

# Constraints, Opportunities, and Strategies

*Technical Memorandum*

## MONTANA PEDESTRIAN & BICYCLE PLAN

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**ALTA PLANNING  
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# Constraints, Opportunities, and Strategies

## 1.0. INTRODUCTION

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Walking and bicycling as modes of transportation have been steadily increasing across the country and throughout many of Montana's communities. While the benefits of walking and bicycling are recognized, providing for pedestrians and bicyclists poses many challenges. Large and diverse geographic areas, changing land use and travel patterns, system linkage, limited financial resources, maintenance responsibilities, and other implementation challenges complicate the effort to provide for pedestrians and bicyclists.

This *Constraints, Opportunities, and Strategies Technical Memorandum* outlines strategies aimed at supporting the vision and goals established for the *Montana Pedestrian and Bicycle Plan (Plan)*. Information from the *Existing Conditions Technical Memorandum*<sup>i</sup> was used to identify constraints and opportunities for walking and bicycling in Montana. This review highlighted inhibiting factors and potential means to improve safety, accessibility, and mobility for current and future users of the transportation system. Considering the identified needs, strategies were identified to help achieve the Plan's vision and goals.

## 2.0. RECOMMENDED STRATEGIES

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The *Existing Conditions Technical Memorandum* provided a review of the state of walking and bicycling in Montana as heard from the public, stakeholders, and research, as well as described barriers and challenges to providing for pedestrians and bicyclists. The following section discusses the process used to develop recommended strategies.

### 2.1. Structure for Defining Strategies

The Plan established five goals to help achieve the vision for walking and bicycling in Montana<sup>ii</sup>. The goals serve as guiding statements for what the Plan is intended to achieve. Constraints and opportunities pertaining to each goal were identified based on review of existing conditions. A series of strategies were then developed to support each of the five goals and address the constraints and opportunities. For each of the recommended strategies the following elements are discussed: the purpose of the strategy as it relates to the goal; the roles and responsibilities of implementation partners; and potential resources to support implementation. Each of these elements are further defined as follows.

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<sup>i</sup> *Existing Conditions Technical Memorandum*, Robert Peccia and Associates, November 27, 2018, <https://www.mdt.mt.gov/pubinvolve/pedbike/docs/PedBike-Existing-Conditions.pdf>

<sup>ii</sup> *Vision and Goals Technical Memorandum*, Robert Peccia and Associates, August 09, 2018, <https://www.mdt.mt.gov/pubinvolve/pedbike/docs/Vision-Goals-Memorandum.pdf>

## **Constraints and Opportunities**

Through the public and stakeholder involvement efforts, as well as research conducted to establish the current state of walking and bicycling in Montana, there were many themes captured. Although not inclusive of every constraint and opportunity revealed throughout this planning process, the key issues concerning the current state of walking and bicycling in Montana were outlined as they pertain to each goal.

## **Strategy**

A strategy is an approach to improving walking and bicycling in support of the established goals. Implementation of the strategies will involve a series of more specific activities along with coordination from a variety of partners. Strategies consider the constraints and opportunities to target the most significant issues associated with walking and bicycling in Montana. Strategies provide broad guidance and suggestions to achieve the desired goal that will leverage changes to support walking and bicycling. It is envisioned that the strategies will help inform and direct decision making for implementation partners. The strategies are intended to be implementable over the 20-year planning horizon of this plan but will require cooperative effort and commitment of resources. The following are defined for each strategy, as appropriate:

- **Purpose**: The purpose provides context as to why a strategy is needed or is beneficial in Montana to achieve the desired goal. The purpose also provides insight into how the strategy will improve or benefit walking and bicycling across the state.
- **Roles and Responsibilities**: A variety of agencies and stakeholders may have the resources, jurisdiction, or special expertise necessary to accomplish the recommended strategies. As such, successful implementation of the strategies may require cooperation and effort from multiple entities. Depending on the strategies, roles and responsibilities may fall to a variety of entities, including the Montana Department of Transportation (MDT), the State Legislature, various state and federal agencies, local jurisdictions, stakeholders, and the public. A variety of illustrative activities for implementing the strategy over time are included. These are ideas that may help agencies and other partners implement the strategies. The ideas may not be applicable to all agencies, including MDT. Furthermore, the activities are not intended to be all inclusive, nor are they requirements to implement the strategy. Rather, they are suggestions to consider as agencies look to improve the state of walking and bicycling.
- **Resources**: This information defines resources that may be of use when implementing a recommended strategy. Resources to support implementation include: national programs providing technical support; educational and promotional campaigns; and published guidebooks, manuals, policies that may aid in design of pedestrian and bicycle facilities. Note that the resources may only apply to some situations depending on jurisdictional authority, funding programs, and other implementation considerations.



## Goal 1: Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.

### 2.1.1. Constraints and Opportunities

Pedestrians and bicyclists currently make up a low overall percentage of crashes, serious injuries and fatalities compared to all crashes in Montana. However, when a vulnerable road user such as a pedestrian or bicyclist collides with a motor vehicle, the injuries are often serious for the vulnerable user. Anecdotally, nation-wide pedestrian and bicycle non-injury and property damage only crashes tend to be underreported, adding to the difficulty of assessing and addressing the underlying causes and problem locations to improve safety for non-motorized users.

Between 2012 and 2016, 33 percent of pedestrian-involved fatal and serious injury crashes, and 14 percent of bicycle-involved fatal and serious injury crashes, were alcohol or drug related. In pedestrian crashes more so than bicycle crashes, the non-motorist was often the impaired user rather than the motorist. During this same time period, approximately 30 percent of pedestrian fatalities or serious injuries and 58 percent of bicyclist fatalities or serious injuries occurred at, or were related to, intersections. Of the pedestrian and bicycle crashes resulting in fatal or serious injuries, 38 percent occurred at night and 67 percent occur in urban areas.

#### Constraints:

- Large trucks, passenger vehicles, motorcycles, pedestrians, and bicycles may require different facilities and accommodations which may conflict with each other. For example, accommodations for large trucks may result in reduced safety for pedestrians and bicyclists.
- Rumble strips make the roadway safer for motorists, but when installed on narrow shoulders, they provide less usable area for bicyclists.
- Implementing new facilities in an already built environment can be limited by available right of way, competing needs (ex. parking and bike lanes) and increased costs.
- Limited crash data for all crashes involving pedestrians and bicyclists.

#### Opportunities:

- Safety for all roadway users is a high priority.
- Education and use of new design and technologies at intersections and crossings for pedestrians and bicyclists can improve safety.
- Laws surrounding safe and predictable behavior by motorists, pedestrians, and bicyclists are critical to roadway safety. Lack of understanding, enforcement, or compliance with these laws can decrease safety and become a contributing factor in many crashes involving pedestrians and bicyclists.
- Safety education for all roadway users of all ages about safety at night, operating at intersections, and impairment is needed.

### 2.1.2. Strategies

The following strategies were developed to address the constraints and capitalize on the opportunities identified for **Goal 1: Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.**



**Strategy 1A: Improve safety at intersections through design best practices and new technologies.**

**Resources:**

- Public Rights-of-Way Accessibility Guidelines (PROWAG)
- Manual on Uniform Traffic Control Devices (MUTCD)
- American Association of State Transportation Officials (AASHTO) Guide for Planning, Design and Operation of Pedestrian Facilities
- AASHTO Guide for the Development of Bicycle Facilities
- National Cooperative Highway Research Program (NCHRP) Guide for Reducing Collisions at Signalized Intersections
- National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide
- Federal Highway Administration (FHWA) Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach

**Purpose:**

Intersections are locations where roadway users travel in different directions and have the most potential for conflict. Statewide crash data show that 40 percent of severe pedestrian and bicycle crashes occur at intersections and are most likely to occur in urban areas. Each intersection is unique in terms of traffic volumes, context, crash history, and pedestrian and bicyclist needs. Intersections should be examined on a case-by-case basis to determine if improvements to design can mitigate safety concerns.

**Roles and Responsibilities:**

City, County, and Tribal governments, as well as MDT, all have a role in intersection safety. The public and stakeholders can and should bring perceived issues to the attention of the relevant agency. Improvements may be simple and low-cost efforts such as signing, striping, or adjustments to signal timings. Others may be large capital efforts which may need to be evaluated through transportation and capital improvement planning processes. Agencies may consider less expensive interim projects in advance of more costly reconstruction. The following ideas can be employed, when applicable, by any agency considering intersection design and safety improvements:

- Consider use of leading pedestrian intervals at urban signalized intersections with pedestrian crash history.
- Consider automatic pedestrian phases and/or radar detection as appropriate.
- Consider signal timing analysis when planned work is commensurate with performing signal timing changes.
- Utilize perpendicular curb ramps as a default unless conditions necessitate otherwise.
- Consider curb extensions, where appropriate, to reduce crossing distance and improve visibility of pedestrians.
- Carry bike lanes up to and through intersections through proper design and treatments.
- Consider advanced crossing treatments at unsignalized intersections along major roadways where appropriate.
- Consider intersection designs such as roundabouts and protected intersections where appropriate.
- Update design guidance periodically to incorporate the latest technology and treatments. (See Strategy 1B)
- Consider feasibility of “No Right On Red” signage at urban signalized intersections where high volumes of bicycles and pedestrians are present.



**Strategy 1B: Periodically review and update design guidance for pedestrian and bicycle facilities.**

**Resources:**

- PROWAG
- MUTCD
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- AASHTO Guide for the Development of Bicycle Facilities
- AASHTO Policy on Geometric Design of Highways and Streets
- NACTO Urban Bikeway Design Guide
- NACTO Urban Street Design Guide
- FHWA Separated Bike Lane Planning and Design Guide
- Other publications/research conducted by Institute of Transportation Engineers (ITE), Transportation Research Board (TRB), NCHRP, and FHWA

**Purpose:**

More than half the state’s population resides in an urban area. The majority of transportation-based pedestrian and bicyclist activity also occurs in urban areas. Urban collectors and arterial roadways are often the most direct, but least comfortable routes to walk or bicycle due to higher vehicle speeds and traffic volumes. As vehicle speeds and volumes increase, greater separation from traffic provides for more comfortable and more broadly usable non-motorized facilities. However, the built environment often poses a constraint to implementing separated non-motorized facilities. As such, parallel street networks can also provide options for lower speeds and traffic volumes, and improved comfort for a broad range of users if they have sidewalks, adequate wayfinding, and provide convenient crossing opportunities at major streets.

**Roles and Responsibilities:**

MDT has the responsibility of designing and maintaining the state highway system per state and federal guidelines. Local agencies and jurisdictions may have roadway standards and guidelines for their local facilities. Many communities have developed local transportation plans which identify recommendations to improve the transportation system.

All transportation agencies should periodically review design guidance and subdivision regulations to ensure they represent the most current practices and guidance promoted by AASHTO and others as appropriate. The 2010s have seen rapid evolution in design guidance with a number of new resources being published as well as support for these treatments at the Federal (AASHTO and FHWA) level. As right-of-way needs vary, design flexibility is encouraged to best accommodate competing needs. The following ideas can be employed, where applicable, by any agency when updating standards:

- Consider sidewalk and bike lane widths greater than minimum standards when feasible and appropriate to meet demand.
- Consider the feasibility of buffered or separated bike lane designs on corridors with travel speeds of 30 mph or greater.
- Consolidate driveways and accesses to reduce the number of conflict points for pedestrians and bicyclists.
- Provide boulevards when feasible between sidewalks and the roadway to allow for buffer distance and snow storage.
- Consider requiring construction of appropriate non-motorized infrastructure as part of local development.



**Strategy 1C: Improve safety on rural roadways through widened shoulders.**

**Resources:**

- PROWAG
- MUTCD
- FHWA Small Town and Rural Multimodal Networks Guide
- FHWA Design Guidance Accommodating Bicycle and Pedestrian Travel: A Recommended Approach
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- AASHTO Guide for the Development of Bicycle Facilities
- AASHTO Policy on Geometric Design of Highways and Streets

**Purpose:**

Montana is a large rural state with over 75,000 centerline miles of roadways. MDT maintains approximately 13,000 of those miles, 93 percent of which are rural roadways or highways outside of urban areas. The other 62,000 centerline miles in the state are owned and maintained by various other jurisdictions, most commonly cities and counties. A small portion are also maintained by private entities and various other state and federal agencies. Rural roads and highways connect Montana’s communities and may also facilitate long distance bicycle tourism.

**Roles and Responsibilities:**

It is not feasible for the state, counties, and cities, for a variety of reasons, to widen every rural road or highway to include wide shoulders. State and local agencies should consider the level of pedestrian or bicycle activity that is existing or anticipated on rural roadways and use it in their decision making for capital projects and maintenance planning. For MDT, the *Route Segment Plan*, exists as a guide for shoulder widths on future major rehabilitation and reconstruction projects. The following ideas can be employed, where applicable, by any agency:

- Regularly examine roadways during surface preservation to adjust rumble strip location if feasible.
- Consider retiring “Share the Road” sign deployment in favor of “Bicycles On Roadway” messaging per FHWA *Small Town and Rural Multimodal Networks Guide*.
- Consider requiring development or continuation of non-motorized facilities as part of local development to ensure connectivity in rural areas.
- Consider bicycle travel when planning for shoulder expansion of roadways.
- Consider future growth in design for urban/rural fringe.



**Resources:**

- Montana Code Annotated (MCA)
- Pedestrian and Bicycle Information Center

**Strategy 1D:** *Collaborate across jurisdictions to support changes to traffic laws aimed at improving the safety and predictability of walking and bicycling.*

**Purpose:**

When considering road safety, it is easy to focus solely on the presence of pedestrian and bicycle facilities. As part of a comprehensive approach, the laws and standards by which all users are obligated to operate are also critical factors to safety. Most cities have local code or ordinances regarding pedestrians and bicyclists which often expand upon and are more stringent than state law. Improvements to state law and consistency in local pedestrian and bicycle laws throughout the state could aid in increased safety and predictability for motorists and non-motorists alike.

**Roles and Responsibilities:**

In order to change traffic laws to improve safety and predictability of users, the Montana State Legislature would need to pass new legislation. MDT and other state agencies are limited in their ability to lobby, however they can provide technical expertise when requested. Support from external groups or members of the legislature may help to facilitate legislative action. The following list of ideas are derived from recent legislative changes and efforts underway in a variety of states with some having been previously proposed in Montana. Studies and additional effort will be necessary to customize these ideas for Montana. The following ideas are illustrative of the types of traffic law changes that may improve safety and predictability:

- Solicit support for methods for reducing speed limits on local streets outside of school zones.
- Solicit support for a “safe passing law” aimed at defining lawful behavior by motorists overtaking bicyclists.
- Study emerging technology such as e-bicycles, e-scooters and other electric devices. The 2015 bill that defined electric bicycles as having the same rights and responsibilities as a standard bicycle may not be expansive or nuanced to consider all applications of emerging technology.
- Study and address use of electric mobility devices as modes of transportation, including rights and responsibilities.



**Strategy 1E: Develop and implement non-motorized crossing treatment guidelines.**

**Resources:**

- MUTCD
- NCHRP Report 562 – Improving Pedestrian Safety at Unsignalized Crossings (2006)
- Safety Effects of Marked Versus Unmarked Crosswalks at Uncontrolled Locations (2005)
- NACTO Urban Bikeway Design Guide
- NACTO Urban Street Design Guide

**Purpose:**

Oftentimes, the decision to walk or bike is subject to the user’s ability to safely cross roadways along the desired travel route. A variety of treatments such as crosswalks, flashing signs, refuge islands, and other devices, can be utilized to improve pedestrian safety when crossing roadways. Treatments will provide a variety of experiences depending on application. Guidelines should adequately allow for the provision of a new crossing, but also consider impacts that the crossing will have on safety and capacity of the roadway. Factors include speed, volume, distance to nearest signalized intersection, type of control, and actuation/coordination (if applicable).

No nationally recognized methodology exists to evaluate the context of the crossing with the recommended treatment, though some states and local agencies have developed their own guidance. Treatments may not be applicable under all circumstances and crossings should be examined on a case-by-case basis to determine which, if any, improvements can mitigate safety concerns.

**Roles and Responsibilities:**

MDT and local agencies can develop their own guidelines for pedestrian and bicycle crossing treatments. The following ideas can be employed, where applicable, by any agency:

- Route mid-block shared use paths to existing intersections if nearby.
- Consider adjacent facilities, land use, and existing activity when evaluating non-motorized crossings.
- Consider latent demand of pedestrian and bicycle crossings in addition to the number of people willing to cross at an unsafe condition.
- Consider user comfort in design. Treatments that have higher yielding performance or stop traffic will yield a more comfortable crossing.
- Provide appropriate treatments for crossings of major roadways.



**Strategy 1F: Analyze pedestrian and bicycle crashes and contributing factors to identify potential safety improvements.**

**Resources:**

- MDT Statewide Crash Database
- State and Local Citation and Violation Data
- National Highway Traffic Safety Administration (NHTSA) Countermeasures That Work
- FHWA Office of Safety Proven Safety Countermeasures
- MDT Comprehensive Highway Safety Plan
- Local Community Transportation Safety Plans

**Purpose:**

Infrastructure design, motorist and non-motorist behavioral factors, and environmental factors can all influence the safety of pedestrians and bicyclists. Understanding and identifying underlying safety problems can be difficult due to lack of data from near misses or unreported crashes. However, the available crash data does provide an ample amount of information which can be used to help properly identify appropriate safety countermeasures. Investigation into road system, location, time of day, lighting conditions, month of year, age, user behavior, and other causal factors is needed to help develop crash reduction strategies. Repeat occurrences of a particular crash type or contributing factor may help identify countermeasures proven to address identified trends. However, some crashes are varied in nature and may be the result of unique circumstances and may not be easily mitigated.

**Roles and Responsibilities:**

Crash analysis should be periodically undertaken in every community, possibly as part of a safety plan or as part of a regularly scheduled transportation planning process. The following ideas can be employed, where applicable, by any agency:

- Consider coordinating with current and planned education programs which address impaired drivers to include impaired pedestrians and bicyclists.
- Consider time of day and year (location of sunset and sunrise) in analysis as some crashes may have visibility or environmental issues that are more a contributing circumstance than the built environment.
- Look for common behaviors that could be improved through education programs.
- Look for crash types that could be addressed through updates to design guidance. (see Strategy 1B)
- Consider accuracy and ease of crash reporting and if it can be improved to yield better data.



## Goal 2: Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.

### 2.1.3. Constraints and Opportunities

According to the American Community Survey (ACS), approximately five percent of households in Montana do not have access to a motor vehicle. The ACS also shows that approximately 6.5 percent of Montanans commute to work by walking (5.1 percent) or biking (1.4 percent).

Safety education and encouragement are supported across Montana in many ways such as with local bike ambassadors, Safe Routes to School (SRTS) coordinators, bicycle and pedestrian coordinators, bicycle and pedestrian advisory boards, and through many other organizations. Education and encouragement programs can be multi-faceted and organized by a variety of organizations and agencies.

Environmental conditions, such as weather, can have a significant affect on walking and bicycling rates. Local Missoula data has shown that biking rates are more influenced by weather conditions than walking.

Laws surrounding safe and predictable behavior by motorists, pedestrians, and bicyclists are critical to roadway safety. Lack of understanding of these laws and unsafe operation can be a contributing factor in many crashes involving pedestrians and bicyclists. Enforcement of the laws plays a key role in raising awareness about safety issues, influencing behaviors and social norms, and reinforcing education programs and strategies. Lack of enforcement can reduce compliance and consequently raise safety concerns.

#### **Constraints:**

- Non-motorized usage data is inconsistent and sparse.
- Reaching all transportation system users requires extensive and on-going outreach.

#### **Opportunities:**

- There are already many education and encouragement programs across Montana which encompass a wide-ranging toolbox of initiatives aimed at increasing safety and participation of people walking and bicycling.
- Enforcement is not exclusively for police officers, the community can also play an important role in enhancing traffic safety.

### 2.1.4. Strategies

The following strategies were developed to address constraints and capitalize on the opportunities identified for **Goal 2: Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.**



**Strategy 2A:** *Explore cost effective mechanisms to improve the quality of data on pedestrian and bicycle activity and travel behavior.*

**Resources:**

- NCHRP Report 797: Guidebook on Pedestrian and Bicycle Volume Data Collection
- FHWA Traffic Monitoring Guide – Chapter 4: Traffic Monitoring for Non-Motorized Traffic
- FHWA Exploring Pedestrian Counting Procedures
- MDT Traffic Data Collection Section
- Pedestrian and Bicycle Information Center

**Purpose:**

A lack of data regarding pedestrian and bicycle activity is a common issue when scoping a project and understanding existing trends in travel. Travel surveys and non-motorized count programs can, over time, fill this data gap and provide agencies with greater tools to both understand use and to aid in planning and decision making.

Technology is continuing to improve and is helping to make automated counting technology more affordable and easier to implement. Manual counts should only be collected as a last resort if automated sources of counting are not feasible. Manual counts are more labor intensive and may be more impacted by external factors such as weather and other short-term influences. Longer term automated counters allow better insight into actual use and short-term spikes or depressions in use can be separated from longer duration averages. Comprehensive count data can help inform all stages of a proposed project from planning to design and safety analysis.

**Roles and Responsibilities:**

Data collection at all levels is important to support transportation decision making. Non-motorized travel surveys and count programs can be implemented at the state, Metropolitan Planning Organization (MPO), or community level. The following ideas can be employed, when applicable, by any agency considering improvements to data quality and availability:

- Encourage statewide, MPO, or community level travel surveys and standardized non-motorized data collection programs to gauge local transportation habits and establish trends over time.
- Require traffic studies to collect data on pedestrians and bicyclists during scheduled vehicle counts.
- Explore use and/or activation of software in traffic signals that can count pedestrians and bicyclists.
- Expand existing traffic count databases to include data on pedestrian and bicycle activity as data becomes more available.
- Establish local count programs that can be undertaken, ideally, with permanent or movable automated counters.



**Strategy 2B: Improve and increase safety education and encouragement program efforts for pedestrians, bicyclists, and motorists.**

**Resources:**

- Pedestrian and Bicycle Information Center
- National Center for Safe Routes to School
- United States Department of Transportation (USDOT) – Encourage and Promote Safe Bicycling and Walking
- FHWA Pedestrian and Bicycle Education and Outreach
- MDT Bicycles and Pedestrians in Montana

**Purpose:**

Safety education and encouragement programs encompass a wide-ranging toolbox of initiatives aimed at increasing safety and participation of people walking and bicycling. Implementation of these programs helps ensure safe and lawful interactions between motorists and non-motorists. Programs should be periodically reviewed for effectiveness and enhanced or replaced over time to continue to support safety education and encourage more pedestrian and bicycle activity.

**Roles and Responsibilities:**

State and local agencies, stakeholders and the public all play a role in the existing assortment of educational and encouragement programs available throughout the state. The following ideas can be employed, where applicable, by any agency:

- Consider prioritizing pedestrian and bicycle education and encouragement.
- Focus safety education on crash contributing factor analysis such as being seen at night, operating safely in intersections, among others. (See Strategy 1 F)
- Include pedestrian and bicycle safety in roadway education media campaigns.
- Support promotion of children’s education and safety training as part of Elementary curriculum.
- Coordinate education and encouragement campaigns among agencies to focus on underserved and disadvantaged Montana communities.
- Enhance state driving test to include improved pedestrian and bicycle education in driver training.
- Provide information on parallel alternative route choice on low volume/low speed roadways.
- Support enforcement of pedestrian and bicycle traffic laws for all roadway users.
- Share information with the public and appropriate agencies on various safety improvements, new technologies, and changes in traffic control methods.
- Consider support for requirements to re-test drivers for license renewals at regular intervals to stay up to date on current laws and regulations.
- Consider providing traffic diversion programs for people cited for traffic violations as opportunities for education.



**Strategy 2C:** Provide ongoing training programs for transportation engineers and planners focused on pedestrian and bicyclist needs and accommodations.

**Resources:**

- AASHTO Joint Technical Committee on Non-Motorized Transportation
- Montana Statewide Bicycle and Pedestrian Coordinator
- Local Bicycle and Pedestrian Coordinators
- Association of Pedestrian and Bicycle Professionals – Webinar Series
- Pedestrian & Bicycle Information Center – Webinars
- FHWA Safety office – Webinar Information
- National Highway Institute (NHI)

**Purpose:**

There are a variety of resources available for planning, design, and development of pedestrian and bicycle facilities. Some of the most commonly used resources are published by AASHTO, FHWA, NACTO, TRB, ITE, and the United States Access Board (USAB). The MDT *Roadway Design Manual* includes provisions for design and construction of non-motorized facilities and some local municipalities have developed their own guidance for their respective communities. However, design and planning guidance are constantly changing, especially as walking and bicycling become more common transportation modes and new treatments are proposed, studied, and approved. Staying up to date with current practices and emerging technologies can help promote safer and more frequent pedestrian and bicycle travel.

**Roles and Responsibilities:**

Successfully planning and designing for safe facilities for walking and bicycling is something that must occur in all jurisdictions. The following ideas can be employed, where applicable, by any agency:

- Encourage local agencies or partner organizations to host webinars and invite area design professionals and other interested parties to attend.
- Host official trainings such as NHI courses and explore other types of training that may be less expensive to conduct.
- Encourage engineers and design professionals to seek continuing education in pedestrian and bicycle facility design.
- Make resources such as webinars and published materials available on a variety of topics related to pedestrian and bicycle facility design and safety.



## Goal 3: Preserve and maintain pedestrian and bicycle transportation facilities.

### 2.1.5. Constraints and Opportunities

Montana is one of five states where all public roads are open to bicyclists. Communities also often have their own non-motorized transportation systems that include trails, shared use paths, sidewalks, on street bicycle facilities, parks, and off system corridors. Approximately 56 percent of Montanans live in urban areas where pedestrian and bicycle infrastructure primarily consist of sidewalks, ramps, crosswalks, refuge islands, signals, bike lanes, and shared use paths. Preservation and maintenance of these facilities are inconsistent across the state.

Preservation and maintenance of walking and bicycling facilities is a costly but critical component of providing non-motorized accommodations. For example, preservation and maintenance needs (in 2015) to restore fair and poor condition portions of the approximately 190 miles of existing shared use paths within MDT right-of-way to “good” condition totaled approximately \$310,000, a onetime cost. The annual costs for general maintenance activities of these shared use paths was just under \$983,000, which is mostly snow removal costs. At the local level, many Montana communities have their own network of sidewalks, shared use paths, on-street bikeways, and bike routes. City, county, and tribal governments are responsible for maintenance of bicycle and pedestrian facilities within their respective jurisdictions, although some require property owners to maintain the sidewalk abutting their property line.

#### **Constraints:**

- Montana’s transportation system is extensive. It is owned and maintained by multiple entities.
- Funding for pedestrian and bicycle facility preservation and maintenance activities comes from a number of sources, including private, local, state, and limited federal (pavement preservation only). Many jurisdictions have trouble meeting their maintenance obligations due to lack of funding, limited personnel, and insufficient equipment. Deferred maintenance of pedestrian and bicycle facilities competes with capital projects for scarce local dollars.
- While the federal fuel tax has remained the same since 1993, the cost of building and maintaining infrastructure has increased, resulting in gaps between available funds and needs.

#### **Opportunities:**

- On-street bikeways are typically maintained along with the remainder of the roadway.
- Sidewalks are typically maintained by a combination of local ordinances governing snow removal, vegetation management, and eventual sidewalk replacement.
- Partnerships between local agencies and organizations can improve network maintenance beyond the capabilities of any one entity.
- The popularity of some areas of the state for various tourism activities can influence maintenance efforts, including when and where to prioritize early season shoulder sweeping and shared use path maintenance efforts.

### 2.1.6. Strategies

The following strategies were developed to address the constraints and capitalize on the opportunities identified for **Goal 3: Preserve and maintain the pedestrian and bicycle transportation system.**



**Strategy 3A: Develop a consistent approach for preservation and maintenance of pedestrian and bicycle facilities.**

**Resources:**

- FHWA Course on Bicycle and Pedestrian Transportation: Bicycle Facility Maintenance
- FHWA A Guide for Maintaining Pedestrian Facilities for Enhanced Safety

**Purpose:**

Montana’s transportation system is extensive and is owned and maintained by multiple entities. There are a variety of activities that are essential for preservation and maintenance of pedestrian and bicycle facilities including snow removal, striping, sweeping, repairs, and pavement preservation. Although the varied jurisdictions may help distribute the funding responsibilities, gaps or inconsistencies in facility maintenance may result. As with users of other modes, users of walking and biking facilities desire a seamless system with high-quality facilities, regardless of ownership. Many communities, as well as the state, have established schedules for completing routine maintenance activities which helps to ensure facilities are properly maintained in an efficient manner. In general, there is a common desire for a consistent approach by both the public and local jurisdictions to preserve and maintain the pedestrian and bicycle system.

**Roles and Responsibilities:**

Preservation and maintenance responsibilities for pedestrian and bicycle facilities affect a number of parties depending on facility type and location. Responsibilities for on-street facilities generally lies with the jurisdiction that maintains the roadway. For trails and some separated shared use paths, responsibility may fall to local Parks and Recreation Departments. Some sidewalk maintenance, such as snow removal, may be the responsibility of the property owner. Coordination among entities is critical to establish and share best practices. The following ideas can be employed as appropriate by all agencies that have preservation and maintenance responsibility:

**Routine Maintenance:**

- Sweep shoulders and bike lanes in urban areas first in the spring.
- Sweep sidewalks and shared use paths that collect debris over the winter.
- Consider sweeping of shoulders on roadways when special bicycling events are planned in the area, as feasible.
- Plow bike lanes and shoulders as part of overall plowing operations.
- Enforce local sidewalk snow removal by property owners.
- Restripe bike lanes and shoulders in coordination with existing striping activities.

**Capital Maintenance:**

- Crack seal / slurry seal asphalt shared use paths in a timely fashion to prolong surface life and reduce rehabilitation or reconstruction expenses.
- Inspect and perform spot repairs where safety issues arise.
- Resurface the full width of roadway rather than leaving a pavement seam in the shoulder.



**Strategy 3B: Explore innovative viable funding alternatives for maintenance of pedestrian and bicycle facilities.**

**Resources:**

- FHWA Course on Bicycle and Pedestrian Transportation: Bicycle Facility Maintenance
- FHWA A Guide for Maintaining Pedestrian Facilities for Enhanced Safety
- Local Maintenance Plans

**Purpose:**

While miles of pedestrian and bicycle facilities have grown in recent years, both as part of roadway projects and as standalone projects, funding for maintenance and preservation of these facilities has decreased or remained mostly stagnant. This results in increasing gaps between needs and available funding. Over time, deferred pavement preservation and other maintenance of pedestrian and bicycle facilities competes with capital projects for scarce local dollars. Many jurisdictions have trouble meeting their maintenance obligations due to lack of funding, limited personnel, and insufficient equipment.

**Roles and Responsibilities:**

Funding for pedestrian and bicycle facility maintenance activities can come from a number of sources, including private, local, state, and federal. All parties (governmental and private) can play a role in applying for grants and securing funding from non-traditional sources. The following ideas can be employed as appropriate by agencies that maintain pedestrian and bicycle facilities:

- Review annual budgets and explore mechanisms for creating dedicated annual funding for various types of maintenance.
- Design and construct pedestrian and bicycle facilities to minimize long-term maintenance including locating them outside snow plow debris zones and constructing shared use paths using durable materials.
- Pursue crowd-sourced programs to provide some services such as “adopt a trail” programs.
- Pursue funding from the Transportation Alternative (TA) Program maintenance set-aside for pavement preservation maintenance projects.
- Consider partnerships to create maintenance endowments which can provide sustainable annual funding dedicated towards maintenance.
- Explore the use of alternative funding mechanisms such as impact fees, improvement districts, tax increment financing, or others.



## Goal 4: Improve mobility and accessibility for all.

### 2.1.7. Constraints and Opportunities

For many Montanans, walking and bicycling represent an important opportunity for mobility. These modes serve a key function in expanding the social and educational opportunities available to many segments of the state’s population who are frequently transportation disadvantaged. In Montana, approximately 22 percent of residents are under 18 years of age while nearly 17 percent are 65 or older. Approximately 13.5 percent of residents identify as persons with a disability, 42 percent of which are 65 or older.

As of 2018, approximately 16 percent of pedestrian signals and curb ramps in MDT right-of-way were fully compliant with the Americans with Disabilities Act (ADA) and had no identified barriers to accessibility. Approximately 34 percent of curb ramps and pedestrian signals had partial barriers noted, while 50 percent had multiple barriers. MDT is working toward full compliance with ADA requirements, however, some existing facilities may already be upgraded to the greatest extent feasible given existing physical constraints or network connectivity needs. Many local jurisdictions have also developed ADA transition plans for their facilities in public rights-of-way. These plans include a list of physical barriers, recommendations for improvements, priority scheduling for barrier removal, and a plan for achieving ADA compliance.

Pedestrian and bicycle facilities should be proactively addressed in land-use and development decisions, in order to ensure connectivity and accessibility and to avoid costly upgrades or expansions of the non-motorized transportation system.

#### **Constraints:**

- Mobility and accessibility gaps exist, and the built environment does not always meet current design guidelines.
- Inconsistent design and maintenance practices may adversely affect accessibility and mobility.
- Given constrained resources, competing needs of multiple user types, and the built environment, finding feasible and implementable solutions is difficult; coordination is necessary to find a solution that creates accessibility for all.

#### **Opportunities:**

- Understanding the state’s share of older, younger, disabled, and minority populations helps plan for a transportation system that supports people who may require additional accommodation to safely walk and bike.
- The state and local communities have adopted ADA Transition Plans which identify a variety of methods to ensure ADA compliance and incorporate the latest design guidance.

### 2.1.8. Strategies

The following strategies were developed to address the constraints and capitalize on the opportunities identified for **Goal 4: Improve mobility and accessibility for all.**



**Resources:**

- PROWAG
- Americans with Disabilities Act Accessibility Guidelines (ADAAG)
- MUTCD
- AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities
- AASHTO Guide for the Development of Bicycle Facilities
- AASHTO Policy on Geometric Design of Highways and Streets
- State and Local ADA Transition Plans
- MDT Roadway Design Manual
- FHWA Context Sensitive Design/Context Sensitive Solutions

**Strategy 4A:** *Improve accessibility and mobility using current design guidance and modern technology when building, upgrading, and retrofitting pedestrian and bicycle facilities.*

**Purpose:**

Under Title II of the ADA, state and local governments must assure all their physical assets are ADA compliant including both existing and newly-constructed facilities. Features within roadway right-of-way include elements such as curb ramps, sidewalks, crosswalks, refuge island crossings, and pedestrian activated signal systems. In 2011, the USAB published Proposed Guidelines for Pedestrian Facilities in the Public Right of Way (PROWAG). The PROWAG is considered best practice and addresses accessibility for the vision-impaired and pedestrians who use mobility devices at street crossings, access to transportation, and constraints posed by roadway design practices, slope, and terrain.

Design guidance at all levels has evolved rapidly in recent years and may not be a natural part of the roadway design process. Flexible design that achieves safe and inclusive roadways may require additional training of design staff, support from local agencies and MDT, and endorsement of outside design guidance from traditional sources.

**Roles and Responsibilities:**

All public entities must follow the Americans with Disabilities Act. Additionally, MDT has adopted the draft PROWAG. The following ideas can be employed as appropriate by all agencies:

- Continue implementation of ADA transition plans.
- Integrate PROWAG into all appropriate roadway projects so that when adopted, projects will not be in need of retrofit.
- Promote use of best practices such as perpendicular curb ramps over diagonal ramps.
- Provide and/or expand training for engineering staff on universal design principles. (see Strategy 2C)
- Adopt the AASHTO *Guide for the Development of Pedestrian and Bicycle Facilities* as official design resources.
- Update design guidelines frequently as new resources and guidance becomes available.
- Maintain a comprehensive list of approved design resources from organizations such as AASHTO, TRB, ITE, NCHRP, NACTO and others.
- Provide non-motorized transportation technical assistance to communities in need.
- Provide appropriate work zone access for pedestrians and bicyclists.



**Resources:**

- National Center for Safe Routes to School
- Safe Routes to School National Partnership
- Local SRTS Programs
- Local Long-Range Transportation Plans
- Local Complete Streets Policies
- US Government Accountability Office: Transportation-Disadvantaged Populations: Federal Coordination Efforts Could Be Further Strengthened

***Strategy 4B: Provide safe access to schools and areas with significant senior, minority, and low-income populations.***

**Purpose:**

Walking and bicycling are important mobility opportunities for the segments of the state’s population who are frequently transportation disadvantaged such as seniors, minority, and low-income individuals and families. In Montana, minority populations make up 8.4 percent of the population. Poverty and race/ethnicity are often correlated with over 35 percent of Montanans who identify as American Indian or Alaska Native living in poverty. Households in lower income brackets tend to rely more on non-motorized transportation. Providing pedestrian and bicycle facilities in communities where these populations are prevalent helps ensure mobility and promotes transportation equity for all Montanans.

**Roles and Responsibilities:**

Transportation to schools is not typically part of the school siting process, and it is may not be thoroughly assessed in local transportation planning. Local and state agencies and schools need to consider the transportation needs of the under-served populations. The following ideas can be employed as appropriate by all agencies:

- Consider proximity of nearby schools, senior centers, low income populations, and disabled populations in project development and plan/design facilities accordingly.
- Solicit public comment by disabled stakeholders, school administration, parents, and others in project development.
- Consider creating a process by which the public can report access difficulties and notify the appropriate local agency.
- Consider developing an annual budget to execute adjustments to pedestrian signal timing, small sections of missing sidewalk or adding isolated curb ramps.
- Work with local schools and stakeholders on grants that can subsidize SRTS and other type improvements such as the TA program.



**Goal 5: Support walking and biking as important transportation modes for access to destinations, economic vitality, and health.**

**2.1.9. Constraints and Opportunities**

Montana has one of the highest mode shares by walking and bicycling in the nation. Approximately 6.5 percent of people are estimated to commute to work by walking (5.1%) or bicycling (1.4%). Nearly 85 percent of commuter’s travel by vehicle while 6 percent work from home and less than 1 percent use public transportation.

There are many benefits from walking and bicycling at the individual, household, and community levels. Benefits include increased physical activity, reduced healthcare costs, lower transportation costs for households, and improved air quality. As more people walk and bike, the benefits increase as well. Targeting non-motorized improvements to areas with a high potential for walking and bicycling trips, or those areas likely to have shorter trip lengths, can help to leverage these benefits.

Montana’s residents are statistically some of the most active individuals in the country. According to the online survey, respondents walk and bicycle the most for leisure/fitness purposes (84 and 67 percent, respectively). Approximately 22 percent of respondents walk and 34 percent bicycle for commuting purposes either daily or weekly, while 37 percent of respondents walk and 34 percent bicycle for shopping, errands, or dining daily or weekly.

Over 60 percent of the state’s population is overweight and approximately 25 percent of the adult population is considered obese. Although obesity threatens the health and well-being of all people, it disproportionately affects low income families and minorities. For many Montanans, walking and bicycling represent an important opportunity for mobility.

Many communities have increased investment in their own local walking and bicycling systems which may be used for a variety of transportation and recreation purposes including hiking and mountain biking. For many, these systems help increase tourism and economic development opportunities.

**Constraints:**

- Funding and personnel for pedestrian and bicycle education, enforcement, encouragement, and infrastructure are limited at the federal, state, and local levels.
- While multiple potential funding sources exist, there are still significant gaps as many are limited in amount, restricted to specific eligibilities and requirements, and are allocated on a competitive basis.
- Competing needs of roadway users as well as space constraints within the built environment present challenges for providing walking and bicycling infrastructure.

**Opportunities:**

- Both the state and local governments have adopted policies and guidelines that are related to or are meant to guide development of pedestrian and bicycle facilities. The state’s long-range transportation plan, *TranPlanMT*, identifies transportation needs, evaluates public and stakeholder issues and priorities, assesses future concerns, and establishes policy goals and strategies to achieve Montana’s overall transportation vision. The plan guides MDT’s efforts to plan, manage, and preserve a safe and efficient transportation system.

- At the local level, many communities have developed multi-modal transportation plans specific to their planning areas. These plans typically include visionary networks for future pedestrian and bicycle transportation systems to help identify areas for future investment.
- Focus investment in pedestrian and bicycle travel in and around urban areas with high potential for short trips and to leverage the many benefits that come with increased walking and bicycling.
- Implementing local and governmental policies that address and incorporate pedestrian and bicycle infrastructure as part of local development and subdivision permitting can assist in providing safe, continuous infrastructure for all users.

### **2.1.10. Strategies**

The following strategies were developed to address the constraints and capitalize on the opportunities identified for **Goal 5: Support walking and biking as important transportation modes for access to destinations, economic vitality, and health.**



**Strategy 5A: Improve community health and economic vitality by promoting walking and bicycling.**

**Resources:**

- Department of Public Health and Human Services Montana Nutrition and Physical Activity Program
- Montana Rural Health Initiative
- Complete Streets Programs
- SRTS Programs
- MUTCD
- Montana Department of Commerce (MDOC)
- Tax Increment Financing

**Purpose:**

Despite being one of the nation’s most active states, Montanans have grown substantially more obese in recent years. From 1990 to 2017, the percent of Montana residents who are obese has risen from 8 percent to over 25 percent. There is growing awareness of the acute link between the built environment and community health. Communities without attractive and safe facilities to walk and bicycle limit access to physical activity and, as a result, tend to exhibit higher rates of obesity and other non-activity related illnesses. Good walking and bicycling facilities that are attractive, provide access to parks, trails and other recreational amenities are a key component of healthy communities. These networks provide close-to-home opportunities for physical activity. Education and encouragement programs can also help promote walking and bicycling as healthy modes of transportation.

**Roles and Responsibilities:**

Access to schools, parks and recreational destinations should be a key component of local transportation planning efforts. The following ideas can be employed by agencies as applicable:

- Support health agencies in promoting walking and bicycling as part of a healthy lifestyle for children and adults.
- Require sidewalks and parks be constructed with new developments in both cities and counties.
- Connect parks and open spaces in communities with pedestrian, bicycle, and trail networks.
- Support and promote local and regional trail system destinations.
- Ensure schools have adequate safe routes that serve the surrounding neighborhoods.
- Adopt local pedestrian, bicycle, and trail wayfinding programs.
- Consider adopting policies and procedures that support mobility for all users.
- Reduce sprawl and promote compact development.



**Resources:**

- Pedestrian and Bicycle Informational Center: Funding
- FHWA Pedestrian and Bicycle Funding Opportunities
- MDT Bicycle & Pedestrian Coordinator

***Strategy 5B: Explore innovative viable funding alternatives for pedestrian and bicycle transportation.***

**Purpose:**

Funding has historically been, and is likely to continue to be, a challenge for developing and maintaining walking and bicycling facilities, developing and delivering new programs, and employing education and encouragement efforts. No agency alone has sufficient funding or resources to implement and maintain transportation networks to the levels desired. Successful communities have found that leveraging a variety of funding sources and creating partnerships is the most effective in providing for non-motorized transportation.

**Roles and Responsibilities:**

Each community has a different mixture of staff capacity, local interest, partnering organizations, and needs. As such, no single model of funding is applicable to every community. MDT's Bicycle and Pedestrian Coordinator is a resource for information on federal funding and technical support. The following ideas may be employed by MDT and local agencies as appropriate:

- Pursue new funding opportunities for non-motorized projects, programs, and maintenance. These opportunities can take a variety of forms from transportation districts, bonds, improvement districts, or general fund set asides.
- Continue to make 100 percent of TA funding available for eligible activities and avoid transferring funds to other programs.
- Ensure pedestrians and bicyclists are considered in all roadway reconstruction, rehabilitation, and new construction projects.
- Consider creating local, dedicated funding sources for implementation of non-motorized projects within local jurisdictions.



**Resources:**

- MDT Bicycling the Big Sky Map
- MDOC
- MDT Bicycle Touring – Bicycling Montana’s Highways
- FWP Recreational Trails Program
- Small Town and Rural Multimodal Networks Planning and Design Guide
- FHWA Federal Lands Access Program (FLAP)

**Strategy 5C:** Support access to recreational, historic, cultural, downtown, and scenic destinations for improved tourism and economic vitality.

**Purpose:**

Montana has a diverse assortment of recreational, historic, cultural and scenic destinations available to visitors and residents alike. Often these destinations are places where people may be more motivated to walk and bike. Access within and to these types of destinations often creates opportunities for partnerships with various federal, local and state agencies and organizations in addition to some unique funding sources.

**Roles and Responsibilities:**

Destinations that attract walking and bicycling activity occur on some form of public land and connections to these areas may cross multiple jurisdictions and agencies. The following ideas can be employed as appropriate by all agencies:

- Study feasibility of dedicated facilities that can serve pedestrian and bicycle traffic to destinations in reasonable proximity to a local community.
- Pursue treatments for roadways that provide access to recreational destinations. (See Strategy 1C)
- Explore funding sources such as FHWA FLAP if connecting local communities to national forest or other federal lands.



**Resources:**

- AASHTO – US Bicycle Routes

***Strategy 5D: Evaluate criteria that ensures safety and meets relevant guidelines for bicycle route identification.***

**Purpose:**

Multiple organizations and agencies share an interest in the identification of bicycle routes for local use and long-distance travel. Pedestrian and bicycle transportation needs vary across the state and have different contexts, preferences, and stakeholders. Many highways, for example, have wide shoulders for bicycle use while others may have narrow or non-existent shoulders combined with high vehicular travel speeds, high volumes, and/or the presence of heavy vehicles. Some of the most popular highways in the state for bicyclists are the least compatible and least suitable from a design perspective. At the local level, some roadways may be more suited for bicycle travel depending on available facilities, vehicle speeds and volumes, and anticipated user types. These factors should all be considered when identifying preferred bicycle routes.

**Roles and Responsibilities:**

Bicycle routes may contain sections of state, county and local roadways as well as off-highway elements. The following ideas can be employed by all agencies as appropriate:

- Use ASSHTO guidance to define criteria that qualify a route for designation as a bike route.
- Work across jurisdictions to determine safest routing for proposed bike routes.
- Coordinate existing and future bicycle usage into future versions of MDT's *Route Segment Plan*.
- Study and inventory options for long distance bicycle touring.



**Strategy 5E: Improve administrative efficiency, consistency, and coordination for pedestrian and bicycle transportation.**

**Resources:**

- Local Transportation Plans and Growth Policies
- MDT Statewide Transportation Improvement Program
- State and Local Bicycle and Pedestrian Coordinators
- MDOC
- Montana Department of Health and Human Services

**Purpose:**

Across the state, communities deal with a variety of challenges in supporting walking and bicycling. Pedestrian and bicycle projects have different contexts, stakeholders, sophistication of design professionals, and needs depending on the community. Additional challenges with consistency and coordination occur when projects cross or are near jurisdictional boundaries. Coordination between appropriate jurisdictions and departments is needed to ensure a consistent approach to providing for walking and bicycling.

**Roles and Responsibilities:**

This strategy is aimed at improving the efficiency, consistency, and coordination between decision makers, such as planning departments, engineers, and elected officials. All entities have a role in ensuring an efficient and consistent approach to considering walking and bicycling modes. The public can assist in this effort by sharing local concerns and providing suggestions to local governments regarding improvements that are important to the community. The following ideas can be employed by state and local decision makers as appropriate:

- Review project scoping process to ensure it accurately accounts for potential pedestrian and bicycle facilities (identify facilities in local plans, review nearby destinations and origins for non-motorized travel, and consider public feedback).
- Ensure local transportation plans capture the needs and vision of local the community.
- Consider local transportation plans when developing non-motorized projects.
- Consider revising development standards and land use decision making criteria to accommodate local pedestrian and bicycle needs.
- Work to improve consistency and coordination among state and local agencies regarding maintenance.

## 3.0. SUMMARY AND NEXT STEPS

The *Montana Pedestrian and Bicycle Plan* lays out an ambitious vision and goals for the future of walking and bicycling in Montana. A series of strategies are recommended to support the identified goals. While these strategies may appear to be presented individually, many are interconnected and will benefit from coordination between a variety of organizations and all levels of government. This section provides a summary of the recommended strategies and key considerations for successful implementation.

### 3.1. Summary of Recommended Strategies

#### *Goal 1: Reduce pedestrian and bicyclist fatalities and serious injuries in support of Vision Zero.*



- Strategy 1A:** Improve safety at intersections through design best practices and new technologies.
- Strategy 1B:** Periodically review and update design guidance for pedestrian and bicycle facilities.
- Strategy 1C:** Improve safety on rural roadways through widened shoulders.
- Strategy 1D:** Collaborate across jurisdictions to support changes to traffic laws aimed at improving the safety and predictability of walking and bicycling.
- Strategy 1E:** Develop and implement non-motorized crossing treatment guidelines.
- Strategy 1F:** Analyze pedestrian and bicycle crashes and contributing factors to identify potential safety improvements.

#### *Goal 2: Educate, encourage, and promote safe and responsible travel practices of motorists, pedestrians, and bicyclists.*



- Strategy 2A:** Explore cost effective mechanisms to improve the quality of data on pedestrian and bicycle activity and travel behavior.
- Strategy 2B:** Improve and increase safety education and encouragement programs for pedestrians, bicyclists, and motorists.
- Strategy 2C:** Provide ongoing training programs for transportation engineers and planners focused on pedestrian and bicyclist needs and accommodations.

#### *Goal 3: Preserve and maintain pedestrian and bicycle transportation system.*



- Strategy 3A:** Develop a consistent approach for preservation and maintenance of pedestrian and bicycle facilities.
- Strategy 3B:** Explore innovative viable funding alternatives for maintenance of pedestrian and bicycle facilities.

#### *Goal 4: Improve mobility and accessibility for all.*



- Strategy 4A:** Improve accessibility and mobility using current design guidance and modern technology when building, upgrading, and retrofitting pedestrian and bicycle facilities.
- Strategy 4B:** Provide safe access to schools and areas with significant senior, minority and low-income populations.

*Goal 5: Support walking and biking as important transportation modes for access to destinations, economic vitality, and health.*



- Strategy 5A:** Improve community health and economic vitality by promoting walking and bicycling.
- Strategy 5B:** Explore innovative viable funding alternatives for pedestrian and bicycle transportation.
- Strategy 5C:** Support access to recreational, historic, cultural, downtown, and scenic destinations for improved tourism and economic vitality.
- Strategy 5D:** Evaluate criteria that ensures safety and meets relevant guidelines for bicycle route identification.
- Strategy 5E:** Improve administrative efficiency, consistency, and coordination for pedestrian and bicycle transportation.

## 3.2. Implementation

It will take time, commitment, and multiple jurisdictions and stakeholders to implement the recommended strategies. Investment in safety, new infrastructure, improved maintenance of non-motorized facilities, and development of programs that educate and encourage residents to walk or bike are necessary to improve the state of walking and bicycling in Montana. No single source of funding will be sufficient to fulfill the strategies in this Plan, nor can a single entity successfully carry out all recommended strategies.

Federal, state, county, city, and tribal government agencies, as well as stakeholders and the public all play an important role in achieving a pedestrian and bicycle friendly Montana. The different agencies may be involved in any number of phases of pedestrian and bicycle improvements including project development, funding, implementation, maintenance, or education. Input from the public and stakeholders helps to identify the needs of communities. Depending on the needs of the community, funding assistance, design support, or general guidance may be needed from state and other agencies. Cooperation and coordination between all agencies to ensure consistency of educational information, design, and maintenance is crucial to successful implementation.

### 3.2.1. Funding and Resources

The state of funding availability and programs is constantly changing. Changes can occur due to the passage of a new federal transportation bill, or at the local level where projects may be creatively funded through evolving sources, which may include voter approved initiatives. What is clear is that in order to make Montana and its communities more pedestrian and bicycle friendly, it will be necessary to invest in new infrastructure, improved maintenance, and programs that educate and encourage users. Unfortunately, current funding levels are unable to keep pace with identified needs. The lack of adequate funding requires state and local governments to make decisions about how best to focus their resources.

Given constrained resources, it can be challenging to find a solution which accommodates the needs of all transportation users and the public at large. The competing needs of multiple user types and the built environment makes finding feasible and implementable solutions difficult. Consultation and coordination among agencies, local jurisdictions, stakeholders, and the public is conducted to help identify needs and determine the best solutions within the confines of the project. Using state and local transportation planning processes to establish goals and identify projects can be an effective way of managing limited funds to provide a transportation system that benefits all users to the greatest extent possible.

### **3.3. Additional Considerations**

This section provides additional considerations that MDT, other agencies, and organizations can take to improve walking and bicycling in Montana. While there is no single formula to successful implementation, the following can apply to the majority of the ideas and may serve as a starting point, or a philosophy to aid in success.

#### **Identify Issues**

It is important to frequently evaluate the built environment from the perspective of pedestrian and bicycle safety. Small fixes can often be addressed on a case-by-case basis. More substantial projects or retrofits will likely require the project to be identified and pursued as part of a more formal process. Most Montana communities have a local or regional transportation planning process that identifies these types of projects and, through the plan, positions them for implementation funding. Many projects will need the coordination of multiple stakeholders like MDT, especially if the project is on a Federal Aid route or will require federal funding to implement.

#### **Avoid Missed Opportunities**

Capital projects represent significant investments in infrastructure. If those investments don't accommodate travel by walking or bicycling, they may result in missed opportunities or costly retrofits. As major infrastructure investments may stand for upwards of 50 years before reconstruction, the opportunity cost of failing to anticipate the needed elements is high. Safe accommodation for pedestrians and bicyclists should be assumed components of any roadway construction project. Knowledge and adherence to the latest design guidelines and practices are also critical.

#### **Use the Right Assumptions**

Having good data that can inform the design of a project or the need for pedestrian and bicycle facilities is critical to ensuring that resources are efficiently spent and that user needs are being met. Improving the quantity and quality of data can assist transportation planners, designers and elected officials in making good decisions.

#### **Promote Non-motorized Transportation**

Good information on walking and bicycling and a good way to distribute it can influence travel behavior. In many cases information may need to come from multiple sources to be adequately understood. Partnerships between agencies and organizations can ensure a consistent message is shared.

#### **Education Matters**

Education plays a central role in all aspects of improving safety and understanding the needs of pedestrian and bicycle modes. This applies most directly to improving the safety behavior of motorists, pedestrians and bicyclists, but it also pertains to conveying the benefits of investing in walking and bicycling to the public and a wide variety of stakeholders, as well as educating local design staff who influence built infrastructure.

#### **Prioritization**

With limited funding all agencies must make decisions about how best to focus their resources. Successfully completing an assortment of smaller safety/efficiency projects may be more beneficial to the non-motorized network than focusing a larger amount of resources on one larger project. Prioritizing local funding sources for the purposes of pedestrian and bicycle improvements also influences the quality and scope of the local network.