

Missoula Bicycle Projects

in URD 2 & 3





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Introduction

The Metropolitan Planning Organization (MPO) plans safe multi-modal transportation systems – emphasizing pedestrian and bicycle infrastructure so as to make Missoula streets accessible to people of all ages and abilities.

The Missoula Redevelopment Agency (MRA) works to revive Urban Renewal Districts by investing in public infrastructure such as parks and sidewalks in order to promote safety, economic vitality, and liveliness within communities.

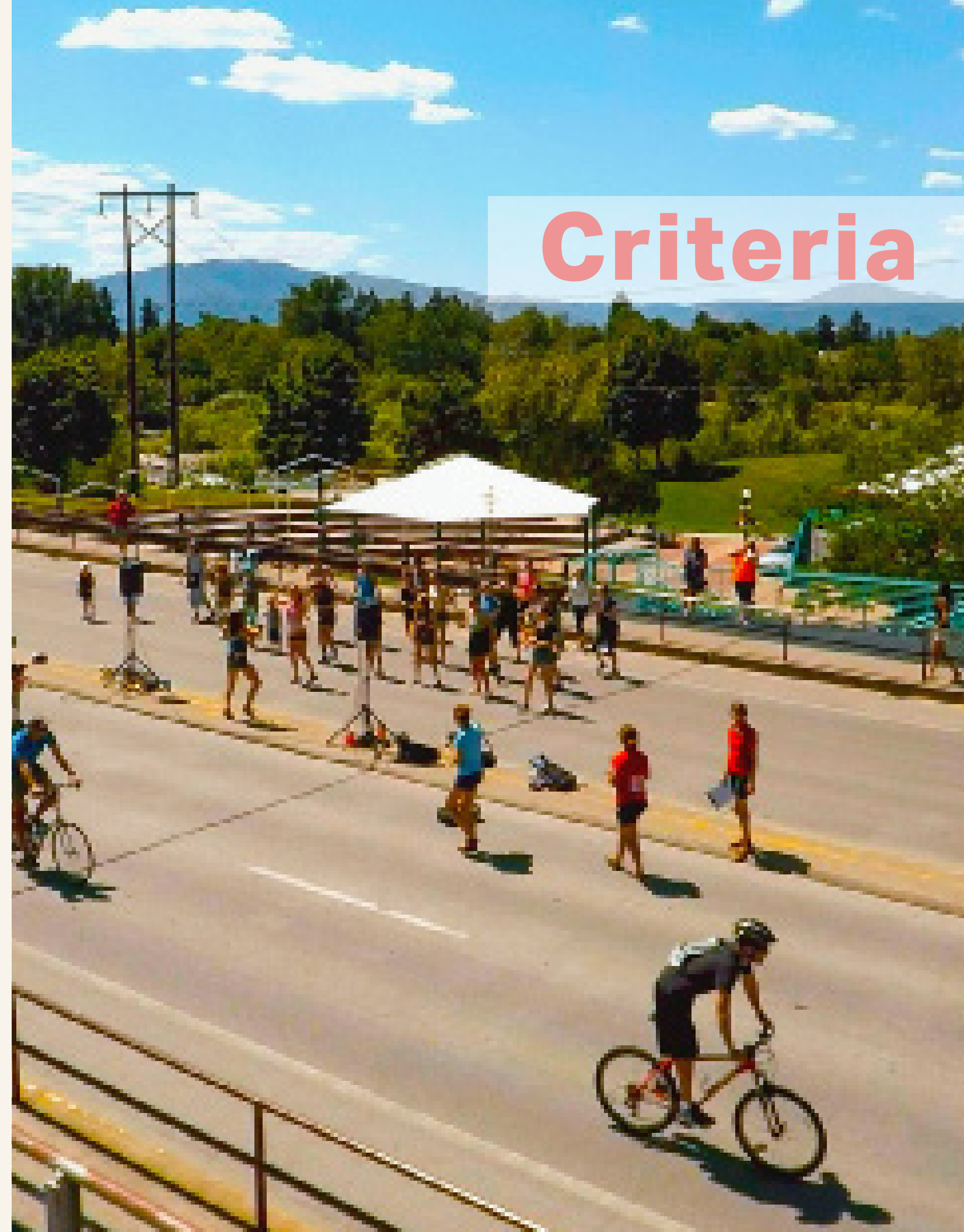
The purpose of this report is to identify areas of high opportunity within Urban Renewal Districts (URD) II & III for improving bicycle infrastructure which would mutually strengthen redevelopment opportunities and support growth of bicycle ridership in people of all ages and abilities.

The goal being to generate a study of transportation, land use, and infrastructure elements to determine potential for improvements that would have the greatest impact to Missoula's non-motorized transportation network which would ultimately help catalyze development.

This project entailed analyzing important planning documents from the City of Missoula, determining criteria for assessing bicycle infrastructure need, and determining feasibility at proposed sites. It required pinpointing recommended sites of improvements, explaining the criteria and recommending creative solutions in accordance with the city's long range plans & development guides.

The combined criteria for measuring the value of a bicycle infrastructure improvement cover a variety of bases so as to determine which sites would best serve the safety, interests, and opportunity of the MRA, the MPO and the greater Missoula community. The metrics for measuring the value of completing a proposed improvement are 1, 2, and 3. These ranges were chosen because they are simply translatable to low, medium, or high value respectively. For example, an intersection scoring a 3 on proximity to transit stop means that improving that intersection has a relatively high value based on its close proximity to other transit nodes, thus promoting a connective multi-modal transit route. While an intersection scoring a 1 would mean it is relatively far from a transit node, thus resulting in a lower value investment.

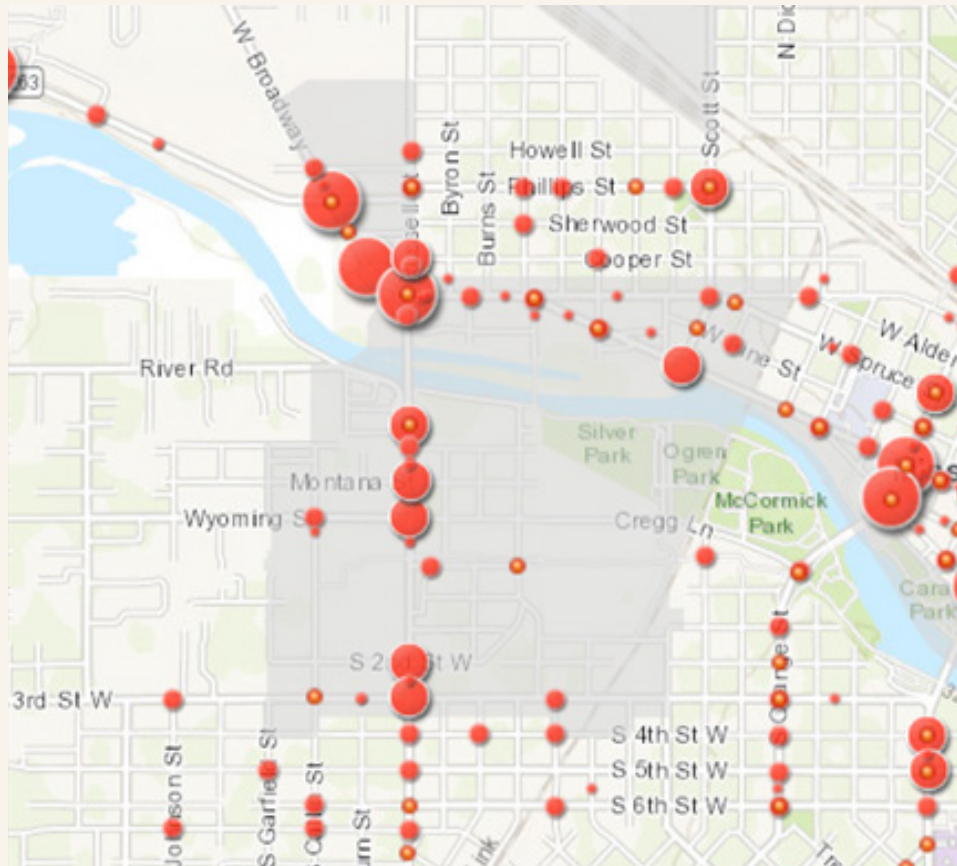
Safety
Level of Traffic Stress
Long Range Planning
Connectivity
Transit



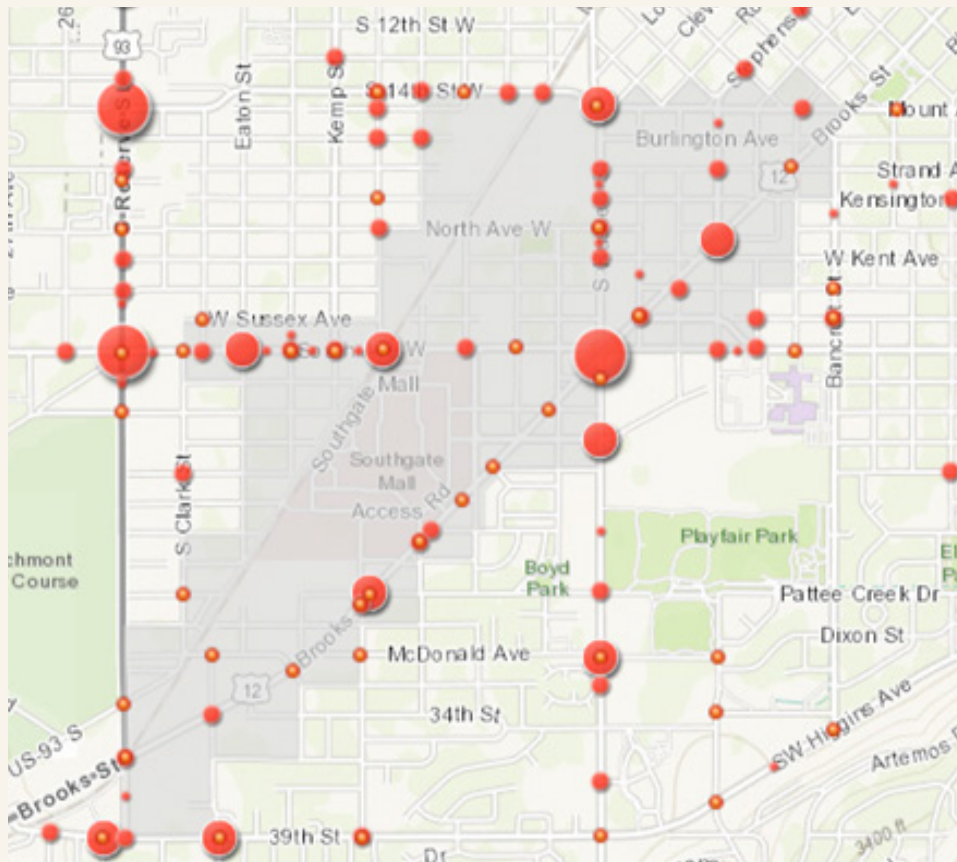
Bicycle Crashes



Ped Crashes



Bicycle & Pedestrian Crash Data URD 2



Bicycle & Pedestrian Crash Data URD 3

Safety

Safety is an important factor to consider when determining sites of improvement. Unsafe intersections and streets deter bicyclists and pedestrians from using those routes, even if they may be the most convenient and connective way to commute. Studies show that streets with bike lanes are safer for pedestrians, cyclists and motorists as compared to similar streets without bicycle facilities. (Ewing, R. and Dumbaugh, E. (2010) The Built Environment and Traffic safety; A Review of Empirical Evidence. Injury Prevention 16: 211-212). Given this information, making an improvement at an intersection with more than 2 crashes would be of high value to pedestrians, cyclists and cars; improving a corridor with more than 5 crashes results in similar value.

Crash data from MDT (2007-2017).

Level of Traffic Stress

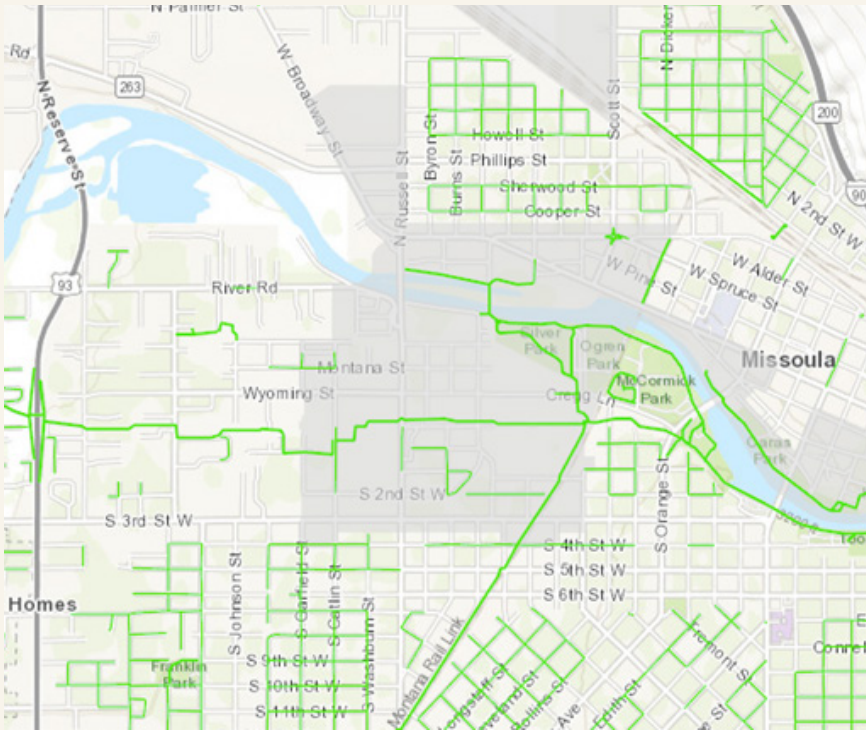
Level of traffic stress (LTS) is the perceived safety level experienced by bicycles and pedestrians. While this metric may or may not correspond to actual crash data, people nevertheless avoid using routes which make them feel unsafe. LTS analysis was adopted and implemented by the Mineta Transportation Institute Report: Low-Stress Bicycling and Network Connectivity. This analysis is based on traffic volume, speed limit, road width, shoulder width, presence of existing bicycle infrastructure, and the general road condition (i.e. potholes). Generally, streets with low traffic levels and speeds are rated as lower LTS according to the Mineta Transportation Institute. There is evidence that female bicyclists are significantly less likely to ride along facilities with a high LTS (2018 Missoula Bicycle & Pedestrian Count Report. Pg. 10). It would be highly valuable to improve those corridors and intersections with a high LTS rating in order to promote ridership, especially amongst women and children. Traffic facilities with an LTS rating of 3 or 4 scored three points in the criteria metric for this report.

Bicyclists are typically willing to deviate from the safest perceived route for only very short distances (two or three blocks), to overcome a barrier, access a continuous bicycle route, or access specific land use (Urban Bikeway Design Guide NACTO, pg. 152). Therefore it is important to invest in improving and connecting key weaknesses in the bicycle network which could deter people from traveling via bike, especially making connections to key non-motorized commuter paths.

The figures to the right show inadequate network connectivity for cyclists who are 'Interested but Concerned'. These kinds of riders most often are children, people with disabilities, or people over the age of 65. The goal is to expand the comfortable network of LTS 1 facilities so that people ages 8-80, of all abilities, can safely and effectively get from place to place.

Missoula aims to become a city with world-class bicycling infrastructure in order to meet the needs of all riders ages 8-80. Therefore, the city should focus on building infrastructure for the 'Interested and Concerned' rider in order to be consistent with community desires and goals.

LTS 1





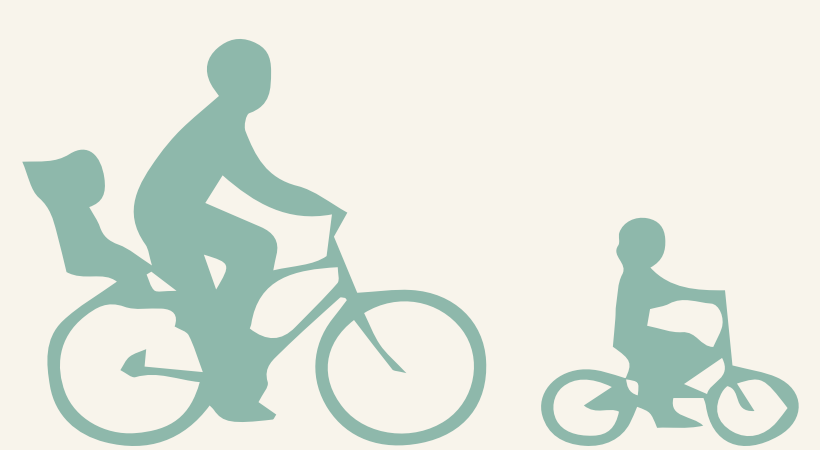
LTS 4



LTS 3



LTS 2



LTS 1



The MPO has developed a Bicycle Facilities Master Plan which supports and builds on the Long Range Transportation Plan and the Missoula Active Transportation plan. This data has been compiled and used to identify sites which the MPO would recommend improving based upon the long-term goals of the city in order to support growth in bicycle ridership for all ages and abilities. Bicycling is emancipating, especially for those under 16, who are not legally able to drive, and people over 65, those who are less willing or able to drive. Areas which the MPO has identified as connective corridors, lynchpin intersections and necessary route improvements have been given a score of 3.

Connectivity

Most trips taken via bicycle in Missoula on weekdays are not for recreation but for commute. The 2018 Bicycle Pedestrian Count Report cited ~67% of trips taken were to work or school, while 20% were for personal business (2018 Missoula Bicycle & Pedestrian Count Report). 15% of bicycle travel taken was for shopping & errands. Bicyclists and pedestrians cited convenience and directness as extremely important measures in transportation mode and route choice. Given this information, the

findings suggest that if non-motorized transportation routes are convenient and direct, people would be more willing to bike or walk. Thus, it is crucial to make improvements to the bicycle network that would link people to amenities such as schools, medical clinics, grocery stores, shopping centers and other important public services. Proposed sites within 0.25 miles from an amenity scored a 3, while sites between 0.25-0.5 miles scored a 2. Sites further than 0.5 miles scored a 1.

Transit

Proximal bicycle facilities to transit stops are mutually supportive in increasing ridership on bikes and buses. Providing high-quality multi-modal public transit means increasing mobility for all ages. Making it fast and reliable to move throughout Missoula using a complementary non-motorized transportation system is key to increasing ridership. It is important to consider a site's proximity to Mountain Line's higher-frequency, longer-hours routes. Routes 1, 2, 6, and 7 have been identified as frequent, high-volume routes. If a site of considered improvement is less than 0.25 miles away from a bus stop along one of these routes the site was scored a 3. If a site was farther than 0.5 miles away from a stop along a high-frequency route it scored a 1.

Closeness to any Mountain Line bus route indicates a considered area has a high opportunity of improvement. If a site is less than 0.25 miles away from a bus stop the site was awarded a score of 3, while if it is farther than 0.5 miles away scored a 1.



Bicycle Projects in URD 2 & 3



Analysis

Over 30 sites of potential bicycle infrastructure improvement were chosen in URD II & II and then analyzed against the criteria discussed previously and ranked according to their total score. The sites of potential improvement were then compared against each other and ranked from highest-opportunity score to lowest score. These scores were then crosschecked with MPO staff subjective rider experience to ensure that the objective scoring made intuitive sense. The sites recommended bicycle infrastructure improvement have been subjectively chosen against other similar objectively high-scoring projects based on staff awareness of which projects are at which stage of development. For example, completing buffered or protected bike lanes on Broadway from California St. to Mullan Rd might score higher than other URD II projects, but this area is included in the next phase of the current Russell St. project. The process for deciding which of these potential bicycle infrastructure improvements would be viable included determining if sites overlap with proposed sidewalk, sewer, water, and road resurfacing projects. Aligning the timing of these infrastructure and redevelopment projects results in lower cost and higher efficiency in installing bicycle infrastructure. Additionally, projects were selected if they would boost an area's Suitability Analysis score for development according to Our Missoula Development Guide (OMDG).

Opportunity



Our Missoula Development Guide (OMDG) centers on determining the areas in Missoula that should be developed according to the Growth Policy's "Focus Inward" approach. Its maps of Composite Suitability and Opportunity are both referenced in this report to establish overlap between URDs boundaries, non-motorized transportation weaknesses and community desires in order to determine bicycle infrastructure projects which would mutually benefit and strengthen redevelopment opportunities.

The Growth Policy encourages development & redevelopment proximal to both bicycle and transit facilities. Given that a large portion of URD III lacks bicycle infrastructure, there is an opportunity for implementing these facilities in order to make these areas more suitable for development. Especially concerning the Brooks corridor and surrounding areas, adding bicycle infrastructure could change an area's Composite Suitability rating from 2 or 3 to 4, or from "Suitable" to "Very Suitable". Implementing bicycle infrastructure, and ultimately developing these areas, would be consistent with the City Growth policy which recommends density development in bike-pedestrian friendly areas which are connective with public services and amenities for people of all ages and abilities.

Choosing Sites

with potential for improvement

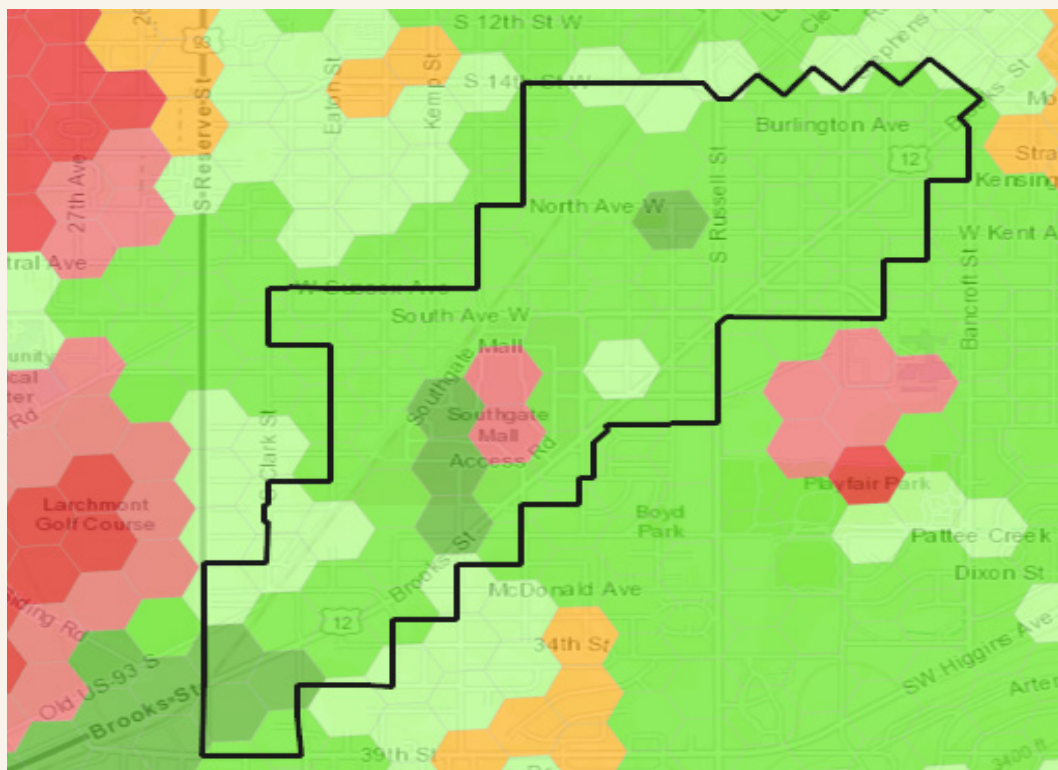
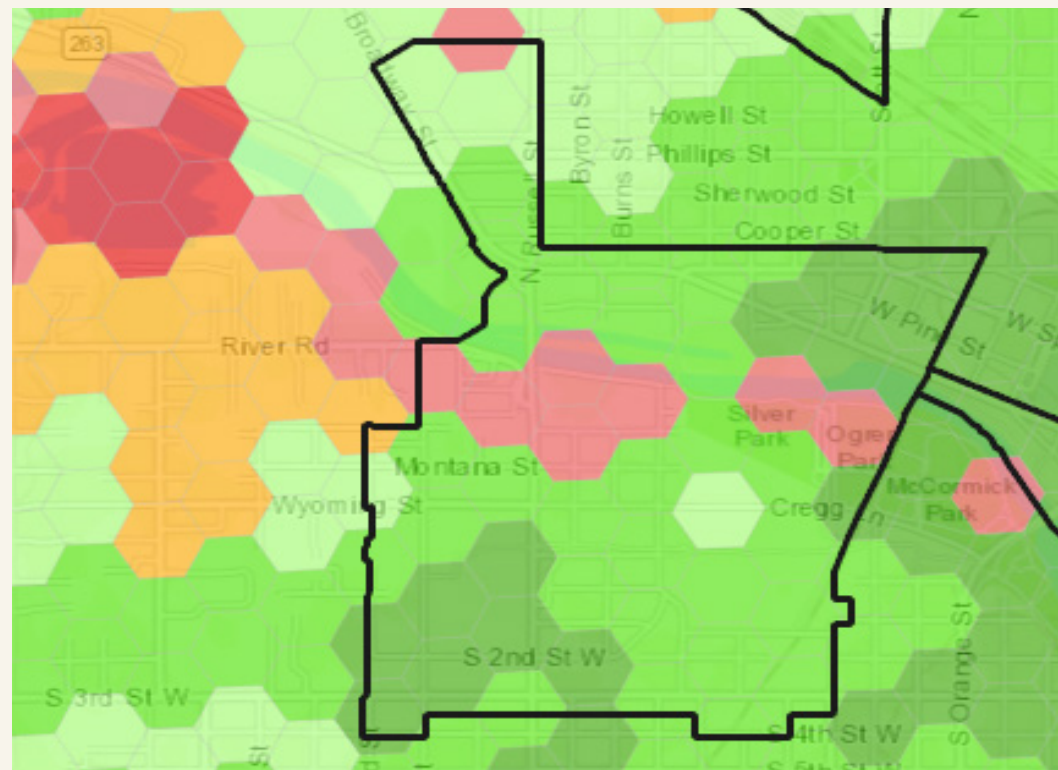
The OMDG plan developed a tiered opportunities map for development based on capability, capacity and suitability.

Capability: where development cannot occur based on physical or social barriers.

Capacity: how much development can occur in order to theoretically maximize density.

Suitability:

- A) **Water & sewer:** areas within 500 feet of both water and sewer, a sensible distance for completing or making connections. (Action item 10.16, Growth Policy)
- B) **Services:** areas within 0.25 mile of amenities such as grocery stores and commercial services. (Action item 5.2, Growth Policy)
- C) **Schools & parks:** areas with access to schools and open-spaces parks with activity areas.
- D) **Transit & bike suitability:** areas within 0.25 mile to both public transit stations and bike trail access are suitable for development.



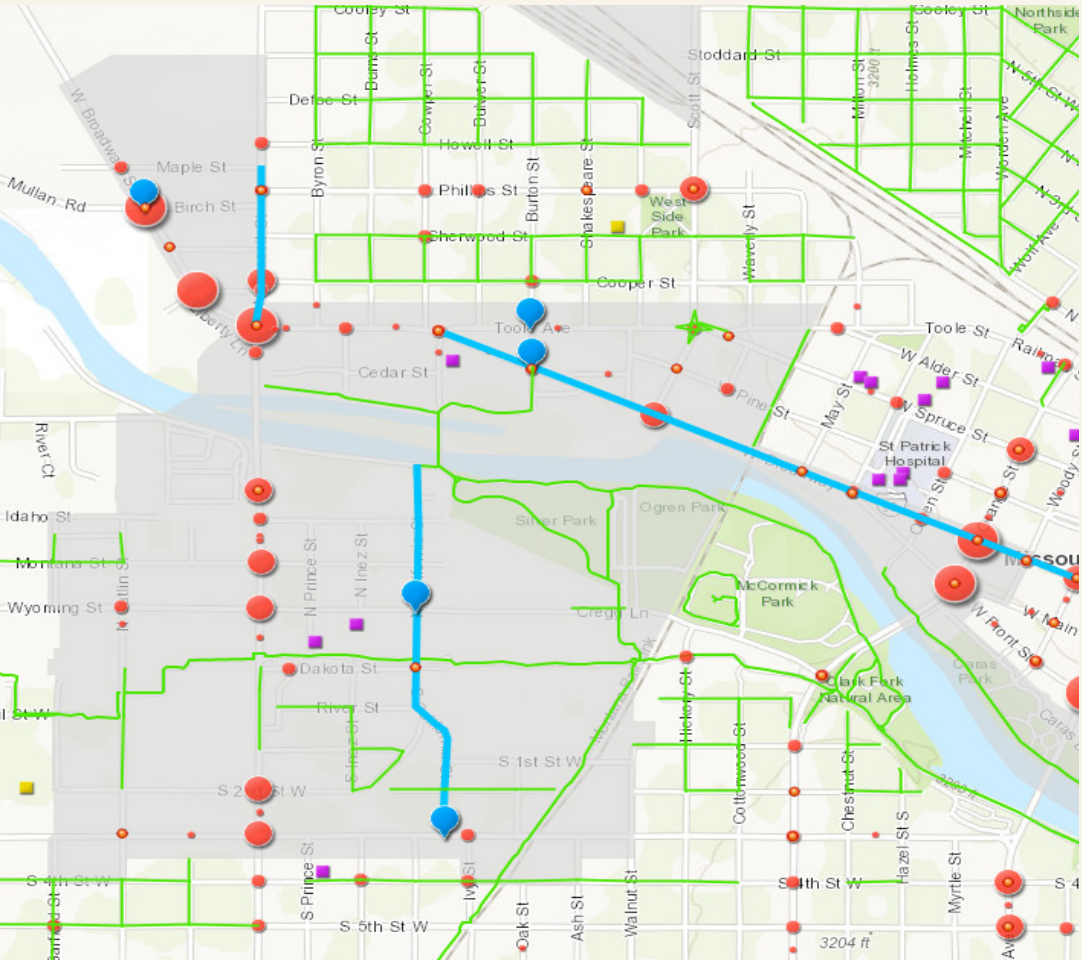
Current Composite Suitability

without proposed bicycle infrastructure

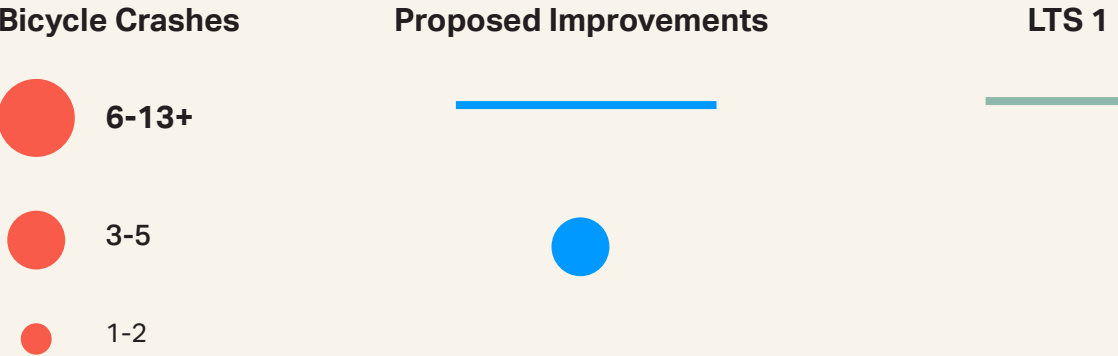
Much of URD II is rated as tier 3 suitability with few tier 4 and fewer tier 0 zones. In areas with a tier 0 rating, adding both sewer/water and bicycle infrastructure could move these zones up to tier 3.

URD III has even more potential for improvement, with much being rated as tier 3 but some key areas rated as 0 or 2, as can be seen in the Figure to the left. There are few areas rated as “very suitable” for redevelopment.

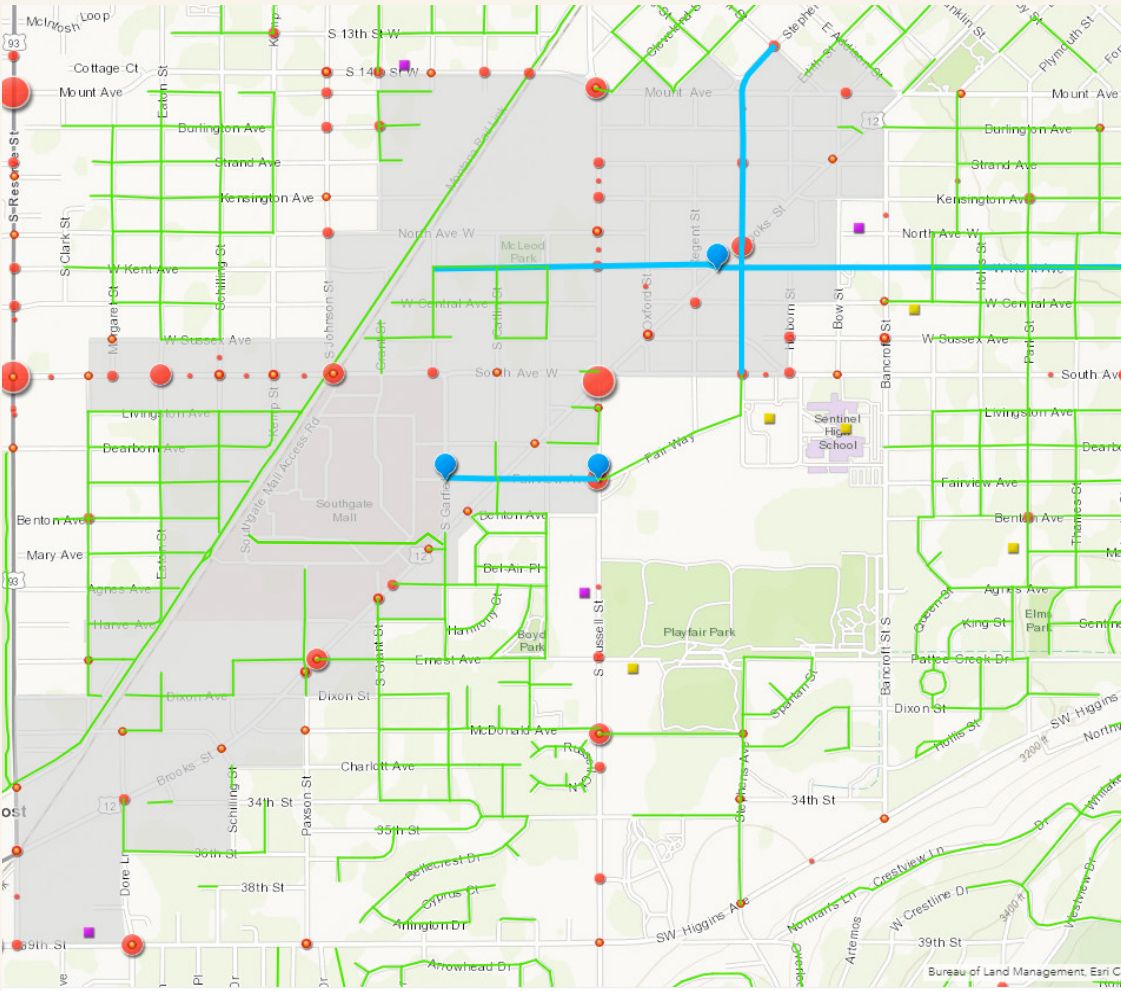
Proposed Sites



Selected bicycle infrastructure improvement projects in Urd II as they relate to crash data, key amenities, and connectivity with LTS 1 network.

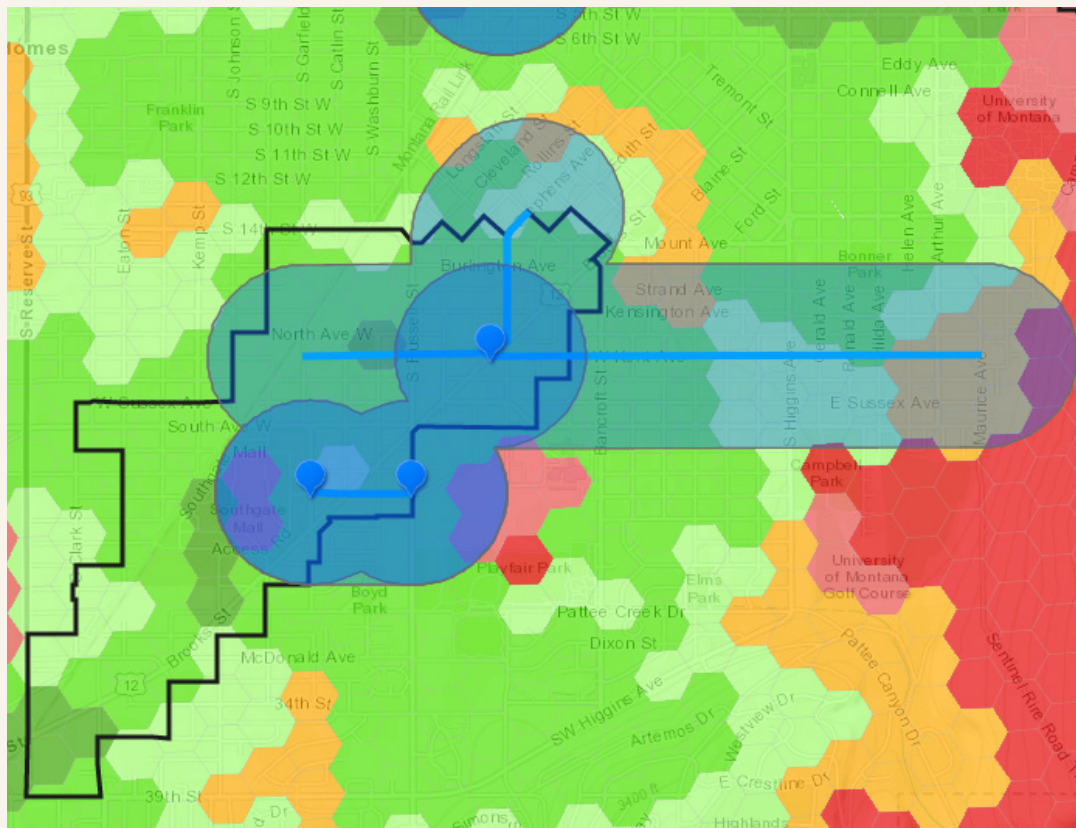
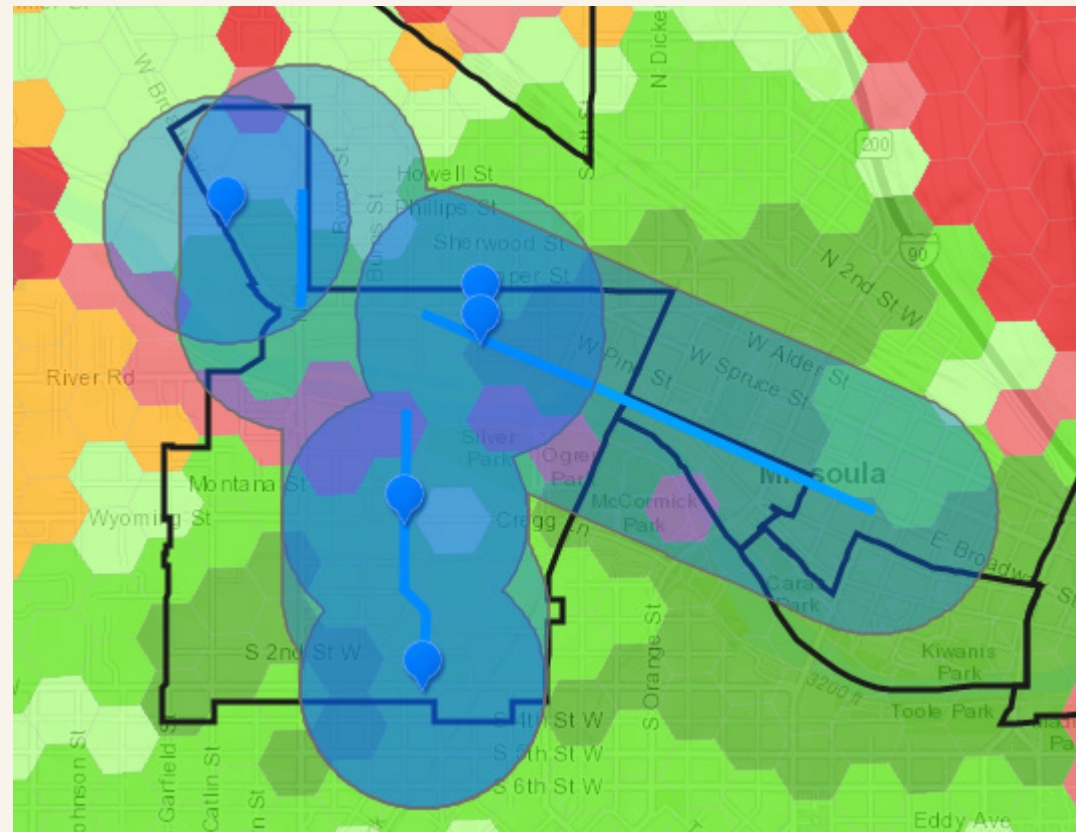


of Improvement



Selected bicycle infrastructure improvement projects in Urd III as they relate to crash data, key amenities, and connectivity with LTS 1 network.





Zone of Impact

The figures to the left show a quarter mile buffer around proposed projects which demonstrate the zone of impact for completing proposed bicycle infrastructure improvements. The quarter mile metric is used because it is the maximum distance a typical cyclist is willing to deviate from a safe, connected route in order to reach another bicycle route. In this way, making improvements to active transportation facilities not only improves the localized road or intersection, but reaches to places which might not have any facilities – thereby creating the necessary connection for people to feel comfortable biking in Missoula.

Most hexagons that fall within the buffered zone would move up one or more tiers in the dynamic OMDG suitability analysis rating if the proper bicycle facilities are implemented. For example, a hexagon rated as a tier 2 could be bumped to tier 3 if a street corridor is restriped or a critical intersection improvement is made. A hexagon with a rating of 0 could be re-rated as a tier 3 if sewer/ water and bicycle facilities are implemented. Prime opportunities for collaboration between MRA & the MPO fall in areas with a suitability rating of 0.

Catalogue of Sites



Overview: URD 2

Bicycle Infrastructure Projects



1	Broadway Corridor California to Higgins	Buffered Bike lanes
2	California Street 3rd to River	Neighborhood Greenway
3	Russell Maple to Broadway	Buffered Bike Lanes
4	Burton Intersections Toole & Burton; Broadway & Burton	Neighborhood Greenway Intersection Improvements
5	California Intersections Wyoming & California; S 3rd & California	Neighborhood Greenway Intersection Improvements
6	Mullan & Broadway	Protected Intersection

1

Broadway Corridor California to Higgins

Buffered Bike Lanes

Description of Project

California to May: A 6.5' bike lane should be marked curb side with a 3-4' buffer on the travel lane side. This bike lane should remain consistent through curb extension areas, the buffer can shrink if necessary.

May to Orange: In the short term a second white line should be added to buffer the parking lane from the bike lane. The current parking lanes are approximately 9-10 feet in width. Parking lanes should be striped at 7 feet with the remainder consisting of a buffer. Long term: Consider protecting the lane up to the intersection.

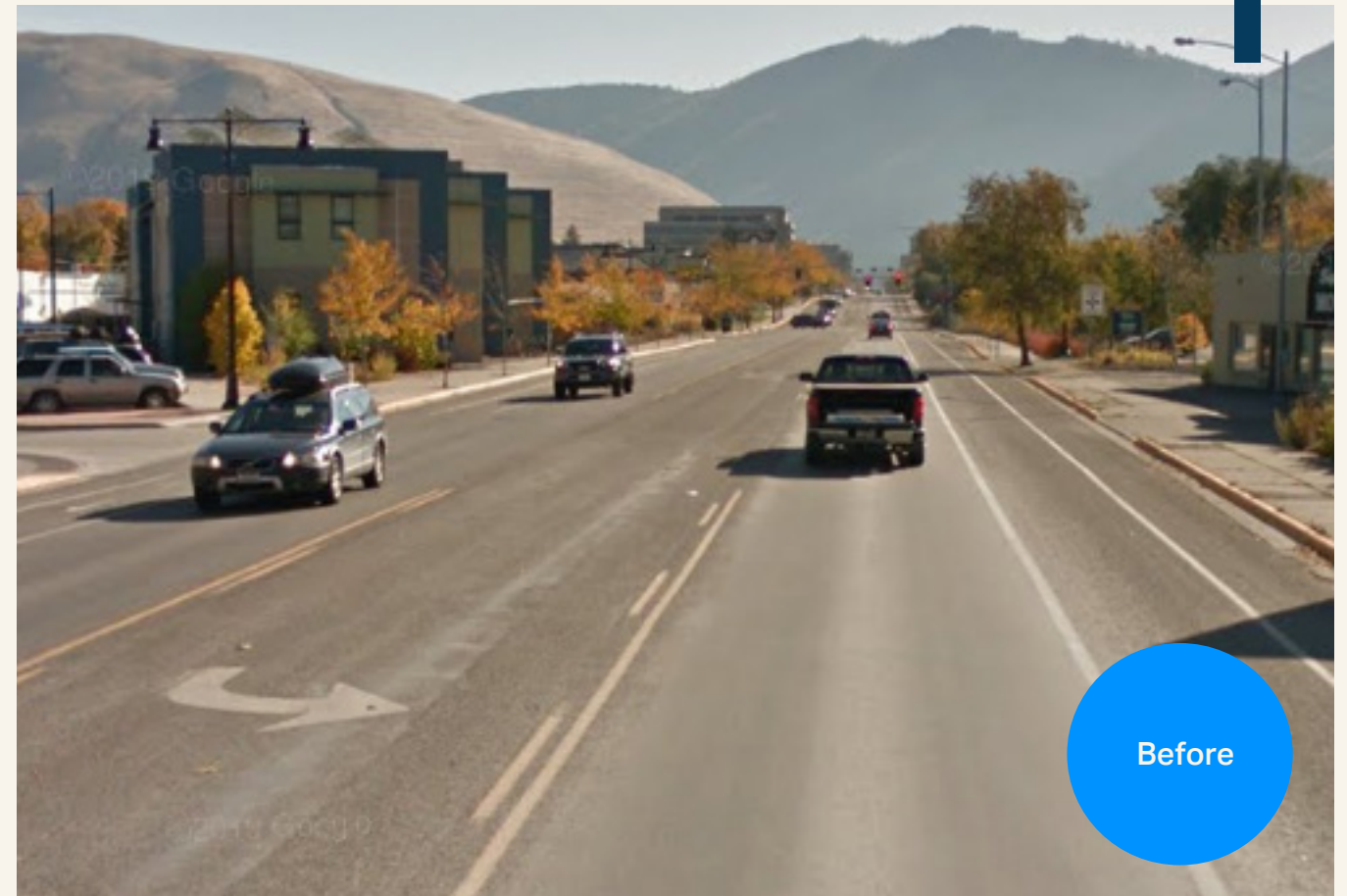
Bike lanes shown in green for effect only. Green markings should be installed at all intersections and conflict areas.

Opportunity

The MDOT is doing a project on Broadway from Mullan to California and should focus on the important intersection at Broadway/California/Toole. The MDOT's redesign should align with the MPO's redesign of the Downtown section of Broadway so as to create continuous use for riders. This particular section will connect to the planned improvements to Broadway between Toole and Mullan Rd. It will also connect with the Downtown Missoula to the Opportunity Zone redevelopment occurring along W. Broadway.

Outcome & Impact

Creating an LTS 1 connection between W. Broadway and Downtown will be a major improvement to an area which has been identified as having redevelopment potential. Bike connections that are protected by buffers will promote additional bike travel, reducing stress on vehicle facilities.



2

California Street

3rd to River St

Neighborhood Greenway

Description of Project

MRA has hired WGM to design California Street from S. 3rd to Dakota. Install way-finding signs, pavement markings and traffic speed control measures such as speed humps or roundabouts. Potential need to remove on-street parking on one side of the street in some areas.

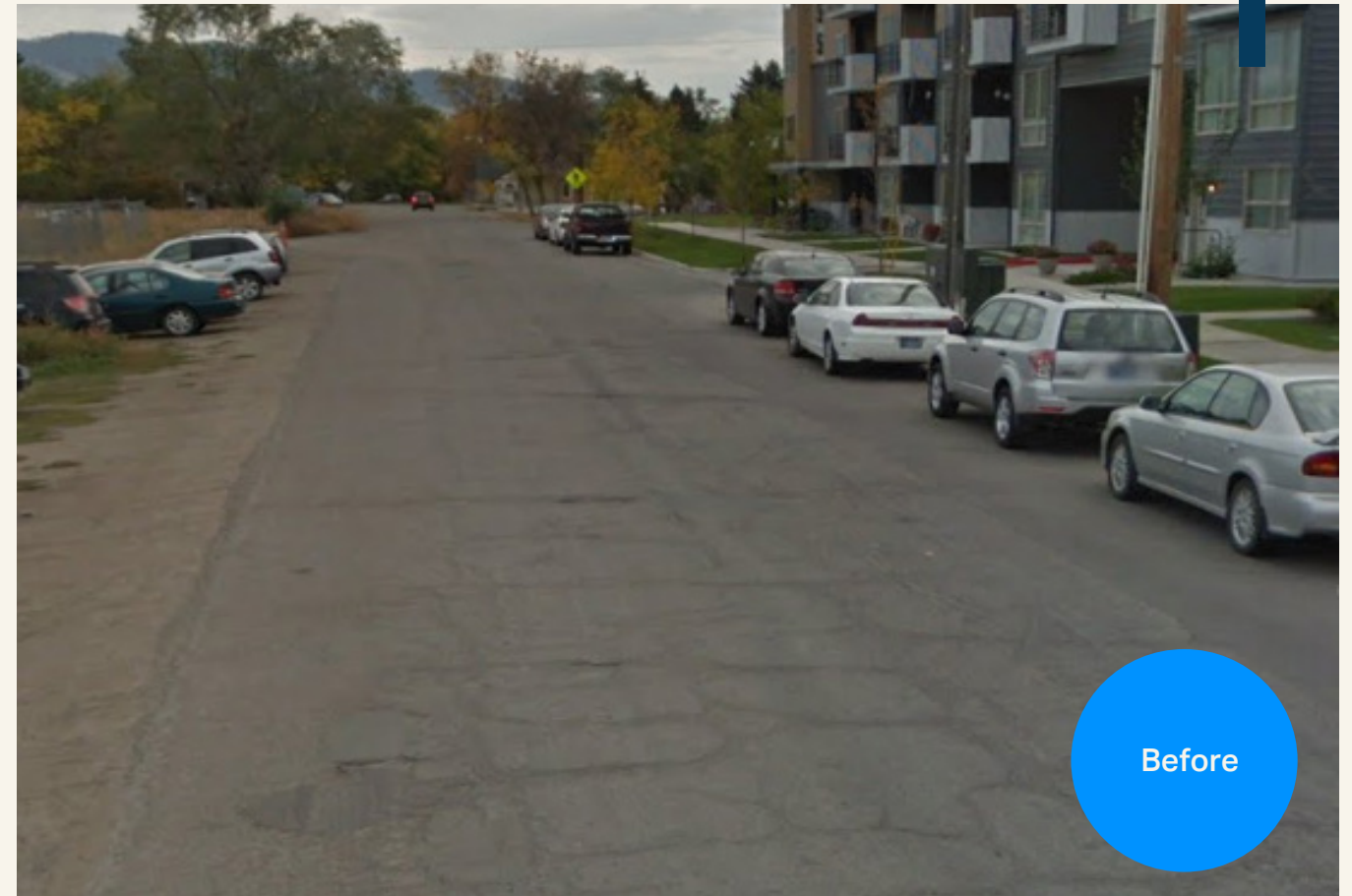
High cost due to curb, gutter, utility & sidewalk work.

Opportunity

This is an area of rapid, high-density growth which is lacking in safe bicycle facilities. Creating a North-South bike route would connect people from Broadway via California St. Bridge to the Milwaukee Trail. Implementing this bicycle facility will also support the vision from the draft Downtown Master Plan. This project will support higher-density mixed-use development in the area near Sawmill District and east of Russell St.

Outcome & Impact

By creating a street design between Wyoming and River Road that supports low-speed, low-volume traffic, a facility is created that emphasizes active transportation. This project would support multi-modal transportation options to reduce increased car traffic due to redevelopment.



Bicycle Projects in URD 2 & 3

3

Russell

Maple to Broadway

Buffered Bike Lanes

Description of Project

Option 1) Eliminate on-street parking, as it is unused presently, and install protected bike lanes.

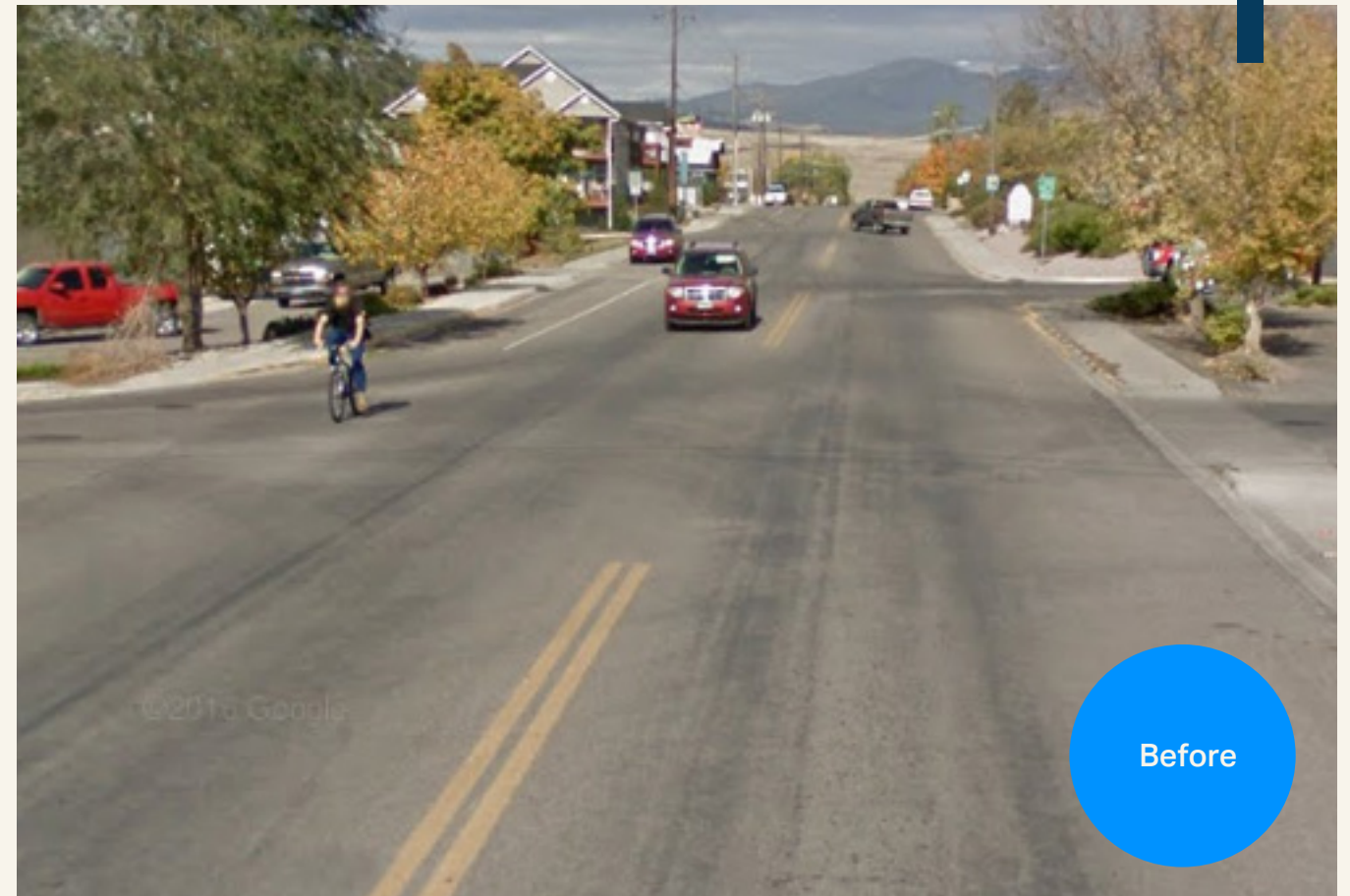
Option 2) One 7.5' parking lane, two 10' travel lanes, and a 5.5' bike lane against the curb and a 6' bike lane along parking lane.

Opportunity

Growing interest in redevelopment of the area between Russell and W. Broadway will require better transportation access. Currently, despite multi-million dollar investment in Russell Street, the area north of Russell is still disconnected and not accessible to new or vulnerable riders. This small improvement project to N. Russell will increase comfortable connection that will support on-going and upcoming redevelopment.

Outcome & Impact

Adding safe LTS 1 bike facilities will increase ridership - especially amongst more vulnerable populations. With appropriate multi-modal facilities, more people will be able to access redevelopment in this area. Thus, mutually benefitting people and businesses.



4

Burton Intersections

Toole & Burton;
Broadway & Burton

Neighborhood Greenway Intersection Improvements

Description of Project

Toole & Burton: Install curb extensions at all four corners to reduce crossing distances. Install pedestrian crossings and bicycle/ pedestrian warning signs.

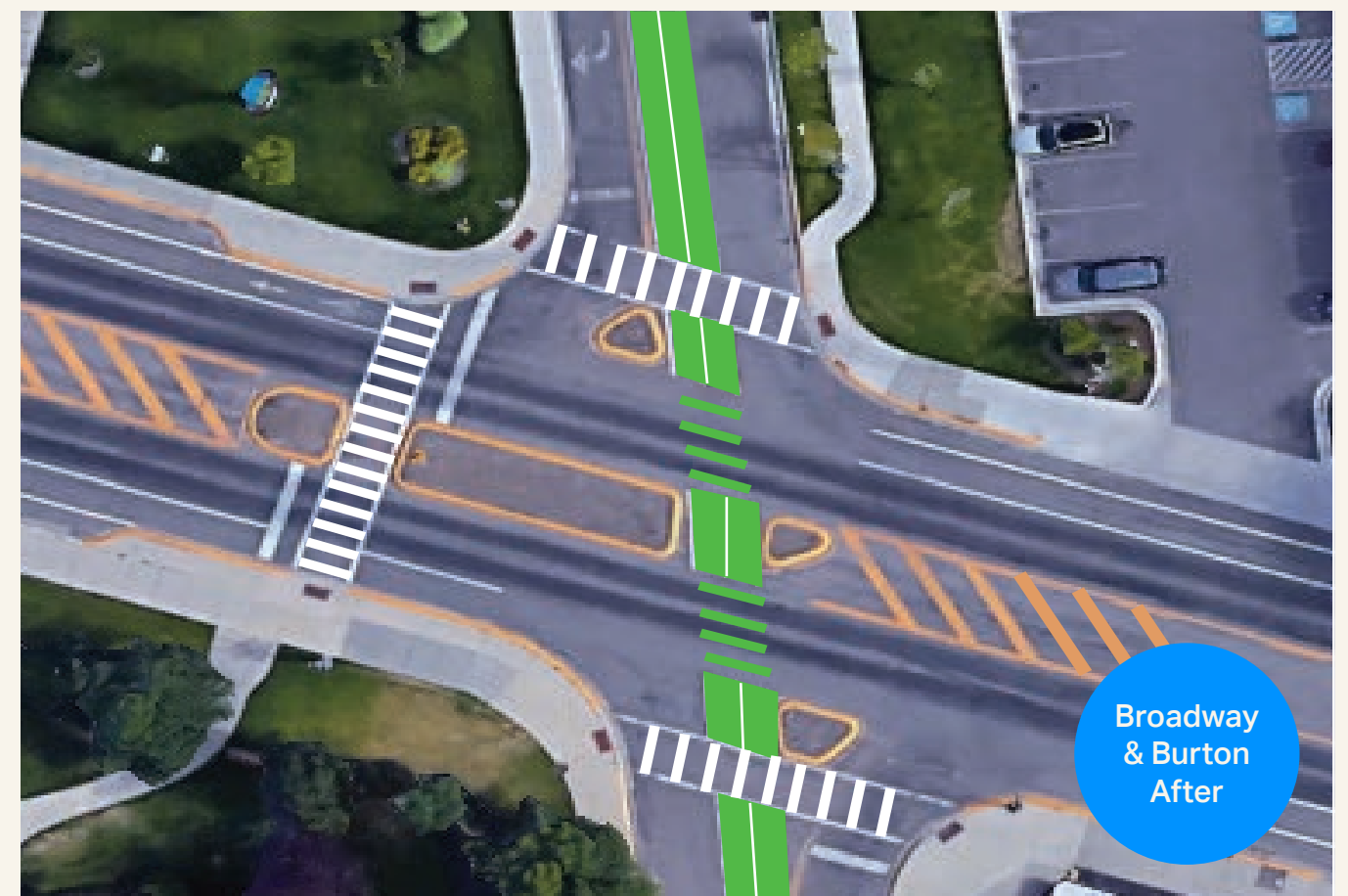
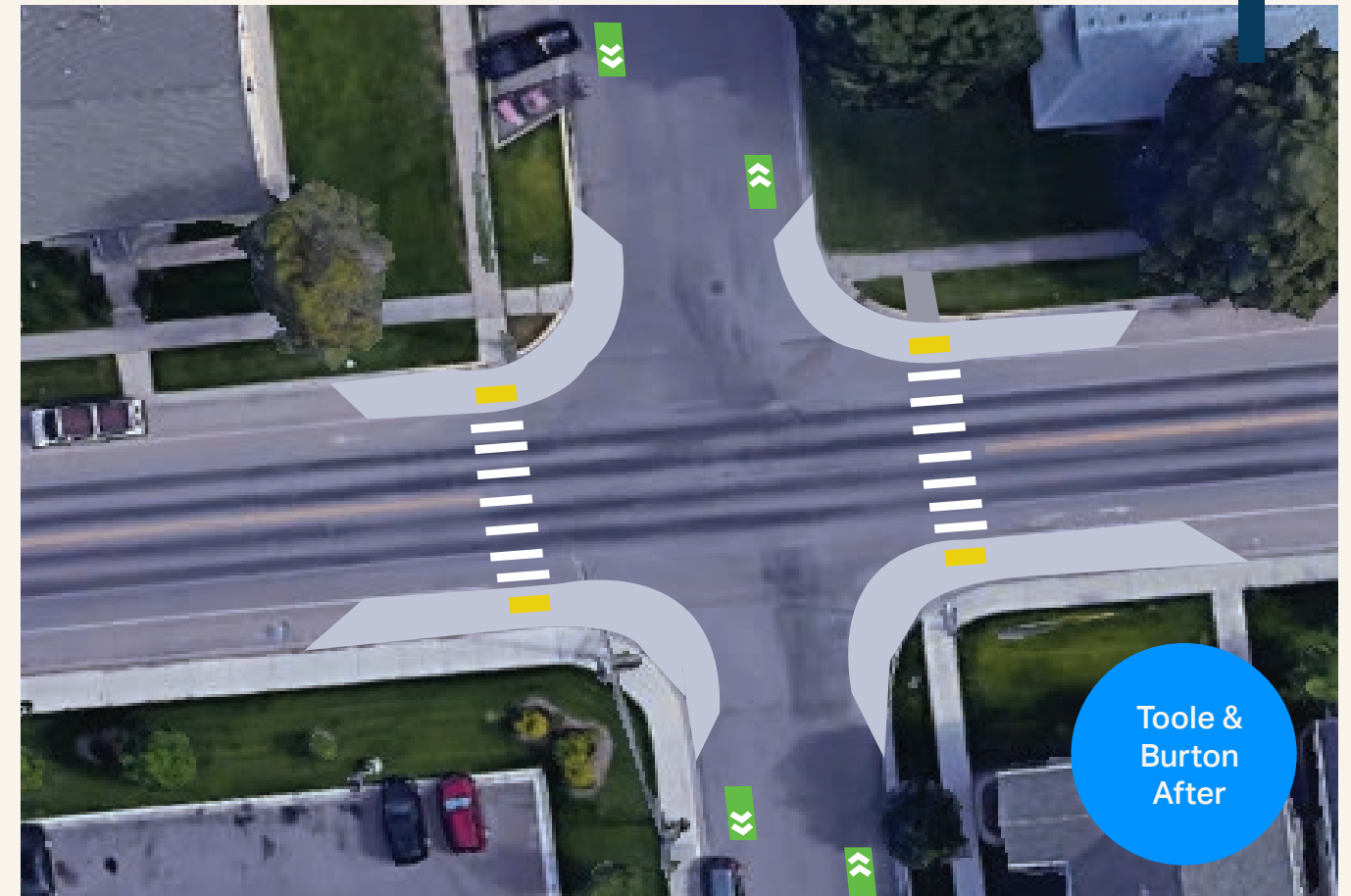
Broadway & Burton: Add striping and install Rapid Flashing Beacons for enhanced visibility for bicycle and pedestrian crossing.

Opportunity

City Lodge Motel will likely redevelop. This project would provide a connection between the Westside neighborhood and the redevelopment Opportunity Zone along the California Street Bridge. It will also connect to the high-density mixed-use redevelopment on the South side of the river.

Outcome & Impact

Burton is a proposed neighborhood greenway which needs significant intersection improvements before being a viable bicycle route for all ages and abilities. Implementing these intersection improvements would provide a safe route for cyclists to connect with primary commuter networks via California Street Bridge, Milwaukee and Bitterroot Trail.



Bicycle Projects in URD 2 & 3

\$ 100k

URD 2

ID 25

5

California St. Intersections

Wyoming & California;
S 3rd & California

Neighborhood Greenway Intersection Improvements

Description of Project

Wyoming & California: Paint traffic calming circle as a traffic slowing measure. Installing traffic circle would require significant changes to intersection. Paint sharrows & install wayfinding signs along California Greenway.

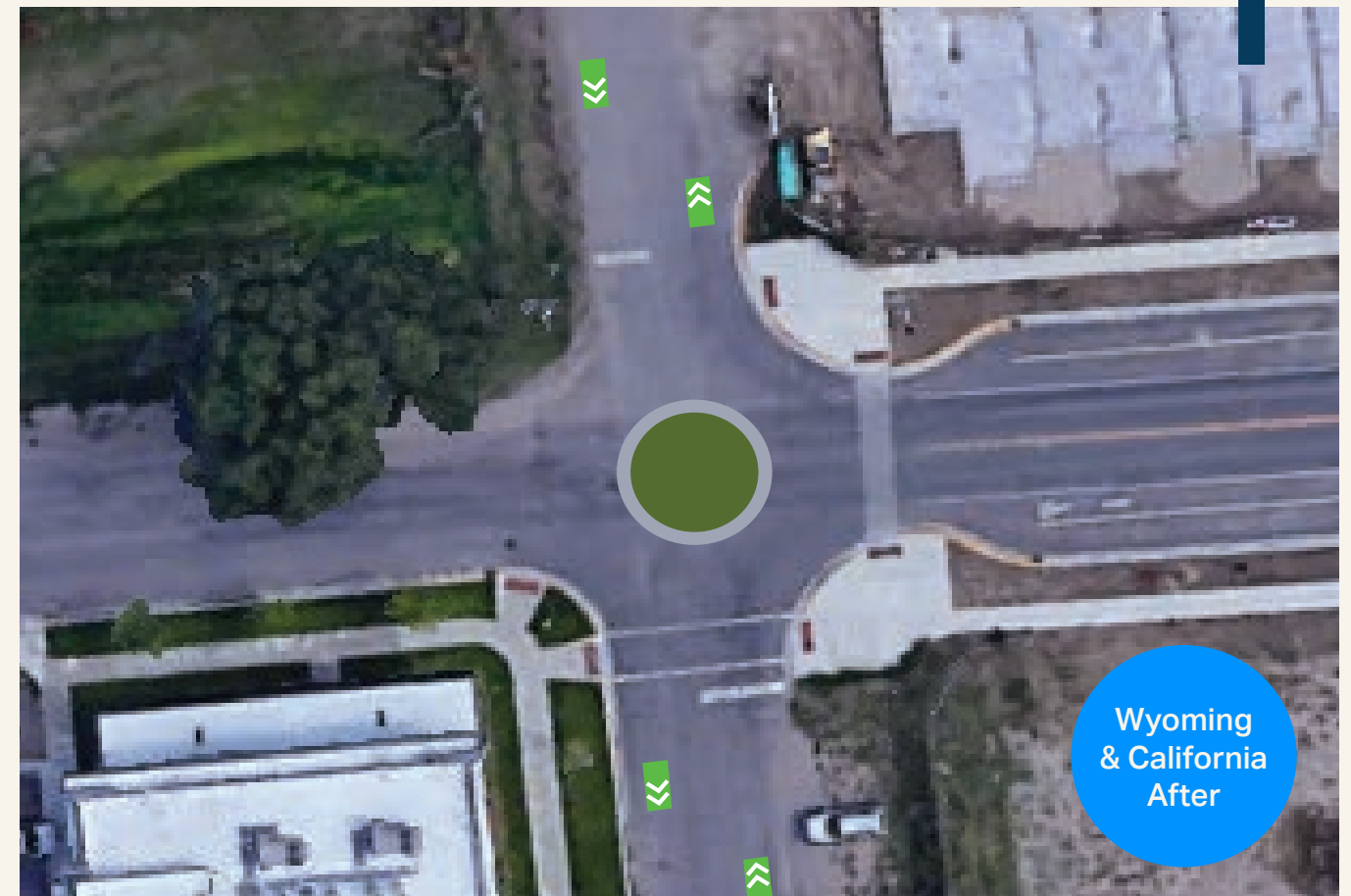
S 3rd & California: Add curb extensions into parking lane to shorten crossing distance. Paint crossing stripes across S 3rd. Paint bike lanes on S 3rd as well. Continue adding sharrows and wayfinding signs on California greenway.

Opportunity

Neighbors have expressed concern regarding the Wyoming & California intersection. Adding safe bicycle facilities will support growth in this rapidly densifying mixed-use neighborhood. Growth should be supported by adequate multi-modal infrastructure to mitigate potential negative impacts on car traffic. Implementing these intersection improvements will increase bike and pedestrian safety and thus support the walkability goal set by the Sawmill District.

Outcome & Impact

California is a proposed neighborhood greenway bicycle route which would connect people to the Milwaukee trail & provide a safe route to the new Sawmill District. In order to complete this greenway and make it accessible for all people, intersection improvements must be made.



Bicycle Projects in URD 2 & 3

\$ 100K

URD 2

ID 21

6

Mullan & Broadway Intersection

Protected Intersection

Description of Project

Due to the significant number of bicycle and pedestrian crashes at this intersection, a protected intersection is recommended. Green bike lanes or stripes are necessary through the intersection to signal bicycle crossing. White crossing stripes signal to cars that they are crossing pedestrian pathways as well. Raised curb extensions are shown which would slow traffic and guide them through the proper turn while providing a physical barrier to cyclists and pedestrians.

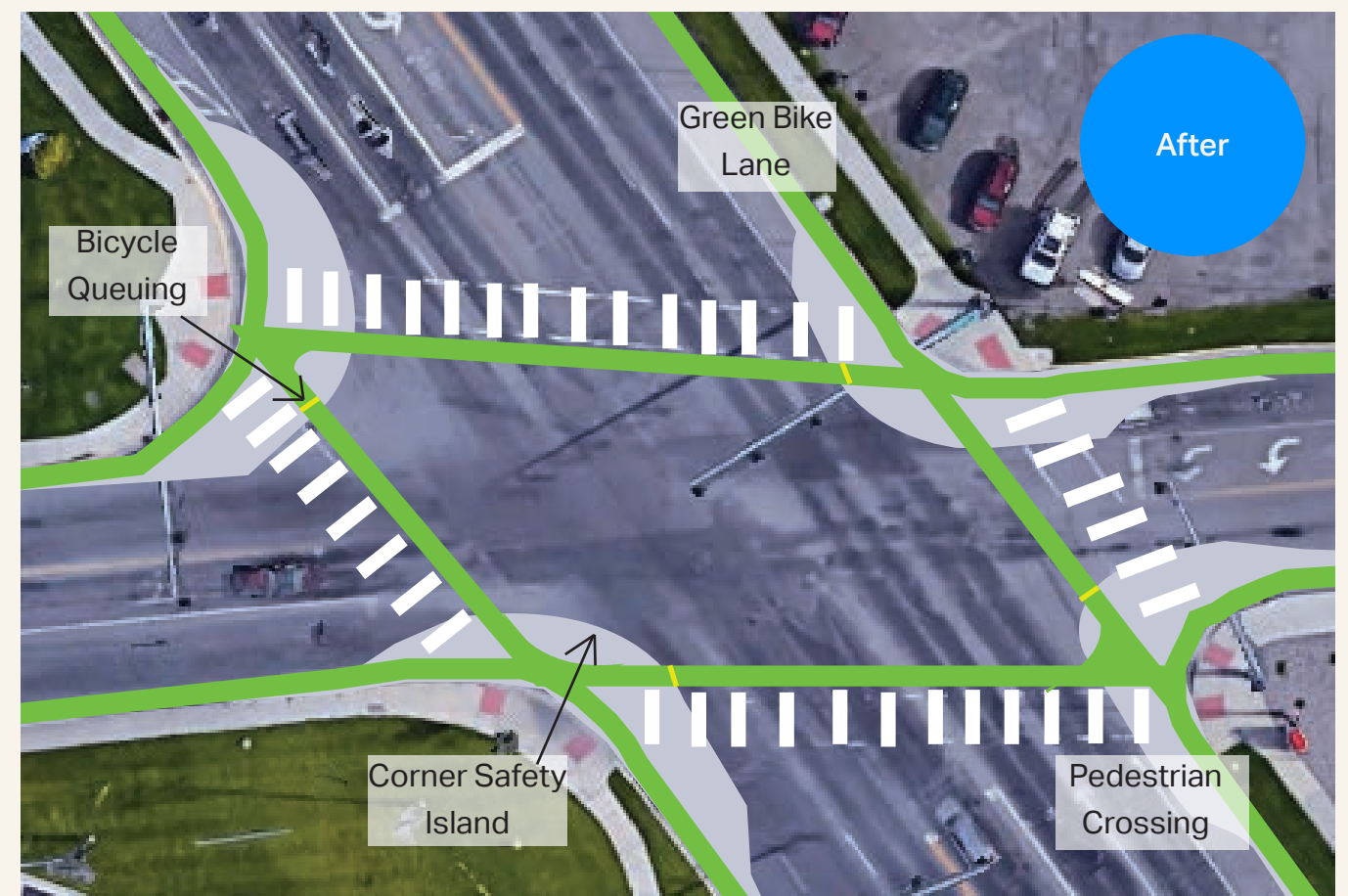
This design will significantly slow motor vehicles, but this is the level of intervention necessary to improve the location for bicycles & pedestrians.

Opportunity

Redoing this intersection will support redevelopment projects such as DJ&A Engineering offices and will support the Russell street bike lane installation. This project would provide a valuable connection between the Opportunity Zone along N. Russell and Downtown and Sawmill District.

Outcome & Impact

The intersection is currently rated as LTS 4, meaning only the Fearless Riders will use this route. Installing a protected intersection will dramatically change the safety and perceived safety of this crossing such that many more people will be willing to use this route. This intersection is a key connection to amenities in this area such as Blue Mountain Clinic, the Poverello Center, Pre-Release & North Reserve retail center.



Bicycle Projects in URD 2 & 3

Overview: URD 3

Bicycle Infrastructure Projects



1

Fairview
Garfield to Russell

Complete Bike Lanes

2

Kent Ave
Garfield to Maurice

Neighborhood Greenway

3

Stephens Ave
South to Harlem

Complete Bike Lanes

4

Fairview & Garfield

Various Safety Improvements

5

Kent & Brooks

Various Safety Improvements

6

Russell & Fairview

Various Safety Improvements

1

Fairview

Garfield to Russell

Complete Bike Lanes

Description of Project

Resurface street to widen bike lanes to 6 ft minimum and install bike lanes in sections which have none. Current width does not allow 6' bike lanes. Redesign should consider removing the two-way left turn lane – it is unsafe & unnecessary. By doing so, bike lanes & on-street parking (on one side) can be implemented. Ideally would happen simultaneously with Fairview intersection improvements.

Opportunity

Would support redevelopment projects such as the Fairgrounds by providing an East-West direct route.

Outcome & Impact

Fairview is lacking bicycle facilities thereby deterring active transportation along this route. This route connects to the Southgate Mall, Fairgrounds & various other amenities which people would like to access by bike safely.



Before



After

Green bike lane
& painted buffer

2

Kent

Garfield to Maurice

Neighborhood Greenway

Description of Project

Install way-finding signs, pavement markings and traffic speed control measures such as speed humps or roundabouts. For safety, consider converting parking to back-in.

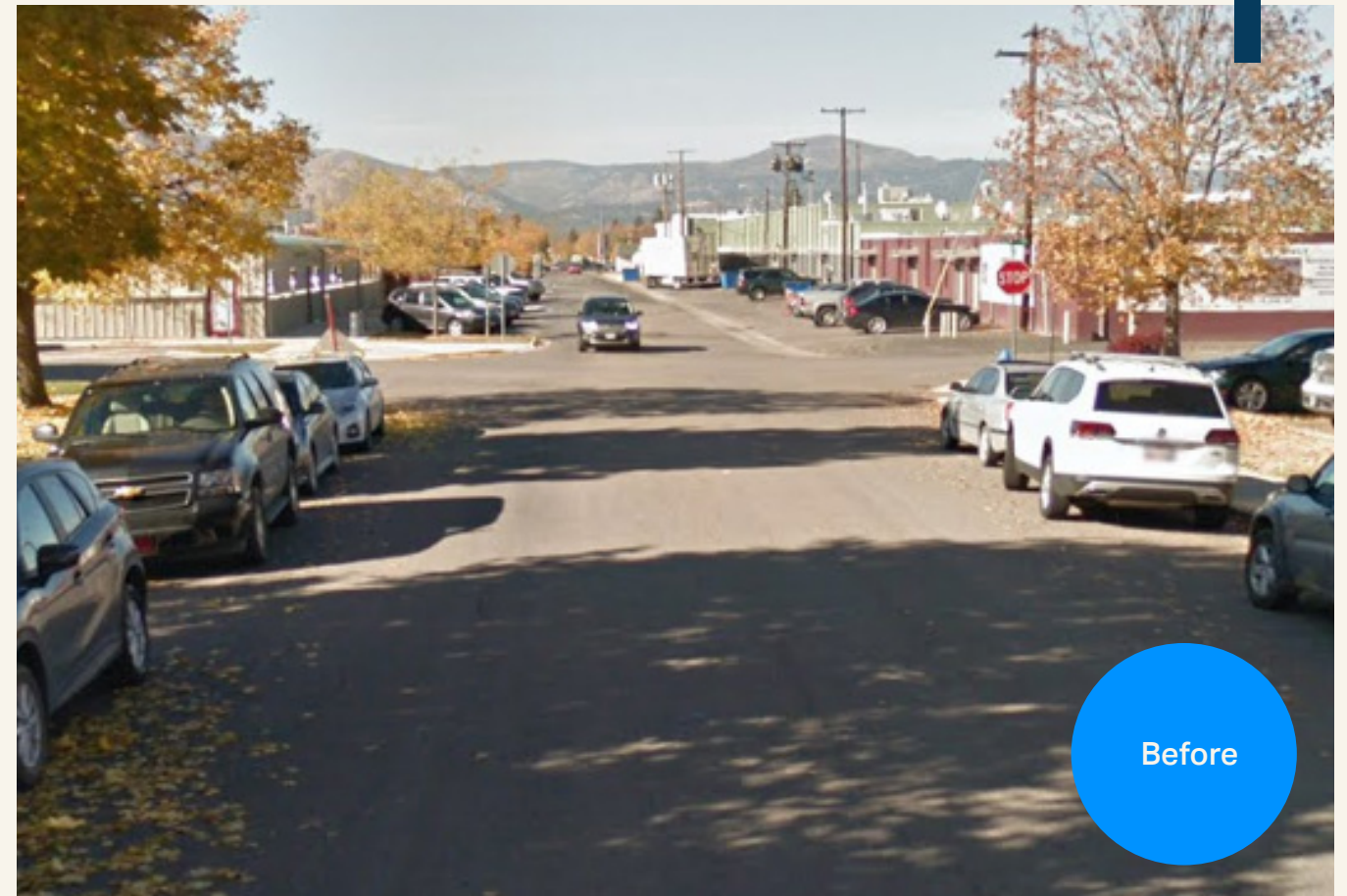
This project would complete over 1.75 miles of greenway.

Opportunity

This low-cost greenway would tie Central Ave railroad crossing at MRL Park to create a complete east-west connection from the University to CS Porter School. This connection will provide safe, comfortable multi-modal access between large residential neighborhoods and areas with high redevelopment potential along Brooks and Russell St. The greenway will support higher density mixed-use development this is walkable and less auto-dominated.

Outcome & Impact

Kent is an essential neighborhood greenway in the proposed network - it would provide a safe connection for kids riding to Washington School & people visiting various mental health clinics. This corridor is in close-proximity to multiple Mountain Line stops including rapid transit & popular/frequent use routes.



Bicycle Projects in URD 2 & 3

\$ 40k

URD 3

ID 22

3

Stephens Ave

South to Harlem

Complete Bike Lanes

Description of Project

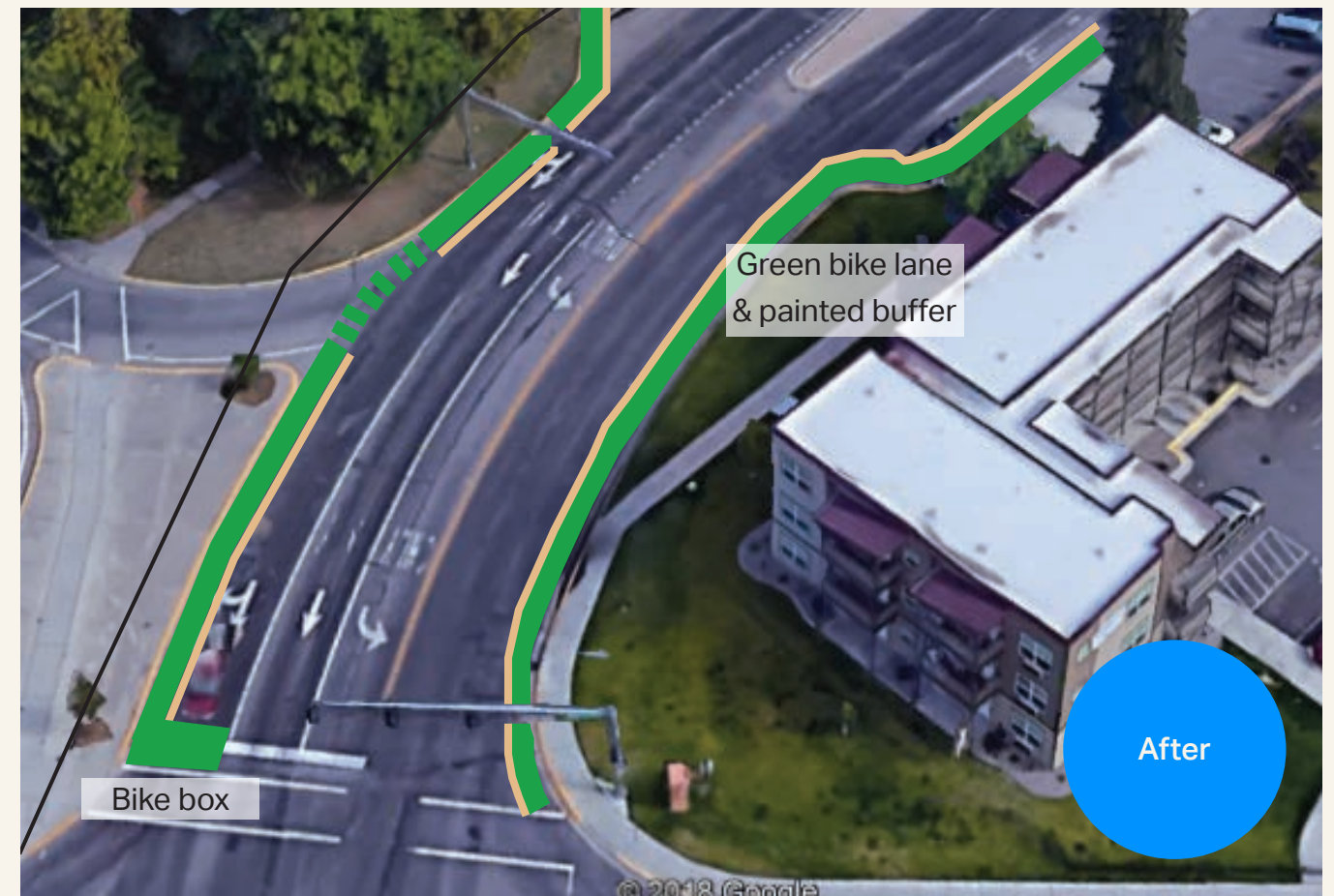
Add striped, buffered bike lanes - perhaps interior to parked cars, as they provide an additional buffer. There is a lot of street width, and right-of-way, along this corridor for potential improvements.

Opportunity

There are underutilized properties along Stephens Ave which would imply potential redevelopment opportunity in the future. This project supports a multi-modal connection to the Fairgrounds, which is a regional activity hub. It increases potential for redevelopment along Stephens due to enhanced transportation access between residential neighborhoods and future redevelopment sites.

Outcome & Impact

Filling in a small gap in bicycle facilities will connect large residential and commercial areas, supporting redevelopment potential. The crucial section of the project on Stephens is from Harlem to Mount, as there are currently no bike lanes.



Bicycle Projects in URD 2 & 3

\$ 200k

URD 3

ID n/a

4

Fairview & Garfield Intersection

Various Safety Improvements

Description of Project

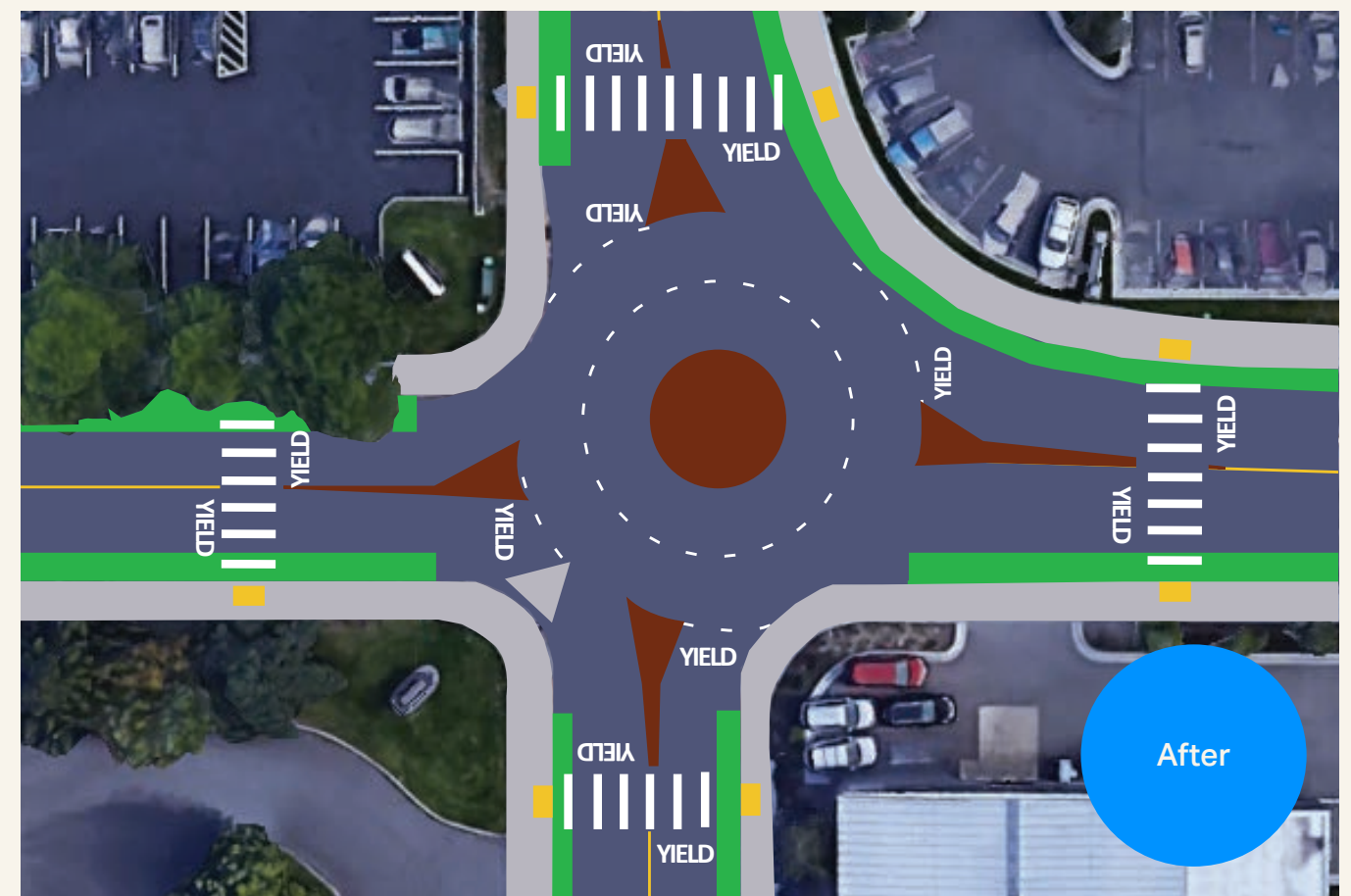
Specific improvements of this intersection are TBD. Possible traffic circle installation: set crosswalks back for improved visibility, add crossing stripes, paint bike lanes. Would require complete intersection reconstruction.

Opportunity

The Southgate Mall redevelopment means more amenities and therefore more people desire safe, efficient access this area. Redoinng this intersection would support the Fairview corridor bicycle project.

Outcome & Impact

Improving this intersection would result in better traffic flow and accessibility to the mall, as this is one of the key entrances.



5

Kent & Brooks Intersection

Various Safety Improvements

Description of Project

Install two-way cycle track along Kent running West-East to provide safe access through Brooks. Paint green crossing stripes to signal bicycle & pedestrian crossing. Install left-turn bike pocket on Kent (West of Brooks) for easy access to cycletrack. Minimize intersection size and control traffic turn speed by increasing median size on Brooks. Provide bicycle & pedestrian safety island on Brooks to shorten crossing distance. Add user-activated beacon to cross Brooks.

Opportunity

The lack of safe bicycle and pedestrian crossings along Brooks is a major impediment to active transportation modes. Adding crossings such as this one will support additional redevelopment projects with nearby residential neighborhoods.

Outcome & Impact

This intersection is highly recommended to be redone during the Brooks Street reconstruction. It will provide a crucial crossing along the Kent neighborhood greenway.



Bicycle Projects in URD 2 & 3

6

Russell & Fairview Intersection

Various Safety Improvements

Description of Project

Short term: Add bulbouts to shorten pedestrian crossing distance and slow traffic turning speed. Add pedestrian crosswalks and green crossing stripes to signal bicycle traffic. Add a through bicycle lane on Fairview in the East-West direction & bike box to prioritize safety of left-turning bicycles.

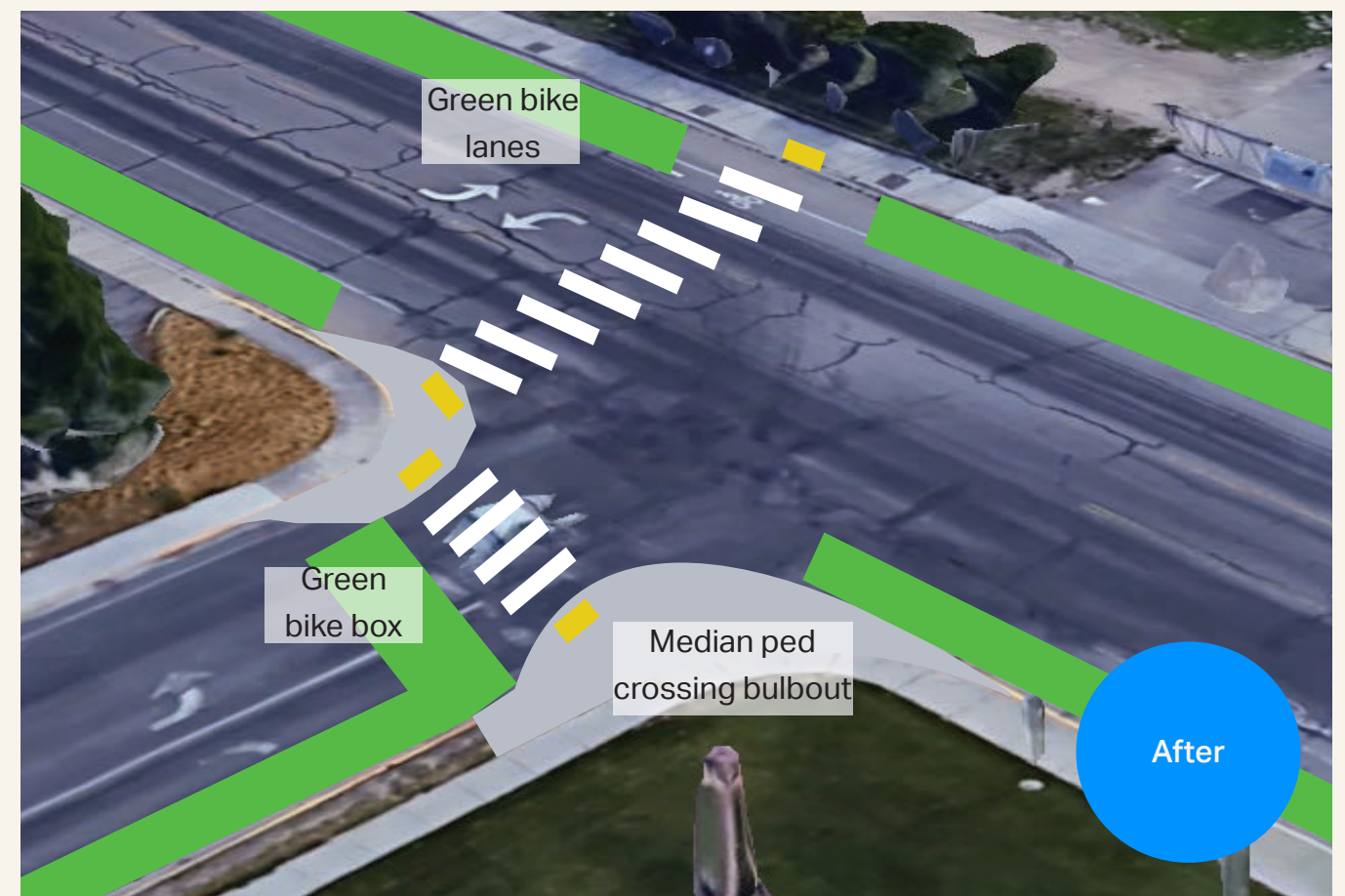
Long term: MRA & others have suggested a roundabout at this intersection.

Opportunity

Redoing this intersection would support and strengthen the Fairview corridor bicycle project.

Outcome & Impact

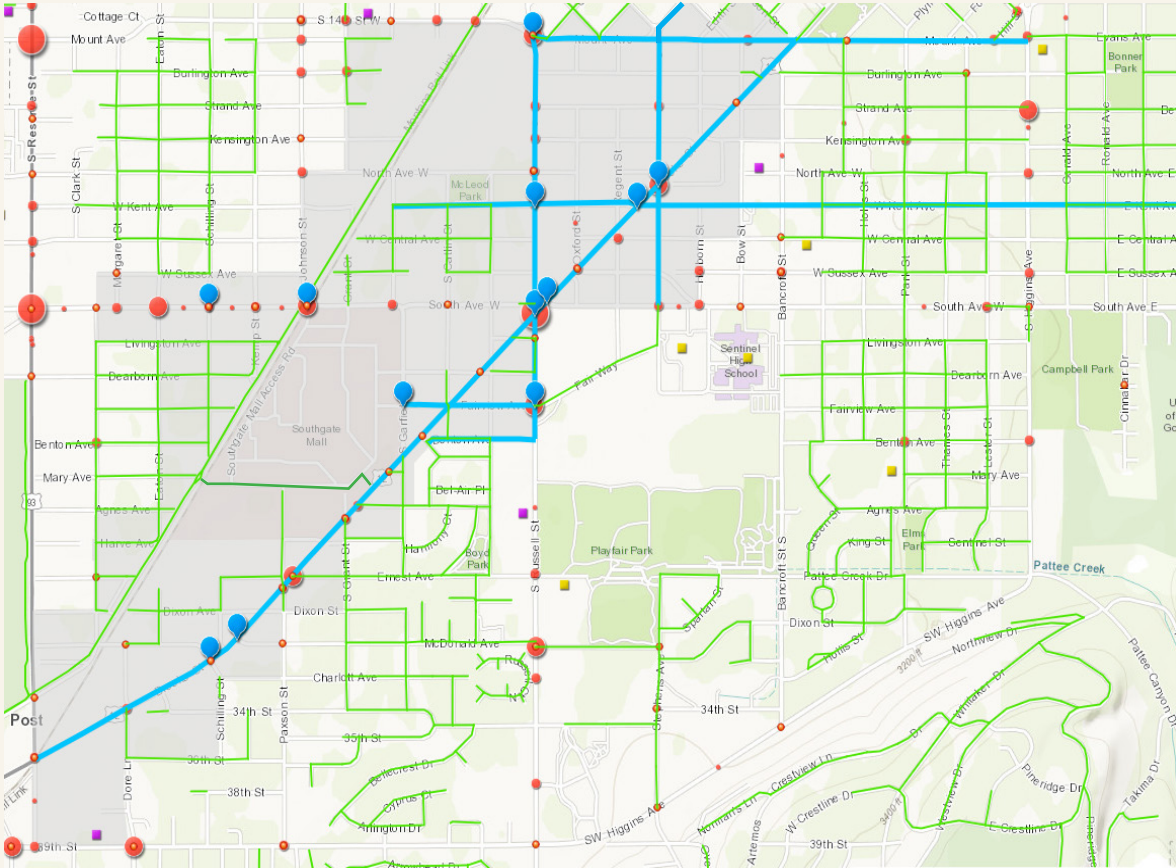
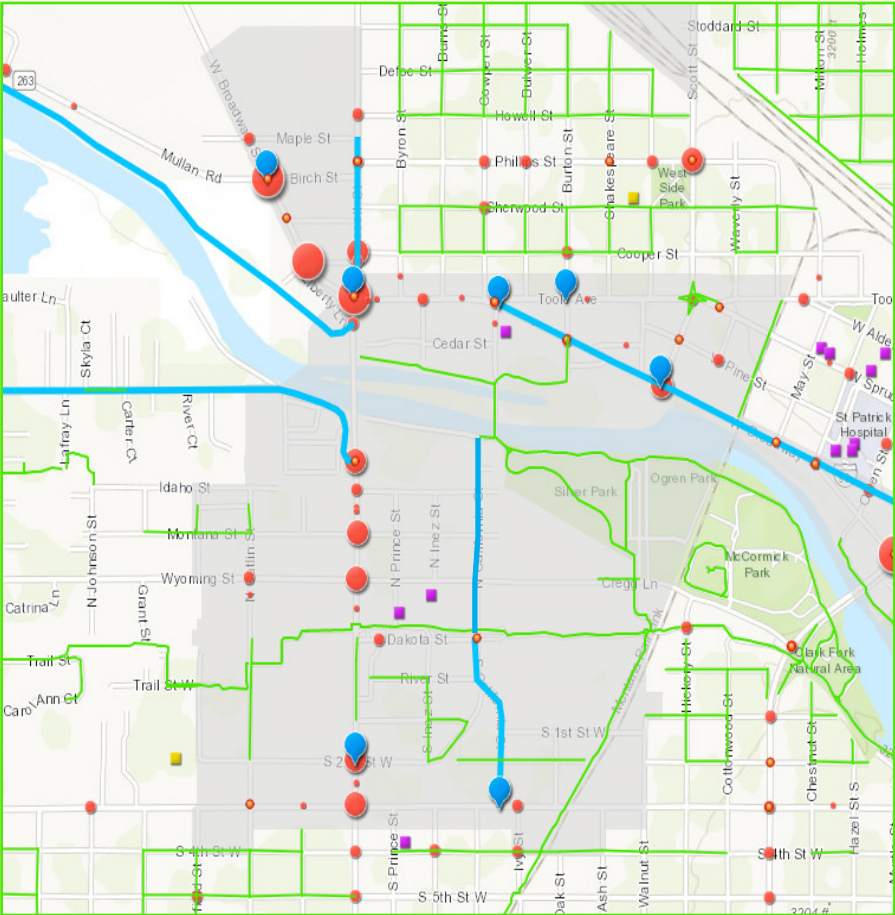
Fairview is recommended to be redesigned to safely accommodate bicycles and pedestrians. As is, this intersection is a deterrent to cyclists who would otherwise like to travel along the Fairview corridor. Creating infrastructure to improve safety would increase the number of active transportation users along this route.



Bicycle Projects in URD 2 & 3

Appendix

Map of all sites in URD 2 & 3 which were analyzed and catalogued in the appendix. Proposed sites of improvement are shown in blue. Bicycle crashes are shown in red. Green streets shown lack of connectivity for vulnerable riders such as children & elderly people.



Brooks & McDonald	ID 16. If no signal is developed with Mall, make cross-street right in-right out with a full traffic signal. Establish new crosswalk in porkchop island. Signal could be conventional signal or be a hybrid beacon. Cost: \$65,000 - \$85,000.
Brooks & Schilling	No project ID. Specific improvements are TBD.
Schilling & South	"ID 18. If turning volumes from South Ave are low, a Minneapolis style median treatment could be applied. This involves a raised median consuming the turn lane with pedestrian crossings on both the east and west legs. The raised median would return to grade through the middle of the intersection, bicyclists would use the medians as refuges, but be on the sides of them. A single vehicle could still queue in the turn area and not block through traffic. Cost: \$20,000 - 25,000.
Brooks & Stephens	Important intersection to recieve bicycle and pedestrian treatments during Brooks Corridor redesign.
Broadway/ California/ Toole	Most crucial intersection along Broadway coridoor. Needs further analysis past scope of this project.
Brooks & South	Specific improvements are TBD.
Kent & Russell	ID 3. Add RRFBs & bike cut-throughs for gre-enway. Cost: \$50,000 - \$150,000.
Russell & Mount	Specifics TBD, may include traffic calming measures, enhanced crossings & striping
South & Johnson	ID 19. Provide diagonal trail crossing parallel to tracks and use bicycle signal. Pedestrians would cross as they do now. Cost: \$15,000 - \$20,000.

Southbank Riverfront Trail (N Reserve to N California)	ID 55. Assumes that the MonRock Site is acquired by city as public park. Cost: \$ n/a. Link between Reserve & North River Trail.
River Road (N Reserve to N California)	ID 101. Add bike lanes. Cost: \$7,000. Link between Reserve & North River Trail.
Scott & Broadway	Important intersection for accessibility on Scott St. Specific improvements are TBD.
2nd & Russell	Specific improvements are TBD.
Benton Ave (Brooks to Russell)	ID 16. Neighborhood greenway, cost: \$7,000. Would connect Brooks St. to Fairway Greenway.
Mount (Russell to Higgins)	ID 133. Street is approximately 40 feet wide. The LRTP calls for a 3-lane section with parking removal from Reserve to Russell. In this section a bike lane could be feasible with 10 foot travel and a 9 foot turn lane. In areas that will stay two-lane on-street parking could be removed on one side of the street to result in an 8 foot parking lane, two 6 foot bike lanes and two 10 foot travel lanes. Some sections such as at arterial street approaches do get tight, if any curb line changes could be made in a targeted fashion, they would be the most beneficial in these contexts. Sharrows could be used at intersections as shared right turn lanes in the interim. East of Brooks one lane of parking would need to be removed to allow the bike lane to fit within the curb to curb width. This should be done on the north side of the street as the slant streets have fewer residential frontages. Cost: \$7,000 - 127,000
Russell (14th to Benton)	ID 146. Traffic volcumes would fuction well as 3-lane. Buffered bike lane in current outside lane. Shared bike lane & turn lane can be added where right turns warrant separate lane. Cost: \$4000.