



Bicycle Transportation in Medford: Connections to the Bear Creek Greenway

Spring 2014 • Planning Public Policy & Management

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All the City of Medford community members and city staff members who volunteered their time to show us around by bike. It truly takes a village.

About SCI

The Sustainable Cities Initiative (SCI) is a cross-disciplinary organization at the University of Oregon that promotes education, service, public outreach, and research on the design and development of sustainable cities. We are redefining higher education for the public good and catalyzing community change toward sustainability. Our work addresses sustainability at multiple scales and emerges from the conviction that creating the sustainable city cannot happen within any single discipline. SCI is grounded in cross-disciplinary engagement as the key strategy for improving community sustainability. Our work connects student energy, faculty experience, and community needs to produce innovative, tangible solutions for the creation of a sustainable society.

About SCYP

The Sustainable City Year Program (SCYP) is a year-long partnership between SCI and one city in Oregon, in which students and faculty in courses from across the university collaborate with the partner city on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner city through a variety of studio projects and service-learning courses to provide students with real-world projects to investigate. Students bring energy, enthusiasm, and innovative approaches to difficult, persistent problems. SCYP's primary value derives from collaborations resulting in on-the-ground impact and expanded conversations for a community ready to transition to a more sustainable and livable future.

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About City of Medford

Medford, located in Jackson County in Southern Oregon's Rogue Valley, has a population of 75,920 within a metropolitan statistical area of 206,310 people, the 4th largest in the state. The City was founded in 1883 at its present site because of its proximity to Bear Creek and the Oregon and California Railroad, becoming the County seat in 1927.

The downtown is a National Historic District and it is flourishing today due to support from the City's Urban Renewal Agency in cooperation with business and property owners. New construction, building restorations, infrastructure improvements and community events are creating a forward-looking downtown grounded in its diverse past. Streets have been realigned and improved with with new pedestrian and bicycle amenities.

Medford is the economic center for a region of over 460,000 people in Southern Oregon and Northern California. In the past, its economy was fueled by agriculture and lumber products. Although the lumber industry has declined, three lumber mills, Boise Cascade, Timber Products and Sierra Pine, remain. The area also is home to an expanding vineyard and wine industry that includes a large assortment of varietals and over 60 wineries. Lithia Motors, the 9th largest auto retailer in the U.S., has been headquartered in Medford since 1970.

The City is a regional hub for medical services. Two major medical centers employ over 7,000 people in the region. Medford is also a retirement destination, with senior housing, assisted living and other elder care services acting as an important part of the economy.

The Bear Creek Greenway extends from Ashland through central Medford and includes a 26-mile multi-use path, linking several cities and numerous parks. Roxy Ann Peak, one of Medford's most prominent landmarks, is a 3,573-foot dormant volcano located on the east side in Prescott Park, Medford's largest city park at 1,740 acres.

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Executive Summary

Under the direction of Professor Marc Schlossberg, 42 students in the University of Oregon Department of Planning, Public Policy, and Management's Bicycle Transportation course reviewed and examined critical elements of an urban bikeway system and proposed projects that would encourage and increase bicycle ridership and safety in Medford. This course was offered to upper-level undergraduates and graduate students from a variety of academic disciplines.

Course projects were generally chosen by surveying elements of Medford's environment including:

- Existing and proposed bike lanes
- Automobile traffic volumes on all roads
- Residential population density in Medford
- Connecting neighborhoods, schools, parks, and destinations.

One of the city's primary goals was to think about ways to build upon and highlight the amenity of the Bear Creek Greenway. The Bear Creek Greenway provides Medford an excellent source for bicycling and walking, but routes connecting to and from the greenway into neighborhoods, business districts, or recreation areas around Medford are lacking.

Students focused on various areas surrounding the Bear Creek Greenway and researched potential recommendations for enhancing its use and connections between destinations. Projects developed for this course considered current bicycle parking capacity, average daily traffic (ADT) counts, neighborhood demographics, local economy, and nearby destinations. Students collaborated with city staff to identify locations where the Greenway intersects key Medford streets.

This report outlines ways to better utilize this asset. Some students introduce the concept of a neighborhood greenway and different strategies developed to better connect schools and neighborhoods safely. Some present a set of approaches that enable bicycle riders to share the road safely with automobile traffic. Other students focus on non-design bicycle and active transportation related projects including education campaigns, wayfinding and branding, and other forms of encouragement, or programs that can increase community awareness and participation in cycling. Recommendations vary from easily implemented changes that complement existing infrastructure, to more challenging road redesigns and treatments. Consistent across course projects, however, was a focus on connectivity throughout Medford that can provide citizens of all ages and abilities with bicycle access to this source of untapped potential from both arterial and neighborhood streets.

Introduction

In the spring term of 2014, undergraduate and graduate students at the University of Oregon developed plans for how to make bicycling more of a regular occurrence in Medford, Oregon. This project was coordinated by the Sustainable City Year Program, and developed in collaboration with city staff, and presented at a poster session on June 10th, 2014 in Medford.

The Bear Creek Greenway runs through the heart of Medford, connecting Central Point to the north with Ashland to the south, a distance of approximately 20 miles. The scope of work document states that path users are likely unaware of popular destinations – such as shopping, dining, or recreation – located close to the Bear Creek Greenway. Medford residents who wish to get to the path by bike often face infrastructure and wayfinding challenges along their route. In essence, the Bear Creek Greenway is a nice off-street, multi-use path bisecting Medford, with few direct, clear ways to get to or from it safely and comfortably by bike. This project examines options to develop better linkages to neighborhoods in Medford and nearby amenities.

According to the Portland Bicycle Counts report conducted by the Portland Bureau of Transportation, 60 percent of the population is interested in bicycling but concerned about safety, 7 percent reported feeling “enthused and confident” only after the city made significant advances in developing its bikeway network and supporting infrastructure, less than 1 percent reported feeling “strong and fearless,” and the remaining 33 percent will not even consider bicycling (Bicycle Count RSS 2012). The 60 percent that reported being “interested but concerned” about bicycling is what cities across the world and country are currently working to get riding bicycles.

National trends show younger generations are obtaining driver’s licenses later in life and prefer getting around by alternative means instead of the single occupancy vehicle (AAA 2013). According to a recent report by the University of Michigan Transportation Research Institute, only 70 percent of nineteen-year-olds have a driver’s license; this is down from 87 percent just over two decades ago (Percentage of Teen Drivers 2012). This means cities can expect a greater demand for bicycle facilities in the years to come.

Transportation trends like this, along with studies showing the health benefits for individuals and the environment of walking and bicycling, mean cities currently investing in bicycle and pedestrian facilities are at the forefront and doing better at keeping and attracting young professionals who prefer to bicycle while providing healthy transportation options for all residents and visitors.

Bicycle Treatments on Neighborhood Streets

Four of the class projects recommended improving bicycling routes on neighborhood streets that would connect to the greenway. This section will outline those proposed routes and treatments.

Bicycle Boulevard/Neighborhood Greenways

Bicycle boulevards and neighborhood greenways are two terms that mean the same thing. In this report, these terms are used interchangeably. Neighborhood greenways are streets with low motorized traffic volumes and speeds that prioritize bicyclists and pedestrians over automobiles. Neighborhood greenways help to serve many functions. These include improving safety for bicyclists and pedestrians by discouraging cars from using neighborhood streets, providing assistance at busy streets crossings, protecting the residential character of neighborhoods, keeping speeds low, and getting people to where they want to go – like parks, schools, shops, and restaurants – without relying on a vehicle. Neighborhood greenways are usually identified by unique signage that clearly identify and communicate to motorists and cyclists that it is a bicycle and pedestrian-friendly street.

These streets are usually positioned parallel to a major arterial road so bicyclists and pedestrians can travel in peace and comfort while cars stay on the main arterials. According to the National Association of City Transportation Officials (NACTO) 2014 guidelines, neighborhood greenways should have fewer than 3,000 motor vehicles per day and 1,500 preferred. To maintain low volumes, neighborhood greenways have designs and treatments that discourage through-trips by motor vehicles, creating a safer environment for both bicyclists and pedestrians. The following sections will highlight those treatments for possible locations in Medford.

Suggested Locations and Maps for Neighborhood Greenways

This proposed system-wide map shows approximately 16 miles of neighborhood greenways that pass by 11 schools and 8 parks, and connect to the Bear Creek Greenway at 7 locations. The neighborhood greenways in this map were chosen by surveying four elements of Medford's environment:

1. Existing and proposed bike lanes
2. Automobile traffic volumes on all roads
3. Residential population density in Medford
4. Connecting schools and parks.

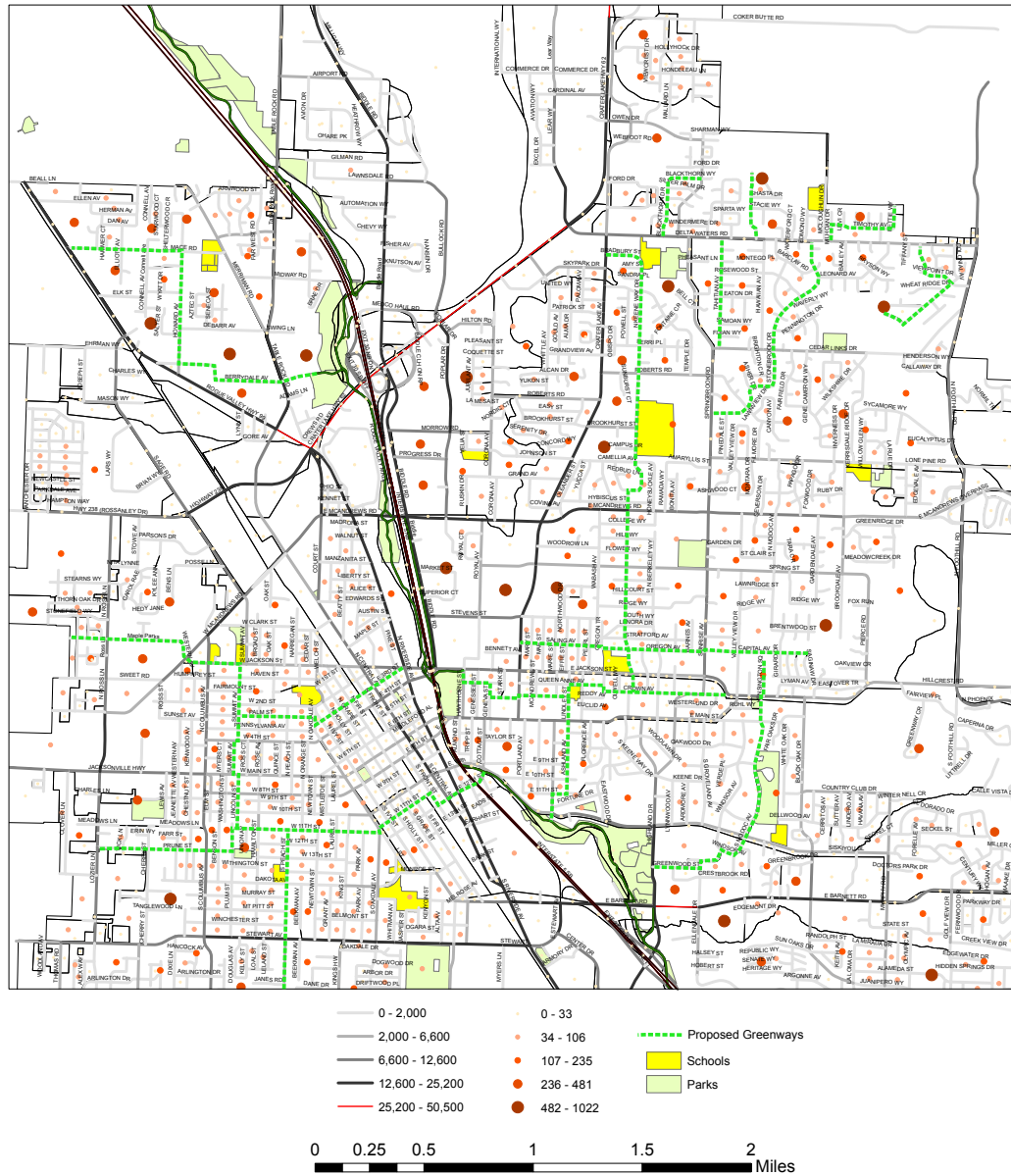


Figure 1: Proposed Medford system-wide neighborhood greenway map.

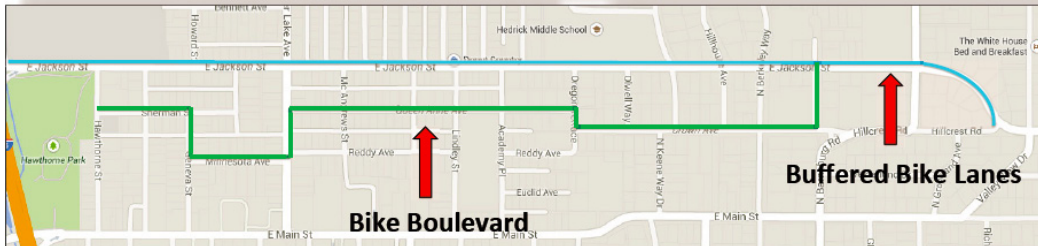


Figure 2: Connecting schools to the Bear Creek Greenway.

The following proposed bicycle boulevard is similar to one of the routes in the system-wide map. This bicycle boulevard begins at Hawthorne Park, and continues east through a network of streets that run adjacent to Roosevelt Elementary School via Queen Anne Avenue before joining with East Jackson Street at North Barneburg Road. This alignment provides residents of all ages and abilities in East Medford the option to use bicycles on neighborhood streets when heading to the Bear Creek Greenway or downtown.

The goal of the following route is to connect Lone Pine Road to the Bear Creek Greenway in the easiest and fastest way possible. This route will provide students of North Medford High and Wilson Elementary Schools with a safe route from home to school. This route is an added spur off of the N Keene Way neighborhood greenway in the system-wide map.

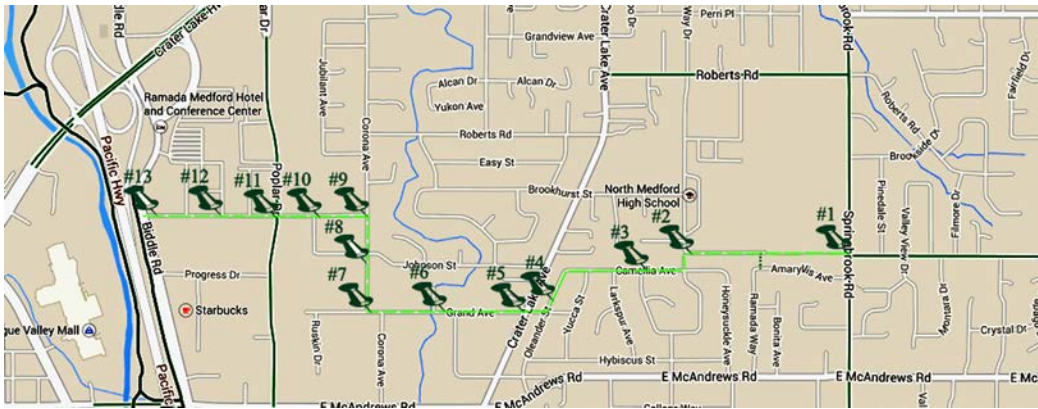


Figure 3: Lone Pine to Bear creek.

The goal of the McLoughlin Bikeway is to connect schools in the West Medford neighborhood including Jackson Elementary, Washington Elementary, and McLoughlin Middle School. This route is slightly different than the proposed system-wide map and is perhaps a better north-south alternative between Northwest and Southwest Medford.

Suggested Route - North Portion



New Segments:

Rose Ave between W Main St and W 4th St

- » .16 miles in length
- » Suggested Speed limit 20mph

W 4th St between Rose and N Peach St

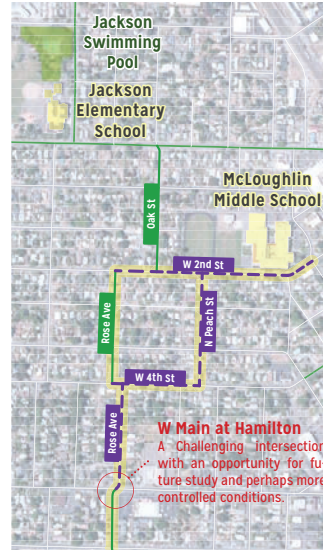
- » .13 miles in length
- » Suggested Speed limit 25mph

N Peach St between W 4th and W 2nd St

- » .17 miles in length
- » Suggested Speed limit 20mph

W 2nd St between Rose Ave and N Holly St

- » .39 miles in length
- » Suggested Speed limit 20mph



THE MCLOUGHLIN BIKEWAY: A Safe Route to School Through the Heart of West Medford
Armstrong, Bradshaw, Champine, and Sakata

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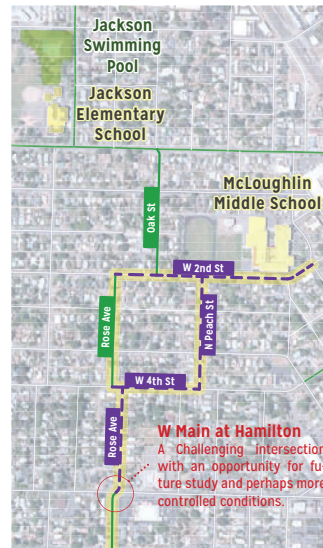
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Renderings of the Neighborhood Greenway Treatments

The following shows renderings of possible neighborhood greenway treatments along the routes specified above in the Suggested Locations section.



Figure 4: Rendering of N Keene Way Drive in east Medford before and after.

Southeast Medford

Southeast Medford has great opportunities for neighborhood greenways as shown previously in two of the suggested location maps. Neighborhood greenways in SE Medford can connect the Bear Creek Greenway to a number of parks and schools in SE Medford and all the way to NE Medford.

The following shows a before and possible after rendering of a neighborhood greenway along N Keene Way Drive intersecting E Jackson Street.

Keene Way Drive south of Jackson Street has 700 Average Daily Traffic (ADT) and Keene Way Drive north of Jackson Street has 1100 ADT. Jackson Street at Keene Way Drive has 5,600-6,400 ADT. Hedrick Middle School is in the northwest corner of the intersection. This rendering suggests intersection-crossing markings, including bike boxes/two-stage turn queue boxes, and rectangular rapid flash beacons. Intersection crossing markings may help bicyclists to cross the street more safely, and bike boxes/two-stage turn queue boxes could provide a location for bicyclists to wait to cross Jackson Street.



Figure 5: Bike pull-out space at Hedrick Middle School.



Figure 6: Rendering of E Main Street crossing before and after.

In addition to decreasing conflicts with automobiles, this also allows bicyclists coming west or east in the bike lanes on Jackson Street the ease of a two-stage left turn so they do not have to maneuver across a lane of traffic.

Another option for this intersection is to create a bike pull-out area on North Keene way for the bike racks in front of the Hedrick Middle School. Currently, the street space on North Keene Way Drive is designated for vehicle parking. This could be a space for students to wait for their friends and ride home safely in groups, or it could be used for more bicycle parking.

The following before and after images show another neighborhood greenway on Ashland Avenue and Lindley Street crossing E Main Street. E Main Street has 9,100 ADT at this intersection. Lindley Street has 900 ADT. The following rendering suggests installing a “no entry except bicycles” sign so cars will no longer be able to turn north onto Lindley from E Main Street, but bicyclists will be able to continue north. This would make the proposed greenway a convenient way for kids to get to school from south of E Main Street. A loop detector and bicycle signal head could be added so bicyclists would trigger the traffic signal and get in queue to go through the intersection safely. More on this treatment can be found in the Menu of Neighborhood Greenway Options section.



Figure 7: Before and after images of North Medford High School pathway.

Northeast Medford

The lack of connectivity on neighborhood streets presents a challenge for creating a neighborhood greenway network in NE Medford. The following are options to connect NE Medford to the Bear Creek Greenway and create some bicycle friendly neighborhood streets.

The pedestrian trail in Figures 7 and 8 below connects North Medford High School to nearby neighborhoods. To make this corridor accessible for both pedestrians and cyclists, improving this connection is important. The light post, currently at the center of the northern entrance, could be moved to the east of the trail, so as to not interfere with traffic. Additional signage may assist in helping to inform the public that this corridor is for pedestrians and bicycles only.



Figure 8: Before and after images of North Medford High School pathway.

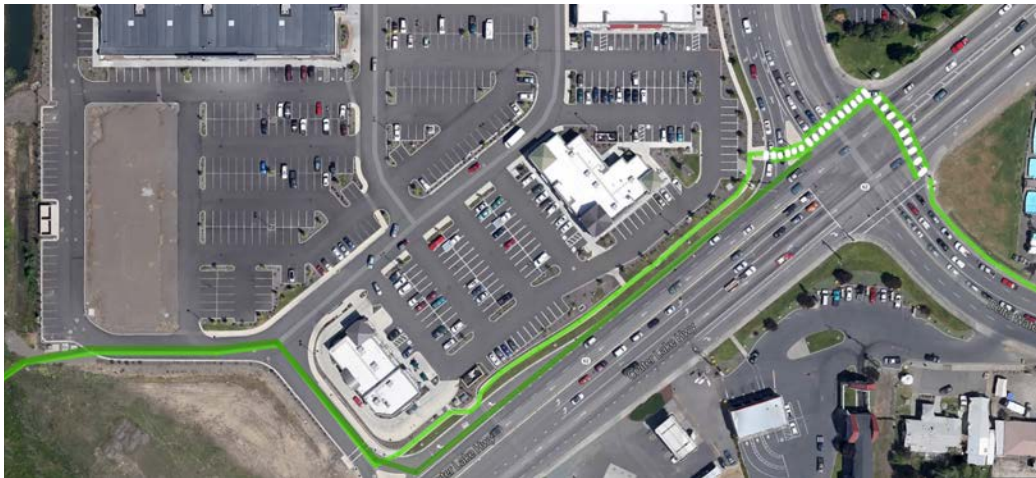


Figure 9: Improved bicycle crossing and connections across Crater Lake Highway.



Figure 10: Social trails to the Bear Creek Greenway in NE Medford

Northeast Medford has some major streets that bicyclists must cross, and this has an impact on the amount of people who feel comfortable bicycling. The bike lanes on Delta Waters Road end before intersecting Crater Lake Highway. This is not a welcoming situation for bicyclists. The following figure 9 suggests an intersection crossing treatment to get bicyclists safely through this intersection and to the Bear Creek Greenway on the other side of Crater Lake Highway. The second figure 10 highlights the social trails where people have created access, but where no

infrastructure currently exists. Foot trails can provide the city an idea of where connections to the Bear Creek Greenway are lacking and these locations could become main access points for bicyclists to get on the multi-use path from the Crater Lake Highway, Delta Waters Road, and shopping centers.

Grand Avenue at Crater Lake Avenue is another busy street crossing for a potential neighborhood greenway in NE Medford. The intersection features a crosswalk that can be improved as shown in Figure 11. The suggested improvements include bringing the sidewalk further out into Grand Avenue,



Figure 11: Improving Grand Avenue at Crater Lake Avenue crossing for bicycles and pedestrians.



Figure 12: Morrow Road and Biddle Road current conditions and rendering.

creating a tighter radius for turning cars that will slow cars down, and shortening the crossing distance for pedestrians. The green-painted bicycle lane directly to the south of the crosswalk at this intersection is a possible bicycle crossing treatment. There is already a yellow flashing light directly above the center of this intersection warning north-south drivers to watch for pedestrians. The proposed treatment suggests installing a lighted crosswalk that is signaled by pedestrians and/or bicyclists who approach this intersection. There could be a crosswalk button that will be doubly accessible, from the street for cyclists, and from the sidewalk for pedestrians. Once initiated, lights installed into the street on both sides of the crosswalk would start flashing, and the hanging light would flash red to stop vehicular traffic and allow the safe crossing of bicyclists and pedestrians. On the south side of the street there may be a painted green bicycle path for eastbound cycle traffic with the same crosswalk button option to stop vehicular traffic.

A possible NE Medford connection to the Bear Creek Greenway is at Morrow Road and Biddle Road. Figure 12 shows the possibility of a two-way cycle track along Morrow Road connecting to the Bear Creek Greenway.



Figure 13: Morrow Road rendering.



Figure 14: Morrow Road rendering.

Figures 13 and 14 show more renderings of a two-way cycle track along Morrow Road, which could connect neighborhood greenways in NE Medford to the Bear Creek Greenway on a facility that is comfortable for all types of bicyclists. The cycle track can have parked cars act as a buffer where parking is needed along Morrow Road, and paint can be a simple buffer where parking is not needed.

Northwest Medford

Creating a neighborhood greenway network in Northwest Medford has a few unique challenges. The Northwest section is not a unified grid network of roads, and there are a number of streets that begin and end abruptly. There are multiple current and proposed bike facilities in the neighborhood, but unfortunately they are placed sporadically throughout the neighborhood with no logical flow. The Northwest section is composed of two distinct areas. The first area is servicing the northwest residential area of the city. The proposed neighborhood greenways will service Mace Road, Howard Avenue, and



Figure 15: Sharrows implemented on Berrydale Avenue, with signage specific to that greenway, creating recognition for a neighborhood greenway.



Figure 16: Sharrows implemented on Berrydale Avenue, with signage specific to that greenway, creating recognition for a neighborhood greenway

connect to the greenway via Berrydale Avenue. Berrydale Avenue is a low-traffic street; to enforce the notion of the neighborhood greenway, we propose adding sharrow markings and wayfinding signage as seen in Figure 15 below to Berrydale Avenue.

The second section of this northwest section focuses on connecting residents west of N Ross Lane to Southwest Medford, downtown, and the Bear Creek Greenway. The major addition that could be added to the current bike network to help bicycle and pedestrian traffic cross N Ross Lane would be to implement a clear bicycle and pedestrian crossway. Figure 16 illustrates what a bicycle focus crossing could look like.

Figure 17: Example of wayfinding signage for the neighborhood greenway.



Southwest Medford

The street network in SW Medford is ideal for a greenway network because the street grid is either north/south or east/west and does not have many streets that end abruptly. To highlight the network there should be clear, consistent, and place-based wayfinding signage along the routes. Figure 17 shows a branded wayfinding sign. See the Menu of Neighborhood Greenway Options section for more ways to create a recognized place using signage.

A couple of specific intersections to possibly improve in SW Medford include 8th Street and Hamilton Street, and W Main Street and Hamilton Street. Figure 18 and its description below highlight possible ways to make these intersections safer as parts of a neighborhood greenway network.

Travelling north from the beginning of the McLoughlin Bikeway at Stewart Avenue, the first key challenging intersection is at W 8th Street, a one-way arterial flowing towards downtown with approximately 4,200 cars per day at that intersection (2012). Currently, the Hamilton bike lanes end before the intersection and there is no marked crossing for W 8th Street. Further traffic studies should be considered to analyze the possibility of installing traffic calming devices or implementing a more controlled treatment.

8th and Hamilton intersection possible improvements include:

- Highlight crosswalk and bike lanes
- Explore possibility of installing High-Intensity Activated CrossWalk (HAWK) Beacon
- Construct “bulb-outs” to reduce crossing distance, increase visibility of waiting.

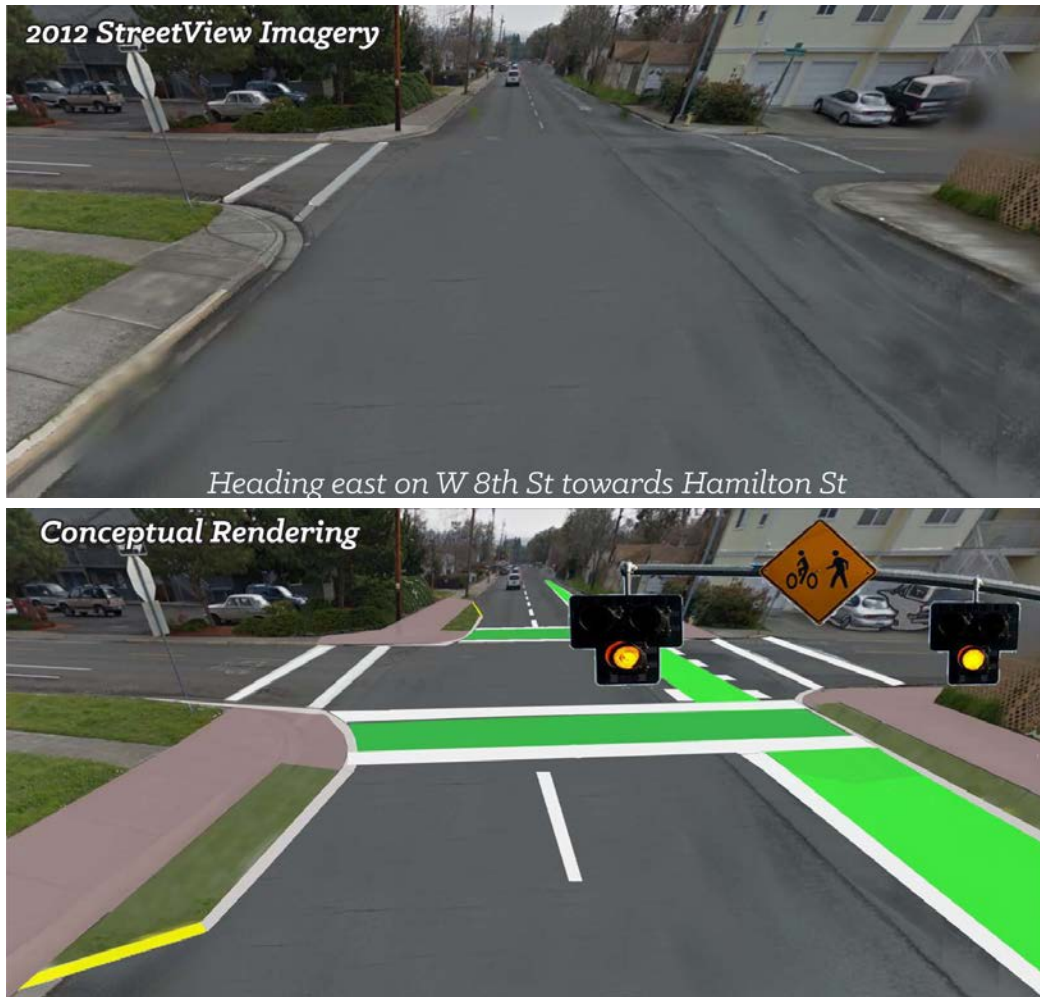


Figure 18: Example of wayfinding signage for the neighborhood greenway.

The intersection at W Main Street presents perhaps an even more difficult challenge with greater traffic volume and an offset grid arrangement. Additionally, the bike lanes end a considerable distance before the intersection and the nearest signalized crossing is 0.25 miles west.

The separated right lane used for traffic continuing on to Rose Avenue from Hamilton presents an interesting opportunity to use existing features to transition into a bicycle boulevard. Restricting this lane to only bikes, and enhancing the visibility of the crossing would give bicyclists given a clear crossing into the north side of the neighborhood. This closure would also limit drivers attempting to use Rose as a shortcut, sending them instead down to Columbus Avenue, the arterial route where they belong.

Main and Hamilton intersection possible improvements include:

- Highlight crosswalk and bike lanes
- Use right lane for bikes only
- Restrict cars to left turn on to Main
- Close Rose Street to incoming cars but allow outgoing traffic and emergency vehicle access, by using a semi-permeable barrier.

If possible, conduct traffic studies to explore possibility of installing a traffic signal with a timed bicycle phase. Funding and grants may be available for such studies and installations by Safe Routes to School, among other programs.

Safe Routes to School

As seen in the Suggested Locations and Maps for Neighborhood Greenways, all of the routes attempt to connect schools to the greenway along quiet neighborhood streets. A national program called Safe Routes to School (SRTS) could be implemented along with a neighborhood greenway, or even before.

The SRTS program is an effective way to empower communities to make walking and bicycling a safer and more popular way to get to school. The five E's provide a comprehensive framework for creating this reality. They consist of:

Evaluation: Assesses need for a designation and identifies opportunities with techniques such as Student Transportation Tallies, Car Counts, Parent Surveys, and more. These methods allow programs to track progress over time.

Education: Teaches students a variety of safety skills for walking and bicycling and informs parents and other drivers how to drive more safely around pedestrians and bicyclists.

Encouragement: Strategies such as contests and rewards are an essential part of most Safe Routes to School programs. They can be the easiest part of a program to start up when the emphasis is on having fun. A good example of encouragement is a Walk+Bike Challenge Month - a friendly competition aimed at encouraging more kids and families to walk and bike to and from school and throughout their neighborhoods (Oregon SRTS).

Enforcement: The primary goals of enforcement programs are to increase awareness of laws protecting children walking and bicycling, and improve driver behavior by mandating slower speeds and increased yielding to pedestrians. Important elements of enforcement include Crossing Guards, Speed Readers, and Police Officer Involvement.

What is a HAWK Beacon?

A relatively new type of intersection control device that acts like a highly visible stop sign - but only when there is demand for crossing.

- Increases safety and visibility of crosswalks
- Stops traffic when button is activated by pedestrian
- Costs approximately \$75,000 - \$150,000 according to Institute of Transportation Engineers
- Normal traffic signals cost \$250,000 or more according to Washington State Department of Transportation



Figure 19: Example of wayfinding signage for the neighborhood greenway.

Engineering: Deals with the built environment and projects that work to create safer places to walk or bike. Infrastructure improvements include bike racks, crosswalks, sidewalks, bike lanes and more.

Why SRTS?

Today fewer children are walking or biking to school, and more often parents are driving them. According to the Institute of Medicine the unintended environmental and health consequences of less walking and biking include: Type 2 diabetes, low self-esteem, decreased physical function, obesity, and negative emotional effects.

How does SRTS work?

Starting a SRTS Program is simple and made accessible with grants to fund everything from the action plan creation process, to remodeling bike networks, to acquiring bike parking. A typical timeline for SRTS:

1. Bring the Right People Together (see figure 20)
2. Hold a Kick-Off Meeting
3. Gather Information and Identify Issues*
4. Identify Solutions
5. Make a Plan
6. Fund the Plan
7. Act on the Plan
8. Evaluate, and make improvements



Figure 20: Bringing the right people together to make SRTS a reality.

Who does SRTS involve?

SRTS connects critical community members to discuss challenges and to collectively overcome these barriers to do what is best for the community.

When should SRTS begin?

NOW! Start with a biking and walking oriented event that encourages both children and parents to walk or bike to school. These events have a history of success in initiating SRTS programs across the country. There is no better time than today to start kids on a more active and sustainable lifestyle.

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Menu of Neighborhood Greenway Options

The previous renderings and possible neighborhood greenway locations are merely suggestions. It is possible and likely that some of these streets might not be the best fit for neighborhood greenways, and Medford City staff and residents will have better insight into the best alignments for a neighborhood greenway network. What is most important is implementing the neighborhood greenway treatments on a network of streets to get more people of all ages and

abilities bicycling and walking as a means of transportation. The following is a menu of neighborhood greenway treatment options for different situations.

Wayfinding And Placemaking



Jonathan Weiss BikePortland
bikeportland.org

Name and brand the routes with signage

This greenway is called “Going” which is simply the name of the street. The route has been given a visual identity with the artwork affixed to the top of the street sign. Giving each route its own unique visual identity will help neighbors identify with their greenway and aid anyone riding the greenway network know where they are.



www.ci.minneapolis.mn.us

Pavement Markings

Pavement marking help bicyclists and vehicles know this street is prioritizing bicycles and to expect bicycles to be present.



bettercities.net

Wayfinding information including estimates times to destinations

This signage helps point users to nearby destinations and provides mileage and estimated times to the destinations. Since neighborhood greenways are typically one street away from a busier commercial street, signs like this help direct users to destinations they might not know about otherwise.

Volume Management



Ross Peizer

No entry except bicycles and forced turns

“No entry except bicycle” signs at key intersections makes the route more convenient for bicyclists. It requires drivers to go a little out of their way to get to their home or destination but solidifies the low stress bicycle route.



nacto.org

Choker entrances

These entrances allow bicycles to go through while cars have to turn.



nacto.org

Diagonal Diverters

These are placed at four-way minor intersections and require all motor vehicle traffic to turn but allow bicyclists and pedestrians through without impediment.



nacto.org

Right-in/Right-out island

This treatment forces vehicles to take a right turn while bicyclists can go straight. This treatment also provides a median island refuge for bicyclists in the intersection.

Speed Management



Speed bumps, humps, or tables

Speed bumps slow car speeds who are using the street to speeds closer to those of bicyclist. Neighborhood greenways should be posted and designed car speeds no greater than 25 mph.



Ross Peizer

Bioswale bump outs

Bump outs reduce car speeds. Bioswale bump outs incorporate plants into the bump outs which filter storm water before it goes into local bodies of water. This green infrastructure reduces demand on grey infrastructure, consequently saving cities money. The bioswales help reduce heat island effect in cities and are visually appealing.



www.streetsblog.org

Neckdowns

Neckdowns shorten crossing distances for pedestrians and slow car speeds around turns and entering the street.

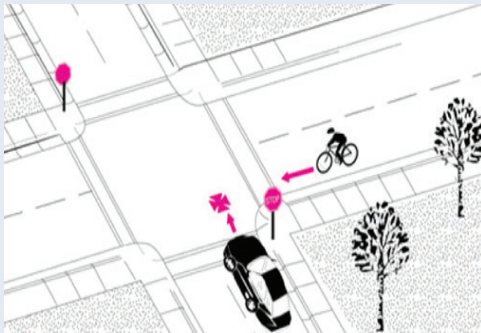
Minor Street Crossings



nacto.org

Pavement markings

At minor intersections it helps to have pavement markings that direct bicyclists where to go.



safety.fhwa.dot.gov

Turning stop signs

Turning stop signs to face vehicles crossing the bicycle boulevard prioritizes bicyclists and pedestrians along the neighborhood greenway.

Major Street Crossings



bikeportland.org

Median refuge island and forced turn for vehicles

Median refuges provide a safe place for bicyclists or pedestrians to wait when crossing a busy street. The refuge allows them to cross one side of the street at a time. This treatment also helps with volume management on the greenway because it forces vehicles to turn.



bikede.org

Intersection crossing markings

This treatment signifies to motorists that bicyclists will be crossing here and also helps direct cyclists where to be in the intersection.



www.tucsonaz.gov

Crossbikes

Crossbikes merge pedestrian crosswalks with bicycles and provides a separate space in the crosswalk for bicycles. In a high traffic pedestrian environment, bicycles should have their own space in the crosswalk to reduce crashes between bicyclists and pedestrians.



www.kirklandwa.gov

Rectangular rapid flash beacons

This flashing beacon is triggered by a pedestrian or bicyclist with a push button. The flashing beacon helps get vehicles to yield.



nacto.org

Bicycle forward stop bar or bike box

A bicycle forward stop bar or bicycle box allows bicycles to go in front of the crosswalk so they can see if it is safe to cross.



sustainablebusinessoregon.com

Bicycle signal

A bicycle signal gives bicyclists their own time to get through the intersection. They are triggered by a loop detector in the group which detects metal and is calibrated for the weight of a bicyclist and rather than a vehicle.

Offset Intersection



nacto.org

Two-way cycle tracks

This is an ideal way to connect to a greenway as it allows for a low-stress bicycle route through an intersection. A cycle track is removed from traffic and extends out from the sidewalk.



bikelibrary.blogspot.com

One-way cycle tracks or buffered bicycle lanes

If there is room on the street, instead of a bike lane connection (which might be appropriate on a minor street) a cycle track or buffered bike lane will cater to all types of bicyclists including children.



biketothefuture.org

Contra-flow bicycle lanes

If the connecting street is one-way for motor vehicles, a contra-flow bike lane allowing bikes to travel in the opposite direction is a way to connect the greenway.



nacto.org

Center turn lanes

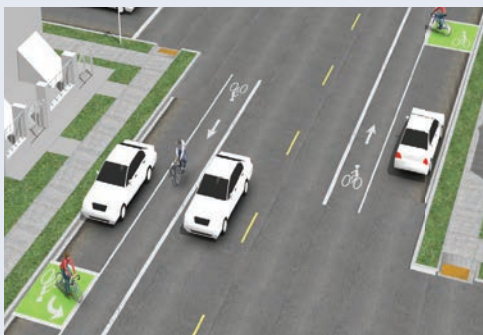
The center turn lane for bicycles connects a neighborhood greenway with an short distance offset intersection. This treatment works on streets with one car travel lane in each direction.



nacto.org

Median island

Similar to the center turn lane, a median island allows more protection of bicyclists with curb end caps and a physical buffer in the middle. This treatment works on a street with two lanes of vehicle traffic in each direction.



nacto.org

Two-stage turn queue box

This method allows bicyclists to not have to turn across vehicle traffic. Instead they can pull to the right into the turn queue box and wait until they feel safe to cross.

Bicycle Treatments on Arterial Streets

Arterial streets are often the quickest and most direct routes linking key destinations throughout a city. Over the course of several decades, however, arterial streets in cities across the nation have become long, high-speed, automobile-dominated corridors on which bicycling and walking is uncomfortable – at best. Consequently, arterials pose a number of challenges for cities trying to plan a comprehensive bicycling network that overlays existing infrastructure.

In some cases restriping, additional signage, and traffic-calming measures could be sufficient, inexpensive, and easily implemented. Other situations will clearly require greater investments of economic and human capital, as well as time. However, making the necessary adjustments to invite bicyclists onto busy streets is not an impossible task, and doing so offers a number of opportunities to benefit the entire city. These include economic growth, more active and healthier residents, decreased vehicle emissions over time, and being recognized as a community that contributes to the growing trend of bicycle tourism in Oregon.

This section will outline the proposed treatments and recommendations that developed from this Bicycle Transportation course. Four projects identified vital arterials where creating complete facilities for all commuters would likely have the greatest impact in improving interconnectivity.

Riverside/Highway 99 – 2-way Cycle Track

Among the arterials slated for an expanded bicycle facility in Medford's Transportation System Plan is Riverside Avenue/OR-99 (City of Medford Transportation System Plan 2003). With approximately 15,000 Average Daily Traffic (ADT), this state highway intersects multiple east-west streets with planned or existing bicycle facilities and bisects downtown, making it a vital and necessary component in Medford's bicycle network. It represents a vein of untapped potential by enabling a more direct route to key destinations and

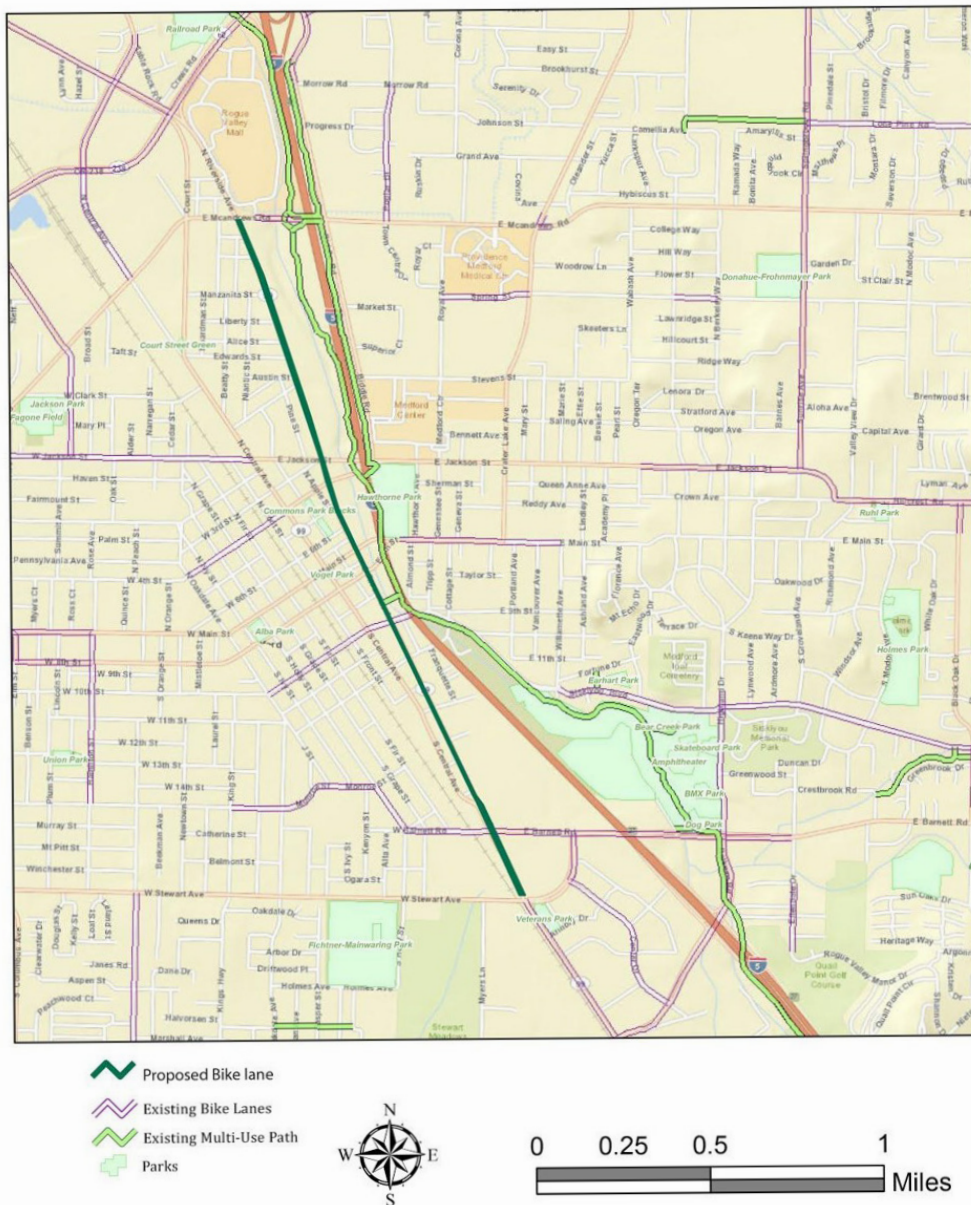


Figure 21: Map of Medford showing Riverside Avenue/OR-99 traversing Medford north to south, intersecting roads and bicycle lanes.



Figure 22: Current conditions on Riverside Avenue/ OR-99.



Figure 23: Proposed two-way cycle track on Riverside Avenue/OR-99.

joining segments of network where a lack of interconnectivity currently seems to create confusion and discourage ridership.

One solution proposed for Riverside Avenue/OR-99 includes the implementation of a two-way cycle track along the east shoulder. This option provides a level of safety usually associated with routes on roads with slower moving vehicle traffic, while also directing bicyclists to key path connections and destinations. Multiple east-to-west bound streets with bicycle facilities, either currently existing or slated for expansion, intersect Riverside Avenue as seen in Figure 23 above. A two-way cycle track through these key intersections on Riverside Avenue/OR-99 would create a safer and more complete network where local residents and tourists could feel comfortable riding.

A two-way cycle track on Riverside Avenue would provide direct access to downtown shops and entertainment. This has promising potential to increase patronage at these local businesses and infuse the local economy with dollars that consumers save on fuel consumption. Together with Medford's favorable climate, a two-way cycle track on this key arterial street could become a major transportation alternative for residents throughout a majority of the year.



Figure 24: Green paint and white lines on Riverside Avenue/ OR-99 clearly show all commuters where to be especially alert.

This recommendation includes possible strategies for mitigating safety risks at certain points along the proposed route. Merging traffic and motorists turning right across bike lanes, in particular, present a risk for riders to be hit. An effective solution for this is to use markings, such as green paint and clearly defined white lines, which draw the attention of both motorists and bicyclists to sections where concern for safety is the greatest.

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Altering some intersections to include bike boxes would allow riders to stop at red lights safely and out of the way of vehicles on the road. Bike boxes give riders space to build momentum and keep pace with vehicle traffic as lights



Figure 25: Aerial view of a bike box proposed for intersections on Riverside Avenue/ OR-99

change to green, and they produce an additional safety benefit by creating a buffer between vehicles and pedestrians using the crosswalk.

The proposal includes installing more bicycle parking on and around Riverside Avenue to accommodate the increase in ridership. Ample bicycle parking invites riders to lock up their bikes downtown and stop to explore local shops and entertainment. It can be artistic and help create a sense of place while providing security for riders to feel confident leaving their bicycles unattended.



Figure 26: Artistic bicycle rack designs.

In addition to popular establishments, U.S. Cellular Sports Park is situated adjacent to both Riverside Avenue/OR-99 and the Bear Creek Greenway, making it a popular destination for many. There is currently insufficient bicycle parking at the park to accommodate the increased demand that could be expected from a two-way cycle track on Riverside Avenue/OR-99. To encourage more residents and visitors to bicycle to U.S. Cellular Park it will be necessary to install safe, fun, and secure bicycle parking.

Key Destinations Along This Route:

- Rogue Community College
- Southern Oregon University
- Veteran's Park
- Medford Public Library
- Vogel Plaza
- Logos Public Charter School
- Medford Food Co-Op
- Craterian Theatre
- Rouge Valley Mall
- Kids Unlimited
- Allba Park
- U.S. Cellular Sports Park



Figure 27: One of five single wave/serpentine parking racks currently located in U.S. Cellular Park.



Figure 28: Map of downtown Medford showing the proposed bike route on 4th Street.

E 4th Street – Hawthorne Park Extension

East 4th Street is a two-way arterial with approximately 5,000–8,000 ADT traveling east-west through downtown. A single bicycle lane in each direction stretches for 0.3 miles from North Oakdale Avenue to busy Central Avenue, where it ends abruptly as 4th Street transitions from a two-lane into to a four-lane road.

This incomplete facility discourages families in neighborhoods surrounding the McLoughlin Middle School district from riding on what could be a direct route to downtown and on to other destinations further in east Medford. One proposal focuses on extending these existing bicycle lanes from Central Avenue through downtown to Hawthorne Park. This could be accomplished by altering vehicular traffic with a road diet, or 4:5 lane conversion.



Figure 29: Intersection at 4th Avenue and Central Avenue currently.

A 4:5 lane conversion—often referred to as a 4:3 lane conversion, or “road diet”—involves reducing the number of vehicle lanes on a four-lane road to provide space for bicyclists and pedestrians. Typically, this design converts a road with two travel lanes in each direction into a road with one lane in each direction and a two-way center turning lane. The space gained from eliminating a lane of traffic can be utilized for bicycle lanes, sidewalks, as well as safer distances from traffic. Benefits gained from a road diet include increased volume of bicyclists, enhanced safety, reduced traffic speed, and a dedicated center lane in which left-turning vehicles wait for the opportunity to turn without blocking traffic. Moreover, traffic capacity remains steady and public transportation tends to improve in efficiency. (Rethinking Streets 2013)

It is of interest to note that the 4:5 and 4:3 conversions are one in the same; the former places emphasis on gaining two bicycle lanes, while the latter places emphasis on losing a lane of traffic. “Road diet” is a neutral term often used by engineers and planners.



Figure 30: A smooth transition across Central Avenue makes 4th Street a safe and bicycle-friendly arterial.



Figure 31: Vehicles turning right onto 4th Avenue from North Riverside Avenue pose a potential safety risk for cyclists.

An important element of this proposal is to capitalize on the direct proximity of 4th Street to the Bear Creek Greenway. Currently, no connection exists. Here the city would need to invest minimal financial and human resources and would in return benefit from a highly strategic and cost-effective addition to its bicycle network. Where 4th Street intersects the Bear Creek Greenway, this group proposed building sloped paths that would cross over the sidewalk and loop downhill to the greenway below.

Opening access to downtown Medford via 4th Street for cyclists traveling from any point on the Bear Creek Greenway creates potential for economic growth. Restaurants, attractive public spaces, theater entertainment, and retail shops comprise the culture of downtown Medford.

A safe and direct route from neighborhoods in west Medford to Hawthorne Park incentivizes families surrounding a major school district to enjoy more recreation and exercise, shopping, and entertainment. The bicycle lanes proposed along East 4th Street would continue east and link with an existing bicycle path at the northwest corner of the park near Jackson Street. Parents could feel comfortable allowing their children to ride longer distances on this proposed route, making Hawthorne Park accessible and providing kids the opportunity to play and socialize with those from different neighborhoods.

Key Destinations Along This Route:

- McLoughlin Middle School
- Porters Dining
- Randall Theatre Company
- Hawthorne Park
- Medford Center
- Southern Oregon University



Figure 32: Rendering of the short path connection to the Bear Creek Greenway envisioned on the north shoulder on 4th Avenue.



Figure 33: Rendering of the short path connections to the Bear Creek Greenway envisioned on the south shoulder on 4th Avenue.

8th Street

8th Street is a two-lane, one-way arterial flowing west to east with approximately 5,200 ADT. On-street parking exists along much the north and south shoulders. In recent years the street has experienced a steady increase in bicycle volume. “Sharrow” markings added to the asphalt signify this is a bicycle route, and yearly automobile counts show vehicle traffic slowly declining on 8th Street.



Figure 34: Standard sharrow bicycle markings.

Rogue Valley Transit District (RVTD) utilizes bus stops along the south side of 8th Street. Rather than proposing to redesign traffic, this option instead proposes eliminating on-street parking along the north side of the street in favor of a buffered bike lane for cyclists, leaving the south side of the street for vehicle parking and bus stops. The route would connect from an existing bike lane west of Hamilton Street and extend through downtown.

This proposal approaches safety with great caution through downtown. Out of seven accidents reported between 1999 and 2002 involving a motorist and cyclist, five occurred in the areas of interest – two on 8th Street and three on Main Street. (City of Medford Bicycle Accident Report 1999-2002) Given that the width necessary to accommodate a bicycle facility is much less than the space currently used for parking, this proposal envisions using the surplus width for a buffered bike lane. It would feature a highly visible two-foot-wide strip of white paint to provide additional distance between cyclists and motorists for optimal safety.



Figure 35: Image envisions downtown 8th Street with the proposed buffered bike lane.

To accommodate the growing demand for bicycling and facilitate even greater increases after implementation, this concept proposes that Medford install more bicycle parking along 8th Street. Doing so invites riders to stop and explore.

Another focus of this idea involves a connection to the Bear Creek Greenway using an existing bridge off of Riverside Avenue. The proposal outlines how wayfinding signs or “sharrow” marking can be added to direct riders south on Bartlett Street, then east on 9th Street, and across an existing footbridge connecting to the Bear Creek Greenway where 9th Street dead-ends at Riverside Avenue.



Figure 36: Image envisions downtown Main Street with the proposed buffered bike lane.

Main Street

Main Street is a two-lane, one-way arterial flowing east-to-west with approximately 6,200 ADT. Similar to 8th Street, RVTD operates along the north shoulder and there is on-street parking along much of both sides of Main Street. Here, too, “sharrow” markings have been added to the pavement in recent years, and annual traffic counts indicate a gradual decline in vehicle use.

It also shares a treatment similar to 8th Street, in that the proposal favors eliminating on-street parking along the south shoulder over redesigning traffic lanes. Green pavement along



Figure 37: Hatch markings can act as sufficient and more cost-effective buffer to separate bike lanes from vehicle traffic. Credit: Seattle Department of Transportation.

the entirety of the bike lane and a solid two-foot-wide strip of white paint is recommended for both 8th Street as well as Main Street.

While safety remains a central concern, a more conservative and cost-effective approach could entertain utilizing green pavement only near intersections and safety hazards. Similarly, a buffer with two-foot-wide hatch markings encased between two thin white stripes could suffice in lieu of a solid line.

Rails-to-Trails and Rails-with-Trails



Figure 38: Depiction of a successful Rails-with-Trails path implemented in the United States. Source: Rails-to-Trails Conservancy.

This project was inspired, in part, by studying the long-fought efforts of Mia Birk to implement Rails-to-Trails and Rails-with-Trails in Portland, Oregon, where she was the city's Program Manager from 1993-1999. Since 1986, Rails-to-Trails and Rails-with-Trails have proven successful in cities throughout the United States – including the Steel Bridge and Springwater Corridor projects in Portland Oregon (Rails-with-Trails 2014).

At the railroad corridor in Medford, between Front Street and Fir Street, there exists an opportunity

where a Rails-with-Trails path could greatly contribute to Medford's bicycling infrastructure. It could serve as a north-south corridor connecting Main Street and 8th Street, and even extend through Downtown Medford.

The limitation of time for this project and the scope of work for a Rails-with-Trails design restricted this group's ability to recommend a specific course of action in this proposal. However, this group is confident that opening up the dialogue with railroads and federal agencies to consider a Rails-with-Trails path in Medford is well worth the benefits.

Key Destinations along this route:

- Alba Park
- Downtown shopping
- Vogel Plaza
- Rogue Community College



Figure 39: Section of Spring Street before and after the recommended buffered bike lane.

Spring Street

Spring Street is a two-lane, two-way arterial with approximately 4,800 ADT flowing east-west through Medford. This proposal converts the auto-dominated Spring Street into a facility that functions as a major bicycle thoroughway. Wards one and four have experienced annexation most recently, leading to the assumption that they are likely candidates for new development. While E McAndrews Road runs parallel to Spring Street a block to the north, this proposal avoids recommending infrastructural changes on the busy four-lane arterial in favor of a simpler, safer, and more cost-effective implementation on Spring Street.

The primary focus is on implementing their proposal without altering or disrupting the flow of traffic in any way; however, it is thought that adding a cycle track along the south shoulder on Spring Street would have a natural

calming effect. Drivers tend to remain more cognizant of their surroundings when bicyclists and pedestrians are present.

One-foot-wide physical barriers are featured separating the cycle track from traffic along sections of mostly low-density residential housing on Spring Street. Physical barriers could include an aesthetic arrangement of plants, art, or more standard barriers such as posts and raised concrete. Sections where there exists more high-density residential housing and commercial driveways, the option suggests a cycle track separated with striping rather than one with physical barriers. In addition, the proposal recommends that a sidewalk extend along the full length of Spring Street.

A similar project is currently slated for Spring Street by the City of Medford in its Transportation System Plan. This proposal expands upon the city's plan such that the cycle track would extend to approximately 100 yards west of Crater Lake Avenue. The adjustment is designed to take into consideration that health care is a major component of the local economy in Medford. The presence of a safe, continuous path from Providence Hospital offers employees and visitors an alternative to commuting by car. Healthcare workers, in particular, are likely to appreciate the health and economic benefits associated with bicycling.

A vital piece of this project includes a connection traveling westbound on Spring Street from east Medford to the Bear Creek Greenway. To make this connection the proposal recommends directing cyclists south on Royal Avenue, removing barriers to Medford Center, and adding "sharrow" markings on Medford Center Road to access the Bear Creek Greenway via Jackson Street.

Adjustments for safety are also highly recommended at two intersections: Royal Avenue at Stevens Street, and Medford Center Road at Jackson Street. To minimize the risk of collisions in both intersections, this proposal suggests altering the right lane to allow right turns only, and shifting to the left lane the

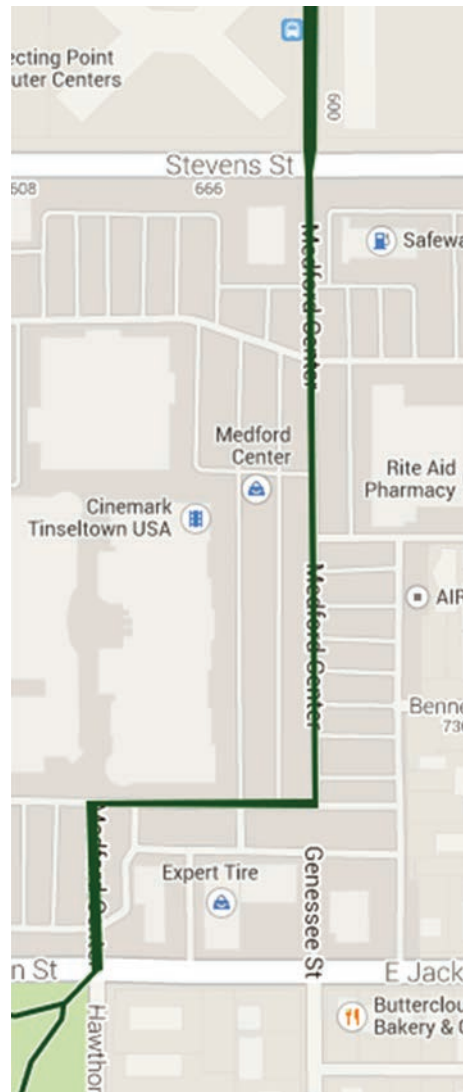


Figure 40: Proposed route showing Medford Center as a thoroughway for bicyclists to access Hawthorne Park and the Bear Creek Greenway.

option to travel straight through the intersection. Cyclists turning right risk colliding with vehicles continuing straight under the current design. Relocating the forward-traveling direction to the left lane helps to mitigate this risk.

Key Destinations Along This Route:

- Donahue Frohnmayer Park
- Providence Medical Center
- Medford Center
- Apartments complexes: Spring Street Apartments, Julia Ann Apartments, Woodrow Terrace Apartments



Figure 41: Intersection at Royal Avenue and Stevens Street.



Figure 42: Intersection at Medford Center Road and Jackson Street.



Figure 43: Medford Center Road before and after the proposed throughway from Stevens Street to Hawthorne Park.

Economic Benefits of Bicycling and Tourism

One of the class projects focused on the economic benefits of bicycle facilities for both residents and visitors. Investing in bicycling infrastructure along busy streets makes economic sense. Oregon is known as one of the more progressive states in the country for bicycling. The growing interest in and demand for large-scale infrastructure that is conducive to bicycling creates incredible economic opportunities for communities that recognize the trend and act as seen in Figure 44.

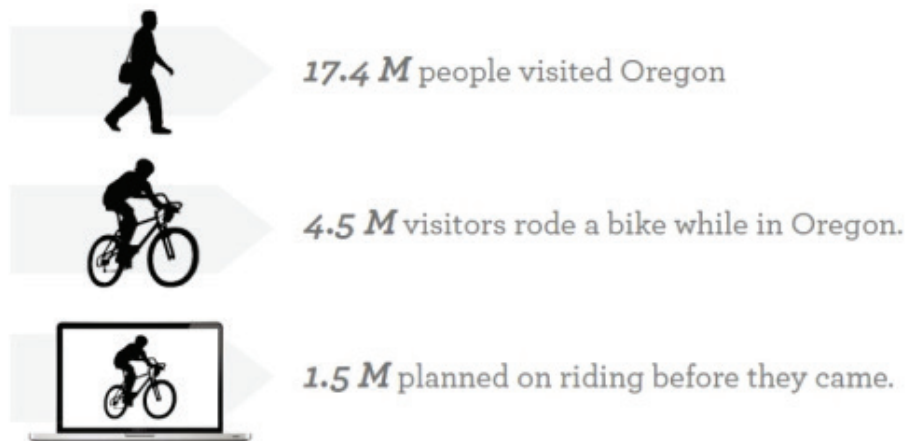


Figure 44: Bicycle Tourism statistics in Oregon (OLIS 2014).

In a review of Wisconsin's bicycle tourism industry, the Center for Sustainability and the Global Environment at the University of Wisconsin-Madison stated that for many areas "Bicycle tourism may serve as an important economic development strategy." It goes on to suggest that, "Increasing both resident and nonresident bicycling by 20 percent could have even more significant effect on the state economy, creating \$184 million in new economic activity and generating 2,638 additional jobs" (Grabow 2010).

Visitors and residents of all ages in Medford stand to benefit tremendously from an affordable transportation alternative to driving. Families spending less of their hard-earned incomes on fuel consumption translates into more savings and discretionary spending. Businesses as well as the City of Medford would be well positioned to realize economic gains from increased bicycle and pedestrian commuters whose forgone option to drive results in additional funds to spend along the way.

Increasing the population that feels comfortable with and chooses to regularly bicycle to school, work, and local businesses because they find it safe, convenient, and fun is good for a city's bottom line. Possible ways to do this



Figure 45: Examples of the economic benefits of bicycling. On street bike parking know as bike corrals, BikeShare systems, and community bicycling events.

include free or discounted concessions at sporting events for those who bicycle, having a ‘Car Free’ street event, and discounts at participating businesses.

Other cities have seen the economic benefits of bicycling through a few different programs. Recently some cities including Portland and Eugene have begun removing on-street car parking spaces in front of businesses and replacing them with bike parking, known as bike corrals. This encourages bicyclists to stop and visit the businesses the bike corrals are in front of. Secondly, BikeShare systems have taken off internationally and nationally and proven to help reduce air pollution, provide a healthy way for both visitors and residents to get around and the placement of the bike share kiosks by businesses help promote economic development. Lastly, promoted and funded community bicycle events like the Bridge Pedal in Portland and Cycle Oregon events have been proven to increase tourism revenue for cities.

Branding the Bear Creek Greenway

Cities like Copenhagen have become known among the top cities in the world for bicycling largely because they have not only focused on a service model but also on an experiential model. Infrastructure is a service that provides functionality and safety, and makes bicycling possible for anyone; branding provides an experience that tells a story about a city, and creates an identity that attracts and captivates visitors.

The Bear Creek Greenway may lack a strong enough identity to distinguish it as state or regional attraction for bicyclists. Given that a large component of this project is to better direct riders to connecting paths and local attractions, wayfinding signage with consistent branding might give the Bear Creek Greenway just the identity it needs.



Figure 46: Shows successful branding campaign in Copenhagen, Denmark.



Figure 47: Rendering of a potential logo for the Bear Creek Greenway.



Figure 48: Logo combines the color palette from Travel Medford's branding guide with the mountain depicted in the official city logo.

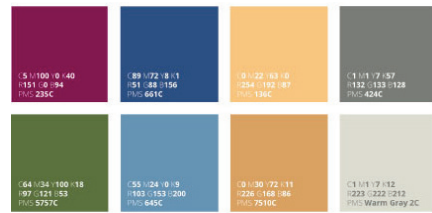


Figure 49: The Bear Creek Greenway logo uses the color palette from Travel Medford's branding guide.

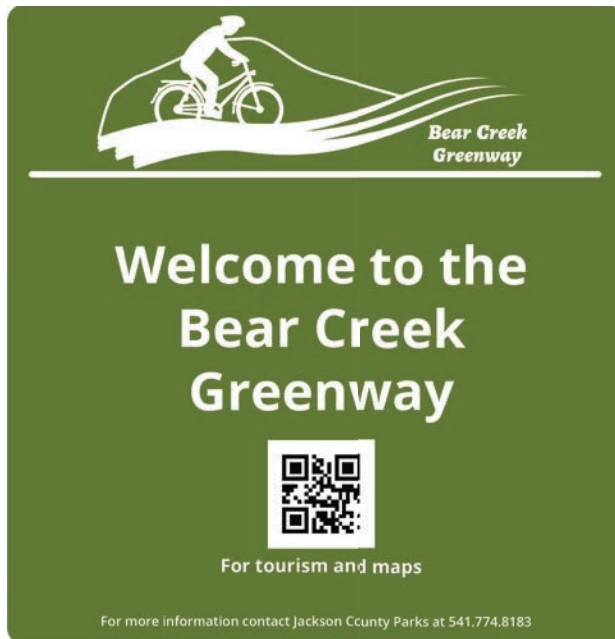


Figure 50: Rendering of a potential welcome sign on the Bear Creek Greenway that invites cyclists and pedestrians.

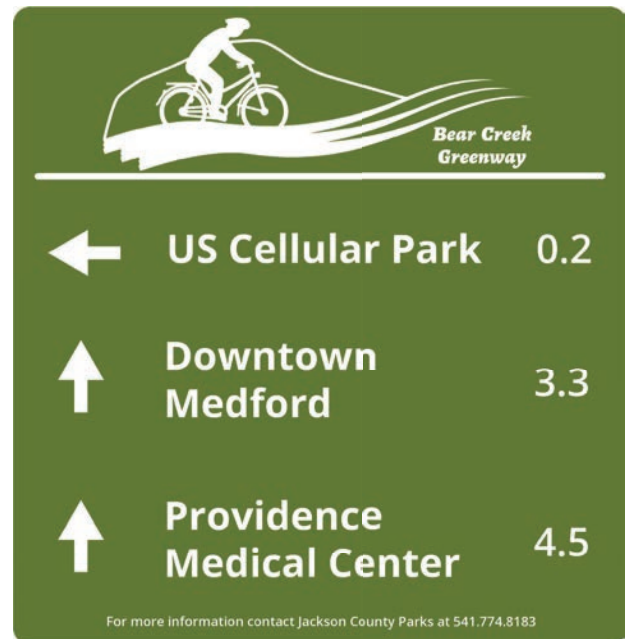


Figure 51: Directional signage on the Bear Creek Greenway makes the city easily navigable. Moreover, branding consistent with the above welcome sign identifies it as a complete network.

Supporting Local Policies

The following are a few of Medford's policies, plans, and discussion that support the types of bicycle facilities discussed in this report.

1. City of Medford Bicycle Pedestrian Advisory Committee

The Bicycle Pedestrian Advisory Committee (BPAC) advises Medford City Council regarding plans and issues related to non-motorized transportation. They meet once a month and have 11 duties listed on their website. Duty #7 is to "Promote connectivity for non-motorized transportation modes on existing streets." This duty supports bicycles plans that utilize existing streets to create a network of streets that prioritize bicyclists and pedestrians.

2. The Southern Oregon Active Transportation Summit

The 2012 Summit had a Big Idea challenge. Michael Black, the Development Director at Grants Pass, submitted the winning idea: "Bicycle boulevards and cycle tracks as the top infrastructure priority for municipalities in the region." Black said "You shouldn't have to be brave to ride a bike. Therefore fully integrated bicycle boulevards and cycle tracks, as well as buffered bike lanes should emerge as the municipal infrastructure priority over all new roads and intersection improvements until such time as cycling becomes a reasonable, everyday and effective transportation alternative for people of all ages and abilities."

3. Medford Transportation System Plan Chapter 10 Non-Motorized Transportation Plan

Medford's Transportation System Plan (TSP) states, "Many of the City's public schools are poorly connected with surrounding neighborhoods, reducing the opportunity for convenient and safe bicycle travel for employees and students. Nearly half of Medford's 19 public schools are currently not served by bikeways." The proposed neighborhood greenway plans in this report could connect schools and parks through residential neighborhoods on low traffic streets creating convenient and safe bicycle travel for employees and students as the TSP states is a problem.

4. Comprehensive Plan

The City of Medford's existing Comprehensive Plan includes a goal and policy specifically directed at enhancing the bicycle transportation system. Goal 5 indicates that the City will take actions "To encourage and facilitate safe and convenient bicycle transportation within the Medford planning area." This goal is further defined by a policy directing that "The City of Medford shall recognize bicycle transportation as a viable component of a city-wide circulation system, both as an important transportation mode, and as an air quality strategy, and shall make every reasonable effort to implement a coordinated Bicycle Facilities Master Plan."

5. Bear Creek Master Plan: An Action Plan for Redeveloping Bear Creek into the Crown Jewel of Medford

The Bear Creek Master Plan provides a plan for enhancement of the Bear Creek Corridor. This plan supports major investment in the Bear Creek Greenway that would naturally support and partner with a plan to get more people to Bear Creek via the Bear Creek Greenway. The discussed bicycle facilities in this report could be a natural partnership to the Bear Creek Master Plan. This research is encouraging for Medford and provides further evidence that a complete bicycle network could provide more mobility and access across the city.

Conclusion

Students took an asset-based approach when researching recommendations for improving Medford's bicycling network. The Bear Creek Greenway stands out as the crown jewel, crossing through the entire city, connecting multiple parks, and creating a gateway to Ashland. The current revitalization of downtown Medford adds to the importance of the Bear Creek Greenway's connections. Moreover, safe neighborhoods, quality schools, and many unique parks throughout the city make Medford an ideal place to raise families.

When recommending treatments, the principle focus for students during this course revolved around how to connect the Bear Creek Greenway to these other key assets located on arterials and neighborhood streets throughout Medford. The process began on the premise of complete streets, where all commuters – bicyclists, pedestrians, as well as vehicles – have equal access to transportation facilities.

Effective treatments on neighborhood streets varied significantly from those on arterials. Neighborhood greenways are roads with low traffic counts, where bicyclists often share the road with motorists, and safety is a concern that can be addressed with traffic-calming measures and mechanisms for interacting with busy intersections. Arterials are roads with high traffic counts, where bicyclists are isolated from motorists in most cases, and safety is of greatest concern at points where the two lanes converge or the separation between them is limited. Many projects recommended wayfinding signage and various traffic-control devices. Others recommended a structural redesigning of traffic on certain streets and a suite of treatments ranging from sharrows to buffered bicycle lanes.

Students cited relevant statistics and case studies to support their recommendations and make educated predictions about future trends. The benefits associated with implementing these recommendations stretch far beyond providing a transportation alternative to automobiles. Included among these benefits is creating a community that welcomes families and growth, wide recognition as a bicycle-friendly city, a boon to the local economy, and the improved health and well-being of citizens.

Whether connecting parks and schools, or paths and commerce, there is a way to make room on our busy roads for bicyclists and pedestrians. More importantly, trends show that younger generations increasingly prefer alternatives to driving, and cities that can plan accordingly will be in a position to attract the best professional talent of the future.

References

- AAA Foundation for Traffic Safety. 2013. "Timing of Driver's License Acquisition and Reasons for Delay among Young People in the United States, 2012." American Automobile Association Foundation. 2013.
- City of Medford Bicycle Accident Report 1999 – 2002. <www.ci.medford.or.us>
- "City of Medford Transportation System Plan." City of Medford. November 2003 <http://www.ci.medford.or.us/files/adopted%20tsp%20all.pdf>
- DeGroat, Bernie. "Percentage of Teen Drivers Continues to Drop." Michigan News. July 23, 2012. <http://ns.umich.edu/new/releases/20646-percentage-of-teen-drivers-continues-to-drop>.
- "Design & Engineering Guidelines for Greenways." Seattle Neighborhood Greenways. <http://seattlegreenways.org/resources/design-guidelines/>.
- Grabow, Maggie, Micah Hahn, and Melissa Whited. "Valuing Bicycling's Economic and Health Impacts in Wisconsin." The Nelson Institute for Environment Studies Center for Sustainability and the Global Environment. January 2010. http://www.sage.wisc.edu/igert/download/bicycling_final_report.pdf.
- "IOM Home - Institute of Medicine." IOM Home - Institute of Medicine. <http://www.iom.edu/>.
- "NACTO." NACTO. <http://nacto.org>.
- "National Center for Safe Routes to School." National Center for Safe Routes to School. <http://www.saferoutesinfo.org/>.
- "Oregon Bicycle Travel Survey." Oregon Leadership in Sustainability. <https://olis.leg.state.or.us/liz/2013R1/Downloads/CommitteeMeetingDocument/22451>
- "Oregon Safe Routes to School." Oregon Safe Routes to School. <http://oregonsaferoutes.org/>.
- "Percentage of teen drivers continues to drop | University of Michigan News." Percentage of teen drivers continues to drop | University of Michigan News. N.p., 23 June 2012. Web. 7 July 2014. <<http://ns.umich.edu/new/releases/20646-percentage-of-teen-drivers-continues-to-drop>>.
- "Rails-with-Trails Lessons Learned." U.S. Department of Transportation Federal Highway Administration. N.p., 11 Feb. 2014. Web. 14 July 2014. <http://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page35>.
- "Rails-with-Trails Lessons Learned." U.S. Department of Transportation Federal Highway Administration. http://www.fhwa.dot.gov/environment/recreational_trails/publications/rwt/page35.cfm.

Schlossberg, Marc, and John Rowell. "Rethinking Streets: An Evidence Based Guide to 25 Complete Street Transformations." Eugene, OR: Sustainable Cities Initiative, 2013. Print.

"The City of Portland, Oregon." Bicycle Counts RSS. <https://www.portlandoregon.gov/transportation/article/158497>.

"Walk Bike Challenge Month." Oregon Walk Bike Challenge. January 1, 2013. Accessed August 22, 2014. <http://www.walknbike.org/walk-bike-challenge-month>.