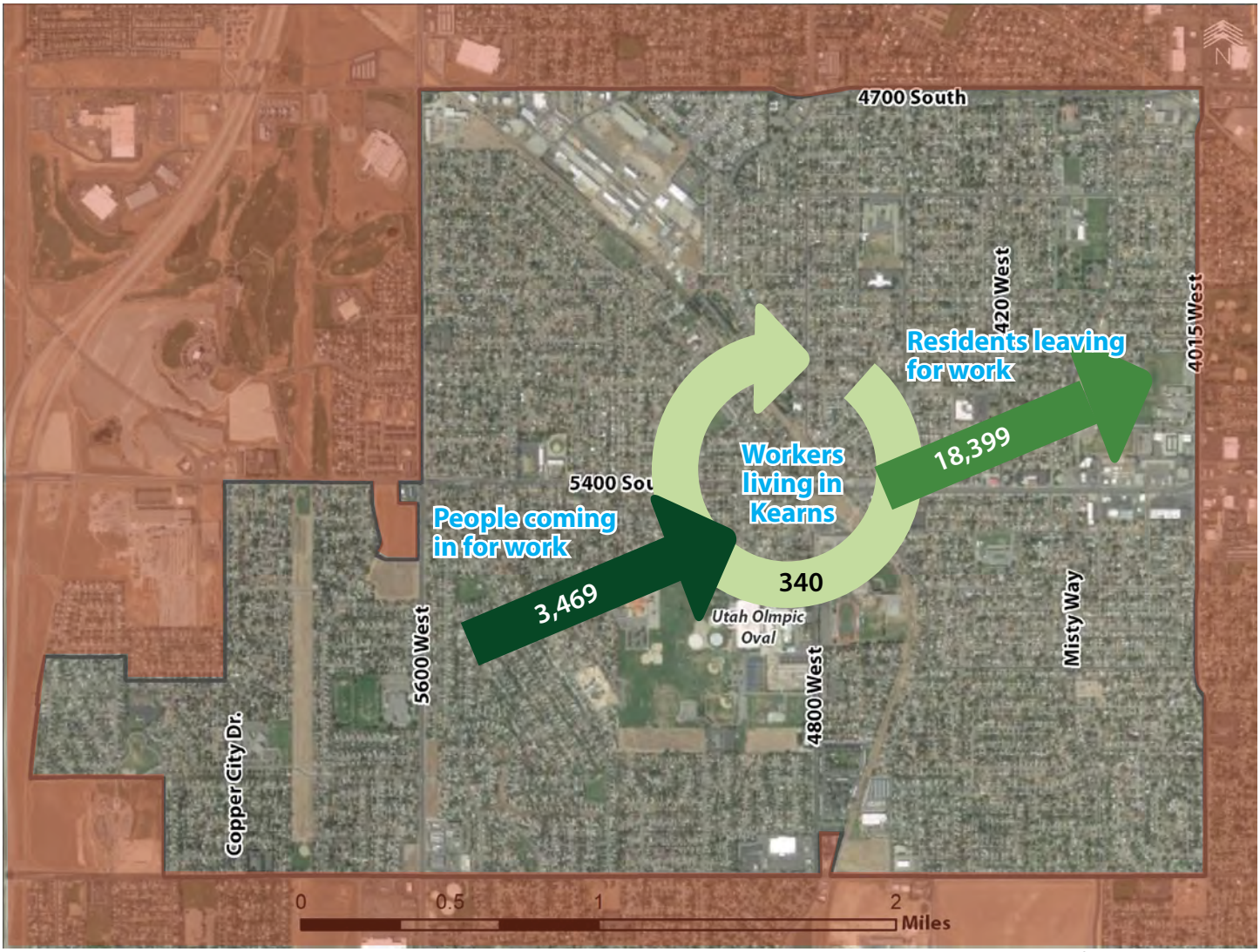

*Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).*

Kearns has diverse employment with job centers such as Camp Kearns and the commercial district on 5400 South, which can be seen in the image below. There are other employers throughout the township, such as schools and spot commercial and industrial zoned sites in various locations.

### Aerial Image Highlighting Employment and Residential Areas in Kearns

Although employment within Kearns has increased recently, there are still more residents that live within the township but are employed elsewhere. There were approximately 18,399 residents that commuted to a job outside of the township in 2017, while only 3,469 people commuted to Kearns from another community for work. There were only about 340 residents that both lived and worked within the township. These existing commuting patterns help inform transportation investment decisions since people commuting into and out of the township for work effectively have a greater impact on the overall transportation system demands due to longer trip lengths.

**Figure 2-6: Inflow/Outflow Commuting Patterns**




*Source: U.S. Census Bureau, OnTheMap Application and LEHD Origin-Destination Employment Statistics (Beginning of Quarter Employment, 2nd Quarter of 2002-2015).*

# Transportation System

The present state of the transportation network in Kearns is well positioned to support the overall community transportation vision. Since Kearns has no major future growth there is less demand for large transportation expansion capacity projects. Much of the improvements in the transportation network will revolve around making the system more accessible, safer, and more efficient.

**5400 South and Northwest Ave in Kearns**

## Street Network

Roadway functional classification is a means to categorize how a roadway functions and operates based upon a combination of the roadway characteristics.

Streets provide for two distinct and competing functions: mobility and land access. As mobility increases, land access decreases and vice versa as shown in Figure 2-7. Both functions are vital, and no trip is made without both. In Kearns, street facilities are classified by the relative amounts of land-access service they provide. There are four primary classifications, with descriptions in Table 2-2 on page 10 and in the text below:

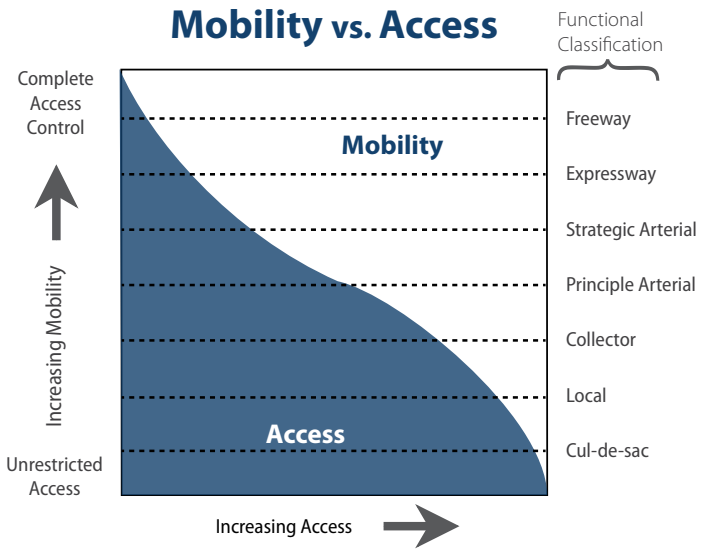
» **Freeways & Expressways –** Freeway and expressway facilities are provided to service long distance trips between cities and states. No land access is provided by these facilities. Both I-15 and the future Mountain View Corridor are freeways near Kearns, but there are no freeways or expressways directly located in Kearns.

» **Arterials –** Arterial facilities are designed to serve a high level of mobility providing fast flowing through-traffic movement but with low level land-access service. The traffic controls and facility designs are primarily intended to provide efficient through movement. 5400 South and 4700 South are arterials in Kearns. Arterials frequently provide the most direct route from A to B not only for vehicles but for pedestrians and bicyclists as well. These roads may offer wide shoulders that can accommodate buffered or separated bike lanes and choice locations for bus stops.

» **Collectors –** Collector facilities are intended to serve both through and land-access functions in relatively equal proportions. For longer, through trips requiring high mobility such facilities are inefficient. Instead they are used for shorter trips requiring increased access to destinations. For the bicyclist or pedestrian, collectors can offer a comfortable level of safety and a number of route choices because of low vehicle speeds and a variety of access options to potential destinations.

» **Local Roads/Residential Streets –** Residential facilities primarily serve land-access functions. Local Road design and control facilitates the movement of vehicles onto and off the street system from land parcels. Through movement is difficult and is discouraged by both the design and control of this facility. This level of street network is likely to provide the highest level of comfort to bicyclists and pedestrians. Local roads will have the lowest speeds and be mostly absent of large vehicles. The safety and comfort of local roads is also due to a quieter

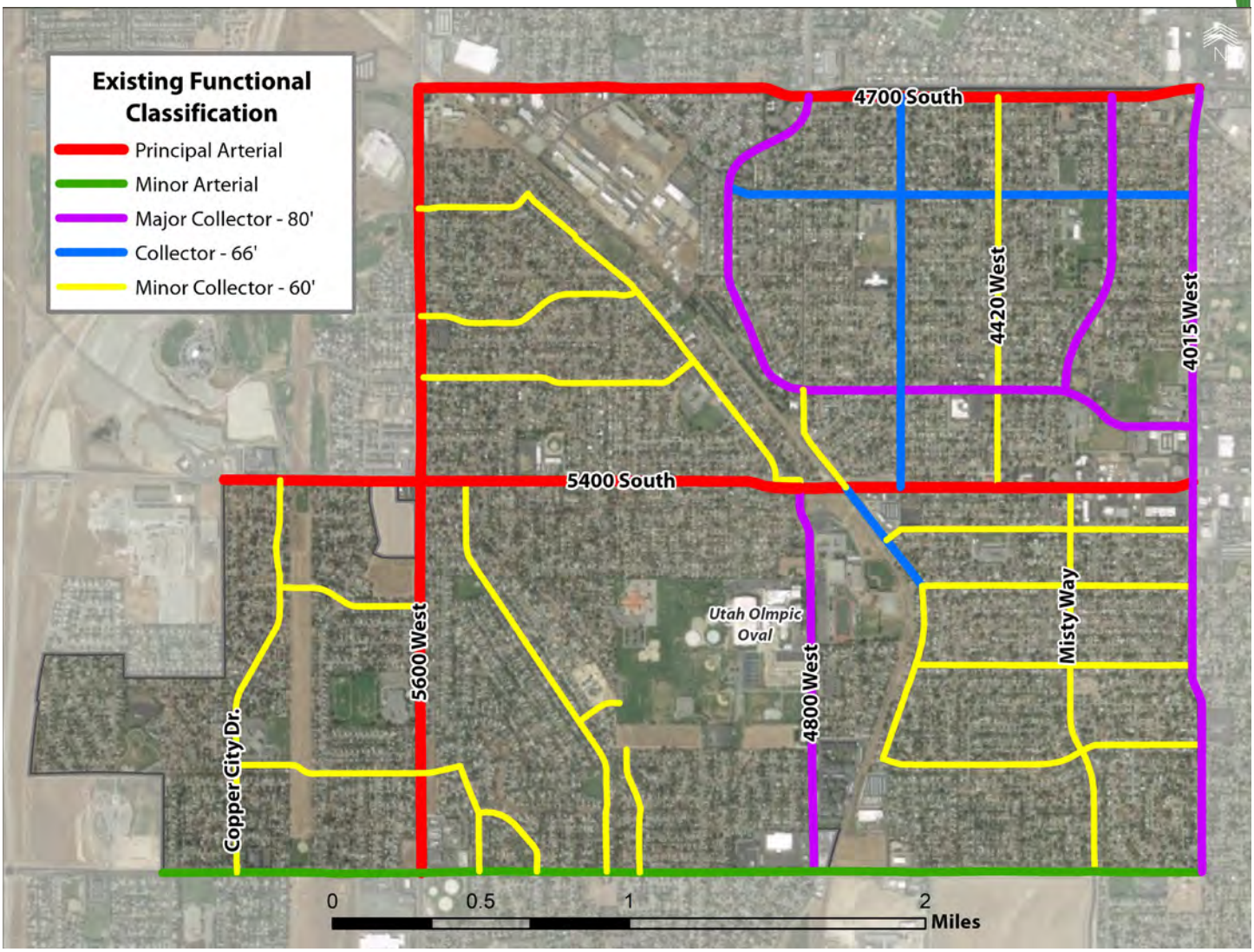
**Figure 2-7: Mobility Vs Access**



environment since there are less vehicles and slower speeds, as well as one removed from roadway air pollution that is associated with higher traffic volumes.

Roadway functional classification does not define the number of lanes required for each roadway's automobile capacity. For instance, a collector street may have two, three, or four lanes, whereas an arterial street may have up to nine lanes for motorized traffic. The number of lanes is a function of the expected automobile traffic volume on the roadway and serves as the greatest measure of roadway capacity for vehicles. The existing functional class network in Figure 2-8 is separated into functional classes by access as well as the general right-of-way width.

### Figure 2-8: Existing Functional Classification



## Table 2-2: Street Functional Classification

| CHARACTERISTIC | FUNCTIONAL CLASSIFICATION | | | |
|---|---|---|---|---|
| | FREEWAY & EXPRESSWAY | ARTERIAL | COLLECTOR | RESIDENTIAL STREET |
| **Function** | Traffic movement | Traffic movement, land access | Collect and distribute traffic between streets & arterials, land access | Land access |
| **Typical % of Surface Street System Mileage** | Not applicable | 5 - 10% | 10 - 20% | 60 - 80% |
| **Continuity** | Continuous | Continuous | Continuous | None |
| **Spacing** | 4 miles | 1 mile | 1/4 - 1/2 mile | As needed |
| **Typical % of Surface Street System Vehicle-Miles Carried** | Not Applicable | 40 - 65% | 10 - 20% | 10 - 25% |
| **Direct Land Access** | None | Limited: Major generators only | Restricted: Some movements prohibited; number & spacing of driveways controlled | Safety controls access |
| **Minimum Roadway Intersection Spacing** | Approximately 1 mile | Approximately 1/2 mile | 300 feet - 1/4 mile | 150 feet |
| **Speed Limit** | 55 -75 mph | 40 - 50 mph in fully developed areas | 30 - 40 mph | 25 mph |
| **Parking** | Prohibited | Discouraged | Limited | Allowed |
| **Comments** | Supplements capacity of arterial street system & provides high-speed mobility | Backbone of street system | | Through traffic should be discouraged |

## Traffic Volume

Traffic data is typically shown as the number of vehicles per day or an average daily volume. Data collection was completed as part of the transportation plan. This included traffic data from Kearns and UDOT, as well as new traffic counts to document traffic volumes and speeds. These volume data provides the basis to calibrate the travel demand model and to identify any capacity deficiencies that may exist today.

The highest traffic volumes in Kearns are on 6200 South. 6200 south is a five-lane arterial road designed to move regional traffic through town. All along 6200 South in Kearns the traffic volume exceeds 30,000 vehicles per day. The highest daily traffic volumes outside of the Township are east of 4000 West which experiences 39,000 vehicles per day. Traffic volumes on the other east-west corridors through Kearns are also high, exceeding 20,000 vehicles per day on average on both S.R. 173 (5400 S) and 4700 S. North-South traffic is not as severe as the two major north-south routes through the area, which are S.R. 172 (5600 West), and Bangerter Highway (S.R. 154), both of which are just outside the Township boundary.

Level of Service (LOS) describes the operating performance of an intersection or roadway. LOS is measured quantitatively and is reported on a scale from A to F, with A representing the best performance and F the worst. For unsignalized intersections, LOS is reported based on the average vehicle delay for the worst approach. While for signalized intersections, an overall LOS is reported for the entire intersection based on the average delay of all vehicles. Table 2-3 provides a brief explanation for each LOS and the associated average delay per vehicle for signalized intersections.

**Table 2-3: Level of Service**

| LEVEL OF SERVICE | TRAFFIC CONDITIONS | AVERAGE DELAY ( SECONDS/VEHICLE ) | |
|---|---|---|---|
| | | SIGNALIZED INTERSECTION | UNSIGNALIZED INTERSECTION |
| A | Free Flow Operations / Insignificant Delay | 0 ≤ 10 | 0 ≤ 10 |
| B | Smooth Operations / Short Delays | > 10 and ≤ 20 | > 10 and ≤ 15 |
| C | Stable Operations / Acceptable Delays | > 20 and ≤ 35 | > 15 and ≤ 25 |
| D | Approaching Unstable Operations / Tolerable Delays | > 35 and ≤ 55 | > 25 and ≤ 35 |
| E | Unstable Operations / Significant Delays Begin | > 55 and ≤ 80 | > 35 and ≤ 50 |
| F | Very Poor Operations / Excessive Delays Occur | > 80 | > 50 |

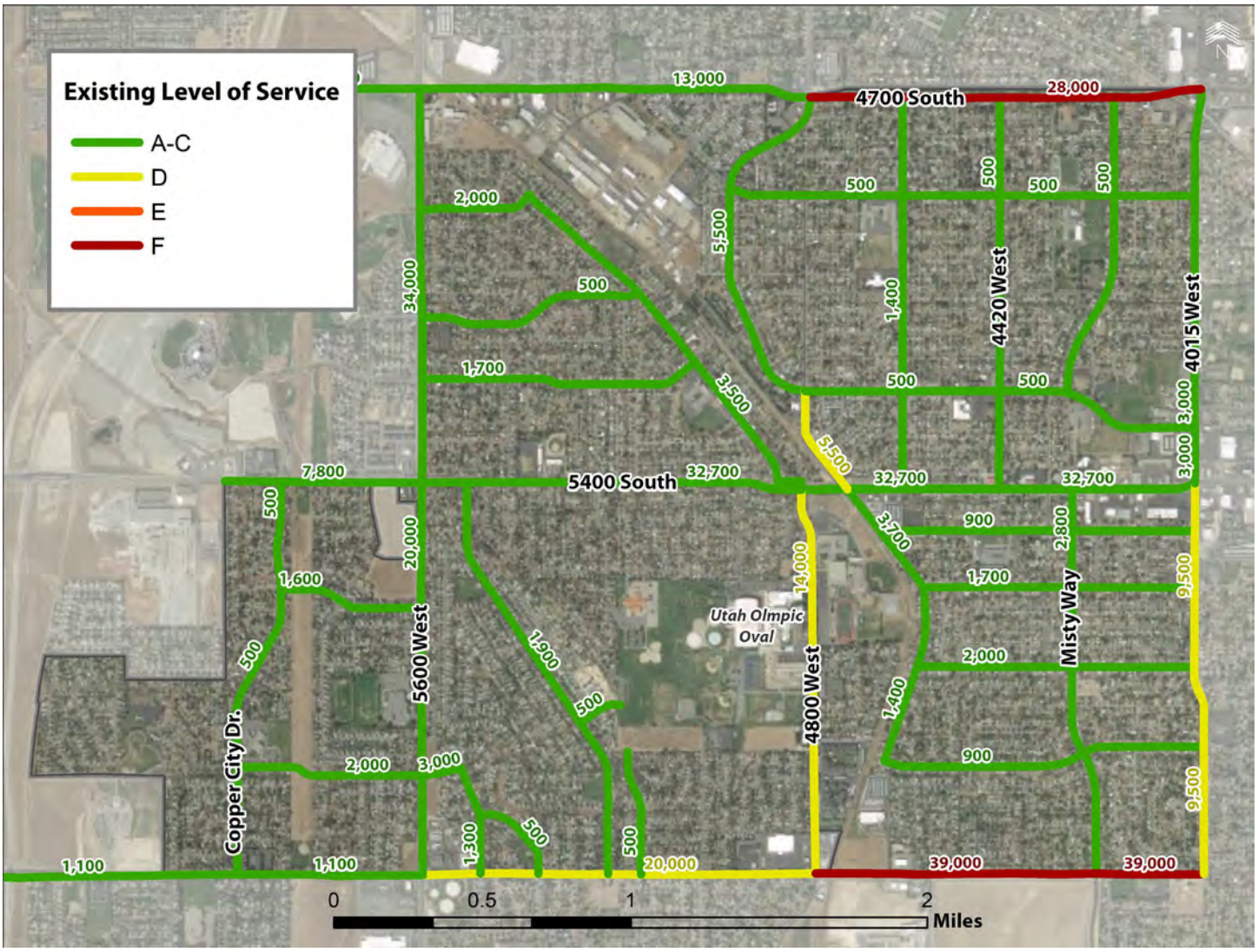
Roadway level of service is typically displayed in the relationship between the traffic volume and the roadway capacity (generally the number of lanes), or a V/C ratio. This is the measure displayed in Figure 2-10.

Some congestion occurs at a LOS D, but the transportation system is assumed to be adequate (not failing) at this level. LOS D was identified as the planning goal for Kearns in the peak traffic hours, meaning that LOS E and F are unacceptable. Although LOS D is a planning goal, roadway LOS may vary on a street-by-street basis. Roadway capacity cannot be scaled to exactly fit demand since demand varies by time of day, day of week, and time of year.

While the travel demand model is used to predict future traffic and level of service, it can also be used to estimate

current conditions. Existing conditions were modeled with a 2019 base year for Kearns functionally classified roadway network. Figure 2-12 summarizes the existing LOS within Kearns. Green roads have little or no traffic congestion, corresponding to LOS A, B or C, while yellow roads have "peak hour" traffic congestion, and red roads have significant traffic congestion. Currently, 6200 S experiences congestion during the peak hours. This is also true for 4700 S. east of 4800 W. During these periods there can be delays and queuing at the signalized intersections along the corridor. There are minimal delays on the other roadways in Kearns.

**Figure 2-10: Existing Level of Service**



# Intervals of Peak Congestion

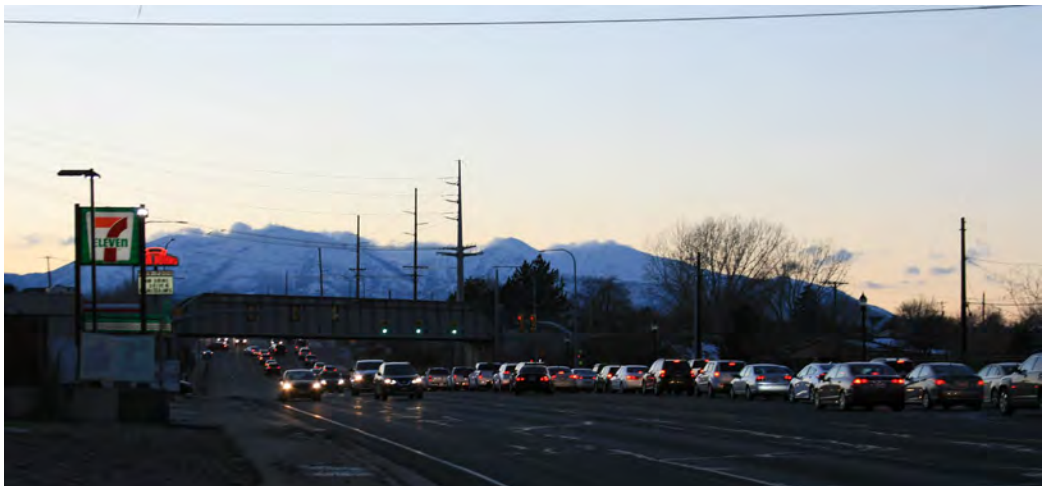
Annual Average Daily Traffic or AADT is a primary factor in determining LOS, which is the efficiency of a roadway to move vehicles. AADT, as the name implies is derived by taking a yearly traffic count and dividing that total by the 365 days of the year. This information is used when determining the performance grade of A-F for a specific roadway segment.

However, while the AADT may determine the average traffic volume for a given day, it's analysis may be lacking the fine-grained perspective to account for fluctuation in congestion throughout a specific day along a section of roadway.

The images to the right display congestion along 5400 South and Cougar Lane in Kearns at various times of the day. This data is collected from GPS vehicle navigation devices and has been purchased by UDOT. A quick glance at the images makes it clear that there are at least certain times of the day where congestion is an issue at this location. While the AADT reveals the broader picture of free flow operations with minimal delays, it should also be noted that there are peak intervals of roughly five to ten minutes where traffic operations can have significant or excessive delays within a 24 hour period.

Below is a photograph looking west at the Union Pacific train crossing and the Cougar Lane intersection along 5400 South. Traffic is beginning to become delayed in the westbound direction, while it is free flowing heading east.



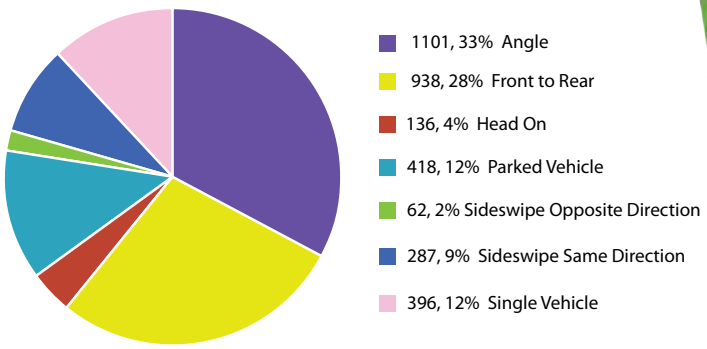



# Safety

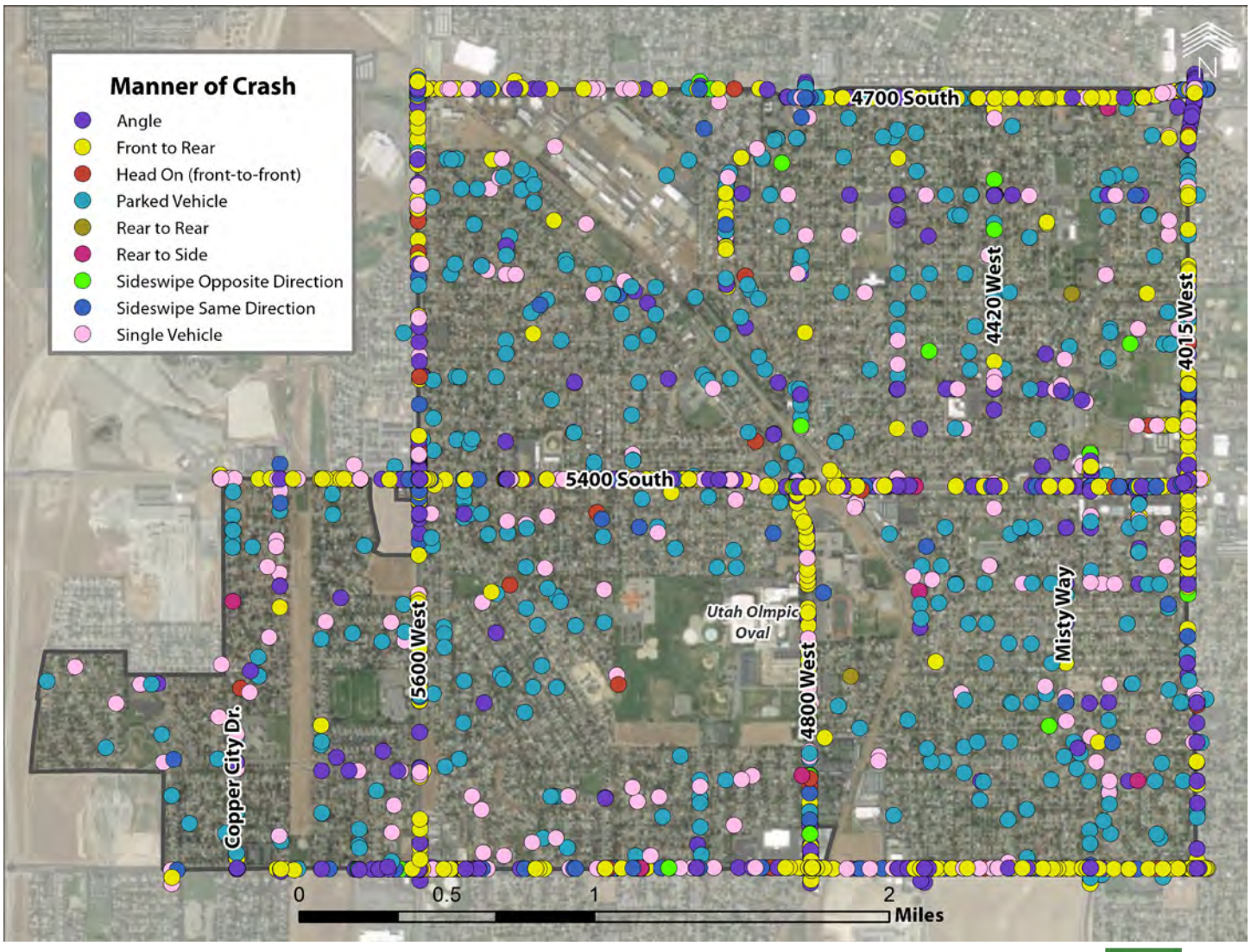
Crash data from 2014 through 2019 for vehicles, bicycles, and pedestrians were analyzed in Kearns. This data was utilized to identify potential crash hotspots and high-risk areas to address the overall safety of residents. In the past five years there have been over 3,300 reported crashes in Kearns, of these, 13 were fatal.

Of the 3,354 crashes that were in Kearns, angle crashes (crashes with vehicles turning left) were the most common collision representing 33% of crashes (1,101), followed by rear end crashes at 28% (938). Based upon the review of the crash data, these results are typical of other areas of the county and state. The safety improvements specified in this master plan are designed to reduce these crashes.

## Figure 2-11: Crashes by Manner of Collision



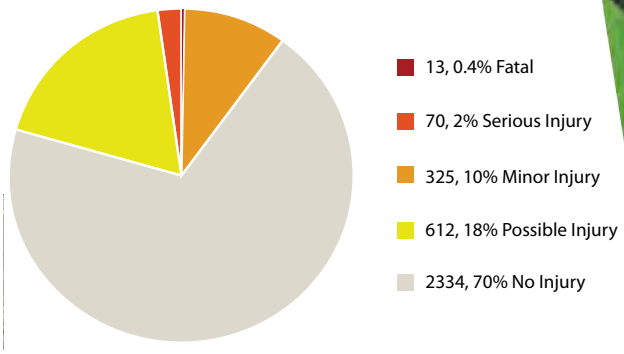

## Figure 2-12: Map of Crashes by Manner of Collision



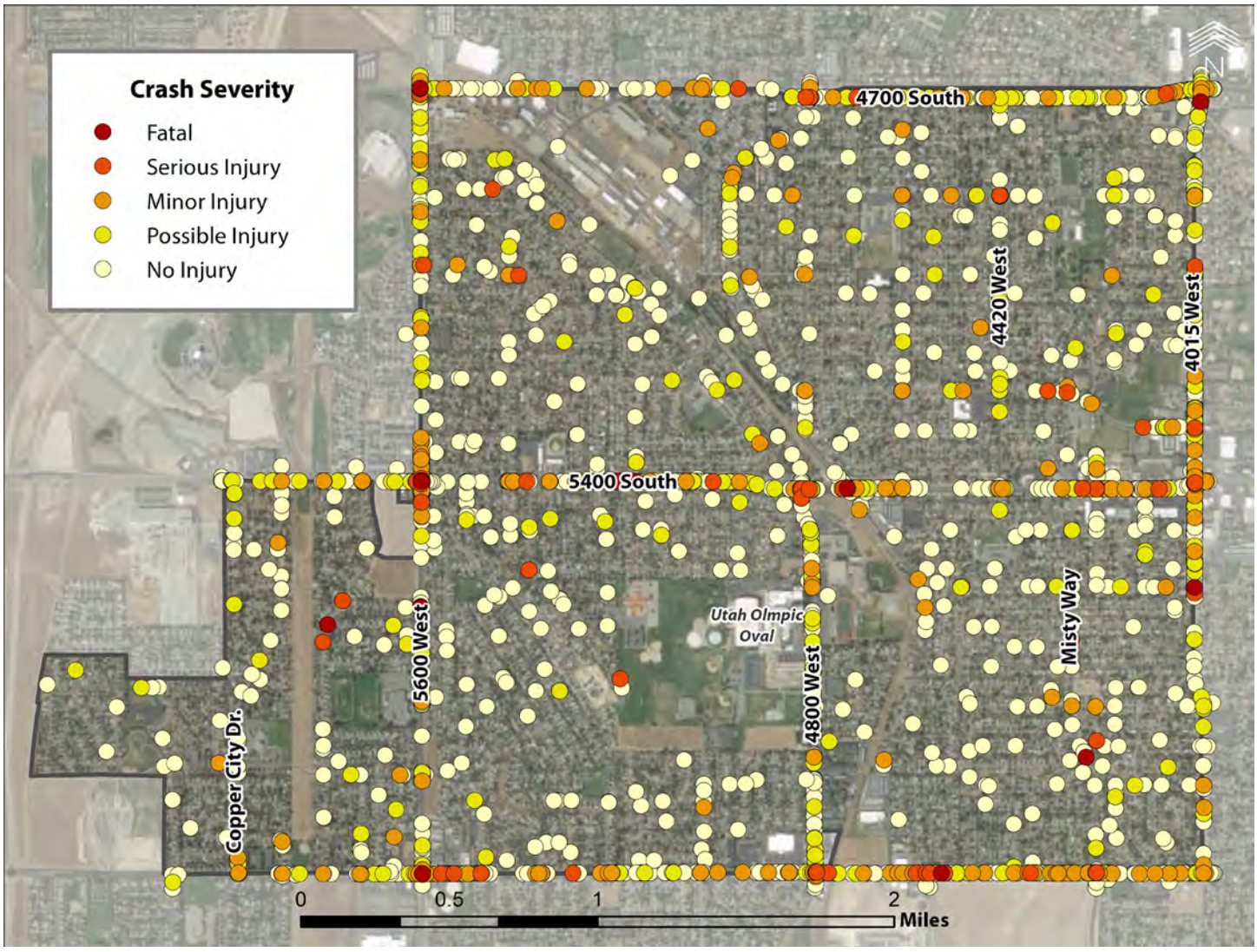
While 3,300 crashes seems like a high number of crashes, the number is not to be unexpected considering the roadway types and volumes. Of the 3,354 crashes in Kearns over 60% occur on 4 roads, 4700 South, 5400 South, 6200 South and 5600 West. These arterials also carry the most vehicles. The number of crashes in 2018 was down to 581 from the 728 crashes that occurred in 2017.

Most of the crashes resulted in no injuries. These 2,334 crashes were fender bender or property damage only crashes. The most concerning crashes totaled 83 and include both serious injury (70) and fatalities (13). Many of the 83 crashes occurred at intersections on the high volume roads discussed in the previous paragraph.

### Figure 2-13: Crashes by Severity




### Figure 2-14: Map of Crashes by Severity

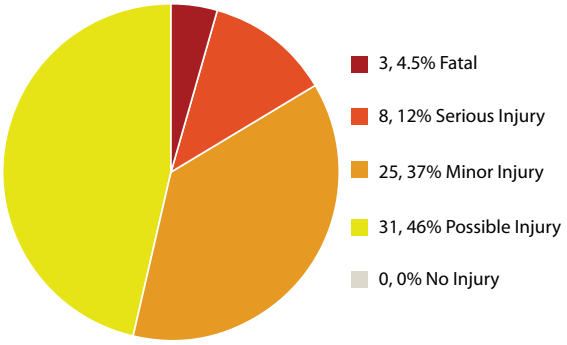


# Pedestrian involved crashes

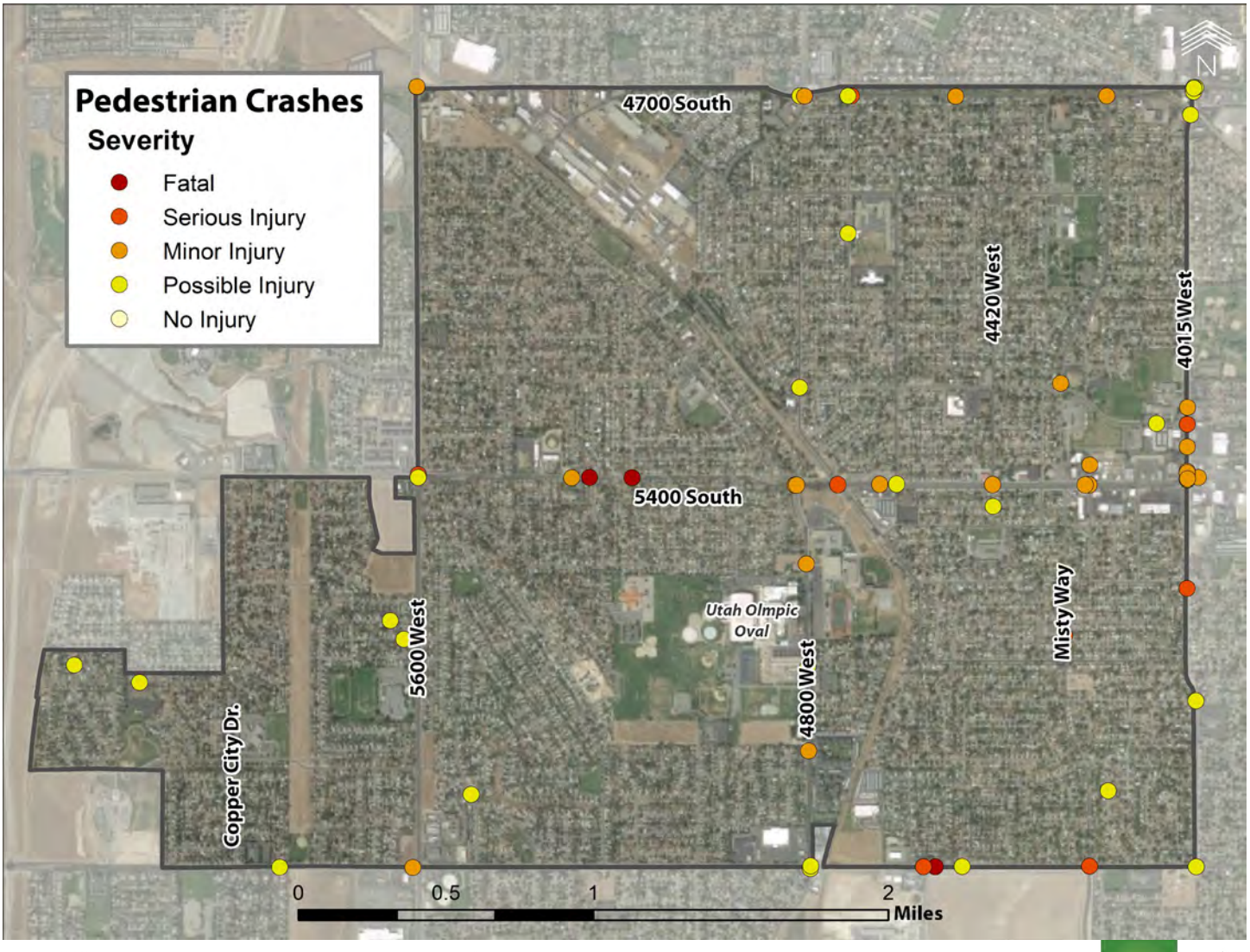
There have been 67 recorded pedestrian crashes in Kearns during the years of analysis. Out of these 67, three were fatalities and eight were categorized as serious injury. 33 of the total 67 crashes, including the three fatalities, occurred while it was either dark, at dusk, or at dawn. In nearly half of the crashes the vehicle was driving straight, while 21 percent involved a left turn, and 27 percent involved a right turn.

Vehicle crashes involving pedestrians have a higher probability of serious or fatal injury. When pedestrian fatalities and serious injury crashes are combined, they make up 16 percent of the total amount of pedestrian crashes in Kearns. This ratio is much higher than the total for overall crashes (discussed on the previous page) that involve either a fatality or serious injury, which is below three percent.

## Figure 2-15: Pedestrian Crashes




## Figure 2-16: Map of Pedestrian Crashes



# Bicycle involved crashes

There has been a total of 20 vehicle crashes involving a bicycle in Kearns during the years of analysis. Out of these 20, there has been one fatality and one serious injury crash. While the fatality occurred while it was dark out, 75 percent of the bicycle crashes happened during daylight hours.

The location for the majority of the bicycle involved crashes follow a similar pattern to both the pedestrian involved crashes and overall crashes. The pattern is that these crashes occur most frequently at places with either wide roads, high speeds, high traffic volume or a combination of the three. In Kearns, these are roads like 5400 South, 4015 West and 4700 South.

Bicycle crashes that involve a vehicle making a right turn are common, and in Kearns they make up 50 percent of bicycle crashes. Drivers may be unaware that a bicyclist is near their vehicle while they are scanning for a break in traffic while they turn as simultaneously looking in the opposite direction of the bicyclist on their right. Either a traffic light or a stop sign was at the location of 80 percent of the right turn crashes, indicating that traffic control devices alone will not increase awareness of bicyclists.

**Figure 2-17: Bicycle Crashes**

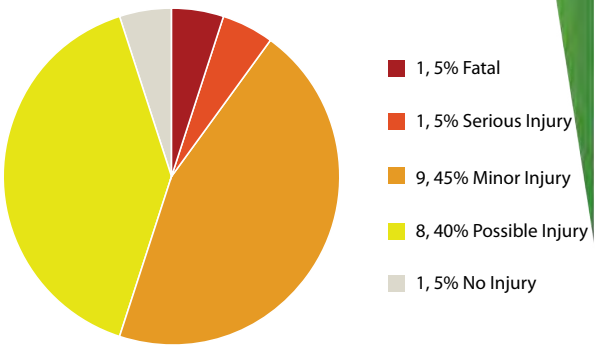
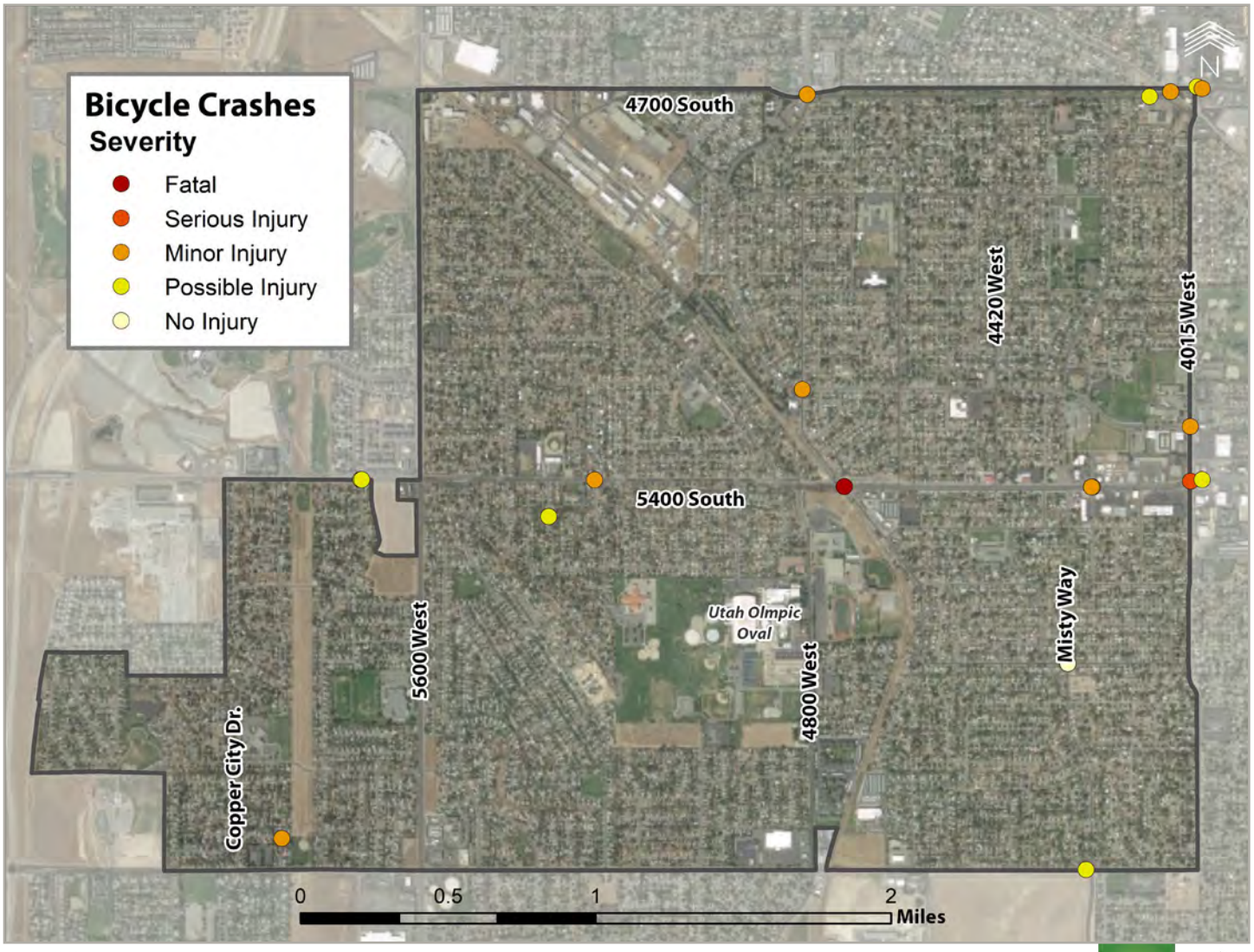


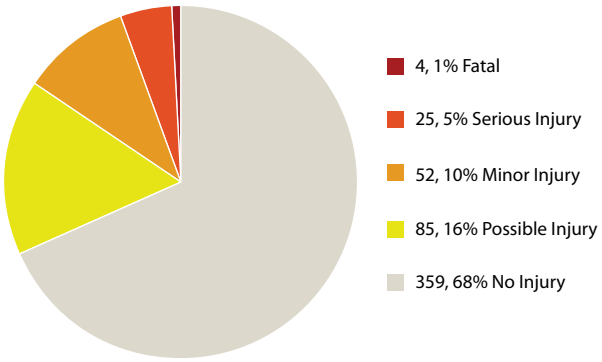

**Figure 2-18: Map of Bicycle Crashes**



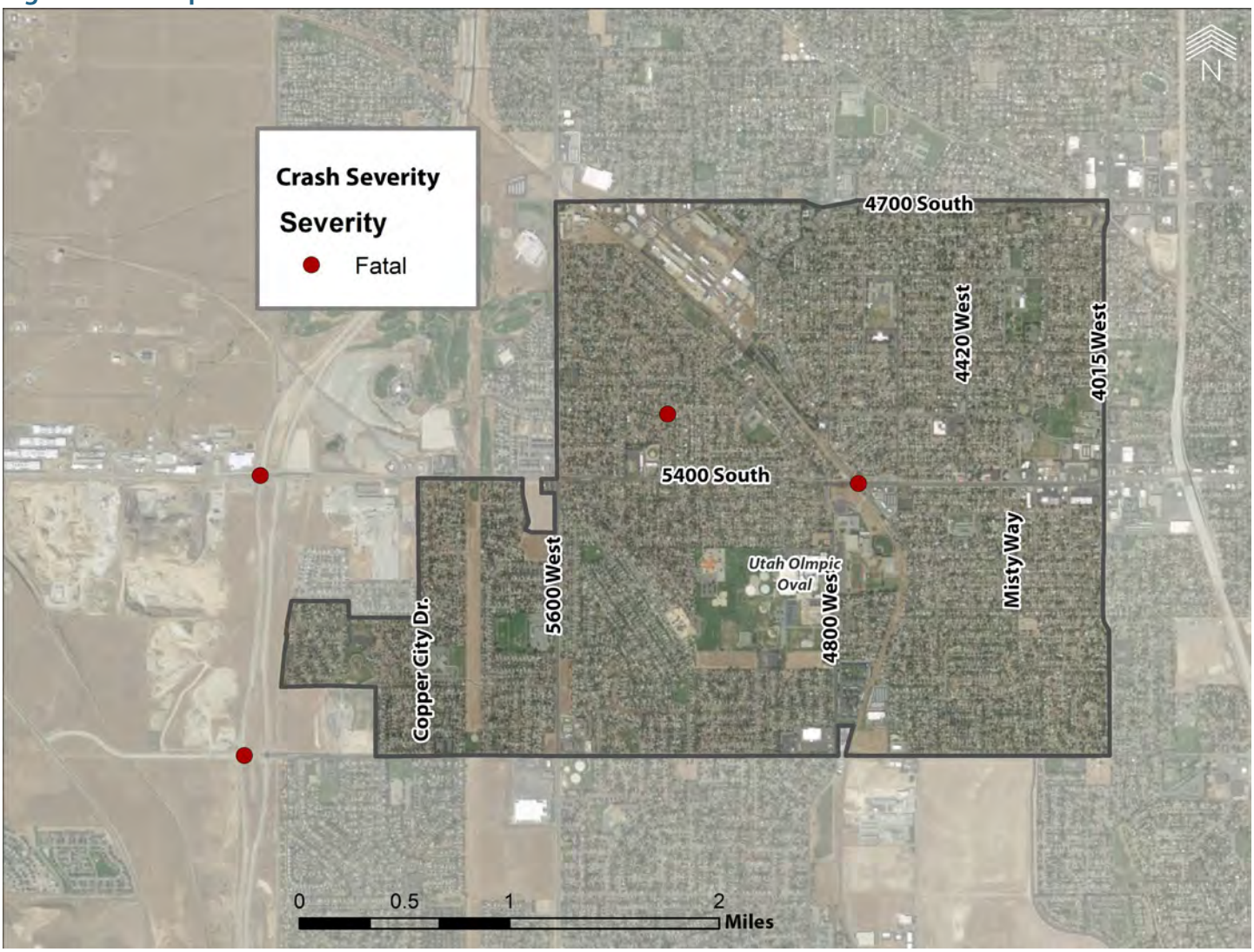
# 2019 Crash Data

At the time of writing this report the 2019 crash data is still incomplete and the collected information is in the process of being organized and verified. However, a majority of the crash numbers and locations are available for the general Salt Lake County area that makes up Kearns. These crash numbers which are represented in the chart to the right may include areas that are slightly beyond the boundary of Kearns, so they should be taken as approximate and not a final set total number. The map in Figure 2-20 is showing data from the same geographic area and only displays fatalities. There were four fatalities in the general Kearns area in 2019, two of which occurred on the Mountain View Corridor.

## Figure 2-19: 2019 Crash Severity




## Figure 2-20: Map of 2019 Fatalities



# Active Transportation

An active transportation network is a key component of a transportation system because it provides mobility options for all residents. Making walking and biking safe and convenient is a key goal of the transportation plan. Benefits of a practical and accessible active transportation network are both long term and immediate and range from improving physical and mental health, decreasing noise and air pollution and increasing property values that are located along the network. The more transportation choices that exists the more the community will be connected. While freeways and expressways favor the speeds associated with mobility, with a robust active transportation network the arterials, collectors and local roads can provide a wide array of accessibility options to origins and destinations, connecting neighborhoods, downtowns, parks, schools, place of work and worship, shopping spots, etc. to everyone from age four to one hundred and four.

Salt Lake County Office of Regional Development has established a vision for active transportation in the county. The Mission of the Salt Lake County Active Transportation Plan is to provide safe, convenient and feasible active transportation in Salt Lake County for all people of all ages and abilities through encouragement, collaboration, and education. The established goals for active transportation are as follows:

1. Implement a pedestrian and Bike Transportation Improvement Program (BTIP) for county communities that is accessible to all.

2. Coordinate planning and implementation of active transportation facilities and programs with agencies and adjoining communities.

3. Implement the County complete street policy in unincorporated SL County while actively searching for opportunities to further improve active transportation.

4. Advocate and provide technical resources to further support self-reliance of our traveling public for active transportation including: the Salt Lake County Bicycle Advisory Committee (SLCBAC), Salt Lake County Bicycle Ambassador Program, Safe Routes to School, and other related programs.

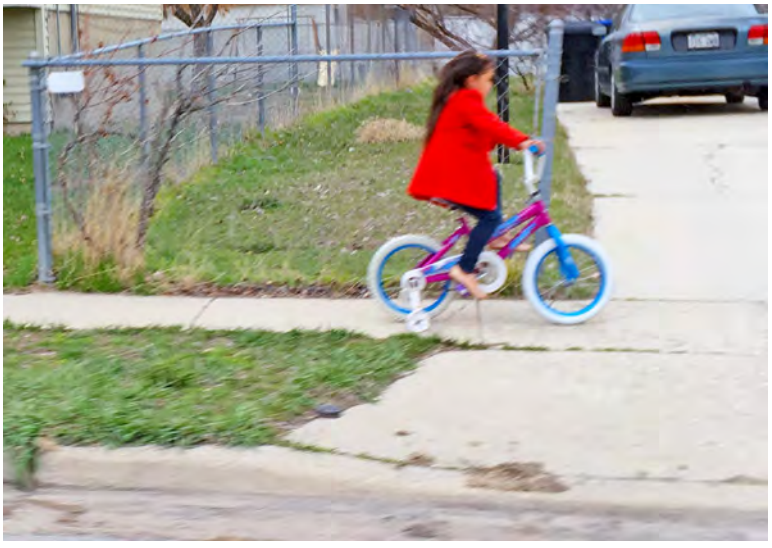
While the established goals and vision of the Salt Lake County Active Transportation Plan specifically call out unincorporated communities they are no less relevant to transportation planning for Kearns. The active transportation component of a plan ensures that mobility options/alternatives are being legitimately considered for those who do not solely rely on automotive technology for travel. The result is a more inclusive community vision.

## Bike Lanes

According to the Salt Lake Township / Salt Lake County Bikeways Map provided by BikeSLC, most of the east-west roads through Kearns are listed as "Very Low Comfort" for bicyclists. North-south connectivity is better with most roads falling in the "Medium Comfort" category. The only currently existing bike lane in Kearns is on 4800 West / Cougar Lane. That bike facility does include an above the curb bike lane between 5400 South and Kearns High School.

Kearns has an opportunity to expand bike lanes throughout the community to create safe riding spaces for all abilities.

**Kearn's bicycle rider on sidewalk**

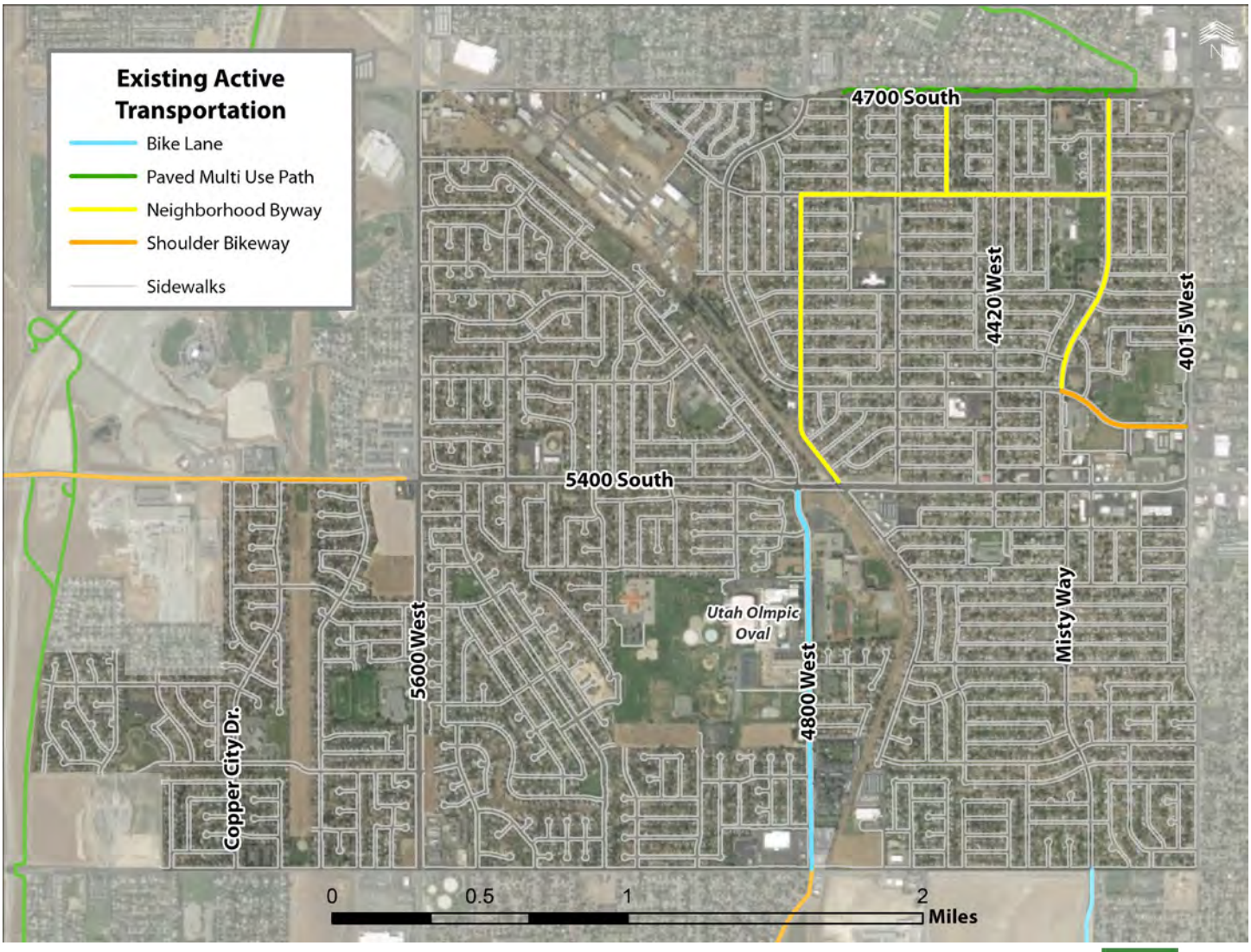


# Trails

As a very urban community, there is not a robust, connected trails system in Kearns. Sidewalk provides much of the pedestrian connectivity between different areas of town. A full sidewalk plan is included in section 5.

There is one paved trail in Kearns along the north side of 4700 South. A map of the existing active transportation network is shown in figure 2-21.

**Figure 2-21-: Existing Active Transportation**



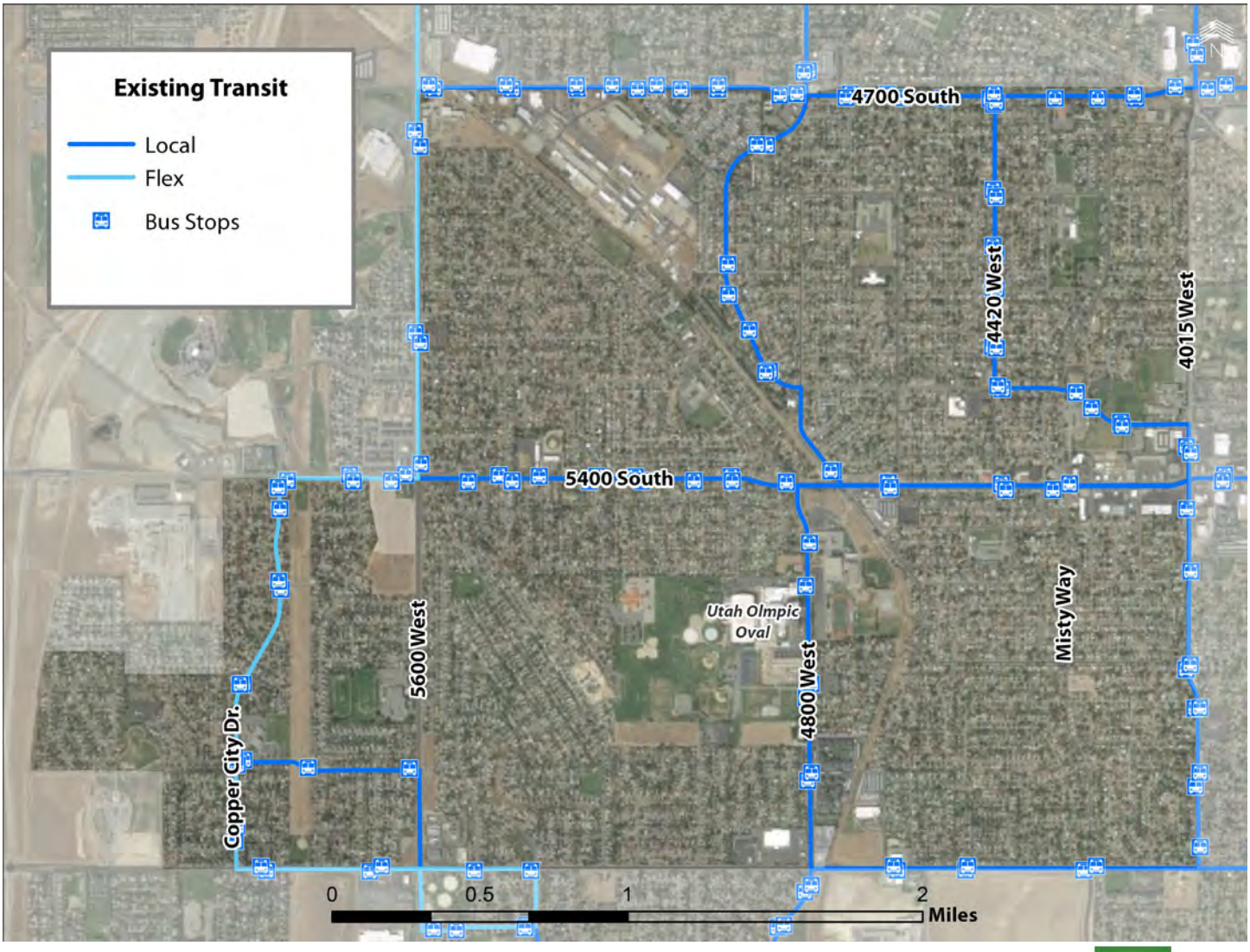
# Transit

Kearns is served well by UTA's (Utah Transit Authority)bus routes which run east to west through the township on 15 minutes intervals and north to south on 30 minute intervals. Limited bus service via the F556 Flex Route are also available on 5600 W. The full UTA bus route availability for Kearns is shown in table 2-4.

### Table 2-4: Transit Routes in Kearns

| ROUTE # | FREQUENCY | AVG WEEKDAY RIDES (2019) | STREETS TRAVERSED |
|---|---|---|---|
| **F556 (Flex)** | Limited | 118 | 5600 W, 5400 S, Copper Township Dr., 6200 S |
| **47** | 15 Minute | 1,477 | 4700 S |
| **54** | 15 Minute | 1,322 | 5400 S, Copper Township Dr., 5600 W, 6200 S, Lodestone Ave. |
| **62** | 30 Minute | 269 | 6200 S, 5600 W, Lodestone Ave., Copper Township Dr. |
| **248** | 30 Minute | 319 | 4800 W |
| **240** | 30 Minute | 797 | 4000 W, 4700 S, 4420 W, 5215 S |

### Figure 2-22: Existing Transit

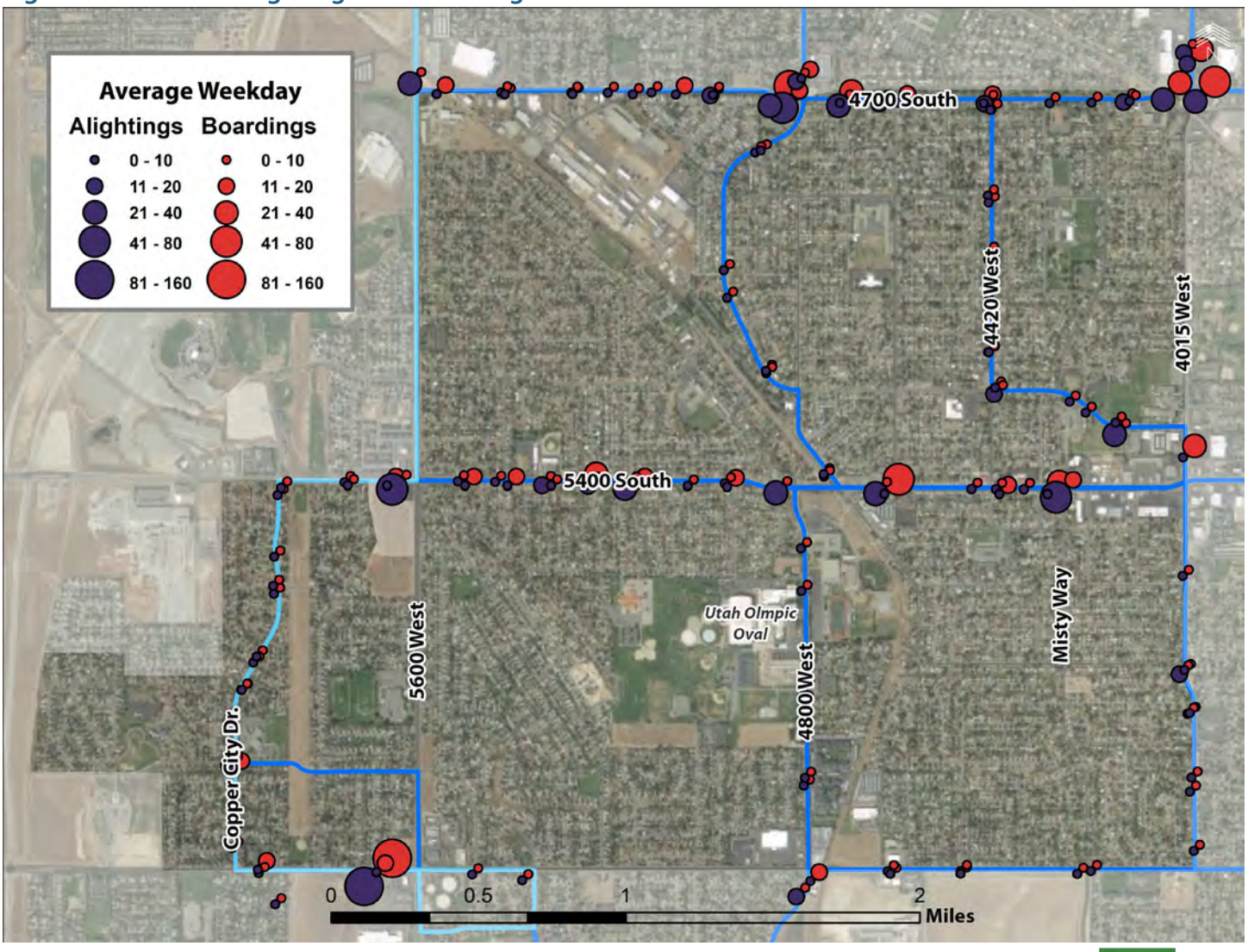


There are several well utilized routes serving neighborhoods across Kearns. UTA route 54 serves on average 1,420 riders per day which is 19 riders per hour. This route is also well utilized and runs through the center of Kearns.

People getting on at bus stops are called 'boardings' and people getting off at bus stops are called 'alightings.' Figure 2-23 shows the average weekday boardings and alightings in Kearns. The larger circles indicate more use at those bus stops.

### UTA Route 62 in Kearns


### Figure 2-23: Transit Alightings and Boardings



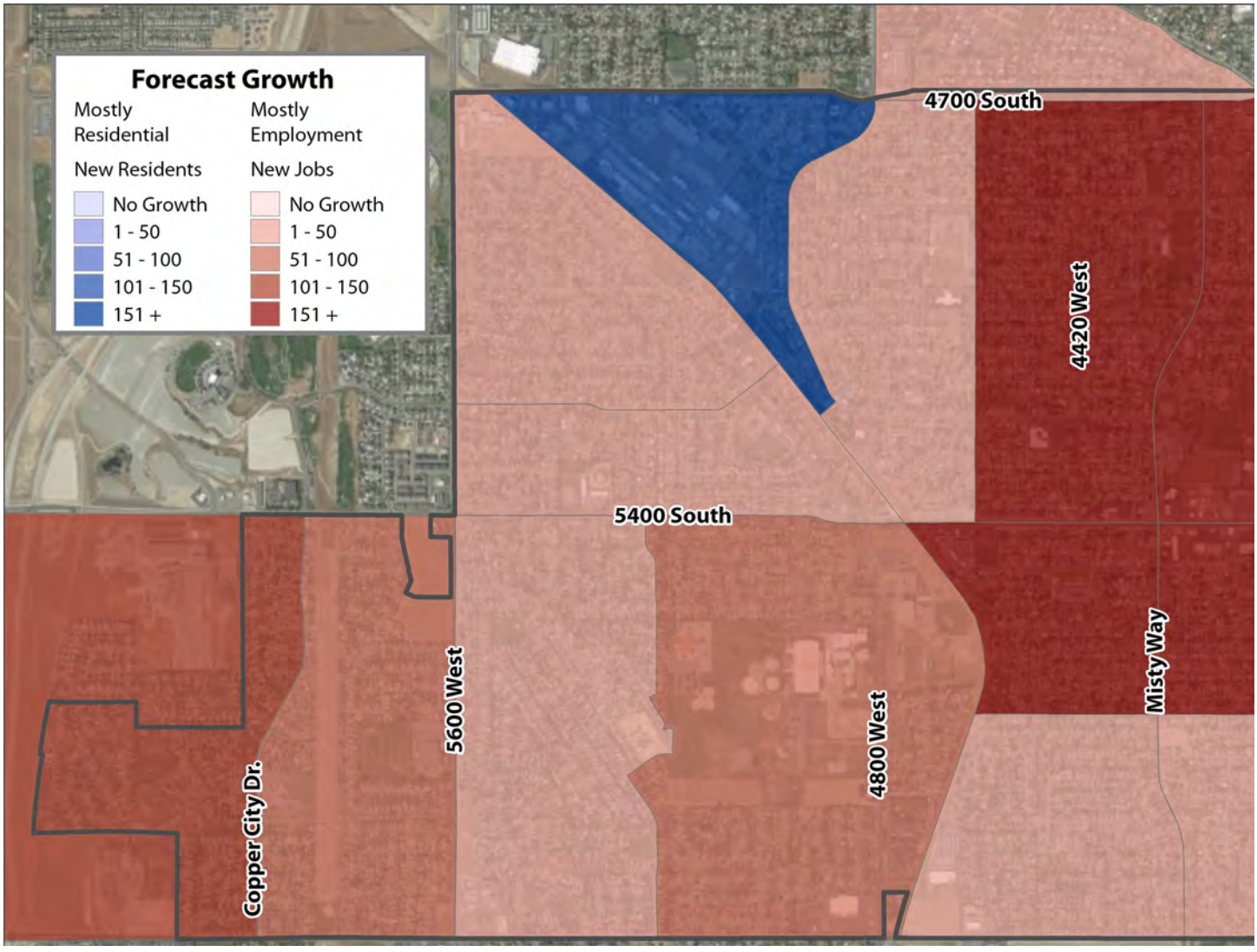
## Future Forecasts

This chapter discusses the background and assumptions used to forecast transportation related growth in Kearns. Using travel demand modeling techniques in conjunction with projected socioeconomic, population, and employment trends, future transportation demands were forecast. Changes that are already committed by agencies such as UDOT and WFRC were included in the transportation forecasting prior to recommending any transportation improvements for Kearns Metro Township. Other projects which are planned but not committed are also recommended as part of this process.

## Future Growth

Most of the projected socioeconomic data used in this study comes from the modeling used for the WFRC Long Range Plan. The future we are planning for revolves around very slight population growth. The projected 2050 population in Kearns is only slightly higher than it is today remaining at just over 36,000 people. Job growth is also expected to remain relatively stable over the next 30 years. This plan reflects this stability. Figure 3-1 is a map showing the limited growth and generally where this growth is likely to occur. While many neighborhoods don't show strong population growth, they may experience redevelopment that could lead to more housing but a lower number of people per household. Again these projected changes are reflected in the travel demand model and transportation projects in this plan.

**Figure 3-1: Forecasted Growth in Kearns**



# Travel Model Development

Projecting future travel demand is a function of projected land use and socioeconomic conditions. The Wasatch Front Regional Council (WFRC) Travel Demand Model (TDM) was used to predict future traffic patterns and travel demand. The travel demand model was modified to reflect better accuracy through the Kearns area by creating smaller Traffic Analysis Zones (TAZ) and a more accurate and extensive roadway network. Existing conditions were simulated in the TDM and compared to the observed traffic count data to get a reasonable base line for future travel demand. Once this effort was completed, future land uses, and socioeconomic data were input into the model to predict the roadway conditions for the design year 2050. 2050 was selected as the planning year horizon to be consistent with the WFRC planning process. The 2019-2050 Regional Transportation Plan, RTP, (available at www.WFRC.org) was adopted by the Wasatch Front Regional Council in May of 2019. The RTP is a guide to maintain and enhance the regional transportation system for Salt Lake, Weber, and Davis Counties. This chapter evaluates the existing transportation system within the metro township and establishes the framework for the development of the transportation plan. This analysis includes a description of the land use as well as the demographic profile of the metro township and how these factors affect the transportation system.

# Land Use's Effect on Transportation

Kearns is expected to maintain its stable, slow growth in the coming years. Kearns' population is projected to grow only by approximately 1,000 people over the next 30 years. Much, if not all, of the expected development growth in Kearns will be through re-development or infill.

Kearns is currently mostly a bedroom community with more households than jobs. Still it does maintain a mix of residential, commercial, and industrial land uses in some areas. As Kearns sees a demand for re-development and infill, maintaining this balance will be important. Residential areas will still encompass most of the land use in Kearns; however, there is re-development potential to include a mix of land uses and housing types.

Aging infrastructure will be more of a priority for Kearns as the township ages without the aid of development to offset the cost of new infrastructure. Maintaining the existing roads, sidewalk, signals, and other infrastructure must be prioritized as budgets are proposed in the future.

# Model Years & Results

### Projected Traffic Volumes & Conditions

The resulting outputs of the travel demand model were made up of traffic volumes on all the classified streets in the township and surrounding area. This data were used to identify the need for future roadway improvements to accommodate growth regionally as much of the traffic in Kearns either commutes to or from adjacent communities or simply passes through. The following two scenarios were analyzed in detail to assess the travel demand and resulting network performance in the County at large:

- No-Build
- Recommended Roadway Network

## No-Build Conditions

A no-build scenario is intended to show what the roadway network would be like in the future if no action were taken to improve the township, county or UDOT roadway network. The travel demand model again used to predict this condition by applying the future growth and travel demand to the existing roadway network. As shown in Figure 3-2, if no improvements are made to Kearns' transportation infrastructure, projected traffic volumes for the planning year 2050 will significantly worsen the LOS of many of the major streets and intersections throughout the township. The following list includes the streets expected to perform at LOS D or worse:

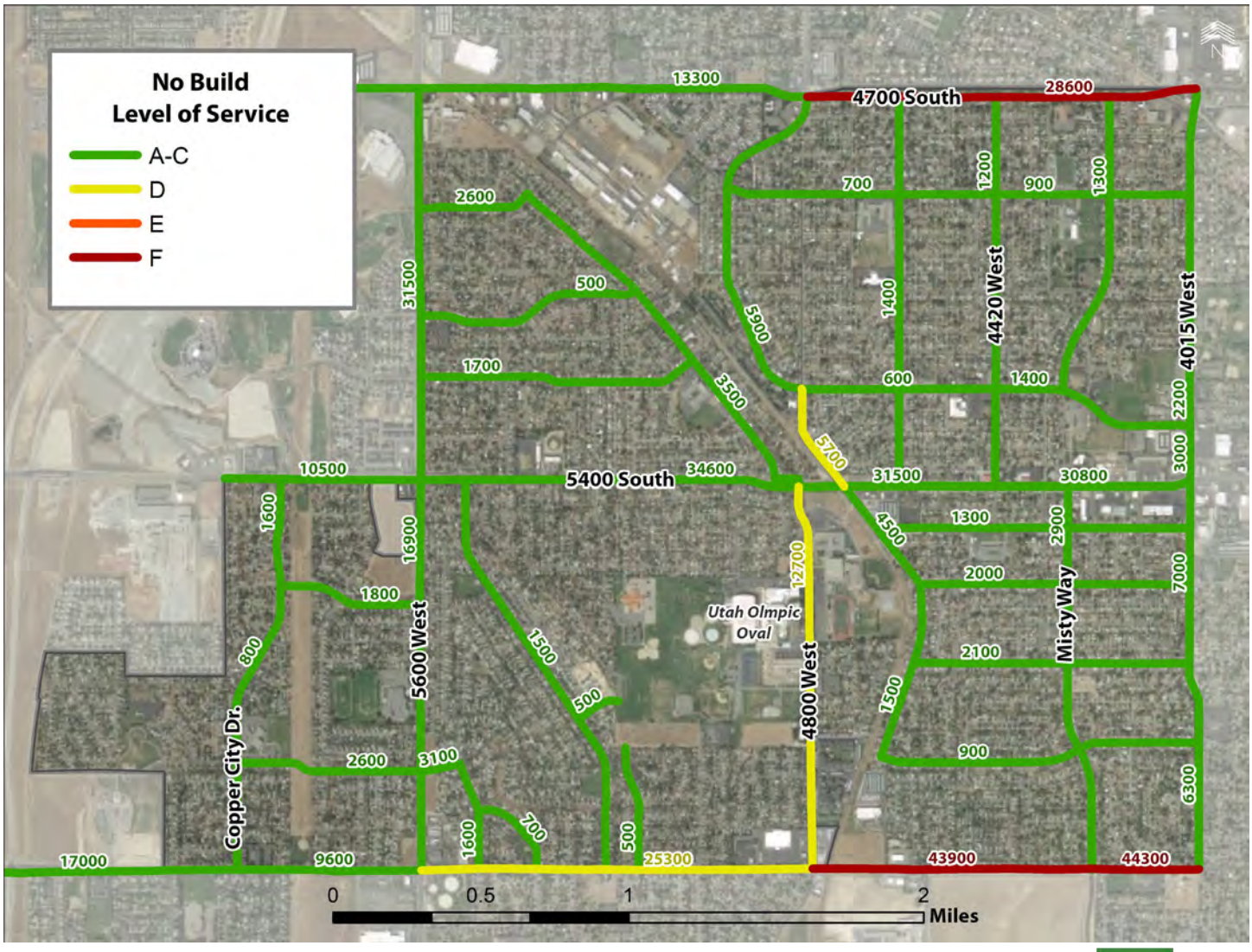
### LOS D (Peak Congestion but Acceptable)

- 4800 West (5415 South to 6200 South)
- 4820 West (5215 South to 5415 South)
- 6200 South (5600 West to 4800 West)

### LOS E or Worse (Unacceptable)

- 4700 South (4800 West to 4015 West)
- 6200 South (4800 West to 4000 West)

**Figure 3-2: 2050 No Build Level of Service**



# Recommended 2050 Roadway Conditions

Improvements will need to be made in Kearns to preserve the quality of life and to maintain an acceptable LOS on the township streets and intersections. These improvements will also provide a sound street system that will support the township's economic base.

Signals will need to be monitored and updated as conditions change. It is recommended that the signalized intersections in the area be regularly monitored, and signal timings adjusted as needed to maintain acceptable operating conditions. Coordination with UDOT will be necessary on all UDOT roads. Additionally, care should be taken to regularly monitor the non-signalized intersections and, where appropriate, studies should be completed to determine the best control for the intersection. The most common mitigations to failing non-signalized intersections are roundabouts and traffic signals. For each intersection, both roundabout and traffic signal solutions should be investigated and studied to determine the best alternative. Funding sources for signals and roundabouts should be explored and may include general funds, impact fees, where appropriate, and/or a special transportation improvement fund.

The future analysis in Kearns can be split into three sections. The first are regional projects included in WRFC's RTP. These projects may be funded in part by WFRC. After determining where the improvements occur with the addition of the WFRC projects, the second section includes the rest of the projects necessary to improve the roadway network to LOS D or better. Finally, the third section includes projects that aren't necessarily capacity improvements but may be more related to safety or accessibility. These projects are identified in the areas of concern analysis in Chapter 4.

## Regional Transportation Plan

Kearns and Salt Lake County are not alone in improving the roadway network. WFRC, in cooperation with UDOT, provides financial assistance for projects included in their Regional Transportation Plan (RTP). If the roadway is included on the RTP and is owned and operated by UDOT, full financial responsibility falls to UDOT. It is important for Kearns to include these projects in this MTP as well as coordinate with UDOT to ensure these projects are implemented. If the roadway is on the RTP and not owned by UDOT, Kearns may be able to apply for funding through WFRC, in which case, the township will only be responsible to match 6.77% of the total cost of the project. The projects in Kearns included on the RTP are to be completed in various phases. An interactive map can be viewed on WFRC's website www.wfrc.org:

### PHASE 1 (2019-2030)

- 5600 West Corridor
  *Express Bus*
- 5400 S Corridor
  *Core Bus Service*
- 4700 South
  *Road Widening*
- 4700 South / 4715 South
  *Bike Lane*
- 6200 South / Bennion Blvd
  *Bike Lane*
- 5600 West Park & Ride
  *Park & Ride*

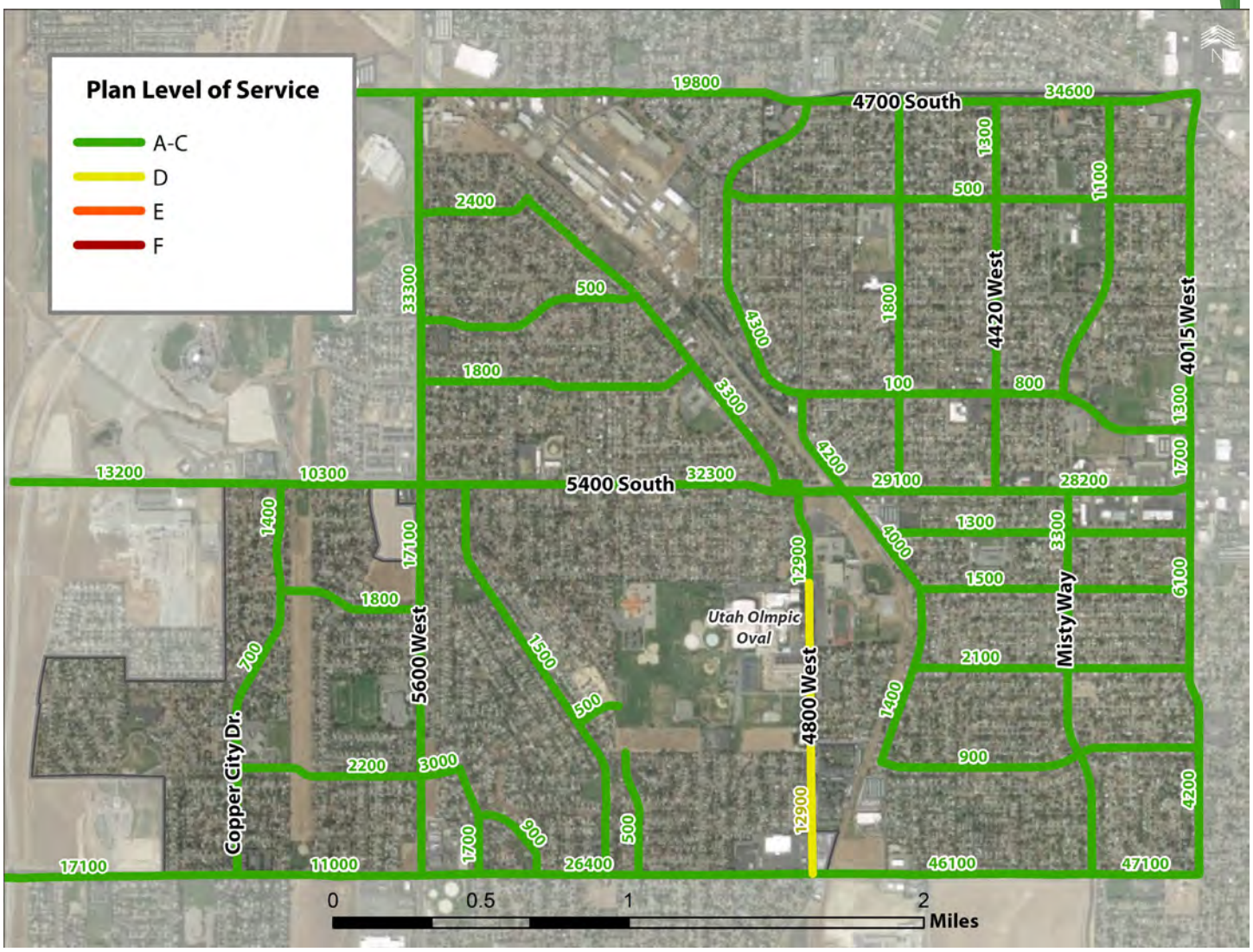
### PHASE 2 (2031-2040)

- 6200 South
  *Core Bus Service*
- 6200 South
  *Road Widening*
- West Sam's Blvd to Northwest Ave
  *Bike Lane*
- Cougar Lane
  *Buffered Bike Lane*
- Midway Drive
  *Shared Use Path*
- 4015 West to 4000 West
  *Bike Lane*

# 2050 Proposed Roadway Network

The indicated roadway segments previously listed, as well as the additional modeling results form the basis of the improvements included in the 2050 roadway improvements. With all projects included, Figure 3-3 shows the proposed 2050 roadway network and LOS with all future projects (including WFRC RTP projects). These projects refine the planned regional projects to better match Kearns individual needs and priorities. Applying all improvements will advance the roadway network to function at LOS D or better in all locations.

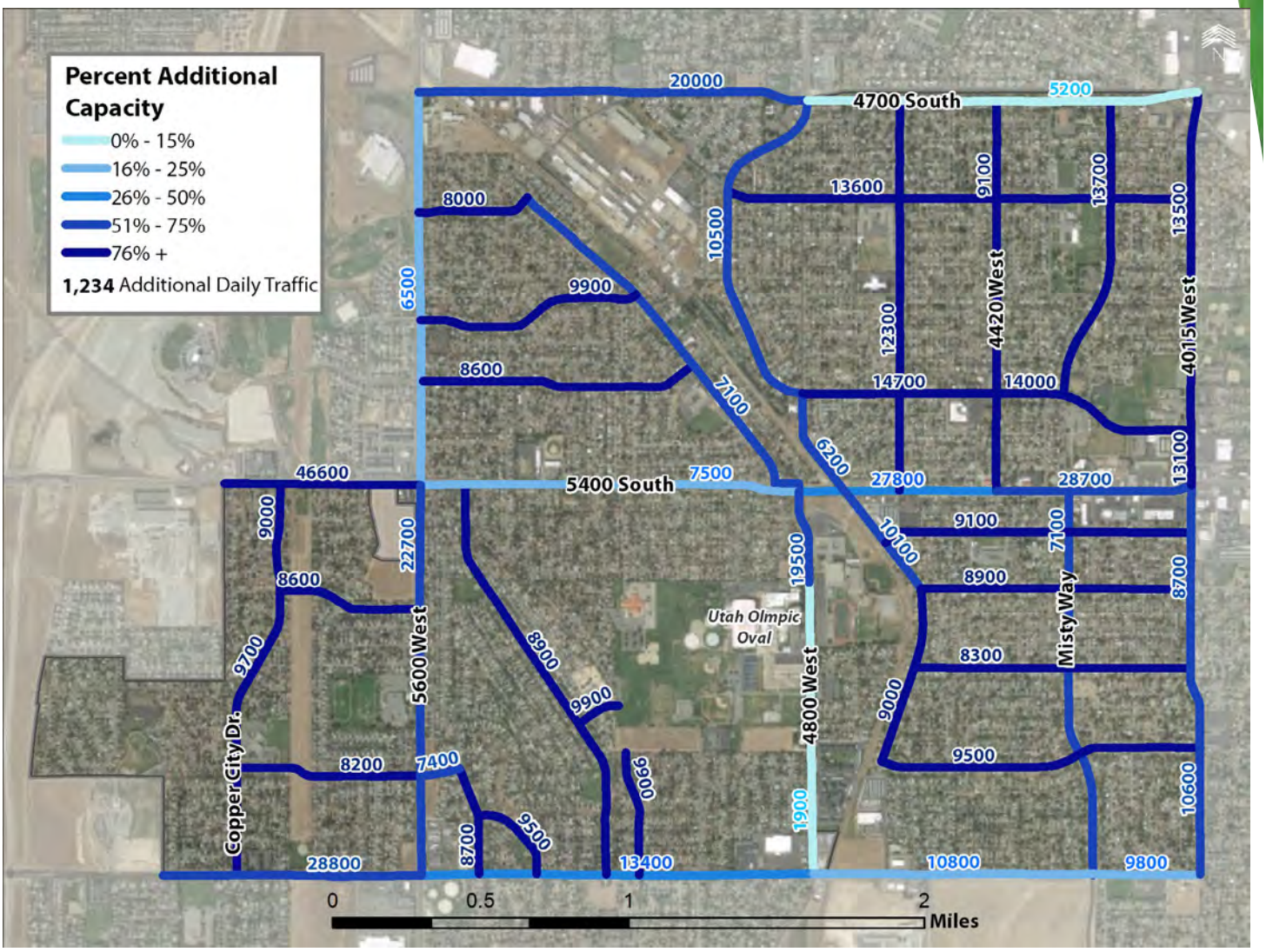
### Figure 3-3: 2050 Planned Level of Service



## Percent of Additional Capacity

The previous map, Figure 3-3, shows Kearns having a roadway network with primarily free flowing and smooth operations across the Township with the exception of 4800 West where LOS is still functioning as acceptable. This means that the future available supply of roadway will meet the traffic demand and have additional capacity. Below, Figure 3-4 shows the percentage of additional available capacity for the roadway network in Kearns if the proposed improvements are implemented.

**Figure 3-4: 2050 Additional Capacity**




# Summary of What The Future Holds

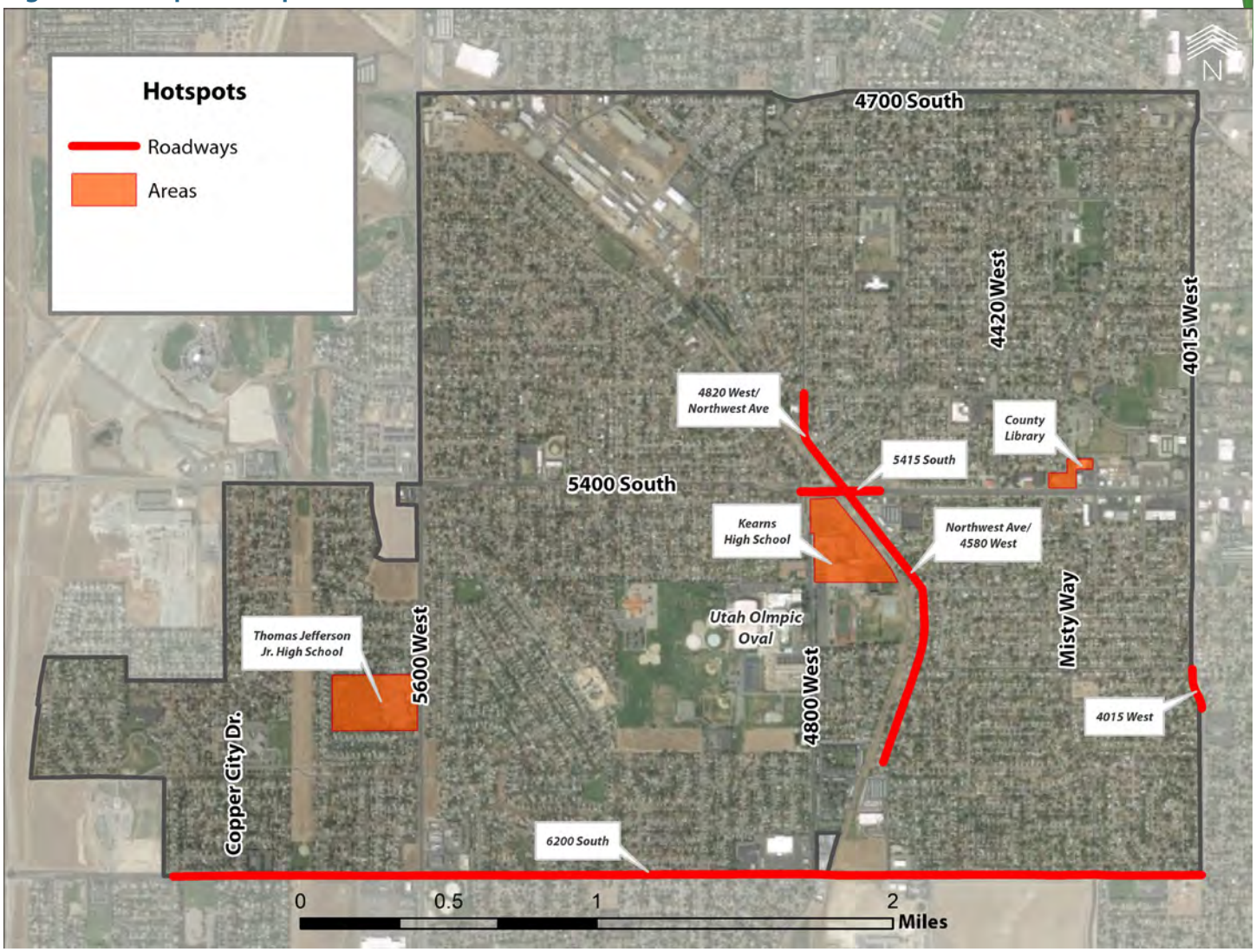
With the stable growth of Kearns and surrounding communities, much of the needed transportation improvement revolves around safety, pedestrian mobility, and active transportation. Kearns is not alone in planning for future growth and WFRC has identified key improvements to the regional roadway, transit, and active transportation networks to accommodate future demand. These regional capacity improvements reduce future congestion on the functionally classified roads within the township and provide needed transit and active transportation facilities. To address remaining needs, additional projects were identified that reflect community input and local priorities. With these additional projects the roadway system is anticipated to function at an acceptable level of service with minimal delays through the planning year 2050.

# 4 AREAS OF CONCERN

Several areas in Kearns raise concern in regards to transportation issues. These locations, which are identified in this chapter, have diverse transportation needs and concerns that range from pedestrian issues, to traffic calming, to travel behaviors. The specific areas are shown in the map in Figure 4-1.

The individual hotspot issues are summarized in fact sheets on the subsequent pages. The hotspot fact sheets are either one or two pages in length and generally include recommendations or takeaways from the transportation analysis completed. The hotspot fact sheets are designed to define the problem, provide some data, and offer insight into possible solutions.

**Figure 4-1: Map of Hotspot Areas**



# Northwest Ave, Salem Ave, & 4280

Northwest Avenue, Salem Avenue, and 4280 West are all segments of the same road, stretching a little over a mile in length.

For years, residents living on all three sections have been complaining about speeding vehicles and dangerous traffic conditions, which exist along the entire length of the road. This puts the residents and their children in this neighborhood at risk. People race down this street despite speed bumps and the Salem Circle cul-de-sac to the south. They would like to see slower traffic in their neighborhood.

All along this road the posted speed limit is 25 mph. North of 5400 S the road is 35 feet wide and south of 5400 S the road becomes 40 feet wide This means that where the road is 40 feet vehicles have 20 foot wide lanes to travel in and at the road's narrowest, lanes are over 16 feet wide. To compare, a standard highway lane along I-80 is only 12 feet wide. This amount of pavement messages to drivers that high speeds are acceptable, which is incongruent with the posted speed limit. Electronic radar speed signs are used to display vehicle speeds and speed bumps are installed on the southern portion of the road. However, no where along the road is the shoulder striped and there is no center lane striping on the southern portion of the road. The 35 foot wide section has painted bicycle sharrows, but those become unsafe when traffic speeds rise above 25 mph. Overall, the design speed on this road is far higher than the posted legal speed limit, so drivers speed. Additional traffic calming measures are needed here, specifically, speed tables should be considered.


**Conclusion:** Additional traffic calming measures should be considered on these roadways including the use of speed tables to Salem Avenue and 4280 West. Lane narrowing could also be considered with striping.


4280 West

Northwest Avenue


Salem Ave

# 4015 West S-Curve

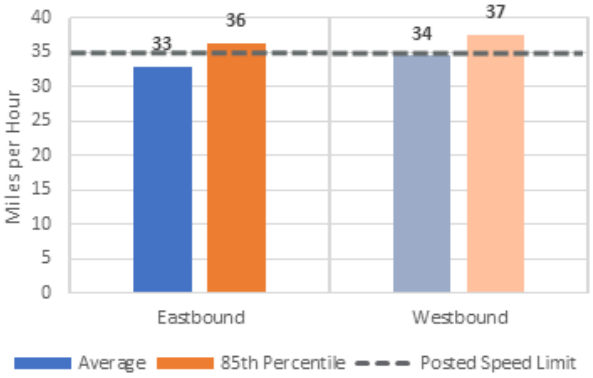
4015 West is a three-lane collector roadway with one travel lane in each direction with a two-way left-turn lane (TWLTL) and shoulders. Between 5780 South and 5855 South the road has an s-curve that shifts the alignment of the roadway and a posted speed limit of 35 mph. In the 2014-2018 crash analysis period, there have been three crashes on this segment of roadway including ten crashes since 2011. Most of the crashes (seven) were due to vehicles running off the road and hitting fixed objects such as a fence or parked vehicles. As a result, the s-curve creates safety concern for residents and township officials.


To identify potential issues and existing traffic operations, traffic counts were collected just to the north and the south of the s-curve at approximately 5878 South and 5780 South. The traffic counts included traffic volumes and traffic speeds. Based upon the count data:

- Average daily traffic volume was 9,480 vehicles per day.
- The average speeds were 33 mph northbound and 34 mph southbound.
- Total of 3 crashes with 2 single vehicle and 1 angle crashes between 2014 and 2018.

In addition to the average speed and traffic volume, the traffic counts identified the 85th percentile speed. The 85th percentile speed is used as a standard to set the speed limit at a safe speed, minimizing crashes and promoting uniform traffic flow. The average speeds and the 85th percentile speeds are shown in Figure 4-2 along with the posted speed limit of 35 mph on 4015 West. The average speeds are just below the post speed limit while the 85th percentile speeds are slightly above the 35 mph speed limits.

**Figure 4-2: Graph of 85th percentile speeds along 4015 West**




When a speed limit is established it should be within five mph of the 85th percentile speed. The 85th percentile speed reflects the collective judgment of most drivers and setting speed limits lower than 85th percentile speed encourages non-compliance with the posted speed limit. Based upon the collected speed data, the posted speed limit is appropriate for the existing driver behavior. If lower speeds and a lower posted speed limit is to be considered, additional traffic calming measures that physically alter the vertical or horizontal alignment of the roadway would be required. These traffic calming measures could include vertical changes such as speed tables or raised intersections or horizontal changes like lane narrowing or curb bulb-outs on adjacent intersections narrowing the roadway and slow drivers could be implemented.

**Conclusion:** Existing data does not show a speed or crash problem near the s-curve. However, striping improvements can be implemented to help clarify right-of-way, narrow travel lanes, and reduce traffic speeds to address resident's concerns.

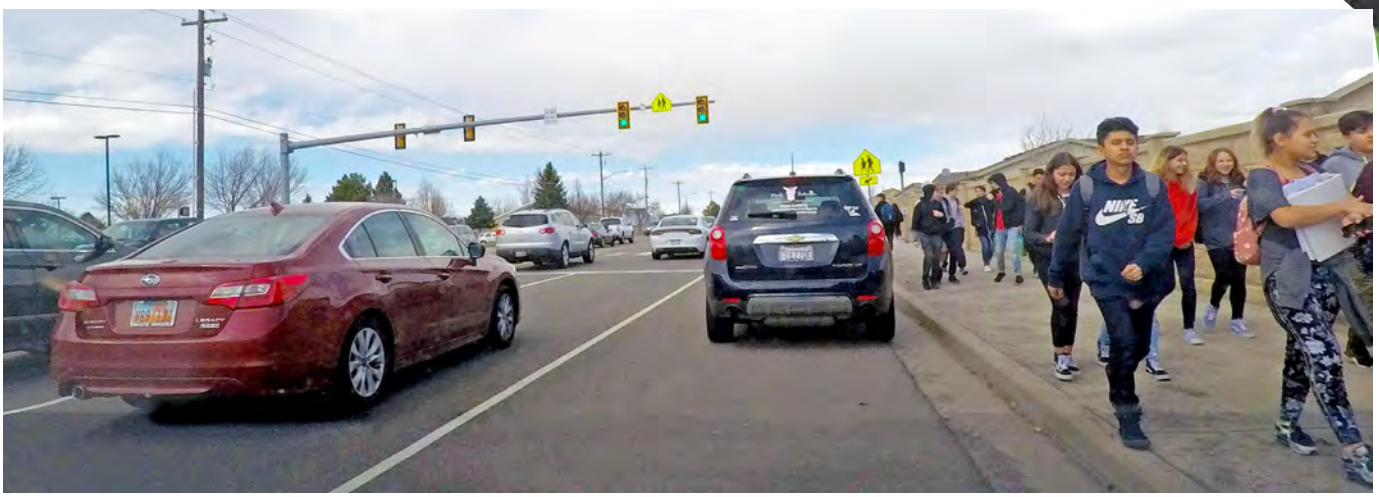
# Thomas Jefferson Junior High School

Thomas Jefferson Junior High School is home to nearly 800 students aged 13-15. Many of them walk to and from school. The crosswalk in front of the school at 5600 West sees a large number of students in a short time - nearly half the school population crosses 5600 West in about 30 minutes. Once across the street, students are met with a half-mile long walk. There is no immediate pedestrian access into the neighborhood to the east. To access it, students must walk a quarter mile in either direction to get into the neighborhood or they must jaywalk across 5600 West at Lodestone Avenue. This is not a comfortable walk for an adult, much less a teenager.


5600 West through Kearns provides passage for nearly 20,000 cars per day. 5600 West is a dangerous road, classified by UDOT as being in the 76%-94% crash rate percentile. The rate of crashes has remained pretty steady since 2010, and there have been four fatalities. There is good neighborhood connectivity to the north, and south of the school, but no access to the west, and very limited access to the east.

### Photo showing the crosswalk and east side wall

# Thomas Jefferson Junior High School

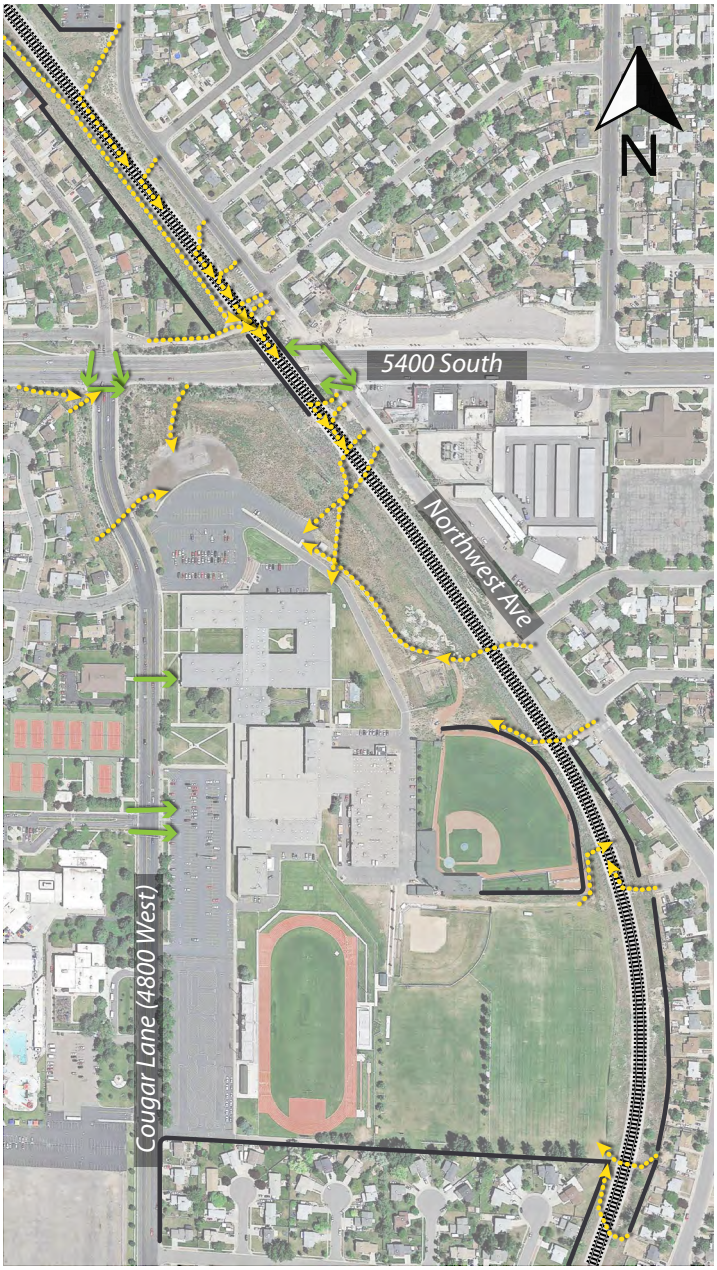


Students walking along the wall

Ideally junior high students would be able to walk to their homes east of the school by passing through a break in the walk. Several schools in Salt Lake County have similar situations with a five or six foot sidewalk between property lines at the end of a cul-de-sac to allows for this neighborhood pedestrian access. Kearns is currently in the process of working with UDOT, the Junior High, and residents to consider this type of pedestrian improvement along 5600 West.

**Conclusion:** Kearns should work with UDOT to construction sidewalks on UDOT's vacant parcel east of 5600 West. This includes completing sidewalks on Lodestone Avenue between 5600 West and Dewdrops Drive. Additionally, there is the potential to work with UDOT to create an easement and construct a sidewalk between 5600 West and the neighborhoods to the north east of the high school. This connection could reduce walking distance by up to 900' feet for students that live east of the school.

# KHS Student Safety & Connectivity




Kearns High School is the main public high school for residents of the Township. Located in an area that is heavily auto-centric and with serious barriers to pedestrian accessibility, mobility, and connectivity. Students face dangerous challenges trying to get to and from school either in a car or walking.

Residents living east of Kearns High are separated by a Union Pacific rail line. The line stretches for 2.5 miles, across the entire width of Kearns, with crossings at 4700 South, 5400 South and 6200 South and because of this, it poses a significant barrier to students walking to school.

As a result, there are informal paths to the east, west, and north of Kearns High. The railroad line between Northwest Avenue and Kearns High School is a high-use pedestrian area. There are numerous existing informal trails (many shown in yellow), connecting into the surrounding neighborhood. There are also trails east of the high school as well. The sheer volume and use of these trails demonstrates the need for good pedestrian access from the east side.

Kearns High has no documentation for students regarding getting to school safely.

This is a connectivity issue between Kearns High and the surrounding neighborhoods. As with most schools in Utah, students walk, bike, bus, drive, or carpool to and from school. With nearly 2,500 students, and parking spaces for approximately 350 cars (15%), only a small population of students can park at the school. The number of students who get to school by bus remains low, as Kearns offers bus service only to students who live beyond a two miles walking distance from school property. This means many students do and will continue to travel to school on foot. Both the statistics and the current behavior of students demonstrate a need for safe and walkable paths that are designed and located appropriately for ease of use to and from school.

# KHS Student Safety & Connectivity

Informal pathway leading over the train tracks to the high school

5400 South has no protective barrier (trees, shrubs, etc.), to shield students and other pedestrians from adjacent traffic and has a narrow sidewalk on a road with no shoulder.

Informal pathway leading over the train tracks to the high school

Students using paths across train tracks to walk home

The route along 4800 West (Cougar Lane) is steep and inconvenient and adds at least one quarter of a mile to many trips.

So persistent is the issue of student connectivity that residents have been forced to devise their own solutions to get students to school.

Student walking along the train tracks with headphones on

Students using paths across train tracks to walk home

**Conclusion:** Currently, the Union Pacific line runs only one train per day at the very early hours of the morning. Otherwise, the tracks remain dormant. It is recommended that long term active transportation design concepts be evaluated for the area around 5400 South and Northwest Ave. In the mean time the access points presently used along the Union Pacific line may be the safest way for students to get to school. Further study of travel behavior should be observed and data collected for analysis. These informal routes may benefit from infrastructure and safety improvements.

# New Library & Pedestrian Plaza


The new 35,000 square foot Salt Lake County Kearns Library is being built next to the old library just north of 5415 South. The new site reorients the library along 5415 South to increase its visibility, access, and usability. The new library includes a 2,100 square foot landscaped pedestrian plaza to bring residents together and create an inclusive community gathering place. This design combines a variety of uses, experiences, access points and places to interact, and will ultimately help strengthen the Kearns community by creating an inclusive public environment. The new library is planned to be completed by the summer of 2020.


**Renderings of the new SLCo Kearns Library with pedestrian plaza. Image Source: Arch Nexus.**

# New Library & Pedestrian Plaza

The library will have three points of vehicle access - a large public parking lot on 5345 South (the site of the old library), a smaller parking lot off 4280 West, a public driveway off of 5375 South, and an employee parking lot off 4320 West. There is no planned access from 5415 South. Traffic to and from the library and 5415 South will be distributed at the intersections of 4320 West and 4220 West which is signalized.

It is planned that the new library will have double the vehicle parking spots as the old library, including 5 ADA spaces, five green vehicles spaces, five carpool spaces, one expectant mother space, and two electric vehicle charging spaces. Also, the site will have a bike parking rack and a skateboard rack. With expanded vehicle parking, bike amenities, and broader, more walkable sidewalks, this new library and the adjacent pedestrian plaza are expected to increase traffic to the library. However, there are major pedestrian accesses on the north, west, south, and southeast sides of the property that provide nearby residents mobility options. The diversity of mobility options, and distributed access means that the new library is not expected to have a significant impact on the overall traffic on 5415 South. There may be increased vehicle traffic at the intersection of 4220 West and 4320 West, and in the surrounding neighborhood roads (5375 S., 4280 W., 5345 ).


*Source: Arch Nexus site plan showing all parking lots and vehicle entrances and exits (purple arrows).*

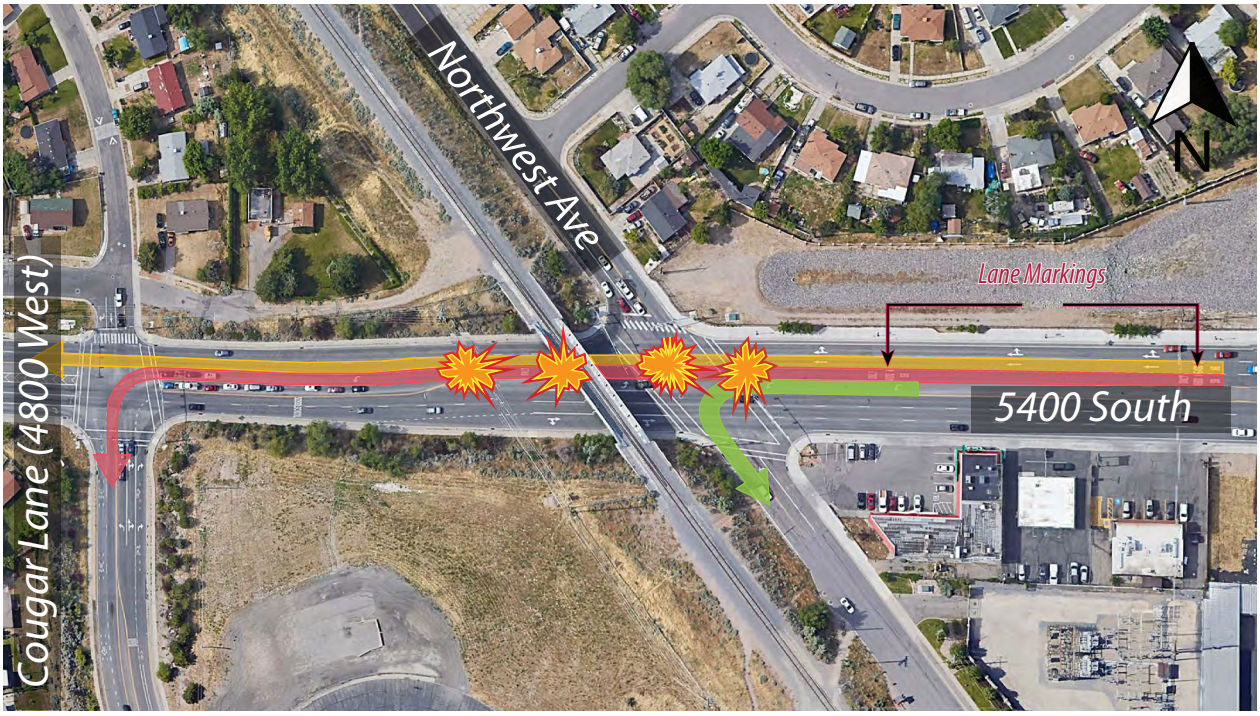
**Conclusion:** The new library will have minimal impact on traffic on 5415 South due multi-modal design elements, no direct access on 5415 south, and traffic being distributed between multiple intersections including signalized intersection at 4220 West.

# 5400 S. Westbound Left Turn Lanes

On 5400 South there are two westbound left turn lanes that start about 500 feet east of the intersection at Northwest Avenue. The inner left turn lane (shown in green) is for drivers to turn left onto Northwest Avenue. The adjacent turn lane (in red) is intended to help handle high traffic volumes that turn left at 4800 West (Cougar Lane).

However, this section of road experiences a high number of crashes and subsequent injuries. For westbound drivers, the only indicators that a vehicle is in the left turn for 4800 West are two "4800 W Only" painted directly onto the lane. No other signage, either on the road, the verge, or on the intersection signal pole have been installed. The drivers who want to go straight through both intersections (Northwest Avenue and 4800 West) are supposed to be in the through lane (in yellow). However, this is not apparent early enough for drivers to ensure they are in the correct lane before reaching the intersection at Northwest Avenue.

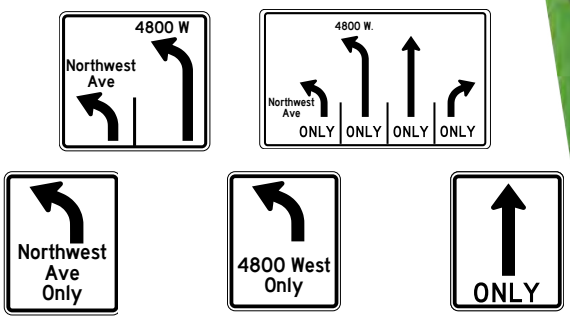
This lack of warning can lead to hazardous driver behavior. It was also observed that drivers tend to use the 4800 West left turn lane at the intersection of Northwest Avenue to speed ahead of those in the through lane when the light turned green. This situation creates unnecessary points of conflict and makes this a dangerous intersection. Nearly 70% of reported crashes in this intersection were either intersection or road-geometry related and involving the left turn lanes. Over half of all the crashes resulted in injuries. This striping pattern was intended to mitigate the hazards of poor visibility for drivers turning left and the high volumes of vehicles waiting to turn, which used to back up to Northwest Avenue from the 4800 West intersection. The present concern is that the lack of advanced notification leads to problems, causes crashes, and increases the danger of the Northwest Avenue intersection.



# 5400 S. Westbound Left Turn Lanes

There is no problem with the roadway striping, but added signage could improve driver behavior in this area. Overhead signs associated with each of the westbound lanes would improve driver understanding and reduce crashes. to the right are some examples of overhead signs that could be used.

The overhead signs would need to be installed prior to (east of) the intersection of Northwest Ave. This will allow drivers approaching the intersection to be in the correct lane. The intersection may also see improved lane utilization if a westbound right-turn lane was added. Some drivers treat the right-most lane as a right-turn lane instead of a right-through, avoiding it and queuing into only one through lane. The addition of a right-turn lane would eliminate confusion and improve lane utilization with two clear through lanes.




West beyond Northwest Ave and the intersection of Cougar Lane the road raises in elevation and curves enough to where signage is required to alert drivers of the change in roadway geometry. Drivers heading from the west have poor visibility as they approach the intersections of Cougar Lane and Northwest Ave. This is due to a combination of the difference in elevation, the curve in the road, and a Union Pacific Railroad bridge that is located in between the two intersections which obstructs the driver's view of the road beyond it while traveling eastbound. Regardless of the limitation in visibility and the potential conflict with cars, pedestrians , and cyclists crossing or turning at these intersections, eastbound vehicles will attempt to beat the read lights at these intersections.

The combination of eastbound traffic exhibiting risky behavior and the issues with the left turn lanes at the previously discussed intersections makes this stretch of 5400 South a safety concern. There were 687 crashes along 5400 South in Kearns between the years of 2014 and 2018. Over 200 of these crashes occurred between the area that begins 1,000-feet east of the Northwest Ave and ends about 1,000-feet after the curve in the road straightens out west of Cougar Lane. Of these crashes, seven were pedestrian related and three were bicycle related, with one of the bicycle crashes resulting in a fatality at the intersection of Northwest Ave and 5400 South.

**Intersection of 5400 South and Cougar Lane**

**Conclusion:** The intersection of 5400 South and Northwest Avenue would be improved with advance signage and a westbound right-turn lane.

Also, additional crossing and intersection related lighting and signaling could be installed west of Cougar Lane and the curve in the road to alert eastbound traffic of turning cars and pedestrians.

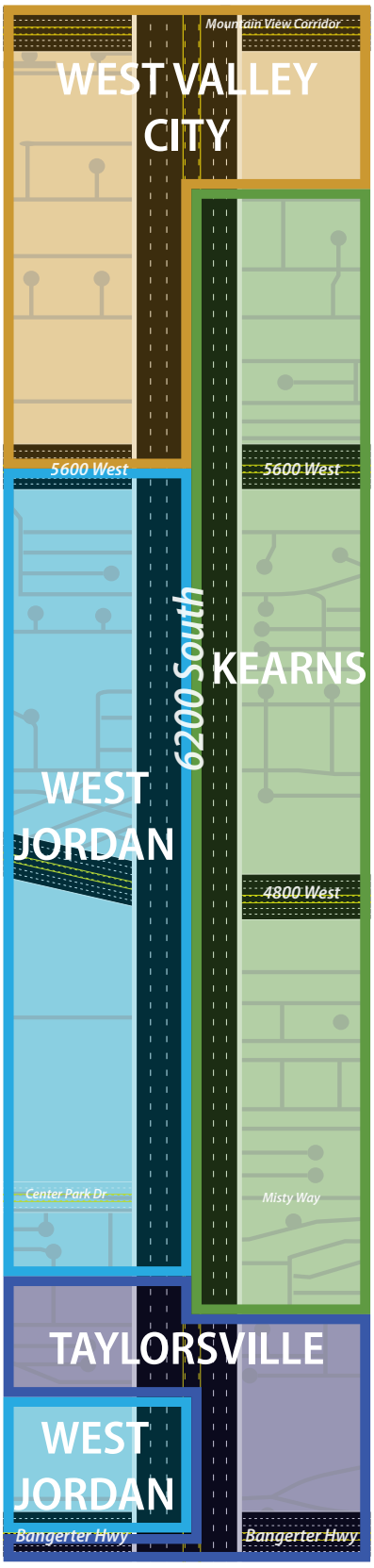
Since this intersection is part of UDOT's jurisdiction, coordination will be required.

# 6200 South Multi-Township Collaboration

6200 South is a 5.5 mile stretch of road that runs east-west and is the southern boarder of Kearns. Over an average day, some sections of 6200 South see as little as 1,100 cars per day while other sections of the same road have nearly 40,000 vehicles per day. Throughout its length, the jurisdiction and ownership change hands multiple times As seen in the map to the right, the cities of West Jordan, Taylorsville, West Valley, and the Kearns Township each have a claim over the street. The jurisdictions also differs depending on the specific application (snow removal, construction, utility/infrastructure, potholes, road maintenance, etc.). Depending on the application, Salt Lake County, and UDOT also become involved in places. In all applications, municipal ownership and responsibility of the left turn lane are vague at best. The lack of a unified plan and unified jurisdictional map creates a series of challenges for township officials, public utilities, first responders, public works, and residents.

For crashes and other incidents taking place on 6200 South, emergency dispatchers must first determine jurisdiction before sending out police, EMTs, and other first responders. This is a serious problem, especially with injury crashes and 34% of the crashes on 6200 South resulting possible injury or worse.

*The lack of a unified plan and unified jurisdictional map creates a series of challenges for township officials, public utilities, first responders, public works, and residents.*



# 6200 South Multi-Township Collaboration

6200 South is also problematic for maintenance and public works operations, such as road construction and maintenance, potholes, utility and fiber installation, snow removal, street signs and striping, street lighting, and traffic signals. Additionally, this creates an economic development disadvantage with businesses owners applying for construction permits along 6200 South if they are unsure of which entity to go to and waste time applying to the wrong entities. Major changes that need to be made to the road, such as basic maintenance or corridor improvements, are often overlooked or left out entirely because it can be too arduous or time-consuming for project coordination.

WFRC's RTP shows a plan for 6200 South to be widened to seven lanes between 2031-2040 to accommodate growth in regional traffic. There is currently no overarching agreement between the municipalities to deal with the specifics of this planning effort. All of these factors make 6200 South a good candidate for a potential jurisdictional transfer with Kearns and UDOT.

**Photo of crash on 6200 South**

**Conclusion:** The cities should coordinate with UDOT for the potential jurisdictional transfer of 6200 South to UDOT as a regional facility. In the interim, Kearns should work to create a cooperate agreement with all parties that creates a consistent, single contact point for directing residents, workers, and developers.

# 5 WHAT WE HEARD

Throughout the project there were opportunities for the public to comment on transportation in Kearns. These opportunities included visiting a project website, attending a public meeting, and completing a community survey. The information on these opportunities and what we heard from these groups can be found below.

## Project Website

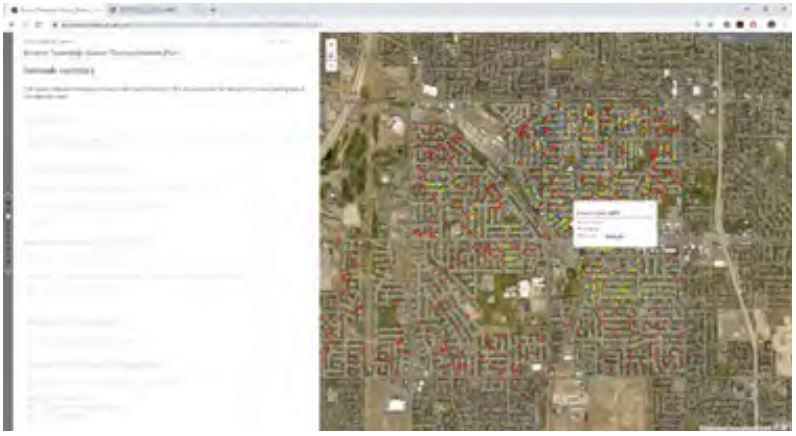
The project website can be found here:

www.planningkearns.com

The website contains 9 pages and has been updated regularly with new content throughout the project. Over 1,400 visitors have viewed the project website.

The most visited page on the website was the sidewalk inventory with over 1,300 clickable dots that show a detailed photo of each sidewalk issue.

**Screenshot of project website**



## Public Meeting:

The project team held a public meeting pop-up event at the Kearns Oquirrh Park Fitness Center to gather input. The pop-up event on May 30, 2019 was held to introduce folks to the project and solicit input on what transportation issues exist and any potential solutions to be considered. The project team listened to all comments and people wrote on, and marked up and stickered two maps. The project team interacted with dozens of people at this public pop-up event from 4:30 PM – 7:00 PM. Some of the most notable take-aways from the first public meeting were:

- Residents expressed safety concerns on Cougar Lane where it loses a southbound lane
- Participants stated that it was difficult to turn left onto 5400 south and 6200 South at certain times in certain places
- The condition of 6200 South was a topic of concern, noting that there are many potholes and the pavement is quite damaged
- A need for better traffic control around USANA Amphitheater – one such person lived in a house nearby and complained about the traffic and noise that the USANA Amphitheater produces.
- Many people expressed little to no transportation concerns, noting that it is worse in other areas outside of Kearns.

**Public outreach pop-up event at Kearns Oquirrh  Park Fitness Center**

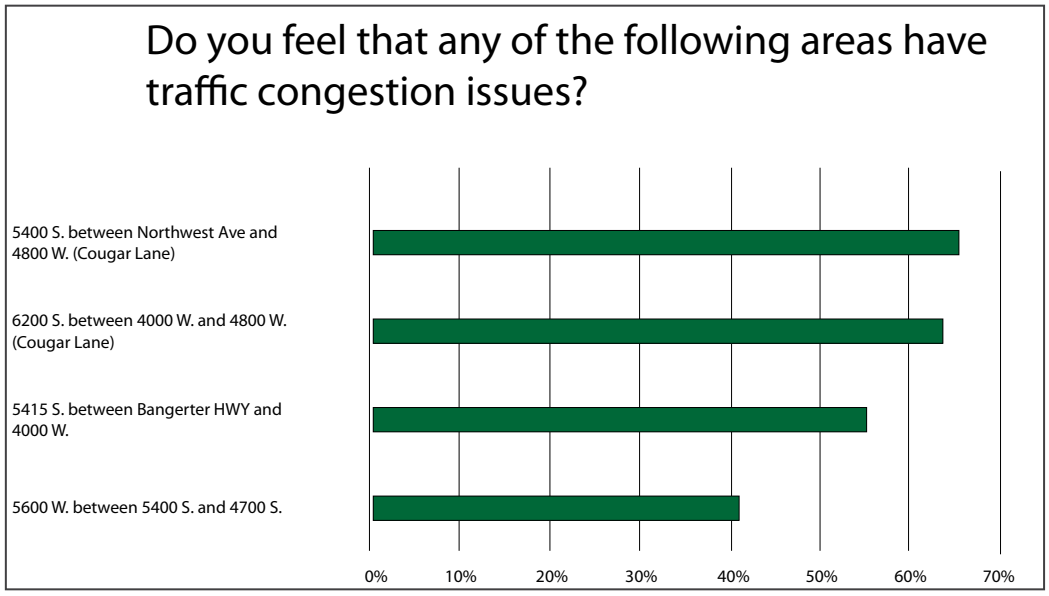
We have the opportunity for a second public meeting to present the Draft Kearns Transportation Master Plan and solicit more comments.

## Community Survey Results

In addition to the public pop-up events at the Kearns Oquirrh Park Fitness Center, the project team hosted an online public survey to gather feedback on the transportation issues around Kearns. The survey was available from May 1st through  June 1st, 2019, and during that time there were 124 completed surveys received. Some of the key findings from the survey are listed below:

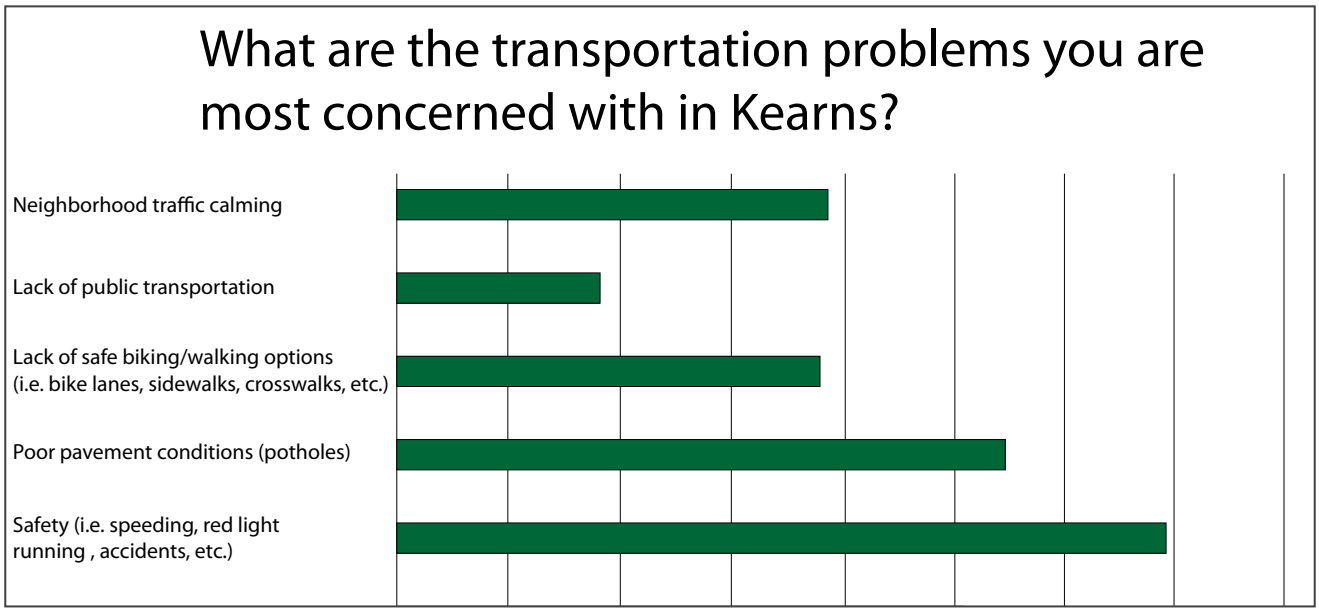
- Everyone surveyed lived or worked in Kearns.
- Most respondents indicated that they felt that Kearns was just  "somewhat congested" (70%) while 16% did feel that Kearns was "very congested."
- Respondents indicated that the heaviest traffic congestion was on 5400 South between Northwest Avenue and Cougar Lane, with 6200 South between 4000 West and 4800 West a close second.

## Graph of online survey results




While people had opinions about locations of congestion, respondents told us that safety was their number one concern.

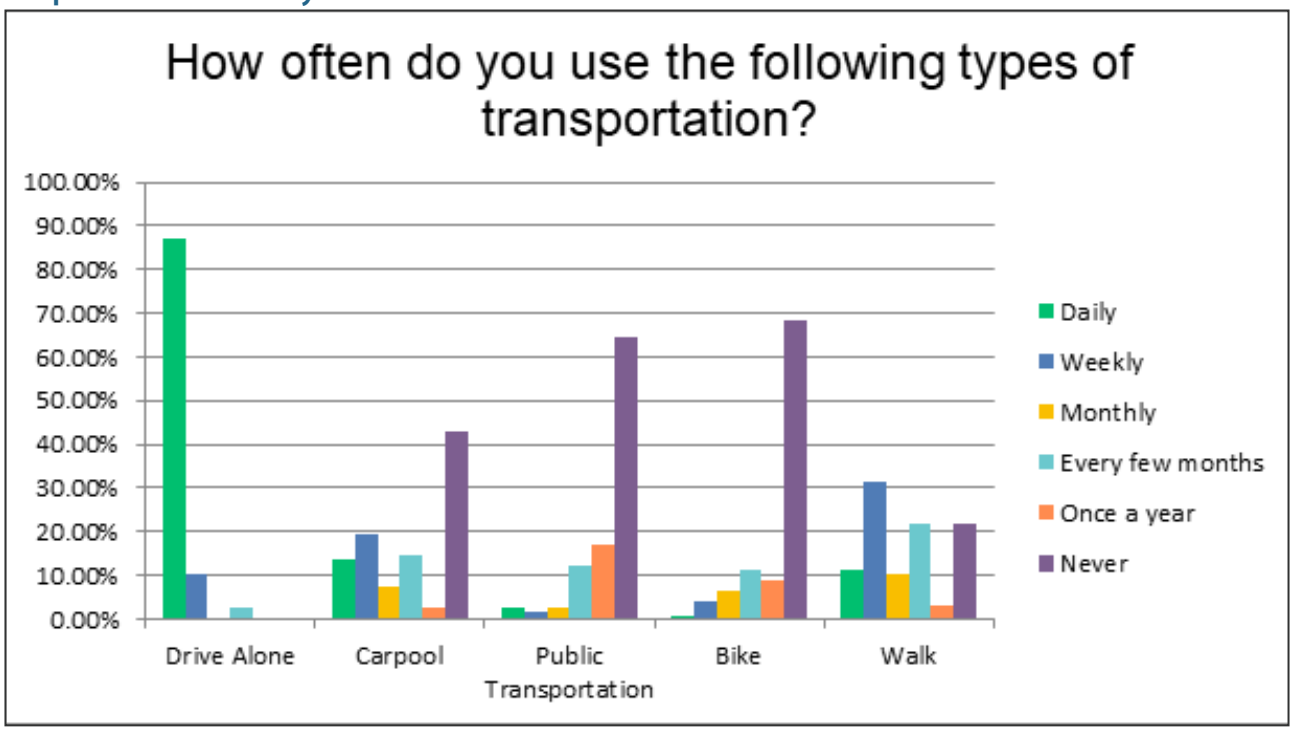
## Graph of online survey results




We used this feedback to consider improvement projects and to analyze specific locations mentioned.

Survey respondents answered questions on roads and driving; 87% told us they drive alone everyday. Over 40 respondents indicated that they bike sometimes and almost every respondent reported that they walk sometimes.

### Graph of online survey results




All of the feedback we received (which includes hundreds of written comments) was reviewed and used in the analysis of transportation and most notably in the development of projects. Improvement projects were considered at every specific location that was mentioned by the public either at the meeting, through the survey, in person, or by direct e-mail. While many times, no improvement was needed, every comment was still considered.

# 6 KEARNS SIDEWALK PLAN

This chapter is a full sidewalk plan for Kearns Metro Township. It evaluates the existing conditions of all 173.3 miles of sidewalks in Kearns. Priority sidewalk routes are identified and detailed sidewalk projects are discussed. Photographs of over 1,400 hundred sidewalk issues in Kearns were collected to document all the needs. Maps of a ten year sidewalk improvement plan are included to pave the way for the future of sidewalks in Kearns.

**The Americans with Disabilities Act (ADA)** of 1990 was the nation's first comprehensive civil rights law which offers protections and addresses needs of people with disabilities. Title II of the ADA prohibits state and local government agencies from discriminating against people with disabilities in their programs, services, and activities.

Among the services that must be accessible to individuals with disabilities are transportation facilities, which includes pedestrian facilities. The current best-practices for pedestrian network accessibility is the **Public Right-of-Way Accessibility Guidelines (PROWAG)**. The PROWAG standards were developed by the Access Board, a federal agency that promotes equality for people with disabilities through leadership in accessible design. The Access Board released the proposed PROWAG in 2011 and subsequently updated it in February 2013. PROWAG provides guidelines for the design, construction, and alteration of pedestrian facilities in the public right-of-way. The guidelines ensure that sidewalks, pedestrian street crossings, pedestrian signals, and other facilities for pedestrian circulation that are constructed or altered in the public right-of-way are readily accessible to and usable by pedestrians with disabilities.

The Kearns Metro Township wish to address sidewalk safety and ADA compliance through the development of a Sidewalk Plan. Part of the plan will include an evaluation in which barriers to accessibility are inventoried. The plan will also prioritize modifications to those barriers based on certain criteria and provide a general schedule for implementing accessibility improvements. To comply with ADA and to provide the basis of evaluation of sidewalk condition in Kearns, an evaluation of pedestrian facilities within the public right-of-way was completed to measure and analyze the network for compliance.

**Example of vegetation obstruction on sidewalk in Kearns.**

The goals for the evaluation included:

- **Assess the condition and ADA compliance of pedestrian facilities, including sidewalks and curb ramps**
- **Identify sidewalk gaps, missing curb ramps, and priority areas for sidewalk network improvements.**
- **Create a comprehensive geographic database of pedestrian facilities features.**

The Metro Township's pedestrian network consists of 173.3 miles of sidewalk. Data collection for the self-assessment was completed from June-July 2019 and includes digital video and photography of defects. During the inventory, data on sidewalks and curb ramps were collected to assess both exisitng wcondition and ADA compliance. The subsequent sections of the plan provide additional background information, project approach, geospatial database structure, analysis of data collected and assessment of condition, and compliance of the pedestrian network.

# Background

## Federal Policies and Standards

Over the past five decades, state and federal regulators have enacted increasingly comprehensive protections for people with disabilities. These policies and standards form the backdrop for accessibility policies at the local level.

## American with Disability Act

Federal accessibility policy has its origin in the **Architectural Barriers Act (ABA)** of 1968. The ABA required limited accessibility provisions in buildings purchased or leased with federal funds.

During the 1970s, Congress enacted sweeping protections for individuals with disabilities. The Rehabilitation Act of 1973 prohibited discrimination based on disability by federal agencies and contractors and required new or altered facilities used for federally funded programs to be accessible. Unlike previous legislation, the Rehabilitation Act framed accessibility as a civil rights issue, paving the way for the ADA. It also established the Access Board, a federal agency responsible for developing accessibility standards and investigating complaints. In 1988, the **Civil Rights Restoration Act** extended the protections of the Rehabilitation Act to all programs of agencies that receive federal funds.

Spalling on sidewalk in Kearns

The most comprehensive federal legislation protecting individuals with disabilities is the **1990 Americans with Disabilities Act (ADA)** and its amendments. Building on the civil rights protections of the Rehabilitation Act, the ADA guarantees equal access to areas such as employment, public facilities, transportation, and government services.

During the 1990s and 2000s, the Access Board developed the **ADA Accessibility Guidelines (ADAAG)** describing the standards for accessible buildings and facilities. These standards were adopted by the U.S. Department of Transportation and the U.S. Department of Justice in 2006 and 2010, respectively, giving them the force of law. Under ADA, the standards apply to state and local government facilities, transportation facilities, and most private commercial establishments.

## Public Right-of-Way Accessibility Guidelines

Public rights-of-way, including the pedestrian network, are required to be accessible to people with disabilities under Title II of ADA. In 1992, the Access Board proposed guidelines for government facilities that included standards for the public right-of-way. Based on public comments, however, the Board deferred action on the public right-of-way standards and instead formed the Public Rights-of-Way Access Advisory Committee (PROWAAC) to make recommendations.

Following PROWAAC's 2001 report, Building a True Community, the Access Board published the draft Public Right-

of-Way Accessibility Guidelines (PROWAG) containing standards for pedestrian access routes in the public right-of-way. The draft guidelines were revised in 2005, and proposed guidelines were published in 2011.

## Local Programs, Policies, and Regulations

Kearns Metro Township has prioritized sidewalk safety and ADA compliance. Programs and policies are in place to ensure appropriate use of funds and response to citizen requests.

## Safer Sidewalk Program

Kearns Metro Township has an adopted Safer Sidewalk Program. Before the metro township's inception older areas of the County were not required to install sidewalks at the time of development. This has created a need for installation of sidewalks due to increased population, particularly in school-age children.

The Safer Sidewalk Program allows residents to request the County analyze a street for sidewalks. Once the street has been analyzed it will be placed on a priority list based on the number of vehicles on the road, number of pedestrians, schools in the area and the accident rate. The higher the priority, the sooner the project can be completed as funds become available.

## Complete Streets

Salt Lake County has a County-Wide Policy on Complete Streets. The purpose of this policy is to improve the ability of pedestrians, bicyclists, motorists, and transit riders of all ages and abilities to safely move along and across a complete street. This policy is intended to integrate the needs of all road users into Kearns Metro Township's everyday transportation planning practices.

## New Development

Title 14 – Highways, Sidewalks and Public Places of the Kearns Metro Township Code contains the guidelines for the development of all public and private curbs, curb ramps and sidewalks within the jurisdiction of Kearns.

Chapter 18 of the Code of Ordinances of Kearns Metro Township Code states that the subdivider shall install curbs, gutter and sidewalks on existing and proposed streets in all subdivisions.

## Design Standards

Salt Lake County Public Works provides the relevant design standards for sidewalks and curb ramps. The design standards establish the criteria necessary to make sidewalk and ramp elements physically accessible to people with disabilities. It also identifies what features need to be accessible and then provides the specific measurements, dimensions, and other technical information needed to make the feature accessible.

**A Gap along a Kearn's sidewalk**

## Ownership, Maintenance, and Replacement

Sidewalks within the public right-of-way are the responsibility of the adjacent property owner per Kearns Metro Township Code Chapter 14.32. According

to this chapter it is the duty of each property owner abutting or fronting any street to repair and maintain in good condition all public curbs, curb ramps, gutters and sidewalks across of immediately abutting their property. The county may inspect the condition of the public curbs and sidewalk etc. to determine and defects or needed repairs. It is also prohibited to obstruct any public curb and/or sidewalk.

## Snow Removal

Kearns Metro Township ordinances require the owner, occupant, lessor or agent of property abutting a paved sidewalk to remove or cause to be removed from such paved sidewalk and any existing curb ramp all hail, snow or sleet falling thereon, within twelve hours after the hail, snow or sleet has ceased falling, provided that in case of a storm between the hours of five p.m. and six a.m., the sidewalk and any existing curb ramp shall be cleaned before eight a.m. following the storm.

# Project Approach

The basis for the project approach was a detailed sidewalk inventory of all Kearns' sidewalk segments using Geographic Information Systems (GIS) as well as a detailed documentation of all sidewalk issues. This documentation was accomplished walking or riding every mile of sidewalk and using a GOPRO camera to photograph every issue on the sidewalks. This exhaustive data collection effort allowed for a level of detail previous unrealized and it gives the county a clear picture of the problems and how to address them. The full sidewalk inventory can be found on www.planningkearns.com.

## Sidewalk Network Feature Creation

All visible sidewalk was digitized from aerial imagery. At the conclusion of the inventory, the sidewalk database consisted of 173.3 miles of sidewalk. The data collected using aerial imagery was then verified visually in the field. Every foot of Kearns roadway was traveled and logged. All defects were photographed and geospatially linked to the GIS database.

The following GIS features were created during the digitization process:

- Sidewalk Line Segments –
  *Pedestrian paths adjacent to public streets.*
  *Sidewalk segments were created generally by block.*
- Defect Points – Visually identified curb defects.
- Cracking
- Cross Slope Deficiencies
- Fixed Obstructions
- Gaps
- Settling
- Spalling
- Uplift
- Vegetation Obstructions
- Vertical Obstructions

**A Photograph taken using a GOPRO during sidewalk inventory**

The identified sidewalk issues and defects were categorized into the following two groups of potential interventions:

**Maintenance can address the following issues**:

Fixed Obstructions, Vegetation Obstructions, Vertical Obstructions, Uplift, Settling

**Replacement may be needed for the following issues:**

Cross Slope, Gaps, Settling, Spalling, Cracking, Uplift

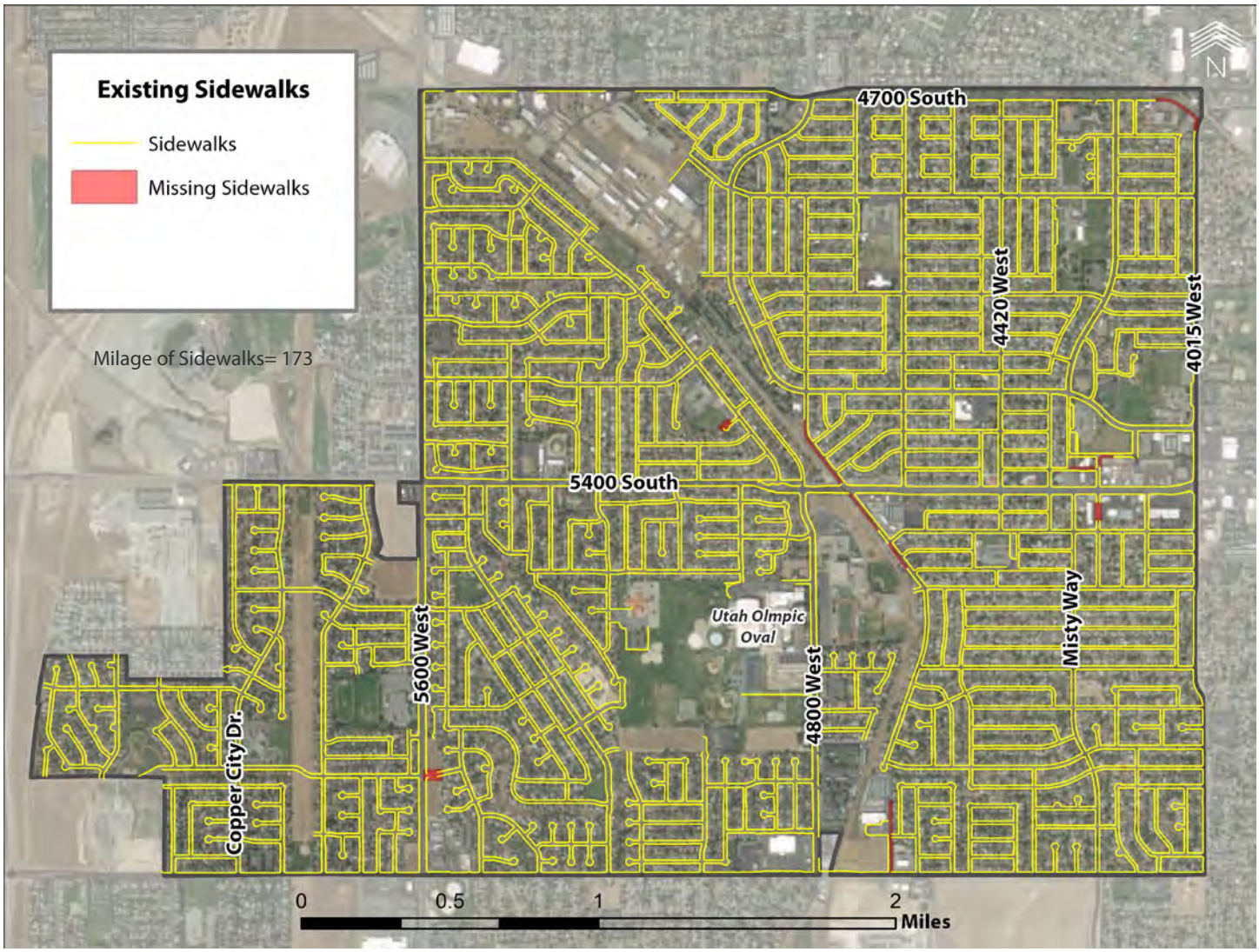
*Automobiles need quantity and pedestrians need quality.*

*– Dan Burden, walkability expert*

## Sidewalk Inventory

A full GIS-based sidewalk inventory was completed using the latest aerial photography and verified by site visits. The sidewalk inventory was built into a GIS database. Figure 6-1 is a map of sidewalk inventory for Kearns, including over 173 miles of sidewalk. The yellow lines show the existing sidewalks and the red areas highlight sections of missing sidewalk. The Kearns sidewalk network is almost completely built out.

**Figure 6-1: Existing Sidewalks in Kearns**



## Sidewalk Inspection

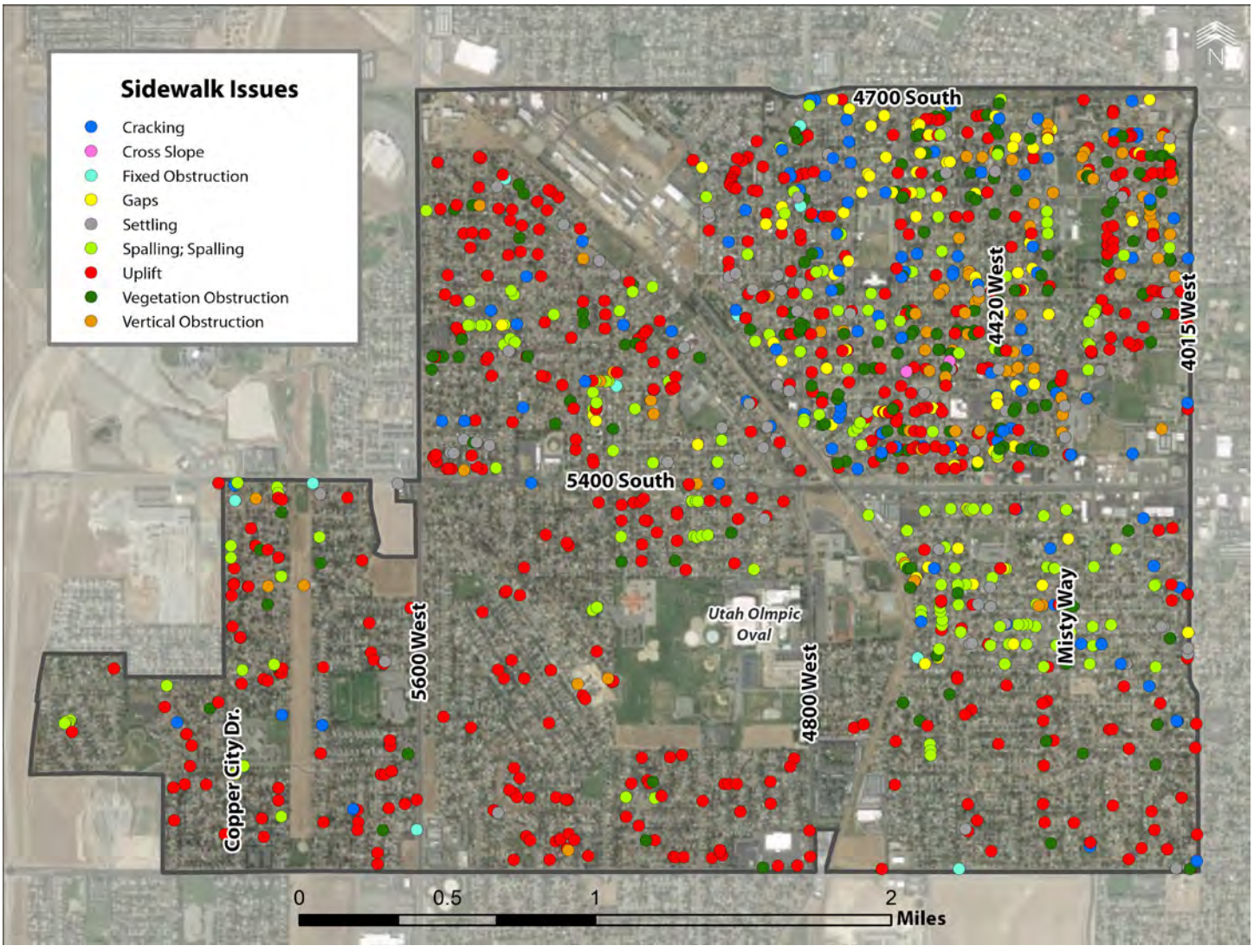
Field data collection was accomplished largely using a GOPRO camera but the field technician also used ArcGIS maps. Every sidewalk was traveled and recorded and every issue or defect was logged categorized. Several locations had multiple issues. Figure 6-2 is a map of around 1,400 documented sidewalk issues in Kearns.

## Sidewalk Inventory Results

One of the main goals of the sidewalk plan is to identify defects and come up with a plan to improve the safety and mobility of sidewalks in Kearns. The results of the sidewalk inventory and inspection will then be programmed into a maintenance plan. The following sections detail the results of the sidewalk inspection.

Photographs of every issue can be viewed by clicking on the mapped dots at www.planningkearns.com.

### Figure 6-2: Identified Sidewalk Issues in Kearns



# Sidewalk ADA Compliance

The level of ADA compliance in the sidewalk network impacts not only individuals with disabilities but all pedestrians.

The compliance index for sidewalks considers multiple criteria representing PROWAG accessibility standards including cross slope, vertical fault, and obstructions.

## Cross Slope

Cross slope is the slope of the sidewalk perpendicular to the direction of travel. To be ADA compliant, sidewalk cross slopes must be two percent or less. Spot locations where cross slopes appeared to exceed the ADA standards are shown in Figure 6-2. There are only two identifiable cross slope issues, corresponding to less than 1% of all observed sidewalk problems.

## Vertical Faults (Trip Hazards)

Vertical faults are points where the surface of the sidewalk is uneven, usually due to uplift or settling of panels typically resulting from freeze-thaw cycles, tree root growth, or settling of soil. To be ADA compliant, all vertical faults must be less than a half inch. In addition, all faults between ¼ inch and ½ inch must be beveled or ground to remove the fault. Because of the high standard set by ADA for vertical faults, this is the most common problem identified in the data collection phase (see Figure 6-6). Of the 1,238 sidewalk concerns identified, 507 were related to uplift and 79 were related to setting. 47% of all sidewalk hazards in Kearns can be classified as Vertical Faults or Trip Hazards.

Each vertical fault was inventoried regardless of severity. No attempt was made to measure the extent of the fault, mostly because the faults will continue to move as aditional settling or uplift occurs and will get more severe. As the Kearns Metro Township begins to schedule these sidewalks for replacement they should be individually inspected and measured to determine whether beveling or grinding would be an appropriate and more cost-effective method of mitigation. In some cases, mudjacking, a process of injected concrete into the soil beneath the panel can also be an effective way to treat settling.

## Obstructions

Obstructions are objects that impede pedestrian travel on the sidewalk. Sidewalks must be free from obstructions to be ADA compliant. Almost all obstructions observed in Kearns were temporary in nature. This was defined as vegetation growth, vehicles parked in driveways, leaning fences or something of a similar nature. In each case, the remedy for the problem is either time, a vehicle will not always be parked blocking the sidewalk, or notifying residents of the issue, an overgrown hedge. In either case, the cost to remedy the issues should and must be borne by the resident and not by Kearns Metro Township. The Township responsibility should be to notify the resident/owner of the property of the concern. 22% (271) of the observed sidewalk concerns were obstructions. Sidewalks locations with obstructions are shown in Figure 6-2.

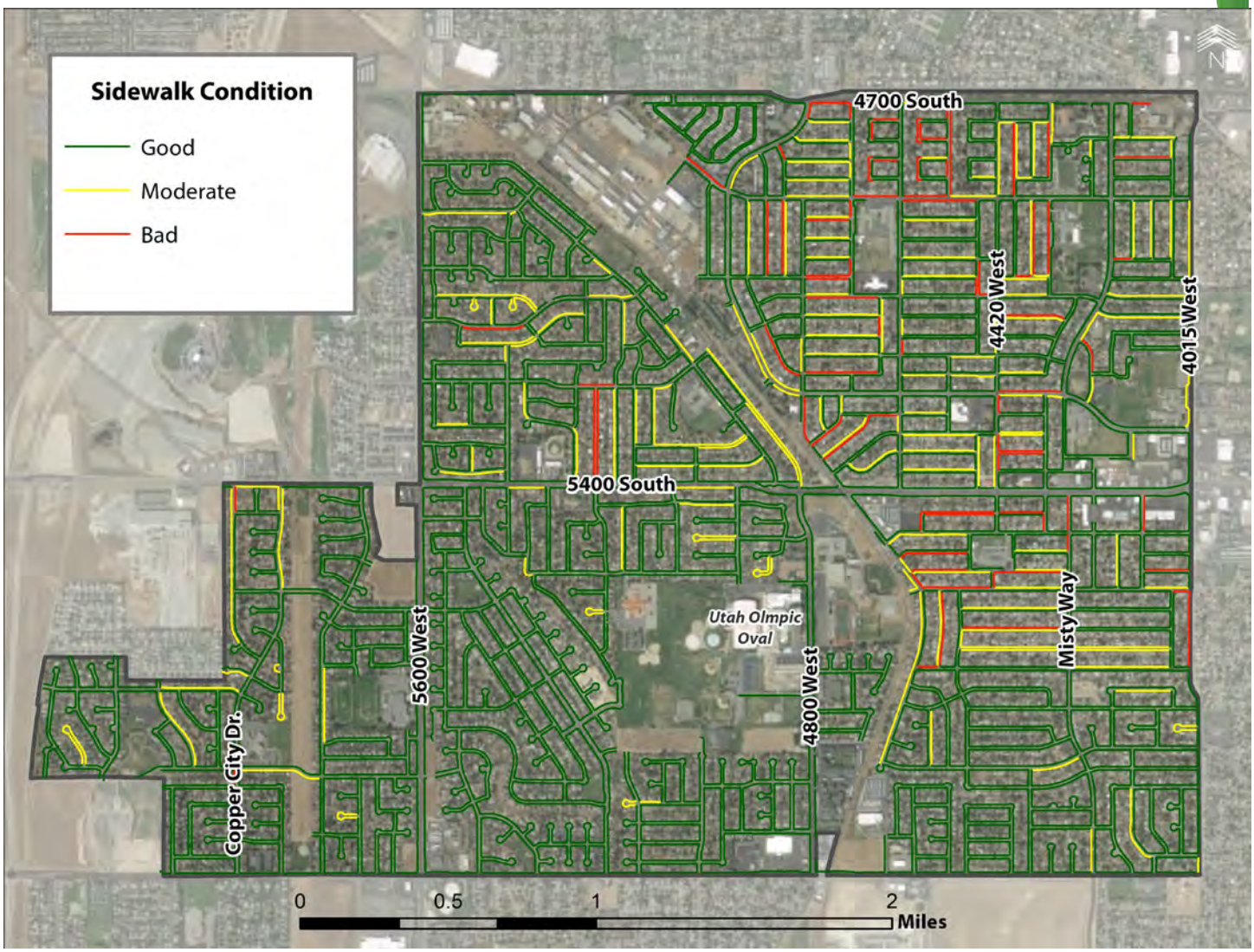
## Condition Assessment

Although ADA compliance and pedestrian mobility should be of primary concern, the existing condition of the sidewalk must not be overlooked and, depending on severity, can impede accessibility. Sidewalk condition deteriorates over time due to changes in temperature, moisture, wear, and other factors. Freezing and thawing is a major contributor to condition deterioration in the Utah climate as expansion and contraction leads to cracking of sidewalk surfaces. Cracks allow moisture to penetrate the structural base of the sidewalk causing heaving, which ultimately leads to more cracking, uplift and/or settling. Cracks also provide opportunity for vegetation growth, further impeding mobility. If sidewalks are left to deteriorate long enough, the concrete surface wears away complete and you are left with essentially a gravel surface. These have been identified as gaps for the purposes of

this assessment.

The most common surface condition issues observed were spalling, cracking, and gaps. Spalling accounted for 174 of the sidewalk issues (14%). There were 85 areas of sidewalk where gaps were present (7%). 120 sidewalks are cracked (10%). Figure 6-3 shows the overall sidewalk conditions in Kearns.

### Figure 6-3: Overall Sidewalk Condition




In general, newer sidewalks tend to have fewer condition issues than older features, though condition is not based solely on age. New features that are designed or installed incorrectly or that use less resilient surfaces develop condition issues more rapidly than features that follow construction best practices. Site preparation, materials, drainage, and ongoing maintenance all play a role in the lifespan of sidewalk network features. In this assessment, the presence of a condition issue was the only criteria. Issues were not analyzed based on severity. As areas of sidewalk are scheduled for maintenance, the condition should be assessed again to determine severity.

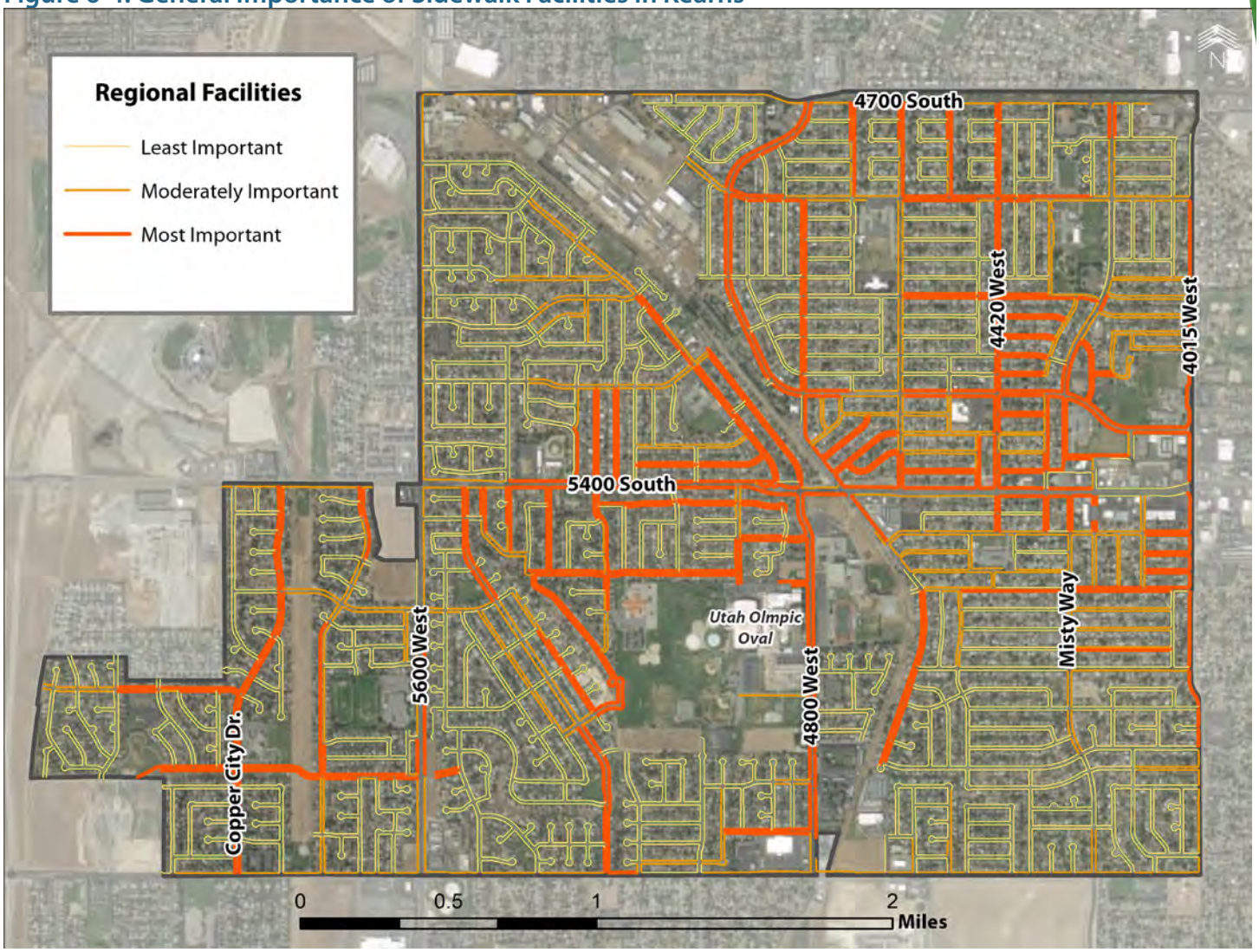
## Regional Facilities

Figure 6-4 is a map showing the general importance of sidewalk facilities in Kearns. The level of importance of regional sidewalks is based on three key factors.

- **Whether the sidewalk is included in a safe routes to school map**
- **Its proximity to bus stops**
- **Estimated sidewalk use derived from 2018 STRAVA data**

Strava is a voluntary fitness app used by runners, walkers, cyclists, etc that records data about routes including frequency of usage. This data is used as one factor in the assessment of sidewalk "importance." The Strava data for Kearns was measured and mapped on every sidewalk segment, then the aggregated values were totaled and displayed as least important, moderately important, and most important.

**Figure 6-4: General Importance of Sidewalk Facilities in Kearns**



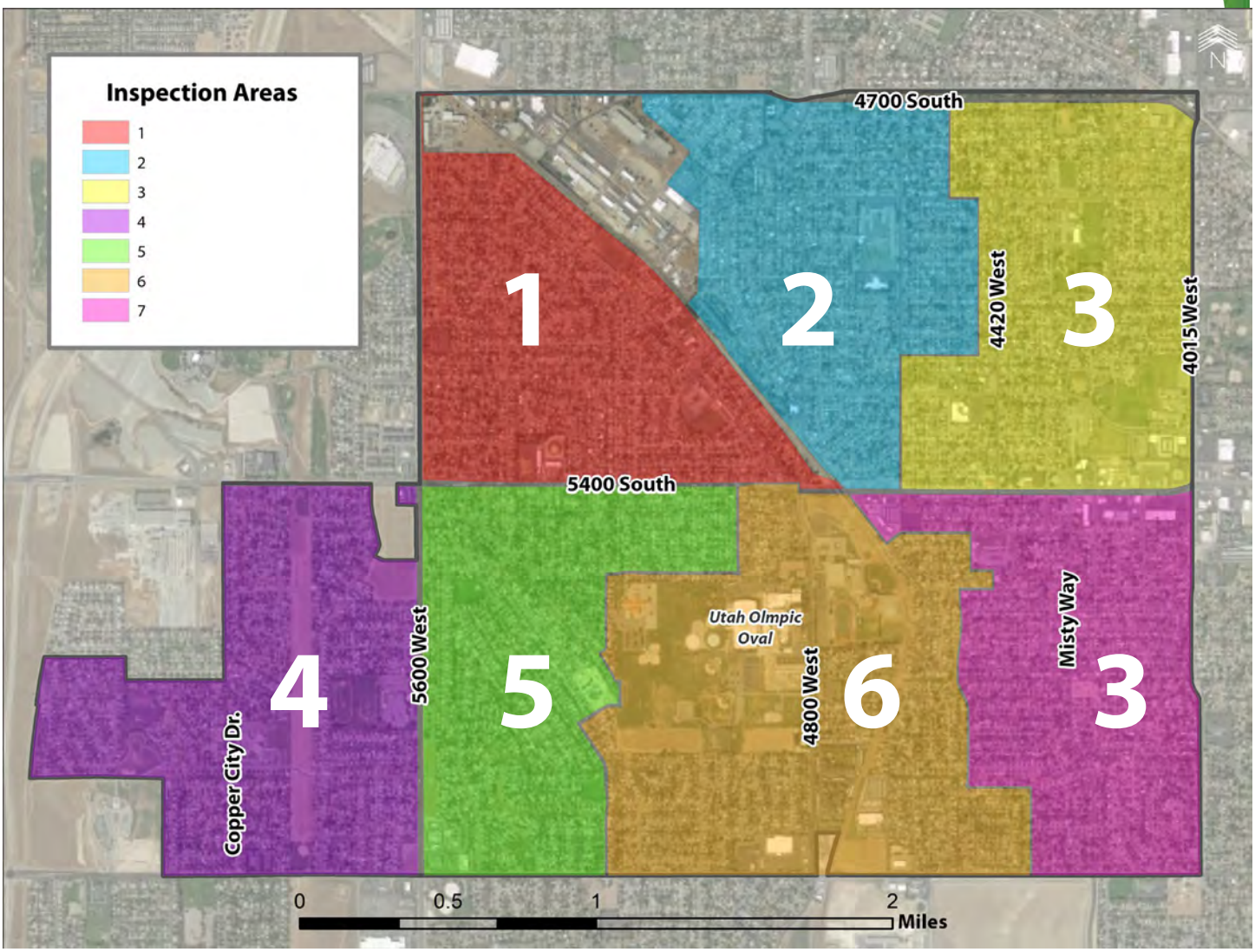

# Maintenance

Sidewalk replacement and repair is a priority for Kearns Metro Township as they move forward to increase pedestrian mobility and accessibility. The following maintenance plan is designed to aid in this goal.

## On-Going Inspection

As a rule, sidewalks should be visually inspected every five years. The recommendation of this assessment is that the metro township be split into seven geographic areas with approximately the same total length of sidewalk in each (see Figure 6-5). Chosen area(s) should be inspected visually each year. It is highly recommended that the same process be used to inspect the sidewalk in the future as was used with this assessment, specifically geo-referencing the inspections with photographs. This can be accomplished using ESRI software and/or a custom-built sidewalk inspection/maintenance web app.

**Figure 6-5: Potential Inspection Areas in Kearns**




## Maintenance

As with the on-going inspection, it is recommended that maintenance be assigned based on geography, potentially using the same areas. Consideration should also be taken of the maintenance type being performed. For example, maintenance performed in year one could include remove and replacing badly spalled/cracked sidewalk, installing new sidewalk where gaps exist, grinding trip hazards, and mudjacking settled sidewalk panels.

A ten-year maintenance plan is recommended to address all 1,238 sidewalk issues identified in the assessment. The maintenance plan spelled out here should be fluid and adjusted every year as more sidewalk is inspected.

# 10 - Year Maintenance Plan

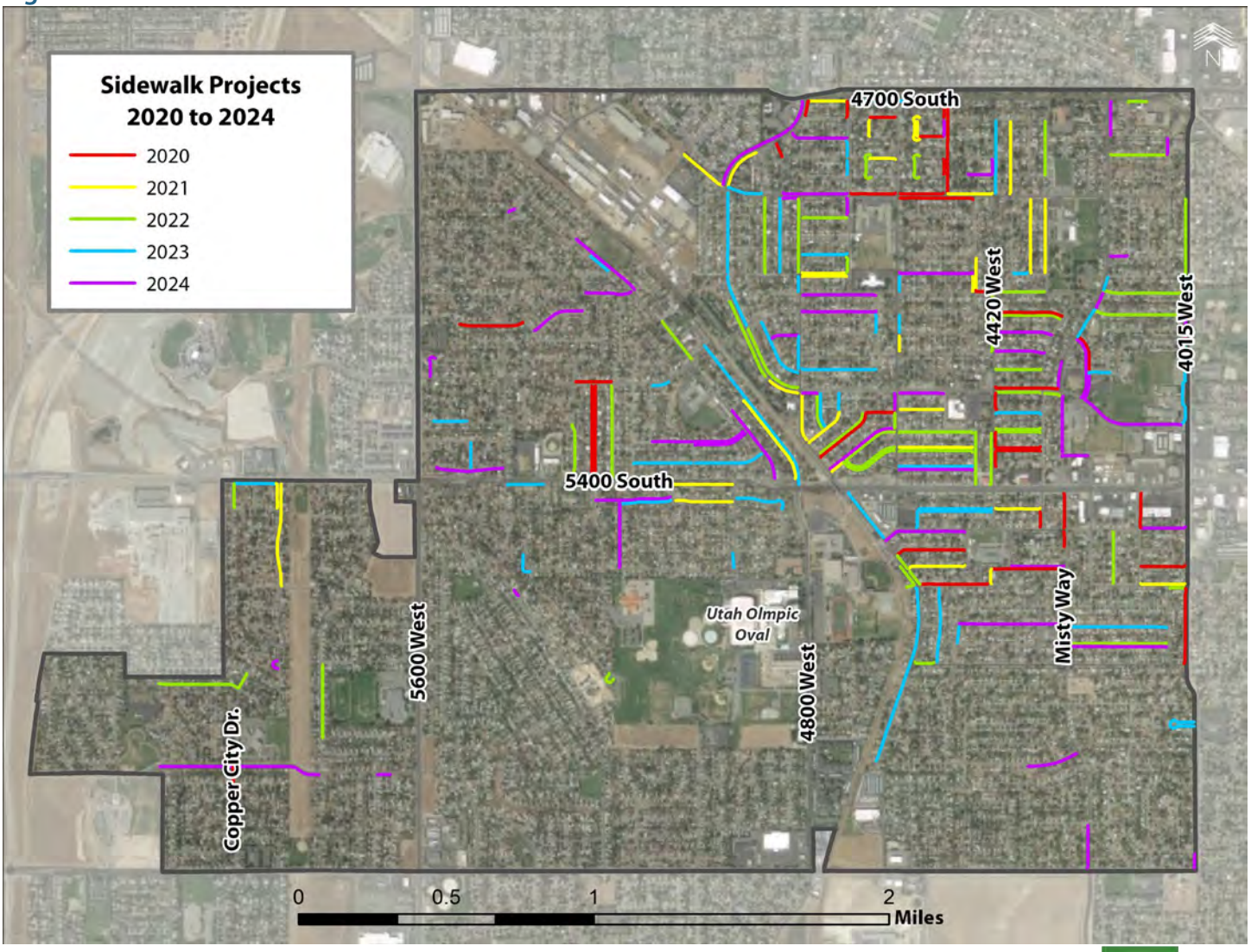
Table 6-1 provides a breakdown of sidewalk maintenance and replacement cost by dollar per foot. While some issues will overlap such as spalling and uplift, this offers general guidance for cost. These general costs are somewhat conservative and will likely vary depending upon contractors. The costs were used to help develop the ten-year maintenance plan. Treatment types were applied to the worst condition segments. Then based on their length a project cost was determined.

### Table 6-1: General Cost by Treatment Type

| Treatment Type | Issues Remedied | Cost per foot of sidewalk |
|---|---|---|
| New Sidewalk | Gaps | **$33.00** |
| Mudjacking | Settling | **$9.00** |
| Grinding | Settling, Uplift | **$6.00** |
| Remove and Replace | Settling, Cracking, Spalling, Uplift, Cross Slope | **$40.00** |

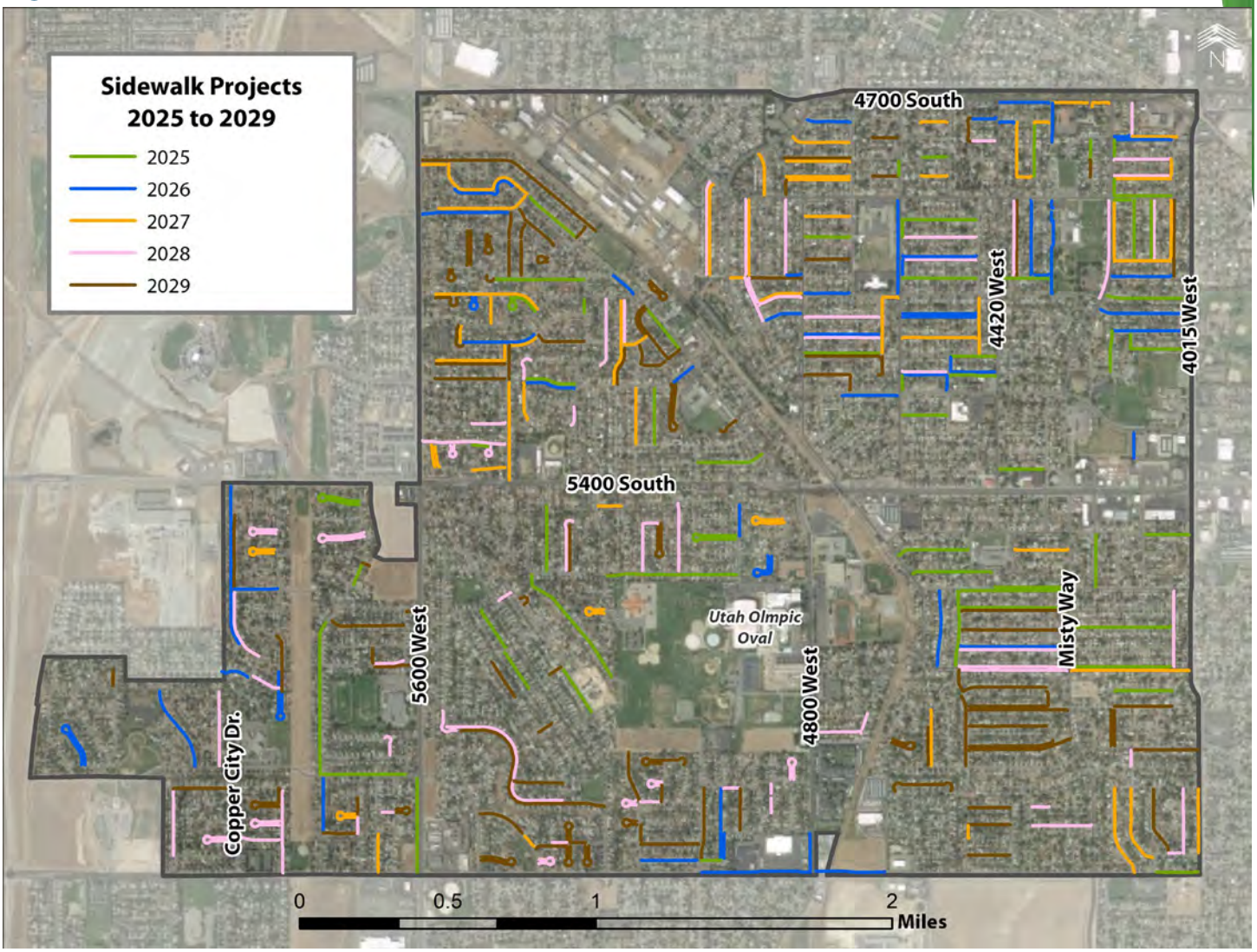
The general length of the treatment types in the ten-year maintenance plan is based on an average of $34,000 per year spent on sidewalk improvements.

### Figure 6-6: First 5 Years of 10-Year Maintenance Plan



The ten-year maintenance plan was developed based on what could be feasibly completed each year. Not every sidewalk segment is addressed and some treatment types allow for more segments to be addressed during different years. On average four to five miles of sidewalk can be addressed each year of the ten-year plan. Figure 5-10 shows the first five years of the sidewalk plan (years 2020-2024) and figure 6-7 shows the remaining 5 years of the plan (2025-2029).

**Figure 6-7: Second 5 Years of 10-Year Maintenance Plan**




# Conclusion

The sidewalk condition in Kearns varies. The worst conditions show up in the older neighborhoods in the northeast, while the newer neighborhoods have few issues. The 173 miles of sidewalks average fewer than ten issues per mile.

While many of these issues would require replacement the ten-year maintenance plan details out a potential schedule to make the largest improvements by segments and increase the overall sidewalk condition throughout Kearns.

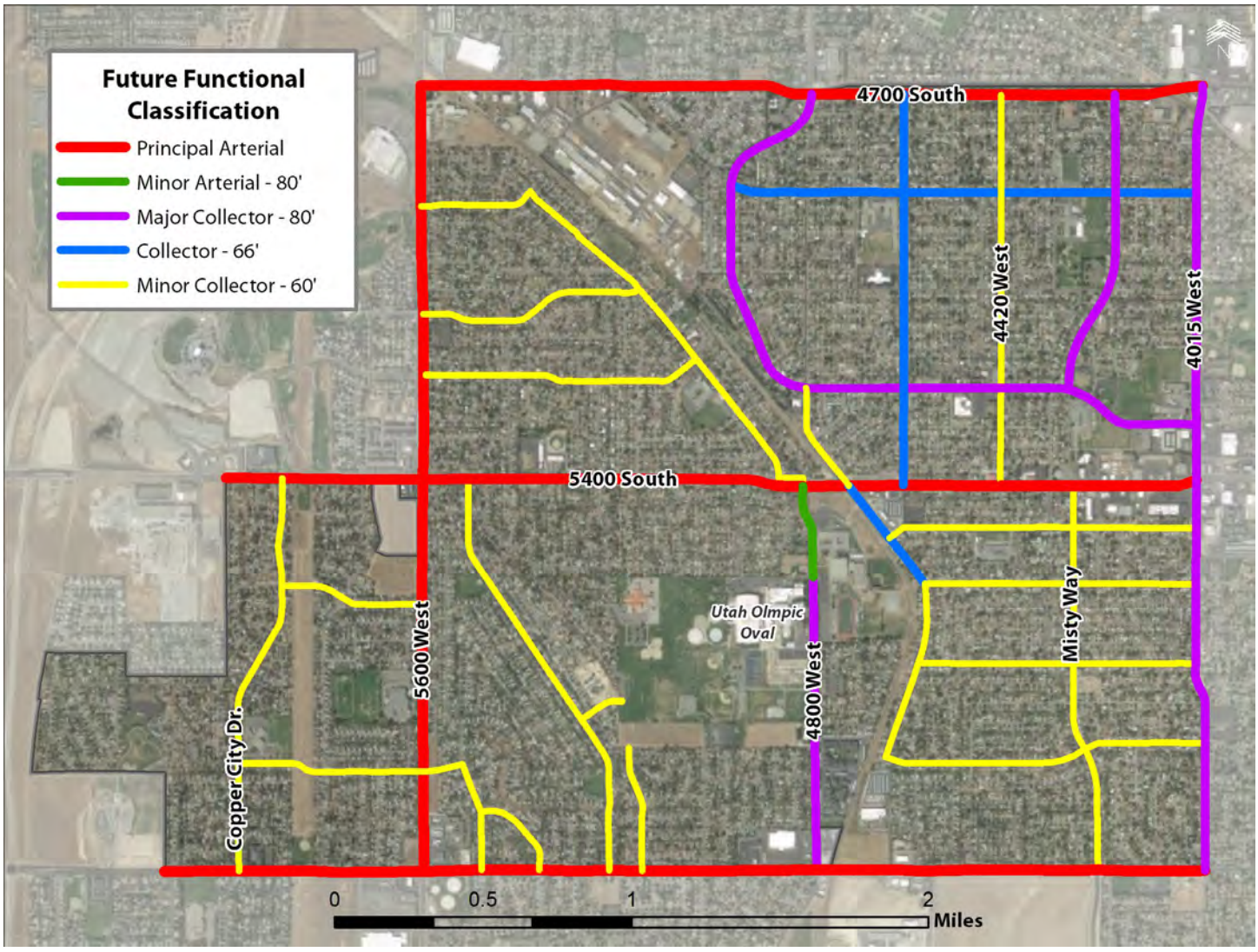
# 7 WHAT IS THE PLAN

This chapter focuses on final recommendations for transportation in Kearns. It includes a capital facilities plan with recommended projects and costs estimates. Based upon the evaluation of existing and future conditions as well as public input that was received through the planning process, specific recommendations were developed for each plan element. These recommendations will be used to complete the transportation network, including functionally classified roads, transportation investments, and active transportation projects.

## Future functional classification

The recommended functionally classified roadway network is illustrated in Figure 7-1. The functional classification was developed based upon prior planning efforts, including the existing functional classification shown in Figure 2-7. This existing map provided the base roadway network that was refined to serve the updated future land use and traffic forecasts from the travel demand modeling. Finally, the recommended functional classification was improved to reflect stakeholder and public comments to create a network that will serve existing and future travel demand. The recommended network includes planned projects from WFRC's Long Range Transportation Plan. These arterial and collector roadways will provide the backbone of the functionally classified transportation network within Kearns.

**Figure 7-1: Future Functional Classification**



The future functional classification map shown in figure 7-1 on the previous page is a comprehensive one-page image of the Master Transportation Plan. It shows the existing and future roads with their connectivity and general sizing so the community will know what the plan is for future roads in Kearns. It is essentially the future road network.

## Standards and cross-sections

Accompanying the future functional classification map to better complete the road network are standard roadway cross-sections. Roadway cross-sections are essential for understanding the function, capacity, and speed, as well as the look and feel of a road. The roadway cross-section standards for Kearns are based on County standards and engineering concepts from the American Association of State Highway and Transportation Officials' (AASHTO) design manual 'A Policy on Geometric Design of Highways and Streets 2018,' (commonly called the "AASHTO Green Book"). The County standards use a table to define right-of-way and pavement widths but generally do not define pavement elements like widths for travel lanes, center-turn lanes, or shoulders.

The typical cross-sections for each functional classification in Kearns are drawn in this section. The County standard for right-of-way (ROW) width as well as pavement width for each functional classification are included in Table 7-1. It is important that Kearns uses specific values for each cross-section for future development. Cross-section drawings are located on the following pages. These are only examples of possible lane configurations within the pavement widths because there is variability in the application of standards. The geometry of these cross-sections are identical to Salt Lake County design standards found in Chapter 14.12 of the Standards for Roadway Development.

**Table 7-1: Roadway Cross Section Widths**

| TYPE | PAVEMENT WIDTH | RIGHT-OF-WAY |
|---|---|---|
| **Principal Arterials** | Varies | Varies |
| **Minor Arterial** | 55′ | 80′ |
| **Major Collector** | 55′ | 80′ |
| **Collector** | 41′ | 66′ |
| **Minor Collector** | 35′ | 60′ |

**Labels of Roadway Elements**

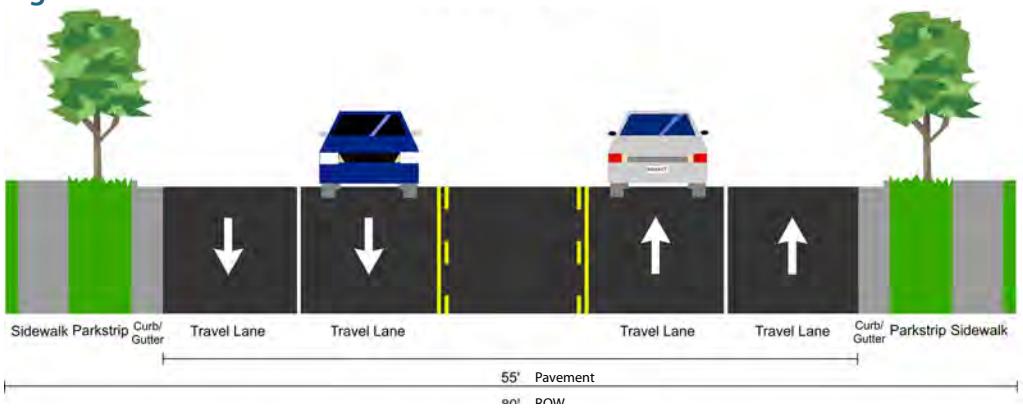
## Principal Arterials

Principal arterial streets are mostly UDOT roads and are designed to move vehicles through an area. These roads have limited access, higher speeds, and traffic signals at major cross streets. Principal arterials are generally spaced about one or two miles apart and usually have four to six travel lanes with a center-turn lane. Principal Arterials in Kearns include 4700 South, 5400 South, 5600 West, and 6200 South. Because many of these are UDOT roads and they have varying widths and cross-sections, there is not a uniform design to display. The design widths for the principal arterials are variable and can be used for 3 to 7 lane roadway sections.

## Minor Arterials

Minor arterials are designed to serve both traffic movement and access. These roads typically have cross street access, but limited driveway access, medium speeds, and flared-out signalized intersections at major cross streets. There is one existing minor arterial identified in Kearns, 4800 West / Cougar Lane. The minor arterial cross-section includes 55 feet of pavement in an 80 foot right-of-way. The cross-section may be three to five lanes. A five-lane section may include two 11-foot travel lanes in each direction and a 11-foot center turn lane, curb and gutter, and sidewalk complete the 80-foot right of way.

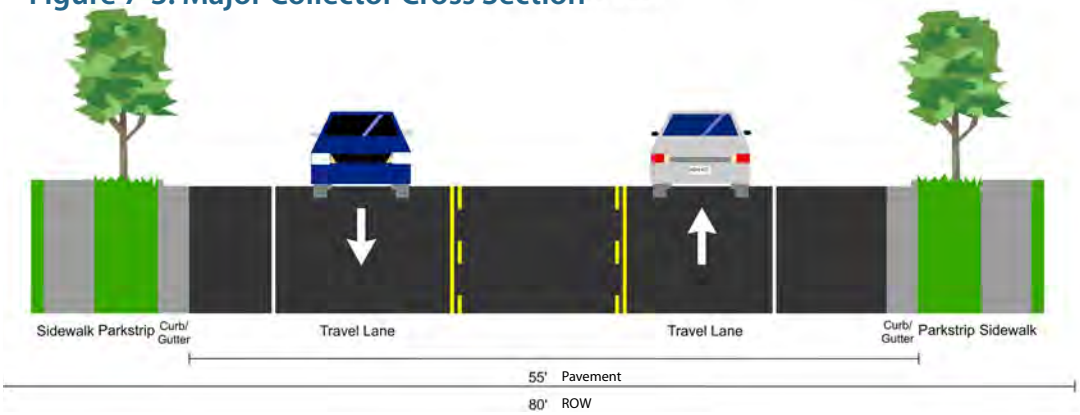
**Figure 7-2: Minor Arterial Cross Section**




## Major Collectors

Planned major collectors in Kearns include 4800 West, 4015 West and 5215 South and others. The minor arterial cross-section includes 55 feet of pavement in an 80 foot right-of-way. The cross-section maybe three, four, or five lanes. A three-lane major collector pavement width could consist of one 12-foot travel lane in each direction, 13-foot center turn lane, and 9-foot shoulders. Similar to the minor arterials, the total width of right-of-way is 80-feet.

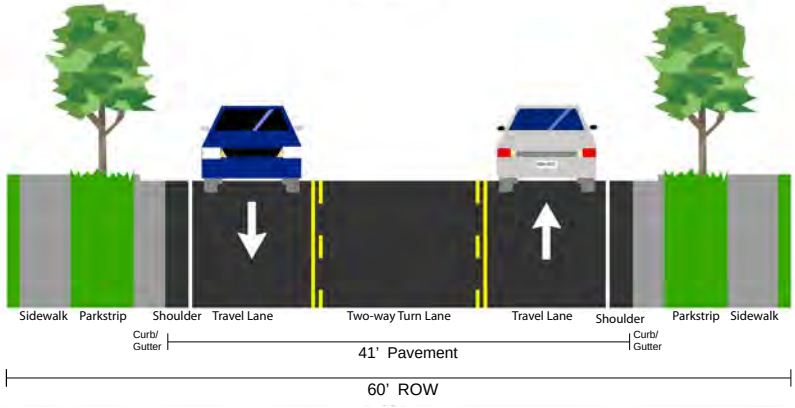
**Figure 7-3: Major Collector Cross Section**



# Collectors

Collector streets are designed to offer local traffic access to arterial streets but they are not designed for long distance travel. These roads typically have no limitations to street or driveway access and facilitate slower speeds, generally 35 miles per hour or slower. Planned collectors in Kearns 4865 South, 4620 West, and Northwest Avenue south of 5415 South and others. The drawing of the collector cross-section is shown in Figure 7-4 and includes a 66-foot right-of-way with 41 feet of pavement. Collectors could include a two or three lane cross-section that might have one 12-foot travel lane in each direction and either 2-foot shoulders. Collectors have less vehicle capacity than arterials, but more capacity than residential streets.

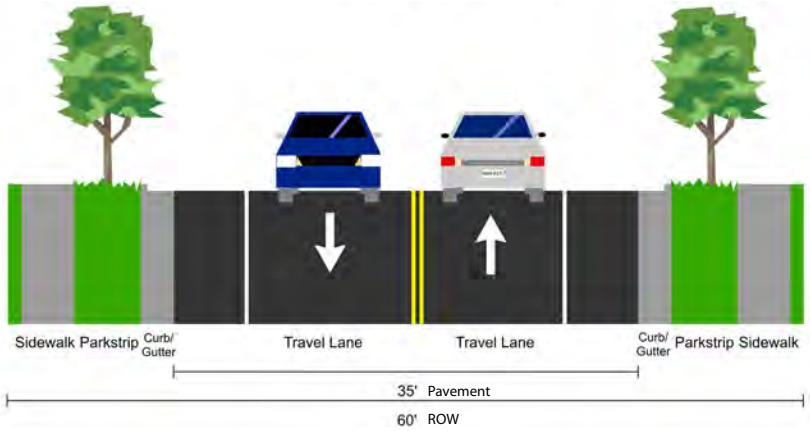
**Figure 7-4: Collector Cross Section**




# Minor Collectors

Residential streets are designed to offer access from residences to the roadway network. Local streets connect driveways to collectors or arterials. Residential streets are typically laced with driveways on both sides and have posted speed limits of 25 miles per hour. These streets are part of developers' plans for neighborhoods and are built within sub-divisions. Residential streets exist throughout Kearns and are in all of the residential developments. The local street cross-section has a 60-foot right-of-way and 35 feet of pavement. Minor Collectors could include one 12.5-foot travel lane in each direction, 5-foot shoulders, curb and gutter, and sidewalk.

**Figure 7-5: Minor Collector Cross Section**



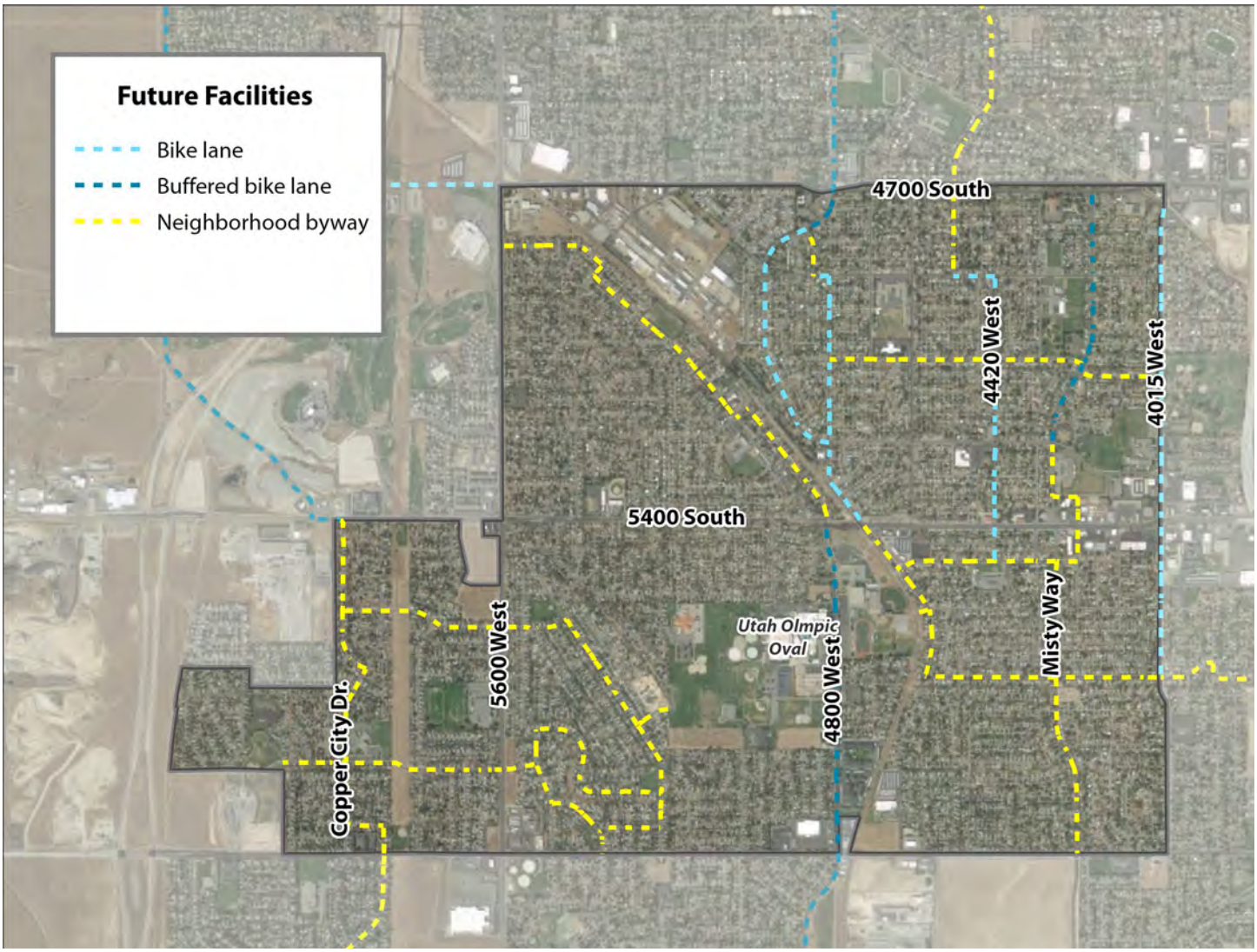
# Active Transportation

A large part of this transportation master plan is accommodating all travel modes including active transportation. Section 6 of this plan addresses sidewalks and walking facilities in detail, including developing a 10-year maintenance plan for sidewalk improvements.

Future bicycle facilities also play an important part to a complete plan. Figure 7-6 is a map that shows projects that are from Salt Lake County's Regional Active Transportation Implementation Plan. Kearns currently has a trail on the north side of 4700 and a bike lane on the west side of 4800 West / Cougar Lane. Future bike lanes are planned on Pieper Blvd, 4420 West, 4015 West, and 4820 West as well as buffered bike lanes on 4800 West / Cougar Lane.

Besides dedicated bike lane facilities Neighborhood byways are also planned throughout Kearns. These byways are typically designated with sharrows and bike stencils but not dedicated lanes. Neighborhood byways are planned on slow speed local roads that residents are already biking on. Figure 7-6 shows the future active transportation bicycle facilities.

**Figure 7-6: Future Active Transportation Facilities**



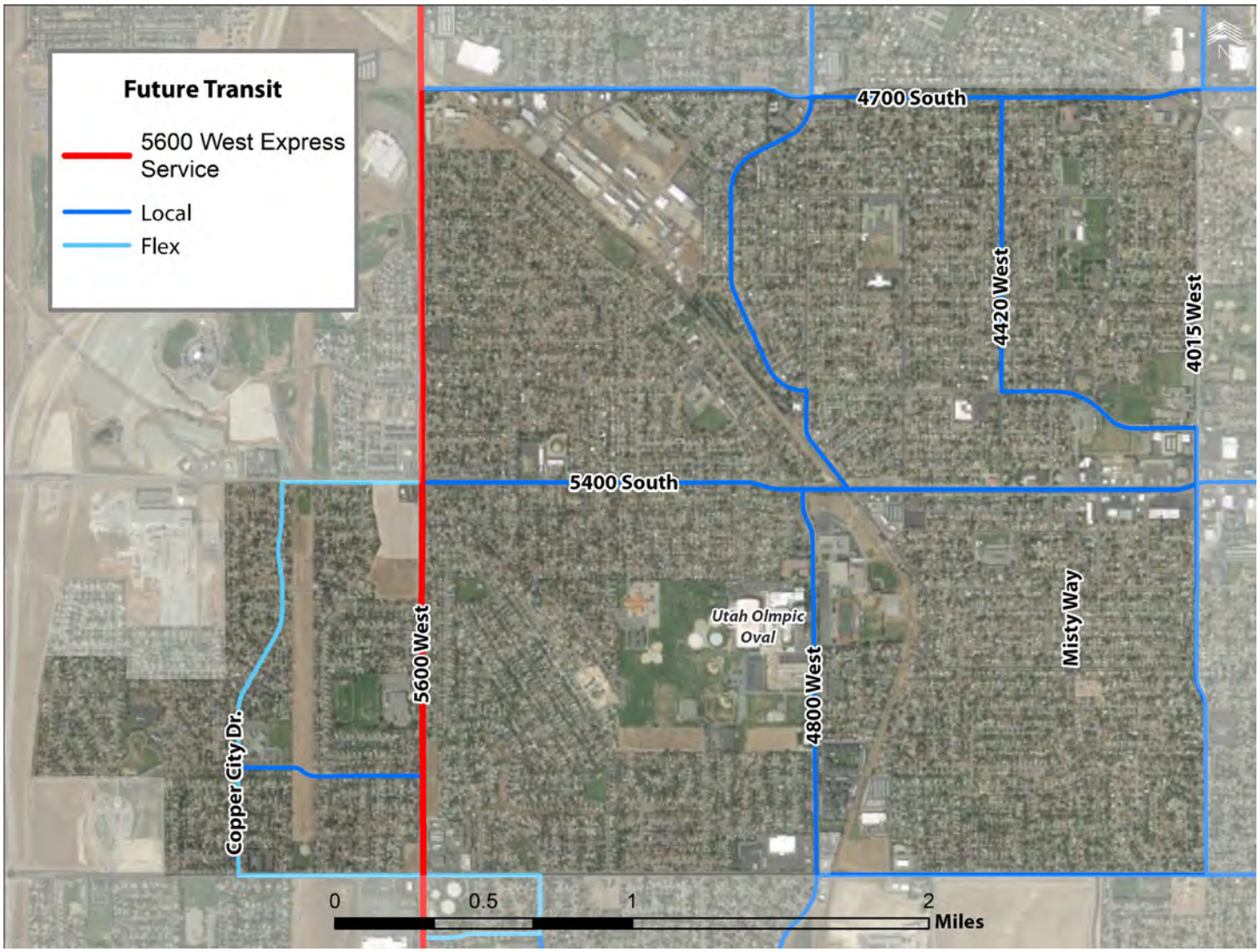
# Transit

Transit is an important part of multi-modal transportation as well as any township's Transportation Master Plan. Transit provides a viable mobility option across economic strata for both residents and commuters. Both WFRC and UTA are planning on expanding transit service in Kearns in the near term.

The most significant aspect of the transit expansion will be the 5600 West Express Service. This new high-frequency service is part of the Mountain View Corridor expansion and will service residents on the west side of Kearns. It is anticipated that this new service will enhance transit ridership throughout Kearns. Individual bus routes will likely change and expand as well, but those details have yet to be determined by UTA.

Figure 7-7 is a map displaying the future of transit service with the new express route highlighted.

**Figure 7-7: Future Transit Facilities**



# Capital Facilities

A capital facilities plan is designed to show the future transportation investment needed in a community. It enhances existing transportation corridors and plans spot intersection improvements to provide future residents of the community with an adequate transportation system. Kearns' capital facilities plan for future growth between the planning years of 2020-2050 is provided below. Figure 7-8 is a map of all the needed transportation project over the next 30 years.

**Figure 7-8: Capital Facilities Plan Costs: 2020-2050**

Tables 7-2 and 7-3 are the detailed project lists with planning level cost estimates and potential funding sources. Table 7-2 is the next ten years of needs and table 7-3 shows the needs from 2031-2050.

### Table 7-2: Capital Facilities Plan Costs: 2020-2030

| Project # | Location | Improvement Type | Total Cost | Funding Source |
|---|---|---|---|---|
| **1** | West Sam's Blvd/4580 West/ Pieper Blvd/Northwest Ave: 4715 South to 5415 South | Traffic Calming | $367,000 | Kearns |
| **2** | Northwest Ave: 5500 South and 5740 South | Traffic Calming | $141,000 | Kearns |
| **3** | 4015 West: Twilight Dr. to 5700 South | Traffic Calming | $32,000 | Kearns |
| **4** | 5415 South/Northwest Avenue | Intersection Improvement | $1,320,000 | UDOT |
| **5** | Cougar Lane: Niagara Way and Kearns High Dr. | Capacity Improvement | $2,380,000 | Kearns |
| **6** | 5400 South/5600 West | Intersection Improvement | $2,880,000 | UDOT |
| **7** | 4700 South: MVC to 4000 West | Capacity Improvement | $31,140,000 | Kearns/WFRC |
| **Subtotal (Kearns): $2,920,000** | | | | |
| **Subtotal (Kearns/WFRC): $31,140,000** | | | | |
| **Subtotal (UDOT): $4,200,000** | | | | |
| **Total: $38,260,000** | | | | |

### Table 7-3: Capital Facilities Plan Costs: 2031-2050

| Project # | Location | Improvement Type | Total Cost | Funding Source |
|---|---|---|---|---|
| **8** | 6200 South: Cougar Lane to Bangerter Highway | Capacity Improvement | $13,990,000 | Kearns/WFRC |
| **9** | 6200 South: Cougar Lane to Bangerter Highway | Capacity Improvement | $11,920,000 | Kearns/WFRC |
| **10** | 5400 South: MVC to 5600 West | Capacity Improvement | $7,640,000 | UDOT |
| **Subtotal (Kearns):** | | | | |
| **Subtotal (Kearns/WFRC): $ 25,910,000** | | | | |
| **Subtotal (UDOT): $7,640,000** | | | | |
| **Total: $33,550,000** | | | | |

## 2020-2030 Projects

1. **West Sam's Boulevard/4580 West/Pieper Boulevard/Northwest Avenue** – This project would add traffic calming to these streets to slow traffic on by adding speed humps and narrow travel lanes. This project would narrow the travel lanes and add bike lanes for the length of the project.
2. **Northwest Avenue** - The project would extend the existing speed humps on Northwest Avenue south between 5500 South and 5700 South. The project also includes restriping Northwest Avenue to define and visually narrow the travel lanes to further slow traffic.
3. **4015 West** – This project is to restripe 4015 West from Twilight Drive to 5700 South to narrow the travel lanes through the s-curve. The project is designed to help slow traffic through this area that has been a concern of residents.
4. **5415 South/Northwest Avenue** – This intersection improvement project would address existing traffic congestion and driver confusion. These improvements could include the addition of dedicated right-turn lanes, advanced signage, lane markings, or signal improvements as identified in a future intersection study.
5. **Cougar Lane -** The project would extend the second southbound lane on Cougar Lane from Niagara Way to Kearns High Drive. Cougar Lane would be widened through this section to accommodate a second travel lane and maintain the existing bike lane.
6. **5400 South/5600 West** - This improvement project would address existing traffic congestion at the intersection. These improvements could include the addition of a dedicated right-turn lane on 4700 South, dual left-turn lanes on 5600 West, signal improvements, or an innovate intersection as identified in a future intersection study.
7. **4700 South** - The project is to widen 4700 South to a five-lane road from Mountain View Corridor to 4015 West. The project is designed to improve existing congestion and provide for additional east/west capacity and is also planned for in the WFRC RTP in phase 1 (2019-2030).

## 2031-2050 Projects

8. **6200 South: Cougar Lane to Bangerter Highway** – This project would widen an approximately one-mile segment of 6200 South from 5 lanes to 7 lanes to reduce existing traffic congestion. The project is also identified the WFRC RTP in phase 2 (2031-2040).
9. **6200 South: Mountain View Corridor to 5600 West** – The project would widen or restripe 6200 South to 5 lanes to reduce existing congestion and provide future capacity to access Mountain View Corridor. The project would match the existing 5 lane roadway section 6200 South east of 5600 West.
10. **5400 South** – This project would widen and restripe the corridor to 7 lanes between Mountain View Corridor and 5600 West. The primary purpose of the project is to add capacity between Mountain View Corridor and USANA Amphitheater to help alleviate event related traffic congestion that currently impacts Kearns roadways.

# Funding

All possible revenue sources have been considered as a means of financing transportation capital improvements needed as a result of new growth. This section discusses the potential revenue sources that could be used to fund transportation needs as a result of new development.

Transportation routes often span multiple jurisdictions and provide regional significance to the transportation network. As a result, other government jurisdictions or agencies often help pay for such regional benefits. Those jurisdictions and agencies could include the Federal Government, the State or (UDOT), Salt Lake County, and the local metropolitan planning organization (WFRC). Kearns will need to continue to partner and work with these other jurisdictions to ensure adequate funds are available for the specific improvements necessary to maintain an acceptable LOS. Kearns will also need to partner with adjacent communities to ensure corridor continuity across jurisdictional boundaries (i.e., arterials connect with arterials; collectors connect with collectors, etc.).

Funding sources for transportation are essential if the Kearns recommended improvements are to be built. The following paragraphs further describe the various transportation funding sources available to the community.

# Federal Funding

Federal monies are available to cities and counties through the federal-aid program. UDOT administers the funds. In order to be eligible, a project must be listed on the five-year Statewide Transportation Improvement Program (STIP).

The Surface Transportation Program (STP) funds projects for any roadway with a functional classification of a collector street or higher as established on the Statewide Functional Classification Map. STP funds can be used for both rehabilitation and new construction. The Joint Highway Committee programs a portion of the STP funds for projects around the state in urban areas. Another portion of the STP funds can be used for projects in any area of the state at the discretion of the State Transportation Commission. Transportation Enhancement funds are allocated based on a competitive application process. The Transportation Enhancement Committee reviews the applications and then a portion of the application is passed to the State Transportation Commission. Transportation enhancements include twelve categories ranging from historic preservation, bicycle and pedestrian facilities, and water runoff mitigation.

WFRC accepts applications for federal funds from local and regional government jurisdictions. The WFRC Technical Advisory and Regional Planning committees select projects for funding every two years. The selected projects form the Transportation Improvement Program (TIP). In order to receive funding, projects should include one or more of the following aspects:

Congestion Relief – spot improvement projects intended to improve Levels of Service and/or reduce average delay along those corridors identified in the Regional Transportation Plan as high congestion areas.

Mode Choice – projects improving the diversity and/or usefulness of travel modes other than single occupant vehicles.

Air Quality Improvements – projects showing demonstrable air quality benefits.

Safety – improvements to vehicular, pedestrian, and bicyclist safety.

## State/County Funding

The distribution of State Class B and C Program monies is established by State Legislation and is administered by the State Department of Transportation. Revenues for the program are derived from State fuel taxes, registration fees, driver license fees, inspection fees, and transportation permits. 75% of these funds are kept by UDOT for their construction and maintenance programs. The rest is made available to counties and cities. As some of the roads in Kearns fall under UDOT jurisdiction, it is in the interest of Kearns that the staff are aware of the procedures used by UDOT to allocate those funds and to be active in requesting the funds be made available for UDOT owned roadways in the Township.

Class B and C funds are allocated to each township and county by a formula based on population, centerline miles, and land area. Class B funds are given to counties, and Class C funds are given to cities and towns. Class B and C funds can be used for maintenance and construction projects; however, thirty percent of those funds must be used for construction or maintenance projects that exceed $40,000. The remainder of these funds can be used for matching federal funds or to pay the principal, interest, premiums, and reserves for issued bonds.

In 2005 the State Senate passed a bill providing for the advance acquisition of right-of-way for highways of regional significance. This bill would enable cities and counties to better plan for future transportation needs by acquiring property to be used as future right-of-way before it is fully developed and becomes extremely difficult to acquire. UDOT holds on to the  account revenue generated by the local corridor preservation fund, but the county is responsible to program and control monies. In order to qualify for preservation funds, the Township must comply with the Corridor Preservation Process, found at the following link https://www.udot.utah.gov/main/uconowner.

## Township Funding

Some cities utilize general fund revenues for their transportation programs. Another option for transportation funding is the creation of special improvement districts. These districts are organized for the purpose of funding a single specific project that benefits an identifiable group of properties. Another source of funding used by cities is revenue bonding for projects intended to benefit the entire community.

Private interests often provide resources for transportation improvements. Developers construct the local streets within subdivisions and often dedicate right-of-ways and participate in the construction of collector/arterial streets adjacent to their developments. Developers can also be considered a possible source of funds for projects through the use of impact fees. These fees are assessed as a result of the impacts a particular development will have on the surrounding roadway system, such as the need for traffic signals or street widening.

General fund revenues are typically reserved for operation and maintenance purposes as they relate to transportation. However, general funds could be used if available to fund the expansion or introduction of specific services. Providing a line item in the Township budgeted general funds to address roadway improvements, which are not impact fee eligible, is a recommended practice to fund transportation projects, should other funding options fall short of the needed amount.

General obligation bonds are debt paid for or backed by the Township's taxing power. In general, facilities paid for through this revenue stream are in high demand amongst the community. Typically, general obligation bonds are not used to fund facilities that are needed as a result of new growth because existing residents would be paying for the impacts of new growth. As a result, general obligation bonds are not considered a fair means of financing future facilities needed as a result of new growth.

Certain areas might have different needs or require different methods of funding than traditional revenue sources. A Special Assessment Area (SAA) can be created for infrastructure needs that benefit or encompass specific areas of the Township. Creation of the SAA may be initiated by the municipality by a resolution declaring public health, convenience, and necessity require the creation of a SAA. The boundaries and services provided by the district must be specified and a public hearing held prior to creation of the SAA. Once the SAA is created, funding can be obtained from tax levies, bonds, and fees when approved by the majority of the qualified electors of the SAA. These funding mechanisms allow the costs to be spread out over time. Through the SAA, tax levies and bonding can apply to specific areas in the Township needing to benefit from the improvements.

## Implementation

The specific roadway improvements required to accommodate future growth throughout Kearns were identified in Figure 6-9. Projects costs for the CFP for 2020-2030 are in Table 6-2: and in Table 6-3: for 2031-2050.

The total costs for the 2030 CFP projects is $33.5 million dollars with Kearns and WFRC generally financially responsible for $25.9 million dollars. Detailed description of each project is included in Table 6-2 and these projects are ordered based on the project priority. Many of the identified projects are for UDOT roads or roads which would be eligible for WFRC funding assistance. Where a planned project occurs on a UDOT road, it is assumed that the Township would not participate in funding that project. In the case of WFRC eligible roadways such as 6200 South that is not an existing UDOT road, Kearns would be responsible for a 6.77% match of the total project cost. This 6.77% would need to be funded by the community with the funding mechanisms described earlier.

Also included in Table 6-3 are the other projects necessary for the year 2050 functionally classified roadway network. Although this transportation plan should be regularly updated, all roadway improvements were identified accommodate forecast traffic volumes.

Overall Kearns is in a good position to improve their transportation system with relatively low cost projects based largely on the fact that the community is mostly built out and doesn't need to accommodate much new growth.

# KEARNS
## MASTER TRANSPORTATION PLAN