La Pine Multi-Use and Pedestrian Connectivity Plan

Spring 2018 • PPPM 438/538 • Bicycle Transportation

Karen Mason, Planning, Public Policy, and Management

Marc Schlossberg, Professor, Planning, Public Policy, and Management

UNIVERSITY OF OREGON

LA PINE OREGON

SCI Sustainable Cities Initiative

SCYP Sustainable City Year Program

Acknowledgments

The work accomplished within this report could not have been completed alone. The author would like to thank the city of La Pine and its staff for making this project possible and their consistent involvement throughout the ten week process. In particular, we would like to thank the following individuals for their assistance and dedication that were instrumental to the completion of this project.

Cory Misley, City Manager, City of La Pine

Melissa Bethel, Community Development Director, City of La Pine

Scott Morgan

Jeff Monson, Commute Options

David Amiton, ODOT Active Transportation Liaison

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 a partner in Oregon, in which students and faculty in courses from across the university collaborate with a public entity on sustainability and livability projects. SCYP faculty and students work in collaboration with staff from the partner agency 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.

SCI Directors and Staff

Marc Schlossberg, SCI Co-Director, and Professor of Planning, Public Policy, and Management, University of Oregon

Nico Larco, SCI Co-Director, and Associate Professor of Architecture, University of Oregon

Megan Banks, SCYP Manager, University of Oregon

About La Pine

La Pine is a small Central Oregon community located in Deschutes County. In the foothills of the Cascade Mountains, La Pine is surrounded by open meadows, lakes, and rivers. It has a long history dating back to French fur traders in the 1800s, but it was not until 2006 that the city formally incorporated. The seven square miles of La Pine represent the newest city in Oregon, and are home to a population of around 2,000 residents. According to the La Pine Chamber of Commerce, Deschutes County has experienced the most rapid growth of any county in Oregon over the last decade. La Pine itself is experiencing significant growth in both population and economics. Key industries contributing to this growth include technology and biotech, recreational and outdoor gear manufacturing, brewing and data centers. As an emerging Oregon city, La Pine is in a unique position to develop and enact sustainable practices for its future.

La Pine is the first ever Small City Pilot for the University of Oregon Sustainable Cities Initiative's Sustainable City Year Program (SCYP). Through this partnership, multiple university courses in areas such as journalism, business, architecture, and more have provided tangible recommendations for the city of La Pine to incorporate into its future development plans. As a small city, La Pine balances day-to-day needs and long-range planning, making it an ideal location for the infusion of energy and new ideas.

The SCYP Small Cities Pilot is made possible in part by a grant from The Ford Family Foundation.

These initiatives and outcomes from participation with SCYP will help develop ideas that are cost-effective to build and operate, provide safe and convenient access, and achieve sustainability goals while supporting La Pine's projected growth in population and employment.

Table of Contents

Course Participants

Hannah Argento-McCurdy, Planning, Public Policy, and Management, Undergraduate
Austin Barnes, Planning, Public Policy, and Management, Undergraduate
Maddie Billings, Planning, Public Policy, and Management, Undergraduate
Luci Charlton, Planning, Public Policy, and Management, Undergraduate
Eliana Clair, Family and Human Services, Undergraduate
Colton Clark, Environmental Studies, Undergraduate
Kaitlyn Cook, Planning, Public Policy, and Management, Undergraduate
Caroline Crisp, Philosophy, Undergraduate
Kelsey Cunningham, Community and Regional Planning, Graduate
James Decker, Planning, Public Policy, and Management, Undergraduate
Emily Fagan, Planning, Public Policy, and Management, Undergraduate
Anna Greenberg, Community and Regional Planning, Graduate
Cally Gustafson, Environmental Studies, Undergraduate
Marie Haefliger, Planning, Public Policy, and Management, Undergraduate
Bear Heindel, Pre-Business Administration, Undergraduate
Ryan Janowski, Architecture, Undergraduate
Lia Kashuba, Planning, Public Policy, and Management, Undergraduate
Cassidy Kroon, Environmental Studies, Undergraduate
Joseph Losner, Environmental Science, Undergraduate
Karen Mason, Community and Regional Planning, Graduate
Maggie Matthews, Environmental Studies, Undergraduate
Zachary Merino, Planning, Public Policy, and Management, Undergraduate
Stephanie Nappa, Community and Regional Planning, Graduate
Emily Nguyen, Geography, Undergraduate
Corrie Parrish, Community and Regional Planning, Graduate
Stevie Pearlman, Environmental Studies, Undergraduate
Jaden Salama, Undeclared, Undergraduate
Aaron Tadei, Planning, Public Policy, and Management, Undergraduate
Sylvia Titterington, Environmental Studies, Undergraduate
Callista Woodrich, Environmental Studies, Undergraduate

Executive Summary

This report is the culmination of ideas and recommendations developed by University of Oregon students in the spring 2018 Bicycle Transportation class. In it are recommendations generated by both undergraduate and graduate students regarding how the city of La Pine can increase bicycle ridership among both residents and tourists. It puts forth proposals for both local and regional networks, street and intersection redesigns, Safe Routes to School programs, development codes, and methods through which to promote both placemaking and tourism. The central tenant of this report is to provide recommendations to the city of La Pine that promote ways in which more people can feel comfortable and safe enough to use their bicycles more often. It is the belief of the authors that by doing so, La Pine can increase the health and happiness of its residents, grow its economy, and reduce its environmental footprint.

Introduction

Riding a bike for the first time is a rite of passage for many. There comes a point, however, when many people stop riding their bikes and start driving a car instead. The reasons for this are many, ranging from cultural attitudes toward bike riding to issues surrounding infrastructure and street design. This report provides design, policy, and program recommendations to the city of La Pine so that more people will feel able to ride their bikes more often.

This report is organized by the following chapters and appendices:

Chapter 1: Why Biking Matters - Outlines how facilitating bicycle ridership in a community contributes to the Triple Bottom Line of benefits for people, planet, and profit.

Chapter 2: Current Conditions of La Pine Infrastructure - An assessment of the current conditions of cycling infrastructure in La Pine.

Chapter 3: Better Biking Around Town - Discusses the benefits of bike culture, connected routes, and how cycling can contribute to placemaking. Provides redesign recommendations and proposals for specific streets and intersections, local networks, development code language, a Safe Routes to School program, and amenities.

Chapter 4: Bicycle Voucher Program - Defines what a Bicycle Voucher Program is and how it is beneficial.

Chapter 5: Wayfinding in La Pine - Provides recommendations for wayfinding signage around La Pine.

Chapter 6: Bicycle Friendly Business Program - Provides information on how to become a certified Bike Friendly Business. Reviews the differences between the State of Oregon's Bicycle Friendly Business Program and the League of American Bicyclists Bike Friendly Program.

Chapter 7: Regional Bike Networks - Addresses how regional networks are valuable to both residents and tourists. Provides recommendations for regional cycling networks.

Chapter 8: Tourism - Considers how bike tourism contributes to the economy of communities and explores ways in which to bring bike tourism to La Pine.

Appendix I: La Pine Stein Festival - Generates an event planning guide for an event that celebrates La Pine, biking, and beer.

Appendix II: Example La Pine Bike Network Brochure - Demonstrates potential content for an informational bike network brochure.

Appendix III: Case Studies - Explores examples from around the country.

Appendix IV: Literature Review - Examines the ideas and resources that other communities have employed to improve bicycling networks.

Appendix V: Supporting Plans - Showcases the language of existing La Pine plans that support the proposals of this report.

Chapter 1: Why Biking Matters

Riding a bicycle has many benefits. In addition to the personal joy it can bring, it also results in cleaner air, healthier residents, and a more robust economy. Investing in safer cycling infrastructure is investing in the future of residents through the "Triple Bottom Line" - people, planet, profit.

Economic Benefits

Implementing and improving bicycle infrastructure has a multitude of positive benefits on local economies (Flusche, 2009). Implementing a safe, pleasant, and connected bike network increases the attractiveness of a city to outsiders and may draw new residents, thus increasing tax revenue. It would also work to attract new users who might have been interested in cycling but have been cautious due to a lack of infrastructure and amenities. As cycling gains popularity, users will need somewhere to buy gear and get repairs. A bike shop would further add to the city's tax revenue, allowing for the supply of public amenities, effectively generating a perpetual cycle of economic growth (Flusche, 2009). Studies have also shown that bicycle infrastructure boosts property values and retail sales in the surrounding area (Schmitt, 2014). Lastly, while "road projects are materials-intensive [...] bicycling [...] projects are labor-intensive," so they "create more jobs per dollar than road projects" (Flusche, 2009).

Cyclists save a lot of money in comparison to their fellow car users because they don't spend money on gas, car maintenance insurance, and roadside assistance. That's money they can spend on other things such as food, retail, and entertainment. Studies have shown that bicyclists and pedestrians spend more at such establishments over the course of a month than their car-driving counterparts. "It's a lot easier to make an impulse pizza stop if you're passing by an aromatic restaurant on foot or bike instead of in a passing car at 35 miles an hour" (Badger, 2012).

Health Benefits

Bicycle infrastructure provides positive health benefits which, in turn, lower the financial burden placed on the government and individuals by lowering medical expenses (Walljasper, 2016). Studies have suggested that "moderate physical exercise such as bicycling for only 30 minutes a day reduces a person's chances of diabetes, dementia, depression, colon cancer, cardiovascular disease, anxiety and high blood pressure by 40 percent or more (Walljasper, 2016)." According to the U.S. Census Bureau's American Community Survey record "B27003" for 2016, 58.5% of La Pine's population is enrolled in public health insurance, and 11.5% of the population remains uninsured. These statistics suggest that there could be significant health care savings, especially to the government, following the implementation of accessible bicycle infrastructure (Walljasper, 2016).

Additional health benefits of regular cycling include: increased cardiovascular fitness, increased muscle strength and flexibility, improved joint mobility, decreased stress levels, improved posture and coordination, strengthened bones, decreased body fat levels, prevention or management of disease, and reduced anxiety and depression. The more your employees bike to work, the healthier, and potentially happier they will be. In the article "Bicycles are Business: What Research Says About Bicycling's Economic Benefits," published by the Bicycle Coalition of Greater Philadelphia, it is said that "the multitude of benefits gained from biking to work mean happier, healthier employees who are more punctual and productive, resulting in a more amicable work environment and a positive impact on the bottom line."

According to the National Institutes of Health, obesity is currently the second leading cause of preventable death in the United States (Rothermel, 2017). Cycling as a form of transportation

or recreation helps to get people moving and healthy. Bicycling for leisure, transportation, or exercise is indisputably good for your physical health as well as the environment around you. According to the League of American Bicyclists' National Household Travel Survey, personal vehicles account for about 60% of trips of a mile or less. Rather than bike or walk to the grocery store that is less than one mile from home, people choose to take a personal vehicle. Prioritizing infrastructure that makes in-town trips accessible, appealing, and safe is crucial to encouraging biking as transportation.

Environmental Benefits

CO2, a greenhouse gas emitted by automobiles with combustion engines, is a major player in climate change. CO2 in the atmosphere traps heat and radiates it back to the earth. In certain quantities, ideally less than 350 parts per million (ppm), CO2 is safe and helps keep the planet at a stable temperature optimal for nurturing life as it currently exists. Currently, the earth's atmosphere contains over 400ppm of CO2. Already, an increase in extreme weather events, crop loss, and the acidification of the oceans has begun.

Changing individual behaviors, such as traveling short distances by bike instead of car, is one way to reduce the amount of CO2 emitted. Each mile rode by bike instead of passenger vehicle saves approximately one pound of CO2 from entering the atmosphere. Encouraging the citizens of La Pine to embrace their bikes as a form of transportation will help to put La Pine on the map as a forward-thinking city.

Chapter 2: Current Conditions of La Pine Bike Infrastructure

In La Pine, the off-street path along new developments provide a safe, shaded refuge suitable for cyclists of all ages and abilities. This is contrasted by on-street bicycle lanes on busy roads with no buffer or unmarked shoulders outside of the fogline that cyclists take as their own, amidst gravel and debris. No bicycle shops are currently located in town for repairs or purchases. Many businesses are along Highway 97 and Huntington Road, both major thoroughfares for automobile traffic in town and passing through.

While La Pine is a beautiful town with a welcoming community, there is currently no infrastructure to qualify La Pine as bicycle friendly. Despite the few bike paths dispersed throughout the city, La Pine lacks a network that would promote daily bicycle commutes or invite bikers from nearby cities. Without a safe and accessible network, many people are often discouraged from using their bikes as their main mode of transportation. Additionally, there are no incentives for bike tourists to visit La Pine, isolating the town from more regional bicycle activities. Auto-centric streets in La Pine, such as Huntington Road, offer no incentive for people to get on their bikes and feel safe commuting through the city.

Although La Pine has little existing bicycle infrastructure, the city is in the midst of a number of transportation projects. Capital improvements to Highway 97 will include construction of a new transit center in the heart of downtown La Pine, repaving roads, implementation of bicycle lanes, and sidewalk upgrades. The city's relatively flat terrain and expanding tourism industry create the perfect conditions for bicycle tourism as well as everyday commuters.

Highway 97

Highway 97 has a speed limit of 55 mph and crosses through the heart of downtown La Pine. It serves as a connector between the southern and northern hemispheres of the city. It also passes directly in front of the soon-to-be La Pine Central Station. Existing conditions on the

highway offer cyclists little in the way of protection from motorists passing by at a speed that, in the instance of a collision, is lethal to both pedestrians and cyclists (Department for Transport, 2010). The Oregon Department of Transportation (ODOT) plans to redesign this stretch of road under the “U.S. 97 paving and La Pine streetscape project.” The plans include bike lanes in each direction of traffic. The lanes will be striped white paint on the road.

Figure 1: Current Bicycling Conditions on Highway 97

The perceived lack of safety to users is demonstrated in the following images. In these photos cyclists would rather ride on the sidewalk instead of the lanes. Physical barriers and painted lanes would increase the visibility and safety of individuals using the lanes. They would also prevent trucks from using the bicycle lane as a loading zone. Electronic signals timed appropriately, lighted roadway signs, and traffic lights at intersections along Highway 97 will protect vulnerable populations - children, seniors, persons with disabilities - from motorists as they cross the road from the corners of the La Pine Central Station.

Figures 2 and 3: Additional Current Conditions on Highway 97

3rd and 4th Streets

Roads on 3rd and 4th Streets are currently two-way streets with a shoulder between traffic lanes and the sidewalk. Cyclists already use the shoulders as a de facto bike lane. Painted lanes would communicate to motorists the intended use of the space and would support cyclists' use of the road.

Figures 4 and 5: Current Bicycling Conditions Along 3rd and 4th Streets

Signage to help users navigate around town, in addition to identifying points of interest, could be made more dominant and visible both around the La Pine Central Station and the downtown area. The bus station sign depicted is dwarfed by the "Info" sign next to it, making it difficult for users to detect the station. Additionally, the bus station sign is mounted in a five-gallon bucket, making it seem unofficial. Wayfinding signage should be given, at minimum, the same visual weight as the "Info" sign.

Figure 6: Current Disparity among Wayfinding Signage

ODOT currently plans to upgrade sidewalk conditions along Highway 97 in coordination with construction of the La Pine Central Station (ODOT, 2017). Current sidewalk conditions on 3rd and 4th Streets are not suitable for users of *all* abilities. As the Station is constructed, work should include upgrades to these sidewalks as well to make them compatible with the Americans' with Disabilities Act (ADA) and safe for users of all abilities.

Figure 7: Current Sidewalk Conditions Along 3rd and 4th Streets

Opportunities and Constraints

When considering how to entice more people to use their bikes more often, La Pine already has a wealth of opportunities. Utilizing the construction of a new transit center in downtown, the city can use the project to launch a placemaking initiative, tap into a tourism market, and create a regional network by working with the cities of Sunriver and Bend. The city could also improve the local trail connectivity by pairing with already scheduled projects, such as work being done by ODOT along Highway 97. Possible roadblocks to such initiatives include funding and a lack of community support. To minimize these drawbacks, the city is encouraged to engage in public involvement programs and to draw from a wide pool of funding sources.

Opportunities

La Pine has the benefit of already having some bike infrastructure in the downtown area, but the bike lane on Highway 97 should be improved to protect cyclists from fast moving vehicles. Plans, in the form of ODOT's "U.S. 97 paving and La Pine streetscape project," are already in place to provide a three-foot buffer to separate cyclists from traffic on each side of the highway, but adding bollards or some other form of physical separation would provide a much needed extra level of safety. Painting the lane would also add visibility.

One of the La Pine Urban Renewal Plan objectives is to improve sidewalks in the downtown area. Maintenance of the sidewalks surrounding the La Pine Central Station is encouraged. The sidewalks on 3rd and 4th Streets between Highway 97 and Huntington Road have cracks and gravel covers them. Additionally, they are not ADA accessible. The previous section shows one disabled user using the road instead of the sidewalk because of the poor conditions on the sidewalk. On 3rd Street sidewalks are not available on both sides of the road. La Pine has the benefit of improving sidewalk infrastructure in the area to current ADA and National Association of City Transportation Officials (NACTO) standards for better connectivity in pedestrian infrastructure. Both of these opportunities should cost less because some of the infrastructure is already in place; it just needs some improvements. Additionally, there is an opportunity for a protected bike lane along Huntington Road. By making these slight improvements around the immediate area of the La Pine Central Station, the city of La Pine can improve its short distance connectivity within the downtown area and the city as a whole. Doing so would make the city more walkable and bikeable both for visitors and residents alike.

In terms of the larger, regional network, La Pine also has the opportunity to tap into the outdoor recreation already established in the Central Oregon region. La Pine is the southern terminus of the regional bus system and is building a new transit center to encourage mass transit between Bend, Sunriver, and La Pine. La Pine has the opportunity to increase both its bike lane and bike trail network connectivity to Bend and Sunriver, as these cities also have some infrastructure in place to encourage cycling as a mode of transportation and recreation as well. If La Pine can coordinate with these cities to focus on vital connectivity points both in their bike lane system and trail system, the regional network for bicycling will be one of comparison for the rest of the country as other small cities attempt to build similar networks.

Incorporating a mural onto one side of the La Pine Central Station that features the multiple ways of commuting around both La Pine and the Central Oregon region, including the outdoor recreation opportunities that are available, would contribute to the identity of the city. Additionally, there is the opportunity to include a "bike bulletin board" at the transit center so that visitors in the area can easily find out information about cycling opportunities and events going on in La Pine. These kinds of placemaking strategies have proven incredibly successful as inviting gateway points into rural communities like La Pine, both helping to brand cities like

La Pine as an outdoors town and supporting its local economic development. Research shows that tourists visiting an area for recreational tourism will go out of their way to visit communities and local businesses that are friendly to tourists that meet their needs.

Off-street paths or buffered lanes in town will make biking more accessible for all users. Different routes provide opportunities for scenic travel, commuters looking to travel efficiently, and athletes bicycling for exercise and fun. Huntington Road can serve as the north/south connection while Burgess Road and Finley Butte Road act as an east/west axis. These routes connect to the greater scenic bikeways of the area, which traverse hundreds of miles of beautiful terrain in the region. From downtown La Pine, you can take any of the previously mentioned routes as main thoroughfares for bicycling.

Commuters, athleisurists, and adventurists are three separate categories of cyclists who may bike in and around La Pine. Commuters bike in town or nearby for necessary trips that many Americans would likely drive to - most of these trips are less than five miles. Athleisurists are athletes and leisurists who may lie closer to one or the other in a wide range. Those who bike right from their own front door for fun, exercise, or necessity in trips of varying length. Anyone can be an athleisurist because anyone can bike! Adventurists are those who often drive - sometimes bike - to events, races, or bicycle destinations in the region for fun. This may include bike-packing, mountain biking, road cycling, or cyclocross.

It is also recommended to connect existing infrastructure through the schools. In certain areas near the schools the bike paths are cut off. That is not helpful for the students and could be made into a safer system of connected paths. Through the implementation of better bike paths, the students will be able to travel safely to and from school and back to their homes with their siblings, friends, and neighbors.

As La Pine is a recreation-oriented community, it would be advantageous to connect La Pine to the surrounding natural areas. The three targeted areas are Paulina Lake/Newberry Crater Monument and two loops that circle La Pine at various lengths. These loops give access to Sunriver, the Deschutes River, La Pine State Park and the Cascade Lake Highway. These are areas already popular with bicyclists. La Pine could benefit economically and culturally by providing bike infrastructure centered around these areas.

Constraints

To fund these projects, La Pine has some resources, such as city funds and other grants available to complete much of the short-term connectivity projects around the transit center and downtown area. La Pine will require additional resources and funding to complete the larger scale projects that include connecting bike lanes and trails to other regional trails. Collaboration with other cities, ODOT, bike/trail advocacy groups, and other community resources will be key to the overall success of these development projects.

It will also be important to engage community members and businesses in La Pine to “buy in” to growing the city into a world-class, bike friendly, point of interest in Central Oregon. If proper community engagement, such as community meetings and surveys, is not done the city of La Pine could face unnecessary resistance and potentially incur costly project delays. Citizen engagement could have a hand in developing some of the creative placemaking projects we are proposing for the area. For instance, we recommend that the mural have community input and be done by a community artist. Additionally, the Bike Bulletin Board could be a project completed by a student group, such as the Eagle Scouts. Building these kinds of partnerships will encourage community support for these sustainable developments and may also lessen costs to the city.

There should also be a strong community engagement focus on creating a bike-friendly culture within the downtown business district of La Pine. If La Pine does not encourage businesses to become bike friendly, the disconnect between bike infrastructure and a bike-friendly culture may dissuade visitors from the area. There are several programs designed to help cities and business owners become bike friendly, not just in infrastructure but in spirit too. By becoming more bike friendly, businesses and cities will benefit from the economic impact that active transportation tourism brings. Bicyclists and other recreational users can bring up to $124 dollars a night into an area they are visiting if it is bike friendly in design and culture. Outdoor recreation tourists will go up to seven blocks out of their way to visit a business they know to be bike friendly or sustainable in practice, most likely due to the environmental ethic many outdoor recreationists try to practice in their everyday lives.

Chapter 3: Better Biking Around Town

Bicycle and pedestrian networks allow for safe connections to community destinations. As a small city, La Pine benefits from short distances between destinations that make biking and walking feasible transportation options. Current road conditions, however, may make biking and walking feel unsafe, especially for families with children. Creating a dedicated bike and pedestrian network will increase comfort and safety, which could encourage bicycling and walking among La Pine residents. As previously discussed in “Why Biking Matters,” pedestrians and cyclists spend more in their communities than vehicular drivers. They also bring a sense of life and personality to a community; it becomes a place filled with people instead of quickly moving metal objects. People are drawn to centers of life and personality. A combination of increased local investment and placemaking initiatives will help to rejuvenate the downtown of La Pine, creating a community in which people want to spend their time.

With a well-connected bicycle and pedestrian network La Pine would benefit from:

- Safe routes to school from all neighborhoods
- Connections to community destinations including the library, community center, parks, restaurants, and places of worship
- A livelier downtown
- Connections to the La Pine Central Station for multi-modal commuters
- Continuous networks through future neighborhood developments
- Increased connection between the southern and northern nodes

Street and Intersection Redesign Recommendations

The following recommendations address specific streets and intersections within the city of La Pine. First, a toolkit of several streetscape redesign methods available to planners, developers, and designers is introduced.

Redesign Toolkit

Buffered bike lanes are an important improvement on the standard bike lane design. Buffered bike lanes offer a visual cue for drivers who may be going into a biker’s lane, as well as added safety if a cyclist falls over or has to swerve. Because buffered bike lanes simply require re-striping they are economical, costing approximately $2.00 per lane foot.

Bike boxes help cyclists stay safe when approaching an intersection. Bike boxes help prevent “right hook” incidences whereby cars turning right don’t see cyclists and turn into them. Getting cyclists out of the blind spots of vehicles helps prevent these collisions, and is another low-cost option.

Rectangular Rapid Flashing Beacons (RRFBs) are increasingly used on busy streets where a stop sign or signal would be undesirable. If young children are traveling to school by foot or bike, they need to be able to cross the street safely. RRFBs can improve safety by attracting drivers' attention when necessary.

Pedestrian scramble intersections are commonly seen throughout Europe and Asia. They are also increasingly used in the United States. An expansion of the scramble intersection design is proposed here to include cyclists as well. This simplifies the flow of traffic, and by combining pedestrian and cyclist movement, eliminates the dangers of cyclists moving through the intersection alongside vehicular traffic. This is the most expensive of the proposed design treatments.

Figure 8: Elements Included in a Redesign Toolkit

Huntington Road

The possible route connection between north and south La Pine would tie the city and its surrounding areas together. North of Huntington Road there are opportunities for outdoor recreation that can be reached by trail. By connecting this route throughout the entire city via Huntington Road people within the city and the suburban area will be able to reach the outskirts for outdoor adventure. This would not only connect the Quail Run Golf Course to the rest of the city via bicycle route, but would also make way for travelers to find solitude outside of the city. This connection would also allow for longer rides, giving the people of La Pine the opportunity to expand their routes and opt for cycling as not only a form of transportation, but a form of exercise.

Figure 9: Possible Redesign of Huntington Road

A new entrance to Huntington Road marking La Pine as a visibly bicycle friendly community from the start is also recommended. The entrance should incorporate a raised traffic calming device, a "slow" sign to warn cars about bicyclists' presence, a small parkway, and an overhead "La Pine" sign to solidify the identify of La Pine as a welcoming town.

Figure 10: Design for Entrance to Huntington Road

Huntington Road/Burgess Road Intersection

The intersection of Huntington Road and Burgess Road offers an exciting opportunity - the creation of a scramble crossing. Pedestrian scrambles have been utilized throughout the world and are increasingly common in the United States, but there are very few examples of bicycle scrambles. When the traffic lights turn red all vehicular traffic will halt, enabling both pedestrians and cyclists to cross the intersection in any direction. Although this is a more expensive solution due to changing the signals, it has the potential to demonstrate new transit thinking.

Figure 11: Example of Possible Redesign of Intersection of Huntington Road and Burgess Road Using a Pedestrian Scramble

The end of the cycle track at Huntington Road and Burgess Road is unique because Burgess Road turns into Highway 43 and leads to recreational opportunities in the Cascade mountain range. This contributes to Burgess Road being busier than most side streets in La Pine. For this reason, there should be extra caution when planning for an end of the cycle track here.

The most complex part of this intersection involves planning for users heading north on the cycle track and turning left. For this, removing the turning lane on Huntington Road so that it gives way to a mixed-used turning lane is recommended. A loop detector or timing signal may be needed in order to improve safety concerns for cyclists. Turning right from Huntington Road can be addressed through a separated track away from the road.

The left turn onto Huntington Road from Burgess Road is also of concern. For this, it is recommended to provide a separate bike signal and two separate loop detectors - one for going straight and one for going left. The bike signal will provide safety to cyclists trying to enter the cycle track and increase drivers' awareness of the existing cycle track.

An alternative design approach would be to bring the left turn queue off to the side of the road to clear up any congestion and seat the cyclists in a safe position until it is there time to cross via bike signal.

Figure 12: Examples of Bike Lane Design for Left Turns at Huntington Road and Burgess Road

Burgess Road Crosswalk

Rosland Elementary School serves a large population to the north of Burgess Road. There is no marked crosswalk, however, leading to the school. This impedes the ability of neighborhood students to walk to class. To remedy this, the installation of a pedestrian crosswalk with a Rectangular Rapid Flashing Beacon (RRFB) is recommended. This is the most visible means of ensuring pedestrian safety and has been used very effectively in cities throughout Oregon, particularly in situations where the placement of traffic lights or stop signs would be inefficient.

Figure 13: Example of Possible Redesign of Burgess Road by Rosland Elementary School

Huntington Road/1st Street

The intersection of Huntington Road and 1st Street is a key location in the city of La Pine. Here, the use of bicycle boxes allow cyclists to be visible as well as safe. According to NACTO's Urban Bikeway Design Guide, "bicycle boxes provide bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase." This is particularly important in areas where drivers may not be as familiar with cyclists on the road by establishing cycling as a visual activity. NACTO standards mandate that the box be at least 10 feet deep and clearly marked. Furthermore, to ensure cyclist safety, it is recommended that right turns on red be prohibited, so as to prevent vehicles from crossing the bicycle box.

The recommended redesign of the Huntington Road and 1st Street intersection includes infrastructure improvements that promote bicycle safety. In this design the bicycle lanes on 1st Street remain the same but are painted green so that vehicles are aware that they are sharing the road with o 98ther forms of transportation. Bike boxes are "designated area[s] at the head of a traffic lane at a signalized intersection", these would be placed on 1st Street in both directions and on Huntington Road in the northbound lane. Furthermore, bike boxes increase the visibility of bicyclists, facilitate bicyclists making left turns, reduce bicycle-to-car collisions that result from cars making right turns in front of moving bicycle traffic, and reduce the likelihood of vehicles encroaching into the crosswalk. (NACTO's Urban Bikeway Design Guide)

Additionally, this design implements green striping through the intersection of Huntington Road and 1st Street. The purpose of this is to signal to vehicles that bicycle traffic continues through the intersection (NACTO's Urban Bikeway Design Guide) and to "guide bicyclists on a safe and direct path through [the] intersection." Additional benefits of the striping include that it "raises awareness for both bicyclists and motorists to potential conflict areas, reinforces that through bicyclists have priority over turning vehicles, reduces bicyclist stress by delineating the bicycle zone, increases the visibility of bicyclists, and reduces conflicts between bicyclists and turning motorists."

These redesigns are reletively simple and promote bicycle visibility, confidence, and safety. They are also fairly inexpensive; as one study of Portland, Oregon explains, an "at grade cycle track [with a] painted buffer [and] no new pavement/ concrete [and] green left turn boxes" costs about $25 per foot (Weigand, 2013).

Figure 14: Examples of Possible Redesign of the Intersection of Huntington Road and 1st Street

Highway 97

ODOT's variation of improvements planned for Highway 97 encourages some bicycling in their design but may not offer enough protection from high speed cars. The current speed limit for this stretch of road is set at 45 miles an hour, which in the case of a collision is almost always lethal to pedestrians and cyclists. ODOT's design includes streets that are wider than current industry standards for city road design, which may encourage vehicular transportation as the main mode of transportation through the La Pine downtown. NACTO states that designated streets with truck and bus routes should not have lanes wider than 11 feet because they may cause unintended speeding and give a more forgiving buffer for drivers while taking away from the safety of other road users, like cyclists. These consequences with wider lanes may be already seen currently on Highway 97.

In the situation of a middle road turning lane like the one on Highway 97, NACTO recommends the outer lanes of the street be wider than the center turning lane. By doing this, the probability of drivers speeding while turning is reduced. Due to the visual perception of a lack of space to drive in created by narrower lanes, motorists usually slow down. However, because Highway 97 is a major transit route for trucks and buses, NACTO recognizes the potential need for a wider turning lane and recommends that the situation be evaluated.

The proposed redesign recommended proposes continuing traffic lanes that are eleven feet wide and a turning lane that is twelve feet wide. ODOT's Highway 97 design plans for a three foot buffer between cyclists and traffic. This report recommends bollards positioned in the buffer to further protect cyclists on this high speed street. At this point, a decrease in the speed limit is not recommended due to the volume and the kind of traffic using this road.

In agreement with ODOT's original design, installing bioswales is recommended along the edges of Highway 97 to help with stormwater management and water quality along this stretch of road. The bioswales will absorb excess water from the road, filter the street grime out of the water through plants, and work to clean the water before it goes into La Pine's water table. However, it is recommended to increase the amount of sidewalk space conceived in ODOT's original design to allow room for wayfinding signage, bike racks, proper sidewalks, lighting, and street trees. These placemaking features will help the downtown area of La Pine feel safer and more welcoming. La Pine is also encouraged to develop specific branding and marketing for

their bike racks and signage to help create a bike friendly culture specific to the city of La Pine. Ultimately, La Pine would work with ODOT to change the current designs of Highway 97 to be more bike and pedestrian friendly.

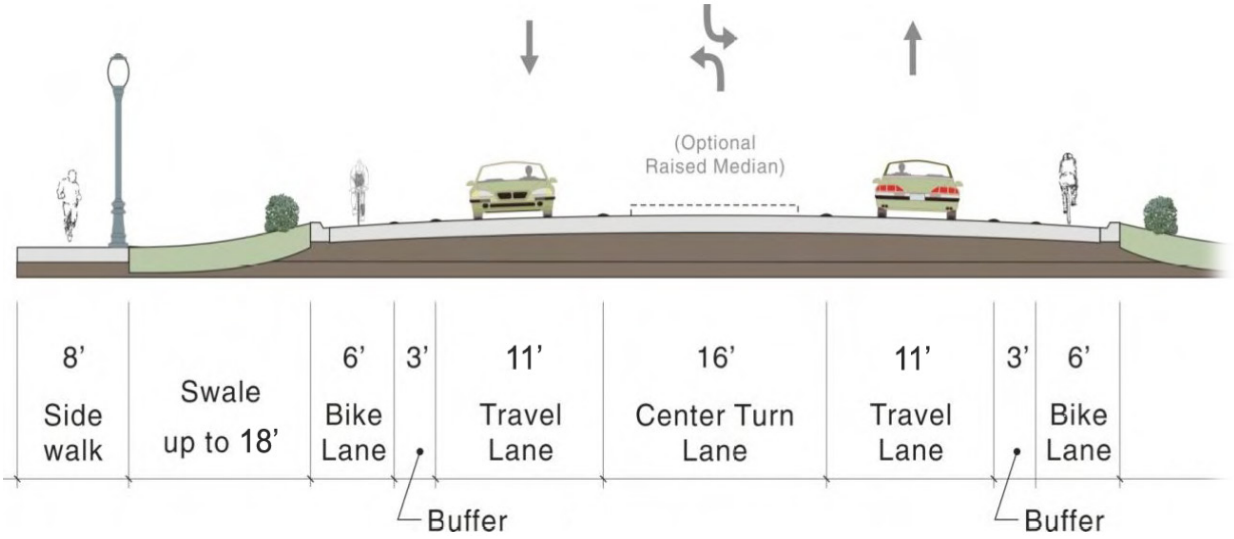


Figure 15: ODOT's Current Vision for Redesigning Highway 97

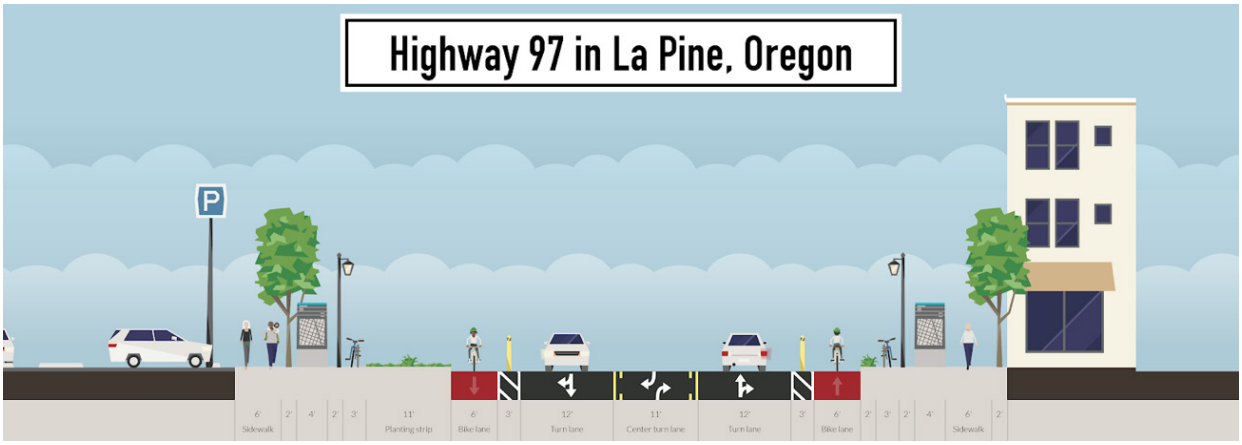


Figure 16: Alternative Design of Highway 97 that Better Accommodates Cyclists and Pedestrians

Local Connectivity Recommendations

To create a La Pine where bicycling is perceived as being safe and convenient, connected local routes are integral. Research has shown that cities with the most combined path and lane mileage see three to four times more bike commuting than cities with the least combined paths and lanes (Buehler and Pucher, 2011).

The 1.5 miles between northern and southern La Pine in which no development currently occurs has created two halves of a community. This section discusses connecting them via a cycle track. It also delves into options for development code language to insure that future development facilitates connectivity.

Figures 17 and 18: Examples of How Highway 97 Can be Reimagined

Connecting North and South

A cycle track along Huntington Road is proposed. Here the cycle track going out of town, connecting north and south La Pine, is pictured. The rendering is featured at night because a cycle track should be utilized at every hour of the day. The street lights pictured would help both cyclists and motorists alike. Once the cycle track begins to lead out of town a barrier with reflectors would be helpful. This barrier won't stop any vehicles but instead raise motorists' awareness of the cycle track and give a small warning if the automobile travels too far over the shoulder.

Figure 19: Example of a Cycle Track Along Highway 97, Connecting Northern and Southern La Pine

This map depicts a suggested bike network. Key elements of the system include routes for accessing community amenities including parks, schools, and the library as well as restaurants and the new transit station. Additionally, the map suggests a possible network through the undeveloped areas in the middle of La Pine. These could be full roads or smaller bike and pedestrian paths depending on how the space is developed.

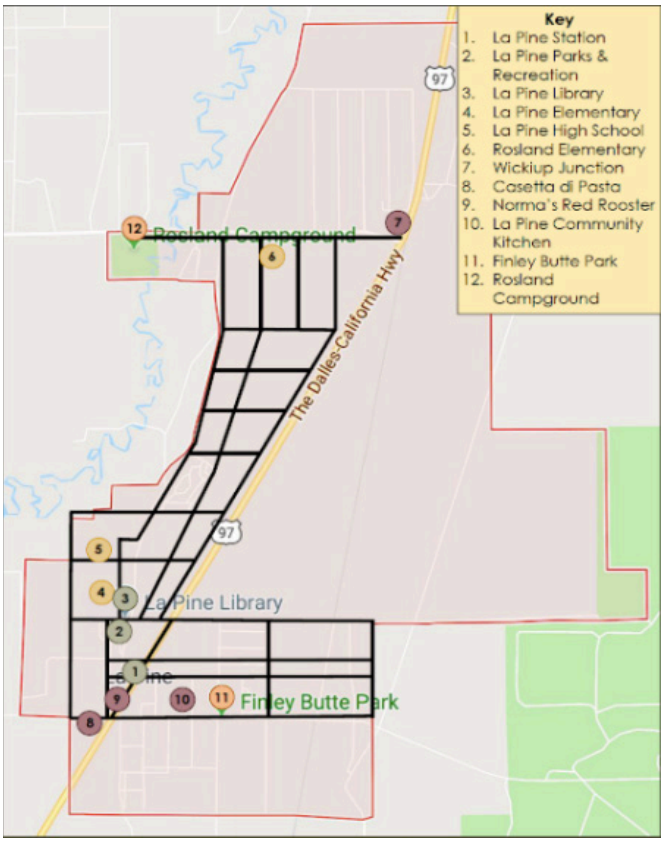


Figure 20: Suggested Bike Network for La Pine

Development Code Language

Development code language is crucial in creating bicycle infrastructure in cities. By including the below language in the development code, La Pine will be working proactively to ensure its vision of a bicycle network comes to fruition. It is easier and less expensive for a community to create language in its development code prior to building, rather than trying to retrofit a network through newly developed areas. All recommendations are derived from "Planning for Street Connectivity: Getting From Here to There" by Susan Handy, Robert G. Paterson, and Kent Butler.

- **Maximum block lengths and significant restrictions on the use of culs-de-sac:** Typical block length requirements fall in the range of 300 to 600 feet (although a few cities allow substantially longer blocks, at least under certain circumstances). Additionally, culs-de-sac are usually restricted to 200 to 300 feet and are allowed only in places where connections would be impractical.
- Culs-de-sac tend to decrease connectivity. Only allow culs-de-sac if absolutely necessary. Necessary exceptions should only be granted when the topography or environmental considerations justify the design.
- Connector paths between culs-de-sac and other destinations can be constructed in one of three ways:

  At the time when the subdivision is first developed

  As a voluntary retrofit

  As a mandatory retrofit when the property is sold or redeveloped. If allowing for culs-de-sac when absolutely necessary, specify length requirements and ensure walking/biking paths that connect between developments.

Stubs (abutted by more than one lot on either side): Incorporate requirements for street stubs and the mapping of future streets into connectivity requirements to ensure connectivity with future streets.

- **Street widths:** Institute narrower streets and traffic calming techniques in new, connected subdivisions to help prevent cut-through traffic. Encourage developers to design street systems that, while connected, do not provide "straight shot" routes through neighborhoods' T-intersections and curving roads. Narrower street standards are also key to minimizing or avoiding increased pavement. These standards reduce costs to developers, thus making the connectivity proposals more palatable. They also reduce environmental impacts due to runoff from impervious cover.
- **Prohibit gated communities and private streets.**
- **Establish design standards that require actual routes from any origin to specific local destinations to be no more than 1.5 to two times the straight-line distance.** This requirement ensures that streets not only connect to each other but to where residents need to go.

Safe Routes to School (SRTS)

Encouraging use of non-automotive transportation has many benefits to the community as a whole and children specifically. One such benefit is that it gets kids active. With only 24.8 percent of youth ages 12 to 15 getting the one hour of moderate to vigorous activity recommended by the Department of Health and Human Services it is imperative that more activity be incorporated into daily lives of students. Therefore, providing kids with infrastructure that supports an active lifestyle will encourage them to live healthier lives. Current bus ridership is high in La Pine. With the implementation of bike and pedestrian routes to school, there may be a decrease in automotive transport. As new bike infrastructure is created around neighborhoods and schools in La Pine, there will be a need to encourage kids to utilize these routes through community engagement.

School (Percentage)	# of Students	# of Students Signed up to Ride Bus
Rosland (150)	186	81%
La Pine Elementary (368)	407	90%
La Pine Middle School (295)	308	96%
La Pine High School (330)	372	89%

Figure 21: School Bus Ridership in La Pine

Allowing the kids in town to bike to school with their families and their friends, would further encourage use of the bicycle infrastructure. With the implementation of bike tracks that connect neighborhoods to schools, older students could drop off their siblings at the elementary or junior high school, then continue their ride to the high school.

Benefits of Bike Riding:

- Promotes daily activity
- Decreases congestion in-and-out of school lots
- Decreases overall bus transportation expense

Safe Routes to School is a national partnership between over 800 organizations that aims to “advance safe walking and bicycling to and from schools, to improve the health and wellbeing of kids of all races, income levels and abilities and to foster the creation of healthy communities for everyone.” The program operates in the Mid-Atlantic, California, and the Pacific Northwest, including Oregon.

Six Elements of Safe Routes to School

Engineering - This element relates to the built environment around neighborhoods and schools. It emphasizes how these areas are constructed related to safety.

Encouragement - Encouragement strategies include long-term projects, group activities, and annual events.

Enforcement - In order to make a community a safe place for children to ride bicycles to and from school, communities must regularly enforce and prohibit specific behaviors. Children, teenagers, parents, and neighbors can benefit from a variety of enforcement strategies.

Education - SRTS emphasizes the importance of in-class bicycle safety instruction. While parents can offer many essential traffic lessons, schools allow all children to get the bicycle safety information they need.

Evaluation - This element is used to determine if the goals of the community have been met concerning bicycle safety. All communities and Safe Routes to School programs can benefit from evaluation.

Equity - SRTS works to support safe, active, and healthy opportunities for children and adults in low-income communities, communities of color, and beyond. Incorporate equity concerns throughout the other E's to understand and address obstacles, create access, and ensure safe and equitable outcomes.

Recommendations

When people feel they've had a hand in the production of a project, they are more likely to utilize the finished product. When installing bicycle infrastructure, kids' input is often overlooked. With these project ideas, La Pine's bicycle paths can reflect the inventive and creative ways of local youth. The following encouragement strategies are designed to give the children of La Pine a more hands-on role in making their community a bike friendly town.

Signage with Flair: Kids can be given a template of La Pine biking signage and can have the chance to color and draw their own designs on the template. A design from three or four different age groups can be chosen to have their template made into an actual sign that will be posted along bike paths. These kid-designed signs should be placed near the elementary schools. They would convey the close-knit community of La Pine and motivate kids to bike to school. They would also increase safety; as drivers see these signs, they would have an increased awareness that they are near a school where children may be riding nearby.

Figures 22 and 23: Examples of Signage with Flair

Custom La Pine SRTS Logo: As La Pine's SRTS program grows, the community has the opportunity to design a customized Safe Routes to School logo for their town. Many cities all over the world have created their own, personal logos, for their Safe Routes to School Program.

Figures 24, 25, and 26: Examples of Customized Safe Routes to School Logos

La Pine SRTS Student Logo Competition: Alternatively, several SRTS programs have encouraged children to design their town's logo. This design competition will generate enthusiasm for the La Pine Safe Routes to School program. Additionally, it will help the children of La Pine to develop more of a personal connection with their SRTS program.

Bike Lanes by You: The elementary, middle ,and high school students of La Pine could partake in a competition modeled off of Portland's bike lane art contest. Students were given a sheet of paper with the outline of the usual biking symbol placed in biking lanes throughout the state. Kids were able to able to make these figures their own while still maintaining its original purpose of communicating the presence of bikers. Portland selected a few winners and installed the art in bike lanes around public libraries. In La Pine, a winner could be selected from each grade and the art could be installed in bike lanes outside of schools, parks, or the local public library.

Figures 27 and 28: Examples of How the Community Can Design Their Own Bike Lane Icon

Taking Back Crosswalks: Cities throughout the country are taking the initiative to reclaim their community spaces. One of the ways this is happening is through the unique redesign of crosswalks. Reimagining the way crosswalks could look like in the city of La Pine can be a community-led event in which students of all ages participate. Kids can use templates to color, draw, and design the crosswalks of their dreams. Likewise, on a beautiful summer day, the community can come together at a local crosswalk, roll out some chalk, and let kids test their artistic capabilities. This is a low cost and low risk way for members of the community to have a hand in the creation of the public spaces they utilize every day, celebrate artistic expression, and emphasize the safe use of crosswalks.

Figures 29, 30, and 31: Examples of Reimagined Artistic Crosswalks

Monthly Walk and Roll to School Day: Schools across the country have established a monthly Walk and Roll to School Day. These monthly events are designed to introduce parents and children to alternative ways of getting to school. Mason Elementary School in Duluth, Georgia added an interesting twist to their monthly Walk and Roll to School Day by establishing a different theme each month. This allowed them to keep kids interested and engaged while at the same time, teaching lessons about safety.

Bike Garden: All over the world, towns are investing in new ways to encourage kids to bike safely. Bike gardens provide a setting for bicycle training, safety instructors, and maintenance workshops to be delivered to students. The skills learned from this type of event give kids and teens the information they need to be responsible and safe cyclists.

Mileage Clubs and Contests: The children and teenagers of La Pine could benefit from the formation of a Mileage Club at each school. Students would track how many miles they've completed during a certain amount of time and are then rewarded for their achievements.

This idea can be applied to all age groups. While teachers may be in charge of elementary school clubs, the high school and middle school members can elect student officers and gain leadership experience in the process. With regard to incentives, local businesses can be involved by donating gift cards and merchandise as potential prizes.

Bicycle Trains: A bicycle train is a designated group of students who bike to school together on a pre-planned route. One or more adults often accompanies elementary age children. For these children, it is up to the discretion of the parents to decide how to organize the group. Safe Routes to School gives guidelines for both a loosely structured bicycle train and a more organized bicycle train.

Loose Structure

1. Invite local families to bike as a group
2. Identify a route
3. Decide the schedule
4. Start walking or bicycling

Organized Structure

1. See how many people are interested
2. Identify the route
3. Pick adults who will supervise
4. Finalize logistical details
5. Kick off the activity
6. Track participation
7. Make changes to the activity as needed

Bike Racks at Schools

By providing bike racks at schools, La Pine would be taking one more step toward encouraging a mode-shift in which students feel enabled to ride their bikes to school. Please see the sub-section “Amenities” below, which discusses the subject further.

Fledgling Trail

A specific trail, called the Fledgling Trail, is proposed. It is a designated route for students to use to bike from their homes to their schools. It is proposed to be built in phases.

The first phase would connect to the La Pine High School, Middle School, and Elementary School on Jackpine Road and end on 6th and Jory. This phase is first because it would establish a direct route to the school.

The second phase is focused on increasing the connectivity to those schools. It is recommended to connect Leona Park to Jackpine Road connecting the park to the schools. From there Leona Park would connect to Sherrie Way to Dorrance Meadow Road.

The third phase of the bike route would retrofit Dorrance Meadow Road Bridge to connect to Rim Drive. Either an off-road bike path that crosses the river or a renovation of the bridge in order to be pedestrian friendly is needed. At the moment there is no shoulder on the bridge that allows people to cross safely.

These are possible designs for safe bicycle infrastructure starting with a paved road on 6th and Jory with a reduced speed to a two-way bicycle only path. It would include streetlights and informational signage.

Additionally, it is recommended that the path be constructed using tightly clustered pavers to ensure that water does not pool up or run off but rather permeates the surface so that it may begin to filter back into the earth. Where the path crosses the inundated area near the high school, constructing a wooden bridge so that the water remains undisturbed and is able to continue to offer wildlife with a water source is recommended. This would make it more visible to the public.

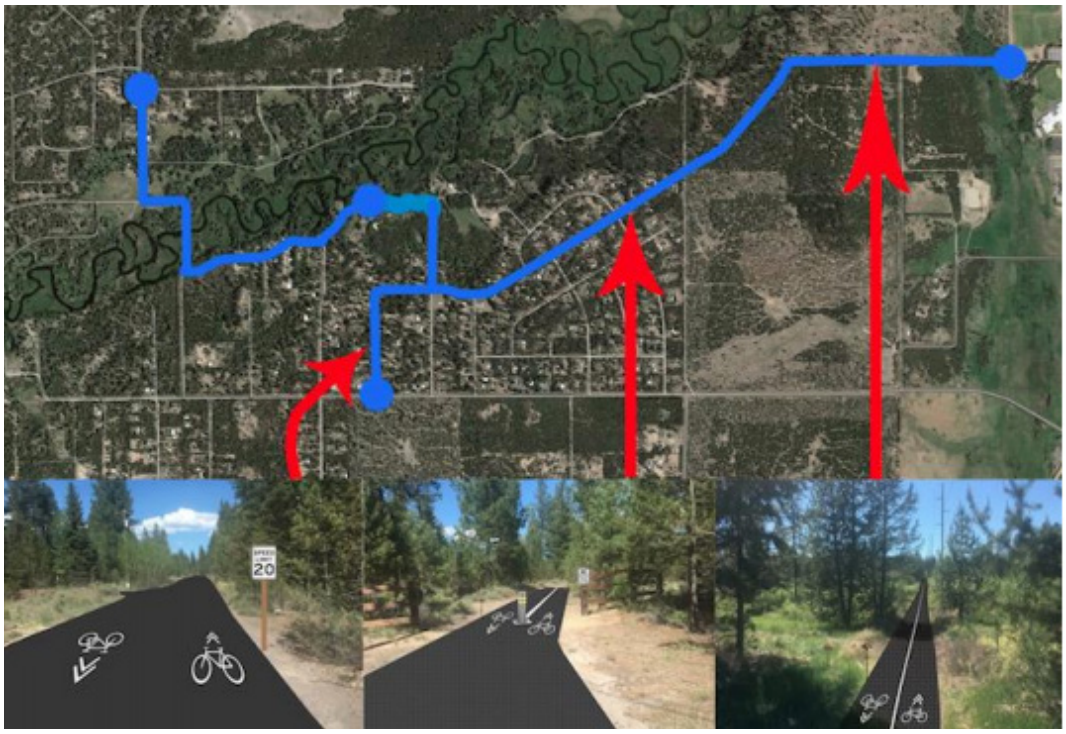


Figure 32: Map of the Fledging Trail

Program Plans

- Mentorship between La Pine High and La Pine Elementary: One idea for a successful ride to school strategy is to have a mentorship program between La Pine High School and La Pine Elementary School. High school students start their school day at 7:30 am. A biking mentorship class could be made for high school students to take as the first class of the day. High school students will then be paired up with elementary school students. High school students would be able to take their bike and meet their elementary "buddy" at a location decided between the two. The high school students will show the elementary "buddy" the route to school using the Fledgling Trail. This program will teach high school students responsibility while also helping the environment as well as create a relationship between all ages of students and encourage biking to school. Having an older student watch the younger ones will also make parents in the community feel safer sending their child on a bike in the community.
- Neighborhood Rides: A great way to meet your neighbors is by spending time in the community with them. Creating a community bike ride through the Fledgling Trail can help families in the community discover their neighborhood. Located near the schools is the library so this trail can also be used to create weekly library programs either for families or even after school activities and promote learning and physical activity.
- Community Beautification: Like the community bike rides, a walk once a month along the Fledgling Trail to clean up any garbage along the way or beautify the trail by planting new greenery could occur. This could be spearheaded by the school, neighborhood, or city.
- Bike Classes for Students: As a part of the Biking Mentorship program class, this bike class can include teaching basic biking subjects such as bicycle safety, routes in the community, biking laws, and bike maintenance.

- Walking School Bus: Many schools around the world participate in a “walking/biking school bus.” The use of a walking school bus is to gather students and parents at a meeting point and encourage walking to school in a community setting. To implement this program in La Pine, there would be certain stops for kids in each neighborhood to meet at a certain time then come together as a whole. Possible placement for stops could be at the corners of Jackpine Road and Hann Road, Jackpine Road and Cedar Road, or Juniper Road and Ash Road. These three locations would all connect to the main location, Jackpine Road and Ash Road. There should be a designated time for students’ departure at Jackpine Road and Ash Road in order to arrive at school with enough time to lock up bikes and get to class.

Figure 33: Proposed Walking Bus Stops on Map

Amenities

Bike amenities are another important factor contributing to the likelihood of people utilizing cycling infrastructure. Amenities include bike parking, path lighting, wayfinding and educational signage, water stations, and fix-it stations.

Bike Racks

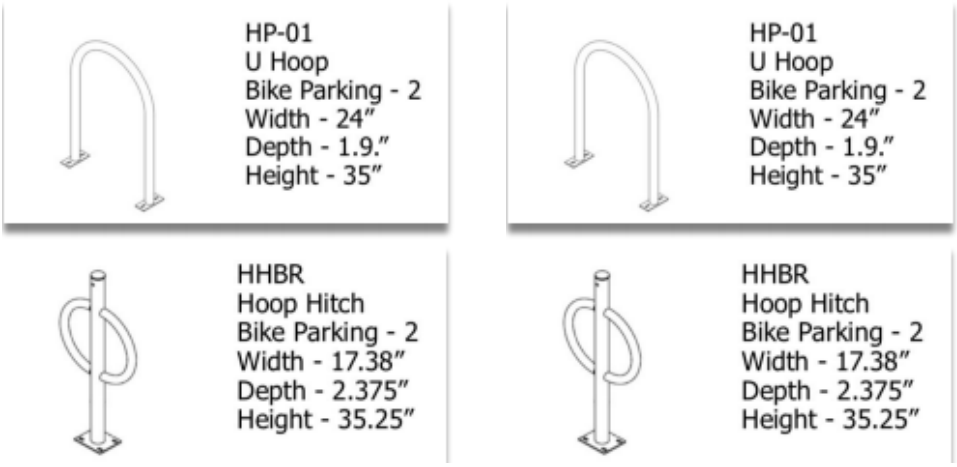
Bike racks could be implemented in a locked area so that the students and staff do not have to worry about their bikes being tampered with. Bike racks could be placed in other areas along the paths and at each school as well. School staff could have their own rack to incentivize riding their bikes instead of driving.

Additional bike parking in La Pine is essential for the growth of the bike tourism industry. Uniform bike racks would build a stronger sense of community and could influence local residents to utilize bicycle transportation more often, particularly when traveling short distances (i.e. errands). For folks passing through, it would demonstrate that the city is committed to sustainable transportation, environmental efforts, and community, and shows cyclists that they are welcome in La Pine. A cohesive, noticeable design reemphasizes the commitment to the

expansion of the bicycle industry in La Pine. The more bike racks are seen around town, the more those who pass by them will consider riding.

In 2016, La Pine High School held a competition to create a mural, seeking a way to bring students away from the stress of school and into an activity that differs from usual academic work. Designing a bike rack would be an entirely new form of creativity that would challenge and engage students. The students can draw, color, sculpt, and model using computer software, etc. Different companies take custom bike rack designs and bring them to life for communities to use. Students are encouraged to be as imaginative and innovative as possible when designing the new bike racks but should remain within certain boundaries in order to allow their work to be successfully implemented. Here are height, width, and depth dimensions of several bike racks that satisfy the typical bike. These numbers should serve as a guide for students when designing their bike rack model.

Figures 34, 35, 36, and 37: Examples of Creative Bike Racks



Figures 38 and 39: Specs for Various Bike Rack Designs

There is an option to do a "call for artists" through the University of Oregon or local communities to get a student artist to create the racks. Another option is to add on optional ski racks for winter months since bike trails will be able to be utilized by cross country skiers. The racks should be placed in the downtown area, local schools, and trailheads so that the city of La Pine nourishes a thriving bicycle culture and commitment to accessible bicycle infrastructure.

Figure 40: Possible La Pine Branded Bike Rack

Three Phases of Bicycle Rack Parking Program

1. Introduce and install classic La Pine bicycle racks to all schools, banks, trailheads, and government buildings.
2. Distribute and establish larger commercial bike stalls and "fix-it" stations in major high-density corridors.
3. The Transportation Department, if it exists, would implement an efficient database for businesses to request custom bicycle racks, mirroring that of the City of Long Beach.

Lights

Lighting would encourage use of sidewalks and bike lanes at night. It would also help to deter unwanted activity, such as vandalism, from these areas. It is necessary to provide lighting that provides a feeling of safety while ensuring that the lighting is not harmful to the natural

environment. In order to do this, lighting should be made of many small, low-emission, low to the ground light posts. In many public projects, developers usually opt for several large, bright street light posts; assuming that this lighting will be the most cost effective and still adequately light the intended area. It is important to keep the design of light-posts in mind so that much of the light emitted does not shine into areas unnecessarily. Such a design would result in wasted energy and a high contrast between lit areas and the dark patches between the lights. Such a contrast would make it easier to remain unseen. Instead, providing lights that are shielded, prevents light pollution are low to the ground and directs the eyes to stay adjusted to the darker areas, will give cyclists and pedestrians the advantage of seeing further ahead than to the next light post.

Trail Signage

Lining the trail with signs that provide users with information about the environment they are walking or cycling through is also suggested. These signs could discuss the local trees, grasses, shrubs, and rushes the trail goes past. They could provide information about local wildlife that can be seen along the trail. These signs could be designed and filled with information by a high school class (as part of a class project) to allow students to feel more involved with the construction of the trail that is ultimately designed to help them have better access to their school. Another option would be to design the signs to be a form of I-Spy, where the signs prompt the user to try to identify particular species that can be seen nearby. Further information about signage is provided in the following chapter.

Red/Burnt Umber Bike Lanes

Painting the bike lane helps promote visibility which increases safety. It also acts as a placemaking tool. The red color promotes the feeling of an “outdoorsy” culture and promotes a message of regional unity between Bend, Sunriver, and La Pine.

Water Stations and Fix-It Stations

Users of bicycles occasionally need places at which they can stop for a break, fill up their water bottle, and/or fix a flat or malfunctioning brake. Providing stations at which cyclists can rehydrate and/or conduct some bike repair is one more way through which La Pine can encourage bike ridership.

Chapter 4: Bicycle Voucher Program

Vouchers are a method of government investment into the private sector allowing citizens or residents to exchange it for goods or services. In general, they encourage the growth of private good sales while still enabling everyone access to it. Bike vouchers could be issued by application to residents who could then only spend it in the private sector on bike equipment or services. Most voucher programs distribute vouchers on a national scale. On a smaller scale, voucher systems usually require formal applications to keep the scope reasonable for the distributor. Application requirements can be tailored to suit the needs of the municipality or region of distribution. Generally, requirements seek to limit the number of non-residents or non-citizens that could manipulate the system. By controlling the number of viable applicants, the cost of the program could be managed indirectly. A less common but still viable solution is to cap the number of vouchers available to the public and distribute them on a first come first serve basis. These requirements can be combined when municipalities face major funding issues. By encouraging investment in the private sector, vouchers also work as a way to

subsidize local investment in the economy. Vouchers are a great way for small or large cities/ regions to encourage specific growth and subsidize growth in specific sectors of the economy.

Buying a bicycle can be a financially-challenging decision. The cost of acquiring and maintaining bikes and bike equipment acts as a barrier to many people who otherwise could be active cyclists. A voucher program based on established and successful models is one solution. The bicycle voucher program could give qualified applicants each four $100 vouchers to spend at participating local bicycle shops. Vouchers may then be used toward the purchase of a bicycle or equipment and accessories to outfit a bike that residents may already own.

In addition to helping lower-income persons acquire bicycles, this program could serve to strengthen business connections between the city of La Pine and neighboring municipalities like Bend and Sunriver. By encouraging a culture of cycling, the voucher program could lay the groundwork for more localized development and help to create a future where La Pine is served by many bicycle businesses and everyone has the opportunity to utilize them. A significant number of bicycle shops in Bend expressed enthusiasm or interest about the potential for a bicycle voucher program and were open to participating.

Wayfinding in La Pine

Wayfinding is an important part of moving people through places they may not be familiar with. This is usually done through the help of signage indicating points of interest, popular routes, or neighborhoods. Here a new logo for La Pine is proposed to unify the city's signage.

A New La Pine Logo

Better signs, rather than more signs, are the most effective way to get more people on their bicycles to ride around La Pine. A logo that represents both cycling and La Pine simultaneously, put on all signage included in the bicycle transportation infrastructure, could help unify the community's knowledge of wayfinding around La Pine.

The proposed La Pine Bicycle Wayfinding Logo is derived from the existing La Pine logo. It adds a bicycle wheel to show that the two could be united in the new bicycle friendly town. With this unifying logo, the intention is that local residents and tourists alike will be inspired to hop on their bikes and go for a ride.

Wayfinding with Signs

When creating a bicycle infrastructure, one of the most important elements is including a wayfinding system. NACTO's "Urban Bikeway Design Guide," states that "a bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes." It also mention how it helps infrequent bicyclists to mitigate the "barrier of entry feeling," by making it less intimidating. When considering La Pine's current street system, one thing that stands out is how spread out all the important points of interest are. By incorporating wayfinding infrastructure, more community members would feel more comfortable, familiarized, and informed riding a bicycle. This could create a safe environment for everyone on the road.

In addition to enhancing safety, this would allow the city of La Pine to create a more defined downtown space, making an area where community members and visitors could come and spend their time to shop, eat, and play. NACTO's "Urban Bikeway Design Guide" also shares how important it is "to classify a list of destinations for inclusion on the signs based on their

relative importance to users throughout the area. A particular destination's ranking in the hierarchy can be used to determine the physical distance from which the locations are signed." It is also recommended to add the mileage and time it takes to reach these destinations, showing how quick and easy it is to go via bicycle rather than automobile. Such destinations could include local schools, grocery stores, health center, and the public library.

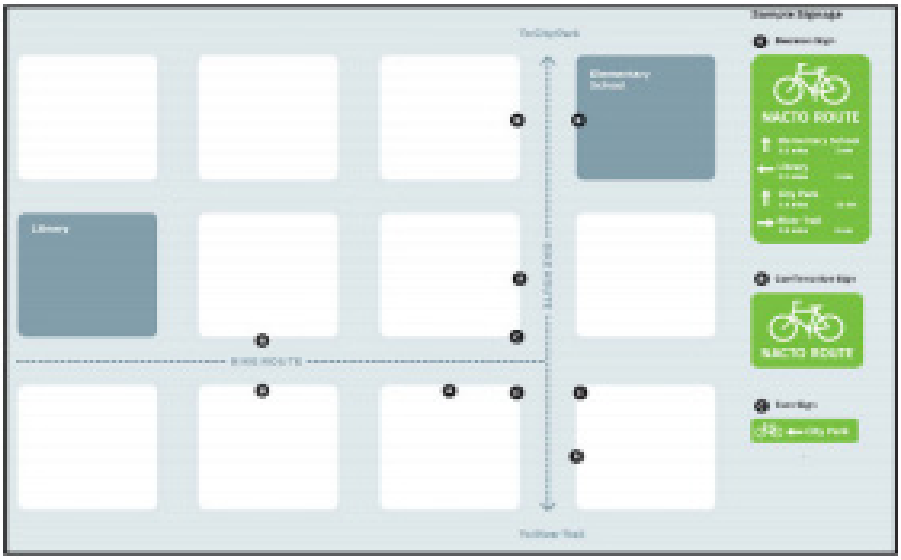


Figure 41: NACTO Recommendations for How to Place Wayfinding Signage

Signage and other wayfinding measures will be integral to communicate to visitors where key attractions in La Pine exist and how to get there. Implementing signage encouraging the right-of-way for bikes and pedestrians, a business directory in the downtown area, and a bike bulletin board with wayfinding information at the La Pine Central Station, is recommended.

Figures 42, 43, 44, 45, 46, and 47: Examples of Bicycle Wayfinding Signage

The Economics of Signs

Maintenance

With all things constructed, maintenance is often one of the last things that is thought about. It is important to maintain the infrastructure that was put into place, not only solidify the current routes but to make it easier to expand these routes when necessary. Another important aspect of maintenance is keeping bicyclist and motorist alike safe.

According to NACTO, “needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear. Cities should maintain comprehensive inventories of the location and age of bicycle wayfinding signs to allow incorporation of bicycle wayfinding signs into any asset management activities.” Pavement markings will need to be paid attention to more frequently due to the amount of wear that they experience. NACTO recommends “Frequent, visible placement of markings is essential. Lateral placement is critical to encourage riders to avoid the ‘door-zone.’ The shared lane marking may be placed in the center of the lane between wheel treads to minimize wear.” Public Works administrators would be able to view these new markings and signs during their routes with in La Pine.

Wayfinding Signs

Creating a bike network from the ground up allows for the system to be more interconnected. It also allows for a more cost-effective approach. By purchasing all the necessary signage at the same time, costs are cut tremendously. When looking at NACTO guidelines for creating a wayfinding system it is mentioned that there are three certain types of signs should be used: confirmation signs, turn signs, and decision signs. Confirmation signs are to be used to show the bicyclist and auto drivers they are in designated route for bicyclist. These signs are spaced ¼ mile from each other and would be used on the main bike routes to destinations listed on confirmation signs. Turn signs are signs that indicate where bike routes are turning onto another street or path. Turn signs are used at intersections where a major bike route is present. Lastly decision signs inform bicyclists of the designated bike route to access the destinations listed on the sign. Decision signs are placed near-side of intersections in advance of a junction with another bicycle route, and along a route to indicate a nearby destination.

Looking at costs each of these signs cost a different amount and by the nature of the street pattern in La Pine, some would be used more than others. According to NACTO, around 10 signs per major intersection is recommended. The example map shown in the previous section has fifteen intersections. According to “Cost Analysis of Bicycle Facilities: Cases from cities in the Portland, OR Region” one wayfinding sign is estimated to cost between $200 and $400. The cost in NACTO’s example would be $3,000-$6,000.

Pavement Markings

Just as important as wayfinding signs, pavement markings enforce the bike routes as well as inform motorist that the space is a shared with bicyclist. According to NACTO, “Pavement markings can be installed to help reinforce routes and directional signage and to provide bicyclist positioning and route branding benefits. Under urban conditions, pavement markings may often be more visible than signs to users of the route. Pavement markings may be especially useful where signs are difficult to see (due to vegetation or parked cars). They can also help bicyclists navigate difficult turns.” A pavement marking that could be implemented into La Pine is a sharrow.

A sharrow is a road marking used to indicate a shared lane environment for bicycles and automobiles. Among other benefits, shared lane markings reinforce the legitimacy of bicycle traffic on the street, recommend proper bicyclist positioning, and may be configured to offer directional and wayfinding guidance. The shared lane marking is a pavement marking with a variety of uses to support a complete bikeway network. According to “Cost Analysis of Bicycle Facilities: Cases from cities in the Portland, OR Region” the cost of one sharrow unit is estimated at $279.00, and installation of these sharrows cost $60.21 per sharrow. Sharrows would be placed every 1⁄4 mile on either side of the road. This would mean a total of 50 Sharrows would be placed in the routes made. The total cost would be $16,960.50 including labor. Most of the routes already had bike lanes incorporated, dropping the cost significantly.

Figure 48: Example of a Sharrow

Recommendations

Signs for Downtown

One of the largest struggles identified in La Pine was the lack of an obvious downtown. Centers of commerce, where people are comfortable coming together, is a large part of bringing a community together. To create this, it is recommended to make it possible for people to get there with various types of transportation, including bicycles. It is important to indicate where primary locations, such as the health center, library, schools, and grocery stores are.

There are other types of signs that can help promote the downtown as well. Multimodal signs that show pedestrians, cyclists, drivers, skateboarders, etc. all moving around in harmony helps reinforce the idea that the downtown should be a shared space for everybody.

Signs for Schools

The La Pine bike network not only aims to create safe biking routes and encourage sustainable transportation, but encourage healthy lifestyle habits. The benefits of biking far extend beyond improving environmental conditions. Biking is an effective way to combat obesity and Type 2 diabetes. Biking furthermore improves individual wellbeing. Regular cycling has been linked

to lower blood pressure and reduces the risk of heart disease. Moreover, cycling can lower your stress levels. Biking home after school can ease tension after a long day while reducing greenhouse gas emissions.

Instilling healthy biking habits in children will strengthen the La Pine community. La Pine's Safe Routes to Schools will encourage cycling in La Pine's youth. Inspiring children to start biking in their youth instills healthy biking habits for the rest of their lives. Exercising for 60 minutes per day is recommended for a healthy child's active lifestyle. Moreover, it gives La Pine youth a deeper sense of responsibility by transporting themselves to and from school. It creates lifestyle habits that can be built upon for years to come. A critical aspect of signage for schools is making bike presence clear to motorized vehicles. With smaller children cycling, it is imperative that signage alert cars to their presence and prioritize cyclists in parking lots and along routes to school.

Bike Friendly Business Program

"Bike Friendly Business" is a phrase with two connotations. In Oregon, it is directed toward travelers with the mission of helping "tourism-related businesses understand the importance of Oregon's growing bicycle tourism industry," and promoting businesses that strive to elevate the Oregonian bicycling experience for residents and visitors alike. On a national scale, The League of American Bicyclists' program works to recognize the efforts of employers to encourage "a more welcoming atmosphere for bicycling employees, customers and the community." Becoming part of either or both of these programs is a great way to demonstrate the commitment of businesses and the community to creating and connecting a bike-friendly La Pine. An additional perk is the press opportunity that is offered to cities and businesses that join in.

Ways in which a business can become certified "Bike Friendly" include providing at least five services or amenities that must be offered from a provided list (Ex. bike parking, water, WiFi, limited groceries, charging stations), applying through an application, and purchasing a Bike Friendly sign.

Promotion of La Pine Bicycle Friendly Business Program

A great way to encourage bike culture in the city of La Pine is to implement a bicycle friendly business program. Creating this kind of program instills a sense of community and culture. It's a great way for businesses to engage with tourism and to benefit from the revenue that comes from it. By implementing this program the city of La Pine is "walking the walk" of bicycle culture and showing cyclists that they really do prioritize cyclists.

Bike Friendly Business Services and Amenities

- Bicycle Cleaning Station - should include hose, rags, towel, brushes, etc.
- Bicycle Floor Pump - both presta and shrader valve options should be available
- Bicycle Mechanic
- Bicycle Parking
- Bicycle Rentals
- Bicycle Shuttle Service
- Bicycle Tours
- Bicycle Tools/Supplies for Sale

- Charging - complimentary plugins for charging cell phones, tablets, etc.
- Complimentary Bicycle Locks
- Complimentary Bicycle Rentals
- Complimentary Bicycle Tools/Supplies
- Complimentary Water - guests must be able to refill their water bottles
- Limited Groceries - energy bars or healthy packaged ready-to-eat foods
- Long-term Vehicle Parking - for visitors taking multi-day bicycling trips
- Public Restroom
- Self-Serve Bicycle Repair Station - should include bicycle stand, rags and bicycle tools
- Shipping - for guests who arrive solely by bicycle and cannot carry purchased items
- Wi-fi

Bike Friendly Business and Community Certification

It is important that community members, especially local businesses, be educated about how to be bike friendly and helpful to tourists attracted to the bike facilities and trails. Resources to help the La Pine businesses and surrounding community become more bike friendly, including matching grants programs for rural tourism, are listed below:

Oregon-specific programs:

- Oregon Bicycle Friendly Business Program: http://industry.traveloregon.com/industry-resources/product-development/bike-friendly-business-program/
- Travel Oregon Rural Tourism Studio Matching Grant http://industry.traveloregon.com/industry-resources/matching-grants-program/rural-tourism-studio-matching-grants-program/

National Programs:

- League of American Bicyclists Bicycle Friendly Business Program: https://www.bikeleague.org/business
- League of American Bicyclists Bicycle Friendly Communities Program: https://www.bikeleague.org/community

Regional Bike Networks

La Pine offers access to outdoor recreation, proximity to nearby resort-like towns, and growing housing options. Encouraging more bicycle-related tourism by physically connecting the region and unifying the language or identity of bicycle transportation will aid in the economic growth of La Pine. Central Oregon already has a regional identity as bicycle friendly, accessible, and open for recreation. Continuing that legacy in La Pine will unite the region.

Connecting La Pine to bicycle infrastructure existing in Sunriver and Bend is crucial to expanding the regional network for biking. The planned pathway from La Pine to Sunriver following Huntington Road will physically connect and encourage travel between the two cities.

From La Pine, access to Paulina Peak and Newberry Crater as well as Finley Butte and the Wickiup Reservoir, are common for enthusiasts who enjoy gravel or dirt beneath their single-track bicycles, which offers a less than urban environment. Commuters, athleisurists, and adventurists can all participate.

A regionally connected bike route that links La Pine, Sunriver, Bend, and surrounding points of interest will benefit all areas involved. Providing bicycle infrastructure will increase ridership and may increase in visitorship to the area. As detailed previously, bicycle and outdoor recreation tourism has significant positive impacts on local economies

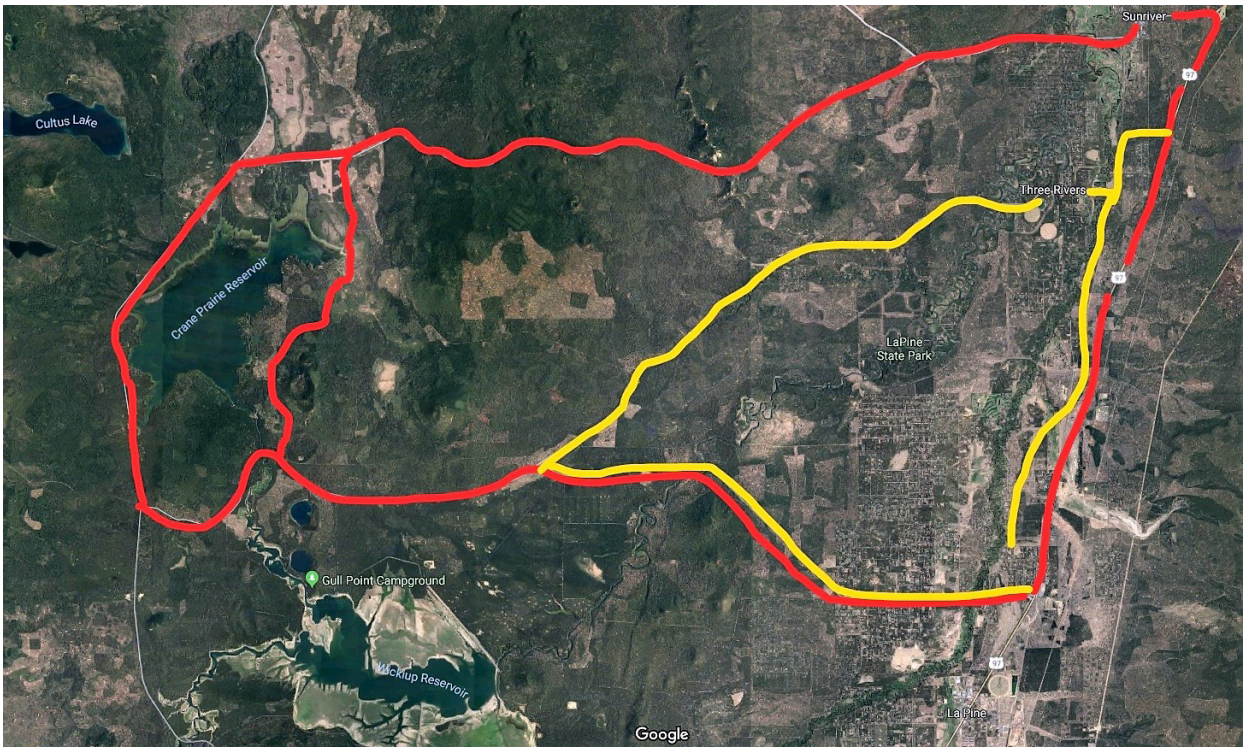
La Pine sits between the beautiful Cascade Lakes Highway, Paulina Lake, and the Newberry Crater National Monument. These are all popular spots for Oregonians and tourists to visit. La Pine is centrally located in between them but has not utilized this position to bring people into town on a regular basis who visit them. A simple but intriguing idea, would be to set up bike tracks, or official “bikeways,” to bring people into town who want to take the day’s journey by bike to visit these attractions. A bike track is an off-road paved path that would allow bicyclists maximum safety and rideability by making their interactions with cars come at a minimum. A bikeway is more or less a regular road which allows bicyclists to ride on it via distinct signage and markings on the asphalt.

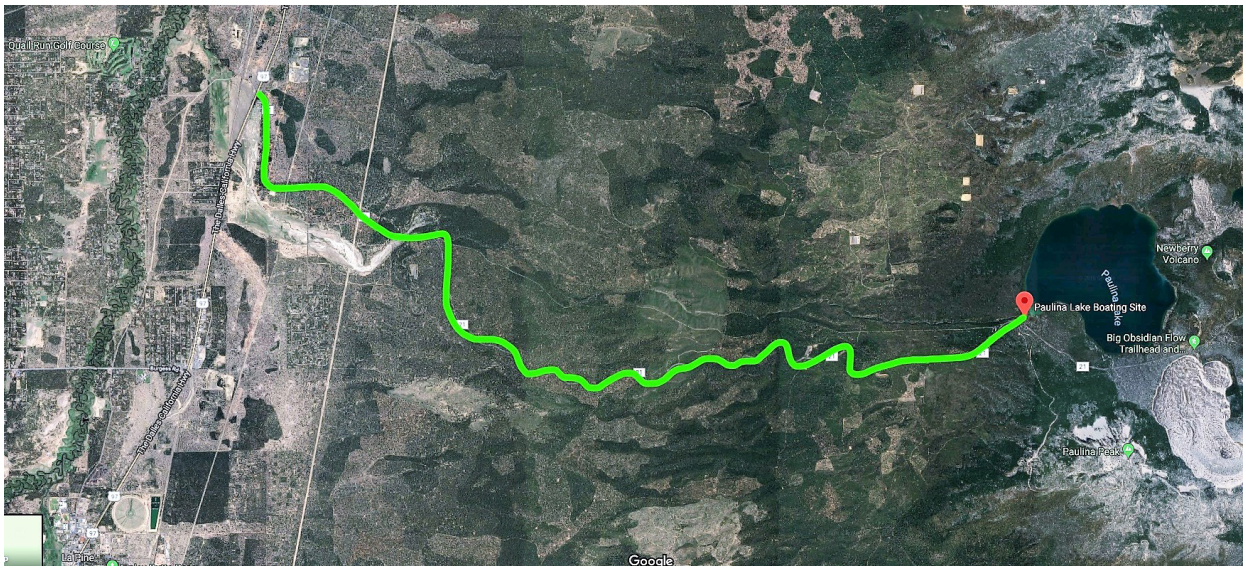
The bike track is more favorable to the rider but costs more money and requires greater infrastructure changes. It is recommended that a bike track be installed in the following proposed areas, but it is ultimately up to La Pine City Council, respective budgets, and ODOT.

Recommendations

Proposed areas/loops are:

- Highway 97 to Highway 40 to Highway 43 (57 miles)
- Huntington Rd to Highway 40 (Century Dr) to Highway 43 (39 miles)
- Highway 21, to the Newberry Crater Monument, Paulina Lakes and back (48 miles)





Route Name	Length	Type	Description	Map Key
Recreation Road	48 miles	Bike track, there and back	Some hills, leads to endless outdoor recreation: hikes, lake, water slides	Green
Central Oregon Sampler	39 miles	Bike track, loop	Easiest, low grade, 50/50 rural and urban, lakes, camping	Yellow
Cascade Lakes Loop	57 miles	Bike track, loop	Medium grade, challenging, lake & nature views, recreation & camping	Red
Cultus Lake Colossal Loop	70 miles	Bike track, loop	Medium/high grade, challenging, lake, nature & views, recreation & camping	Red w/ extension around Craine Prairie

Figures 49, 50, and 51: Proposed Regional Trails

Tourism

In 2017, The Outdoor Recreation Industry Association released, “The Outdoor Recreation Economy,” finding that each year Americans spend $36 billion more on bicycling than on video games. In addition to the money spent on gear, the simple fact remains that due to the nature of cycling, cyclists pass through areas at slower speeds and with less protection from the elements than automobile drivers. This means they have more opportunities to enjoy the sights, sounds, and smells of localities. Being more open to the pleasures of the senses, they are more likely to enjoy spontaneous decisions, such as stopping to enjoy a delicious smelling baked good or to listen to the sounds of a band whose notes have journeyed beyond the bounds of a backyard fence.

Bringing Bicycle Tourism to La Pine

There is no one definitive method to bringing bicycle tourism to an area. There are, however, many ways to get people involved, and to create and grow a biking community and culture. The bicycling communities in Bend and Sunriver exemplify this, as biking networks and resources are now widespread and easily accessible. Some biking networks have already been created in the region, providing La Pine with the opportunity to connect to existing networks and to continue to build. Having extensive bicycle routes and proper infrastructure for biking is essential in forming a thriving bicycling community. Along with having the proper infrastructure to accommodate bike riding, it is also important to have bike facilities available. By having facilities available, more people will be more willing to bike because they will know that they will have resources available to them if/when they need it. Biking facilities include having places to lock up your bike such as bike racks or bike garages, having places to buy or rent bikes, and locations to repair bikes or buy bike parts.

When designing plans for bicycle routes, it is important to consider the variety of groups of people that could be using them. Bicycle communities that have programs and resources available for people of all ages and skill levels are more likely to thrive as it shows that anyone can enjoy bike riding. Designing bike routes for all types of riders will help the growth of bike culture as people ride for different reasons and have different preferences and abilities. Once these networks are made, it is important to reflect where these routes are on maps so people can easily locate and access these trails. Creating colored coded maps specifying levels of difficulties would be beneficial, as highlighting trails in this manner would direct people toward the activity level they are seeking. Making these maps available in different mediums can also bring awareness to bicycling opportunities. Forms these maps might take include, but are not limited to, classic paper maps, digital maps accessible online, or digital maps accessible through a mobile app. A variety of resources can help the city reach a wider audience by giving people options on how to access them.

Bike route maps are just one way to grow a bicycle community. Many cities have started to develop a variety of programs and events to raise awareness about the importance of biking to get people interested and involved. Numerous organizations will host a variety of bicycle classes and workshops year-round as a way to promote bike riding in communities. Workshops and classes range from introductions to biking and how to bike safely to teaching people about the bicycle itself and the basics of bike maintenance. These workshops are meant to educate the community about the benefits and importance of bike riding and show people that it can be fun and rewarding. Hosting programs like these can help La Pine grow bike culture as they can show community members the biking potential that the city has. Facilitating events is also a good way to get people involved as they bring people together through a common bond. Holding bike events can bring in a lot of people from all over the world as they celebrate the biking culture and community. Open streets events, such as Bend Open Streets, allow people to bike freely and safely by closing down certain streets to only non-motorized modes of transportation. These types of events have proven to be successful as they get people engaged and bring in not only advanced bikers, but also people who are curious about the biking world.

Recommendations

Currently, no one resource highlights bike trails relatively close to the city. A multi-page program showcasing the many trails in the area, limiting research time and surfing through several trail websites, would be beneficial. It should include suggested routes within a 40-mile radius of town. Ideally, these routes would share information such as: length, difficulty, when to go, directions to the trailhead, and recommendations on where to stay and what to eat when you visit. It could be distributed at locations promoted within the pamphlet, Bike Friendly Businesses in town, and the Chamber of Commerce.

Additionally, the city of La Pine's website does not currently feature opportunities for bicycle tourism. "Mountain biking" is briefly mentioned as an outdoor activity in a list with many other summer activities. A downloadable PDF version of the most recently updated of cycling opportunities, with a brochure for electronic accessibility including hyperlinks to visit websites of other area for activities, and a separate page for "Things To Do" is recommended. The website will serve as a means to connect potential and current visitors to places to go and things to do.

An updated informational calendar is also important for visitors to align their visit with happenings in the city. It is recommended that the city calendar include current and recurring events. Popular La Pine events such as Frontier Days, the Rodeo, and the Coop and Garden Tour could be publicized on the city's website.

Bike friendly businesses (BFBs) that support the local expansion of bike tourism are vital to the industry's success. To assist BFBs, sufficient bike infrastructure is essential to building a bike-friendly community. In addition to safe, convenient, attractive routes, additional necessities that were identified are food outlets, bicycle friendly accommodations, and additional activities that offer more opportunities to tourists (Pratte, 2006).

Presently, Google Maps does not indicate any designated bike lanes in La Pine. In the age of digital information sharing, this can be a major disadvantage to the city in attracting prospective tourists and residents who may use the tool to inform their spending decisions. A system of bike lanes surrounding the La Pine Central Station will help to embolden prospective tourists and residents to the area. Working with information-sharing agencies such as Google to market the availability of this resource will also serve to attract these groups.

Likewise, a well-marketed regional route connecting La Pine, Sunriver, and Bend is recommended. The route would complement the bus service already established in the area because it would provide numerous ways to travel in the area; trips would not necessarily have to be completed via one sole mode of transportation. Users could combine trips via the bus and their bikes, allowing for more opportunities to explore the recreation points-of-interest in the region. It would also enhance transportation mode equity in the region for those who cannot afford a car or train pass.

Conclusion

There are many reasons to create and implement policy, programs, and infrastructure that promote bicycling in La Pine. Examples include the health of residents, the emotional growth of children, the environment, and economic gain. This report has provided recommendations spanning from streetscape redesign projects, to festivals, to development code language. La Pine may be Oregon's newest city, but it has the opportunity to make a splash by challenging even Portland for a reputation of being forward-thinking and accommodating modes of transportation that aren't the car. La Pine has already taken a first step with its in-progress transit center; the second step would be demonstrating its commitment to improving the experience of cyclists.

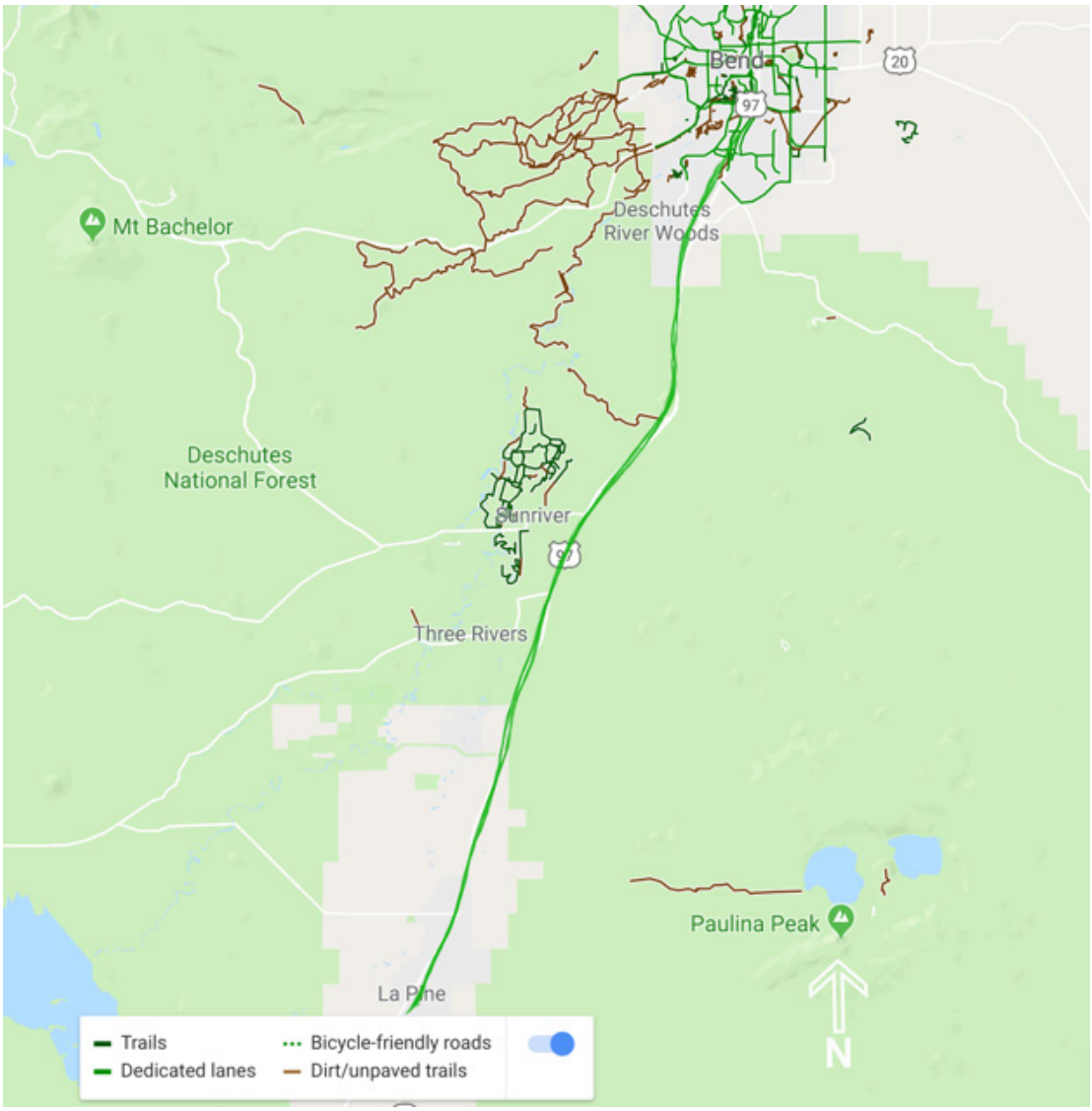


Figure 52: Proposed Regional Route Connecting La Pine, Sunriver, and Bend

Appendix I – La Pine Stein Festival

An opportunity to enhance tourism is the creation of an annual festival. The core of this festival is to bring the community together to highlight the opportunities for growth that are present in La Pine along with educating new prospective community members about this remarkable place to live. Titled “La Pine Stein Festival,” the intention is to bring cyclists in from Bend and surrounding communities, such as Hood River, to celebrate. The festival would be a great opportunity for the city to introduce their own custom bicycle racks and parking program.

The La Pine Stein is about bringing townspeople and out of towners together to celebrate La Pine. It’s also about introducing the people of La Pine to bike culture and the idea of biking, showing out of towners that La Pine is working on becoming bike friendly in its future, and that it’s likely to become an even more lovely and unique place to live.

The festival would have fun activities for people of all ages, with activities for both adults and kids to enjoy. It would incorporate bikes, beer, and an opportunity for the whole community to come together to celebrate La Pine.

The festival could be themed as an “off season Oktoberfest” and could include events such as a costume themed cycle ride, beer tastings, an eating contest, bike rodeos, a beer/cider competition, and bike workshops. It could also sell original La Pine Steins for tasting for that year, have annual costume merchandise, and give out bike lights and helmets. If a band is part of the festivities, bicycle power could be an attraction to power the stage. A bike valet service would play an integral piece in attracting attendees.

Bike Rodeo

A bike rodeo is a clinic that helps teach those who do not know how to cycle in and around downtown or high traffic areas. The Safe Routes to School Program is a national and locally based nonprofit that is best known for putting on these great events. Bike Rodeos are a fantastic way for beginners to learn bicycle safety and the ways of the road! The bike rodeo could include smoothies made by bike power, an obstacle course, and a safety town or traffic garden.

Run/Marathon

Medford, Oregon puts on a similar event called the Pear Blossom run. It provides the options for a 10-mile run, a 5k run, or a one-mile or two-mile fun run. People entered in the event have their names entered in a random prize draw and winners of the races get medals, while participants in the fun run get ribbons. People can buy merchandise featuring the name of the town and the run unique to that event and place. It’s a good way to draw people to town and make their visit memorable and to generate revenue.

Stein Collection Exhibition

Anybody based in Oregon, regional, or worldwide can enter the contest and compete. The festival could include multiple ways for participants to show off their collections, including the option for vendors to sell products they made or sell what they have acquired, and a competition for best collection. Categories for best collection competitions might include the funniest/weirdest stein, the most elegant stein, the most inventive stein, and the most inspiring stein. An additional competition could be a test of strength, with male and female categories for the longest a stein is held at shoulder height without spilling or lowering arm.

Beer Tasting

Vendors from all over Oregon and locally could come to the La Pine Stein to show off their craftsmanship, with prizes to be awarded to the best brew that represents its category. Possible categories could include: best lager, best belgian ale, best dry cider, best sweet cider, best sour cider, and best shandy.

Prizes

Bronze/ Third Place - A beer that varies slightly from the style of the category and deviates from the taste, aroma, and appearance of the style.

Silver/ Second Place - A beer that varies slightly from the style of the category but still displays excellent taste, aroma, and appearance

Gold/ First Place - A beer that exemplifies the style of the specified category, balanced in taste, aroma, and appearance.

Best Overall/ Grand Champion - Whoever sold the most or Whoever was the most popular.

Promotional Banners

With the road traffic of people traveling through La Pine, a banner could be erected over Highway 97. The banner should reflect the event name, time, date, location, sponsors, point of contact, and promotional logo.

Entertainment

Musical guests and bands will provide quality entertainment for everyone while attendees can meet on the dance floor to socialize and engage with their neighbors. Three bands have already professed interest in attending and performing for the festival.

Food Truck Competition

There will be a contest among the food trucks for whoever has the best meal. This would enable many diverse vendors to come and contribute to the event. There will be a winner, as well as second and third place winners. These titles can be advertised by the vendors and will encourage trucks from other cities to come and participate.

Art Competition/Exhibition

Could be a variety of mediums anything from woodshop, paintings, metal work, etc. This will be a place where the city can showcase local artists. This also provides a space where the community can come and enjoy the creative innovations of their fellow members.

Appendix II - Potential La Pine Bike Network Brochure

La Pine State Park

Length: ~11 miles

Difficulty: Easy - Moderate

When to go: May-October

Description: This trail includes about 11 miles of single-track loops so you can customize the length of your ride. This is the perfect trail to see the best of Central Oregon. It includes trails

that follow the river bank and extend out further into the wilderness. This is your opportunity to visit “Big Red,” a Ponderosa Pine that is over 500 years old and among the oldest in the country.

Directions: Head north on Highway 97 for about 12 miles, take the exit for State Recreation Rd. Turn left onto State Recreation Rd. Follow it for about seven miles until you take a right turn towards the State Park. Take your first left towards the picnic area where you will find parking, bike racks, and your lunch spot after you ride!

Mt. Bachelor

Length: 13 Miles of Downhill Trail

Difficulty: Moderate - Difficult

When to go: Early June to October

Description: Mt. Bachelor offers passes to ride some of their most iconic chairlifts up the mountain to provide access to their trails in the summer. On their designated routes you will find a combination of machine-built and single track paths that will fill the need of any adventurous spirit.

Directions: Head north on Highway 97 and exit for Vandervert Road in 13 miles. In one mile turn right onto S. Century Dr. In two miles turn left onto Spring River Rd. Continue 16 miles on Cascade lake Hwy then keep left for the Mt. Bachelor Resort exit.

More information can be found at https//www.mtbachelor.com/mountain-biking

Paulina Creek

Length: 11 Miles

Difficulty: Easy

When to go: May through October

Description: This section of the Peter Skene Ogden Trail features some of the larger waterfalls in the area. The trail can be extended or shortened based on your preferences. This trail is mainly uphill until reaching Paulina Creek Falls. An early start is recommended for ample time to stop at all the falls, enjoy the views, and catch your breath.

Directions: Head north on Highway 97. In 6.5 miles turn right onto Paulina Lake Road. In three miles keep left onto NFD Rd. 2120, pull into the small gravel pullout on the left.

Waldo Lake

Length: 21 Miles

Difficulty: Advanced

When to go: Early Summer to Late Fall

Description: The Jim Weaver loop is said to have very “manageable” elevation gain, but the many short yet steep climbs will provide a good workout and the technical sections will keep you on your toes. No shortage of beautiful lake views and swim spots exist along the trail. The loop can be completed either clockwise or counter-clockwise.

Directions: Head south on Highway 97 for 17 miles, turn right on the Crescent Cut Off Road. In 12 miles turn right onto Highway 58 then after another 12 miles turn right on NFD Road 500. In 2.3 miles turn right on NFD Road 5897 and then left onto NFD Road 5896 in five miles. Signs in the area should be clear to reach the waters’ edge.

Lava Butte to Benham Falls

Length: 5.5 Miles

Difficulty: Moderate

When to go: Spring through Fall

Description: A paved, multi-use trail, the Sun-Lava Path is accessible to all and features limited elevation gain. The trail takes riders from the impressive Lava Lands Visitors Center to the incredible Benham Falls area.

Directions: Travel north on Highway 97. Take Exit 151/Cottonwood Road. Turn right after exiting. Continue on road about two miles passing Lava River Cave. Turn right after underpass to Lava Lands Visitor Center Welcome Station.

Lodging in La Pine

Best Western – Newberry Station, 16515 Reed Road: "This is the best hotel I have ever stayed at. They have food in the morning and a great pool. I have a LOT of great memories from this place. Staying here in the winter, snow outside, wake up in the morning and go to the galley and get some scrambled eggs, make some waffles, have some sausage while looking out at the beautiful snow. What a great place. This hotel alone is a destination for me."

Diamond Stone Lodge and Gallery, 16693 Sprague Loop: "We had such a great time I took a friend here and we enjoyed it so much! There is so many things to do from hiking to boating, swimming and even drinking craft beers! I would recommend this place to anyone looking for a stay that will impress you. Doug & Gloria are friendly n cool people I loved it here and would say it's better than a regular hotel by faaaar!"

Where to Eat

Cinco de Mayo Restaurant & Catina, 51470 US-97: "Great food. Excellent service. No long waits for food. Wait staff always pleasant and friendly and professional. Been going there 12 years and never a bad meal. Drinks are good too."

Red Rooster, 51425 US-97: "The staff and food were amazing. My boyfriend ordered the corned beef hash with a cup of coffee and OJ and honestly he said it was the best corned beef he's ever had. I ordered oatmeal and just simple eggs toast and bacon with hash browns, it was so good. I wish I lived closer so I could have breakfast there all the time, but I was only visiting. Definitely glad I visited!!!"

Wickiup Junction, 17000 Burgess Road: "'Homemade Donuts' like the memories of my youth. A hole in the wall funky truck stop on the west side of 97, south of Bend. Oh my goodness. Sinfully yummy raised donuts. We were licking our fingers and smiling all the way to Klamath Falls."

Central Perk, 51365 US-97: "As an expatriate from the San Francisco Bay area, I'm used to a vast array of caffeinated options – yet don't need to travel any further than this oasis-in-the-wilderness coffee stand to get my 'fix.' With a 24-ounce blended mocha for me, a coffee bean for my husband, and a dog treat for our puppy, the entire family is happy! The lovely owner and her expert staff are a delight!"

Summer Fun

May 19: ATV Poker Run

June 9: Rhubarb Festival

July 1-4: Frontier Days

July 6-8: Rodeo Events

July 20-22: Newberry Event Music and Arts Festival

August 13: Coop and Garden Tour

Appendix III - Case Studies

The Federal Highway Administration's (FHWA) report "Case Studies in Delivering Safe, Comfortable and Connected Pedestrian and Bicycle Networks: Volume II" synthesizes a list of six principles that influence the success of multi-model connectivity. These principles include:

COHESION: How connected is the network in terms of its concentration of destinations and routes?

DIRECTNESS: Does the network provide direct and convenient access to destinations?

ACCESSIBILITY: How well does the network accommodate travel for all users, regardless of age or ability?

ALTERNATIVES: Are there a number of different route choices available within the network?

SAFETY & SECURITY: Does the network provide routes that minimize risk of injury, danger, and crime?

COMFORT: Does the network appeal to a broad range of ages and ability levels and is consideration given to user amenities?

Below are a sample of case studies from around the country that are outlined in various FHWA reports. Studies chosen are comparable in size, context, and geography of La Pine. These case studies point towards ideas for funding, decision making, and design that can increase connectivity in La Pine.

The Lawton Metropolitan Bicycle and Pedestrian Plan (Lawton, Oklahoma)

The Lawton Metropolitan Bicycle and Pedestrian Plan was adopted in 2008, with revisions made in 2010. The first four routes identified in the plan are near completion. These routes provide connections among the metropolitan park (Elmer Thomas Park), several community neighborhoods, Fort Sill, downtown, government buildings, schools, and other residential areas. In addition to the increased connectivity offered by these routes, design and construction use a mixture of off-street trails, separated bike lanes, and shared roadway lanes. These efforts help to ensure that users of all ages and mobility levels can access this trail network.

Piscataquog and Goffstown Rail Trails (Manchester and Goffstown, New Hampshire)

The Piscataquog Trail is a 10-foot wide paved trail in the west side of Manchester. The trail is heavily used by cyclists and pedestrians and allows residents from the west side of Manchester to connect to the amenities of downtown. The trail can help link residents between residences, businesses, schools, hospitals and recreational amenities. Through a NHDOT administered FHWA Transportation Enhancement grant, and a generous local match raised by the trail and advocacy group, Manchester Moves, construction of the critical connection across the Piscataquog River was completed in October 2015. With a NHDOT-administered FHWA Transportation Enhancement grant, the Town of Goffstown completed two Pedestrian Hybrid Beacon crossings of NH 113 and critical trail sections that connect Manchester with Goffstown via a seven-mile non-motorized corridor. The network includes walking paths, sidewalks, transit stops, and thousands of residents within a quarter mile of the trail.

Madras Bicycle and Pedestrian Improvements (Madras, Oregon)

Project to construct multi-use path and sidewalks from Jefferson Street to Plum Street along US 97 in Madras. These enhancements will increase accessibility to the North side of town, thereby improving the overall network connectivity. Enhancements will also include ADA-accessible curb ramps.

Cloverdale Avenue Corridor Improvements (Winston-Salem, North Carolina)

The Cloverdale Avenue corridor improvements to the walking and biking infrastructure have significantly improved the environment for walkers and bikers in the area. The project corridor connects a large residential area to nearby businesses and services and previously was very much auto-centric. The improvements, both completed and proposed, address pedestrian crossings and automobile speeds to improve the safety for walkers. Improved pedestrian crossings, including the use of refuge islands and crosswalks were the emphasis of the project.

Anacortes Schools Pedestrian Bicycle Network Improvements (Anacortes, Washington)

In 2011, the city of Anacortes and Anacortes School District combined forces to apply for a Safe Routes To School (SRTS) grant with extensive engineering, education, and encouragement elements. The project consisted of numerous improvements. Nearly 2,000 feet of new sidewalks were added on 29th Street and I Avenue, where there were no existing pedestrian facilities. The project featured a complete rebuild an intersection of two collector streets just in front of the Middle school and on the same block as the target school, Island View Elementary. This intersection also had a recent pedestrian and automobile collision and the project opened up sight distance using bollards at each corner. Bicycle racks to accommodate 48 bikes were added, and a bicycle education program was funded to bring comprehensive bike safety education to the elementary schools. To help sustain future projects, an SRTS board was created to improve collaboration between numerous partners.

Improving Safe Routes to Schools (Arlee, Montana)

A pathway connecting the north side of Arlee to the schools was completed in 2012. This pathway provides a critical connection that enables students and parents from the neighborhood north of the school to walk and bike to and from school. The pathway connection also provides an additional link from the neighborhood to the businesses in town. The project was funded through the Montana Department of Transportation's Safe Routes to School Program.

Twin Bridges Scenic Bikeway (Bend and Tumalo, Oregon)

Throughout this 36 mile designated bikeway route just north of Bend, municipalities have collaborated with ODOT to provide amenities for touring cyclists throughout the region of this ride. In addition to Tumalo State Park and Shevlin Park offering restrooms and camping sites for long distance riders, the city of Bend and village of Tumalo offers bike friendly places to shop, to dine, and to experience the outdoor recreation culture of Central Oregon.

As part of this route, the wayfinding signage encourages clockwise directionality to complete the loop. This provides additional safety for both cyclists and traffic alike. ODOT has also installed a bike lane along Highway 20 for further safety measures in relation to road cycling.

Additionally, Tumalo and Bend have worked closely with Travel Oregon to highlight different activities, events, and weekend getaway guides to help promote outdoor recreation tourism in the area.

Ohiopyle, Pennsylvania

Ohiopyle, Pennsylvania is a small former railroad town nestled in the Laurel Highlands of Pennsylvania. While only 72 permanent residents live in the town year-round, this outdoor recreation destination boasts over 1.5 million visitors a year, which increased considerably after the completion of the Great Allegheny Passage (GAP). Additional nearby attractions include Ohiopyle State Park, the Laurel Highlands Hiking Trail, and a rafter's favorite–the Youghiogheny River.

The GAP extends from Pittsburgh, Pennsylvania to Cumberland, Maryland to connect to the C&O Canal Towpath, which connects to Washington D.C for a trail that is over three hundred miles long. To encourage economic development for bike tourism, towns along the trail have collaborated with each other, nonprofits, and policy makers to promote one of the nation's first long distance bike trails. For example, several local businesses have worked together across the region to build travel packages for touring cyclists. Other cities have worked with main street programs and city officials to redevelop their downtown area. Dozens of local businesses and community organizations have also joined the "Trail Town Certified" Network, a networking and economic development program helping businesses become both trail-friendly and sustainably minded. In many cases, this has saved small business from going under in an otherwise small, rural community still reeling from the loss of the steel industry in the area.

Ohiopyle is a model city for this kind of recreation and transit planning. In addition to having nearby recreational points-of-interest nearby, Ohiopyle worked with Pennsylvania Department of Transportation to include bike lanes or sharrows on every street within the town to encourage trail users to visit local businesses, including the section of highway going through town. There is significant wayfinding signage for tourists, proper safety precautions and notice to motorists that bicyclists and pedestrians are in the area, in addition to traffic calming measures to slow vehicular traffic entering the area.

Business and policy makers in the town support the bicycling culture by providing appropriate services for the trail-user such as lodging, cafes, restaurants, and bike shops. The community also hosts several outdoor-focused festivals throughout the year, including one specific for bike tourism. On average, trail users spend around $124 a day to visit the area and partake in local outdoor activities along the GAP.

As a result of strong bike infrastructure presence throughout town, collaboration with other communities, and accommodations for the trail user and their families, Ohiopyle benefits directly from the $51 million in direct economic impact that biking brings to the region via the GAP trail every year.

Bend, Oregon

The ease of bicycling in Bend, OR makes it appealing to leisurists, athletes, commuters, and anyone in between. Well-connected infrastructure, plentiful places to lock up your bike, community events, and more than twenty bike shops all encourage cycling.

Biking in Town

Key bicycle corridors going north/south and east/west connect areas on either side of the Deschutes River. Recognizable green signage throughout the city aids in wayfinding and route clarity. Bicycle routes are in close proximity to schools, emergency services, parks and other attractions.

Biking to Surrounding Areas

Easy access to Phil's Trail system with over 60 miles of rideable terrain for mountain bikes west of Bend attracts locals and tourists. Several mountain bike races are hosted May through October with local sponsors including breweries, bike shops, and other businesses. Phil's Trailhead is just 4.2 miles from downtown Bend via the West Bend Trail.

Park and Bike

Many attractions throughout the Deschutes County are appealing for cyclists to drive to, park their vehicles, and then bike around. Crater Lake, 117 miles from Bend, opens the rim road two times per year to cyclists only. These events are highly publicized and hundreds of riders flock to Ride The Rim each year since the first annual ride in 2015. The Cascade Lakes Scenic Byway is a 66-mile scenic route closed to automobiles November through May due to snow, however cyclists take advantage of this route when bikeable - weather permitting. The Three Sisters Scenic Byway is a collection of scenic road cycling routes of Central Oregon. The Central Oregon 500+ and Tour des Chutes rides offer competitive and fun road cycling events in the area.

Bike Culture in Bend

Competitive and fun events in and around Bend, OR draw tourists to the region with bicycles in tow. For those who don't have their own bikes, affordable rental options are available from many bike shops and rental outfitters around town. Consistent wayfinding for bicyclists creates a network of legible pathways that vehicles, pedestrians and cyclists all recognize. It is not unusual for students to show up to school or professionals to arrive at work with their helmet still on their head. Plentiful racks make it easy to bike from point A to point B without worry. These aspects of Bend encourage and normalize biking, making the city very "bicycle-friendly."

Sunriver, OregonThe city of Sunriver is nestled between La Pine and Bend and prides itself on having a large network of bicycle trails for all skill levels and interests. Networks include leisurely paved trails and mountain biking trails. Bikes and biking equipment are very readily available in the city as the town has developed a biking culture that everyone can enjoy.

Biking in Town

The city boasts over 40 miles of well-maintained paved biking trails that weave through resort communities and takes you to various points of interest in the Central Oregon region. The paths found in Sunriver are very family oriented as many of the trail routes are completely separate from motorized vehicle roadways with a barrier of trees and homes in between. This type of trail network is perfect for the casual rider as the routes are well-maintained and straightforward for a leisurely bike ride.

Biking to Surrounding Areas

Apart from the 40 miles of paved leisurely bikeways throughout Sunriver, there are also other bike trail options around the city for more adventurous riders. A popular nearby bike trail is the Benham Falls Loop. A half hour bike ride north brings riders to the Benham Falls trailhead which takes riders on a short, scenic eight-mile ride alongside the Deschutes River and also passes by Dillon Falls.

Park and Bike

The city of Sunriver is located near many scenic areas and destinations. Not only is there a large network of family-friendly bike paths, there are also many opportunities for those who are interested in more challenging outdoor pursuits. Being located in the mountainous Central Oregon region, there are many scenic trails that people can take a short drive to and bike around. The Newberry Crater Rim Loop, Todd Lake Trail, the Swede Ridge Loop, and Sparks and Lava Lakes are popular destinations for mountain biking that is within a reasonable driving distance from Sunriver. These trails allow those wanting a more challenging course a chance to ride and explore the scenic backwoods of Central Oregon.

Bike Culture in Sunriver

There is a long-standing biking culture in the city of Sunriver as the vacation resort community is well-connected with its extensive bicycle trail networks. Biking paths weave throughout the resort and leads to points of interest such as the waterpark, golf course, mall, parks, and picnic areas. Bikes are readily available as there are multiple bike shops with large fleets of all types of bikes for people to rent by the hour, day, or week. Even vacation rental companies in Sunriver have become part of the biking movement. Bennington Properties has become a recognized Bike Friendly Business as they work closely with local bike shops to offer complimentary adult bike at all of their vacation properties. Rental shops prepare bike riders with the proper equipment as shops will include a bike lock, helmet, and trail maps with their rentals. By making sure riders are prepared with the resources that they might need during their bike ride helps create a positive bike culture image as it can make even the most nervous new bike rider more confident. Along with providing biking riding equipment, the city also provides other resources to maintain the biking culture. In the busy summer months, bike patrols monitor the trails to ensure safety on the pathways and a Sunriver Navigator mobile app has been created so riders can navigate the trails with ease. The amount of time and thought that has put into making bike riding safe and enjoyable for everyone is one of the main reasons why Sunriver has become a premier destination for family-friendly riding. The bike culture in

the city continues to grow strong as there is widespread support of biking from community members and homeowners as well as vacationers who come to Sunriver and take advantage of the biking opportunities.

Appendix IV - Literature Review

There is a wealth of ideas and resources for communities that desire to improve their bicycle networks. In researching ideas for development in La Pine, many of the most useful resources found are from the Federal Highway Administration.

Small Town and Rural Multimodal Networks, 2016

This guide applies existing national design guidelines in a rural setting and highlights small town and rural case studies. It addresses challenges specific to rural areas, recognizes how many rural roadways are operating today, and focuses on opportunities to make incremental improvements despite the geographic, fiscal, and other challenges that many rural communities face.

Case Studies in Delivering Safe, Comfortable and Connected Pedestrian and Bicycle Networks, 2016

This report summarizes data collection from 93 projects around the U.S. and shares them with the public to provide inspiration to agencies interested in making improvements to their pedestrian and bicycle networks. The report also provides a detailed breakdown of the types of projects that can be completed to improve network connectivity for pedestrians and bicyclists. Within each project type, there are several examples from locations across the country.

Noteworthy Local Policies That Support Safe and Complete Pedestrian and Bicycle Networks, 2016

Federal Highway Administration developed this guide to provide local and state agencies with tools to complement new infrastructure and program development. The guidebook is accompanied by case studies from across the country that support safe and complete street networks.

Planning For Street Connectivity: Getting from Here to There, written by Kent Butler, Robert G. Paterson, and Susan Handy and published by the American Planning Association.

This report offers research results and studies of the experience of 14 communities' efforts to incorporate greater connectivity, with Raleigh, North Carolina, and Austin, Texas, receiving in-depth studies. Excerpts from the codes of nine communities are included in an appendix. This report supplies planners a wealth of information that enables them to address questions and concerns of residents and local officials about street connectivity.**Complete Street Local Policy Workbook, published by Smart Growth America.**

Based on existing examples from around the country, this workbook aids local leaders in examining their community's needs, vision, and goals. The most successful policies incorporate input from a broad group of stakeholders. The workbook is intended to be used during the development of a city or county Complete Streets policy.

Appendix V - Supporting Plans

Plans drafted by the city of La Pine that support our recommendations include the La Pine Urban Renewable Plan, the City of La Pine Comprehensive Plan, and the La Pine Corridor Plan, as well as ORS 366.514 “Bike Bill.” Themes identified in the plans that support our proposals include economic development and tourism, placemaking, livability, and wayfinding through signage.

These four topics do not exist in silos; they all feed into and affect each other. For instance, signage can be a form of branding and of art, thus contributing to the culture of a community, but is also essential for tourists understanding how to navigate their ways around the region. An important factor that contributes to the livability of a community is the range of transportation options it has. Several studies prove that areas that are more walkable, and more bikeable, have a significantly lower rate of traffic incidents compared to auto-dominated areas. A community that works to lessen auto-dominance and develop other modes of safe, accessible active transportation options is one that is viewed as having a higher level of livability and benefit economically likewise. This section introduces these plans to the reader and then presents the supporting language contained within them.

La Pine Urban Renewal Plan

The city of La Pine adopted a plan in 2014 to guide urban renewal efforts in its downtown district. The plan lists a series of goals, objectives, and projects for the city to implement to facilitate this renewal. The new transit hub, La Pine Central Station, is situated in the middle of the urban renewal boundary. By providing additional and improved bicycle and pedestrian infrastructure in conjunction with the new hub, the city will be able to meet its goals of stimulating economic growth, attracting tourism, increasing livability, and facilitating placemaking.

III. Goals and Objectives

2. Economy

Promote the role of the Area as an energetic community of local businesses that is supported by the residents of both La Pine and outlying areas and by tourists travelling through La Pine.

Objectives

2d. Encourage the creation of a focused area of commercial activity to both strengthen existing businesses and create new business activity.

2f. Identify opportunities to support tourist/recreational related businesses, activities, and growth.

3. Create an Identifiable Town Center as a Hub of Community Activity

Within the Town Center, create a unique identity that strengthens the sense of place, promotes economic development through resident and tourist visits, encourages return patronage, and leverages private investment.

Objectives

a. Establish an identity that promotes a sense of character, providing a community for existing businesses and residents and inviting visitors to bring additional commerce to the Area.
b. Establish gateway features to delineate the Town Center and show pride in the community by providing improved aesthetic features.

c. Improve sidewalks, streetscape, walkways, and bike pathways to provide easier access to the commercial area and to promote activity within the Town Center.

d. Provide business and way-finding signage.

e. Create gathering places that will provide focal points and draw patronage to the Area.

f. Assist in the development of public facilities that expand or enhance the services provided by the Town Center and that serve the interests of the citizens of La Pine and tourist activity in La Pine. (pg. 5)

V. Urban Renewal Projects

A. District Identity/Transportation Improvements

1. Sidewalk improvements: Improve sidewalks within the Area to allow for greater access for pedestrians to the commercials district.
2. Signage: business and way-finding. Support effective signage for businesses and for way-finding to allow citizens and visitors to frequent the commercial area and to know of other opportunities the La Pine community has to offer.
3. Streetscape: Improve the streetscape in the Area to encourage citizens and visitors to visit the Area. Streetscape includes sidewalks, signage, trees, benches, landscaping, public art, archways, bus shelters, lighting and other improvements to enhance the overall appearance of the Area and encourage development and redevelopment of the Area.
4. Bicycle paths: Add bike paths within the Area to encourage greater access to the commercial district.
5. Gathering spaces: Develop gathering spaces to add to the overall positive environment of the Area, encouraging visits to the Area by citizens of La Pine and visitors to the Area.

B. Planning and development assistance programs to support economic development

1. Assist with development of mixed-use area: Encourage development of the mixed-use area by providing amenities to help make the area more desirable.

City of La Pine Comprehensive Plan

The City of La Pine Comprehensive Plan is a land-use regulation document. Its primary purpose is to direct the city's long-term growth by providing a guide for how land will be developed. By planning for the future, it regulates present-day decisions by providing a framework for the desired character and quality of life within the community. Goals and recommended policies contained in the plan call for increased and improved bicycle and pedestrian infrastructure as a means to increase livability and attract tourism, thus stimulating economic activity. By creating a connected system of trails, sidewalks, and multi-modal pathways barriers to recreational opportunities are reduced, encouraging an increase in visitors to the area.

Goal VI Parks, Recreation, and Open Space

Goal 1: Create a system of parks, recreational facilities, and open space areas that provide quality active and passive recreational experiences for all urban area residents.

Policies

- The City shall coordinate the development of new parks and recreation opportunities, and programs with the La Pine Park and Recreation District

- The City shall shall encourage recreational opportunities within the community to acknowledge and encourage use by visitors and tourists to the community.
- Local parks and recreational opportunities tend to be distributed throughout the community without connecting links other than streets; La Pine's citizens desire to connect existing and future parks and recreation facilities by sidewalks, trails, and other mechanisms. Such connections provide greater opportunities for citizens, particularly children, to safely access parks without vehicle use.
- Older neighborhoods and redevelopment areas should consider incorporating parks, trails, and other recreational facilities as a way to enhance to community.

Goal VII Transportation

Goal 1: Create a safe, convenient, balanced, functional and economical transportation system to maximize and extend the life of transportation facilities and improve livability throughout the La Pine community.

- Vehicle use is the primary and most important form of transportation for the majority of La Pines citizens, but increased alternate mode use is essential to the livability of the community and to preserve valuable resources.
- The community, as a whole, will benefit from transportation systems that provide sidewalks, trails, bike lanes and transit amenities to encourage alternate mode use and promote a high level of livability.
- A transportation system that includes alternate modes in addition to vehicle needs is a State requirement. The term "Alternate Mode" includes anything, besides single occupants vehicle, capable of moving people and goods such as rail, pedestrian facilities, bike lanes, air transport, transit, and the like.

Bicycle and Pedestrian Policies

- Encourage pedestrian and bicycle movement as a safe, feasible alternative to the automobile.
- Require all proposed activity centers generating large amounts of traffic to provide safe and convenient off-street bicycle parking space and routes in their design.
- Insure neighborhoods and activity centers, including public loading and pickup areas, are served by pedestrian and bicycle routes.
- Provide curb cuts at all corners, intersections, or locations where bicycle and pedestrian routes and paths intersect with streets.
- Provide paving of pedestrian and bicycle ways where appropriate.
- Improve signs, markings, and safety features on existing bicycle and pedestrian paths.

US 97/La Pine Corridor Plan

The US 97/La Pine Corridor Plan identifies multi-modal and capacity needs for the stretch of US 97 that occurs between 1st and 6th Streets. The route is one of the bounding roads for the La Pine Central Station and is one of the roads we address in our proposals. Written in 2011, it is a pre-cursor the city's Transportation Systems Plan. While many of the recommendations for the route segment have already been implemented, the plan notes that "La Pine is planning for significant industrial and employment growth on the east side of the city during the next twenty years. This growth will further exacerbate the multimodal connectivity and capacity needs near the US97/First Street intersection. This growth will also require multimodal connectivity on city streets that parallel US 97 to provide residents with non-highway options to access their homes

and jobs." Multi-modal connectivity between the La Pine Central Station and places of residency, employment, or recreation that is safe and convenient are at the heart of our proposal.

ORS 366.514 - "Bike Bill" and Use of Highway Funds

Oregon Law dictates through the Bike Bill that any major redevelopment, "requires the inclusion of facilities for pedestrians and bicyclists wherever a road, street or highway is built or rebuilt. It applies to ODOT, cities and counties and requires spending reasonable amounts of their share of the state highway fund on facilities for pedestrians and bicyclists. These facilities must be located within the right-of-way of public roads, streets or highways open to motor vehicle traffic." Therefore, any development around the transit center should include implementation of ADA accessible sidewalks and bike lanes.

References

America Walks. "Benefits of Walking." Retrieved from http://americawalks.org/learning_center/benefits-of-walking-2/

Badger, Emily. "Cyclists and Pedestrians Can End Up Spending More Each Month Than Drivers." Citylab, (2012). Retrieved from https://www.citylab.com/transportation/2012/12/cyclists-and-pedestrians-can-end-spending-more-each-month-drivers/4066/

Bend Citywide Walking and Biking Safety Improvements. (2018, January 24). Retrieved from https://altaplanning.com/ projects/bend-citywide-walking-biking-safety-improvements/

Bend, Oregon Mountain Biking - Sunriver Resort. (n.d.). Retrieved from https://www.destinationhotels.com/sunriver-resort/activities/mountain-biking-bend-oregon

Better Health Channel. "Cycling - health benefits." PDF. Retrieved from https://www.betterhealth.vic.gov.au/health/healthyliving/cycling-health-benefits?viewAsPdf=true

Bicycling. (n.d.). Retrieved from https://traveloregon.com/things-to-do/outdoor-recreation/bicycling/

Bicycle Access: Parking (2017). In 511 SF Bay. Retrieved June 10, 2018, from https://511.org/biking/bicycle/parking

Bicycle Coalition of Greater Philadelphia. "Bicycles are Business: What Research Says About Bicycling's Economic Benefits," (2014). Retrieved from https://bicyclecoalition.org/facts-biking-improves-business/

Big Dog Bikes. (n.d.). Retrieved from https://www.benningtonproperties.com/big-dog-bikes.html

Bricker, S. (2003). Safe Routes for Kids: Bicycle Safety Program Curriculum

(S. Sermet & C. Ciarlo, Eds.). Retrieved May 12, 2018, from https://www.portlandoregon.gov/transportation/article/565224

Buehler, Ralph and John Pucher. "Cycling to work in 90 large American cities: new evidence on the role of bike paths and lanes." Transportation, vol. 39: (2012), pp. 409-432.

Butler, Kent et al. "Planning for Street Connectivity: Getting From Here to There," (2003).

City of Bend. (n.d.). Retrieved from https://www.bendoregon.gov/government/departments/growth-management/transportation-planning-program/multimodal-safety-program/strategic-implementation-plan-for-walking-and-biking

Commuting By Bike (n.d.). In Ada County. Retrieved June 10, 2018, from https://adacounty.id.gov/Commuter-Connection/Tools/Commuting-By-Bike#243542744-overcoming-bike-commuting-challenges

Cycle Oregon. (2017, June 14). Cycle Oregon Spotlight - La Pine – Cycle Oregon. Retrieved from http://www.cycleoregon.com/blog/cycle-oregon-spotlight-la-pine/

Cycle Oregon. (2017, June 14). Cycle Oregon Spotlight - La Pine – Cycle Oregon. Retrieved from http://www.cycleoregon.com/blog/cycle-oregon-spotlight-la-pine/

Department for Transport. "Relationship between Speed and Risk of Fatal Injury: Pedestrians and Car Occupants." Road Safety Web Publication, No. 16 (2010): 5. Retrieved from https://nacto.org/docs/usdg/relationship_between_speed_risk_fatal_injury_pedestrians_and_car_occupants_richards.pdf

Deschutes Community Development South County Plan. PDF. Retrieved from https://www.deschutes.org/sites/default/files/fileattachments/community_development/page/730/south_county_plan.pdf

Deschutes County Bike Guide, Visit Bend. PDF. Retrieved from https://www.visitbend.com/Deschutes-County-Bike-Guide.pdf

Esteve, Harry. "Bicycling contribute $400 million to Oregon tourism, new survey says." Oregon Live (2013). Retrieved from https://www.oregonlive.com/business/index.ssf/2013/05/bicycling_contributes_400_mill.html

Flusche, Darren. "Bicycling Means Business: The Economic Benefits of Bicycling Infrastructure." PDF. League of American Bicyclists, (2009). Retrieved from https://bikeleague.org/sites/default/files/Bicycling_and_the_Economy-Econ_Impact_Studies_web.pdf

Fueleconomy.gov. "How can a gallon of gasoline product 20 pounds of carbon dioxide?" Retrieved from https://www.fueleconomy.gov/feg/contentIncludes/co2_inc.htm

FHWA. "Case Studies in Delivering Safe, Comfortable, and Connected Pedestrian and Bicycle Networks: Volume II," Pedestrian and Bicycle Information Center, (2016). Retrieved from http://www.pedbikeinfo.org/cms/downloads/NetworksReport_Vol2_Dec2016.pdf

Good Practices Guide For Bicycle Safety Education. (n.d.). Retrieved May 12, 2018, from http://www.bendoregon.gov/Home/ShowDocument?id=3091

Health Risks. (n.d.). Retrieved April 27, 2018, from http://guide.saferoutesinfo.org/introduction/health_risks.cfm

Kerr, R. (Photographer). (2017). [Image of photograph]. Retrieved from https://visitcentraloregon.com/central-oregon-stories/eat-drink-stories/bends-blitz/

Kwak, J. (n.d.). Vacationing: Sunriver Bike Parking. In Bicitoro. Retrieved from http://www.bicitoro.com/vacationing-sunriver-bike-parking/

League of American Bicyclists. "Becoming a Bike Friendly Business." Retrieved from https://bikeleague.org/business.

Leinasars, J. (n.d.). Bike repair stations installed near Ohio State recreational facilities. Retrieved from https://www.thelantern.com/2014/04/bike-repair-stations-installed-near-ohio-state-recreational-facilities/

M. (n.d.). Three Rivers. Retrieved from http://www.mapmyride.com/us/three-rivers-or/

Maallyn, & Djstabe. (2012, August 01). Thoughts on Sunriver, Oregon (home of the best

bikeway network in North America). Retrieved from https://bikeportland.org/2012/07/31/thoughts-on-sunriver-oregon-home-of-the-best-bikeway-network-in-north-america-75256

Map of Mountain Biking Trails near Bend, OR | AllTrails (n.d.). In AllTrails. Retrieved June 10, 2018, from https://www.alltrails.com/explore/us/oregon/bend?a[]=mountain-biking

Map of Mountain Biking Trails near La Pine, OR | AllTrails. (n.d.). Retrieved from https://www.alltrails.com/explore?b_tl_lat=44.02911175095576&b_tl_lng=-121.58226013183592&b_br_lat=43.894676229869866&b_br_lng=-121.26811981201172&a[]=mountain-biking

NACTO. "Urban Bikeway Design Guide: Second Edition," (2014). Retrieved from https://nacto.org/publication/urban-street-design-guide/

Next step in the process: Open houses for Neighborhood Greenways. (2018, March 19). Retrieved from http://www.bendbikes.org/next-step-in-the-process-open-houses-for-neighborhood-greenways/

NW15th Neighborhood Greenway Project. (n.d.). Retrieved from http://www.bendbikes.org/nw15street/

ODOT. "U.S. 97: Sunriver Interchange to OR 31 Construction Phase, Region 4: Central Oregon (La Pine, Deschutes), U.S. 97 paving and La Pine streetscape project." Retrieved from http://www.oregon.gov/odot/projects/pages/project-details.aspx?project=18679

Rothermel, Andrew. "Part ¼ - The Current State of the US Obesity Epidemic." Medium, (2017). Retrieved from https://medium.com/@abovebelowhealthfitness/part-1-4-the-current-state-of-the-us-obesity-epidemic-bcaa03acb41e

S. (2016, August 26). Bicycle Friendly AmericaSM. Retrieved from http://www.bikeleague.org/bfa

Safe Route to School National Partnership. "The 6 E's." Retrieved from https://www.saferoutespartnership.org/healthy-communities/101/6Es

Safe Routes to School National Partnership. "Strategic Plan: 2016 - 2021," (2016) PDF. Retrieved from https://www.saferoutespartnership.org/sites/default/files/pdf/03-25-16_stratplan.pdf

Schmitt, Angie. "Four Reasons Cities Can't Afford Not to Invest in Bike Infrastructure." Streetsblog USA, (2014). Retrieved from https://usa.streetsblog.org/2014/01/16/four-reasons-cities-cant-afford-not-to-invest-in-bike-infrastructure/

Sunriver Area Chamber of Commerce. Retrieved from https://www.sunriverchamber.com/Biking

Sunriver / La Pine loop. (n.d.). Retrieved from https://ridewithgps.com/routes/2176487

Sunriver Bike Path Map. (n.d.). Visit Bend. PDF. Retrieved from https://www.visitbend.com/Sunriver-Bike-Path-Map.pdf

The Outdoor Industry Association. "The Outdoor Recreation Economy," (2017). PDF. Retrieved from https://outdoorindustry.org/wp-content/uploads/2017/04/OIA_RecEconomy_FINAL_Single.pdf

The Progress Fund. "The Trail Town Guide – revitalizing rural communities with bike trail tourism." (2017): 36. Retrieved from: https.trailtowns.org/wp-content/uploads/2017/10/TrailTownGuide.2.pdf

Travel Oregon. "Bike Friendly Business Program." Retrieved from http://industry.traveloregon.com/industry-resources/product-development/bike-friendly-business-program/

V. (2016, May 02). Sunriver, Oregon. Retrieved from https://bendoregon365.com/sunriver-oregon/

Village Bike and Ski. (n.d.). Retrieved from http://www.sunriverstyle.com/pedal-the-pathways.html

Walljasper, Jay. “How Bicycling Infrastructure Benefits Non-Bicyclists.” AARP, (2016). Retrieved from https://www.aarp.org/livable-communities/getting-around/info-2016/why-bicycling-infrastructure-is-good-for-people-who-dont-ride-bikes.html.

Wayfinding. (2017, October 09). Retrieved from https://altaplanning.com/services/bicycle-and-pedestrian-wayfinding-design/

Weigand, Lynn, Pd.D., Nathan McNeill, M.U.R.P., and Jennifer Dill, Pd.D. Cost Analysis of Bicycle Facilities: Cases from Cities in the Portland, OR Region. Report. School of Urban Studies and Planning, Portland State University. June 2013. Page 32.

Zimmerman, T. (Photographer). (2012). John Frey, 5th Place, Cat 1 19-39 Bend, Oregon Enduro. [Image of photograph]. Retrieved from https://www.vitalmtb.com/photos/features/2012-Oregon-Enduro-Series-1-Bend,3816/John-Frey-5th-Place-Cat-1-19-39-Bend-Oregon-Enduro,36541/sspomer,2