



Payson City

Active Transportation Plan

DECEMBER 2024

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EXECUTIVE SUMMARY

The Payson City Active Transportation Plan provides a detailed vision for expanding the bicycle and pedestrian network within Payson City. It focuses on completing connectivity between existing facilities, providing easy access to key destinations in the city and surrounding area, and integrating future developments into the network. The active transportation plan builds off of the future projects detailed in the MAG (Mountainland Association of Governments) Regional Transportation Plan, Payson City plans, as well as other small areas plans and studies detailed in the report. The plan includes on-street bike facilities, paved paths, intersection improvement projects, and sidewalk projects, as well as discussion on good maintenance practices. Detailed maps are provided below:

Figure 2: Existing Active Transportation Facilities

Figure 14: Proposed On-Street Bicycle Network

Figure 15: Proposed Paved Path Network

Figure 16: Proposed Intersection and Crossing Improvements

INTRODUCTION

Payson City is a rapidly growing city in southern Utah County. Utah County as a whole is experiencing a tremendous amount of growth, and the population of the county is expected to increase by 60% by 2050. Much of the growth will be concentrated in the southern part of the county, which has more undeveloped land. The population of Payson City itself is expected to almost triple in that same time frame. Considering this expected growth, there is concern from the community about increasing traffic volumes and the negative impacts to safety, air quality, and the livability of the city that come with these increases. One way that the City hopes to mitigate these concerns is by creating a safe, effective, and comfortable active transportation network, which will provide desirable non-vehicular options for transportation.

Active Transportation Benefits

An active transportation plan creates a strategic long-term approach to building an active transportation system that meets the needs of the community. The Payson City Active Transportation Plan accomplishes this by identifying existing and future facilities that connect key destinations throughout the city with each other and with the major developments that are planned adjacent to the city. In this plan, specific active transportation projects, and potential funding sources, are identified.

There are many benefits to having a robust, safe, and easily accessible active transportation system and an associated master plan. These benefits include:

- ▶ Promoting healthy living
- ▶ Improved safety through greater separation from motor vehicles and less dependence on them for travel.
- ▶ Better quality of life
- ▶ More fit-to-purpose choices for transportation modes
- ▶ Equitable access
- ▶ Independence for children or others who cannot operate a motor vehicle
- ▶ Improved air quality
- ▶ Spatial efficiency can lead to greater connectivity than with an auto-oriented network alone
- ▶ Reduced traffic congestion
- ▶ Encouraging economic growth
- ▶ Increased livability and desirability within the community

All of these benefits can help Payson City meet the demand for growth sustainably while maintaining much of the quiet, calm nature of life which its residents value.

Payson City Profile

Payson City has historically been a town surrounded by rural land uses, but it has been experiencing rapid growth. There are several large projects slated for the next few years that the City hopes will allow it to absorb this growth gracefully, and complement the increased population with more local employment and shopping opportunities for residents.

One such project is UTA's planned FrontRunner commuter rail station to the north of Payson City, which will be a prime destination for active transportation trips. The Payson City FrontRunner Station Area Plan places dense residential, retail, and office space around the station to maximize the utility of transit-adjacent land uses. Included in this plan is a Utah Valley University (UVU) satellite campus in the vicinity of the station.

Similarly, Mountainland Technical College (MTECH) is currently constructing a new campus on the southwest end of Payson City, along the future extension of 800 South to the west of I-15. This campus will tie in with the larger plan for the Spring Creek area. Additionally, the South Meadows Area Plan outlines future development in the area surrounding the Payson Utah Temple of the Church of Jesus Christ of Latter-day Saints.

In addition to future developments, Payson City has a variety of historical sites reflecting its rich history, which incorporates both indigenous and pioneer heritage. These sites include its historic downtown, the Peteetneet Museum and Cultural Center, among other historic arts and religious buildings. The City would like to ensure these historic sites continue to thrive and be well-integrated with the community, and would also like to improve access to the numerous parks and recreational areas in and around the city. The Key Destinations section highlights the locations of future developments, historical sites, and popular recreational areas.

Demographics

The demographics of Payson City are valuable as they highlight the kinds of road users that need to be accommodated if the City wishes to encourage more biking and walking. The [2020 Payson City General Plan](#) gives a comprehensive demographic summary of the city, and here are some highlights from that summary (updated with more recent data):

- ▶ Payson City has grown steadily over the past several decades, with a population increasing from 9,510 in 1990 to 22,516 in 2022. (U.S. Census Bureau, American Community Survey 2022 5 Year Estimates)
- ▶ Payson City's population is projected to increase by almost 20% by 2030, and more than double by 2050. (WFRC Household and Job Forecast)
- ▶ The average household size in Payson City is 3.47, compared with Utah's value of 2.95, and the median age is 27.8 compared with the Utah median age of 31.4. School aged children make up a significant share of Payson City's population (30.9%), greater than Utah as a whole (24.5%). (ACS 2022)
- ▶ Payson City's 2022 median household income was \$81,387, which was lower than the median income of \$89,168 for Utah during that same period. Payson City has roughly the same share of households living under \$50,000 per year (25.8%) as the state (25.7%). (U.S. Census Bureau, ACS 2022).
- ▶ Payson City is expected to add 12,000 new jobs by 2050. As of the 2020 general plan, there were about 10,000 workers living in Payson City, but only 14% of those were also working within city limits. The rest of resident workers were commuting outside of the city, while 4,547 workers were commuting into the city from other cities, meaning that 76% of jobs in Payson City were being filled by in-bound commuters. The average travel time to work is 21 minutes for Payson City residents. (U.S. Census Bureau)
- ▶ Workers in Payson City typically commute by car, with 74% driving alone and 13% carpooling. Less than 1% take public transportation, with the same percentage walking and likewise for biking, and 11% work from home (ACS 2022)

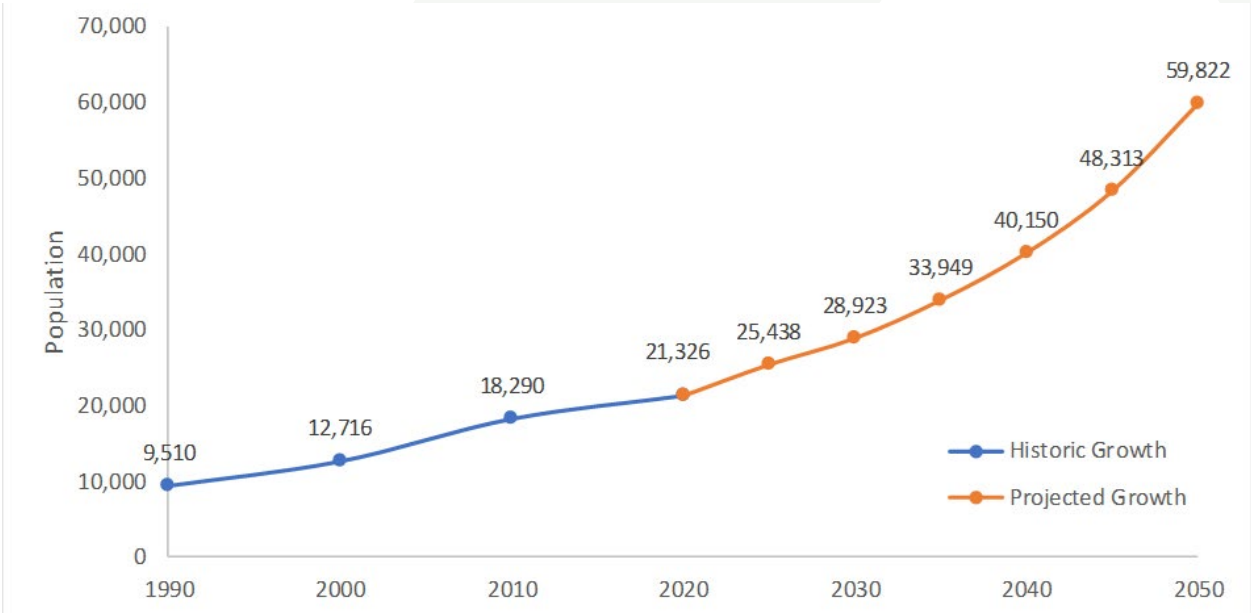


Figure 1: Population Growth in Payson City (source: MAG)

EXISTING CONDITIONS

Current Travel Patterns and Obstacles to Increased Walking and Biking

As noted in the demographics section, less than 1% of Payson City residents walk to commute, and the same percentage bike to work and take public transportation. The sidewalks in the city are often narrow and inconsistent, even along key pedestrian corridors. As for bike infrastructure, there are on-street bike lanes on SR-198 and 800 South, which are major thoroughfares. This makes them prime candidates for such infrastructure, but the level of traffic stress on these roads is high. In addition to these on-street facilities, there are several sections of paved trail throughout the city, including some significant greenways along Dry Creek and Peteetneet Creek on the south end of the city. These trails provide a good foundation, but finishing connections between them and providing a more complete grid of comfortable facilities is an important next step for attracting aspiring cyclists who are less familiar with bicycling and/or uncomfortable sharing the road with fast-moving vehicles.

Although many Payson City residents currently work outside of the city and thus commuting by bike or walking are likely not an option, most of the built-up sections of the city are within 0.5 to 1 miles of the central business corridor and/or a park, which presents an excellent opportunity for more walking and bicycling for shopping and recreation trips. The presence of comfortable, well-maintained facilities for these modes, coupled with traffic-calming measures when the context is appropriate, can encourage more active transportation for these kinds of trips.

Additionally, Payson City is expected to see many more employment opportunities coming into the area along with the commuter rail, so there is opportunity for a larger portion of workers to live in Payson City and commute to work or transit via active transportation. As these growth opportunities come to fruition, it is important that appropriate density is targeted around the city center and amenities so that daily trips can utilize active transportation and transit in greater measure.

Existing Bicycle and Pedestrian Facilities

Payson City has been making an effort to install paved paths connecting key locations in the city. Additionally, there are many popular unpaved trails suitable for mountain biking and hiking in Payson Canyon, to the south of the city.

Payson City has a solid active transportation corridor on the south side in the form of the Dry Creek Trail, which provides good connectivity between several neighborhoods. Additionally, UDOT has striped on-street facilities along most of the length of SR-198 and SR-178.

According to the Payson City 2022 Resident Survey:

- ▶ 41% percent of respondents felt that the city should invest in more and wider sidewalks throughout the city to preserve the small-town feel. This was the largest portion of all options, though the options were not mutually exclusive.
- ▶ 48% of respondents asked for the completion of curb, gutter, and sidewalk throughout the city to be a priority investment.
- ▶ The top two city facilities that respondents felt the city should prioritize were the parks, trails, and open space, and the historic downtown.



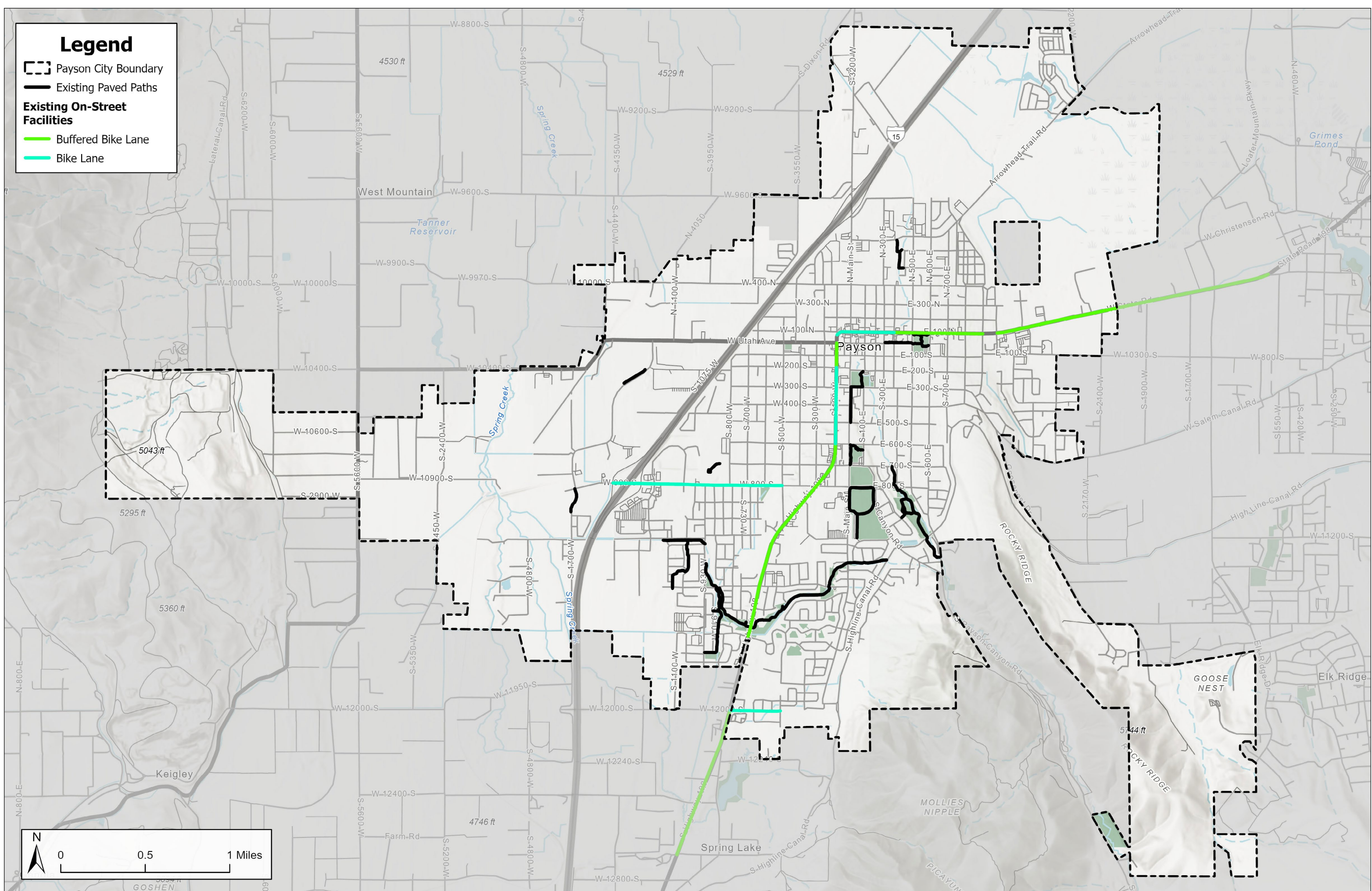


Figure 2: Existing Active Transportation Facilities

Coordination with Previous Studies

There are many sections of paved trail that are currently in use throughout the city, with plans from both the City and MAG that envision a more complete grid of trails. Notable future trails that have already been funded include a section of the Highline Canal Trail (2028) that will connect the city to the broader region in the southeast, and the Payson Canyon Trail that will provide a comfortable pathway up Payson Canyon separated from motor vehicles.

WCG compiled plans that have been adopted by MAG and the city. A list of these previous studies are provided below.

- ▶ [MAG's Regional Transportation Plan](#)
- ▶ [Payson City's 2020 General Plan](#)
- ▶ [The East Side Parks and Open Space Plan \(2007\)](#)
- ▶ [The South Meadows Area Specific Plan \(2016\)](#)
- ▶ [The 800 S Extension Study \(2022\)](#)
- ▶ [The Spring Creek Area Specific Plan \(2023\)](#)

Transit Connections

Currently the Utah Transit Authority (UTA) runs two bus routes through Payson City. The 821 route runs at half-hour frequencies on weekdays and hourly frequencies on weekends. The 822 route runs at hourly frequencies during the evening peak on weekdays, between 3 and 6 PM, and follows the same route through Payson City. The route follows the main arterial as it winds through Payson City, from SR-178 in the southwest up along 100 West to SR-198, leaving the city in the northeast and continuing towards Salem, Spanish Fork, and eventually Provo. There is also an express bus that runs a few times in the mornings and evenings. In the mornings it leaves from Santaquin and makes one stop in Payson City at 800 S and 1270 W before continuing on to UVU Station in Orem. In the evenings it makes the reverse trip.

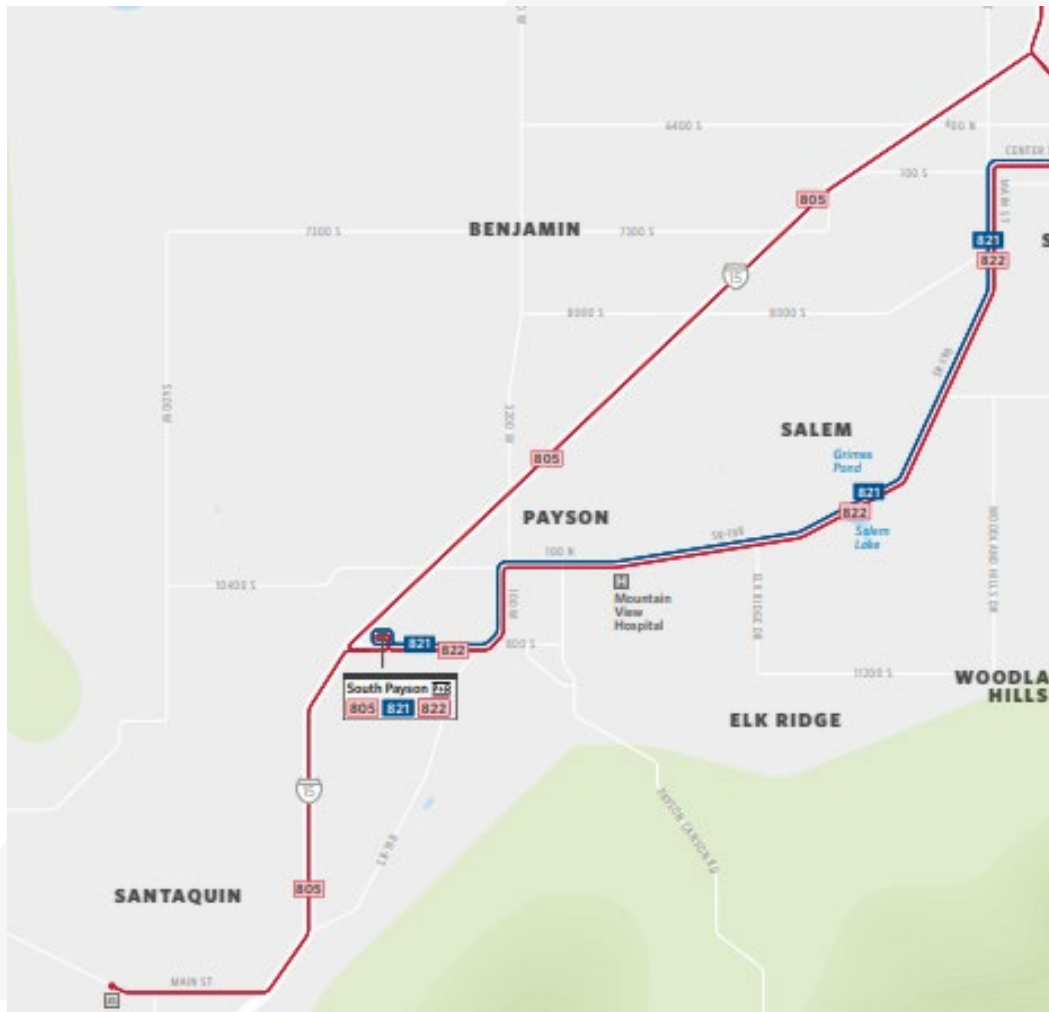


Figure 3: UTA Service Map for Payson City

UTA has also outlined a few future transit projects for the city. The first is the previously mentioned FrontRunner extension, which will stop at a location just to the north of the city. The second is the Nebo Core bus route, which will run from the Payson City FrontRunner station down to SR-198 before following largely the same route as the current 821 and 822 routes. Finally, an express bus service is planned from Payson City Station to Santaquin, as a precursor to a potential FrontRunner. Finally, there is an express bus service which is planned to run from Payson Station to Santaquin. This may be replaced by a further extension of the FrontRunner in the future. Additional information is provided in [UTA Moves 2050](#) and the [UTA Five Year Service Plan](#).



Existing Bicycle and Pedestrian Usage Patterns

Strava datasets show recorded running and biking trips, which can serve as a proxy for popular active transportation routes, though they are biased towards more confident users. Brighter/thicker lines indicate more usage on a roadway or trail. Heat maps for each of these modes are shown below:

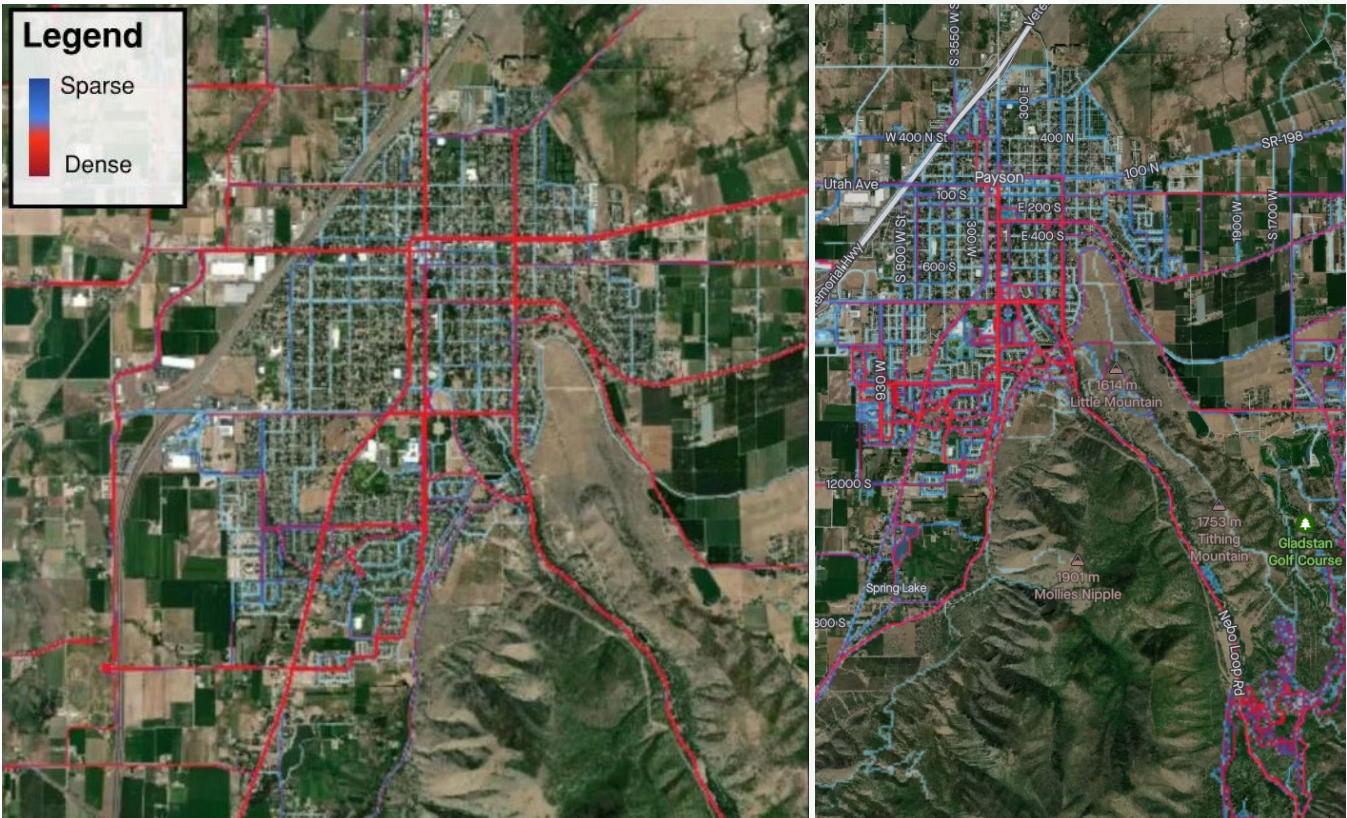


Figure 4: Strava Biking (Left) and Running (Right) Heat Maps

Crash Data

Crash data was collected for the 2010 – 2023 timeframe for all crashes involving pedestrians or bicycles. These crashes are shown in Figure 5. Given the vulnerability of pedestrians and bicycles on roadways, safety was a major consideration in determining treatment location and type. While the correct pedestrian and bicycle treatment can decrease crash risk, inadequate treatment can provide an illusion of safety that actually leads to increased crash risk (for example: installing a marked crosswalk alone across a busy arterial without a beacon or signalized control).

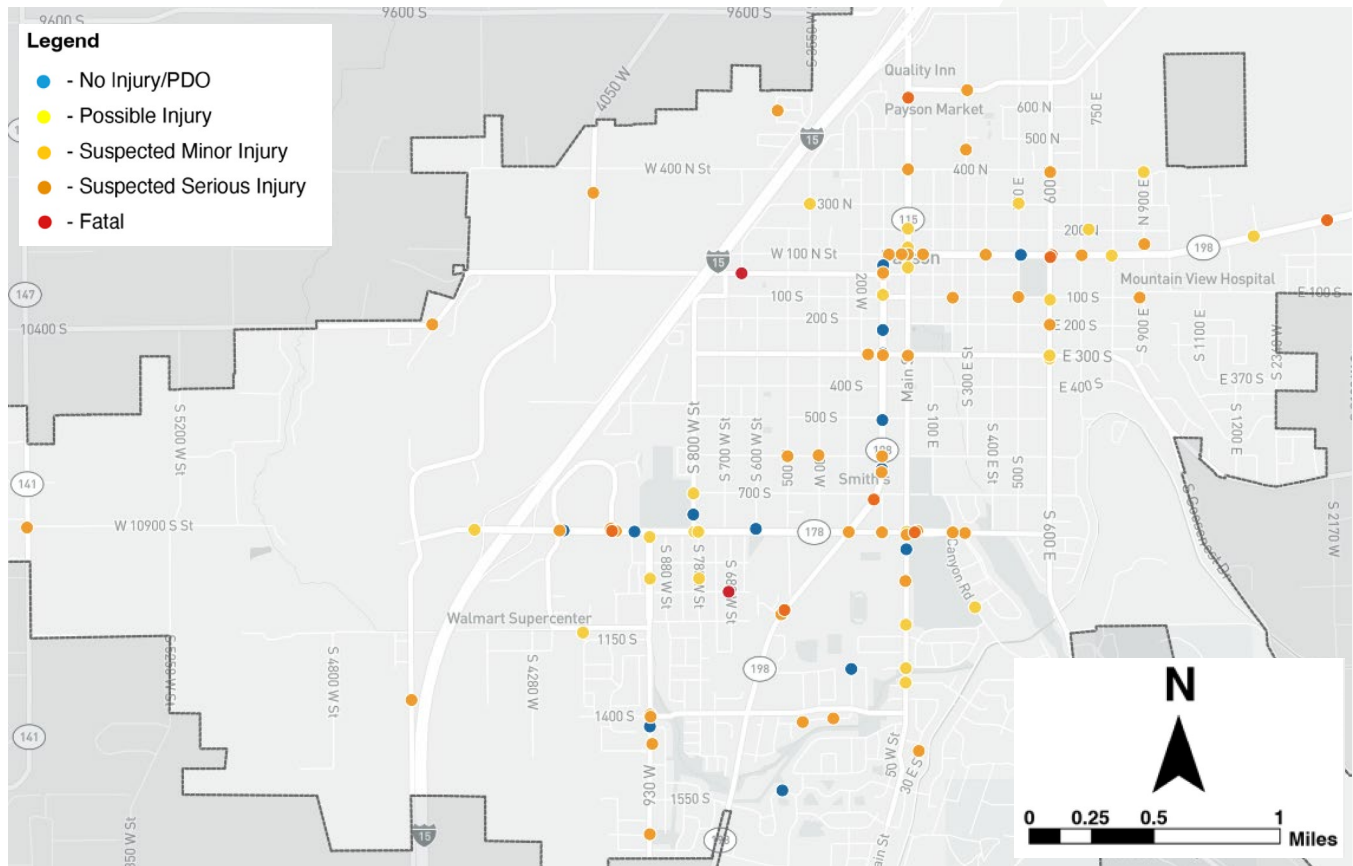


Figure 5: All Active Transportation—Related Crashes in Payson City, 2010–2023
Source: Utah Department of Transportation—AASHTOWare Safety

The highest concentration of active transportation-involved crashes have occurred at Main Street and 800 South, 1040 West and 800 South, and around the four blocks comprising Payson City's Historic Downtown. The corridors in between these locations also see a large number of pedestrians and sustaining injuries along them. Common trends in these crashes include drivers failing to see pedestrians or bicyclists in the roadway, or drivers turning into someone crossing a side street because they are focused on watching for oncoming traffic. Proposed guidelines for mitigating these types of accidents are as follows:

- ▶ Placing more frequent mid-block crossings to discourage risky crossing behavior and increase visibility. Best practices for these crossings are outlined in the Best Practices section of this report, and many such crossings are included in the recommendations section.
- ▶ Recessing crosswalks from the main roadway allows vehicles exiting the side street more space to encounter the crosswalk and the roadway as discrete events, and gives vehicles turning onto the side street room to clear the travel lanes while they stop for the crosswalk. This should be coupled with measures for greater visibility in the crosswalk and signs reminding drivers to watch for pedestrians. One such sign is the MUTCD R10-15 Sign "Turning Vehicles Yield to Pedestrians Sign", which can be placed at left turn signals and in left-turn medians.



MUTCD R10-15(L)

After reviewing the record of severe pedestrian- and bicycle-involved crashes in Payson City, WCG recommends that these guidelines be applied to key intersections as follows:

- ▶ The intersections of SR-198 with Utah Avenue and Main Street should be better lit and utilize MUTCD Sign R10-15 for left-turning vehicles. Both SR-198 and Main Street are State roads, but the Payson Gateway Project presents an opportunity to work with UDOT on implementing these recommendations.
- ▶ The right turn radii on the east side of the Main Street and 800 S intersection should be addressed to reduce turning speeds and decrease crossing distance for pedestrians. This can be accomplished by simply extending the curb to match the other side of the intersection, or by implementing slip-lanes with a refuge island that pedestrians can access using a raised crosswalk with appropriate warning markings.

These recommendations and other intersection projects are included in the recommendations section.

ACTIVE TRANSPORTATION EVALUATION—DESTINATION APPROACH

Payson City has a wide variety of destinations throughout the city. Destinations include parks, a public pool, schools, retail areas, Payson Canyon, several existing waterways and canal trails, and numerous hiking / mountain biking trails. With connectivity to destinations being a major factor in whether people will choose to use the active transportation network, the project team decided to approach this ATP from a destinations perspective. Additionally, this project is part of the larger Payson Gateway Project, which seeks to preserve the vitality of Payson City Main Street and integrate the changes that are coming to the area into the larger community. Figure 6 identifies key destinations in the city, and our analysis focuses on these key destinations and evaluates the safest and most efficient way to create active transportation connections between them. This approach is combined with feedback from the public to ensure the destinations and concerns of the public are addressed in our recommendations.



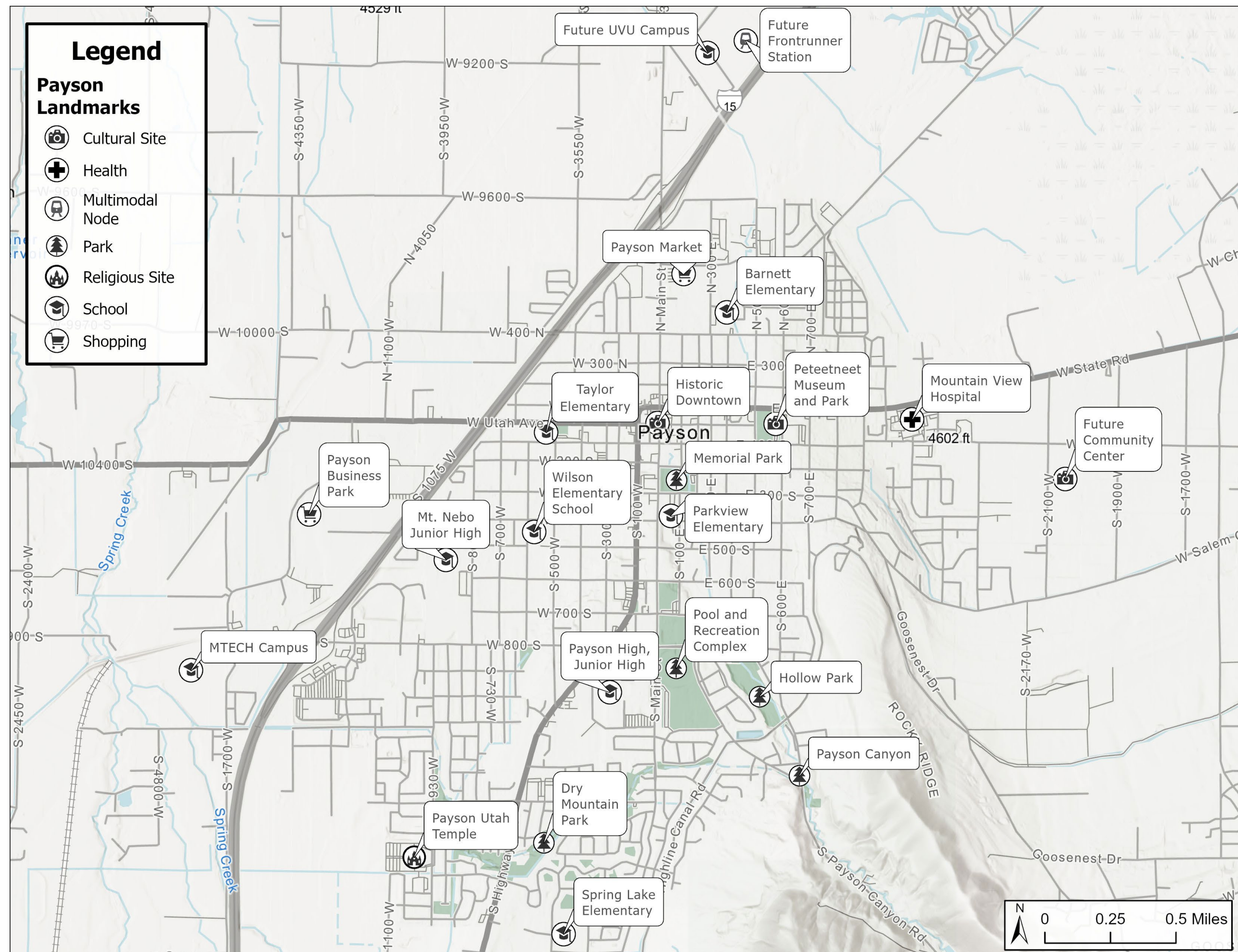


Figure 6: Key Locations in Payson City

Transportation Master Plan Classifications

Understanding the cross-section recommendations identified in the [Transportation Master Plan](#) is key to developing active transportation recommendations. A breakdown of intended cross sections by functional classification from the 2020 Master Plan is included below. While the specific recommendations for bike facilities outlined in the cross sections do not need to be explicitly followed, they do outline the amount of right-of-way likely available along a roadway.

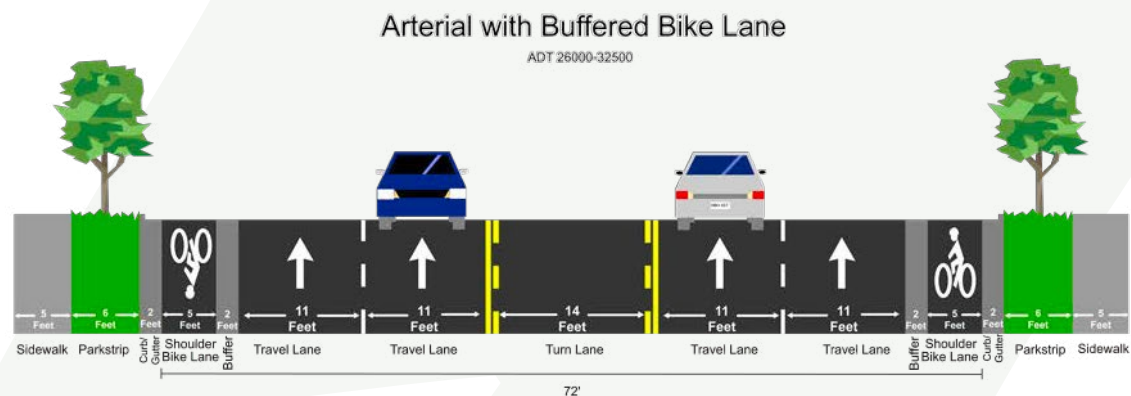
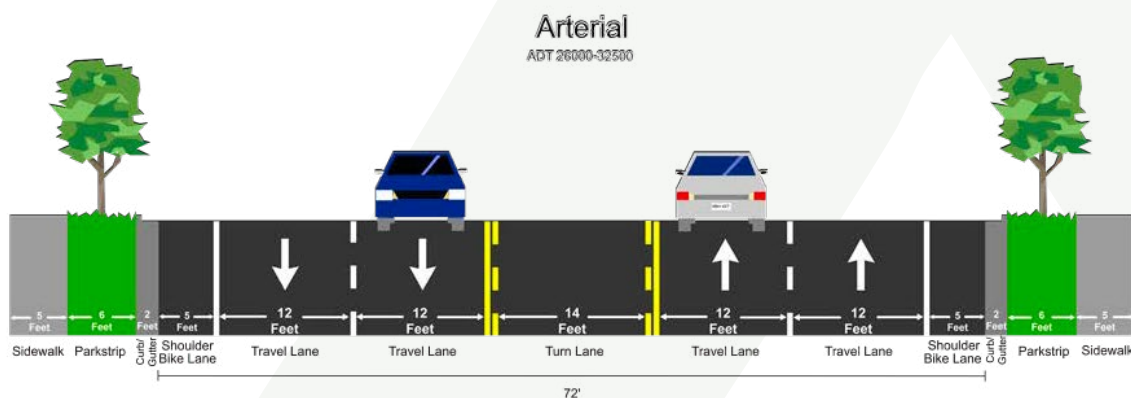
Take for example the Arterial cross section. This 98-foot right-of-way could be used to have buffered bike lanes in each direction, or a 12' side path replacing the sidewalk on one side to accommodate both bicycles and pedestrians.

Roadway designations of major collector, minor collector, and arterial all contain ample space for fairly robust active transportation facilities and green buffers. On lower classification roadways bicycles do not need the same separation from vehicles. Any local street can likely just be painted as a bike boulevard or with bike lanes. Minor Collectors are allocated enough pavement space to accommodate a shared left-turn lane in the future, but in the meantime only two travel lanes are prescribed. This leaves room for a variety of facilities along them, including paved paths.

When possible, active transportation projects should be tied to widening projects outlined in the Transportation Master Plan.

TABLE 1: PAYSON CITY TMP FUNCTIONAL CLASS DESCRIPTIONS

Functional Classification	Number of Lanes	Right-Of-Way (ROW)	Pavement	Target Volume (VEH/DAY)
Arterial	5	98'	72'	17,000-32,500
Major Collector	3	76'	50'	9,000-17,000
Minor Collector	2	76'	50'	5,000-9,000
Local Residential	2	60'	34'	2,000-5,000



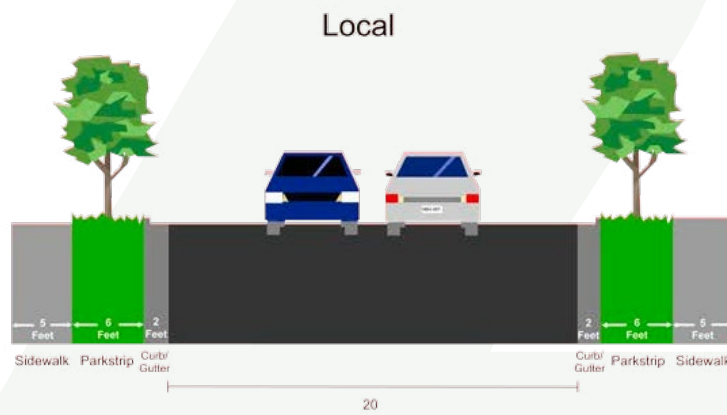
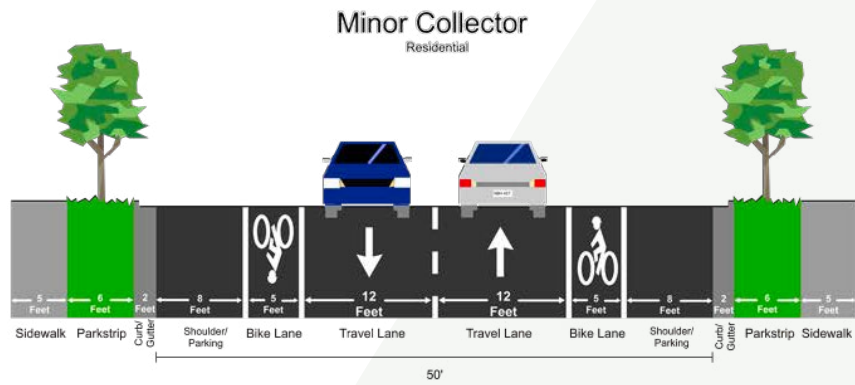
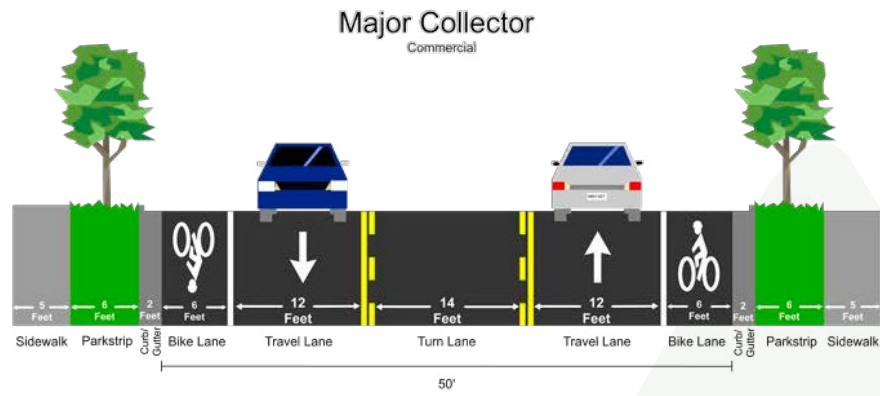


Figure 7: Cross-Section Diagrams from the TMP

The 2020 TMP also included a map outlining the future functional classification of roads in Payson City, included below. This map was used to inform active transportation corridor recommendations, balancing the right-of-way that will be available for facilities and the level of traffic stress that will be present.

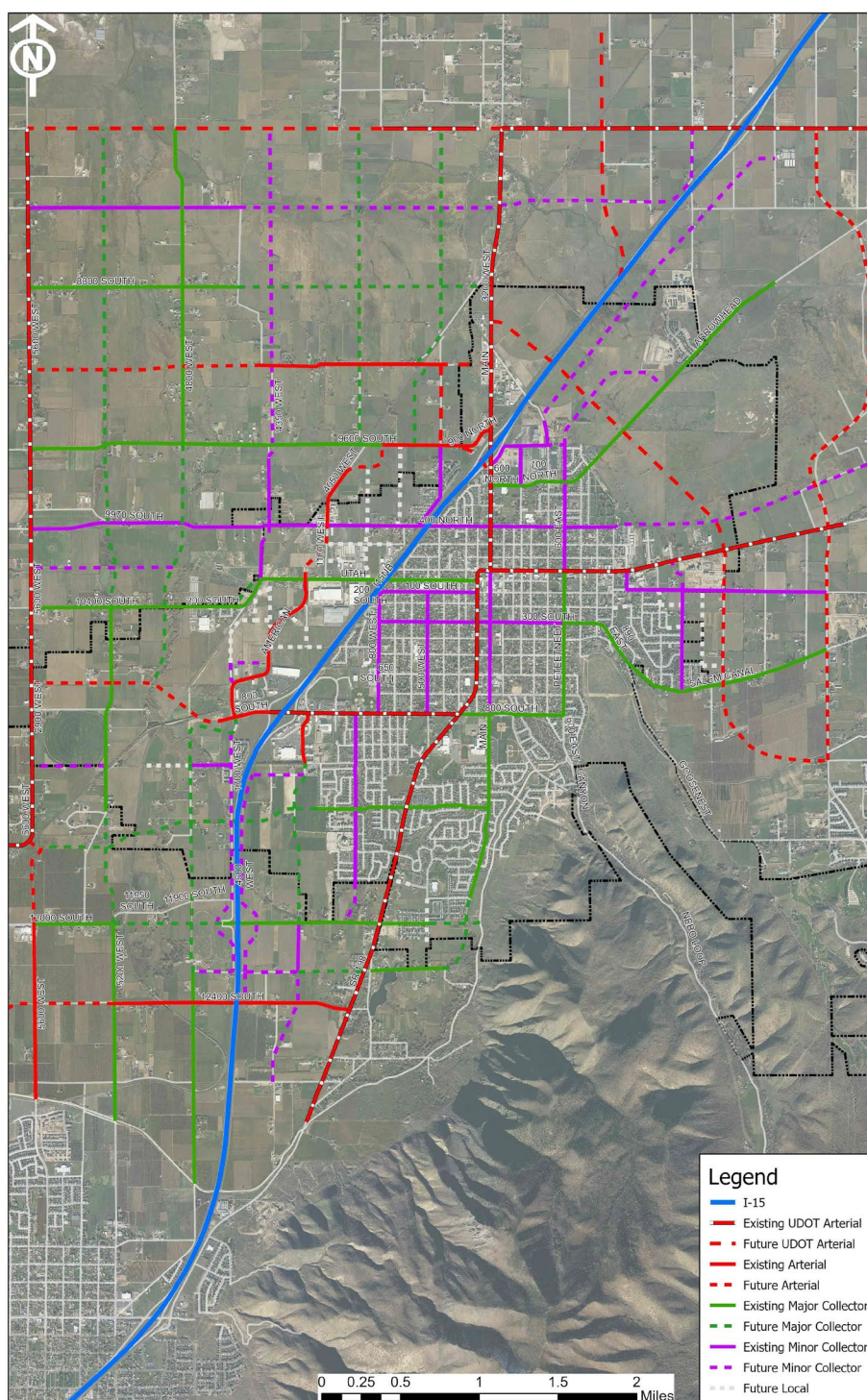


Figure 8: Future Functional Classification Map for Payson City (source: TMP)

The Recommendations section includes proposed cross-sections that follow the constraints outlined in the master plan while incorporating the additional facilities recommended in this active transportation plan.

RECOMMENDATIONS

This section provides recommendations for Payson City for what types of active transportation facilities to provide and where.

Facility Types

Based upon Payson City's resources and context, our team chose five main types of bicycle facilities to recommend. The treatment recommendations vary depending on the posted speed limit, traffic volumes, and available cross-section.

- ▶ bike lanes
- ▶ buffered bike lanes
- ▶ protected bike lanes
- ▶ bike boulevards (shared lanes or sharrows)
- ▶ paved paths

Example cross-sections for each type of bicycle facility are provided below.

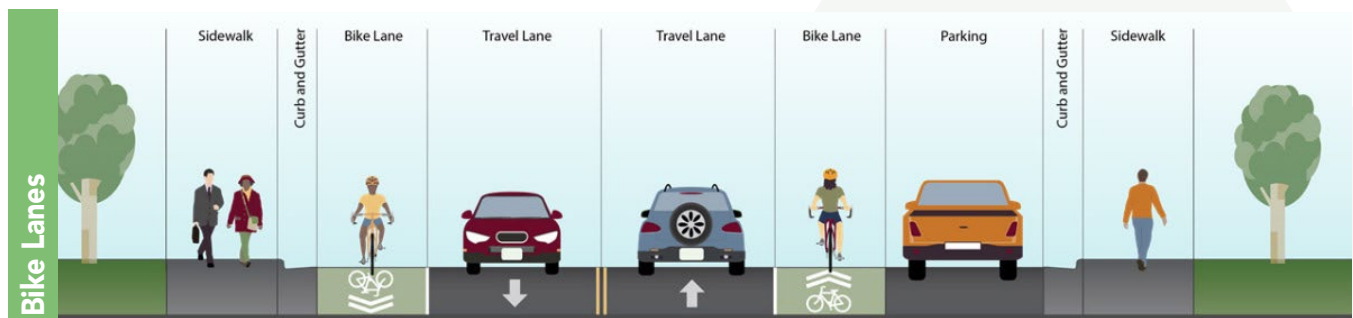


Figure 9: Bike Lanes



Figure 10: Buffered Bike Lanes

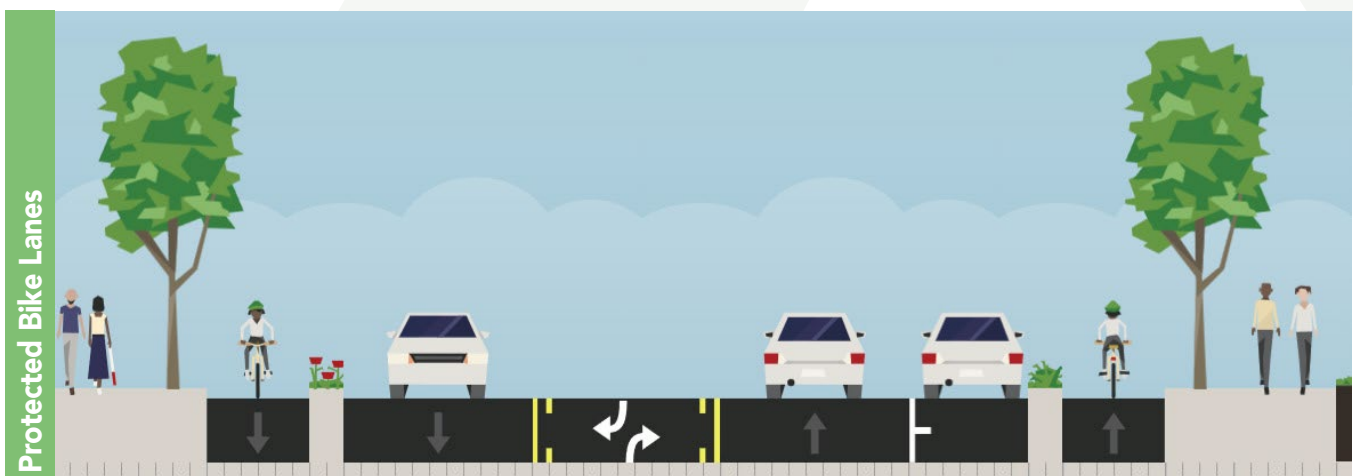


Figure 11: Protected Bike Lanes

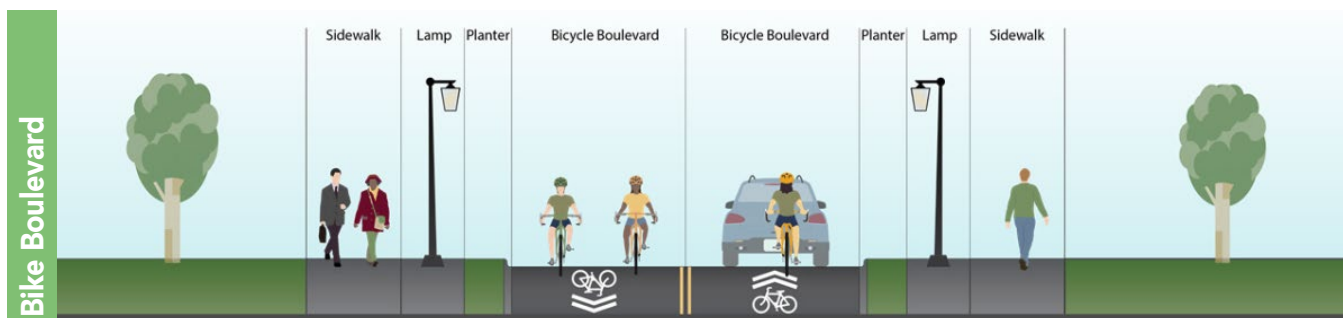


Figure 12: Bike Boulevard



Figure 13: Paved Path

Paved Paths are classified as “off-street” facilities, while the rest are classified as “on-street”. Specific design standards for these facilities are provided in the Recommendations section and are tailored to Payson City’s current cross-sections while remaining consistent with design standards for other cities in the area.

Proposed Projects

Proposed projects were divided into three categories:

- ▶ On-Street Facility Projects (ID 20XX)
- ▶ Paved Path Projects (ID 30XX)
- ▶ Intersection/Crossing Improvements (ID 40XX)

Additionally, projects were divided into 3 levels of priority:

- ▶ **Priority 1 (Community Showcase):** These projects will be cornerstones of the future active transportation network, and provide high quality key connections across the city.
- ▶ **Priority 2 (Support Network):** These projects will build off of Priority 1 projects to provide a comprehensive network for all users, not just users connecting to major destinations.
- ▶ **Priority 3 (Vision):** These are future projects where the demand is potentially not there yet, but as the City continues to build-out will be essential for providing a robust active transportation network.

A summary is provided in Table 2 outlining the total and proposed distance (in miles) of the two active transportation facility types covered in this plan.

TABLE 2: INCREASE IN ACTIVE TRANSPORTATION FACILITY MILES

	Existing	Priority 1 Added (% Increase)	Priority 2 Added (% Increase)	Priority 3 Added (% Increase)	Total Proposed	Total Increase
On-Street	8.1	14.1 (174%)	9.6 (43%)	18.7 (59%)	42.4	523%
Paved Paths	6.5	28.07 (432%)	41.55 (86%)	82.9 (109%)	152.5	2346%

As shown in the summary table, the active transportation plan would increase the length of on-street facilities by 523% and would result in a 2346% increase for paved paths.

The projects are summarized in the following tables and maps. There are 45 on-road projects, 50 paved path projects, and 37 intersection improvement projects. Together, these projects will help create a comprehensive, safe, and connected active transportation system in Payson City. These projects have been organized by priority and include type of improvement, and length.

As active transportation facilities are built out, wayfinding should also be provided. [MAG's guidance for bicycle wayfinding](#) and sign templates should be reviewed when implementing wayfinding to provide consistent signage throughout the county.

On-Street Projects

The WCG team evaluated the existing network of on-street bicycle facilities and selected a series of projects that will provide better accommodations for bicyclists. This network will aim to maximize speed and safety for more confident cyclists who value directness and separation from pedestrians and are willing to share the road with motor vehicles. For each route selected, a facility type and associated cross-section was chosen based on motor vehicle speeds, traffic volumes, availability of right-of-way, and cost of construction versus expected demand.

Like the paved path projects, these projects are assigned priorities based upon need from a safety and demand standpoint, with projects on roads that do not exist yet receiving **Priority 3** so they are kept on the horizon for when development does occur. These recommendations do not differentiate between buffered and protected bike lanes. This should be determined based on specifics of the project, available funding, and available ROW, with protected bike lanes being the preferred option. For project 2010 on Main Street south of the high school, it should be noted that there is an opportunity to narrow the roadway from four through lanes to two, which would provide ample space for improved on-street facilities. The feasibility of this would require further study.

TABLE 3: ON STREET PROJECTS

Project ID	Roadway	Type	Miles
Priority 1 (Community Showcase)			
2001	100 S	Buffered Bike Lane	0.44
2002	100 S	Bike Boulevard	0.43
2003	300 S	Buffered Bike Lane	0.75
2004	300 S	Bike Lane	0.15
2005	500 E	Bike Lane	1.91
2006	600 N	Bike Lane	0.19
2007	700 N	Bike Lane	0.28
2008	800 S	Buffered Bike Lane	1.75
2009	Arrowhead Trail	Bike Lane	0.19
2010	Main St	Buffered Bike Lane	1.89
2011	Main St	Bike Boulevard	0.15
2012	Nebo Loop Rd	Bike Lane	3.57
2013	Salem Canal Rd	Buffered Bike Lane	1.22
2014	Salem Canal Rd	Bike Lane	0.52
2015	Utah Ave	Bike Lane	0.62
Priority 2 (Support Network)			
2016	500 S	Bike Boulevard	0.64
2017	800 S	Buffered Bike Lane	0.22
2018	800 S	Bike Lane	0.17
2019	American Way	Buffered Bike Lane	1.14

2020	Arrowhead Trail	Buffered Bike Lane	3.35
2021	SR-198	Protected/Buffered Bike Lane (Green Paint)	3.53
2022	SR-198	Bike Lane (Green Paint)	0.03
2024	Utah Ave	Buffered Bike Lane	0.48
Priority 3 (Vision)			
2025	100 S	Buffered Bike Lane	0.26
2026	10000 S	Buffered Bike Lane	0.51
2027	10300 S	Buffered Bike Lane	0.65
2028	10400 S	Buffered Bike Lane	1.35
2029	1500 E	Bike Lane	0.85
2030	1700 W	Buffered Bike Lane	0.80
2031	1900 W	Bike Lane	0.84
2032	220 S	Bike Lane	0.80
2033	3550 W	Bike Boulevard	0.35
2034	400 N	Bike Lane	1.09
2035	400 W	Buffered Bike Lane	0.34
2036	470 S	Bike Boulevard	0.78
2037	50 S	Bike Boulevard	0.92
2038	500 W	Bike Boulevard	0.21
2039	800 S	Bike Lane	1.59
2040	9600 S	Buffered Bike Lane	2.75
2041	9970 S	Buffered Bike Lane	0.61
2042	Nebo Beltway	Buffered Bike Lane	3.03
2043	Utah Ave	Buffered Bike Lane	0.48
2044	Utah Ave	Bike Boulevard	0.45

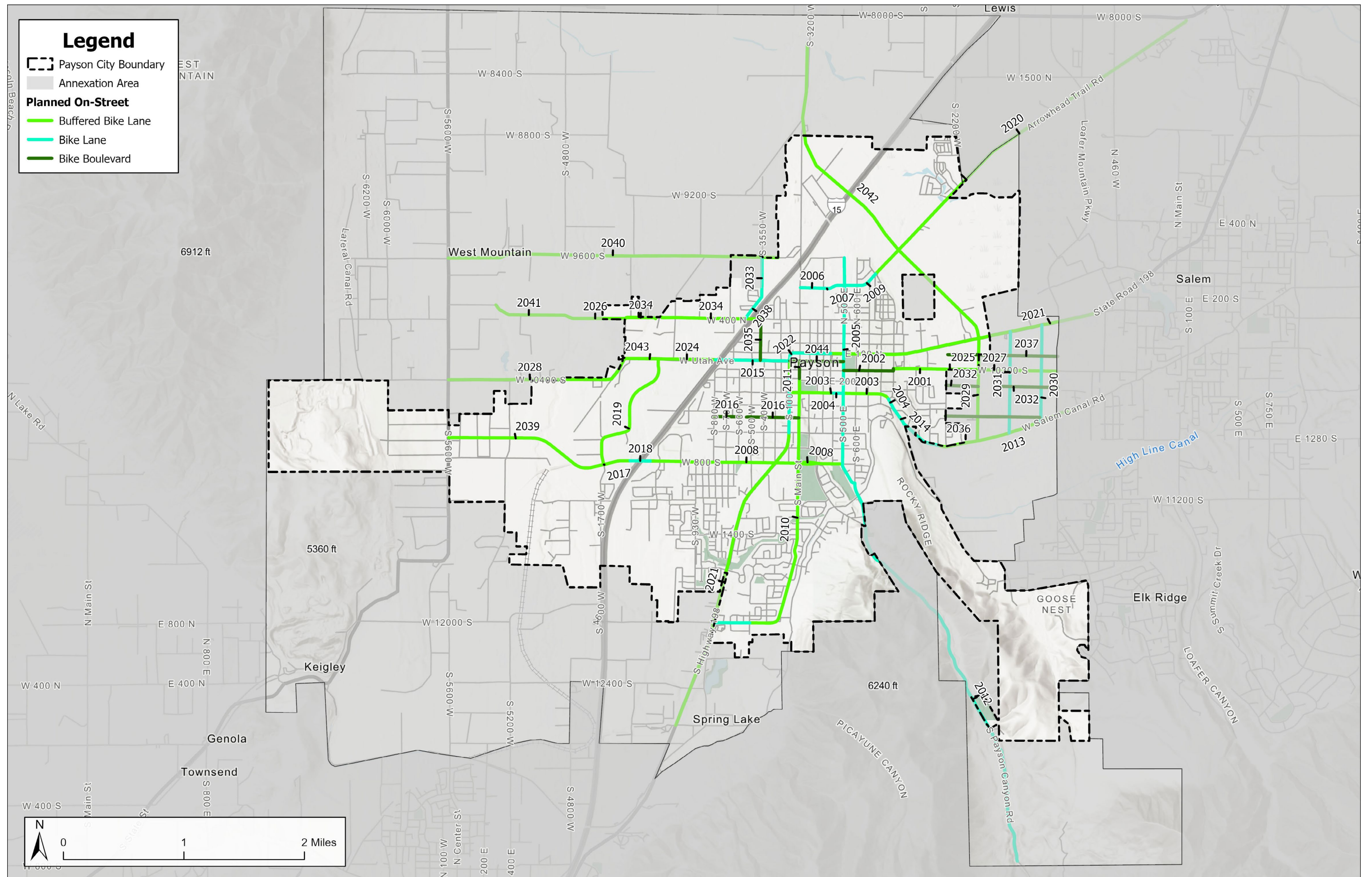


Figure 14: Proposed On-Street Bicycle Network

Paved Path Projects

The proposed paved paths, or trails, include three types of facilities:

1. Recreational trails, which follow scenic corridors with primarily a recreational purpose.
2. Urban pathways, which lie primarily along roadways and serve a transportation purpose, providing connections to key destinations.
3. Grade separated crossings, which link trails together where obstacles do not permit a ground-level connection.

The team has selected eight trails to be **Priority 1** to build. The goal with these projects is to provide trails that can serve as "Community Showcases", connecting Payson City's "Gateway" at Main Street and the FrontRunner station area to the rest of the city and region or providing robust access to the recreational opportunities around Payson Canyon.

Three of these projects, the Salem Canal Trail, the High Line Canal Trail, and the Payson Canyon trail, are already funded and will be executed by other organizations. Four of the other projects, the Payson Gateway Trail, Peteetneet Creek Connector, the SR-198 to Main Street Trail, and the Salem Canal Trail Extension will need more direct supervision by Payson City for funding acquisition and construction. The final project, the Nebo Beltway Trail, lies along a future UDOT project. It is anticipated that the City would propose this trail's inclusion during the design phase for the Nebo Beltway project.

After these eight projects, the team has selected another set of projects as **Priority 2** that will serve to provide a more complete grid network and expand connectivity to areas of future development. After these, there is another set of **Priority 3** projects that the City can adopt as part of their "Vision" for the future. Most of these projects come from previously adopted area plans, and can be built as these areas are built out in partnership with developers. Others are suggestions from various entities for trails that can provide additional connectivity as opportunities arise during routine reconstruction. Where appropriate, some of these projects have been assigned individual names, while others have been grouped together by plan or entity source. All proposed projects and associated miles are listed in Table 4, grouped by facility type and name or source. Figure 15 maps the trail network, styled by priority level.

TABLE 4: PAVED PATH PROJECTS

Project ID	Trail Name Or Plan Source	Facility Type	Miles
Priority 1 (Community Showcase)			
3001	High Line Canal Trail	Paved Path	11.4
3002	Nebo Beltway Trail	Paved Path	2.12
3003	Payson Canyon Trail	Paved Path	3.22
3004	Payson Gateway Trail	Paved Path	4.33
3005	Peteetneet Creek Connector	Paved Path	0.04
3006	Salem Canal Trail	Paved Path	1.68
3007	Salem Canal Trail Extension	Paved Path	3.02
3008	SR-198 to Main Street Trail	Paved Path	2.26
Priority 2 (Support Network)			
3009	2100 W Trail	Paved Path	9.22
3010	3200 W Trail	Paved Path	1.40
3011	400 N Trail	Paved Path	1.17
3012	500 W Trail	Paved Path	3.79
3013	600 E Connector	Paved Path	1.01
3014	700 S Trail	Paved Path	0.56
3015	9600 S Trail	Paved Path	1.46
3016	Arrowhead Trail Sidepath	Paved Path	3.88

3017	Elkridge Dr. Trail	Paved Path	3.78
3018	Frontrunner Rail Trail	Paved Path	1.44
3019	Loafer Mountain Pkwy Trail	Paved Path	5.49
3020	Main Street Overpass	Grade Separated Crossing	2.78
3021	Payson High Connector	Paved Path	0.15
3022	Payson Pkwy	Paved Path	0.51
3023	Spring Creek Trail	Paved Path	0.56
3024	SR-198 to Salem Canal Connector	Paved Path	3.11
3025	SR-198 to Payson Parkway Access	Grade Separated Crossing	0.21
3026	Utah Ave Trail	Paved Path	0.83
Priority 3 (Vision)			
3027	800 S EIS (I-15 Bridge Priority 2)	Paved Path	6.37
3028	2020 City Trails Plan	Paved Path	0.83
3029	East-Side Plan	Paved Path	2.69
3030	Elk Ridge General Plan	Paved Path	2.38
3031	File from City	Paved Path	3.94
3032	Frontrunner SAP	Paved Path	19.46
3033	MAG RTP	Paved Path	4.06
3034	Payson City Comments	Paved Path	10.03
3035	Salem High Connector	Paved Path	11.47
3036	South Meadows (Temple) Plan	Paved Path	10.98
3037	Southern Farms Plan	Paved Path	7.21
3038	Spring Creek Area Plan	Paved Path	7.15
3039	WCG Recommendations	Shared Use Path	2.68

* Project is already funded

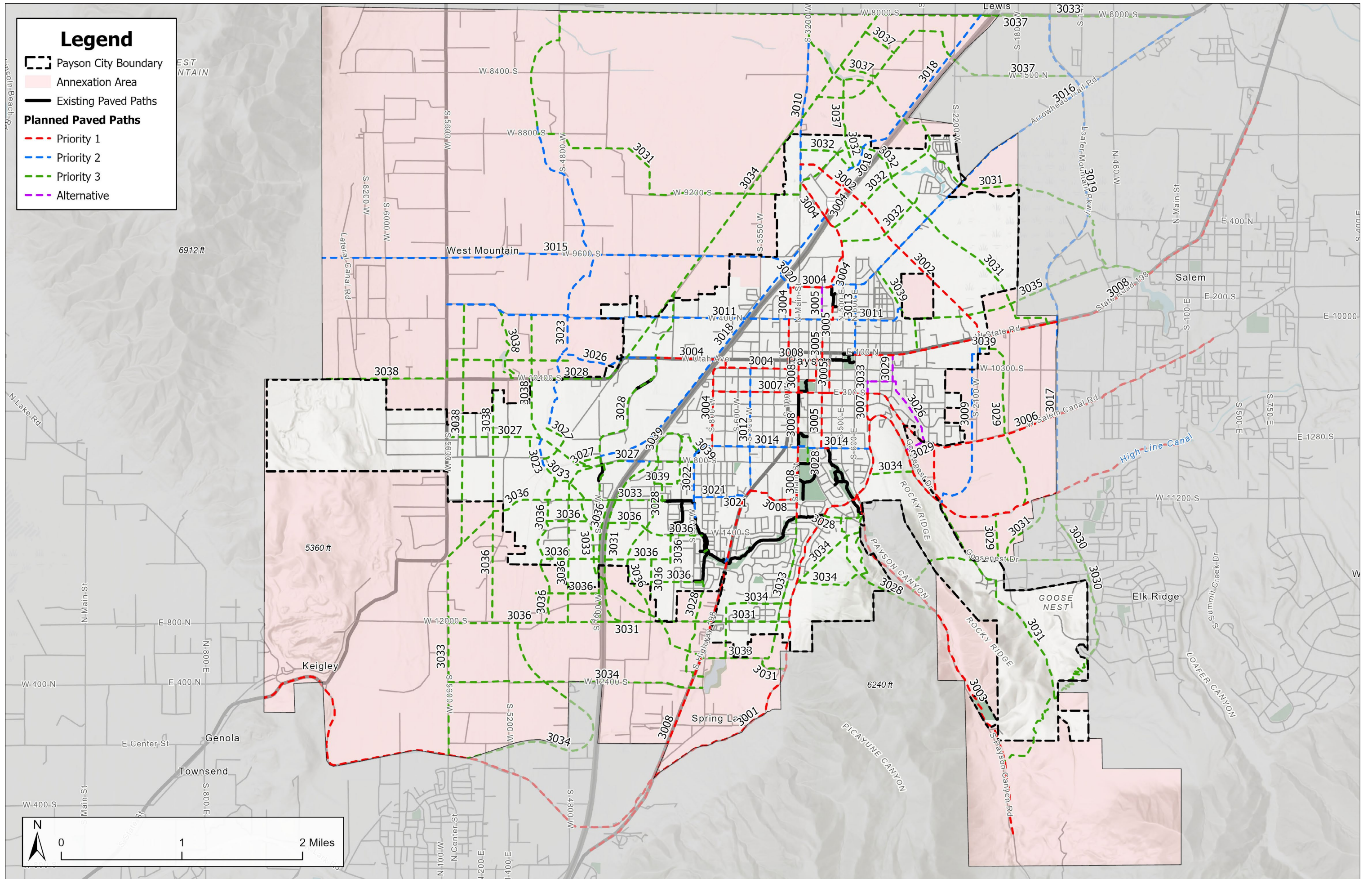


Figure 15: Proposed Paved Path Network

Intersection and Crossing Projects

A bicycle facility is only as good as its major crossings, so it's key to ensure safe, comfortable, and efficient crossings.

Intersection and crossing improvements are divided into two types of grading, At-Grade and Grade-Separated. Grade-Separated crossings can be either bridges or tunnels, as specified in the recommendations. For conciseness, improvement types are given as numbers, with Table 5 serving as a reference. Figure 16 shows the location of these improvements.

TABLE 5: REFERENCE CODES FOR INTERSECTION IMPROVEMENT TYPE

Code	Improvement
1	High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
2	Raised crosswalk
3	Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) markings or advance warning lines
4	In-Street Pedestrian Crossing sign
5	Curb extension
6	Pedestrian refuge island
7	Rectangular Rapid-Flashing Beacon (RRFB)
8	Road Diet
9	Pedestrian Hybrid Beacon ¹
10	Left Turning Vehicles Yield to Pedestrians Sign – MUTCD R10-15(L)
11	Colored pavement in crossing
12	Bike boxes
13	Leading Pedestrian Interval
14	Slip lane with raised crosswalk and yield markings

Table 6: Intersection And Crossing Projects

Project ID	Location	Treatment	Grading	Project Context
Priority 1 (Community Showcase)				
4001	Mouth of Payson Canyon	Underpass	Grade-Separated	Payson Canyon Trail
4002	700 S and Main St	1, 3, 9	At Grade	Main St Trail and 700 S Trail
4003	Nebo Beltway and Arrowhead Trail Rd	12, 13, 14	At Grade	Nebo Beltway Project
4004	SR-198 and Main St	10, 11, 13, Lighting Improvements	At Grade	Payson Gateway Project
4005	SR-198 and Utah Ave	10, 11, 13, Lighting Improvements	At Grade	Payson Gateway Project
4006	400 N and 100 W	1, 3, 5, 7	At Grade	Payson Gateway Trail

¹ If MUTCD warrants are met

4007	600 N and Main St	11, 13	At Grade	Payson Gateway Trail
4008	Bamberger Underpass	Paving, Lighting, Signage	Grade-Separated	Payson Gateway Trail
4009	On 700 N Between 300 E and 500 E	1, 3, 5, 7	At Grade	Payson Gateway Trail
4010	SR-198 and 500 S	1, 3, 4, 6, 7	At Grade	Payson Gateway Trail
4011	300 E and 700 S	1, 3, 5, 7	At Grade	Peteetneet Creek Connector
4012	400 E and 300 S	1, 3, 7	At Grade	Peteetneet Creek Connector
4013	400 N and 300 E	1, 3, 7	At Grade	Peteetneet Creek Connector
4014	SR-198 and 300 E	1, 3, 9	At Grade	Peteetneet Creek Connector
4015	300 S and Main St	1, 3, 9	At Grade	Salem Canal Trail Extension
4016	SR-198 and 300 S	1, 3, 9	At Grade	Salem Canal Trail Extension
4017	800 S and Main St	12, 13, 14	At Grade	SR-198 to Main St Trail
4018	Main Street and Payson Pkwy	1, 5, 6, 7	At Grade	SR-198 to Main St Trail
4019*	Dry Mountain Park	Connect across river at divergence	Grade-Separated	Payson Parkway
4020	SR-198 and Dry Mountain Park	Add access to path from road overpass	Grade-Separated	Payson Parkway
4021	SR-198 and Nebo Beltway	12, 13	At Grade	SR-198 to Main St Trail
4022	SR-198 and Payson High Connector	1, 3, 9	At Grade	SR-198 to Main St Trail
4023	SR-198 and 600 E	10, 11, 12, 13	At Grade	SR-198 to Main St Trail
4024	SR-198 and 500 E	1, 3, 4, 6, 7, 9	At Grade	500 E Bike Lane
Priority 2 (Support Network)				
4025	400 N and 600 E	1, 3, 7	At Grade	400 N Trail
4026	SR-198 and 700 S	1, 3, 9	At Grade	700 S Trail
4027	Elk Ridge Dr and Salem Canal Rd	1, 3, 7	At Grade	Elkridge Dr Trail
4028	SR-198 and Lofer Mountain Pkwy	1, 3, 9	At Grade	Loafer Mountain Pkwy Trail
4029	I-15 and 125 W	Pedestrian Overpass	Grade-Separated	Main Street Overpass
4030	800 S and 930 W	12, 13	At Grade	Payson Parkway Trail
4031	I-15 and 800 S	Separate bicycle/pedestrian bridge over I-15	Grade-Separated	800 S Project
4032	Salem Canal Rd and 1300 E	1, 3, 7	At Grade	SR-198 to Salem Canal Connector
4033	800 S and 500 W	1, 3, 9	At Grade	500 W Trail

Priority 3 (Vision)				
4034	800 S and 1270 W	12, 13	At Grade	800 S Bike Lanes
4035	SR-198 and 800 S	12, 13, Realign Crosswalks	At Grade	800 S Bike Lanes
4036	I-15 and Spring Creek	Freeway Crossing	Grade-Separated	Spring Creek Trail
4037	I-15 and 11200 S	Freeway Crossing	Grade-Separated	Southern Farms Development
4038	I-15 and 12000 S	Freeway Crossing	Grade-Separated	Southern Farms Development
4039	I-15 and 12400 S	Freeway Crossing	Grade-Separated	12400 S Trail
4040	I-15 and 2200 W	Freeway Crossing	Grade-Separated	Southern Farms Development

* Project #4020 involves installing a ramp to provide access to the parkway trail from SR-198, adding a bridge across the waterway near where the trail on either side converges, and adding a crossing at 1400 S so trail users can access both sides of the waterway from there.



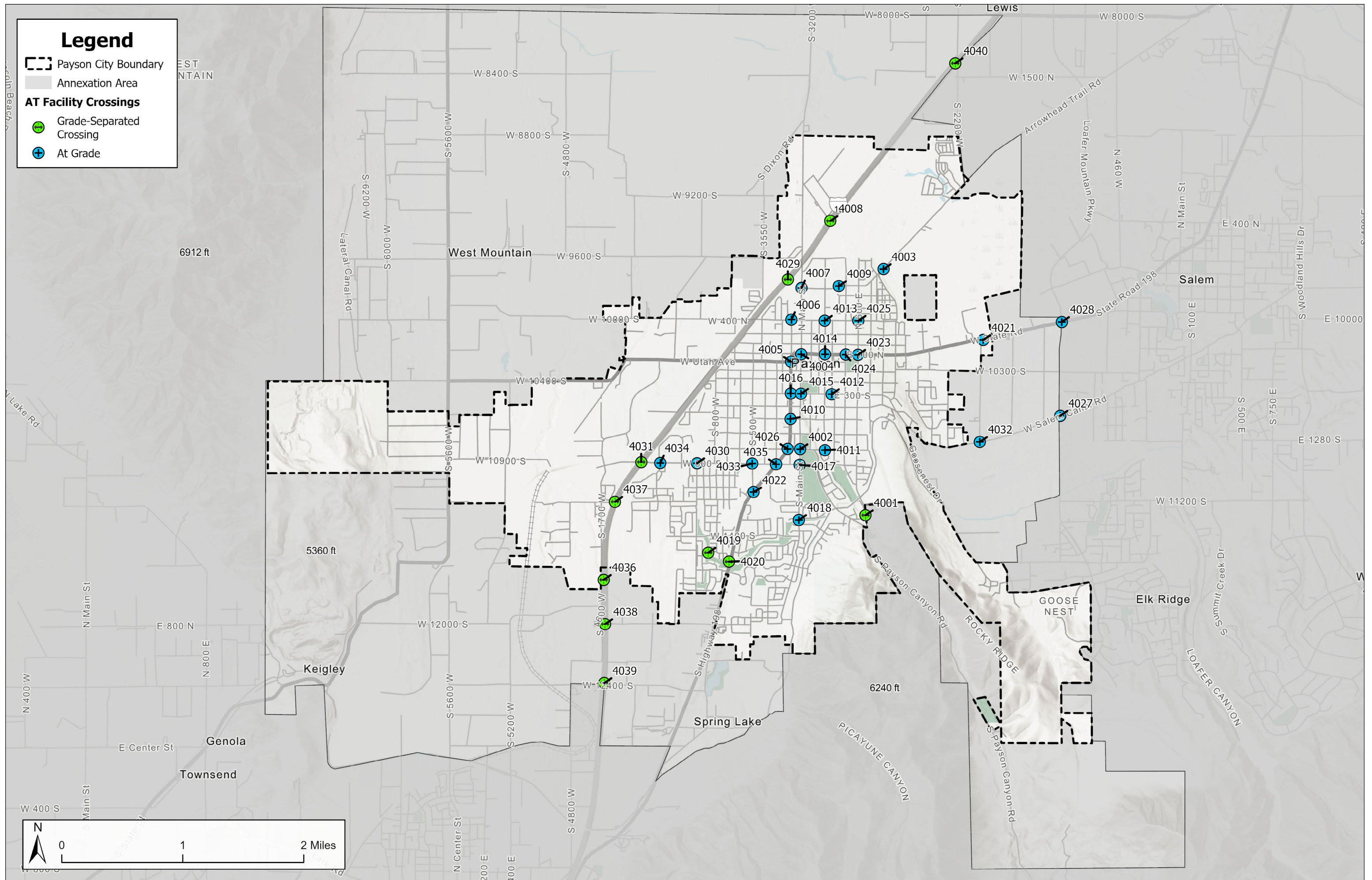


Figure 16: Proposed Intersection and Crossing Improvements

Sidewalk Projects

Gaps in the current sidewalk network that exist along key corridors have been identified and addressed in the **Priority 1** trail projects. They are included in the concept reports for these projects. Outside of these, it is assumed that sidewalks will be built wherever future development occurs as part of the city's requirements. There are many other gaps in the current network, particularly along residential roads that still have gravel shoulders. It is recommended that these be noted and filled as opportunities arise during regular road maintenance or infill development.

Potential amenities, design criteria, roadway crossings, policy updates, etc.

- ▶ Consider updating cross sections to include a wider range of active transportation improvements.
 - Minor Local Street: Add option with sharrows, bike-accommodating speed humps, other traffic-calming measures.
 - Local Standard Street: Add option with 10' lanes and 6' bike lanes.
 - Minor Collector Street: Add option with 11' center turn lane and 5' bike lanes.
 - Major Collector, Minor Arterial, and Major Arterial Streets: Add option with 12' paved side path instead of bike lanes.
 - Major Arterial Street: 5-lane option with buffered bike lanes or paved side path (given the likely need for increased vehicular capacity in the future, the city should have a cross section that accommodates both a 5-lane cross section and bicycle facilities).
- ▶ Consider developing connectivity standards. Neighborhood connectivity is key in ensuring a robust active transportation network. Payson City has provided active transportation connections between houses on some of the longer streets in the South Meadows area, which can also be done at the end of cul-de-sacs. This is great and should be continued going forward. The Utah Street Connectivity Guide 8 provides a great guide for developing this framework.
- ▶ Require developers to provide active transportation facilities.

Technical Resources

The Mountainland Association of Governments is committed to assisting communities in their efforts to improve connectivity and amenities for their residents. Currently, MAG has resources available for help in designing and planning specific projects on a case-by-case basis. They can be a great asset to the city for workshopping solutions for specific intersections and crossings, tricky alignment issues, or any other challenge that may arise during the execution phases of the projects discussed here.

FUNDING SOURCES FOR ACTIVE TRANSPORTATION INFRASTRUCTURE AND PROGRAMS

The timing and implementation of active transportation projects is directly tied to funding. That is why any of the active transportation projects identified in this plan are tied to planned City roadway improvements. This will help to facilitate funding, ROW, and construction costs. Additional funding opportunities are also identified as part of this plan. Active transportation facilities often span multiple cities and connect to regionally significant destinations. Therefore, agencies like the Federal Government, UDOT, Utah County, or metropolitan planning organizations (MAG) may have funding available for active transportation projects. It is recommended that Payson City work closely with these agencies and neighboring municipalities to apply for active transportation funding. Funding for ATP improvements and/or new facilities is available from a variety of sources, including federal programs and state and regional revenue sources. This section provides an overview of these potential funding sources.

Federal Programs

There are several federal funding sources that have potential to be used for ATP improvement projects:

- ▶ Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program
- ▶ Transportation Infrastructure Finance and Innovation Act (TIFIA)
- ▶ Federal Transit Administration (FTA) Grant Programs
- ▶ Congestion Mitigation/Air Quality (CMAQ) Program
- ▶ Highway Safety Improvement Program (HSIP)
- ▶ National Highway Performance Program (NHPP)
- ▶ Surface Transportation Block Grant Program (STBG)
- ▶ Transportation Alternatives Set-Aside (TA Set-Aside)
- ▶ Recreational Trails Program (RTP)

- ▶ Safe Routes to School (SRTS)
- ▶ NHTSA Section 402: State and Community Highway Safety Grant Program
- ▶ NHTSA Section 405: National Priority Safety Programs (Nonmotorized Safety)

A brief overview of these programs is provided as follows.

Rebuilding American Infrastructure with Sustainability and Equity (RAISE) Grant Program

The RAISE competitive grant program is the combination of the former BUILD and TIGER Grant programs. Projects for RAISE funding are evaluated based on merit criteria that include safety, environmental sustainability, quality of life, economic competitiveness, state of good repair, innovation, and partnership. Within these criteria, the DOT will prioritize projects that can demonstrate improvements to racial equity, reduce impacts to climate change, and create good-paying jobs.

<https://www.transportation.gov/RAISEgrants>

Transportation Infrastructure Finance and Innovation Act (TIFIA)

The TIFIA program provides credit assistance for qualified projects of regional and national significance. Many large-scale surface transportation projects – highway, transit, railroad, intermodal freight, and port access – are eligible for assistance. Eligible applicants include state and local governments, transit agencies, railroad companies, special authorities, special districts, and private entities. The program's fundamental goal is to leverage Federal funds by attracting substantial private and other non-Federal co-investment in critical improvements to the nation's surface transportation system.

<https://www.transportation.gov/buildamerica/financing/tifia>

Federal Transit Administration (FTA) Grant Programs

The following FTA grant programs listed pedestrian improvements as eligible for funding to provide access to transit:

- ▶ **FTA Section 5310:** Enhanced Mobility of Seniors and Individuals with Disabilities – Information on this program cites examples of funding for pedestrian improvements to improve transit access such as building an accessible path to a bus stop or providing curb-cuts, sidewalks, accessible pedestrian signals, or other accessible features.
- ▶ **FTA Section 5311:** Rural Areas – Grants can support a joint development improvement, such as pedestrian and bicycle access to a public transportation facility.

<https://www.transit.dot.gov/funding/grants/grant-programs>

Highway Safety Improvement Program (HSIP)

The FAST Act continued the HSIP. The purpose of this program is to achieve a significant reduction in traffic fatalities and serious injuries on all public roads, including non-state-owned roads and roads on Tribal land. The HSIP requires a data-driven, strategic approach to improving highway safety on all public roads with a focus on performance.

<https://safety.fhwa.dot.gov/hsip/hsip.cfm>

Surface Transportation Block Grant Program (STBG)

The STBG provides flexible funding that may be used by states and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway. Eligible projects related to pedestrian safety include pedestrian and bicycle projects, safety projects, recreational trails, safe routes to school projects, and projects within the pre-FAST Act Title 23 definition of “transportation alternatives” (see the Transportation Alternatives Set-Aside description below). Projects must be identified in the Statewide Transportation Improvement Program (STIP) and be consistent with the Long-Range Statewide Transportation Plan and the Metropolitan Transportation Plan.

https://www.fhwa.dot.gov/specialfunding/stp/bil_stbg_implementation_guidance-05_25_22.pdf

Recreational Trails Program (RTP)

The RTP provides funds to the states to develop and maintain recreational trails and trail-related facilities for both nonmotorized and motorized recreational trail uses. It is funded by the Federal Highway Administration and locally administered by the Division of Natural Resources (DNR).

<https://recreation.utah.gov/grants/recreational-trails-program/>

Safe Routes to School (SRTS)

SRTS funds are available until expended (they are not subject to the usual Federal-aid highway four-year rule of availability). SRTS is now funded within the TA Set-Aside. This is administered locally by UDOT.

https://www.fhwa.dot.gov/environment/safe_routes_to_school/guidance/#toc123542199

NHTSA Section 402: State and Community Highway Safety Grant Program

To receive Section 402 grant funds, a state must have an approved HSP and provide assurances that it will implement activities in support of national goals that also reflect the primary data-related factors within the state, as identified by the state highway safety planning process. States can distribute highway safety grant funds to a wide network of sub-grantees, including local law enforcement agencies, municipalities, universities, health care organizations, and other local institutions. States may spend 402 funds in accordance with an approved HSP that complies with the uniform national guidelines for highway safety programs. One of the eligible programs is to improve pedestrian and bicycle safety.

<https://safety.fhwa.dot.gov/legislationandpolicy/policy/section402/>

NHTSA Section 405: National Priority Safety Programs (Nonmotorized Safety)

Under the FAST Act, Section 405 is the National Priority Safety Program, which provides grant funding to address selected national priorities for reducing highway deaths and injuries. The FAST Act added two new grants under this program, one of which is for nonmotorized safety. States are eligible if the annual combined pedestrian and bicyclist fatalities in the state exceed 15 percent of the total annual crash fatalities in the state using the most recently available final data from NHTSA's Fatality Analysis Reporting System (FARS). Eligible states may use Section 405 grant funds only for training law enforcement on state laws applicable to pedestrian and bicycle safety; enforcement mobilizations and campaigns designed to enforce those state laws; or public education and awareness programs designed to inform motorists, pedestrians, and bicyclists of those state laws.

<https://www.law.cornell.edu/uscode/text/23/405> (See section H)

Local Funding Sources

Technical Assistance Grant (TAG)

Technical assistance is available to local governments throughout Utah, Summit, and Wasatch Counties for plans and studies that proactively address growth related challenges. Competitive projects integrate transportation and land use in a meaningful way and align with the region's long-range plans: [Wasatch Choice Vision](#) and [TransPlan50](#).

<https://mountainland.org/tag/>

Transportation Improvement Program (TIP)

The Transportation Improvement Program is a 5-year funded construction program. MAG and its regional transportation partners - UDOT and UTA - fund projects, programs, and studies to improve and expand the regional transportation network. MAG funds about \$300 million of the \$1.7 billion 5-year program. The TIP is the implementation program of the Regional Transportation Plan or TransPlan50.

<https://mountainland.org/tip/>

Land and Water Conservation Fund (LWCF)

LWCF is a competitive grant program for the acquisition and/or development of public outdoor recreation areas. Federal oversight to this program is provided by the National Park Service and is administered locally by State of Utah through the Utah State Parks and Recreation. Any site or facility that is developed, improved, or purchased with funding from this grant program is protected in perpetuity as a public outdoor recreation area. All applications are reviewed and ranked through the evaluation process developed by the state and National Parks Service. Potential projects are evaluated on their alignment with needs identified in the 2019 Utah State Comprehensive Outdoor Recreation Plan (2019 SCORP), application completeness, technical merits, previous recreation program performance, project readiness, availability of local funding, and a site visit/inspection.

<https://recreation.utah.gov/grants/lwcf/>

The National Parks Services – River, Trails and Conservation Assistance Program (NPS-RTCA)

NPS-RTCA is a federal program that supports community-led projects by helping them leverage resources through diverse partnerships. This is not a funding program but tries to align experts in the field of planning, design, and technical knowledge. The goal of NPS-RTCA is to provide the guidance needed to make community-led projects a success.

<https://www.nps.gov/orgs/rta/>

Federal Lands Access Program (FLAP)

The Federal Lands Access Program (FLAP) was established to improve transportation facilities that provide access to, are adjacent to, or are located within Federal Lands. FLAP supplements local and state resources for public roads, transit systems, and other transportation facilities. There is an emphasis placed on high-use recreation sites and economic generators.

<https://highways.dot.gov/federal-lands/flap>

Utah Office of Outdoor Recreation Grant Programs – Utah Outdoor Recreation Grant (UORG) and Mini-Grant

The Utah Outdoor Recreation Grant (UORG) program is to help construct new outdoor recreation infrastructure projects that helps communities build recreation amenities that support local economic development. There are several tiers of grants that can be applied for based on the total project cost.

The general eligibility requirements include being an eligible applicant, the project must be open for public use, the project increases visitation to the area, and offers economic opportunities to the community to help attract or retain residents.

<https://business.utah.gov/outdoor/grants/>

Active Transportation Investment Fund (ATIF)

This is administered by UDOT annually for active transportation projects. Municipalities need to contact their local UDOT Region Planner for assistance in applying for these funds. Project applications are evaluated and selected by UDOT. There is not a maximum funding amount limit for projects in this fund.

<https://projectprioritization.udot.utah.gov/nominations>

New Development

One way to add active transportation infrastructure and improvements is through new development. This active transportation plan includes planned trails and connections in areas of the city that are undeveloped. Many of these planned trails come from plans for these areas that the city has adopted previously. This allows the city to require that developers provide the planned active transportation infrastructure within their development boundaries in order to get approval for development. In this way, new sections of the active transportation network can be added as new development occurs at lower cost to the taxpayers, and the active transportation network can be kept coherent and consistent throughout the city.

Leveraging Multiple Funding Sources

When seeking funding for projects, it can be helpful to diversify the grants and other funding sources that the City applies for in order to minimize local costs and maximize project benefits. For example, many grants require a certain percentage of funds to be matched with local funds, but if projects are coordinated with UDOT and MAG, funding that those agencies apply to their jurisdiction may be eligible to be counted as local funding for the City's portion of the project.

Best Practices

The project team reviewed active transportation best practices at a national, state, county, and city level. From this review, recommended practices for Payson City to follow were developed. This is not meant to be a comprehensive document of design standards and policies, but rather a list of recommendations for the city.

Pedestrian Policies

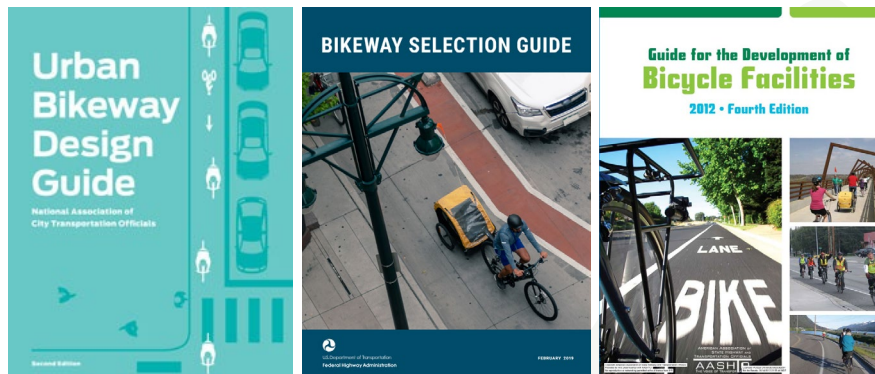
We recommend that Payson City follows the same policies as UDOT for crosswalk and additional crossing treatment installation. Currently, two documents guide crosswalk and school crosswalk installation:

- ▶ UDOT Policy 06C-27: Marked Pedestrian Crosswalks²
- ▶ Utah MUTCD, Part 7: Traffic Control for School Zones

² UDOT Policy 06C-27 is currently being updated and a revised policy is expected to be available by the end of 2024.

Bicycle Policies

Determining policy for Payson City involves balancing the necessary infrastructure required for a safe and user-friendly bicycling experience with the feasibility and costs of such facilities. The Federal Highway Administration's [Bikeway Selection Guide](#), NACTO's [Urban Bikeway Design Guide](#), and the AASHTO [Guide for the Development of Bicycle Facilities](#) were utilized to weigh these trade-offs in order to select policies and facility types for recommendation.



When making recommendations, our team focused on two primary user-types to guide decision-making. The first type of user is the “confident and enthusiastic” type. The second type of user is the “interested but concerned” type.

Because the historic core of Payson City is a grid system, and in light of the fact that Payson City desires all future development to continue implementing grid-like interconnectivity (see [2020 Payson City General Plan](#)), the City is in a strong position to provide excellent bicycle route connectivity. The grid allows for Payson City to utilize lower volume grid streets to provide excellent bicycle connection while still having sufficient vehicle capacity.

The AASHTO Bicycle Facilities Guide addresses major arterials in particular, which have an advantage in directness and signal priority, and advises that they should always have some bicycle route that parallels them. This could be accomplished either

“Confident and Enthusiastic” Cyclists:

- ▶ Have a high tolerance for traffic stress and tend to prioritize speed and directness.
- ▶ Typically cycle for sport or commuting.
- ▶ On-street bike lanes, sharrows on roads with priority at intersections, and other direct facilities along major thoroughfares will best serve these users
- ▶ Special care must be taken to ensure these users are visible to motorists on all road segments and crossings and that they have sufficient accommodation to remove the temptation for risky behavior.

“Interested but Concerned” Cyclists:

- ▶ May enjoy bicycling and want to do it more, but feel unsafe cycling beyond their neighborhood.
- ▶ Either cannot drive or wish to drive less, but feel that there are no viable alternatives.
- ▶ People who fall into this category can include children and parents, those who wish to cycle for commuting due to environmental or financial concerns, and those who cannot afford a vehicle.
- ▶ These users are much more likely to venture out if there is a complete network of separate facilities like trails or on-street facilities on low-speed, low volume roads.
- ▶ They will tend to be very sensitive to traffic noise and steep grades.

through a separated side-path (which still may be uncomfortable due to the proximity to loud and fast traffic), or a route along a more quiet adjacent street. This allows for the accommodation of less confident riders and children and reduces potential conflicts with fast vehicle traffic. Our team applied these principles by planning separated paths on minor roads parallel to major thoroughfares, with on-street facilities lying on those major thoroughfares to accommodate greater speed and directness. In the case of Payson City, arterial roads are typically under the jurisdiction of UDOT. Along SR-178 and SR-198, which both run through Payson City, UDOT is actively maintaining on-street bike lanes.

Our trail plan outlines a grid of separated multi-use trails accessing key locations across the city that are spaced between 0.5 and 0.75 miles apart at the most, which means that every resident would have access to a comfortable bikeway within about ¼ of a mile of their home, a goal held up by the AASHTO guide as a good threshold. This is a precedent that can be applied to all new development and is present in both the Spring Creek and South Meadows area plans. Outside of this grid, it is desirable

to provide on-street space for bicyclists on many roads to facilitate direct access to all destinations, with the treatment type varying from a sharrow (painted shared lane) to a protected bike lane depending upon road context and available space. These treatment types will be discussed further in the section on bicycle segment treatments.

Bicycle Facility Type Selection

The FHWA Bikeway Selection Guide provides the below decision chart for selecting bikeways based on road context. There are many additional tools for determining the type of facility needed, but they all rely on the same simple principle of the more vehicle traffic there is and the faster they are traveling, the more separation active transportation users need.

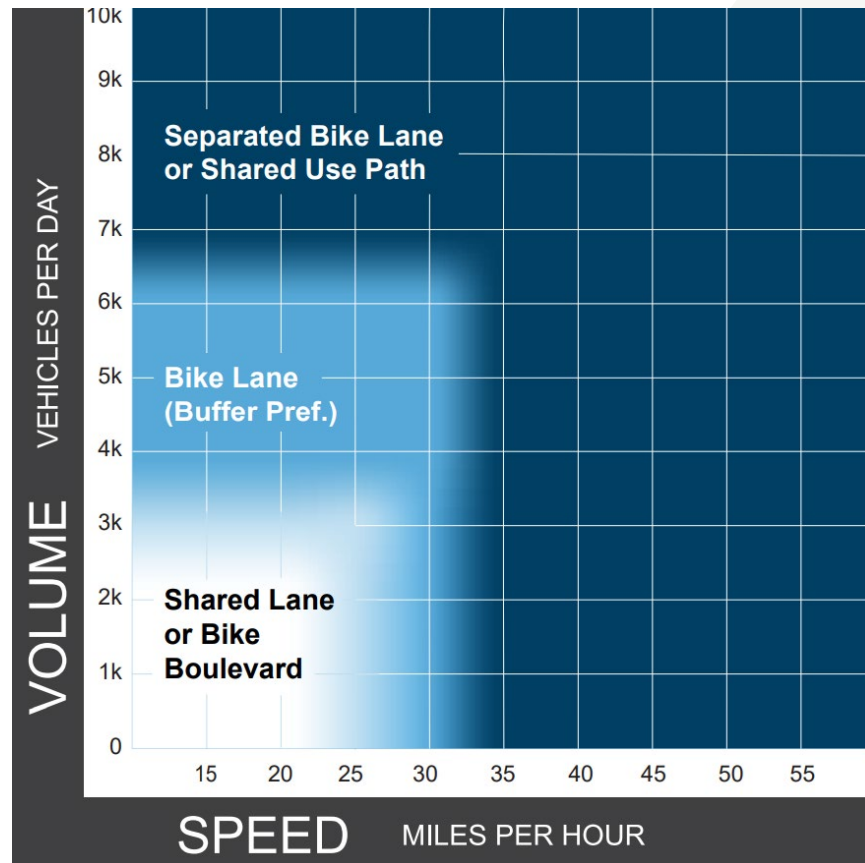


Figure 17: Source - FHWA Bikeway Selection Guide

Bike Boulevard

Bicycle boulevards are often misunderstood as just striping sharrows, and in reality it is much more. Thus, additional information on bicycle boulevards are provided below.

Most streets with low operating speeds and low volumes already offer many characteristics that facilitate safe bicycling. Small improvements to these streets can create further comfort and encourage more cycling in the community, and a side effect of these treatments is that they also create a quieter and more pleasant environment for all residents and road users along the street. The NACTO Urban Bikeway Design Guide provides extensive guidance for this facility type, which it calls "Bicycle Boulevards". This guidance is grouped into the following seven categories:

1. [Route Planning: Direct access to destinations](#)
2. [Signs and Pavement Markings: Easy to find and to follow](#)
3. [Speed Management: Slow motor vehicle speeds](#)
4. [Volume Management: Low or reduced motor vehicle volumes](#)
5. [Minor Street Crossings: Minimal bicyclist delay](#)
6. [Major Street Crossings: Safe and convenient crossings](#)
7. [Offset Crossings: Clear and safe navigation](#)
8. [Green Infrastructure: Enhancing environments](#)

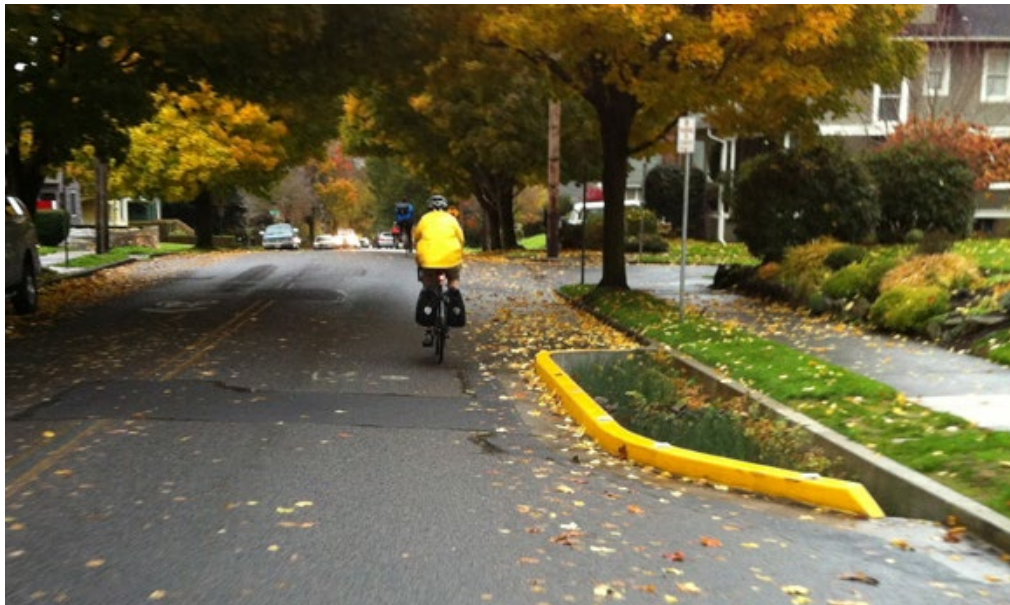
All of these guides should be consulted when doing design for a sharrow-marked roadway. Below are some real-life examples of bicycle boulevards to illustrate the concept.



Mini traffic circles can manage vehicle speeds while improving flow for both vehicles and bicycles on local streets. The mountable curb allows emergency vehicles to proceed straight through, but the circle can also be landscaped for beauty and character (200 E and 200 N, Provo)



Street-level views of 200 E in Provo. Note that markings, bulb-outs, trees, and on-street parking visually narrow the roadway to decrease speed. The trees will also provide shade and reduce road noise for pedestrians.



A curb extension with landscaping helps to slow vehicle speeds while providing beauty and a place for stormwater to infiltrate naturally (Portland Oregon)

Intersection Treatment

An assortment of potential intersection treatments for each intersection type are provided on the following pages. Specific recommendations for intersection treatments in Payson City are provided in the Implementation Plan later in the report.

Mid-Block Crossings and Stop-Controlled Intersections

Mid-block crossings are designated locations for pedestrians and bicyclists to cross in between established intersections. They are typically warranted when the distance between intersections is great enough that risky crossing behavior is observed, because pedestrians in particular are averse to walking too far out of their way to cross the road for a destination that is directly across from them.

The FHWA Guide for Improving Pedestrian Safety at Uncontrolled Locations is particularly helpful when determining additional treatment at locations in between intersections. Figure 18 shows the decision table from this document.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	1 2 4 5 6 7 9	1 5 6 7 9	1 5 6 7 9	1 4 5 6 7 9	1 5 6 7 9	1 5 6 7 9	1 4 5 6 7 9	1 5 6 7 9	1 5 6 7 9
3 lanes with raised median (1 lane in each direction)	1 2 3 4 5 7 9	1 3 5 7 9	1 3 5 7 9	1 3 4 5 7 9	1 3 5 7 9	1 3 5 7 9	1 3 4 5 7 9	1 3 5 7 9	1 3 5 7 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	1 2 3 4 5 6 7 9	1 3 5 6 7 9	1 3 5 6 7 9	1 3 4 5 6 7 9	1 3 5 6 7 9	1 3 5 6 7 9	1 3 4 5 6 7 9	1 3 5 6 7 9	1 3 5 6 7 9
4+ lanes with raised median (2 or more lanes in each direction)	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9	1 3 5 7 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9	1 3 5 6 7 8 9

Given the set of conditions in a cell,

- Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.
- Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.
- Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.*

The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

*Refer to Chapter 4, Using Table 1 and Table 2 to Select Countermeasures, for more information about using multiple countermeasures.

**It should be noted that the PHB and RFB are not both installed at the same crossing location.

- 1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs
- 2 Raised crosswalk
- 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line
- 4 In-Street Pedestrian Crossing sign
- 5 Curb extension
- 6 Pedestrian refuge island
- 7 Rectangular Rapid-Flashing Beacon (RRFB)**
- 8 Road Diet
- 9 Pedestrian Hybrid Beacon (PHB)**

Figure 18: Pedestrian Policy Decision Table

Examples of mid-block crossing treatments are provided below.



RRFB with a Refuge Island and Yield Markers at 300 W 500 N in Provo



Pedestrian Hybrid Beacon Accessing Lone Peak High School on North County Blvd, Highland



Murdock Canal Trail Crossing 200 S in Lindon – Bulb-outs assert the right-of-way for trail users and decrease crossing distance.



RRFB with a Refuge Island and Advance Warning Markers on Sunnyside Avenue in Salt Lake City



Recessed crossing location with bulb-outs in Salt Lake City

Selected Guidance from NACTO Relevant to Payson City's Streets:

- ▶ Select routes that access key destinations, ideally cover a stretch of 2-5 miles, and have an average daily traffic below 3,000 vehicles (under 1,500 is ideal).
- ▶ Signage, naming, and markings should make it clear that the route is designed for cycling. This helps manage drivers' expectations and ensures that cyclists don't overlook it in their wayfinding.
- ▶ Intersections should minimize delay for cyclists, who will avoid the route if they are forced to stop frequently. Removing stop signs for the bicycle direction can facilitate this, but may encourage greater vehicle volumes than desired. Small traffic circles also facilitate better flow.
- ▶ Speed management practices should ensure that motor vehicles keep their speed in line with cyclists. These can include horizontal and vertical deflections like traffic circles and speed humps. Markings can also provide visual narrowing to the roadway.
- ▶ Green infrastructure like wider buffers with native landscaping and medium-to-large trees improves stormwater management while providing beauty, noise and heat reduction, and traffic-calming effects.

Raised crossings are beneficial wherever they do not interfere with appropriate vehicle speeds. For example, they may not be appropriate for mid-block or intersection crossings on roadways with speeds exceeding 30 mph that have phases of uncontrolled right-of-way, but they are appropriate for use in slip lanes in conjunction with other markings, where right-turning vehicles are expected to yield to pedestrians. The below example from Redwood Road and Pioneer Crossing in Saratoga Springs makes good use of previously discussed markings and signage, but could also benefit from a raised crosswalk:



Pedestrian Access Across a Slip Lane

Signalized Intersections

The wide array of possible lane configurations at signalized intersections adds complexity to accommodating bicyclists and pedestrians. As more lanes are added, crossing distances increase for bicyclists and pedestrians, which increases stress, particularly for slower walkers or those in wheelchairs. Where right-of-way permits, refuge islands can alleviate this and serve to calm traffic. It is also recommended to orient the intersection such that crossings are perpendicular to the leg which they're crossing, which serves to minimize crossing distance.

In situations where it is deemed necessary to prohibit crossing or left turn movements from minor roads onto major roads, it is still advisable to accommodate bicycles and pedestrians making crossing movements at those signalized locations. Provo has several examples of protected bicycle intersections along major roads, like the below example:

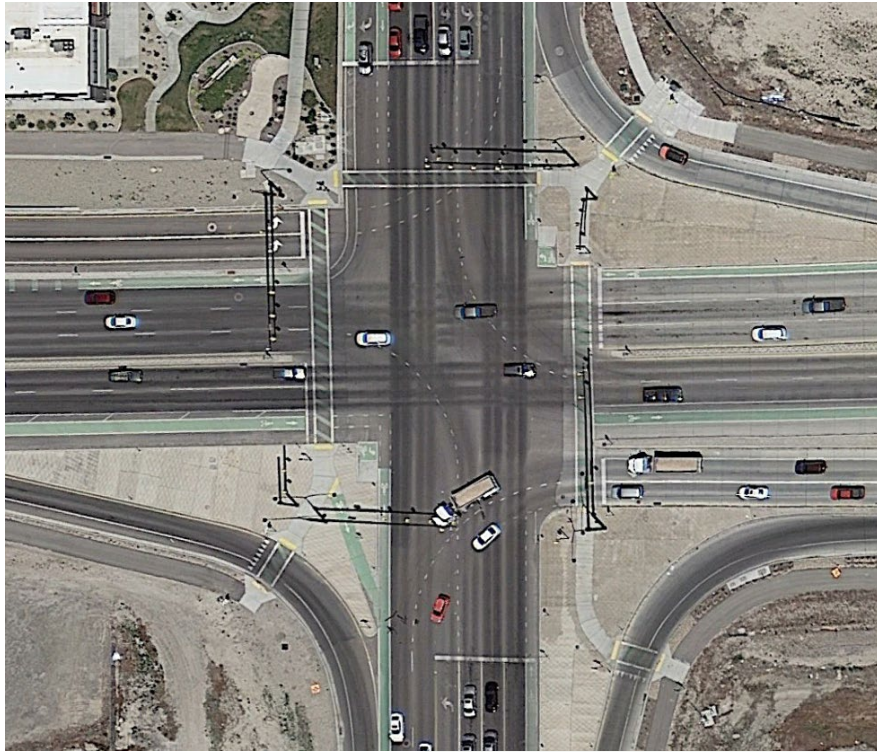


300 S and 200 E in Provo - Curbing protects bicycles approaching the intersection, prohibits crossing movements for vehicles, but allows active transportation users passage. Green pavement increases visibility for bicyclists.

Just as with vehicles, left turns are the most difficult to accommodate for bicycles. There are a variety of strategies for handling left-turns for bicycles through intersections. A few examples are shown below.



300 S W Temple in Salt Lake - Bike boxes and striping assisting with left turns from a protected bike lane.



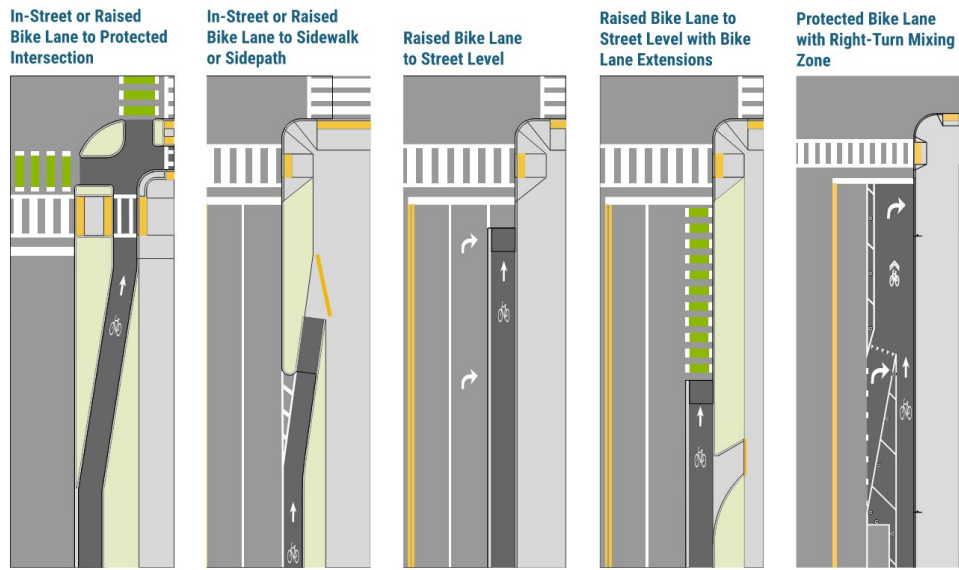
Redwood Rd and Pioneer Crossing, Saratoga Springs – Bike-boxes, striping, channelized paths, and green pavement all serve to guide bicycle movements



200 E 500 N Provo – Bulb-outs on the minor street with a sharrow calms traffic to make it a more comfortable bicycle facility.

Bikeway Transitions at Intersections

The transition into an intersection from a bike lane is often confusing for all road users, and particular care should be taken to ensure that right-turning vehicles are aware of the presence of bicyclists and that both cyclists and drivers have adequate room to anticipate each other's actions and maneuver. It is often helpful to provide cyclists with easy access to the sidewalk from an on-street bike lane as they approach the intersection, which allows less-confident cyclists to cross with the pedestrian signal. Below are several examples from the FHWA of ways to handle bike lanes at intersections.



Other Intersection Transitions - Source: FHWA Guide on Improving Intersections for Pedestrians and Bicyclists

Additional Treatments

There are a variety of treatment options for intersections and in-between to better accommodate bicyclists and pedestrians. More examples from actual roadways are presented below:



Providing early access to a paved path or sidewalk can remove some of the complexity of the interface between a right turn lane and the bike lane (Example: SR-224 in Park City)



Painted driveway and right turn lane crossings remind drivers to look for bicyclists (Cougar Blvd, Provo)



Right turn lane crossings and side-path transitions together provide options for cyclists (Redwood Road, Saratoga Springs)

Maintenance

As the city expands its bicycle and pedestrian network a robust maintenance plan must be put in place to ensure that these investments will remain accessible and not go underutilized. This maintenance plan should include general upkeep like snow and dirt removal, as well as longer-term plans to repair structural distress in the pavement. Snow and dirt accumulation as well as distress due to heaving from tree roots, both shown below, can negatively affect the safety and functionality of a trail, particularly for users with disabilities or those on bicycles. In this section, we seek to provide recommendations to help establish a programmatic approach to maintenance for existing and proposed bike and pedestrian infrastructure.



Snow and ice buildup on facilities is a hazard for bicyclists and pedestrians



Tree roots can cause the pavement to bulge up, creating an uncomfortable and potentially dangerous riding experience

Sweeping Maintenance and Snow Removal

On-street bikeways require similar upkeep to the drive lanes but are often overlooked during the overall maintenance of the road. Being located on the side of the road, bike lanes tend to be the most likely to become clogged with snow and debris, especially as it's cleared from the center of the roadway. Extra care should be taken during maintenance activities to ensure that this debris doesn't accumulate but is instead removed from curbed roadways or pushed onto gravel shoulders when a curb isn't present. If debris is allowed to accumulate, it can force bicyclists to veer suddenly into the road, contributing to crashes. The presence of debris can deter bicyclists from using either kind of facility because of the risk of flat tires or skidding, which is a concern for wheelchair and other wheeled users as well.

Pavement Surface

Bicyclists and other wheeled active transportation users are more sensitive to uneven pavement surfaces than motor vehicles. If a pavement surface has frequent and glaring cracks, it can slow wheeled users down tremendously and create an unpleasant experience. These kinds of discontinuities can occur through freeze-thaw stresses, root heaving, or natural deterioration, but even certain styles of concrete joint construction can create a bumpy ride for wheelchair users, skaters, or cyclists.

Street trees carry many benefits for active transportation facilities, including the shade and beauty they provide. A well-maintained tree canopy creates a "forest" effect that dampens road noise, cools paths in the summer, and makes a walk or a bike ride an activity to seek out for its own sake. However, their roots can grow too close to the surface underneath the adjacent facility, leading to the heaving up and cracking of the pavement surface. [The Arbor Day Foundation](#) provides useful guidance on planning and maintenance related to street trees. Careful planning to prevent conflict between tree roots and pavements is much more cost-effective than trying to address heaving that has already happened.

Selected Guidance on Sweeping and Plowing:

- ▶ Establish a seasonal sweeping schedule which, along with the snow removal plan, should prioritize roads with on-street bikeways.
- ▶ Spring is an important time to sweep due to accumulation of debris from winter weather, as is the fall when leaves accumulate in the bikeway. Incidental sweeping should also be done whenever accumulation occurs in between seasonal network-wide sweeping.
- ▶ Paving the approaches to gravel driveways can mitigate the risk of gravel accumulation on bikeways.
- ▶ During snow removal, on-street bikeways should be noted so that the snow can be pushed a sufficient distance off the edge of the pavement instead of being left in the bikeway.
- ▶ Off-street bikeways may require specialized equipment for sweeping and plowing, such as bobcats with sweeper attachments or ATVs with mounted plows.

Regular surface maintenance is crucial for the preservation of active transportation facilities. During routine road maintenance, on-street bike facilities should not be ignored. For those paved paths that are under the jurisdiction of the City, they should be added to the City's regular pavement maintenance schedule. Preventative maintenance treatments like slurry seals are appropriate for asphalt facilities that bicyclists will use. Chip seals should be avoided on local streets, paved paths, or sections of roadway dedicated to bicycle travel, as they produce an uncomfortable ride and can cause serious injury if playing children or bicyclists fall onto pavements treated with them.

Although preventative maintenance and proper vegetation management will delay the development of surface distresses, they are inevitable on both concrete and asphalt pavements. Annual inspections should be done on facilities as they age to monitor the development of cracks.

Design Standards

When designing for the projects outlined in the recommendations section, a set of design standards can ensure consistent active transportation facilities across both Payson City and the rest of the region. The NACTO Urban Bikeway Design Guide, the [Design Guidelines for the Jordan River Parkway](#) developed by the Jordan River Commission, the AASHTO Guide for Development of Bicycle Facilities Fourth Edition, and the FHWA Report "[Characteristics of Emerging Road and Trail Users and Their Safety](#)" were consulted in the development of these standards.

Paved Paths

Width:

- ▶ Path width has a large effect on the level of service of a facility, with wider paths allowing more room for faster wheeled users to safely pass slower users. As with on-street bike lanes, the minimum width for a cyclist, the design user, to cycle comfortably is 5 feet.
- ▶ For local road contexts, particularly those where available right-of-way is fixed, a minimum path width of 10 ft is acceptable. 11 feet of width is necessary for a bicyclist to safely pass a path user going the same direction while another user approaches from the opposite direction.
- ▶ For regional paths, paths along major thoroughfares, or paths along scenic corridors, a minimum width of 12 feet should be used, but widths can be as wide as 15 feet if the funds and demand are present, as with the Murdock Canal Trail.

Design Speed:

- ▶ Paths should be designed to accommodate speeds that the fastest cyclists will wish to go, while acknowledging that some constraint must be in place due to the mixed-use nature of these paths.
- ▶ In general, a design speed of 20 mph is desirable on all paths.
- ▶ To accommodate this speed, AASHTO recommends a minimum curve radius of 90 feet with 2% superelevation, though exceptions will need to be made for sharp corners during the navigation of the grid system within the city.
- ▶ Many bicyclists can easily exceed speeds of 20 mph, especially on downgrades, but this poses a safety hazard for other road users. Signage and markings should be used to warn cyclists to slow down, and even direct those who wish to go faster onto the roadway.

Selected Guidance on Construction and Repair Practices for Pavement Surface:

- ▶ Utilize compaction when constructing or patching active transportation facilities, including bringing the subgrade to a moist condition for optimal compaction. This increases structural stability and discourages tree root encroachment.
- ▶ Use saw-cut joints instead of tooled joints for concrete facilities. This provides a smoother ride across joints.
- ▶ Ensure that in new roadway construction, the finished surface for on-street bikeways does not vary more than ¼ inch.
- ▶ Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.

Selected Guidance on the Prevention of Tree Root - Pavement Conflicts:

- ▶ Select tree species that are appropriate for the available space, and leave space for the trees that are already present when possible.
- ▶ Tree lawns of 4-6 feet are appropriate for small trees, 6-8 feet is appropriate for medium trees, and 8+ feet is appropriate for large trees.
- ▶ Plan around existing trees during path construction if possible.
- ▶ Consider tree barriers to direct the roots away from pavement surfaces.
- ▶ Plant trees with the roots as deep as is healthy to promote deeper growth.
- ▶ When root cutting, ensure the stability of the tree won't be compromised, prune a year in advance, only cut in the Spring or Early Summer, and fertilize then backfill or cover immediately after cutting to keep the roots moist.
- ▶ Additional guidance on root cutting can be found in section 32 01 91 of the APWA Standards

Grade:

- ▶ Grades should be minimized on paths as much as possible; however, Payson City in general has a large slope running up from west to east and from north to south, towards the canyon, so some grades are unavoidable.
- ▶ In general, grades exceeding 5% are considered to pose the most significant challenge to ascending cyclists and the most danger to descending cyclists due to speed.
- ▶ Should terrain constraints necessitate grades exceeding 5%, the length that these grades extend over should be kept within reasonable constraints. AASHTO provides the following guidelines for grade lengths;
 - 5-6% for up to 800 ft
 - 7% for up to 400 ft
 - 8% for up to 300 ft
 - 9% for up to 200 ft
 - 10% for up to 100ft
 - 11+% for up to 50 ft
- ▶ During sections with steep grades, signage with advisory speeds and grade warnings should be used. Additionally, provide recovery areas after steep grades
- ▶ Path widening of 4-6 feet in addition to small switchbacks can be used to decrease the effective grade and encourage descending cyclists to slow down while increasing safety.

Selected Guidance on Pavement Maintenance:

- ▶ Avoid using chip seals on roads with bicycle facilities. If no alternative treatment is available, it may be appropriate to chip seal the travel lanes only. However, use caution when doing this so as not to create an unacceptable ridge between the bike lane and travel lane.
- ▶ Regular surface sealing of asphalt constitutes important preventative maintenance.
- ▶ Cracks should be filled as they appear and progress. Especially critical are cracks with a width that could accept a bicycle tire.
- ▶ Patching is recommended for Portland cement concrete facilities in areas where cracks in the pavement exceed 0.5 inches, or where there is significant concrete pavement degradation.
- ▶ Monitor all facilities for drainage issues and fix grading where needed.

Sight Distance:

- ▶ Sight distance over crest vertical curves or around horizontal curves is an important consideration for safety, especially in the case of bicyclists picking up high speeds on downgrades before approaching a blind corner. [Table 20](#) from the FHWA outlines stopping distances and minimum lengths of vertical curves for common path users.

Pavement:

- ▶ Pavements should be machine laid over a compacted subgrade and proper aggregate base. Soil sterilizers should be used underneath the pavement to prevent plants from erupting through the pavement.
- ▶ Paths can be paved with either asphalt or concrete. Asphalt is typically preferred by wheeled users because of the absence of joints, and it provides a softer surface that is more comfortable for runners.
- ▶ Given that normal sidewalks are paved with concrete, concrete may be considered for trails that run through residential areas or other places with intermittent sidewalks to provide a more consistent look and smoother transitions from sidewalk to path. However, path users do prefer asphalt overall, so it should be the default material, particularly for trails with more recreational uses or those that expect heavier use. Asphalt should be used for all Priority 1 "Community Showcase" and Priority 2 trails from this plan.
- ▶ Asphalt thickness should be a minimum of 3 inches deep for good soil, but more is required for poorer subgrade. Thicker asphalt will yield greater durability.
- ▶ Concrete joints should be saw-cut instead of tooled, which creates a smoother transition for wheeled users.
- ▶ Broom-finished or burlap-dragged concrete is preferred for its skid resistance.
- ▶ The edges of pavements can crumble if motor vehicles drive on the facility. While this is not normally a concern, the edges should still have extra reinforcement to accommodate occasional emergency or maintenance vehicles, whose extra weight may be too much for the pavement to handle otherwise.
- ▶ Refer to the Maintenance section for more specific guidance on maintenance by pavement type.

The resources listed above provide more details about various design elements and can serve as a further resource.

Bike Boulevards

Creating a facility where bicyclists and vehicles can successfully share the road requires more than a simple sharrow marker. The following design elements should also be considered as guidance in order to keep vehicle speeds to an appropriate limit and increase visibility for active transport users.

Speed Management:

- ▶ Posted speed limits should not exceed 25 mph, and a posted speed of 20 mph may be more appropriate.
- ▶ Lane widths should reflect the desired speed. No more than 10 feet in either direction should be available for motor vehicles to use. Double yellow center lines with white outside lane markers should be used in combination with on-street parking where practical to enforce this standard.
- ▶ Raising pedestrian crossings is an excellent way to manage vehicle speeds at intersections.
- ▶ Where vertical deflections are used, small channels can be left open to accommodate bicycle tires.

Environment:

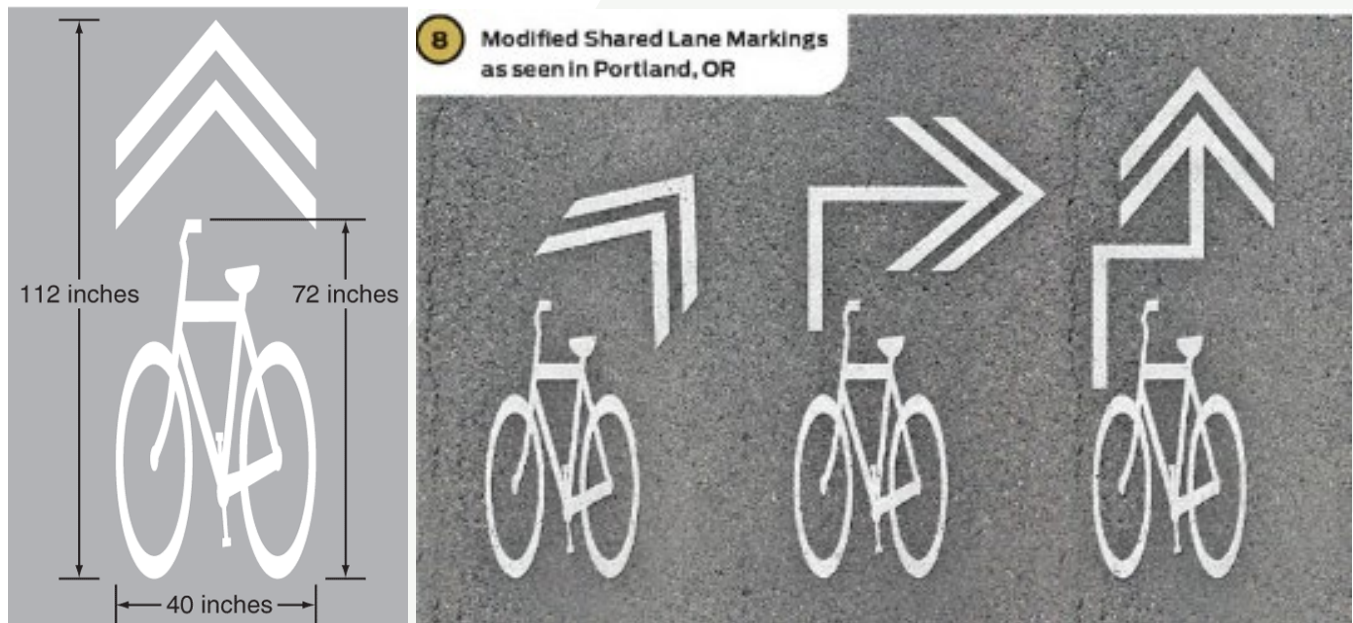
- ▶ The presence of large, abundant street trees should be prioritized during route selection or created during construction. Where excessive right-of-way is available or street parking is not desired, a wide center median with further landscaping can be beneficial, so long as it is accessible for pedestrians to cross.

Grade:

- ▶ Similar grade constraints to shared paths should be considered when selecting routes for bike boulevards, particularly because selected roads are likely to be straighter, wider, and require more frequent stops than paved trails, making excessive bicycle speed a hazard.

Signage and Control:

- ▶ Intersection priority should be given to the bike boulevard route wherever possible, to maximize its attractiveness for bicycle use. This can be accomplished by only controlling cross streets, or by implementing small traffic circles.
- ▶ The graphics below contains shared-lane markings for the forward direction, and a variety of options indicating deviations to the route at intersections. These deviations could be due to a turn, an offset intersection, or a transition to another street.
- ▶ Please reference [MAG's guidance for bicycle wayfinding](#) for signage to mark bike boulevard routes and orient them in the bicycle network.



Sharrow Alternatives

Buffered and Conventional Bike Lanes

Conventional Bike Lanes:

- ▶ The desired width of right-of-way for a conventional bicycle lane is six feet, including all border markings. If wider than six feet is available, buffer markings should be considered to allow for further separation. Five feet is acceptable if necessary.
- ▶ When approaching an intersection, colored pavement markings should be used to remind right-turning drivers of the bike lane. If possible, provide a ramp for the bike lane to transition to the sidewalk to cross the intersection to reduce conflicts with right turning vehicles.
- ▶ Bike boxes should be utilized as a queuing area for bicyclists to prepare to cross the intersection, whether they come from the left to make a left turn or are proceeding straight.
- ▶ Further guidance is available from NACTO [here](#)

All of the above applies to buffered bike lanes plus the following:



- ▶ The same amount of rideable space should be available as for conventional bike lanes, with added buffer striping of at least 18 inches.
- ▶ The use of bollards, curbing, or a landscaped buffer can provide further protection and comfort, and comprises a "protected bike lane". This can be applied across the whole facility, or selectively where conflicts between vehicles and bicycles are likely to occur such as before right turns, as it can force vehicles to yield to bicycles proceeding straight through and make their turn more slowly.







APPENDIX: ALL FACILITIES MAPS



Legend

-  Payson City Boundary
-  Annexation Area




AT Facility Crossings

-  Grade-Separated Crossing
-  At Grade

Planned Paved Paths

-  Grade Separated Crossing
-  Multi-Use Path

Planned On-Street

-  Buffered Bike Lane
-  Bike Lane
-  Bike Boulevard

■ Annexation Area

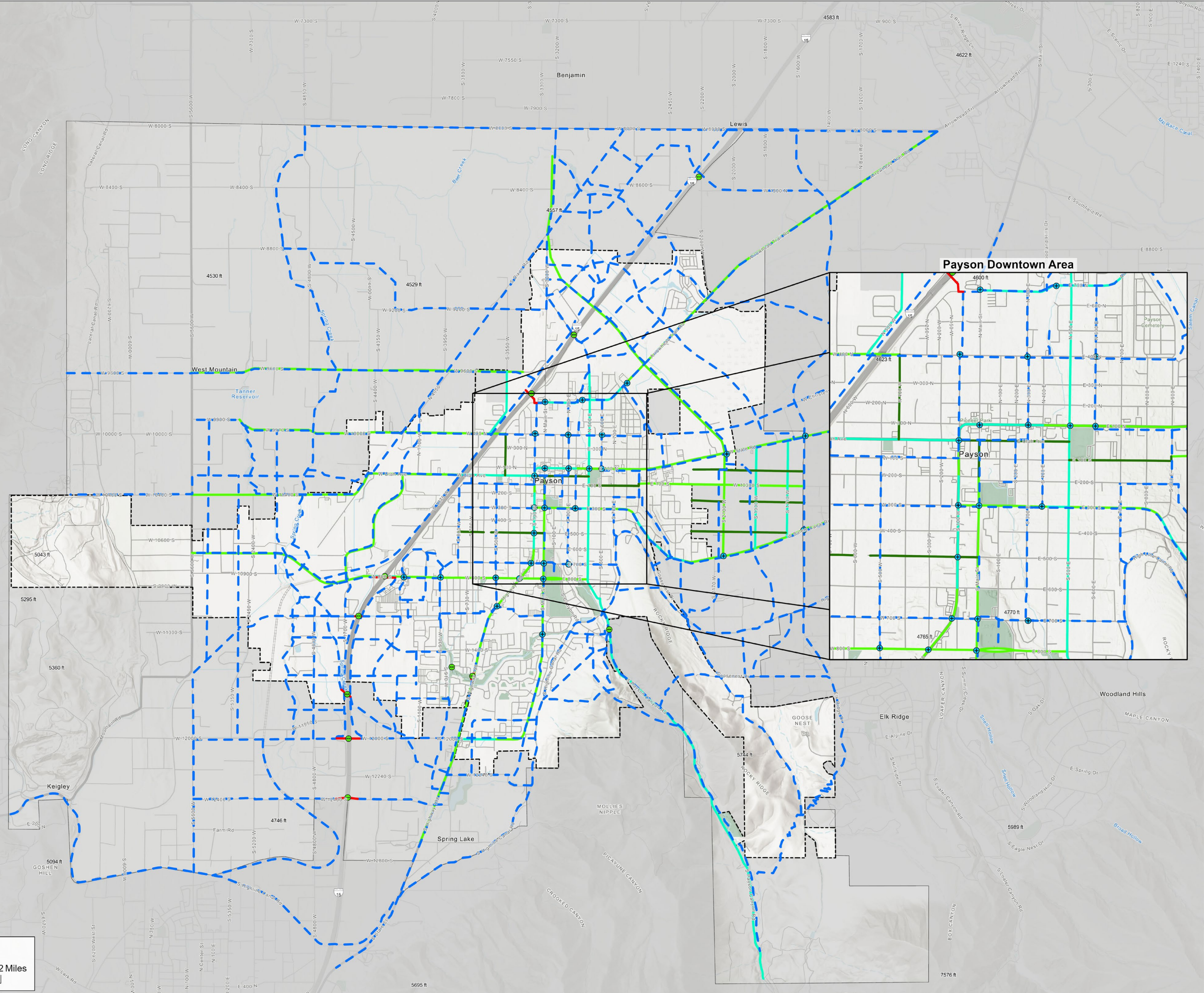
- Grade-Separated Crossing

Planned Paved Paths

- Multi-Use Path

- Buffered Bike Lane

— Bike Boulevard



Legend

Payson City Boundary

Annexation Area

AT Facility Crossings

Grade-Separated Crossing

At Grade

Planned Paved Paths

Grade Separated Crossing

Multi-Use Path

Planned On-Street

Buffered Bike Lane

Bike Lane

Bike Boulevard

