8. Implementation

Achieving the Vision

The goal of implementing the Bicycle and Pedestrian Plan is to make walking and bicycling viable transportation options for all Iowans. Implementation of the Plan will occur over many years and will require changes to funding practices and modifications to the planning and design processes of the Iowa DOT as well as city, county, and regional agencies. It also requires continued education for the general public and government agencies alike in order to recognize that biking and walking are valid modes of transportation and are central to daily life.

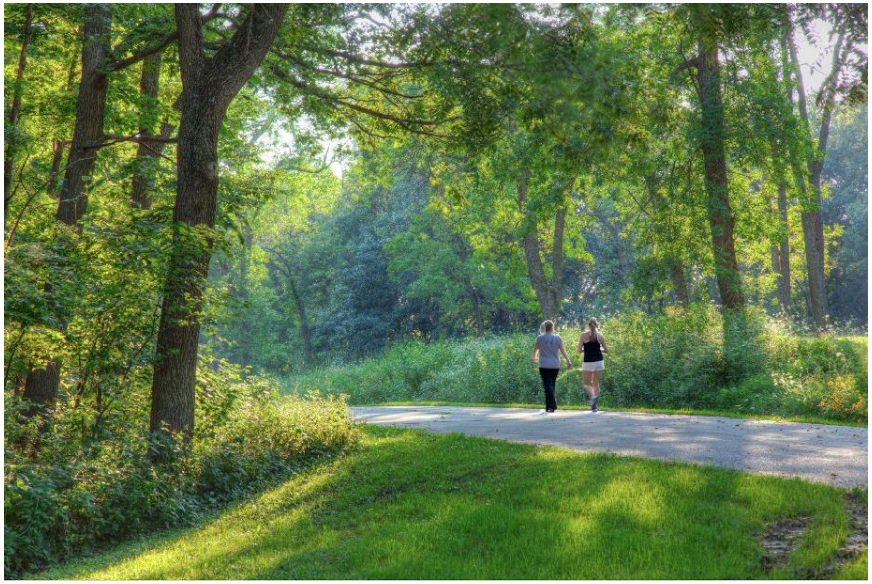
This chapter is structured as two sections.

1. *Implementation Actions* sets forth a comprehensive implementation approach that includes engineering, education, enforcement, encouragement, and evaluation actions to be initiated and completed over several years.
2. *Measuring the Effectiveness of Actions and Investments* includes a series of performance measures (used to track the outcomes of broad infrastructure and programmatic actions) and input measures (used to track the level of investment and input on the part of Iowa DOT and other implementing bodies).

8.1 Implementation Actions

Implementation actions for the Bicycle and Pedestrian Plan are divided into four categories and listed in the tables on the following pages.

- **Completed**—These actions were initiated after the adoption of the Bicycle and Pedestrian Long-Range Plan in 2018 and are considered complete and established. These will be updated as needed.
- **Ongoing**—These actions were identified in the 2018 Bicycle and Pedestrian Long-Range Plan and are considered as on-going, or continually being implemented.
- **Short-term**—These actions are intended to be initiated within the next one to three years and completed (or well-established in the case of on-going programs) within five to ten years.
- **Long-term**—Example long-term implementation actions to consider future needs beyond the life of this Plan.



8.2 Completed Implementation Actions

These actions were initiated after the adoption of the Bicycle and Pedestrian Long-Range Plan in 2018 and are considered complete and established. These will be updated as needed.

Table 8.1: Completed implementation actions

Action	Responsible	Steps
Implement the Complete Streets Policy.	• Iowa DOT	• Develop Complete Streets Policy • Train Staff. • Modify project development processes.
Incorporate bicycle and pedestrian safety into the Strategic Highway Safety Plan and consider the interrelated impacts of projects funded by the HSIP program.	• Iowa DOT Traffic & Safety Bureau • Iowa DOT Systems Planning Bureau	• Identify the most common crash types/contributing factors. • Include strategies for reducing and ultimately eliminating bicycle and pedestrian crashes.
Develop methodology for bicycle and pedestrian safety audits of high crash corridors and intersections to identify adequate countermeasures.	• Iowa DOT • FHWA • Local jurisdictions	• Identify high bicycle and pedestrian crash corridors and intersections. • Determine participants. • Conduct audits.
Modify the Bridge Design Manual to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities and NACTO Urban Street Design Guide).	• Iowa DOT Bridges and Structures Bureau • Iowa DOT Design Bureau	• Align bridge designer and county engineer judgment statements with the Complete Streets Policy. • Add requirement to consider bicycle accommodations when determining bridge width.
Modify Iowa DOT's project scoping process in accordance with the Complete Streets Policy.	• Iowa DOT Transportation Development Division	• Develop a one-stop comprehensive project scoping process guide. • Distribute to staff
Modify the Design Manual to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities, AASHTO Pedestrian Guide, and NACTO Urban Street Design Guide).	• Iowa DOT Design Bureau	• Develop an on-road bikeways section. • Specify 4' minimum effective paved shoulder width for bicyclists. • Add 5' sidewalks and bike lanes to urban typical sections.

8.3 Ongoing Implementation Actions

These actions were identified in the 2018 Bicycle and Pedestrian Long-Range Plan and are considered as on-going or continually being implemented.

Table 8.2: Ongoing implementation actions

Action	Responsible	Steps
Continue implementation of the Complete Streets Policy.	• Iowa DOT	• Train new staff. • Implement new project development processes.
Develop Complete Streets training for Iowa DOT staff as well as interested local and regional staff.	• Iowa DOT Systems Planning Bureau • Iowa DOT Design Bureau	• Develop training program. • Schedule workshops at each Iowa DOT District offices.
Support MPOs and RPAs in the development and adoption of bicycle and pedestrian plans.	• Iowa DOT • MPOs/RPAs • Advocates	• Reach out to MPOs and RPAs regularly to offer support and technical guidance. • Coordinate with the Iowa Bicycle and Pedestrian Plan.
Continually revisit driver's education curriculum.	• Iowa DOT • Iowa Bicycle Coalition	• Include the rights of bicyclists and pedestrians, as well as current and future vulnerable road user laws (subsequent to adoption of new laws).
Annually or biennially recalculate the On-Road Bicycle Compatibility Rating for all rural and metro area periphery paved.	• Iowa DOT	• Identify segments with poor conditions for biking. • Coordinate gap elimination efforts with opportunities in upcoming projects.

8.4 Short-Term Implementation Actions

These actions are intended to be initiated within the next one to three years and completed (or well-established in the case of ongoing programs) within five to ten years.

Table 8.3: Short-term implementation actions

Action	Responsible	Steps
Encourage modifications to SUDAS* to uniformly comply with the latest version of national standards and best practices (AASHTO Guide for the Development of Bicycle Facilities, NACTO Urban Bikeway Design Guide, NACTO Urban Street Design Guide).	• Iowa SUDAS Corporation with support from Iowa DOT and Iowa County Engineers Association	• Copy revised sections from the Bridge Design Manual.
Hold accessibility workshops designed to train local officials, agency staff, and professional engineers to effectively meet accessibility requirements on state, county, and local road projects.	• Iowa DOT • Iowa Bicycle Coalition	• Identify case study examples of challenges in meeting accessibility requirements during the design process. • Work through potential solutions and strategies with participants.
Designate one** licensed engineer in the Iowa DOT Central Office to be dedicated to providing technical assistance on bicycle and pedestrian facility design.	• Iowa DOT	• Determine responsibilities. • Determine appropriate division/office for employee. • Possibly modify the responsibilities of one or more existing employees.
Enhance law enforcement curriculum for bicycle safety-related training.	• Iowa DOT • Iowa Governor's Traffic Safety Bureau • Iowa Bicycle Coalition	• Review law enforcement curriculum. • Make recommendations.
Support safety and skills training courses annually for adults and youth.	• Iowa Bicycle Coalition • Iowa DOT	• Develop/acquire curriculum. • Recruit and train instructors. • Identify local partners for hosting, advertising, etc.
Develop clear and consistent criteria to prioritize funding for stand-alone bicycle and pedestrian projects, consistent with the Complete Streets Policy.	• Iowa DOT	• Develop criteria that prioritize projects that have the greatest impact on improving access and connectivity.

**Statewide Urban Design and Specifications, the transportation infrastructure design manual used by municipalities and counties in Iowa.*

***One full-time equivalent (FTE)*

Table 8.3 (continued): Short-term implementation actions

Action	Responsible	Steps
Develop and implement a Bicycle Awareness and Traffic Safety public relations campaign via web, billboards, dynamic message signs, bus advertisements, and other media.	• Iowa DOT Systems Planning Bureau • Iowa DOT Outreach & Development Bureau • Iowa Bicycle Coalition	• Identify primary messages. • Develop graphics and copy. • Procure billboard space, bus advertisement space, web hosting, etc.
Identify the primary urban and rural crash types occurring in Iowa and develop strategies for reducing crashes.	• Iowa Governor's Traffic Safety Bureau • Iowa DOT	• Review crash data for previous 5-10 years. • Review crash reports to identify crash types. • Coordinate with the development of the Strategic Highway Safety Plan and FHWA-led safety audits.
Review road project prioritization criteria to consider the project's potential benefits to bicycling and walking.	• Iowa DOT • MPOs & RPAs	• Consider criteria that prioritizes projects that follow the Complete Streets process.
Apply for US Bicycle Route Designation for USBR 36, 40, 44, 51, and 55 (applications submitted to AASHTO).	• Iowa DOT • Affected Jurisdictions • Advocates	• Review routes in detail with stakeholders. • Develop or revise maps and turn-by-turn details. • Coordinate with bordering states. • Secure resolutions of support from cities, counties, and regional agencies. • Prepare applications.
Encourage and work with cities, counties, and MPOs/RPAs across the state to adopt Complete Streets policies using the Iowa DOT's Complete Streets Policy as a model.	• Iowa DOT • Cities • Counties • MPOs/RPAs • Advocates	• Identify cities, counties, and MPOs/RPAs across the state that have implemented Complete Streets policies.
Develop a bicycle Level of Traffic Stress (LTS) that quantifies the amount of discomfort people feel when bicycling close to traffic.	• Iowa DOT	• Develop LTS metrics to determine whether a bicycle facility is appropriate and provides low-stress connectivity without exposing users to stressful network links. • Establish a baseline for urban bicycle LTS; see Chapter 4, Section 4.12.

Table 8.3 (continued): Short-term implementation actions

Action	Responsible	Steps
Explore options for increasing the amount of dedicated funding allocated to bicycle and pedestrian projects and programs.	• Iowa DOT • Advocates	• Research bicycle and pedestrian funding sources.
Identify barriers and gaps in the state highway system for bicycling and walking that will not be corrected by planned reconstruction/3R activities.	• Iowa DOT	• Develop alternatives for providing adequate interim connections, especially in cities and metro areas.
Develop and implement statewide maintenance and work zone guidelines to address bicyclist and pedestrian needs. These guidelines should be adaptable to city, county, and Iowa DOT maintenance and work zone responsibilities.	• Iowa DOT • Counties	• Review maintenance and work zones guidelines related to bicycling and walking.
Work with transit agencies across the state to provide bike racks on all compatible buses.	• Iowa DOT • MPOs/RPAs	• Identify transit agencies with bicycle racks on buses. • Identify funding sources. • Develop product and operational guidelines to assist agencies with implementation.
Develop encouragement programs and events to get more people walking and bicycling.	• Advocates • Iowa DOT • Iowa Dept of Health and Human Services	• Design safety materials, training courses, maps, and other education efforts that promote the health, safety, environmental, and economic benefits of biking and walking.
Recommend a safe passing law that requires drivers to change lanes when passing another vehicle.	• Iowa DOT • Iowa Governor's Traffic Safety Bureau • Advocates	• Include cars, bicycles, agricultural equipment, construction equipment, etc.
Recommend a vulnerable road user law.	• Iowa DOT • Iowa Governor's Traffic Safety Bureau • Advocates	• Increase penalties beyond the current penalties for a motorist that injures or kills a bicyclist, pedestrian, construction worker, law enforcement officer, or any other vulnerable roadway user.
Develop a bicycle and pedestrian count program.	• Iowa DOT • MPOs/RPAs	• Gather MPO/RPA bicycle and pedestrian count programs, identify trail count methodologies, identify benchmark count locations, and create a bicycle and pedestrian count program.

8.5 Long-Term Actions

Many of the direct and indirect recommendations of this Plan can only be implemented by performing numerous implementation actions over the course of many years. Furthermore, some of the recommendations necessitate additional planning and analysis prior to implementation.

Below are examples of long-term implementation actions, which are not intended to be an exhaustive list of all future implementation needs. This Plan will likely be updated before initiation begins for many of these actions, but it is important to consider future needs during current planning.

- Implement current plans for the US Bicycle Route and National Trails systems (which include the Mississippi River Trail, American Discovery Trail, and Lewis & Clark Trail). Revisit these plans every 5 to 10 years until each segment is completely implemented.
- Implement the Statewide Trails Vision plan discussed in Chapter 5 in an opportunity-based manner. This means constructing trails along the Vision plan's alignment as right-of-way and funds become available. While the Iowa DOT has a role in providing funding for this purpose, implementation will primarily be the responsibility of cities, counties, MPOs/RPAs, the Department of Natural Resources, and nonprofit groups.
- Encourage every unit of government in Iowa that has jurisdiction of streets and roads to adopt a Complete Streets policy to accommodate bicyclists and pedestrians across the state.
- Continue to identify barriers and gaps in the state highway system for bicycling and walking that have not been corrected by reconstruction/3R activities and develop alternatives for providing adequate interim connections, especially in cities and metro areas.
- Continue to analyze crash data and develop strategies for increasing road safety for all users.
- Continue to expand education and encouragement programs to teach safe bicycling skills, educate road users on the rights and responsibilities of bicyclists and pedestrians, and encourage more people to ride and walk (since greater numbers of people biking has an inverse correlation with bicyclist crash rates).

Plan Update

It is important to update this Bicycle and Pedestrian Plan at least every 10 years to account for infrastructure, legislative, and programmatic changes that affect bicycling and walking.

Measuring the Effectiveness of Actions and Investments

Using data-driven methods to measure the success of Iowa's efforts to improve conditions for walking and bicycling is the most accurate way to determine the effectiveness of the various actions (including programs and policies) and infrastructure investments resulting from this Plan.

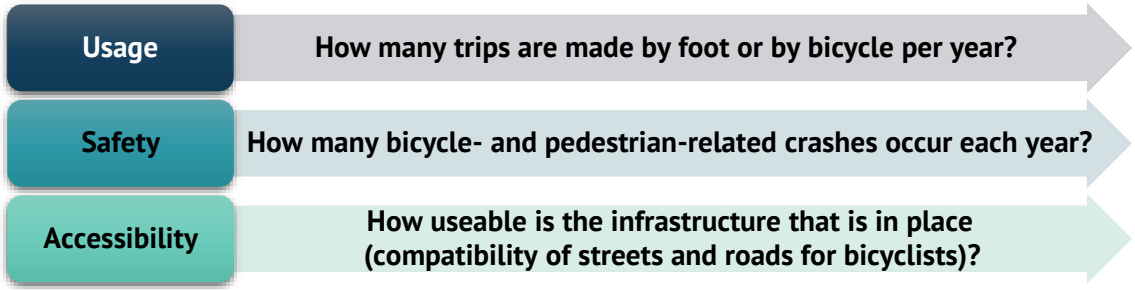
Suitable methods will include those that use quantifiable data to measure improvements in the bicycle and pedestrian systems that primarily result from changes to the programs, policies, and investments of the various agencies and organizations involved in implementing this Plan (the Iowa DOT, cities, counties, regional agencies, advocates, the public health community, etc.).

8.6 Methods of Measuring

There are two primary methods of measuring the effectiveness of efforts made to improve conditions for walking and bicycling—performance measures and input measures.

Performance measures are used to track the outcomes of broad infrastructure and programmatic actions on the part of all stakeholders. They are the primary way to determine the effectiveness of actions and investments.

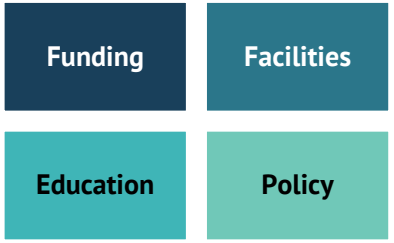
Performance measures metrics



In addition, public health statistics (e.g., including obesity rates, percentage of seniors getting sufficient physical activity, etc.) can be considered performance measures. However, while bicycling and walking are healthy activities that can positively affect these statistics, they are not the only relevant factors. Diet, genetics, socioeconomics, and other factors also have significant impacts.

Input measures track the actions taken by various stakeholders. They are the primary way in which to track the progress of actions and investments. Input measures are believed to have a positive impact on performance outcomes, but there is no guarantee until the relationships are established.

Input measure categories



8.7 Performance Measures (Outcomes)

Performance measures should use quantifiable data to measure outcomes or trends that can be attributed as results of the programs, policies, and investments made by the Iowa DOT and others. In other words, they do not measure the actions—or inputs—of the Iowa DOT, such as how much funding is allocated, but instead they measure the results of those actions, such as how many more people are walking or biking. Baseline data must be established for each performance measure, which in some cases will require the Iowa DOT and its partners to engage in new data collection activities. Once the baseline is established, a desired trend is identified for a specific point in the future for each performance measure. The Iowa DOT should consistently assess progress on each performance measure, preferably on an annual basis.

Pedestrian Performance Measures

The following performance measures will be used by the Iowa DOT to assess progress on improving conditions for walking in Iowa:

Measure	Baseline	Desired Trend	Data and Method	Strategies
Usage—Pedestrian Mode Share	3.2% (2018 ACS)	Increase	American Community Survey journey to work data is the most consistently available source of mode share information. However, it is an estimate and factors only trips to work, ignoring walking trips made for other transportation purposes as well as recreational trips.	• Expand sidewalk and multi-use trail networks to provide adequate access and connectivity for pedestrian needs. • Encourage more people to walk by providing safety materials, promote the health benefits of walking, increase the comfort and safety of infrastructure, and encourage communities to become walk-friendly. • Employers and communities can use incentives to promote walking.
Safety—Pedestrian-Related Crashes per Year	409 (2019-2023 five-year average; includes all ages)	Decrease	Pedestrian related crashes are recorded in the Iowa Crash Analysis Tool (ICAT) dataset maintained by the Iowa DOT.	• Incorporate pedestrian safety into the state's Strategic Highway Safety Plan. • Recommend legislation designed to protect all road users. • Conduct safety audits of intersections that have a high number of pedestrian crashes.

Bicycle Performance Measures

The following performance measures will be used by the Iowa DOT to assess progress on improving conditions for bicycling in Iowa:

Measure	Baseline	Desired Trend	Data and Method	Strategies
Usage—Bicycle Mode Share	0.5% (2018 ACS)	Increase	American Community Survey journey to work data is the most consistently available source of mode share information. However, it is an estimate and factors only trips to work, ignoring trips made for other transportation purposes as well as recreational trips.	• Improve city streets and rural roads for bicycling by providing adequate accommodations based on traffic volumes, speeds, etc. • Encourage more people to bicycle by providing safety and how-to materials, on-the-bike training, continuing to popularize RAGBRAI, and encouraging communities and businesses to become bicycle-friendly.
Safety—Bicycle-Related Crashes per Year	299 (2019-2023 five-year average; includes all ages)	Decrease	Bicycle related crashes are recorded in the Iowa Crash Analysis Tool (ICAT) dataset maintained by the Iowa DOT.	• Provide education for all road users on traffic law and bicyclists' rights. • Incorporate bike safety into the Strategic Highway Safety Plan. • Incorporate bicycle safety-related education into training for new and experienced law enforcement officials. • Recommend legislation designed to protect all road users.
Accessibility—Percentage of the Rural Transportation Network Suitable for Bicycling	Rural: 35% rated good	Increase	Bicycle compatibility ratings for rural roads have been calculated as part of this Plan. The ratings should be recalculated annually, or biennially as new traffic volume data is available and as infrastructure changes are made.	• Provide training for planners and engineers (DOT, county, city) on how to effectively plan and design suitable accommodations. • Incorporate a review of bicycle compatibility/level of service ratings as part of each project and ensure than an improvement in suitability results from the project. • Consider the need to improve bicycle suitability as a criterion in the prioritization of 3R projects.

Child Performance Measures

The following performance measures will be used by the Iowa DOT to assess progress on improving conditions for children that bicycle and walk in Iowa:

Measure	Baseline	Desired Trend	Data and Method	Strategies
Safety—Bicycle- and Pedestrian-Related Crashes Involving Children per Year	314 (2019-2023 five-year average)	Decrease	Bicycle and pedestrian crashes are recorded in the Iowa Crash Analysis Tool (ICAT) dataset maintained by Iowa DOT.	• Encourage each school district or individual school to complete a Safe Routes to School plan. • Provide education for all road users on traffic law and bicyclists' rights. • Incorporate bicycle and pedestrian safety into the Strategic Highway Safety Plan. • Incorporate bicycle safety-related education into training for new and experienced law enforcement officials. • Recommend legislation designed to protect all road users. • Conduct safety audits of intersections that have a high number of bicycle and/or pedestrian crashes. • Provide traffic safety education for school-aged children. • Provide adequate bicycle and pedestrian accommodations near schools.

8.8 Input Measures (Actions)

Input measures are used to track the progress of the Iowa DOT and the state as a whole in implementing the Plan and its various recommendations. On their own, input measures cannot be used to determine if implementation actions result in improved conditions for walking and bicycling; rather they can only be used to determine whether implementation is occurring at an adequate pace.

Input Measure	Baseline	Desired Trend	Related Goal	Who Measures or Implements
Number of MPOs/RPAs, counties, and cities that have adopted a Complete Streets policy.	To be determined.	Increase	Valid, Coordinated, Connected, Funded, Well-Designed	Iowa DOT compiles data from MPOs and RPAs.
Annual percent of non-Interstate highway project centerline miles excepted by the Complete Streets Policy.	n/a	Decrease	Valid, Coordinated, Connected, Funded, Well-Designed	Iowa DOT
Number of miles of paved shoulder (4+ feet wide excluding rumble strips) added to the primary highway system.	0 miles	Increase	Connected	Iowa DOT
Number of miles of bike lanes added to the system. (Data annually collected by each MPO/RPA).	0 miles	Increase	Connected	Iowa DOT compiles data from MPOs and RPAs.
Number of miles of sidewalks and curb ramps added to the system. (Data annually collected by each MPO/RPA).	0 miles	Increase	Connected	Iowa DOT compiles data from MPOs and RPAs.
Number of miles of multi-use trails added to the system. (Data annually collected by each MPO/RPA).	0 miles	Increase	Connected	Iowa DOT compiles data from MPOs and RPAs.
Percent of Iowa's Transportation Alternatives Program (TAP) funds (and any similar federal funding programs) used for bicycle and pedestrian purposes/projects.	To be determined.	Increase.	Funded	Iowa DOT compiles data from MPOs and RPAs.

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