



Bicycle & Pedestrian Master Plan

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Prepared by

FEHR & PEERS



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chapter one

introduction

Bicycling and walking are increasingly recognized as an important component of the transportation system. The Saratoga Springs Bicycle and Pedestrian Master Plan (the Plan) sets forth a vision and goals and policies for walking and bicycling in Saratoga Springs:

“Saratoga Springs will create healthy and vibrant communities through the creation of attractive and safe bicycle and pedestrian networks that can be enjoyed for recreation and transportation.”

The Plan serves as a guide for elected officials, City staff, and Saratoga Springs residents to implement infrastructure necessary to achieve the Plan’s vision. The Saratoga Springs Bicycle and Pedestrian Master Plan does this by proposing a system of bikeways, sidewalks, and trails connecting neighborhoods to key activity centers throughout the City, developing support facilities, and by identifying recommendations for monitoring the implementation of the Plan.

Bicycle and Pedestrian Master Plan Overview

This is Saratoga Spring’s first ever Bicycle and Pedestrian Master Plan. Previously, all bicycle planning and policy was contained within the City’s General Plan or in the Trails Master Plan.

The development of the Plan comes as part of an effort by the City to address local and regional desires to enhance the viability of active transportation as mode of transportations, enhance the local quality of life, and reduce transportation system impacts on local communities.

The goals, policies, and recommendations in this Plan are the of a public outreach effort by the Project Team. Between June and December 2015, the City and consultant team accepted public input to the Plan at one public event and through an on-line survey and on-line web application. Additionally, a public website and Facebook broadcasted the latest news related to the Plan.

Making the Case for Investment

Walking and bicycling are effective ways for people to improve their health and wellbeing. But the benefits of active transportation go beyond the health of the individual. A growing body of research shows that active transportation can also benefit the environment and improve the transportation network. The addition of active transportation infrastructure can even boost economic viability in the places where it is located. A short summary of research regarding the benefits of active transportation infrastructure is provided below.

Air Quality

- Research indicates that transportation accounts for roughly 28 percent of the United States' total greenhouse gas (GHG) emissions¹. Of commuting modes, automobiles have the largest impact on air quality². Bicycling and walking have a negligible GHG impact (outside of the production needed in the manufacturing of the bicycle).
- The Rails To Trails Conservancy estimates that bicycling and pedestrian travel can offset between 3 percent and 8 percent of GHG emissions in the United States caused by surface transportation³.
- Many state applications for Congestion Mitigation and Air Quality Improvement Program (CMAQ), a federal funding program, ask applicants to estimate the congestion and GHG reduction potential of their bicycle and pedestrian projects. A federal review of CMAQ bicycle and pedestrian projects found CO₂ reductions of up to 38.4 kg emissions reductions each day⁴.

MAKING THE CASE

According to research conducted in the Portland area, every 1% increase in miles traveled by active transportation instead of by car reduces regional greenhouse gas emissions by 0.4%.

Reduced Vehicle Miles Traveled

- Many trips regularly done by car can be done by bicycle. The national average trip length is 2.25 miles for a one-way bicycling trip. Half of all trips taken in the United States are three miles or less, with 40 percent under two miles. However, 90 percent of trips fewer than three miles are taken by car⁵.
- A study in King County, Seattle, WA found that a 5 percent increase in walkability of a community reduced vehicle miles traveled per capita by 6.5 percent and increased time spent in physically active travel by 32.1 percent⁶.

¹ Moving Cooler Steering Committee. *Moving Cooler: An Analysis of Transportation Strategies for Reducing Greenhouse Gas Emissions*. Prepared by Cambridge Systematics, Inc. July 2009.

² Urban Transportation Caucus. *Urban Transportation Report Card*. August 2007. Accessed online June 2013: http://www.transalt.org/files/newsroom/reports/Urban_Transpo_Report_Card.pdf

³ Oregon Metro. *The Case for Active Transportation*. Spring 2009. Accessed online June 2013: http://library.oregonmetro.gov/files/case_for_at.pdf

⁴ Ibid.

⁵ America Bikes and the League of American Bicyclists. *National Household Travel Survey – Short Trips Analysis*. Accessed online June 2013: <http://www.bikeleague.org/content/national-household-travel-survey-short-trips-analysis>

⁶ Frank, L. D., J. F. Sallis, T. L. Conway, J. E. Chapman, B. E. Saelens and W. Bachman (2006). "Many Pathways from Land Use to Health: Associations between Neighborhood Walkability and Active Transportation, Body Mass Index, and Air Quality." *Journal of the American Planning Association* 72(1): 75-87

Increased Bike Commuting

- Each additional mile of bicycle lane per square mile is correlated with an approximate one percent increase in the share of bike-to-work trips⁷.
- Cities with higher levels of bicycle infrastructure (lanes and paths) also saw higher levels of bicycle commuting⁸.
- The construction of a bicycle and pedestrian bridge in Charleston, South Carolina led to more cycling throughout the City. A survey conducted on trail use showed that 67 percent of users claimed their physical activity had increased since the path opened⁹.

MAKING THE CASE

An analysis of Portland, Oregon's bicycle infrastructure on health savings shows that completion of their 2030 Plan would help the City save \$800 million due to fuel cost savings, health care savings, and the value of reduced mortality.

Health Benefits

- Communities with higher rates of bicycling and walking have lower obesity rates than communities with lower levels of active transportation¹⁰.
- Researchers from Harvard University found that bicycling for as little as five minutes each day can prevent weight gain for middle aged women¹¹.
- The National Institutes of Health have shown that people are more likely to consistently ride a bicycle or walk than to maintain a gym-based exercise program¹².
- Commuters using active transportation modes are happier with their commutes¹³.
- People who use active transportation to commute report fewer days of work missed due to illness than those with non-active commutes¹⁴.

⁷ Dill, Jennifer and Carr, Theresa. "Bicycle Commuting and Facilities in Major U.S. Cities: If you build them they will come – another look." Accessed online June 2013: http://www.des.ucdavis.edu/faculty/handy/ESP178/Dill_bike_facilities.pdf.

⁸ Dill, Jennifer and Theresa Carr. (2003). Bicycle Commuting and Facilities in Major U.S. Cities: If You Build Them They Will Come – Another Look Transportation Review Board 2003 Annual Meeting. http://www.des.ucdavis.edu/faculty/handy/ESP178/Dill_bike_facilities.pdf

⁹ "Wonder's Way Bike Pedestrian Pathway on the Arthur Ravenel, Jr. Bridge: A Successful Model for Facilitating Active Living in Lowcountry South Carolina" (http://media.charleston.net/2009/pdf/crbpathstudy_032609.pdf).

¹⁰ "Walking and Cycling to Health: A Comparison of Recent Evidence from City, State, and International Studies" (<http://www.cfah.org/hbns/archives/viewSupportDoc.cfm?supportingDocID=943>).

¹¹ "Bicycle Riding, Walking, and Weight Gain in Premenopausal Women" (<http://archinte.ama-assn.org/cgi/reprint/170/12/1050>).

¹² "Randomised controlled trials of physical activity promotion in free living populations: a review" (<http://www.ncbi.nlm.nih.gov/pubmed/7499985>).

¹³ "Like commuting? Workers' perceptions of their daily commute" (<http://www.statcan.gc.ca/pub/11-008-x/2006004/pdf/9516-eng.pdf>).

¹⁴ "Physical activity, absenteeism and productivity: an Evidence Review" (<http://www.tfl.gov.uk/assets/downloads/businessandpartners/Physical-activityabsenteeism-and-productivity-evidence-review.pdf>).

- A study by the National Institutes of Health determined that physically active employees incurred approximately \$250 less in health care costs annually compared to sedentary employees¹⁵.

Transportation Safety

- There is safety in numbers. The walking/bicycling crash risk decreases as walking/bicycling rates increase¹⁶.
- The National Institutes of Health found that for every 100 percent increase in the number of cyclists, the number of fatalities only increases by 25 percent, thus reducing the overall risk of cycling by 37 percent¹⁷.
- The presence of bike lanes have been shown to reduce the overall crash rate by 18 percent compared to streets without any bicycle facility¹⁸.

Economic Benefits

- The combined potential value of bicycling in Wisconsin totals nearly \$2 billion yearly¹⁹.
- It's been estimated that the entire bikeway network of Portland, Oregon was built for less than the cost of constructing one mile of urban freeway²⁰.
- There is a 12.5 percent increase in productivity of employees who exercise as compared to those who do not exercise²¹.
- A survey of residents along bicycle boulevards indicated that the majority of respondents felt that bicycle boulevards have had a positive impact on home values, quality of life and sense of community, along with reducing noise, improving air quality, and providing convenience for bicyclists. Additionally, 42 percent of respondents said living on a bicycle boulevard makes them more likely to bike²².
- Installation of bike lanes and bike racks can have a positive influence on the local economy. Fort Worth, Texas spent \$12,000 to purchase 80 bike racks and \$160,000 on local road diets in one district in town. As a result, local restaurants experienced a 200 percent increase in business²³.

¹⁵ "Relationship of body mass index and physical activity to health care costs among employees" (<http://www.ncbi.nlm.nih.gov/pubmed/15167389>).

¹⁶ Source: "Safety in numbers: more walkers and bicyclists, safer walking and bicycling" (<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1731007/pdf/v009p00205.pdf>).

¹⁷ Source: "An expert judgment model applied to estimating the safety effect of a bicycle facility" (<http://www.ncbi.nlm.nih.gov/pubmed/10868762>).

¹⁸ "Adult Bicyclists in the United States: Characteristics and Riding Experience in 1996" (<http://www.enhancements.org/download/trb/1636-001.PDF>).

¹⁹ Gabrow, Maggie, Micah Hahn, Melissa Whited. (2010). Valuing Bicycling's Economic and Health Impacts in Wisconsin. The Nelson Institute for Environmental Studies and the The Center for Sustainability and the Global Environment. University of Wisconsin-Madison. Prepared for Representative Spencer Black.

²⁰ <http://www.politifact.com/oregon/statements/2011/mar/19/samadams/>

[portland-mayor-sam-adams-says-portlands-spent-its-/](http://www.portlandmayor.com/news/2011/03/19/portland-mayor-sam-adams-says-portlands-spent-its-/)

²¹ Campbell, Richard and Wittgens, Margaret. (2004). The Business Case for Active Transportation: The Economic Benefits of Walking and Cycling. Prepared for Better Environmentally Sound Transportation.

²² VanZerr, Mariah. (2009). Resident Perceptions of Bicycle Boulevards: A Portland, Oregon Case Study. Submitted to the Transportation Research Board for the 89th Annual Meeting.

²³ Elly Blue's Bikenomics series: <http://grist.org/biking/2011-04-11-the-economic-case-for-on-street-bike-parking/>

Impacts on Home Values

- The walkability of an area can directly impact home values. Homes with above average levels of walkability are worth \$4,000 to \$34,000 more than homes with average levels of walkability in the areas studied. Typically, a one point increase in Walk Score was associated with between a \$500 and \$3,000 increase in home value²⁴.
- The Urban Land Institute compared four new pedestrian communities to determine the effect of walkability on home prices. They determined that homebuyers were willing to pay \$20,000 more for homes in walkable areas compared to similar homes in surrounding areas²⁵.
- For developers, walkability translates into direct economic benefits. In Washington, buildings in neighborhoods with good walkability command an average of \$8.88/sq. ft. per year more in office rents and \$6.92/sq. ft. per year higher in retail rents, and generate 80 percent more in retail sales as compared to places with fair walkability, holding household income levels constant. Housing prices and property values are also increased in areas with higher walkability – a place with good walkability, on average, commands \$301.76 per month more in residential rent and has for-sale residential property values of \$81.54/sq. ft. more relative to places with fair walkability, holding household income levels constant²⁶.
- Adjacency to trails can also have a positive effect on property values. For instance, according to the Rails to Trails Conservancy, lots adjacent to Wisconsin’s Mountain Bay Trail sold for 9 percent more than similar properties not adjacent to the trail²⁷.
- In Apex, North Carolina, houses adjacent to a regional greenway sold for \$5,000 more than houses in the same subdivision that were not on the greenway²⁸.

Job Creation

- A national study of employment impacts following the installation of bicycle and pedestrian infrastructure estimated that each \$1 million in bicycle-related projects creates 11.4 jobs from direct, indirect and induced construction spending. Likewise, pedestrian-only projects create about 10 jobs and multi-use path projects create 9.6 jobs per \$1 million of project cost. Street Projects that combine pedestrian and bicycle facilities with other road improvements create 7.8 jobs per \$1 million. In contrast, road-only projects generated 7.75 jobs per \$1

MAKING THE CASE

Bike lanes reduced the risk of fatalities in pedestrian-involved crashes by 40%.
(Source: The New York City Pedestrian Safety Study and Action Plan)

²⁴ CEOS for Cities. *Walking the Walk*. August 2009. Accessed online June 2013: http://blog.walkscore.com/wp-content/uploads/2009/08/WalkingTheWalk_CEOsforCities.pdf

²⁵ Eppli, Mark J. and Charles C. Tu. Valuing the new Urbanism, The Impact of the New Urbanism of Prices of Single-Family Homes. Urban Land Institute, 1999.

²⁶ Leinberger, Christopher B. and Mariela Alfonzo. (2012). Walk this Way: The Economic Promise of Walkable Places in Metropolitan Washington, D.C. The Metropolitan Policy Program at the Brookings Institute.

²⁷ Rails to Trails Conservancy. *Economic Benefits of Trails and Greenways*. Washington, DC.

²⁸ Ibid.

million. Spillover (indirect) employment adds an additional 3 jobs per \$1 million²⁹.

- In Colorado, the bicycling industry has created 513 manufacturing jobs and 700 full-time equivalent retail jobs³⁰.
- Similar results have been shown in Wisconsin, where the bicycling industry (consisting of manufacturing, distribution, retail, and other services) contributes \$556 million and 3,418 jobs to the Wisconsin economy³¹.
- Portland's bicycle industry has also contributed significantly to the local economy. In 2008, revenues in the bicycle-related economic sector were found to be nearly \$90 million³².

²⁹ Garrett-Peltier, Heidi (2011). Pedestrian and Bicycle Infrastructure: A National Study of Employment Impacts. Political Economy Research Institute. University of Massachusetts, Amherst. <http://www.peri.umass.edu/236/hash/64a34bab6a183a2fc06fdc212875a3ad/publication/467/>

³⁰ "Economic Impact of Bicycling in Colorado" (<http://atfiles.org/files/pdf/CObikeEcon.pdf>).

³¹ Source: "The Economic Impact of Bicycling in Wisconsin" (<http://www.dot.wisconsin.gov/business/econdev/docs/impact-bicycling.pdf>).

³² "The Value of the Bicycle-Related Industry in Portland" (http://www.altaplanning.com/App_Content/files/fp_docs/2008%20Portland%20Bicycle-Related%20Economy%20Report.pdf).

chapter two

goals, objectives, and policies

This chapter articulates the purpose, goals and objectives for the Saratoga Springs Bicycle and Pedestrian Master Plan. These principles provide a guiding document for Saratoga Springs in creating, maintaining, and promoting pedestrian and bicycle infrastructure and programs both now and in the future.

Vision

The vision statement guides Saratoga Springs' direction for bicycle and pedestrian facilities, and provides clear direction for the project. To create consistency with neighboring communities, the Steering Committee reviewed language from previously developed local bicycle and pedestrian master plans, including the Lindon Bicycle and Pedestrian Master Plan (2014), American Fork Bicycle and Pedestrian Master Plan (2013), the Lehi Bicycle and Pedestrian Master Plan, the Pleasant Grove Master Plan (2013), and the Orem Bicycle and Pedestrian Master Plan (2010), as well as national examples from Anchorage, Alaska; Davis, California; Minneapolis, Minnesota; and Portland, Oregon. The vision statement of the Saratoga Springs Bicycle and Pedestrian Plan is:

“Saratoga Springs will create healthy and vibrant communities through the creation of attractive and safe bicycle and pedestrian networks that can be enjoyed for recreation and transportation.”

Goals and Objectives

Goal 1: Provide a continuous system of bike lanes, sidewalks, crosswalks, shared paths, and other bicycle and pedestrian facilities throughout Saratoga Springs and connections to neighboring cities that are safe and attractive to all users.

Objective 1a: Coordinate multi-modal bicycle and pedestrian planning with adjacent municipalities, including hard surface / paved trails, sidewalks, bike lanes, and soft trails for mountain biking and equestrian use.

Objective 1b: Install signage along local and regional bikeways to assist with way-finding and to increase awareness of bicyclists.

Objective 1c: Coordinate with the Utah Department of Transportation (UDOT) on desired improvements on State roadways.

Objective 1d: Encourage, incentivize, or require new development to participate in the advancement of a robust bicycle and pedestrian system.

Objective 1e: Coordinate with Utah County on its Adopt-a-Trail program for shared use paths.

Objective 1f: Foster a bicycle friendly atmosphere to attract large events like the Tour of Utah and triathlons.

Goal 2: Increase transportation safety for all modes through education and enforcement efforts.

Objective 2a: Publish, distribute, and post city and region-wide bike maps.

Objective 2b: Keep non-motorized facilities clean, safe, and accessible.

Objective 2c: Promote pedestrian and bicycle safety and awareness through education and encouragement activities.

Objective 2d: Enhance Safe Routes to School programming and support Saratoga Springs school children who walk and bike to school.

Goal 3: Institutionalize bicycle and pedestrian planning and routine accommodation of bicycle and pedestrian needs into city processes.

Objective 3a: Involve the Civic Events Committee to attract large events or festivals like the Tour of Utah and triathlons.

Objective 3b: Ensure that bicycle and pedestrian facilities are an integral part of intersection and street design.

Objective 3c: Standardize bike route detour protocol for roadway construction projects.

Objective 3d: Incorporate bicycle and pedestrian network repair and maintenance needs into the regular roadway maintenance regime as appropriate, paying particular attention to sweeping and pothole repair on priority bicycle facilities.

Objective 3e: Identify, track, and pursue a variety of funding sources to implement, renovate, and maintain Saratoga Springs' bicycle and pedestrian system.

chapter three

existing conditions

Study Area Context

Saratoga Springs is located in north-central Utah County, neighboring Camp Williams to the north, Lehi to north/east, Eagle Mountain to the west, and unincorporated Utah County to the south. The City is constrained by Utah Lake to the east and Lake Mountain to the west. These constraints and neighboring jurisdictional boundaries make Saratoga Springs a city that runs primarily north to south. At the widest point the City is only approximately five miles wide, and far narrower in other areas.

According to the most recent census estimate available (2014), the city's population is approximately 24,000 and is one of the fastest growing cities in the state – a trend that is expected to continue. The Mountainland Association of Governments (MAG) projects the population to reach 33,500 by 2020 and 58,500 by 2030. According to the city's general plan the estimated buildout population will range between 75,000 and 125,000 people.

The average high temperature for Saratoga Springs in January is 37°F and the average low is 17°F with 1.02 inches of precipitation. In July, the average high temperature is 91°F and the average low is 56°F, with 0.59 inches of precipitation.

Elevation increases from the low points of Utah Lake and the Jordan River to Lake Mountain on the west and the Traverse Mountains to the north create a mixed topography. There is an elevation change of approximately 400' between the low points and high points in the city.

State Route 68/Redwood Road is the primary north/south transportation corridor while State Route 73/Crossroad Boulevard, Pioneer Crossing, and Pony Express Parkway are the primary east/west corridors through the city. Both of these routes are owned and maintained by UDOT. Subdivision neighborhoods, cul-de-sacs, large lots, or undeveloped land are typically accessed off of these main corridors. Foothill Boulevard/800 West is currently the only other roadway that provides a portion of the city with a contiguous access from north to south through the city. Commercial land uses and employment are also located along State Route 68/Redwood Road and State Route 73/Crossroads Boulevard. The major roads of State Route 68/Redwood Road (20,900 vehicles per day³³) and Pioneer Crossing (21,600 vehicles per day³⁴) are crucial for regional vehicle mobility. These routes are also very important for cycling mobility, as they provide continuous routes through Utah County.

Existing Planning Document Review

The following relevant existing planning documents were reviewed to gain an understanding of existing conditions of bicycle and pedestrian facilities in Saratoga Springs:

³³ UDOT AADT Data, 2014

³⁴ UDOT AADT Data, 2014

- Saratoga Springs Parks, Recreation, Trails, and Open Space Mater Plan (2011)
- Saratoga Springs Transportation Master Plan (2012)
- Saratoga Springs City Center Plan
- Saratoga Springs Land Use Element of the General Plan –100 Year Plan (2005)
- Saratoga Springs Land Use Element of the General Plan – 100 Year Plan (2005)
- TransPlan 2040 (MAG Regional Transportation Plan)
- Utah Collaborative Active Transportation Study (UCATS)
- Utah Department of Transportation Region 3 Bike Plan

Saratoga Springs City General Plan

The Saratoga Springs General Plan Land Use Element (2005) lays out a broad vision and goals for future development of the city. Three sections highlight goals and policies directly related to the Bicycle and Pedestrian Master Plan:

Alternative Transportation Modes

Goal 1.0: Reduce the number of vehicular trips required by residents to accomplish employment and other activities.

POLICIES:

1.1 Be responsive to the infrastructure needs of the community that support home shopping, home banking, electronic neighborhood meetings, telecommuting and other alternatives to travel.

1.2 Where appropriate, require the construction of pedestrian connections between adjoining developments.

Pedestrian Trails

Goal 1.0: Provide a network of pedestrian trails, including sidewalks, walkways, and hiking/jogging trails throughout the City as a viable alternative to automobiles.

POLICIES:

1.1 Require installation and maintenance of a continuous, safe, and aesthetically pleasing network of pedestrian trails throughout the City.

1.2 Develop design standards for each type of pedestrian trail to minimizes hazards (e.g. lighting, surface texture, landscaping, automobile pedestrian conflicts).

1.3 Reduce physical barriers for the handicapped who might use these facilities.

1.4 Require sidewalks on both sides of all roads unless facilities for other modes of transportation are planned, particularly on arterial and collector roads.

1.5 Require access for pedestrian traffic to and from all parts of commercial development. This should include bus stops, handicapped loading, crosswalks, traffic signals, sidewalks and roadways.

1.6 Work closely with the Alpine School District in reviewing locations for future schools and bus stops to minimize the necessity of children crossing or waiting for buses on arterial roads.

1.7 Consider maintenance costs in the planning and design of sidewalks, trails, landscaping, and other alternative transportation modes or recreational facilities.

Bicycle Trails

Goal 1.0: Provide a network of bicycle trails throughout the City.

POLICIES:

1.1 Require installation and maintenance of a continuous and aesthetically pleasing network of bicycle trails throughout the City.

1.2 Provide a balance of each type of bicycle trail, where appropriate, to satisfy the transportation as well as the recreation needs for residents of the City.

1.3 Develop design standards for bicycle trails that will integrate bicycle trails with other modes of transportation and that will be buffered from surrounding land uses for safety.

1.4 Coordinate road improvement projects with construction of bicycle trails.

1.5 Require bicycle trail access to commercial and recreational sites.

1.6 Require bike racks at shopping centers, public buildings, schools, parks, transportation, nodes, etc.

1.7 Enforce State laws and local ordinances concerning the use of bicycles to promote bicycle safety.

Parks, Recreation, and Open Space

Goal 6.0: To provide a recreational trail system with trail heads in strategic locations for access to the mountains and existing parks.

POLICIES:

6.1 Encourage the completion of the Jordan River Parkway Trail.

6.2 Require the completion of trails along major arterial roadways.

6.3 Where applicable, ensure the development of the Welby Jacob Canal Parkway and the development of trails along other canals as well as utility corridors and rail right-of-ways.

6.4 Plan for east-west trail connections in the urbanized areas of the City.

6.5 Encourage the completion of a comprehensive Parks and Trails Element of the General Plan identifying exact locations and alignments, and secure rights of way/easements.

6.6 Encourage the design and implementation of multi-use trails as indicated.

6.7 Maintain public access to State lands.

2040 Metropolitan Transportation Plan

The Metropolitan Transportation Plan notes that “as Utah Valley continues to grow and urbanize, the need and demand for multi-use paths, neighborhood connections, on-street bike lanes, sidewalks and pedestrian friendly development increases.” Planned bicycle and pedestrian projects in Saratoga Springs include a SR-68 / Redwood Road buffered bike lanes, Pony Express Parkway Trail, Lehi Main Street On-street bike facilities, Utah Lake Shore Trail, and an SR-73 Trail.

Utah Collaborative Active Transportation Study (UCATS)

The Utah Collaborative Active Transportation Study was a joint planning effort between UDOT and the Utah Transit Authority (UTA) to identify a regional bicycle network throughout the Wasatch Front. As part of this plan, the project team identified locations across the Wasatch Front that could potentially have high levels of bicycle and pedestrian activity or demand for facilities, based on factors like housing and employment densities, demographic information, and proximity to destinations like shopping, schools, and parks. In Saratoga Springs, the areas of highest demand are located in the Harvest Hills neighborhood and around commercial districts on Redwood Road.



Adjacent Community Plans

Saratoga Springs is bordered on the north/east by Lehi, and Eagle Mountain on the west. Both bordering cities have completed a bicycle and pedestrian master plan, and where possible connections have been identified to provide continuous facilities between the communities.

Existing and Planned Bicycle and Pedestrian Facilities

This section inventories the existing network of facilities to accommodate active transportation, which is a term that usually refers to walking and bicycle trips, but can include many forms of transportation powered by human energy, such as skateboards, kick scooters, or rollerblades. To be effective, active transportation systems should be designed to provide a network of facilities that accommodate a diversity of equipment and skill levels. For instance, it is not unusual to have side paths in a corridor with bike lanes; experienced adult riders may choose to ride at higher speeds adjacent to vehicle travel lanes, whereas a 12-year old riding to school would probably feel more comfortable on a path or sidewalk separated from traffic.

Similar to the roadway networks that connect destinations for automobiles, active transportation networks get people from point A to point B on trails, quiet neighborhood streets, side paths, sidewalks, and bike lanes. For the purposes of this plan, active transportation facilities are distinguished in terms of “On-Street Bicycle Facilities” and “Off-Street Pedestrian & Bicycle Facilities.”

On-Street Bicycle Facility: portion of the roadway that has been designated by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists.

Off-Street Pedestrian & Bicycle Facility: separate from roadways for use of bicyclists, pedestrians, and other non-motorized user groups. Commonly referred to as shared use paths, multi-use paths, side paths, and trails. Often hard surface asphalt or concrete but can also be unpaved.

On-Street Bicycle Facilities

On-street bicycle facilities are limited to a few corridors within Saratoga Springs. Redwood Road north of 400 South has a marked bike lane, as does Pony Express and 2100 North. Pioneer Crossing also has a shoulder bikeway, however future widening may remove this bike facility. **Figure 1** provides an overview of existing on-street bicycle facilities.



Off-Street Pedestrian & Bicycle Facilities

Saratoga Springs has leveraged new development to include sidewalks and multi-use pathways as part of its subdivision regulation requirements. The City has also developed a robust trails system to provide recreational amenities for the community. Gaps in these systems are limited primarily to areas where development has yet to occur. **Figure 2** provides an overview of existing off-street bike and pedestrian facilities.

Mountain biking is becoming an increasingly important recreation amenity for Saratoga Springs. While the city does not currently have designated mountain biking trails, the neighboring community of Eagle Mountain invested in 30-acre amenity called the Mountain Ranch Bike Park. Connections to this regional facility and more informal mountain bike routes are viewed as key components to the bicycle network.



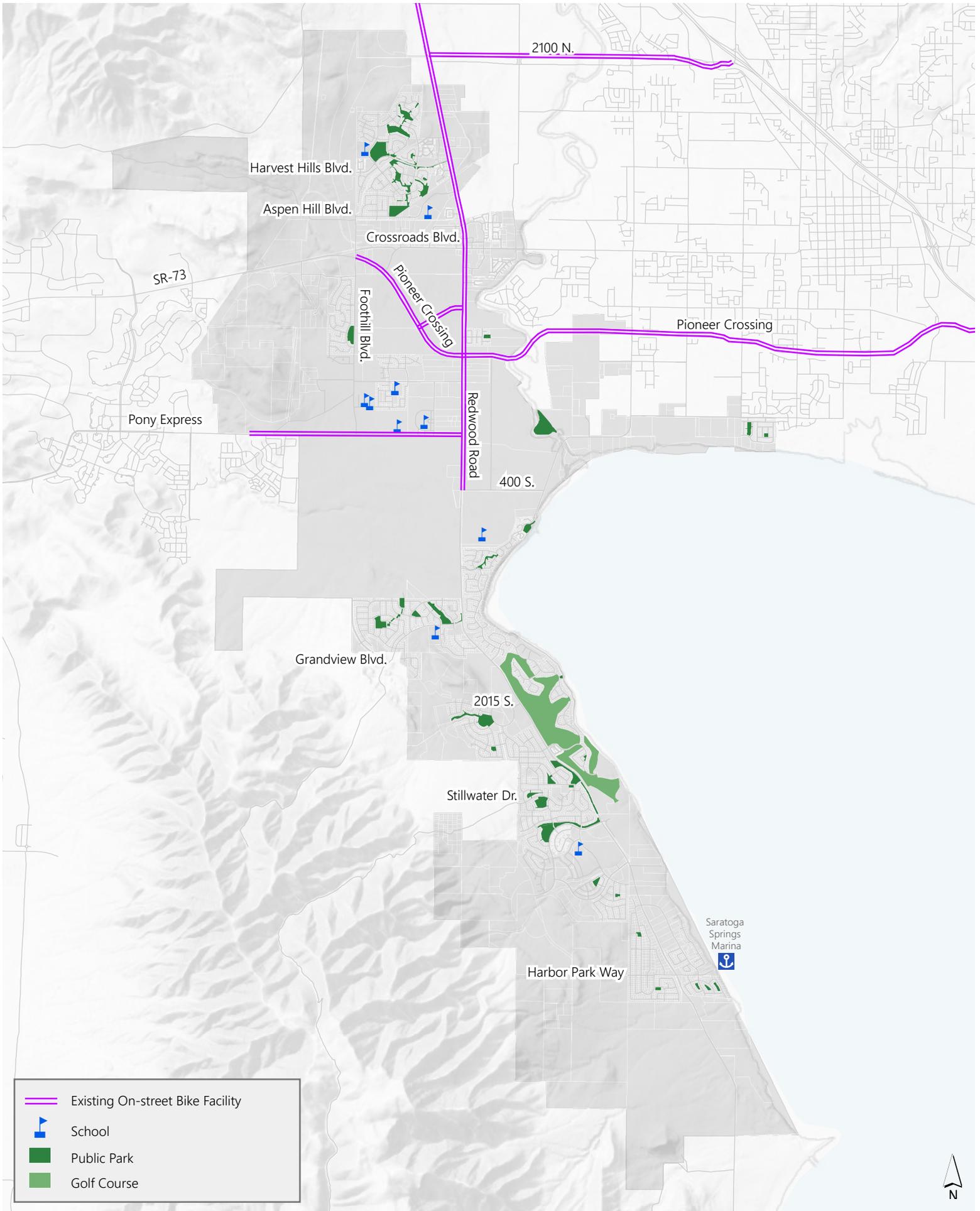
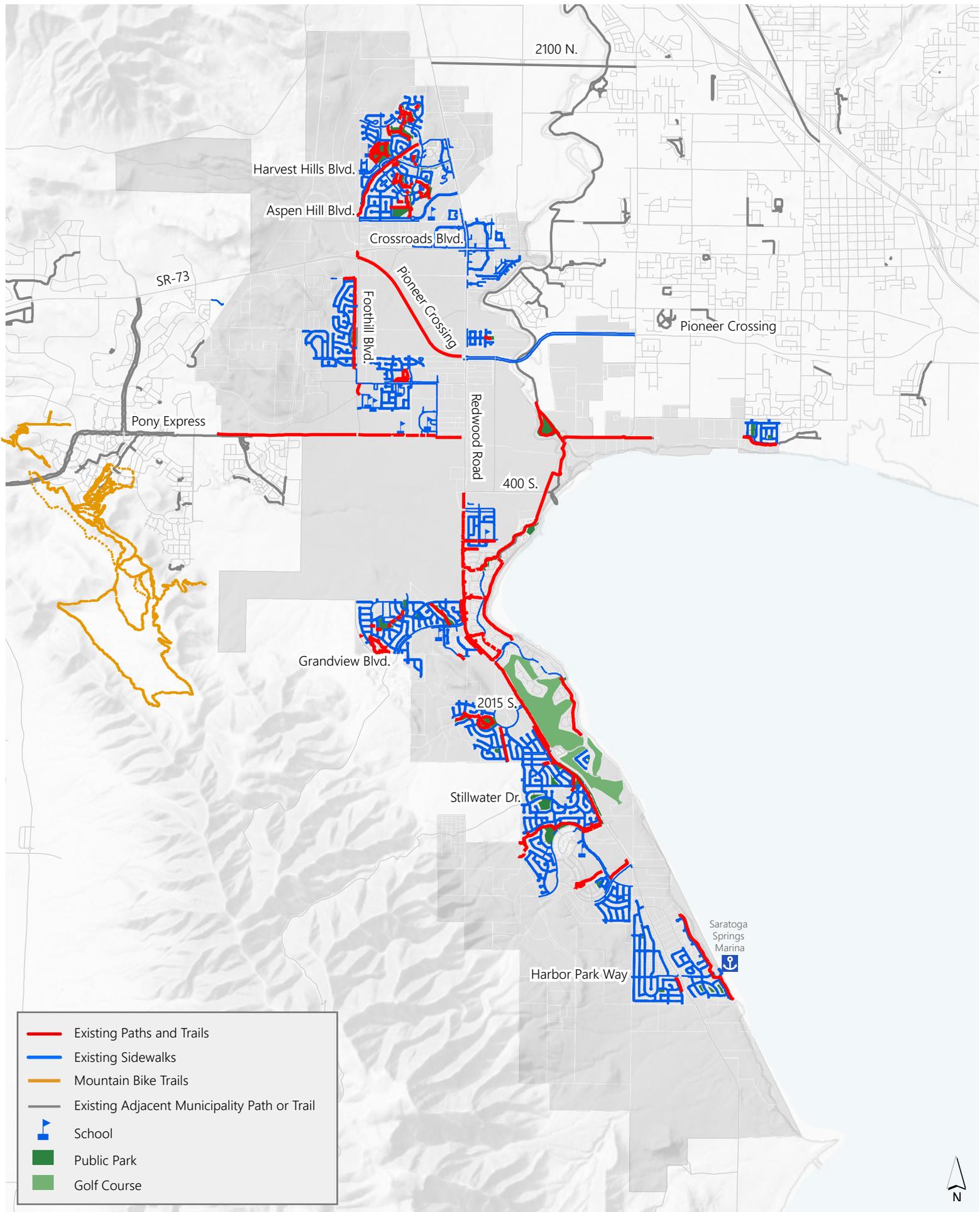


Figure 1: Existing On-Street Bicycle Facilities



0 1.25 2.5 5 Miles

Figure 2: Existing Off-Street Bike/Ped Facilities

Schools

Elementary

- Harvest Elementary (2105 Providence Drive) is located in the Harvest Hills neighborhood which has several path and trail facilities and a robust sidewalk network. However, connections outside of the neighborhood to the rest of the city are limited.
- Thunder Ridge Elementary (264 North 750 West) is located just north of Pony Express Parkway and west of Redwood Road. It is bordered by a shared-use path on 400 N and on Foothill Boulevard and a path is also being constructed on Pony Express Parkway. Connectivity is limited even with these facilities as they do not connect to major subdivisions to the north or south.
- Horizon School (682 W. Marie Way) is a special education school located adjacent to Thunder Ridge Elementary and houses pre-kindergarten to high-school.
- Saratoga Shores Elementary (1415 S. Parkside Drive) is located just off of Grandview Boulevard and west of Redwood Road. Grandview Boulevard has a shared-use pathway and there is a signalized crossing across Redwood Road, which also has a shared-use path in this location. The surrounding neighborhoods also have a robust sidewalk network. Connections to the north, however, are limited.
- Sage Hills Elementary (3033 Swainson Avenue) is located just south of Village Parkway and west of Redwood Road. Village Parkway has a shared-use path, as does Redwood Road running north. The surrounding neighborhood has a robust sidewalk network, but there is limited connectivity to the rest of the city.
- Legacy Farms Elementary is currently under construction at the northwest corner of School House Road and High Point Drive. It is anticipated that the school will open in the fall of 2016. According to the Legacy Farms Community Plan, there will be a 5' sidewalk network around the school and also access to an 8' multi-use trail on the south side of High Point Drive.



Junior High

- Vista Heights Middle School (484 Pony Express Parkway) is located southeast of Thunder Ridge Elementary. Similar to Thunder Ridge Elementary, connectivity is limited to the north and south due to gaps in the shared-use network.

High School

- Westlake High School (99 N. 200 W.) is located east of Vista Heights Middle School. Similar to Vista Heights Middle School, connectivity is limited to the north and south due to gaps in the shared-use network.

Charter Schools

- Lakeview Academy (527 W. 400 N.) is located west of Thunder Ridge Elementary. Similar to Thunder Ridge Elementary, connectivity is limited to the north and south due to gaps in the shared-use network.

Barriers and Safety

Barriers

Several barriers exist that limit bicycle and pedestrian travel in Saratoga Springs. These include:

- The major north-south facility, Redwood Road, is a high-traffic roadway with vehicles speeds around 50 mph. This is intimidating for cyclists and pedestrians, especially at intersections with other large roadways.
- Bicycle and pedestrian facilities have generally been built as part of commercial and residential development; undeveloped parcels create gaps in the network.
- Destinations such as schools and commercial areas are primarily located near Redwood Road between SR-73 and Pony Express Parkway. High-stress roadways and incomplete networks contribute to uncomfortable and indirect travel conditions.
- There are few support amenities provided for pedestrians and cyclists, such as way-finding signage and bike racks.

Safety

Pedestrian and bicycle related crash data between 2010 and 2015 was provided by UDOT and analyzed by Fehr & Peers. There were a total of 9 pedestrian related crashes and 9 bicycle related crashes. **Figure 3** highlights where these crashes occurred as well as their severity. While the crashes were fairly geographically dispersed, several occurred along the Redwood Road corridor, including one of the two fatal crashes. The second fatal crash occurred on Foothill Boulevard near SR-73.



Transit

Saratoga Springs is currently served by one bus line which serves Pony Express, Redwood Road and the Harvest Hills neighborhood during peak hours. The nearest FrontRunner stations are located in American Fork, approximately 5 miles to the east and in Lehi, 4-5 miles to the northeast, depending on the route with no direct connection. The American Fork station is accessed via the Pioneer Crossing corridor, while the Lehi station is accessed using the 2100 North corridor. Both corridors currently have bicycle and pedestrian facilities, however accessing these corridors from Saratoga Springs remains a challenge due to gaps in the bicycle network linking subdivisions to these corridors.

In the long term, Saratoga Springs is planning for transit facilities near the intersections of Pony Express and Redwood Road and Pioneer Crossing and Redwood Road. However, there are no projects scheduled in this area in the near term.

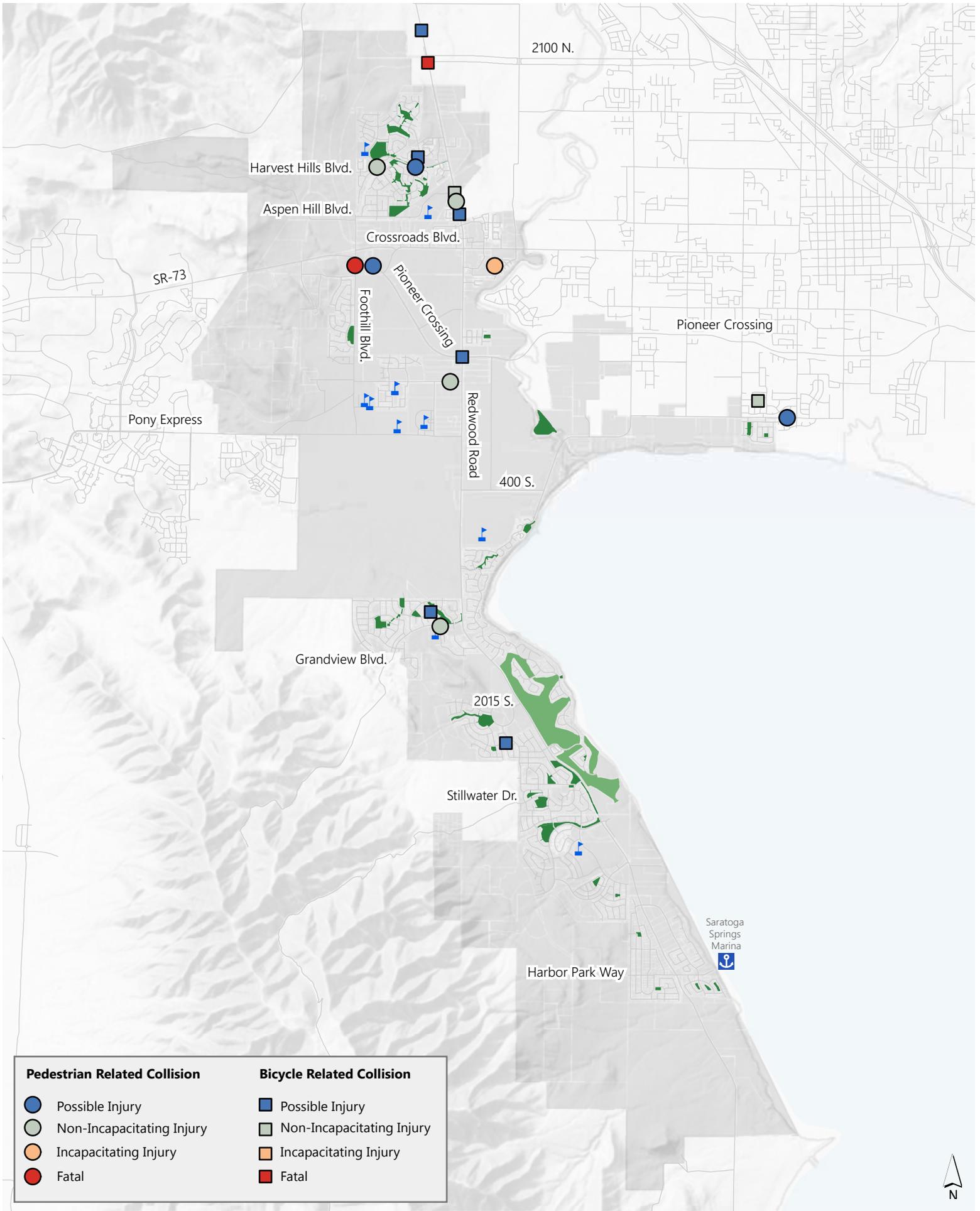


Figure 3: Collisions

chapter four

public outreach and input

Public outreach is a key component of any master planning effort. The objective of this outreach was to reach a broad, diverse public in which to discuss ideas for an improved bicycling and pedestrian environment in Saratoga Springs. Public outreach was conducted in a variety of ways including a project website, Needs and Attitudes Survey, an in-person public event, and an “online open house.”

Needs and Attitudes Survey

An online Needs and Attitudes Survey was conducted between July and August (2015) to understand public attitudes and preferences. The survey was used to identify priorities from those who live, work, play, and travel in and around Saratoga Springs. The survey had 11 multiple choice and several open-response questions as well as four optional demographic questions at the end. There were 168 unique responses to the survey. It is noted that responses represent the opinions of people who voluntarily took the survey, and may not represent the opinion of the majority of people in Saratoga Springs or those who may be affected by this plan.

Demographics

94% of respondents live in Saratoga Springs, 38% recreate here, 16% work here, and 3% go to school here. There was a nearly even male-female split among respondents, with slightly more females than males completing the survey. When asked their age range, respondents answered predominantly in the 26-44 year old age range, with few 25 and under or over 70.

Walking

- Walking Conditions – A plurality (**43%**) of respondents rated **overall walking conditions fair**; only 3% rated them excellent.
- Walking Frequency – More than **75%** of respondents **walk at least a few times a week**, with 31% of the total walking more than four times per week. Very few said that they never walk.



Bicycling

- Bicycling Conditions – Rated less favorably than walking conditions, with almost 75% rating conditions fair or poor.
- Bicycling Frequency – 18% said that they never ride a bike. The most common response, however, was riding a few times per month (33%) with about 50% riding at least a few times per week, if not more. It should be noted that people who are already comfortable bicycling are typically more likely to take a survey of this kind.

Types of Bicyclists Who Responded to the Survey

- 17% are strong and fearless (typically do not need dedicated facilities)
- 50% are enthused and confident bicyclists (prefer bike lanes)
- 30% are interested in bicycling but concerned about safety (prefer more separation)
- 5% were not interested at all

It is noted these results very likely reflect a respondent group that is more confident and engaged in cycling activities than the general population.

Types of Facilities – People rated the following facilities from **most** to least **likely to encourage them to ride more** (Theme: more separation is more desirable)

1. Off-street, paved shared use path
2. Protected bike lane
3. Paint-buffered bike lane
4. Painted bike lane
5. Shared roads

Walking and Bicycling

Most Common Reasons for Walking and Bicycling in Saratoga Springs

1. Improve my health
2. Be outdoors
3. Reduce stress
4. Be with family

Most Desired Destinations

1. Paved, off-street paths
2. Parks, pools, recreation areas
3. Friends' houses
4. School

What prevents people in Saratoga Springs from walking and bicycling more? (Respondents could select more than one)

1. Lack of complete sidewalks, bike lanes, or paths (80%)
2. Traffic or dangerous behavior by motorists (speeding, not yielding) (54%)
3. Lack of crossings (28%)

4. Destinations are too far away (27%)

Top three improvement priorities (could select more than one)

1. New or improved sidewalks, crossings, bike lanes, and shared use paths (88%)
2. Better connectivity to parks and recreation (66%)
3. Safer routes to schools (43%)

Public Outreach

In addition to the Needs and Attitudes Survey, there were two opportunities for the public to provide input on the Plan. The purpose of the initial in-person event was to inform the public about the project and solicit open-ended feedback about facilities, locations, and issues. The purpose of the second “online open house” was to present the recommendations of the plan via an interactive web application and obtain feedback for prioritizing the recommendations. These comment opportunities were advertised through the Saratoga Springs city newsletter, flyers, project website, Facebook, and by directly contacting interested parties, including Home Owner’s Associations.



Splash Days Event

The first open house was held at the Saratoga Springs Splash Days event at Neptune Park. Over 25 people stopped at the booth and half of the visitors provided comments. Materials at the event included welcome and project boards, a comment map, objectives exercise and a survey flyer.

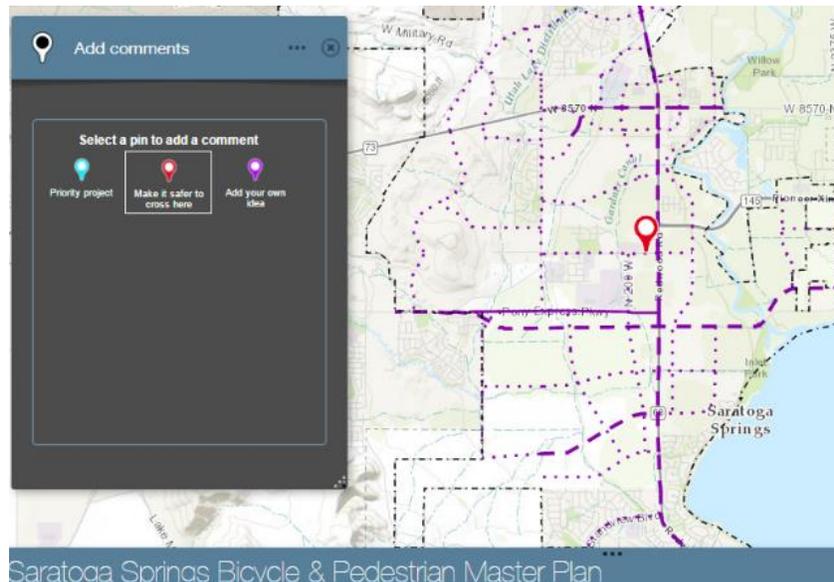
Comments

Several comments were received and are listed below.

- Harvest Hills is isolated and hard to get down to the city
- Connect Shea Park
- Provide additional connections/wayfinding to Jordan River Trail
- Signage improvements at the bridge under Pioneer Crossing (SR-145) bridge
- Gravel paths should be paved to improve conditions for cyclists
- There is not enough shoulder along Redwood Road south of the golf course
- Continue proposed trail along Utah Lake
- Heavy trucks going to the gravel pit are a safety hazard
- Median along Redwood Road presents access issues

Online Open House

The online open house was administered through the project website. This forum presented the proposed bicycle/pedestrian networks and priorities, and provided an interactive web map to collect comments. Compared to a traditional open house, the online open house extends the comment period over a longer time to allow engagement from a variety of constituents.



A total of 55 comments were made via the interactive web map, which were used to make edits to the proposed bicycle and pedestrian networks. Because the web map collects comments that are referenced to a spatial location, comments were also analyzed to identify geographic clusters and high priority areas. **Figure 5** provides a map of comment densities. Red areas had high comment density while blue areas had lower comment densities.

Field Tour to Salt Lake City, Utah

Members of the Steering Committee participated in a field tour of bicycle and pedestrian facilities in Salt Lake City. The purpose of this trip was to educate decision makers on the different bicycle and pedestrian treatment types and supporting systems. This field trip provided the opportunity to observe wayfinding signage, bicycle signals, buffered bike lanes, GREENbike (bike share), protected bike lanes / cycletrack, green-painted shared lanes, left turn bike boxes, different bike parking styles, and lighted pedestrian signage.



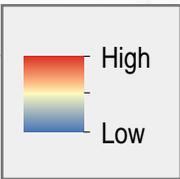
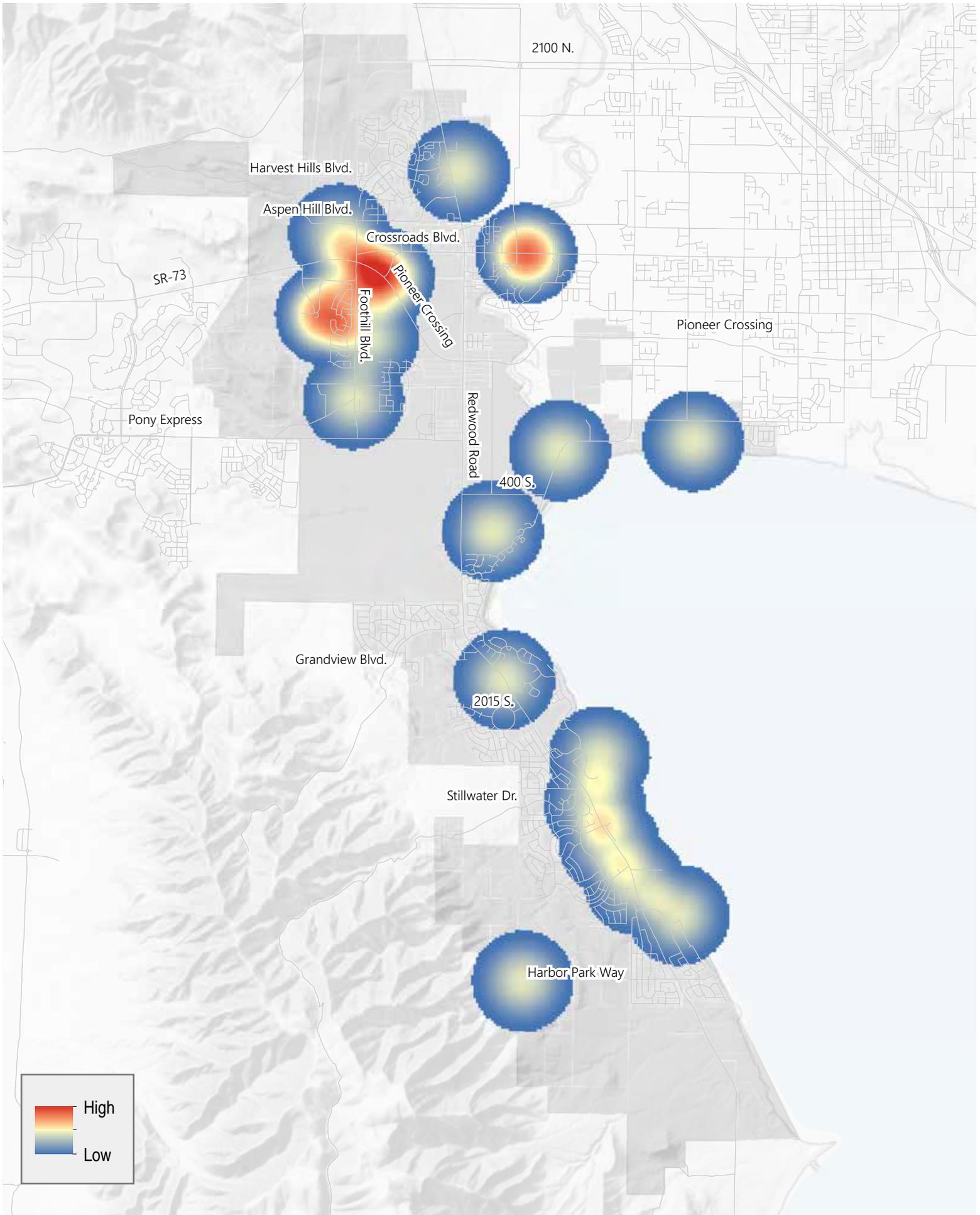


Figure 4: Public Comment Geographic Clusters

chapter five

proposed system & project prioritization

The proposed active transportation network is designed to fulfill the vision for walking and bicycling in Saratoga Springs. The proposed system is the result of field reviews, discussions with the Steering Committee, input from the public, and engineering judgment. Once completed, the active transportation network will provide safe and direct travel paths throughout Saratoga Springs for those who walk or bike for recreation or as part of their commute.

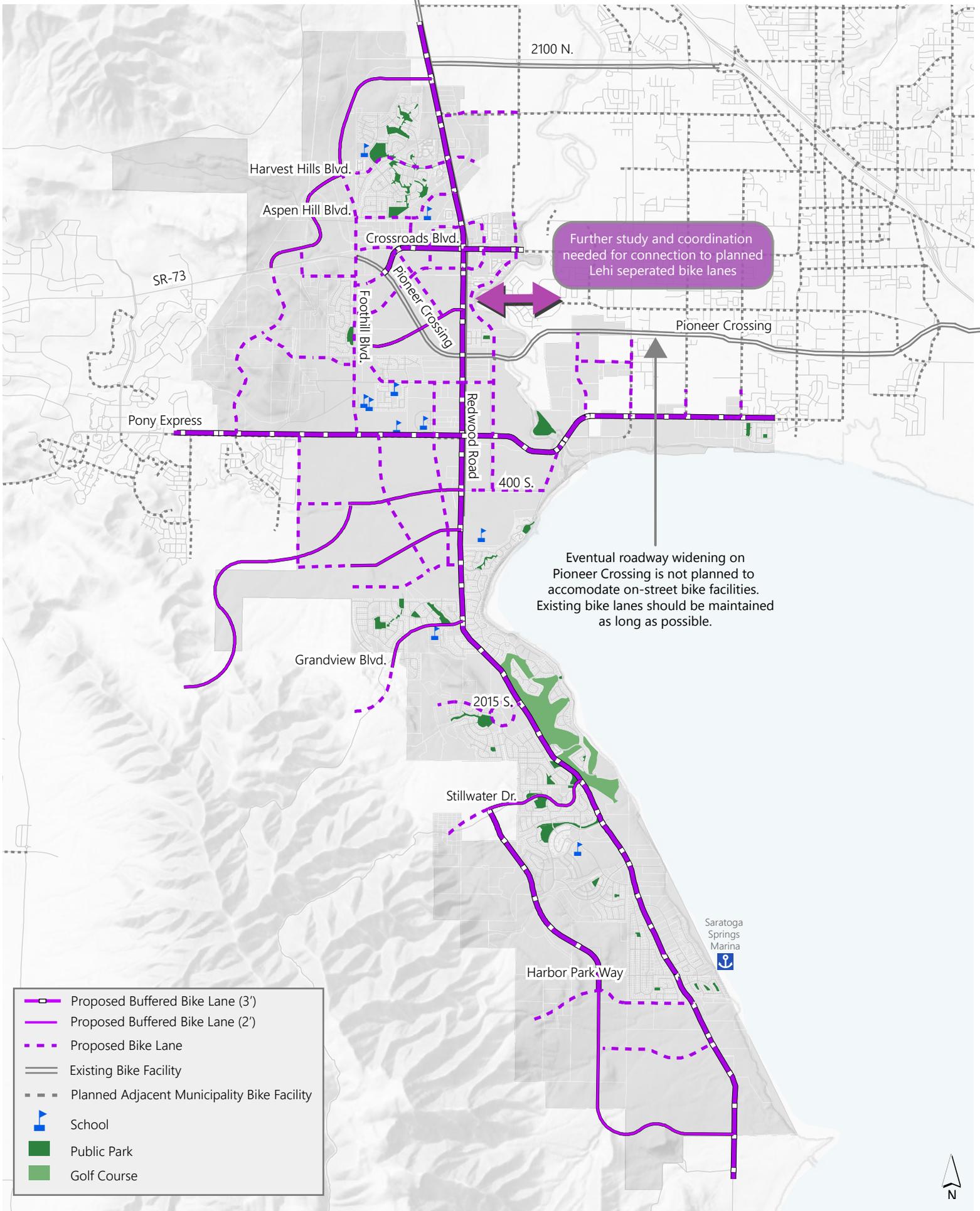
On-Street Bicycle Facilities

The proposed on-street network is designed for more confident and experienced bicyclists traveling in Saratoga Springs. Corridors selected for inclusion in the network are targeted for specific improvements in this Plan, such as the installation of bicycling lanes. However, unless explicitly prohibited, bicyclists are allowed on all streets and roads regardless of whether the streets and roads are a part of the bikeway network.

Figure 5 illustrates the existing and proposed on-street bicycle network. The proposed system includes about 70 miles of new on-street bikeway facilities such as bicycle lanes and buffered bicycle lanes. **Table 1** shows the number of proposed miles for each bikeway classification.

TABLE 1: SUMMARY OF PROPOSED ON-STREET BIKE NETWORK

Facility Type	Existing (miles)	Proposed (miles)	Total (miles)
<i>Bike Lane</i>	8.1	33.0	41.1
<i>Buffered Bike Lane (2')</i>	0	13.5	13.5
<i>Buffered Bike Lane (3')</i>	0	21.0	21.0
Total	8.1	67.4	75.6



On-Street Bicycle Network Design Methodology

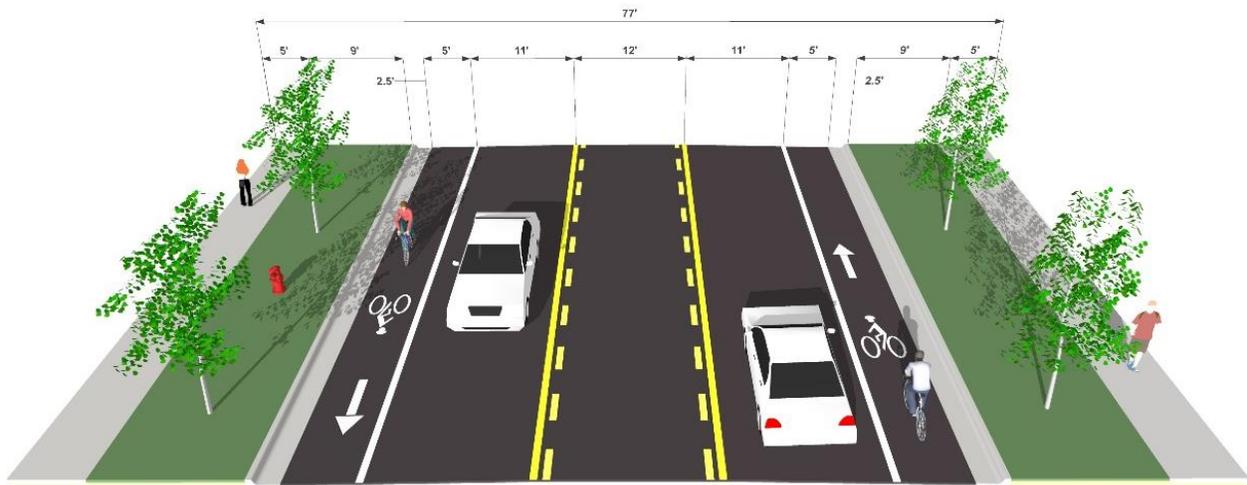
The following approach was used to create the Plan:

- The existing conditions map was overlaid with identified corridors from the input gathered from the Steering Committee and the public.
- These corridors were combined with access to destinations such as schools, parks, and commercial areas to create a preliminary bicycle network.
- The Transportation Master Plan and Parks, Recreation, Trails, and Open Space Master Plan were reviewed to identify future connections and facility types.
- The preliminary bicycle network was checked against existing and proposed networks in adjacent communities to ensure regional connectivity.
- The preliminary bicycle network was reviewed to ensure adequate spacing of facilities, closure of gaps within the network, and addressing of safety concerns.
- Initial bicycle facility types were created based on revised cross-section standard drawings, functional classification, field work, and discussions with the City.
- The complete bicycle network was reviewed with the Steering Committee and checked to ensure connectivity within Saratoga Springs and to adjacent communities.

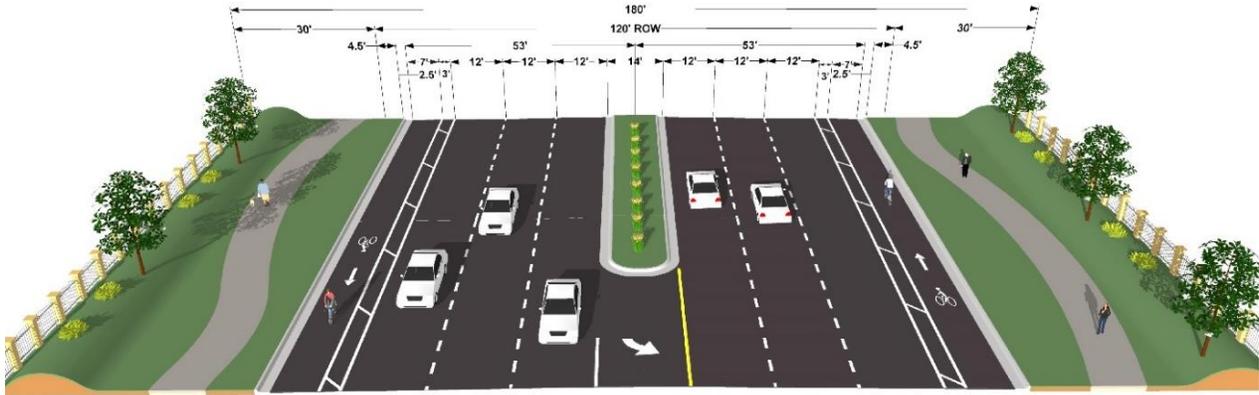
Proposed Facility Types & Cross-sections

The proposed on-street bicycle network is composed of bicycle lanes and buffered bicycle lanes. Roadway cross-sections, shown on the following page, were developed using the street typology from the Transportation Master Plan (see **Appendix A** for all street typologies).

Bike lanes provide a restricted right-of-way and are designated for the use of bicycles with a striped lane and signage on a street or highway. They can increase bicyclists' safety and comfort by providing a visual separation between modes. Bicycle lanes are generally five to six feet wide.



Buffered bike lanes are bike lanes that provide a greater level of separation from vehicular traffic and/or parked vehicles by creating a buffer adjacent to the bicycle lanes through striping. Buffered bike lanes typically include a two to three foot striped buffer adjacent to a five to six foot bike lane. Buffers can be painted or can include vertical elements like a concrete curb or plastic bollards, which provide additional protection for users.



Bicycle Facility Decision Matrix

While the proposed cross-sections provided in Appendix A provide bicycle infrastructure recommended based on roadway types, the context of roadways change over time. To assist Saratoga Springs in determining appropriate bicycle facility types in the future, bicycle facility guidance has also been developed. **Appendix C** contains guidance on appropriate facility types based on conditions including the number of lanes, traffic volume, and speed. If these attributes increase, a higher degree of separation is recommended to improve comfort and safety for cyclists. While the facility types identified reflect best practices, the guidance is not meant to replace engineering judgement. Each situation is unique and facility types should be selected on a case-by-case basis.

Bicycle Project Prioritization

Much of the future on-street bicycle network is expected to be incorporated into new roadway construction. However, there are several existing roads on which bike lanes are proposed, and these were identified as priority project locations. From the City perspective, these are priority projects because they will not be funded through new development and will require the City and government partners to fund these projects. **Figure 6** illustrates these priority projects.

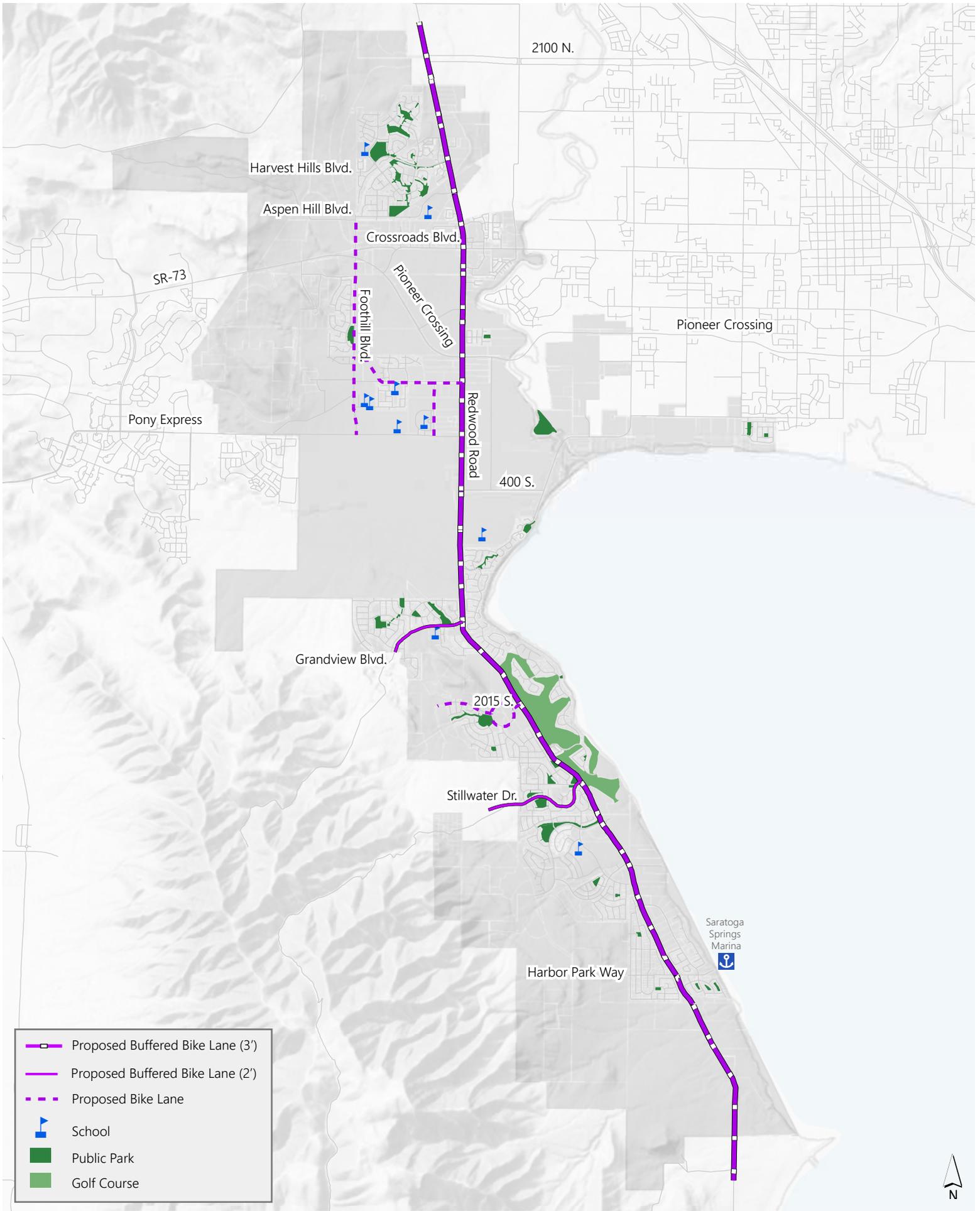


Figure 6: Proposed Priority On-Street Bike Facilities

Off-Street Pedestrian & Bicycle Facilities

The provision of off-street infrastructure is essential to creating a comfortable walking environment. It is also important to provide these facilities to serve cyclists who are uncomfortable using on-street bicycle facilities. Saratoga Springs is ahead of many other Wasatch Front communities in providing sidewalk infrastructure. City development requirements include provisions to ensure sidewalks are integrated in new residential and commercial development. Beyond neighborhood sidewalk networks there is a need for paved paths and soft surface trails that can provide connections between subdivision and serve as recreation facilities.

The proposed off-street network consists of trails and pathways that are designed to connect destinations and provide recreational opportunities. While sidewalks are usually oriented toward pedestrians, many user groups can utilize these facilities, especially those designated as multi-use trails, including road and mountain bicyclists, and equestrians.

Figure 7 illustrates the existing and proposed off-street network. The proposed system includes a total of approximately 100 miles of new facilities. **Table 2** shows the number of proposed miles for each classification. While this plan does not specify locations for crossing treatments, guidance on selecting appropriate treatments can be found in **Appendices D and E**.

TABLE 2: SUMMARY OF PROPOSED OFF-STREET BIKE/PED NETWORK

Facility Type	Existing (miles)	Proposed (miles)	Total (miles)
<i>Off-Street Paved Pedestrian & Bicycle Facilities</i>	26.2	93.4	119.7
<i>Soft Trails</i>	1.5	35.4	36.9
<i>Sidewalk</i>	140.4	N/A	N/A
<i>Total*</i>	168.1	269.2	297.0

*Future sidewalks are not defined in the Plan, and therefore only existing sidewalk is included in total calculations.

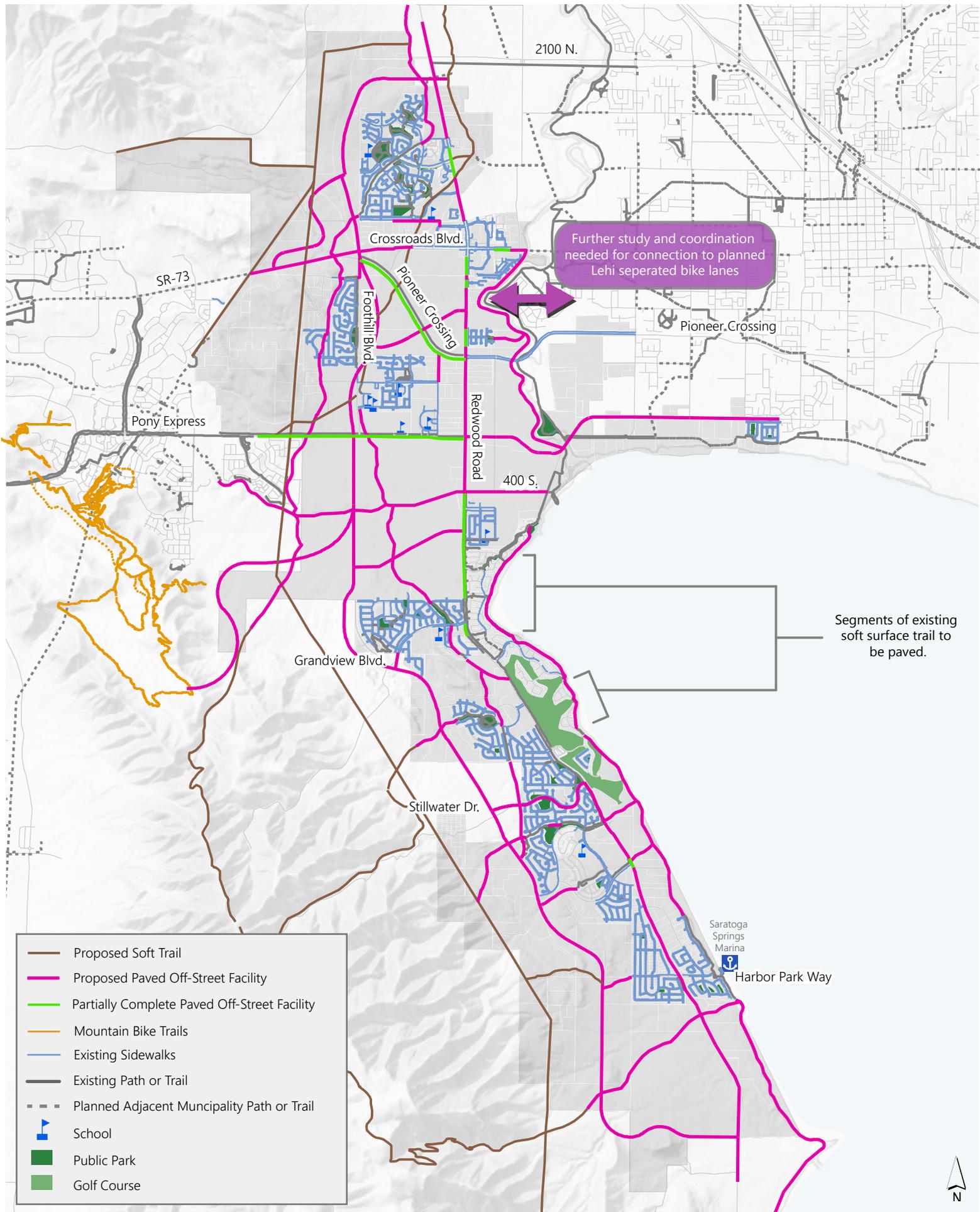


Figure 7: Existing and Proposed Off-Street Bike/Ped Facilities

Off-Street Network Design Methodology

The proposed system was developed according to the following methodology:

1. Gaps in the existing trail and pathway network were identified through reviewing existing geospatial data.
2. Corridors for prioritization were selected based on the input gathered from the Steering Committee and the public and corridors with access to destinations such as schools, parks, trails, and commercial areas.
3. The preliminary network was reviewed to ensure closure of gaps within the network, addressing of safety concerns.
4. The pedestrian network was reviewed with the Steering Committee and checked to ensure connectivity within Saratoga Springs.

Project Prioritization

Like the on-street bike network, much of the off-street network will be constructed through future development. However, some projects should be pursued by the City. These projects fill gaps in the network and complete regionally significant multi-use trails and pathways. **Figure 8** illustrates these priority projects.

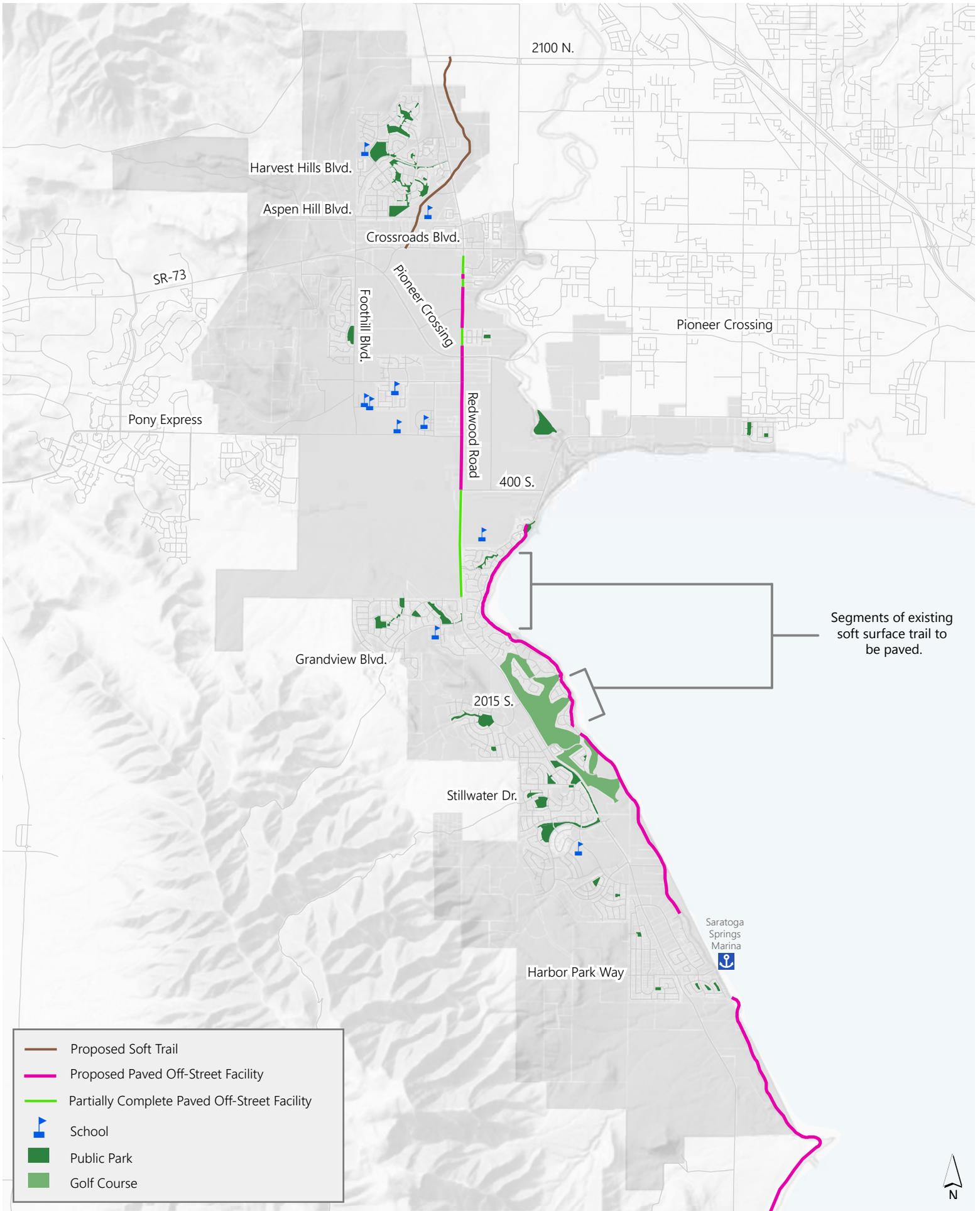


Figure 8: Proposed Priority Off-Street Bike/Ped Facilities

Amenities & Recommendations

Active transportation networks can be supported through other amenities such as lighting, trash cans, water fountains, and benches. Saratoga Springs should endeavor to provide these, and other amenities, wherever possible. Several key amenities are recommended based upon field visits and discussion with the Steering Committee. These recommendations are described in **Table 3**. Additional amenities and bicycle and pedestrian facility treatments are listed in **Appendix D** (“toolbox”).

TABLE 3: SUMMARY OF ACTIVE TRANSPORTATION AMENITIES

Tool	Description	Benefits	Considerations
<p>Corridor Lighting</p>  <p>Image source: www.pedbikeimages.org/</p>	<p>Roadway and pedestrian sidewalk lighting to improve driver visibility of pedestrians during low light conditions</p>	<p>Improves driver visibility of pedestrians and provides them more time to react to a potential conflict</p>	<p>Should be considered along all corridors</p>
<p>Way-finding Signs</p>  <p>Image source: NACTO</p>	<p>Posting a series of pedestrian and bicycle way-finding signs that orient pedestrians to walking and biking destinations along a corridor</p>	<p>Encourages more walking and bike trips by providing people with a reference point to a destination</p>	<p>Applied in locations where there are pedestrian and bicycle destination or attractors</p> <p>Should be scaled to be legible for appropriate user</p>
<p>Bicycle Repair Stands</p> 	<p>Do-it-yourself bicycle repair stands offer an air pump and basic tools to make minor bicycle repairs.</p>	<p>Encourages bicycle use by removing concerns related to common maintenance and repair issues.</p>	<p>Repair stands should be located near short-term and long-term bicycle parking.</p>

Bicycle Parking

Bicycle parking is an important end-of-trip facility for those riding bicycles for any purpose, allowing secure storage of bicycles and comfortable access to destinations. Saratoga Springs should consider adopting a bicycle parking ordinance that would provide both short and long-term bicycle parking.

As part of this Plan, a bicycle parking best practice was developed based on guidance from the Association for Pedestrian and Bicycle Professionals' (APBP) Bicycle Parking Guidelines Manual (2nd Edition) and bicycle parking generation code language and design standards from Lindon, American Fork, and Eagle Mountain, Utah. **Appendix B** contains the best practice guidance.



Crosswalk and Intersection Guidance

Crosswalk Decision Matrix

To assist Saratoga Springs in creating safe crosswalks, this Plan includes a Crosswalk Decision Matrix (**Appendix E**), which provides guidance for determining where to install crosswalks at uncontrolled locations. The Crosswalk Decision Matrix is a toolbox of elements to improve pedestrian mobility, visibility, and safety at uncontrolled locations. It will assist the City in making decisions about where basic crosswalks (two stripes) can be marked; where crosswalks with special treatments, such as high visibility crosswalks, flashing beacons, and other special features, should be employed; and where crosswalks will not be marked due to safety concerns resulting from volume, speed, or sight distance issues. This matrix provides guidance about the type of treatments appropriate on various streets and under various conditions. While the strategies in the matrix reflect best practices, the guidance is not meant to replace engineering judgment. Each situation is unique and walking safety treatments must be selected on a case-by-case basis.

Separated Bikeways at Intersections

Creating safe intersections for bicyclists is often challenging. Even if linear bicycle facilities are acceptable, if the interaction between automobiles and bicycles at intersections is not appropriately addressed it can lead to safety issues and lower utilization. **Appendix F** provides guidance to transition bike lanes through right turn lanes and roundabouts, as well as guidance related to signal detection.

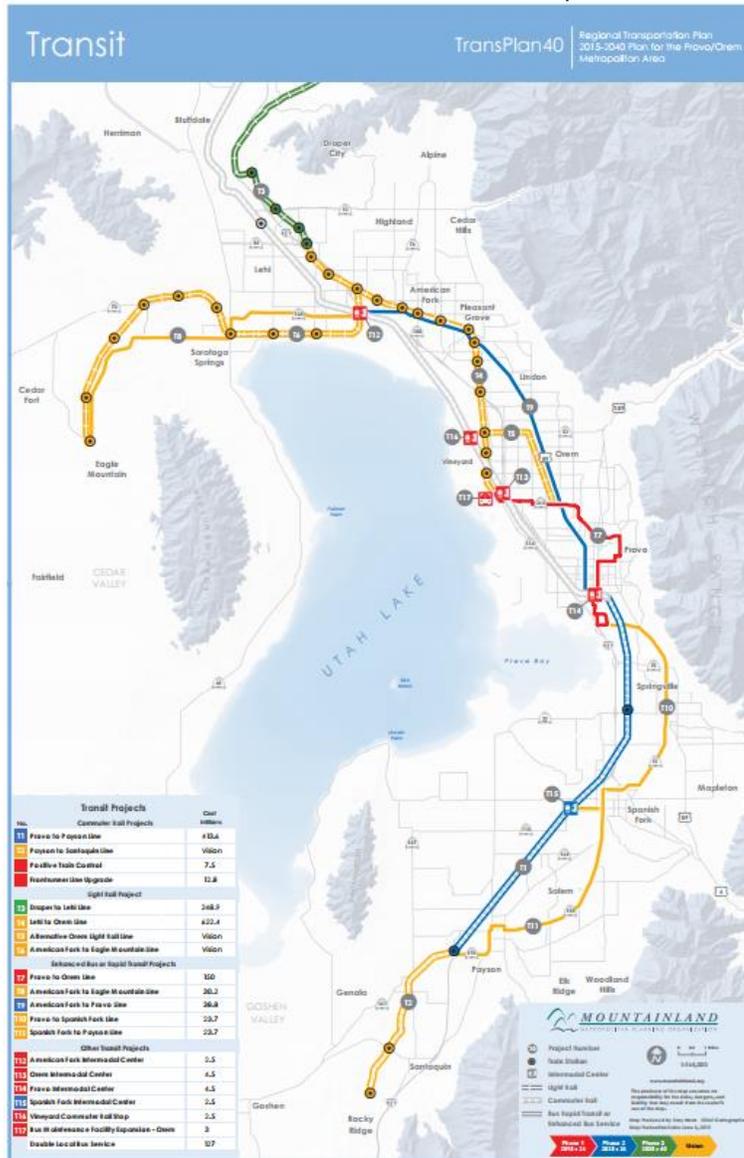
Future Transit Integration

The 2015-2040 MAG long-range transportation plan identifies two projects with connections to Saratoga Springs; a Bus Rapid Transit (BRT) route with service between American Fork and Eagle Mountain and a Light Rail project with service between Lehi and Eagle Mountain. Both projects are identified as “Vision/Unfunded” with no specific timeline for

development. However, connections to these future projects and other interim transit investments are critical to the future bike and pedestrian networks. Transit can work hand-in-hand with these networks, allowing users to use both systems together to make longer trips, or providing alternatives during inclement weather. Providing seamless and convenient “first/last mile” connections to transit makes using both networks more feasible.

In the short term more frequent transit service is most likely to be added to major corridors like Redwood Road, Pony Express Parkway, and Crossroads Blvd. Saratoga Springs should pay special attention to making effective first/last mile connections to these corridors. For future fixed-guideway projects, multi-modal access to station areas should be a key focus. The Utah Transit Authority (UTA) has developed a First/Last Mile toolbox that is an excellent reference for providing connections to station areas.

MAG TransPlan40 Transit Map



chapter six

capital costs & maintenance

There are two costs associated with developing the proposed active transportation network – capital costs for constructing the facilities, and ongoing maintenance costs to ensure that the facilities in good condition. While new development will cover some of the upfront capital costs, Saratoga Springs will need to plan for appropriate resources for new construction, retrofits, and regular maintenance activities.

Capital Cost Assumptions

This section discusses capital costs of bicycle and pedestrian facilities recommended in this Plan. Table 4 provides a summary of capital costs by facility type as well as priority.

On-Street Bike Facilities

The planning-level cost is \$13,000 per mile (bi-directional) for a standard bike lane. The planning-level cost is \$21,000 per mile (bi-directional) for a buffered bike lane. These costs assume sufficient curb-to-curb width to install the bike facility and associated pavement markings, but that modifications to existing striping would be necessary to make room. It assumes that the road is in good condition and doesn't require maintenance or rehabilitation as part of the striping project.

Off-Street Bike/Ped. Facilities

The planning-level cost is \$686,000 per mile (centerline) for paved paths, assuming asphalt paving of an 8'-10' pathway. Right-of-way acquisition and other soft costs including design and engineering are not included in this estimate.

The planning-level cost is \$32,000 per mile for 8'-10' trail of a soft-surface material such as soil or chipped wood. Costs from the Saratoga Springs Park, Recreation, Trails, and Open Space Master Plan were adjusted using a CPI inflation calculator to develop the cost estimate in 2015 dollars.

In most cases, sidewalk construction costs will be covered through future development. However, sidewalks cost estimates are provided to better understand the costs incurred by developers. A standard 5-foot sidewalk with curb and gutter is roughly \$75 per linear foot.

TABLE 4: CAPITAL COSTS SUMMARY

Priority Network			
	Miles	Per Mile Unit Cost	Cost
Off-Street Paved Pedestrian & Bicycle Facilities	12.0	\$686,000	\$8,250,800
Soft Trails	2.1	\$32,000	\$66,200
Bike Lane	4.9	\$13,000	\$63,900
Buffered Bike Lane (2')	1.8	\$21,000	\$38,200
Buffered Bike Lane (3')	11.6	\$21,000	\$243,700
TOTAL	32.4		\$ 8,662,800
All Recommendations			
	Miles	Per Mile Unit Cost	Cost
Off-Street Paved Pedestrian & Bicycle Facilities	93.4	\$686,000	\$64,091,200
Soft Trails	35.4	\$32,000	\$1,133,000
Bike Lane	33.0	\$13,000	\$428,900
Buffered Bike Lane (2')	13.5	\$21,000	\$282,500
Buffered Bike Lane (3')	21.0	\$21,000	\$440,000
TOTAL	196.2		\$66,375,600

Maintenance Recommendations

The City of Saratoga Springs has invested considerable resources in the construction of shared use paths and sidewalks, both of which provide valuable recreational and transportation benefits to local residents and visitors. The City currently allocates about \$50,000 annually to the Parks Department for snow removal and plant management along trails. Trails outside of established parks are essentially treated as linear parks and maintained by the Parks Department. On-street bike lanes are currently maintained as part of regular roadway maintenance.

As Saratoga Springs continues to grow, capital costs and therefore maintenance costs will increase as more and different types of facilities are installed. Currently, an element of disconnect or disparity exists between growth and budgeted maintenance costs, as well as between expectations of facility quality and financial resources. Additional operations and budgetary planning will benefit the City as it handles current and future demand for high quality facilities and associated maintenance activities. The following maintenance recommendations seek to establish a structured yet flexible approach to maintenance activities for existing and proposed on and off-street bicycle and pedestrian facilities.

The physical condition of bicycling and walking facilities like bike lanes, paved shoulders, dedicated shared-use paths, and sidewalks, is an important consideration when residents consider choosing walking or bicycling for transportation or other uses.

Primary on-street bikeway maintenance activities include sweeping, maintaining a smooth roadway, and snow removal. Pavement management and overlay projects are good opportunities to add or improve bicycle facilities within the existing roadway width.

Typical off-street bicycle and pedestrian facility maintenance activities include sweeping, pavement management, snow removal, weed abatement, landscaping, and mowing.

Developing a city-wide maintenance management plan will be useful in ensuring that responsibility is assigned to different departments within the City and that regular maintenance is completed efficiently and uniformly. The following recommendations provide a menu of options that will improve Saratoga Springs' existing and future maintenance program. Recommendations should be incorporated into the City's construction standards, development code, master development agreements, standard cross sections, City Code (where applicable), and other zoning and maintenance definitions and standards.

On-Street Maintenance Activities

Implementing bikeway facilities is important and keeping them in good condition equally so. On-street bikeways are currently maintained as part of standard roadway maintenance programs, however wide shoulders and bike lanes often have debris, like rocks, sand, and snow, in them, making bicycle travel within those designated areas more difficult. Extra emphasis should be put on keeping bike lanes and roadway shoulders clear of debris and snow, as well as keeping vegetation overgrowth from blocking visibility or creeping into the roadway. Maintenance activities could be driven by a regular schedule or by maintenance requests from the public. Typical maintenance costs for on-street bikeways are shown in **Table 5** at the end of this section.

Street Sweeping

When a bicycle lane becomes filled with debris, bicyclists are forced into the motor vehicle lane. Poor bikeway maintenance can contribute to crashes and deter potential bicyclists unwilling to risk flat tires and skidding on roadways. The City of Saratoga Springs maintains all public roadways within city limits that are not state routes except for Cedar Fort Rd/SR-73, Redwood Rd/SR-68, Pioneer Crossing, and SR-145, which are UDOT-maintained, state highway facilities.

Periodic checks should be made of the on-street bikeway network. Street sweeping of on-street facilities should be coordinated with the management agency's roadway maintenance program to ensure that the roadway is cleared curb to curb and that debris is not swept into the bike lane.

Sweeping Guidance

- Establish a seasonal sweeping schedule that prioritizes roadways with bikeways.
- Sweep bikeways whenever there is an accumulation of debris.
- In curbed sections, sweepers should pick up debris; on open shoulders, debris can be swept onto gravel shoulders.
- Pave gravel driveway approaches to minimize loose gravel on paved roadway shoulders.

- Sweeping of off-street paths may require special equipment such as bobcats equipped with sweeping attachments or specialized path sweepers.
- Perform additional sweeping in the spring to remove debris that has accumulated during winter.
- Perform additional sweeping in the fall in areas where leaves accumulate.

Pavement Surface

Bicyclists are more sensitive to pavement quality than motorists because of reduced speeds, narrower tire widths, and, typically, lack of suspension or dampening systems. Compaction after trenches and other construction holes are filled can negatively affect bicycle travel. Uneven settlement after trenching can affect the roadway surface nearest the curb where bicycles travel. Sometimes compaction is not achieved to a satisfactory level, and an uneven pavement surface can result due to settling over the course of days or weeks.

Roadway paving aggregate material choice is an important issue when roads are repaired or repaved. The City should investigate using a smaller chip size, such as ¼ inch or ½ inch, on at least the most popular on-street biking routes to improve pavement quality and bicyclist comfort. A seal coat, which is applied after the chip, will greatly improve smoothness of the roadway surface.

Pavement Surface Guidance

- Maintain a smooth pothole-free surface.
- Ensure that the finished surface on bikeways does not vary more than ¼ inch on new roadway construction and existing roadway repaving or resurfacing.
- Maintain pavement so that ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings.
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.
- During chip seal maintenance projects, if the pavement condition of the bike lane is satisfactory, 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.

Pavement overlays represent good opportunities to improve conditions for on-street bikeways if done carefully. A ridge should not be left in the area where bicyclists ride (this occurs where an overlay extends part-way into a shoulder bikeway or bike lane). Overlay projects also offer opportunities to widen a roadway or to re-stripe a roadway with bike lanes.

Pavement Overlay Guidance

- Extend the overlay over the entire roadway surface to avoid leaving an abrupt edge.
- If the bike lane pavement is of good quality, it may be appropriate to end the overlay at the shoulder or bike lane stripe provided no abrupt ridge remains.
- Ensure that inlet grates, and manhole and valve covers are within ¼ inch of the finished pavement surface and are made or treated with slip-resistant materials.
- Pave gravel driveways to property lines to prevent gravel from being tracked onto shoulders or bike lanes.

Off-Street Maintenance Activities

Shared-use paths and trails require regular maintenance to provide a quality experience to users. Maintenance activities can generally be categorized into one of two types: routine maintenance, which is

done frequently to annually; and, major or capital maintenance, which involves more intensive activity at a less than annual frequency.

Not every shared-use path or trail will have the same needs and levels of expenditure. It is estimated that approximately \$500 to \$1,500 per mile be budgeted annually for routine maintenance of shared-use paths and trails.

Sidewalk Maintenance

Sidewalks enable residents to safely access friends' homes, commercial areas, community resources, transit stops, schools, and other destinations on foot. Sidewalks are also integral to Saratoga Springs' future economic centers as they will provide spaces to meet, eat, and engage with one's community. Maintaining sidewalks clear of debris and obstructions is essential to maintaining comfort and safety for and limiting liability in the city.

Sidewalk Guidance

- Work with property owners to enforce regular sidewalk maintenance.
- Repair and reconstruct sidewalks where necessary because of tree root heaving, settling, deterioration, landslides, or other natural occurrences.

Snow Removal

In the event of a snow storm, the City uses as many as five snow plow trucks to clear and salt 180 lane miles of non-state highway roads (mentioned previously), sometimes 24 hour per day if necessary. The Public Works Department prioritizes which streets will be plowed first in the following order, ranked by priority: (1) collectors and streets serving schools, municipal buildings, and selected streets on steep grades; (2) main secondary routes through subdivisions connecting collector streets; (3) remaining City streets and unpaved roadways. During major snow events, the top priority streets may be cleared before and continually before any other streets in order to keep them operational; snow removal on second and third priority streets may not occur for several days after a major event.

Individual property owners, occupants, and/or homeowners are not allowed to park or allow to be parked vehicles on the street in the case of a snow event, so as to allow effective snow removal by Public Works. Residents are also responsible for removing snow and ice on and in front of private driveways and mailboxes, though snow may not be plowed into or back into the public roadway. Residents are also required to remove snow and ice from sidewalks along their property, though City crews are responsible for sidewalks in and in front of public facilities.

Winter maintenance of bicycle and pedestrian facilities is an important consideration for a city like Saratoga Springs that receives significant amounts of snowfall. The City should expect bicyclists to use the road network year round, even in inclement conditions. Providing safe conditions for bicyclists year round should be a top priority. Some communities prioritize streets with bicycle and pedestrian facilities to be plowed by 7:00 am (starting at 4:00 am), Monday through Friday, to facilitate active transportation users' commutes to school and work. Conventional on-street bike lanes can and should be plowed at the same time as the rest of the street and should not require a considerable amount of extra effort. Protected bike lanes may require a small plow or brush to clear snow and/or debris, but should be maintained at the same time as the rest of the roadway. The planted strip separating the sidewalk from the roadway and/or the protected bike lane buffer can be used for snow storage.

Snow removal along proposed on-street paths and off-street trails will require additional or new efforts from Saratoga Springs maintenance crews in several departments. The City should attempt to provide

snow removal for paths and sidewalks (where they are not currently being cleared) throughout the rest of the city as the proposed system develops. Immediately clearing snow from all paths will likely not be feasible because of time and budget resources, but department staff and maintenance crews should establish a prioritization that focuses on 1) regionally-significant trails and paths, 2) trails and paths that connect to schools, 3) trails and paths that connect to retail/commercial centers and 4) trails and paths that connect to transit stops.

Snow Removal Guidance

- City should employ a proactive or anti-icing strategy and have a plan for the removal of unused de-icing surface material debris after storms that accumulates in and around bike facilities.
- A prioritization schedule for snow removal is necessary and should focus on primary routes and destinations that impact the highest volume of bicyclists and pedestrians immediately following snow events.
- Plow all the way to the curb to clear bike lanes and rideable shoulders.
- Snow removal on off-street trails and on-street paths may require special equipment such as skid steers equipped with plows or smaller pickup truck plows.

Annual Maintenance Cost Estimates

The following tables provide cost estimates and recommendations for ongoing maintenance of the existing and proposed active transportation network.

TABLE 5: MAINTENANCE COSTS

Existing Plus Proposed Network			
	Miles	Per Mile Unit Cost	Cost
<i>Paved Paths</i>	119.7	\$500 - \$1,500	\$59,800 – \$179,500
<i>Soft Trails</i>	36.9	\$500 - \$1,500	\$18,500 - \$55,400
<i>Bike Lane</i>	41.1	\$1,800-\$3,700	\$74,000 - \$152,100
<i>Buffered Bike Lane (2')</i>	13.5	\$3,900 - \$5,900	\$52,500 - \$79,400
<i>Buffered Bike Lane (3')</i>	21.0	\$3,900 - \$5,900	\$81,700 - \$123,600
<i>TOTAL</i>	232.1		\$286,500 - \$590,000

Capital Maintenance

Major or capital maintenance activities typically involve more intensive maintenance repairs such as pavement seal coating, pavement overlays, pavement reconstruction, or other structural rehabilitations. Needs can vary widely based upon environmental factors, such as soil conditions, drainage, and the quality of initial construction. Any paved path surface will deteriorate over time with asphalt surfaces dropping in quality rapidly after 10 years. Preservation efforts such as seal coating extend the life of asphalt efficiently and at a lower cost than waiting for the surface to fail requiring expensive reconstruction. Overlays may be needed after multiple seal coats or after approximately 30 years of

service. A full reconstruction could be required when needed, typically at 50 years if the seal coat and overlay have been provided at regularly, proposed intervals.

Concrete paths will require significantly less capital maintenance than asphalt paths. Although they may require isolated jacking or replacement, generally limited capital maintenance expenditures can be expected for upwards of 50 years.

Financial planning for major or capital maintenance can be challenging. Typically asphalt shared-use paths require greater capital maintenance activities with age and ultimately require full reconstruction at some point. Some jurisdictions stay focused on eventual reconstruction and treat this as a maintenance item to be budgeted for, whereas some treat this as a separate capital project to be considered at a later date in the future. Depending on the existing age and the level of effort, major or capital maintenance can require an average budget of between \$2,000 and \$7,000 per mile per year. Some years may require more expensive maintenance while others require none.

TABLE 6: ON-STREET BIKEWAY MAINTENANCE FREQUENCY AND COST OPINIONS

Maintenance Activity	Material	Frequency	Estimated Cost
<i>Pavement sweeping</i>	All	Weekly or monthly as needed	Part of regular street sweeping activities and costs
<i>Snow removal</i>	All	Simultaneous with regular roadway snow removal; otherwise, as needed	Depends on conditions, ~\$150/mile
<i>Tree and shrub trimming</i>	All	5 months to 1 year	Part of regular street sweeping activities and costs
<i>Sign repair and replacement</i>	Signs and poles	Every 10 years	\$300/sign
<i>Bike lane re-striping</i>	Paint	Every 1 to 2 years	\$3,700/mile
<i>Buffered bike lane re-striping</i>	Paint	Every 1 to 2 years	\$5,900/mile
<i>Shared lane marking re-painting</i>	Paint	Every 1 to 2 years	\$500/mile

TABLE 7: OFF-STREET PATH MAINTENANCE FREQUENCY AND COST OPINIONS

Maintenance Activity	Function	Frequency	Est. Annual Cost (per mi.)
<i>Path sweeping</i>	Keep paved surfaces debris free	Twice annually (once in spring and once in fall)	\$140 (x2)
<i>Litter and trash removal</i>	Keep path clean and maintain consistent quality of experience for users	Annually, or as needed	\$70
<i>Mowing path shoulders (native open space areas)</i>	Increases the effective width of the path corridor and helps protect encroachment	Twice annually, in late spring and mid to late summer	\$100 (x2)
<i>Tree and brush trimming</i>	Eliminate encroachments into path corridor and open up sight lines	Annually, or less frequently as needed	\$100
<i>Weed abatement</i>	Manage existence and/or spread of noxious weeds, if present	Twice annually, in late spring and mid to late summer	\$140 (x2)
<i>Safety Inspections</i>	Inspect path tread, slope stability, and bridges or other structures	Annually	\$20
<i>Snow removal</i>	Generally limited to urban sections of the path where year-round bike access is desired	As needed (assume 5 events)	\$120
<i>Sign and other amenity inspection/replacement</i>	Identify and replace damaged infrastructure	Annually (assume 2 sign replacements)	\$100
<i>Crack sealing and repair</i>	Seal cracks in asphalt to reduce long term damage	Annually	\$250
<i>Total</i>			\$1,420

TABLE 8: CAPITAL OFF-STREET, SHARED USE PATH MAINTENANCE 50-YEAR SCENARIO

Maintenance Activity	Time		Long Term Capital Costs				
<i>Seal Coat</i>	Year 10	SF	\$0.19	LF	\$1.90	Mile	\$10,000
<i>Seal Coat</i>	Year 20	SF	\$0.19	LF	\$1.90	Mile	\$10,000
<i>Overlay</i>	Year 30	SF	\$2.00	LF	\$20.00	Mile	\$105,000
<i>Seal Coat</i>	Year 40	SF	\$0.19	LF	\$1.90	Mile	\$10,000
<i>Reconstruction</i>	Year 50	SF	\$6.50	LF	\$65.00	Mile	\$343,000

TABLE 9: ANNUAL CAPITAL BUDGETING REQUIREMENTS

	Full Reconstruction	w/o Full Reconstruction	Before Overlay
<i>Total Cost</i>	\$479,000	\$136,000	\$20,000
<i>Cost / Year</i>	\$9,500	\$2,700	\$717

TABLE 10: CAPITAL UNPAVED TRAIL MAINTENANCE 10-YEAR SCENARIO

Maintenance Activity	Time		Long Term Capital Costs				
<i>Re-grade</i>	Year 2	SF	\$0.025	LF	\$0.24	Mile	\$1,320
<i>Re-grade</i>	Year 4	SF	\$0.025	LF	\$0.24	Mile	\$1,320
<i>Re-grade</i>	Year 6	SF	\$0.025	LF	\$0.24	Mile	\$1,320
<i>Re-grade</i>	Year 8	SF	\$0.025	LF	\$0.24	Mile	\$1,320
<i>Gravel Overlay</i>	Year 10	SF	\$0.20	LF	\$2.00	Mile	\$10,500
<i>Total Cost / 10 Years</i>							\$15,800
<i>Avg Cost / Year</i>							\$1,580

chapter seven

funding and implementation

Implementation of the proposed bicycle and pedestrian system will require funding from local, regional, state, and federal sources and coordination with multiple agencies. To facilitate funding efforts, this section presents conceptual cost estimates for the proposed system along with a brief description of past expenditures for bicycle and pedestrian facilities. The conclusion of this section provides a brief overview of overall funding and implementation strategies.

As infrastructure projects come under construction, the City should use opportunities such as roadway repaving or utility work to implement network segments that require limited changes or consist of “sign and paint only.” These features can be implemented relatively rapidly at low cost and greatly expand the network, which would both facilitate and encourage increased cycling in the City. This approach allows the City to implement more of the plan at a quicker pace, with the intent of effectively providing alternative mobility choices.

Funding Sources

Many funding sources are potentially available at the federal, state, regional, county, and local levels for Saratoga Springs to implement the projects in the Bicycle and Pedestrian Master Plan. The majority of public funds for bicycle and pedestrian projects are derived through a core group of federal and state programs. Federal funds from the Surface Transportation Program (STP), Transportation Alternatives (TA), and Congestion Mitigation Air Quality (CMAQ) programs are allocated to UDOT and Mountainland Association of Governments and distributed by those agencies at their discretion. Other programs such as the TIGER (Transportation Investments Generating Economic Recovery) grants can be used for “shovel ready” projects that meet federal transportation goals. County or City funds may also be used to construct bicycle and pedestrian facilities.

Table 11 provides a list of funding sources that may be applicable to projects identified in this plan. Most of these sources are highly competitive and require the preparation of applications. For multi-agency projects, applications may be more successful if prepared jointly with other local and regional agencies.

The City should also take advantage of private contributions, if appropriate, in developing the proposed system. This could include a variety of resources, such as volunteer labor during construction, right-of-way donations, or monetary donations towards specific improvements.

TABLE 11: FUNDING OPPORTUNITIES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Submittal Specifics
Municipal Funds				
Bond Financing	Varies	Varies	Varies	Bonds can be approved by voters to fund a range of projects. A local successful precedent is the 2012 Parks and Trails Bond in Salt Lake County, which authorized \$47 million in bond funds to complete the Jordan River Parkway, the Parley's Trail, and acquire land for and construct new parks throughout the County.
Sales Tax	Varies	Varies	Varies	It is possible to pass a specified sales tax that could be used to fund active transportation improvements. Precedents include the San Diego region, which approves a half-cent sales tax in 2008 to generate funds for highway, transit, and local road (including bicycle and pedestrian) projects; and the Great Rivers Greenway in the St Louis area, where voters passed a proposition in 2000 to create a 0.1% sales tax for parks, open space and trails.
Special Assessment or Taxing Districts	Varies	Varies	Local Government	Local municipalities can establish special assessment districts for infrastructure improvements. For example, Urbandale, Iowa established a special assessment program in 1996 for building sidewalks in existing developments where they were missing. Exception clauses allowed residents to apply for hardship status, or to petition for sidewalks on only one side of the street rather than both.
Parking Fees	Varies	Varies	Local Government	Some cities have instituted parking fees to pay for infrastructure improvements. Pasadena, CA installed paid parking meters to gather revenue to maintain streets, alleys, and sidewalks in Old Pasadena, and also to provide new signs, lighting, pedestrian-friendly alleys, and other aesthetic improvements.

TABLE 11: FUNDING OPPORTUNITIES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Submittal Specifics
Development Impact Fees	Varies	Varies	Local Government	Development impact fees are one-time charges collected from developers for financing new infrastructure construction and operations and can help fund bicycle and pedestrian improvements. Impact fees are assessed through a city's impact fee program.
New Construction	Varies	Varies	Local Government	Future road widening and construction projects are methods of providing bike lanes. To ensure that roadway construction projects provide bike lanes and walkways where needed, it is important that the review process includes a designated bicycle and pedestrian coordinator. Planned roadway improvements in Saratoga Springs should provide bikeways in the City.
State Funds				
ADA Ramps	ADA-related improvement	For missing ADA ramps on State routes only	UDOT	Applications are submitted to the Region Coordinator. Missing ramps can be found in the UDOT database from a recent survey of ramps. (http://udot.utah.gov/main/uconowner.gf?n=13652716548952568)
Safe Sidewalks Program	Sidewalks	Sidewalks on State routes only	UDOT	Applications are submitted to the Region Safe Sidewalk Program coordinator and require scope and cost estimate. Local jurisdiction must agree to maintenance and the sidewalk must be built within one year of money allocation. (http://www.udot.utah.gov/main/uconowner.gf?n=104675223364328443)
Community Development Block Grants-State Administered Program	Street improvement	Best if benefits low- or moderate-income populations. Part of a Consolidated Plan.	HUD, State, and Local Government	The Grantee for these grants cannot be a principal city of a metropolitan statistical area, a city with more than 50,000, or a county with a population with more than 200,000. Applications are submitted to the State. (https://www.hudexchange.info/cdbg-state/)

TABLE 11: FUNDING OPPORTUNITIES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Submittal Specifics
State Legislation	Legislation dependent	Legislation dependent	State of Utah	<p>State legislatures can create laws that have dedicated bicycle funding components. Two examples of this are the Oregon "bike bill" which requires including bicycle and pedestrian facilities when any road, street or highway is built or rebuilt and the California Bicycle Transportation Account, which provides state funds to cities and counties wishing to improve safety and convenience for bicycle commuters.</p> <p>(http://oregon.gov/ODOT/HWY/BIKEPED/Pages/bike_bill.aspx and http://www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm)</p>
State Funds				
Transportation Alternatives Program	Bicycle and pedestrian improvement	Funds can be used for construction, planning and design of on- and off-road facilities.	MAG and UDOT	<p>MAG funds are distributed to projects during the Transportation Improvement Plan project selection process. Most TAP projects will have an 80/20 federal/local match split. Projects can include sidewalks, trails, bicycle facilities, signals, traffic calming, lighting and safety infrastructure, and ADA improvements. Rails-to-trails conversions are also allowed. The Recreational Trails Program is included in Transportation Alternatives, as is the Safe Routes to School program.</p> <p>(http://www.fhwa.dot.gov/environment/transportation_alternatives/)</p>
Community Development Block Grants-Entitlement Communities Program	Street improvement	Best if benefits low- or moderate-income populations.	HUD and Local Government	<p>Grantee is a principal city of a metropolitan statistical area, a city with a population over 50,000, or a county with a population over 200,000. Part of a Consolidated Plan.</p> <p>(http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/entitlement)</p>
Surface Transportation Program	Bicycle and pedestrian improvement	Generally not used on local minor collectors with exceptions for bicycle/pedestrian walkways.	UDOT	<p>Concept reports due to MPO for consideration of programming funds.</p> <p>(http://www.fhwa.dot.gov/map21/factsheets/stp.cfm)</p>

TABLE 11: FUNDING OPPORTUNITIES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Submittal Specifics
Congestion Mitigation and Air Quality	Bicycle and pedestrian improvement	Reduce congestion or improve air quality in nonattainment or maintenance areas by shifting travel demand to non-automobile modes.	MAG	Projects must be included in the TIP. MAG calls for projects from local communities each year. (http://www.fhwa.dot.gov/map21/factsheets/cmaq.cfm)
Land and Water Conservation Fund	Bicycle and pedestrian trails, or acquisition of land for trails	Projects that create outdoor recreation facilities, or land acquisition for public outdoor recreation.	DNR	The Land and Water Conservation Fund (LWCF) provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. The program is intended to create and maintain a nationwide legacy of high quality recreation areas and facilities and to stimulate non-federal investments in the protection and maintenance of recreation resources. 50/50 match is required, and the grant recipient must be able to fund the project completely while seeking reimbursements for eligible expenses. (http://stateparks.utah.gov/resources/grants/land-and-water-conservation-fund)
Federal Lands Access Program	Planning, engineering, construction, and other activities	Projects must be on, adjacent to, or provide access to federal lands.	UDOT	Fund is administered through UDOT in coordination with the Central Federal Lands Highway Division, which develops a Programming Decisions Committee. The Committee prioritizes projects, establishes selection criteria, and calls for projects. Next call for projects is anticipated for 2015. (http://www.cflhd.gov/programs/flap/ut/)
Rivers, Trails, and Conservation Assistance Program	Planning assistance for bicycle and pedestrian projects.	Staff support for facilitation and planning.	National Park Service	Projects need to be related to conservation and recreation, with broad community support, and supporting the National Park Service's mission. Applicants must submit National Park Service applications by August 1 annually, including basic information as well as letters of support. The local contact is Marcy DeMillion, at 801-741-1012 or marcy_demillion@nps.gov .

TABLE 11: FUNDING OPPORTUNITIES

Funding Opportunity	Eligible Project Types	Qualifications	Lead Agency	Submittal Specifics
Passenger Enhancement	Sidewalk projects and bicycle infrastructure	Sidewalk must be within half mile and bike infrastructure must be within three miles of a transit stop	UTA	Funding can be completed in two ways – the lead agency will share in the cost of the construction, if the submitting agency has already done design and is planning to construct. If the project is on a priority sidewalk list for UTA, UTA will design and construct.
Private or Corporate Funds				
Cambia Health Foundation Children’s Health Program	Programs and possibly infrastructure	Projects must improve access to healthy foods, recreation facilities, and encourage healthy behavior for families.	Cambia Health Foundation	Grants are typically in \$50,000 - \$100,000 range. Focus is on programs. Contact foundation staff at cambiahealthfoundation@cambiahealth.org for additional information. (http://www.cambiahealthfoundation.org/programs/childrens-health)
Bikes Belong Foundation	Bicycle infrastructure	Projects must improve the cycling environment	Bikes Belong	Bike Belong has awarded 272 grants to non-profit organizations and local governments in 49 states and the District of Columbia, since 1999.
Community Fundraising	All	Small dollar amounts	Local agency or non-profit	Lead agency manages the details, marketing, and range of a community fundraising campaign. Successful examples include Softwalks' Kickstarter campaign for sidewalk amenities in New York City, and use of volunteer labor for trail construction in Springdale, Utah. Follow link below for more ideas. (http://www.bicyclinginfo.org/funding/sources-community.cfm)

Implementation

Plan Implementation

Saratoga Springs should regularly revisit their bicycle and pedestrian master plan to review progress in implementing projects. Key review components are described below.

Implementing Projects

City staff should review project implementation within two or three years after plan completion, to document the status of priority projects, and whether new projects from the plan should be added to current implementation efforts. At five years following plan completion, staff members should again evaluate how many priority projects have been implemented.

Maintenance Budget Considerations

As discussed in Chapter Six, developing a city-wide maintenance management plan will be key to ensuring that responsibility is assigned to different departments within the City and that regular maintenance is completed. Furthermore, as the active transportation network grows maintenance costs will also rise. The current budgetary process for managing these growing costs is insufficient. Additional operations and budgetary planning will benefit the City as it handles current and future demand for high quality facilities and associated maintenance activities. It is recommended the Saratoga Springs create a budgetary line item and set aside funds on an ongoing basis for active transportation network maintenance. This will add clarity to the budget and allow the city to prioritize this maintenance in the context of other city needs. It is also recommended that this budget be increased based on network buildout rather than a set percentage increase annually to ensure that funding is adequate for what needs to be maintained.

Building Partnerships

Relationships with regional and local transportation agencies such as UDOT, UTA, Mountainland Association of Governments, and other organizations can be helpful for Saratoga Springs while attempting to build bicycle and pedestrian networks. Staff members should establish strategic working relationships with their counterparts and leadership at these agencies, and at adjacent municipalities. Building partnerships takes time and effort, however, and the results may take some years to come to fruition. Municipalities should take stock of their partnering efforts at the three- to five-year mark following completion of a bicycle and pedestrian master plan. Staff members should re-evaluate their strategies if partnering efforts do not result in some increase of political and agency support of bicycle and pedestrian issues – other strategies or methods of building support may be necessary.

Online Monitoring Feedback

While most local and state transportation divisions have internal methods for monitoring transportation facility conditions, many have additional mechanisms for citizens to report problems. Several online options are available as well. For instance, Salt Lake City has a “Bicycle Route Maintenance Form” online, through which the public can identify cycling routes in need of maintenance work such as sweeping, pothole repair, pavement maintenance, or other problems. The form can be found online through the Salt Lake City Transportation Division website. Other cities, such as Portland Oregon, also seek online feedback on transportation conditions such as desired curb ramps, traffic safety concerns (i.e. speeding, crosswalk needs, visibility, or school zones), and street light problems. Portland’s online forms

can be found through the Portland Bureau of Transportation website. Cities may also state timelines for responding to requests – within a day, several days, or a week – which demonstrates a commitment to the public’s traveling needs. Currently, several cities incorporate crowd-sourced or volunteered geographic information (VGI) into maintenance requests. Users can submit requests for repair by sending a GPS-marked photo through a smartphone application, categorizing the photo based on repairs needed (striping, sweeping, pothole repair, etc). Reno, Nevada is one example of a municipality engaging its citizens this way in monitoring for maintenance needs.

Monitoring

This section presents a framework for monitoring the success of implementation of the Plan through benchmarking progress, engaging local advocacy groups, and continuing to generate interest in bicycle and pedestrian issues once a master plan is complete. Evaluation and monitoring allow Saratoga Springs to track progress made as it implements the bicycle and pedestrian master plan. Three major components to monitoring bicycle and pedestrian planning efforts should follow plan adoption:

- Tracking progress on implementing planned projects and meeting the master plan’s stated goals;
- Monitoring needs for small-scale spot improvements on bicycle and pedestrian facilities; and
- Monitoring public sentiment and engagement in bicycling and walking issues.

TABLE 12: MONITORING ACTIVITIES

Monitoring Activity	Effort Required
Track plan implementation	Staff time to document projects and policies implemented
Volunteer reporting of maintenance needs	Staff time to receive input and respond to reports
Reactive maintenance	Staff time to respond to maintenance requests
Ongoing Advisory Committee	Staff time to establish policy framework creating an ongoing committee; identify avenue for receiving committee's feedback; and serve as staff liaison at meetings. Committee will set agendas and attend regular meetings.
Ensure project funding through inclusion in Capital Facilities Plan	Staff time to coordinate between planning and budget departments
Proactive maintenance of bicycle and pedestrian facilities	City and/or contractor staff to monitor needs, make needed repairs, plan for funding in municipal public works or operations budgets
Online reporting mechanism for maintenance and repairs	Development of web-based forum to receive public input, staff time to respond to reports
Ongoing local communication around bicycle and pedestrian issues	Maintaining project website, generating new content for website and other communication outlets, developing events to increase participation and enthusiasm, and creating a bicycling ambassadors program
Pursue outside funding for bicycle and pedestrian projects	Staff time to evaluate grant programs, prepare applications, and coordinate with funding agency representatives
Measuring progress by benchmarks	Before-and-after data collection and surveys, review of multiple datasets. Benchmarks could include: <ul style="list-style-type: none"> • Number of people bicycling and walking on off-street facilities • Mileage of on-street bicycle facilities • Percentage of households within ¼ miles of a bicycle facility • Number of pedestrians • Percentage of K-8 students biking and walking to school
Identify additional financing opportunities for projects, such as public-private partnerships or impact fees	Staff time to build partnerships, and potential need for outside consultant to identify defensible impact fees and ensure compliance with state and local laws.
Regular bicycle and pedestrian counts	Partner with local advocacy groups, boy scouts, schools, and MAG to conduct annual bicycle and pedestrian counts and an annual monitoring program that reviews and compares these counts. Additionally, Saratoga Springs can require that all traffic study counts include bicycles and pedestrians to estimate bicycling levels and changes in bicycling levels over time.
Bicycling and Walking Audits	Conduct bicycle and walking audits as part of outreach strategies for new development projects. A bike/walk audit leads stakeholders on a set course to discuss bicyclist/pedestrian safety concerns and strategies to improve safety.