TranPlanMT

Moving Montana Forward. Together.

Volume I
Transportation Assets

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MONTANA MDT DEPARTMENT OF TRANSPORTATION

DOWL

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MONTANA MDT DEPARTMENT OF TRANSPORTATION

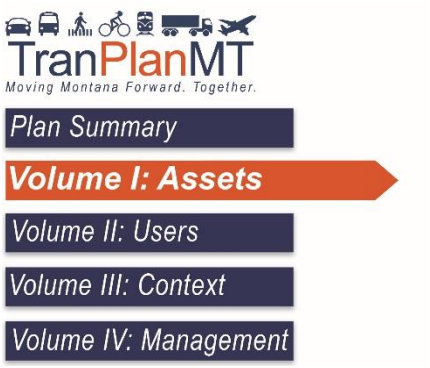
CONTENTS

Figures

Tables

INTRODUCTION

Transportation assets form the physical framework for the integrated transportation network. When we think about transportation assets, we typically identify roads and bridges. However, in a robust transportation network, assets also include safety rest areas, public transit assets such as buses and vans, aviation facilities, passenger and freight rail systems, and pedestrian and bicycle facilities.



Assets are developed, constructed, and maintained over many years and therefore reflect significant capital investments. Understanding asset history, condition, function, and use is paramount for the Montana Department of Transportation (MDT) and the public it serves. A full accounting of assets is important because transportation funding is limited and maintaining existing assets is crucial.

Volume I of TranPlanMT focuses on the primary assets maintained by MDT and used by MDT's external customers – the traveling public. Assets maintained by others (such as passenger and freight rail facilities) and internal assets such as computer hardware and software, office buildings, and other capital assets used mainly by MDT employees are not discussed. The base year for data is 2015 unless otherwise noted.

WHAT WE KNOW

Roadways

Montana is considered a frontier state and includes some of the most isolated and sparsely populated counties on the urban-rural scale. The term "frontier" typically refers to low population density coupled with long distances and lengthy travel times to reach population centers and services. These characteristics make Montana's roadway system critically important.

Within Montana's towns and cities, roadways provide important connections to destinations, enabling access to jobs, health care services, schools, and shopping. Montana transportation users depend on an efficient road network.

Governing Framework

The United States Department of Transportation (USDOT) is the regulatory authority overseeing surface transportation in the United States. The Federal Highway Administration (FHWA) is the arm of USDOT that develops regulations to promote a safe and efficient surface transportation network. Each state has a transportation department that manages the state's highway assets, with financial and technical support from FHWA. State departments of transportation, including MDT, generally administer nearly all federal and state highway funding. The degree of financial support from FHWA varies by state.

Once initial planning and environmental work is done, the MDT Highways and Engineering Division prepares highway projects to meet specific safety, capacity, and condition needs. MDT coordinates highway project development through the preconstruction process and manages and oversees project construction. Specific project and program management activities are administered by multiple MDT divisions and bureaus in addition to five district offices in Billings, Butte, Great Falls, Glendive, and Missoula.

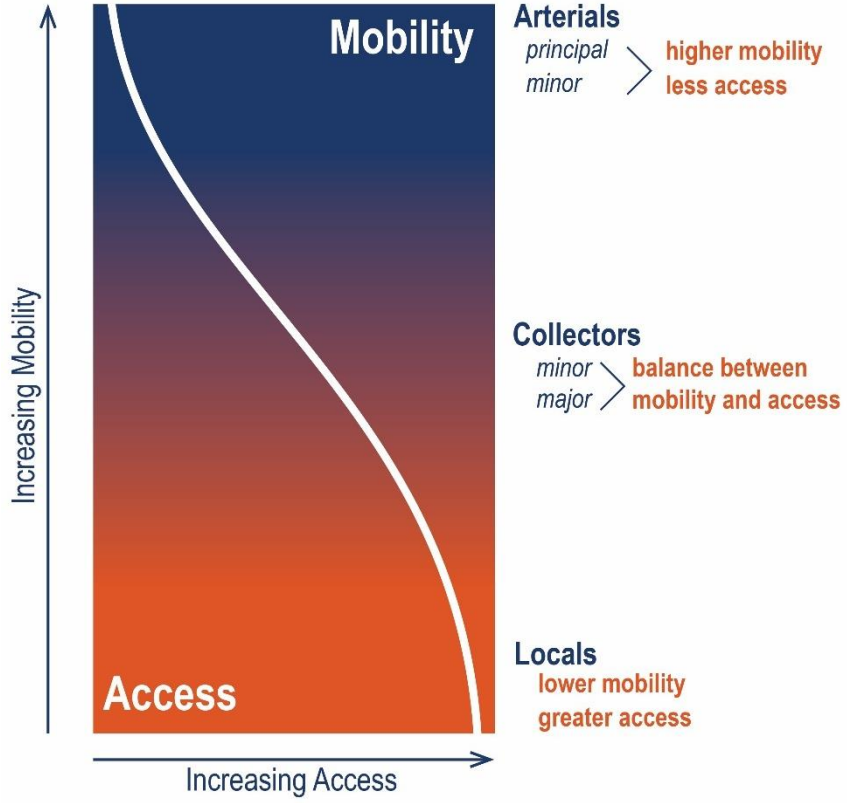
A number of publications provide national guidance for the design of highways and streets. The American Association of State Highway and Transportation Officials (AASHTO) *Policy on Geometric Design of Highways and Streets* (also known as the *Green Book*), *Roadside Design Guide*, and *Model Drainage Manual* present national policies, practices, and criteria for geometric design, roadside safety, and hydrologic and hydraulic design associated with highways and streets. Design elements outlined in the *Montana Road Design Manual* are based on these national concepts but are tailored to Montana's climate, topography, and practices.

Functional Classification

Roadways are classified according to their function based on travel mobility and level of access to adjacent land uses, as illustrated in Figure 1.

Figure 1: Functional Classification

- **Arterials** are high-volume routes that typically provide some degree of access control and serve relatively long trip lengths between and within major population centers.
- **Collectors** provide a balance between travel mobility and access to property.
- **Local roadways** provide the greatest degree of access to adjacent land uses while limiting travel mobility.



Source: FHWA Flexibility in Highway Design, 2012; DOWL 2017.

System Designation

Federal and state roadway systems are designated to enable allocation of federal and state resources.

- Federally Designated Highway System

  The **National Highway System (NHS)** includes Interstate and Non-Interstate principal arterial roadways important to the nation's economy, defense, and mobility. These routes directly connect urban areas, serve the national defense, and connect with routes of continental importance in Canada and Mexico.

- State-designated Highway Systems

  As outlined in MCA §60-2-125, the Montana Transportation Commission designates certain routes classified by MDT and FHWA as principal or minor arterials to be placed on the **Primary Highway System**. The **Secondary Highway System** includes routes functionally classified by MDT and FHWA as minor arterials or major collectors that are selected by the Commission in cooperation with respective boards of county commissioners. Additionally, the Commission, in cooperation with local government authorities, designates **Urban Highway System** routes in or near incorporated cities with populations over 5,000 and within urban boundaries. Urban system routes are functionally classified as urban arterials or collectors.

- State Highways

  Other highways are also maintained by the state but are not included on a designated highway system. These roads connect with roadways on the designated highway systems.

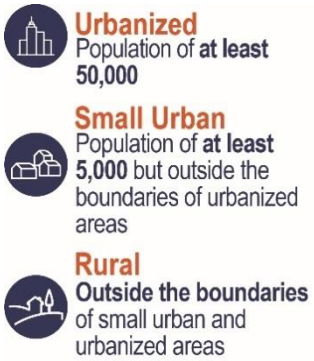
- Off System – Local Roads

  All remaining roads not designated to a state or federal highway system fall under responsibility of local government entities (including cities and counties).

Rural/Urban Designation

Roadways in Montana are designated according to their location in either rural or urban settings. Geographic boundaries and population numbers are based on decennial census data. As noted in Figure 2, FHWA defines urban areas as having a population of 5,000 or more residents. Urbanized areas (also referred to as Metropolitan Planning Organizations or MPOs) have a population of 50,000 residents. Rural areas encompass the remainder of the state.

Figure 2: FHWA Rural/Urban Definitions



Source: A Guide to Functional Classification, Highway Systems and Other Route Designations in Montana 2010; DOWL 2017.

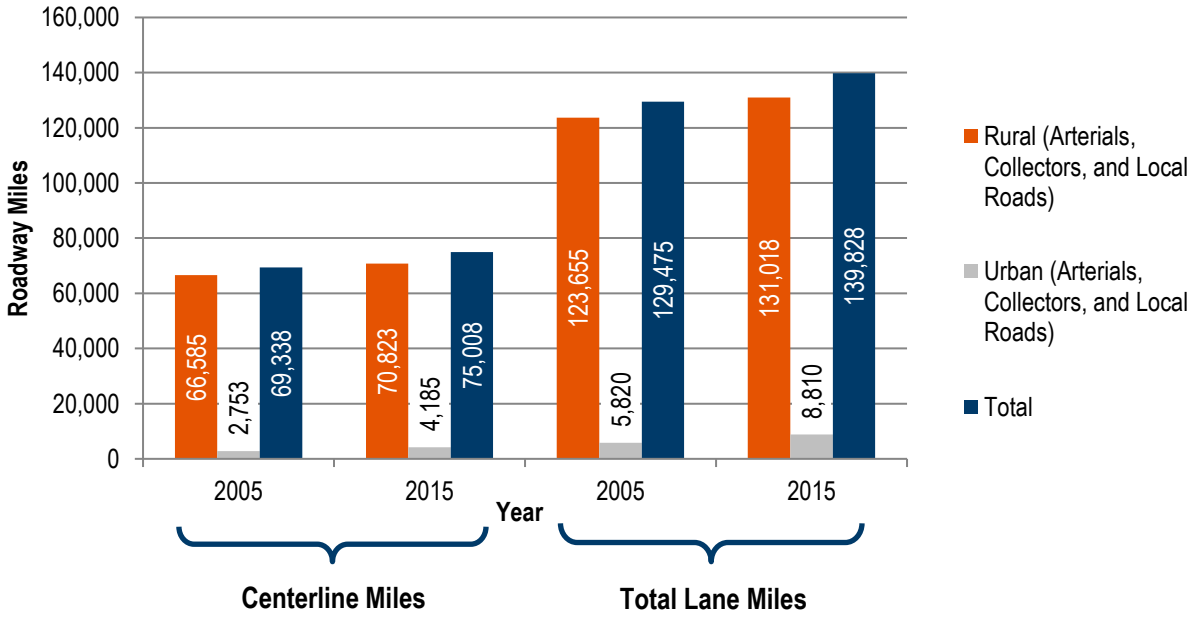
Inventory

Rural highways account for the largest total number of lane miles and centerline miles in Montana as presented in Figure 3. In 2015, more than 90 percent of roadways in the state were classified as rural. Urban roadways occur in Montana's largest communities and provide important connections to destinations.

From 2005 to 2015, the number of roadway miles recognized in MDT's database increased. This increase was primarily due to technology advancements, improved data collection and management practices, and increased coordination with local, state, tribal, and federal government entities enabling accurate roadway inventory as opposed to construction of new roadways. Additionally, the 2010 United States Census enlarged boundaries for existing urban areas and added four new urban areas, which affected how urban/rural roadway mileage was designated.

In 2015, **MDT's** database recorded ***more than 75,000*** roadway miles statewide.

Figure 3: Montana's Rural and Urban Roadways

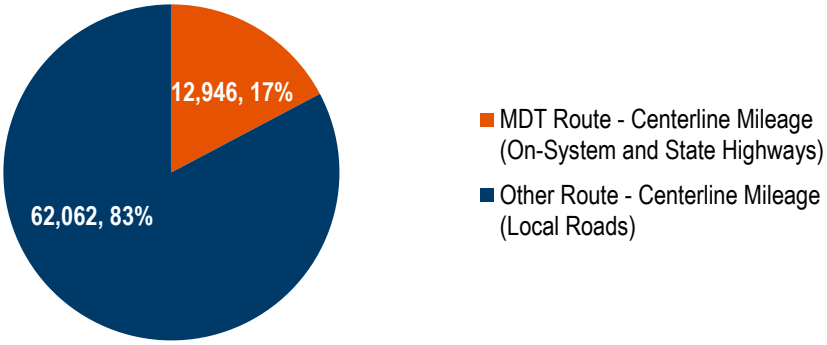


Source: MDT Data and Statistics Bureau 2015; DOWL 2017. Increase from 2005 to 2015 primarily reflects improved data collection and management as opposed to construction of new roadways.

Rural total mileage jumped approximately six percent, or over 4,000 miles, and urban totals increased by approximately 50 percent, or 1,400 miles. In total, more than 5,000 centerline miles and 10,000 total lane miles were added to the state's roadway database during the ten-year period. This increase reflects an additional maintenance and operations burden for MDT and local roadway authorities with limited revenue sources.

Figure 4 illustrates MDT and other entities' responsibility by number and percentage of roadway miles. MDT routes constitute approximately 17 percent of all Montana roadways, while local roads make up the remaining 83 percent of roads in Montana. However, the majority of vehicle miles traveled in Montana occur on MDT on-system routes.

Figure 4: Montana Roadways by Responsibility

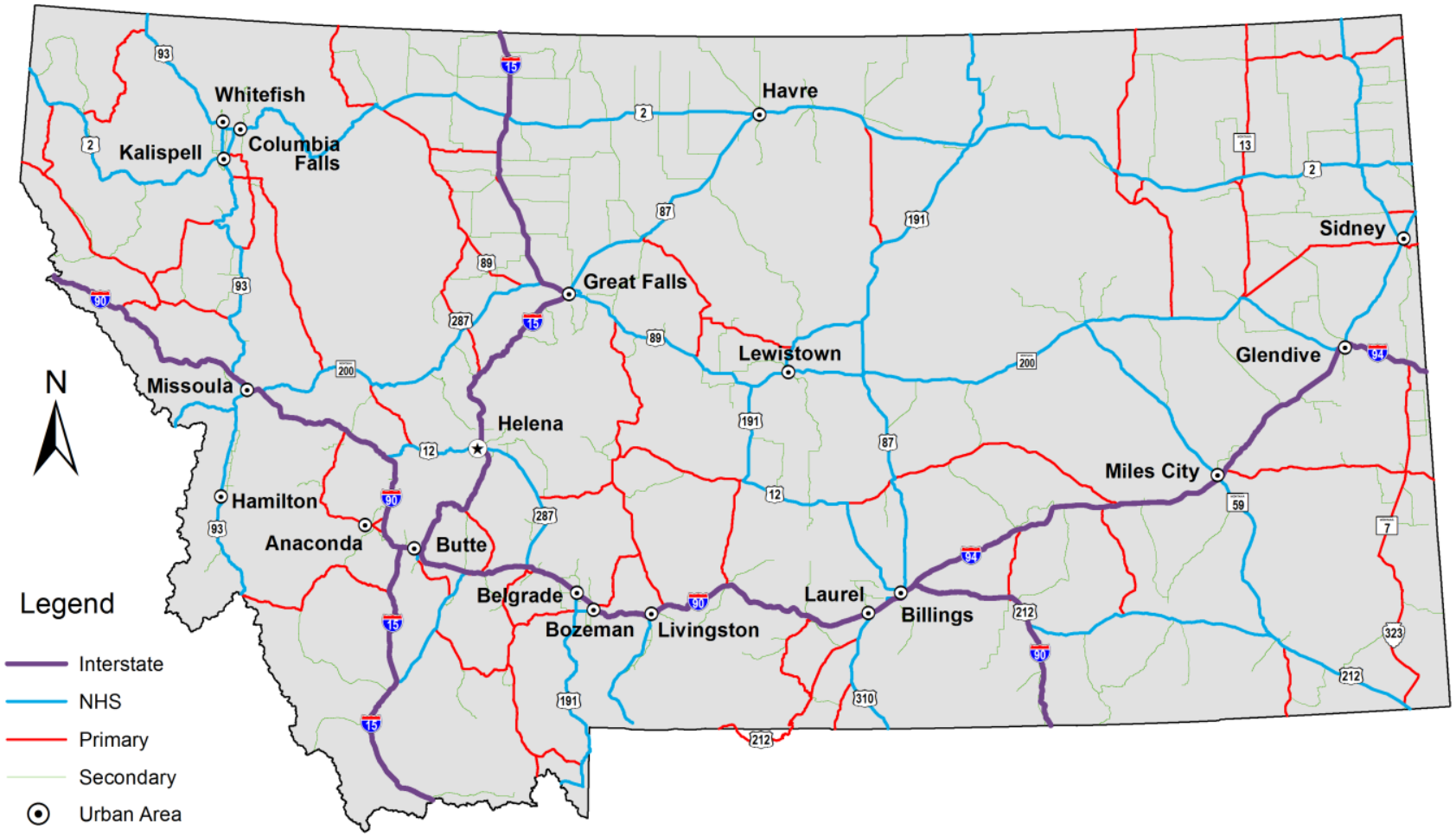


Source: MDT Data and Statistics Bureau 2015; DOWL 2017.

Major Corridors

Figure 5 illustrates major roadway corridors in Montana, including the Interstate, NHS, Primary, and Secondary Highway System. Interstate corridors run north-south (I-15) and east-west (I-90 and I-94) through Montana, connecting major urban and urbanized areas. Additionally, I-315 is near Great Falls and I-115 is near Butte.

Figure 5: Designated System Roadways



Source: MDT Data and Statistics Bureau 2015.

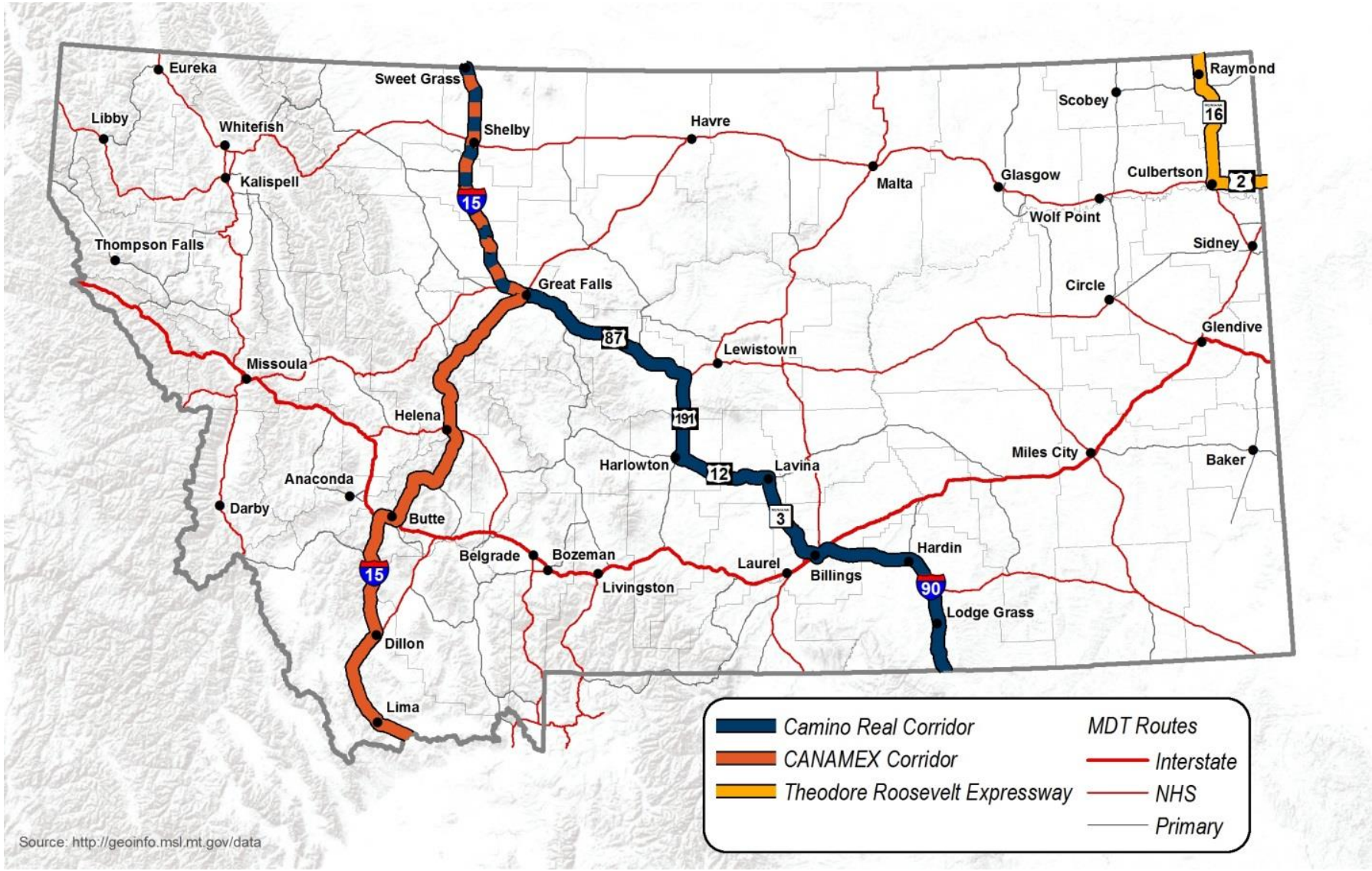
Several NHS corridors in Montana provide important trade connections with neighboring states and provinces. These three federally designated high-priority corridors are illustrated in Figure 6.

- The Camino Real corridor traverses from Texas to the Canadian border. From the Wyoming/Montana border, the corridor follows I-90 to Billings; Montana Route 3, United States Route 12, United States Route 191, and United States Route 87 to Great Falls; and I-15 north to the Canadian border.

- The CANAMEX corridor is a north-south route traversing from Arizona to the Canadian border. In Montana, the corridor follows I-15 from the Idaho border to the Canadian border.

- The Theodore Roosevelt Expressway connects South Dakota to the Canadian border. In Montana, the route follows United States Route 2 to Culbertson and Montana Highway 16 to the international border with Canada at the port of Raymond, Montana.

Figure 6: Multi-state Trade Corridors



Source: http://geoinfo.msl.mt.gov/data; DOWL 2017.

Condition

MDT collects pavement condition data using data collection vehicles equipped with a road profiling system, lasers, and 3D cameras. The Pavement Management System (PvMS) houses tables to manage the data and provides methods to analyze the multiple data types.

MDT uses several metrics to evaluate pavement condition including a Ride Index (RI), which measures the perceived ride smoothness. It is calculated by converting the International Roughness Index (IRI) in inches per mile to a 0 to 100 scale. MDT assigns good/fair/poor levels as listed in Table 1; these are consistent with the qualitative ratings MDT uses in its Performance Programming Process (P3).

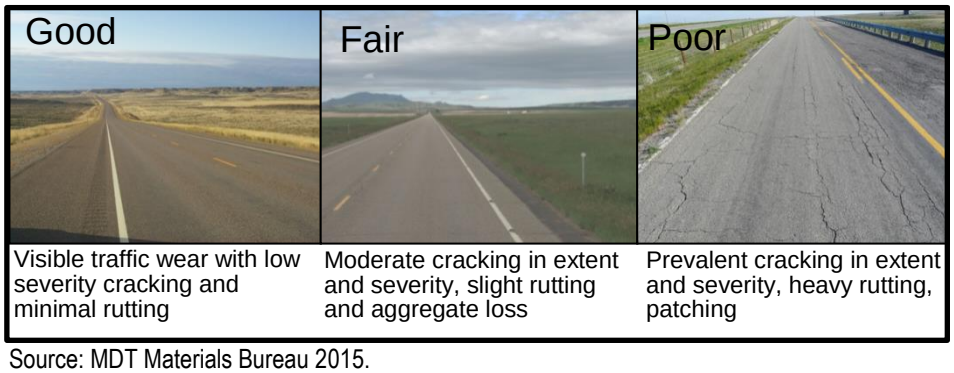
Table 1: Pavement Condition

Condition	P3 Designation	Ride Index	IRI
Good	Superior	≥80	<75
Fair	Desirable	≥60 and <80	76-150
Poor	Undesirable	<60	>150

Source: Transportation Asset Management Plan 2015.

Examples of pavement in good, fair, and poor condition are shown in Figure 7 below.

Figure 7: Pavement Condition Examples



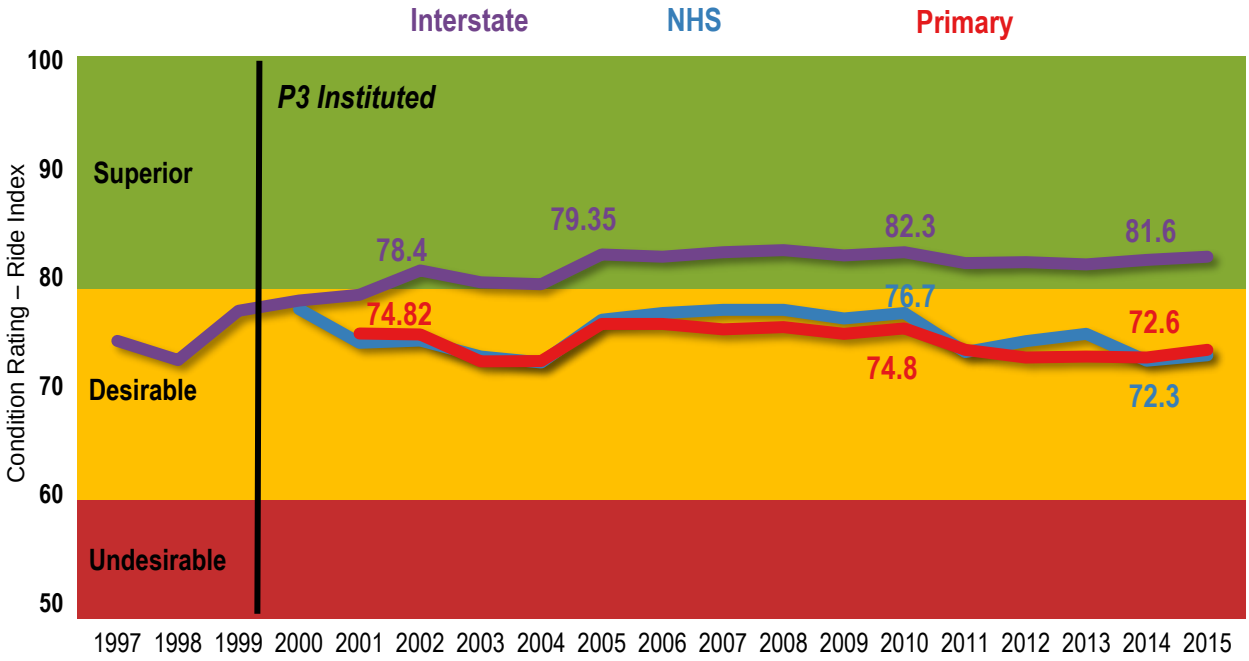
Source: MDT Materials Bureau 2015.

MDT uses P3 to develop an optimal investment plan for preserving roadway pavements on the Interstate, NHS, and Primary systems to achieve system goals within funding constraints. MDT utilizes pavement preservation in a focused effort to improve functional pavement performance and extend the life of the pavement network.

Trends and Outlook

Figure 8 illustrates the effect of the P3 management approach coupled with MDT's focused pavement preservation efforts. Since 1999, pavement Ride Index in Montana has generally remained stable.

Figure 8: Historical Pavement Condition - Ride Index



Source: MDT Materials Bureau 2015.

MDT will continue to manage the anticipated decline in pavement condition by optimally investing available funding.

Structures

Bridges are vital to ensure a connected transportation network. They span water bodies, rolling and mountainous terrain, and intersecting features such as major roadways and rail lines to enable continuous traffic flow.

Governing Framework

Under the federal oversight of FHWA, the Bridge Bureau designs all major MDT bridges and approves bridge design performed by consultants.

The American Association of State Highway and Transportation Officials (AASHTO) *Load and Resistance Factor Design (LRFD) Bridge Design Specifications* serve as a national guide for the development of a transportation agency's structural specifications and standards. MDT has adopted the AASHTO *LRFD Bridge Design Specifications* as the preferred document for the structural design of highway bridges in Montana. Volume II of the *Montana Structures Manual* presents MDT's application of the LRFD specifications to structural design on Montana roadways.

MDT has also developed the *Montana Bridge Design Standards*, which are approved MDT design requirements for loading, horizontal and vertical clearances, and bridge width. Formal design exception approval from the MDT Bridge Engineer must be secured when deviating from the *Montana Bridge Design Standards*.

The FHWA *National Bridge Inspection Standards* (NBIS) outline national methodologies for the inspection and evaluation of highway bridges including data elements comprising the National Bridge Inventory (NBI) database. The NBIS promote uniformity in data collection and condition reporting to facilitate effective bridge management.

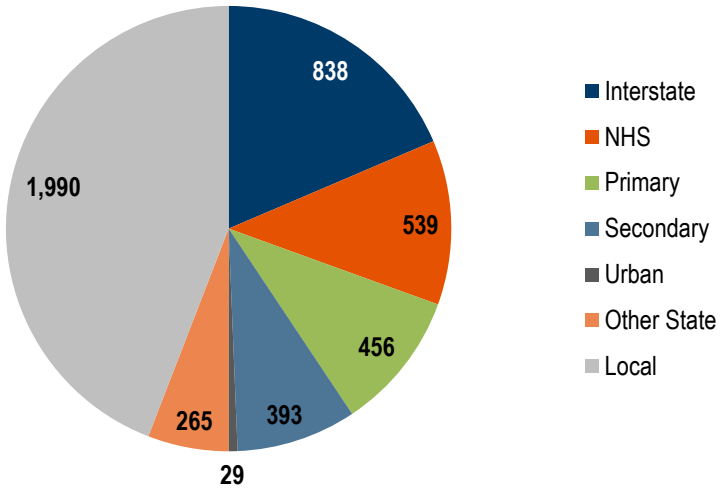
Together, these regulations, guidelines, and standards direct MDT efforts to design, construct, maintain, and inspect state bridges.

Inventory

MDT maintains inventory data for bridges and culverts within the state, including structures maintained by cities and counties but excluding those located within federal lands such as national parks.

Figure 9 illustrates the number of structures by roadway type reflecting 2015 inventory data.

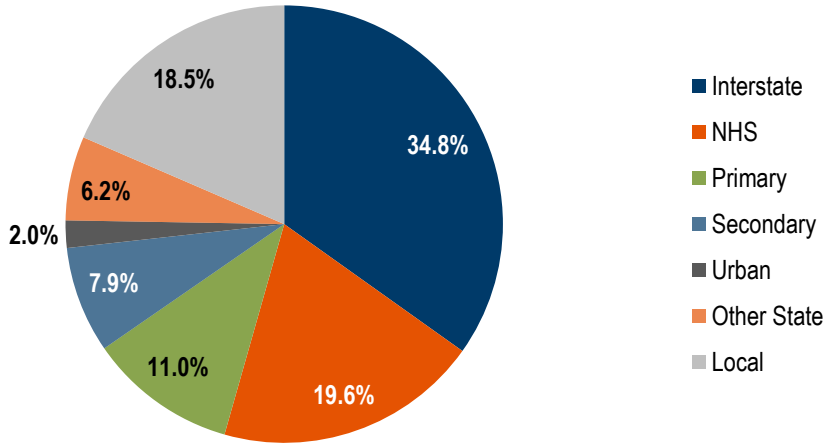
Figure 9: Structure Inventory



Source: MDT Bridge Bureau 2015; DOWL 2017. Data labels reflect 2015 inventory.

Another way to evaluate inventory data is to consider total deck area as illustrated in Figure 10. On the Interstate system, deck area is proportionately higher because structures are typically larger on multi-lane roadways.

Figure 10: Deck Area



Source: MDT Bridge Bureau 2015; DOWL 2017.

Condition

MDT inspects its bridges every two years according to requirements outlined by the NBI program. MDT also conducts additional routine maintenance inspections to proactively identify issues such as debris, scour, cracking, and other deterioration of major bridge components.

MDT has developed two bridge performance measures to assess bridge condition. Structure condition and deck condition are assessed using NBI ratings, including superstructure rating, substructure rating, deck condition, and structurally deficient status to assess bridge condition using a good/fair/poor system. Deck condition is further divided into Fair-1 and Fair-2 to assist in determining appropriate preservation treatments.

NBI ratings are assessed on a scale of 1 to 9. As presented in Table 2, bridges are considered structurally deficient if any deck, superstructure, or substructure elements are rated less than 5 on the NBI scale. When a bridge is classified as structurally deficient, it does not mean it is unsafe. A structurally deficient bridge typically requires increased maintenance and repair to remain in service and eventual rehabilitation or replacement to address deficiencies. All structurally deficient bridges are considered to be in poor condition.

Table 2: Structure and Deck Condition

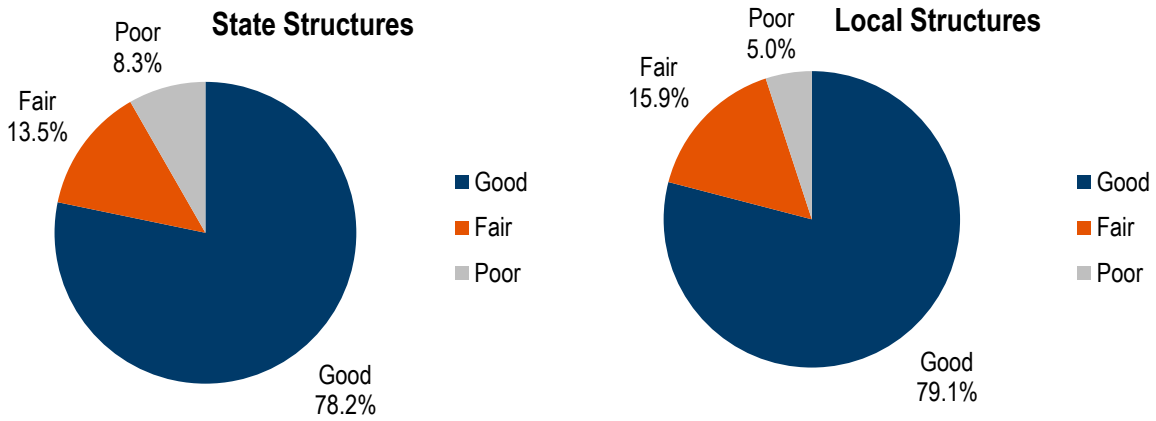
Structure Condition	
NBI Structure Condition Rating	**Structure Condition**
> 5 (and bridge is not Structurally Deficient)	**Good**
= 5 (and bridge is not Structurally Deficient)	**Fair**
< 5 (or bridge is Structurally Deficient)	**Poor**

Deck Condition		
NBI Deck Condition Rating	**Deck Condition**	
	(for reporting)	(for decision making)
> 6	**Good**	
6	**Fair**	**Fair-1**
5		**Fair-2**
< 5	**Poor**	

Source: Transportation Asset Management Plan 2015.

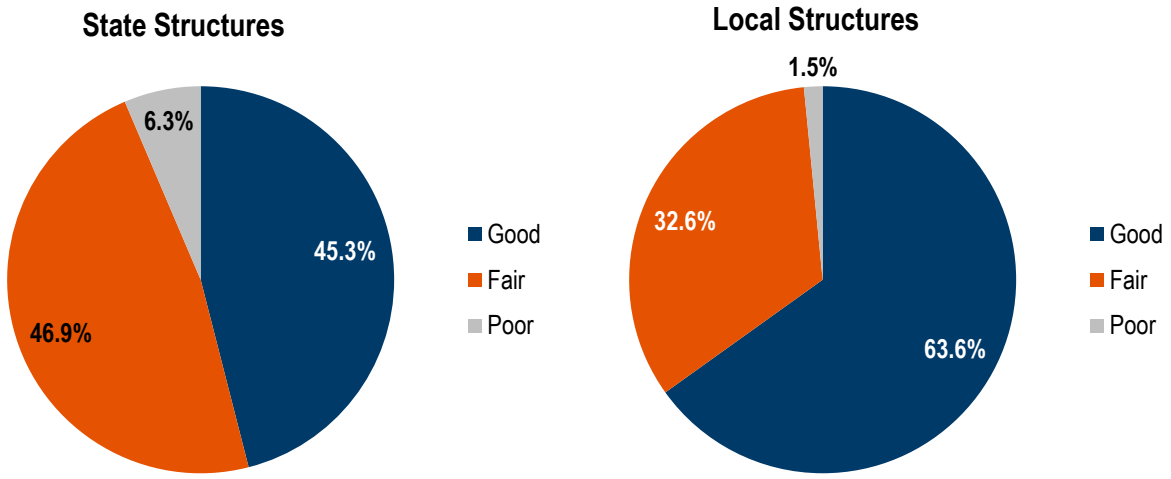
In 2015, nearly 80 percent of state and local structures were in good condition (Figure 11). The 2015 percentage of good ratings by deck area was lower, ranging from 45 to 64 percent for state and local structures (Figure 12).

Figure 11: Structure Condition by Number



Source: MDT Bridge Bureau 2015; DOWL 2017.

Figure 12: Riding Surface Condition by Deck Area

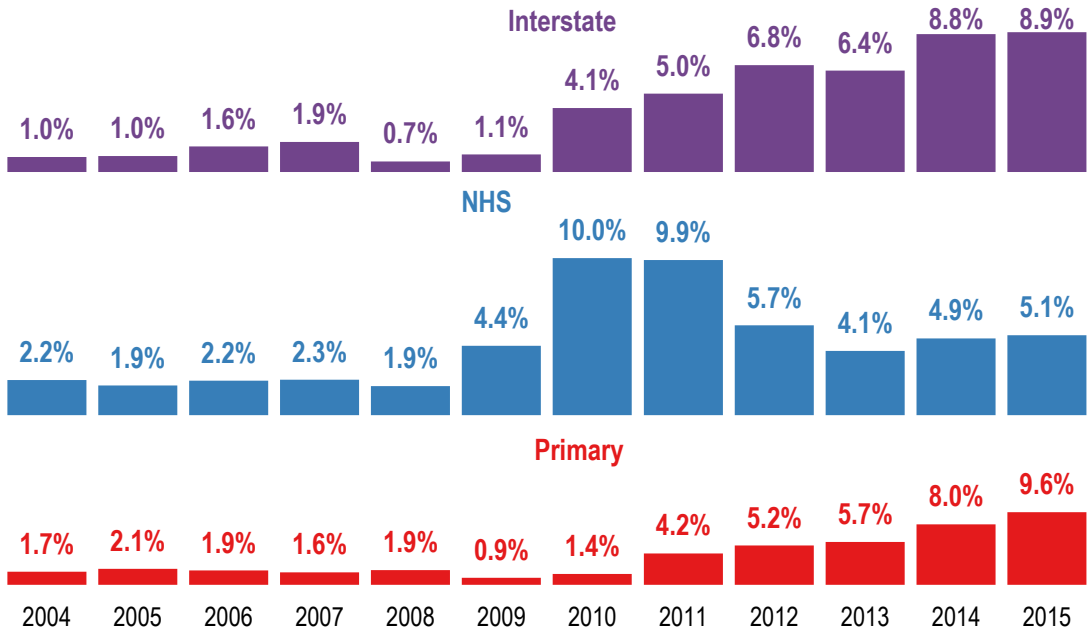


Source: MDT Bridge Bureau 2015; DOWL 2017.

Trends and Outlook

From 2004 to 2015, the percentage of structurally deficient bridge decks increased on the Interstate, NHS, and Primary roadway systems as illustrated in Figure 13. Some of the increase can be attributed to improved data collection and quality assurance in MDT's bridge inspection program (particularly during the 2009 to 2010 time period).

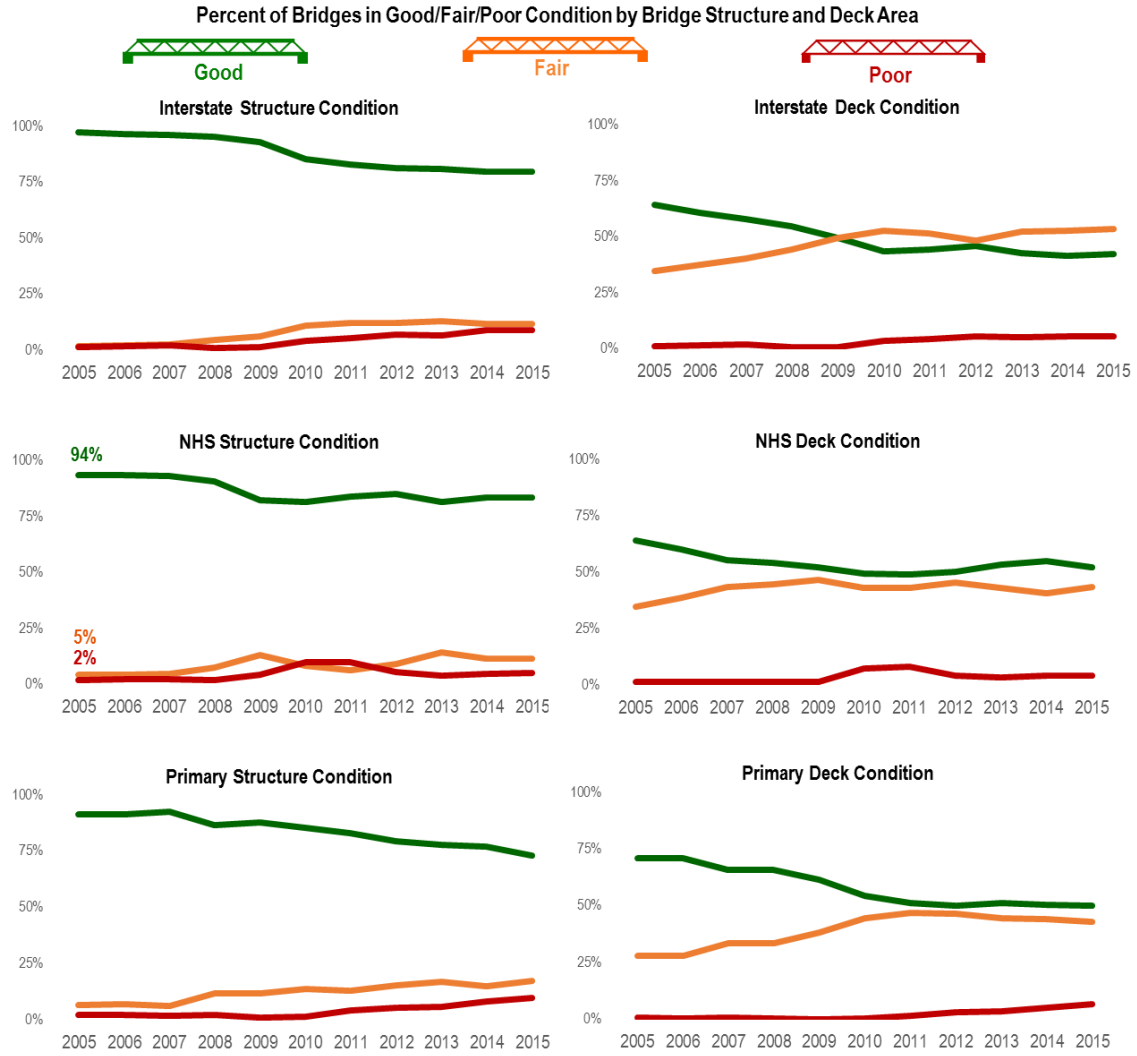
Figure 13: Percent of Structurally Deficient Bridge Decks by System



Source: MDT Bridge Bureau 2015.

Structure and condition data for the Interstate, NHS, and Primary roadway systems also indicates deterioration since 2005. Figure 14 illustrates a reduction in structures and bridge decks rated good and an increase in fair to poor ratings.

Figure 14: Percent of Structures and Bridge Decks in Good/Fair/Poor Condition



Source: MDT Bridge Bureau 2015. Note: percentages are rounded.

Safety Rest Areas

Safety rest areas promote transportation safety by providing safe stopping opportunities for motorists along Montana's highways. Safety rest areas offer a place for motorists to stop and perform activities that aid in combating drowsy and distracted driving, such as walking, using a mobile device, sleeping, resting, and eating. They also offer a safe place to stop during weather events and road closures. Safety rest areas enhance visitor experience for out-of-state motorists and support Montana's tourism and trucking industries.

Governing Framework

MDT recognizes the safety benefits of rest areas, and continues to focus on addressing critical rest area issues. MDT's Safety Rest Area Program is tailored to fit Montana's specific conditions and needs. The *Montana Rest Area Plan* outlines MDT's comprehensive statewide vision for the MDT rest area program in the context of challenges such as aging infrastructure, high rest area demand and visibility, and limited funding.

The *Montana Rest Area Plan* provides guidelines for rest area site and network evaluations; project identification, prioritization, and development; and operation and maintenance. The rest area program guidelines reflect MDT's mission to emphasize safety, quality, cost effectiveness, economic vitality, and sensitivity to the environment. MDT strives to provide convenient, accessible, clean rest areas throughout Montana and is committed to providing safe opportunities for resting adjacent to Montana's highways. The MDT Safety Rest Area Program investment decisions are intended to target the greatest needs, produce the greatest anticipated benefits over time, and minimize risk exposure with funding priority given to rest areas adjacent to higher order and higher volume roadways. MDT values the human and natural environment, and endeavors to avoid or minimize adverse environmental impacts, to the extent practicable, through appropriate rest area siting, construction, and management practices.

Using a formalized process for prioritization of projects and activities, the rest area program utilizes dedicated funding for rest area improvements. The MDT Statewide Rest Area Prioritization Plan Committee meets regularly to discuss and advance the progress and priority of rest area projects and topics that affect rest area strategy, including the public experience and regulation. The committee employs an asset management approach to decision making and is driven by defined objectives and credible data from systematic assessments to justify investment decisions. The process allows MDT to develop an optimal investment plan and measure progress toward strategic transportation system goals.

Inventory

Montana safety rest areas vary in type depending on the entity responsible for construction, operation, and maintenance and the level of service provided at each facility. MDT is responsible for state-maintained rest areas and parking areas. Non-MDT maintained rest areas include sites such as city park rest areas and other sites. Table 3 lists rest area types in Montana and the corresponding number of rest areas within each category. Many rest areas are directional facilities, meaning they consist of both an east and west or north and south facility. Table 3 summarizes rest area numbers considering directional facilities as single sites and as separate sites. Rest area location and maintenance designation are displayed graphically on Figure 15, which displays directional facilities as single sites.

Table 3: Safety Rest Area Inventory

Rest Area Type		Description	Number of Rest Areas	
			Counting Directional Facilities as a Single Site	Counting Directional Facilities as Separate Sites
MDT-Maintained	Rest Area	Provide a higher level of service, generally offering dedicated parking spaces for passenger and commercial vehicles; a building containing flush toilets and sinks with running water; picnic areas; and other amenities.	35	49
MDT-Maintained	Parking Area	Generally provide open parking for passenger and commercial vehicles, and vault toilets without running water. Parking areas provide important stopping opportunities and fill network spacing and truck parking needs along corridor segments.	9	14
Non-MDT Maintained	City Park Rest Area (CPRA)	The CPRA program was developed in the early 1990s. Legislative appropriations provided select communities with funding to improve city parks so they could be used as rest areas. These rest areas are maintained by communities.	10	10
Non-MDT Maintained	Other Sites	Rest areas and parking areas maintained by other entities such as federal/state agencies. These sites assist in filling spacing gaps in the statewide network and provide a safe location for motorists to stop and rest in locations not served by state-maintained or city park facilities.	6	7
Total Rest Areas			**60**	**80**

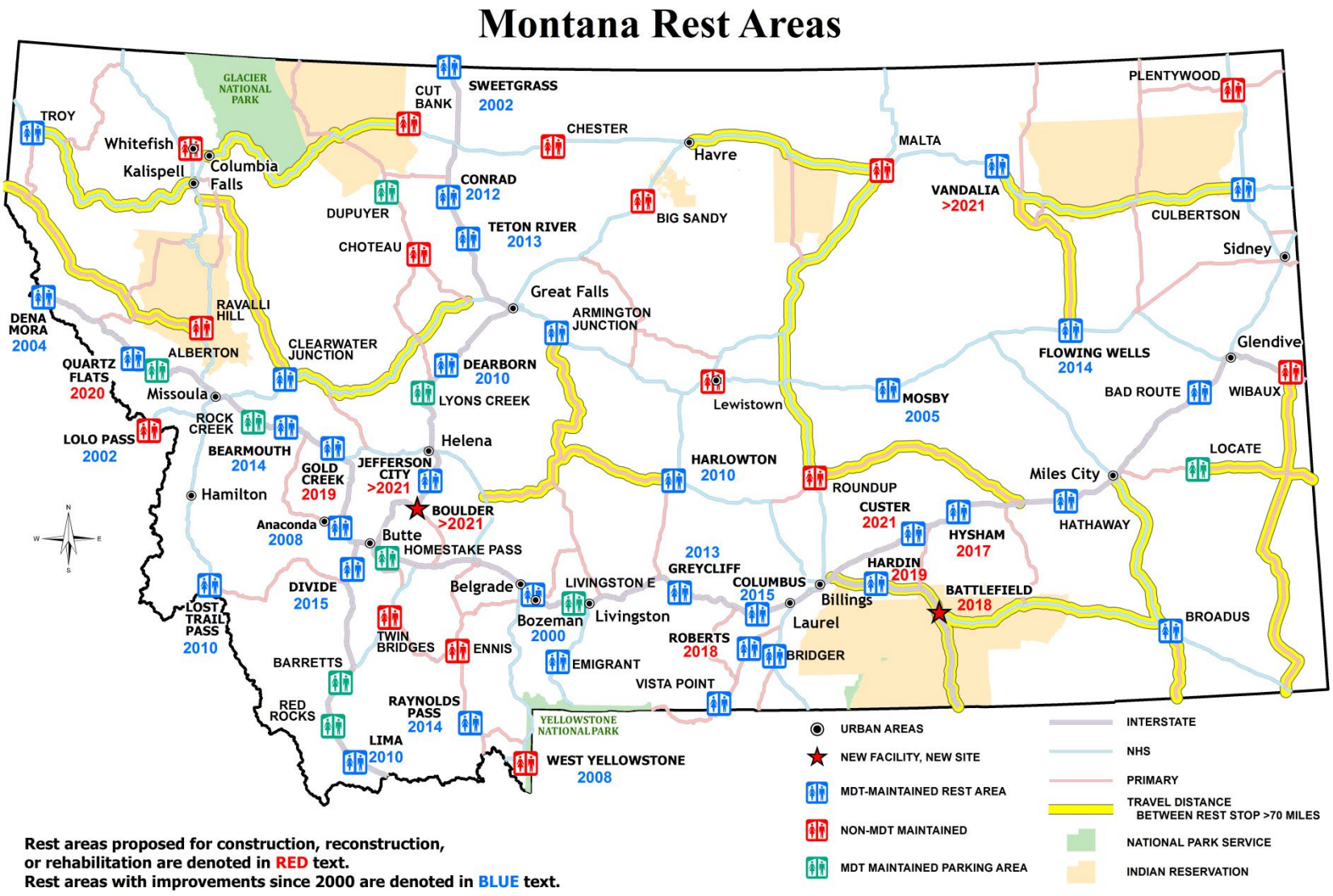
Source: Montana Rest Area Plan 2014; DOWL 2017.

Network Evaluation

MDT regularly evaluates the rest area network to assess rest area spacing and determine where additional sites might be needed or where reduction in service may be warranted. MDT strives to provide stopping opportunities spaced by a maximum of approximately one hour of travel time.

Yellow segments illustrated in Figure 15 indicate underserved corridors with distances greater than 70 miles between rest areas.

Figure 15: Highway Segments Underserved by Rest Areas



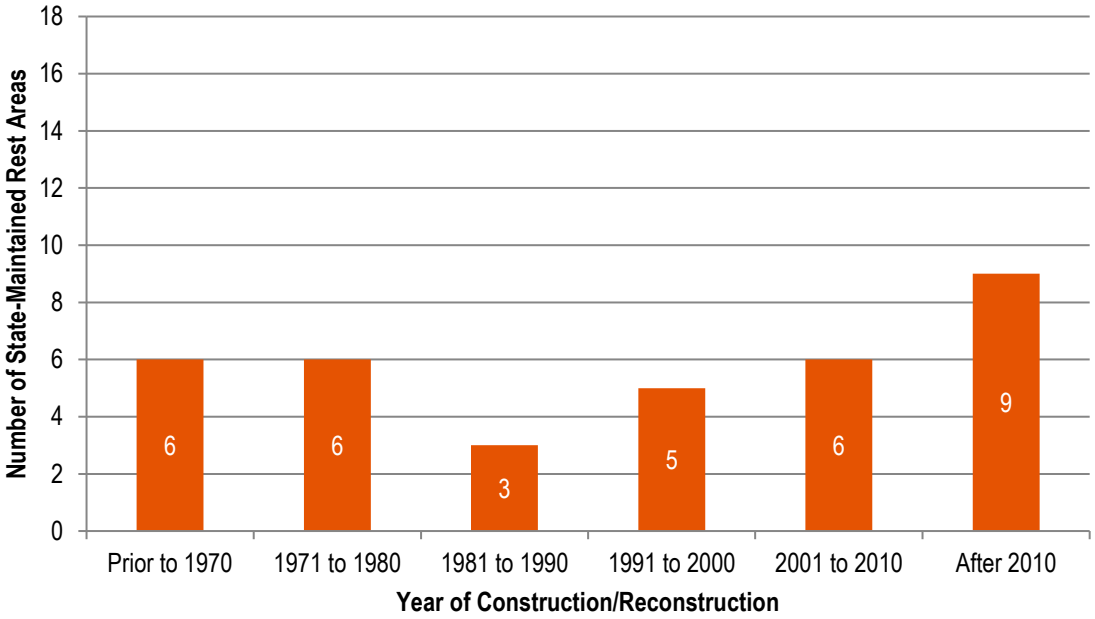
Source: Montana Rest Area Plan 2014.

Rest areas contain many elements that must be maintained for proper function and operation of the facility. Rest area elements vary by type but generally include parking lots, site features such as picnic tables and sidewalks, structural elements such as restroom fixtures and building features, and water and wastewater systems. Many sites also offer amenities such as pet areas, trails, drinking fountains, display cases, and historical markers.

Condition

MDT periodically conducts condition assessments of its rest area assets. State-maintained rest areas range in age from new construction to more than fifty years old. Figure 16 depicts state-maintained rest area year of construction or reconstruction. Substantial progress has been made in recent years with several rest area construction, reconstruction, and rehabilitation projects.

Figure 16: Rest Area Construction/Reconstruction

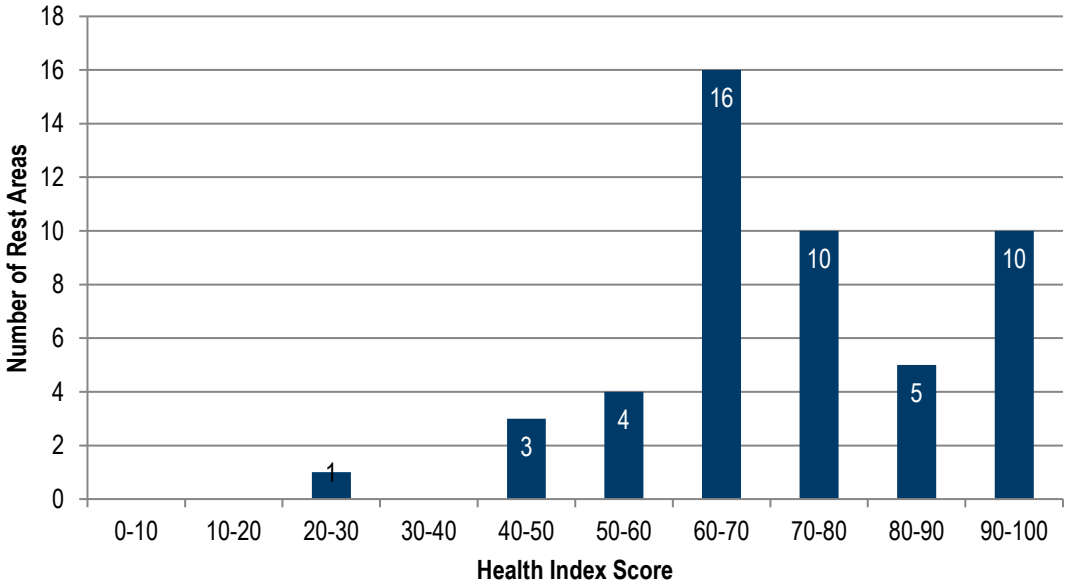


Source: Montana Rest Area Plan 2014; DOWL 2017. Total number of safety rest areas (35) depicted in figure counts directional facilities as a single site.

Recognizing age is only one component of condition, MDT uses a health index scoring methodology to assess the adequacy and availability of services at state-maintained rest areas. The scoring system considers parking, site features, structural elements, water, wastewater, and amenities at each rest area site. Scoring ranges from 0 points to 100 points, with a higher score indicating a better facility. Rest areas with lower health index scores indicate greater need and are generally targeted for improvements before rest areas with higher scores. Rest areas with lower scores generally correspond with older facilities that have reached the end of their service life, are undersized for current demand with respect to parking and restrooms, and do not meet current design standards or regulations.

Figure 17 summarizes health index scores for state-maintained rest areas. Scores represent the sum of parking, site, structure, water, wastewater, and amenity scores. The Statewide Rest Area Prioritization Plan Committee regularly evaluates rest areas with health index scores of 70 or lower for potential improvements.

Figure 17: Health Index Score Distribution for State-maintained Rest Areas



Source: Montana Rest Area Plan 2014. Total number of safety rest areas (49) depicted in figure counts directional facilities as separate sites.

Trends and Outlook

In recent years, MDT has taken a proactive approach to evaluate and improve its rest area assets. Based on available funding, MDT nominates projects each year to rehabilitate and reconstruct existing rest areas to meet today's standards and construct new rest areas in accordance with guidelines outlined in the *Montana Rest Area Plan*.

Using a phased approach and design-build delivery methods, MDT has incorporated innovative solutions to address safety and accessibility, meet stringent water and wastewater regulations, and develop site-appropriate rest areas. MDT continues to maintain parking areas and work with communities as possible to provide stopping locations through the City Park Rest Area (CPRA) program.

Highway-Rail Crossings

Roadways intersect railroads in numerous locations across Montana. When these crossings occur at the same level or grade, they create potential safety and mobility concerns for vehicles and non-motorized users. MDT continues to focus on improving safety where public roadways cross railroads.

Apart from highway-rail crossings, MDT does not administer rail funding or oversee rail facilities. Refer to Volume II (Users) for additional information about the passenger and freight rail network in Montana.

Governing Framework

The Federal Railroad Administration (FRA) issues and enforces federal regulations relating to safety at highway-rail crossings, conducts rail safety research, and provides rail safety guidance and best practices. FRA regulations specify that railroad operators must perform a variety of duties to ensure safety at highway-rail crossings, including testing warning devices, installing lighting and retro-reflective materials on rail cars to enhance visibility, sounding the horn when approaching crossings, maintaining track and signals at crossings, and reporting all incidents and collisions. FRA also administers the Railroad Safety Infrastructure Improvement Grant program to fund safety improvements to railroad infrastructure, including upgrades to railroad crossings and the separation of railroad crossings and roads. In fiscal year 2016, grants were awarded to the City of Shelby to upgrade two pedestrian and motor vehicle crossings.

Under 23 U.S.C. Section 130, FHWA apportions funds to states each year for safety improvements at public highway-rail crossings to install protective devices at crossings and eliminate hazards. States have the responsibility for determining which public crossings should be improved and the type of warning and traffic control devices that should be installed in each location, including warning systems, advance roadway signage, and pavement markings. FHWA also defines standards for installation and maintenance of traffic control devices, including those at highway-rail crossings, as detailed in the Manual on Uniform Traffic Control Devices (MUTCD).

MDT's Rail, Transit and Planning Division conducts rail planning activities; administers the Montana Essential Freight Rail Loan program in accordance with MCS 60-11-113, and provides administrative and technical support for the Rail Service Competition Council.

Inventory

Highway-rail crossings can occur at grade (i.e., at the same level), or they may be grade separated (where the highway is either above or below the railroad tracks). Crossings can occur at the intersection of a public roadway under the jurisdiction of a government authority, or they may occur at the intersection of a private road such as a farm or industrial access roadway.

In accordance with 23 USC 130, MDT maintains a highway-rail grade crossing inventory system of a total of 1,359 public at-grade crossings in Montana. In addition, Montana has a total of 212 grade-separated crossings. Of these, 80 are highway underpasses and the remaining 132 are highway overpasses (Table 4). MDT does not maintain an inventory of the 1,663 private at-grade crossing across Montana as safety funds are not available for these crossings.

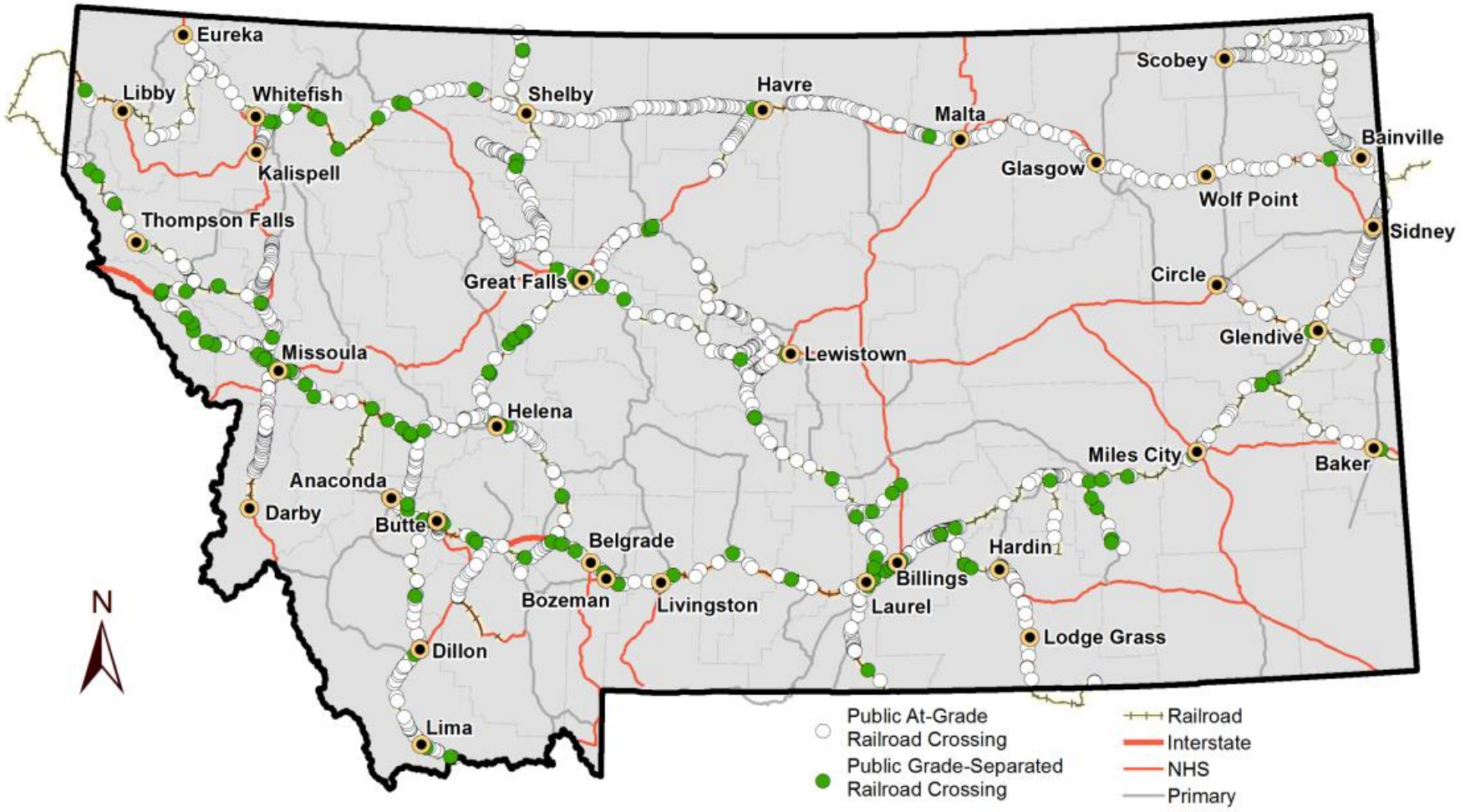
Table 4: Highway-Rail Crossing Inventory

Element	At-Grade Crossings	Grade-Separated Crossings	
		Underpasses (highway under railroad)	Overpasses (highway over railroad)
Highway-Rail Public Crossings	1,359	80	132

Source: MDT Traffic & Safety Bureau 2015; DOWL 2017.

Figure 18 illustrates the location of at-grade and grade-separated underpass crossings in Montana.

Figure 18: Montana Rail Crossings



Source: MDT Traffic & Safety Bureau 2015.

Condition

On a three-year rotating schedule, MDT conducts an evaluation of the 1,359 public at-grade crossings in the state to assess vehicle counts, sight distance, and roadway geometry. MDT also requests information from rail operators including the number of trains, train speed, and train type for each crossing location, and other factors to determine potential safety concerns. MDT inputs this data into its database and calculates a priority index for each crossing location based on its relative safety. This system enables MDT to rank and prioritize locations for safety improvements, which primarily entail installation of signal systems. MDT also requests feedback annually from railroad operators and local governments on desired safety improvements for specific crossing locations.

MDT receives approximately $3.5 million each year from FHWA for grade crossing improvements. MDT uses these funds to install new and replace outdated signal systems. Per the administrative rules of Montana, the road authority owns the signal systems, while the railroad operator is responsible for inspecting, testing, and maintaining the system.

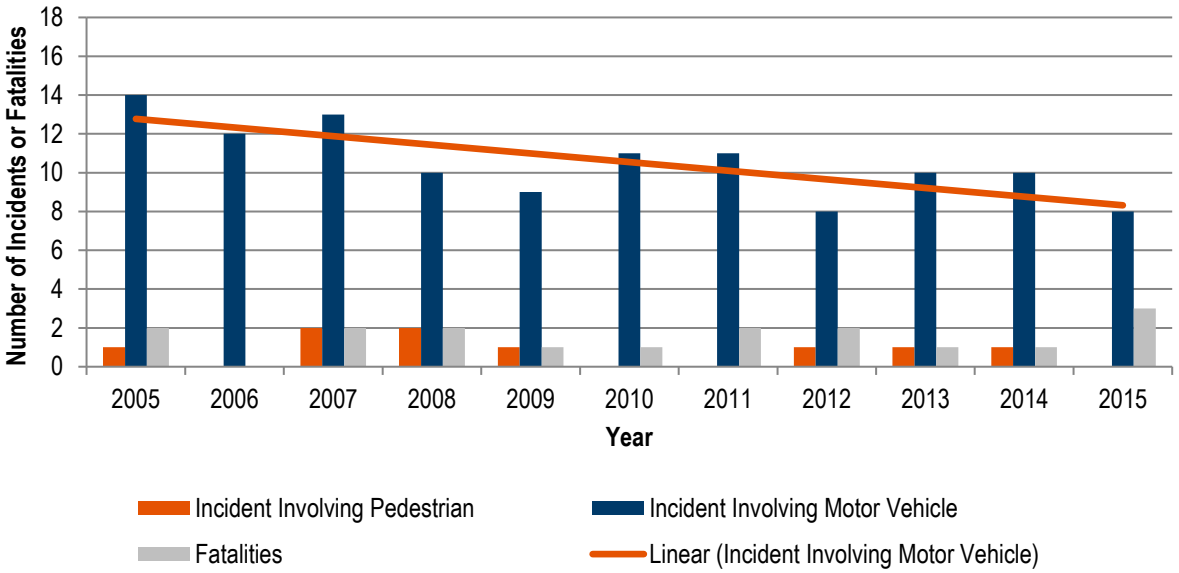
In 2016, MDT completed the *Montana Rail Grade Separation Study* to review at-grade and highway under grade-separated railroad crossings. The study determined that grade-separation solutions may be feasible for railroad crossings in Billings, Bozeman, and Helena. Additionally, five grade-separated crossings were identified for further investigation due to vertical or horizontal clearance and/or roadway geometry issues. Using the results of this study, MDT will determine if improvements in these locations would be viable and cost effective.

For highway underpass crossings where railroad bridges cross over a highway, the railroad operator is responsible for the integrity of the rail structure. Each railroad operator owns and inspects railroad bridges and addresses safety improvements as needed to maintain structural integrity.

Trends and Outlook

The FRA records highway-rail incidents and fatalities in its safety database. As illustrated in Figure 19, the number of incidents involving motor vehicles in Montana dropped from a high of 14 in 2005 to a low of 8 in 2015. The number of fatalities and incidents involving pedestrians has varied from zero to three during the same period.

Figure 19: Highway-Rail Incidents and Fatalities



Source: Federal Railroad Administration Office of Safety Analysis 2015; DOWL 2017. Data reflects public crossings in Montana only.

MDT continues to monitor safety at highway-rail crossings and invest in safety improvements within available funding where improvements are feasible and cost effective. MDT is also focused on fostering economic vitality via rail freight through its efforts to coordinate regular meetings of the Rail Service Competition Council to help facilitate development of rail services, coordinate with railroads, and promote expansion and construction of rail services.

Pedestrian and Bicycle Facilities

Sidewalks and bicycle accommodations are important physical assets within the transportation network. Sidewalks are supported by features such as curb ramps, crosswalks, and pedestrian signals. Pedestrian and bicycle facilities offer transportation system users an alternative to driving and are components of a multimodal system.

These facilities increase safety for non-motorized users, offer a choice in travel, and provide economic benefits to communities through improved connectivity of the system and access to services.

Governing Framework

Federal Policies

Planning for pedestrian and bicycle facilities at the federal level began in 1991 with the passing of the Intermodal Surface Transportation Efficiency Act (ISTEA). This bill established new funding categories for the development and improvement of pedestrian facilities. ISTEA also required state departments of transportation to establish a pedestrian and bicycle coordinator and implemented consideration of pedestrian facilities in the transportation planning process.

Subsequent federal transportation bills have continued funding programs for pedestrian and bicycle facilities, and federal policies continue to evolve and advocate consideration of pedestrian and bicycle facilities in transportation system planning and design. Federal legislation related to pedestrian facility funding, planning, and policies are reflected in Section 217 of Title 23 of the United States Code (23 U.S.C. 217).

The Americans with Disabilities Act (ADA) of 1990 also applies to pedestrian facilities. The act prevents discrimination on the basis of disability and applies to the programs and activities administered by MDT, including physical assets built before and after 1990.

State and Local Policies

The Montana Shared-Use Path Act is reflected in Part 3 of Title 60 of the Montana Code Annotated (MCA 60-3-301 through 304). The act outlines the conditions under which footpaths and bicycle trails may be established using funds provided by the Transportation Commission. The act also specifies the duties of the Transportation Commission and MDT in regard to pedestrian facilities such as offering technical assistance and construction standards.

MDT recognizes the value and benefits of pedestrian and bicycle facilities to the transportation network and has an established state-level pedestrian and bicycle program. In compliance with federal legislation, MDT employs a bicycle/pedestrian coordinator. The coordinator performs a variety of functions such as distributing safety and planning information, coordinating training for bicycling and pedestrian facility design, providing technical assistance, and facilitating a variety of education and outreach programs such as MDT's Share the Road promoting pedestrian and bicycle safety. MDT maintains a pedestrian and bicycle website with links to applicable laws, safety tips, maps, tourist information, events, and other informational sources.

Municipalities and other local jurisdictions are typically responsible for planning, constructing, and maintaining pedestrian and bicycle facilities. Urban area comprehensive plans and non-motorized plans address pedestrian and bicycle facilities, identify needs and deficiencies, and provide the framework for project development. MDT administers limited federal funds for construction of pedestrian and bicycle facilities.

MDT considers shared-use paths (SUP) in state highway rights of way that are funded by and included in MDT projects or as non-MDT project encroachments. MDT's policy includes various elements for evaluation such as long-term ownership and maintenance responsibility, transportation purpose, location in specific proximity to city limits, enhancement of traffic safety, connectivity, impact to the Highway State Special Revenue Account, and cost in consideration of need.

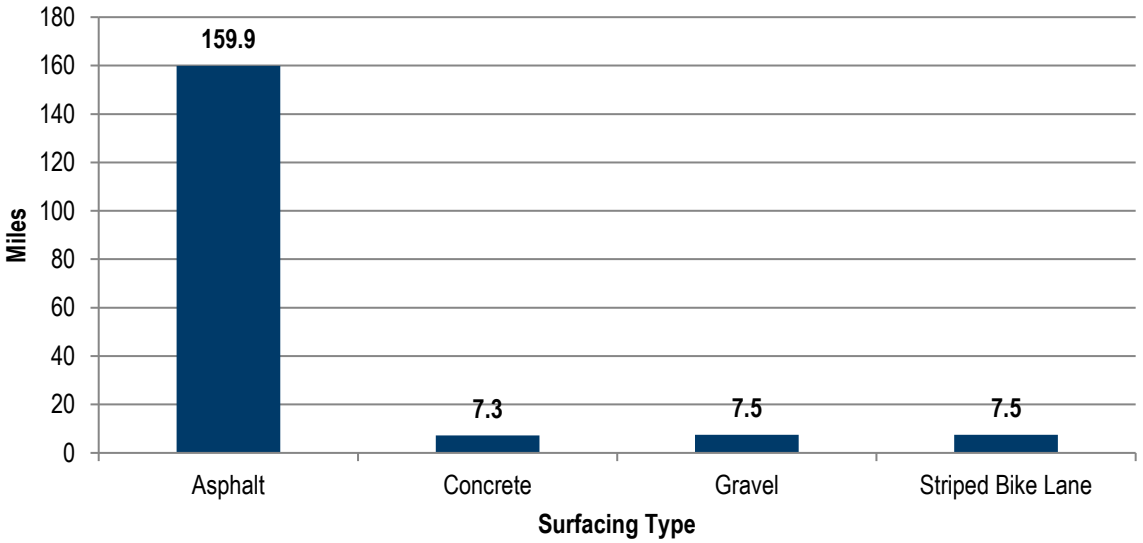
As pedestrian facilities are considered in the planning and project development process, MDT also recognizes the importance of providing equitable access to all transportation users. MDT's *ADA Transition Plan* guides the department's efforts to provide an accessible transportation system within the state of Montana through removal of accessibility barriers. The plan provides an overview of MDT's external ADA program and identifies the methods MDT uses to comply with ADA regulations.

MDT follows federal guidelines for the design of bicycle lanes, paths, and widened shoulders when these facilities are determined appropriate for a project. MDT's bicycle facility design standards incorporate the AASHTO *Guide for the Development of Bicycle Facilities*. MDT has also adopted the *Public Right-of-Way Accessibility Guidelines* (PROWAG) for design of accessible pedestrian features on new construction and alterations to existing transportation assets.

Inventory

In accordance with House Bill 604 passed during the 64th Montana Legislature, MDT maintains an inventory of trails and paths created under the Montana Footpath and Bicycle Trail Act of 1975. MDT maintains information on path length and width, coordinates, setting, type of path, and agency responsible for maintenance. As illustrated in Figure 20, approximately 180 total SUP miles were inventoried in 2015, of which approximately 87 percent were asphalt surfaced.

Figure 20: Statewide Shared Use Path Mileage by Surfacing Type



Source: MDT Shared Use Paths Inventory and Detailed Maintenance Plan 2015; DOWL 2017. Mileage reflects paths within state-maintained federal-aid highway rights-of-way that are separated from motorized vehicular traffic (excluding structures and intersections).

All public roads in Montana are open to cyclists although roads vary for the type of bicycle accommodations provided. MDT maintains a highway map with information and roadway data to inform bicyclists of roadway features and geometrics, shoulder width, slope, rumble strip presence, traffic volumes, and locations of facilities such as rest areas, campgrounds, bicycle shops, and hospitals. This map, entitled "Bicycling the Big Sky," is found at the following link: https://mdt.mt.gov/travinfo/docs/bike_map.pdf.

Pedestrian paths such as sidewalks provide direct access to building entrances and contain features such as curb ramps to make the facilities accessible to pedestrians with disabilities. MDT currently maintains an inventory of ADA features within MDT right-of-way such as curb ramps, pedestrian signals, and limited information on sidewalks. Table 5 summarizes the number of curb ramps and pedestrian signals that MDT is responsible for along with ADA compliance status. ADA compliance data is used to measure and track progress toward eliminating accessibility barriers and ultimately informs funding decisions and the project development process.

Table 5: ADA Feature Inventory

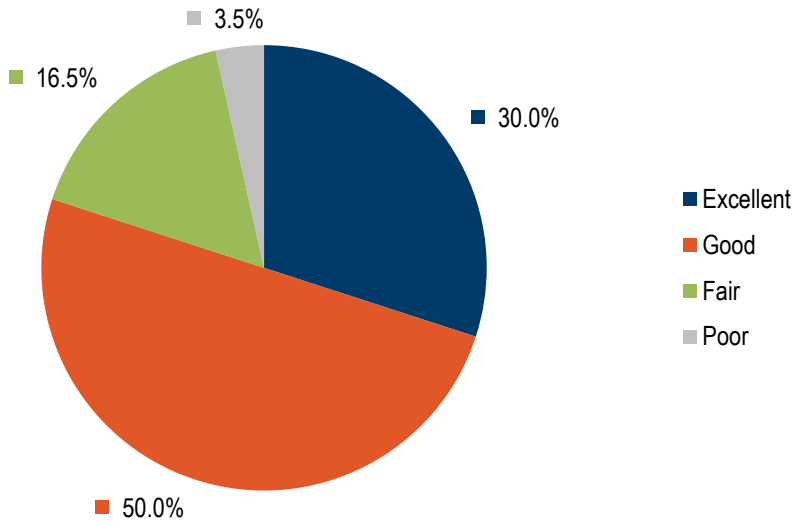
Feature	Total	Compliant	Non-Compliant	% Compliant
Curb Ramps	14,960	3,164	11,796	21%
Pedestrian Signals	614	67	547	11%

Source: MDT Office of Civil Rights 2015; DOWL 2017.

Condition

MDT maintains condition data for trails and paths included in its database. MDT has defined a qualitative rating system based on the degree of surface distress observed during inspection (including cracking, oxidation, and pothole formation/raveling). Of the approximately 180 statewide miles catalogued in the SUP database, approximately 80 percent are in good or excellent condition (Figure 21).

Figure 21: Statewide Shared Use Path Condition



Source: MDT Shared Use Paths Inventory and Detailed Maintenance Plan 2015; DOWL 2017. Condition data presented for paths within state-maintained federal-aid highway rights-of-way that are separated from motorized vehicular traffic (excluding structures and intersections).

The condition of bicycle lanes or shoulders not included within the SUP database can be estimated using MDT PvMS pavement condition data and viewed using MDT PathWeb.

ADA inventory data contains information on continuity of sidewalks and also addresses other conditional elements such as trip hazards and the condition of detectable warning devices on curb ramps. The condition and functionality of ADA features is factored into a scoring procedure that identifies the most critical ADA needs.

Trends and Outlook

Planning and consideration of pedestrian and bicycle improvements will continue to be an important part of MDT programs and projects. MDT has identified focus areas for improvement such as establishment of a consistent planning approach for incorporation of pedestrian and bicycle improvements into highway improvement projects. MDT's planning, engineering, and maintenance functions also work together to identify paths in need of repairs and consider for inclusion in the scope of work for future projects where right-of-way overlaps.

ADA improvements have traditionally been incorporated into bridge and roadway projects funded through MDT's core funding program. Through the development of the *ADA Transition Plan* and associated inventory data, MDT funds independent ADA improvement projects with dedicated funding. The transition plan provides the framework and methods for identification of projects that specifically address non-compliant ADA features within a designated corridor. The plan also provides an implementation plan and schedule for addressing ADA deficiencies. While

dependent on available funding, MDT plans to achieve full compliance through continuation of the ADA program.

Transit

The public transportation network is operated by a number of different entities and comprises several modes, including rural and urban bus systems, passenger rail, demand response vehicles, vanpools, carpools, and passenger air service. Assets such as vans and buses are not permanent assets, but are continuously replaced and updated based on life cycle, demand, and availability of funds. The following sections focus on urban and rural transit assets financially supported by MDT. Rural and urban transit distinctions are separate and unique from previous definitions for roadways systems. Small urban for transit purposes is described by the Federal Transit Administration (FTA) as having a population of more than 50,000.

Governing Framework

The FTA is the regulatory authority overseeing transit in the United States. FTA develops regulations and manages programs to promote a safe and efficient transit system.

FTA provides financial assistance to states, tribes, and local public agencies for the development of new transit systems and maintenance and operation of existing systems. FTA also provides technical assistance and administers an asset management program to prioritize funding to achieve or maintain transit assets in a state of good repair.

The MDT Rail, Transit and Planning Division identifies funding needs, administers FTA and state funding programs for rural transit and intercity bus services, and assists recipients to ensure compliance with federal regulations.

Inventory

Transit assets funded through MDT generally encompass maintenance equipment, rolling stock (i.e., buses and vans used to carry passengers), and fixed asset building facilities used to support transit operations and service. MDT has provided financial assistance in the form of vehicle purchases for approximately 325 vehicles throughout Montana.

Rural Transit

MDT administers funding assistance for transit in the rural areas but does not serve as an operator. Of the 40 transit operators in the state, 37 operate rural systems. The majority of rural transit systems provide demand response services (32 of 37); smaller fixed route service is offered in Butte, Bozeman, Kalispell, Big Sky, and Helena.

Urban Transit

Larger urban fixed-route systems operate in Great Falls (Great Falls Transit District), Billings (MET Transit), and Missoula (Mountain Line). In these areas, transit providers work directly with the MPOs to develop transit plans for their jurisdictions. Unlike the rural areas, FTA issues formula programs and grants and provides direct oversight for transit in these areas.

Table 6 shows that the three urban transit systems have approximately 100 vehicles available for maximum service, including demand response and bus vehicles. The average vehicle age is between four and ten years, depending on the system and the mode.

Table 6: Urban Transit Provider Fleet Data

Agency	Mode	Vehicles Available for Maximum Service	Vehicles Operated in Maximum Service	Percent Spare Vehicles	Average Fleet Age in Years
Billings MET	Demand Response	15	11	27%	6.1
	Bus	25	20	20%	10.4
Great Falls Transit	Demand Response	8	7	12.5%	4.6
	Bus	18	13	28%	5.8
Missoula Mountain Line	Demand Response	10	7	30%	5.2
	Bus	24	21	12.5%	6.6

Source: MDT Transit Section 2015; DOWL 2017.

Condition

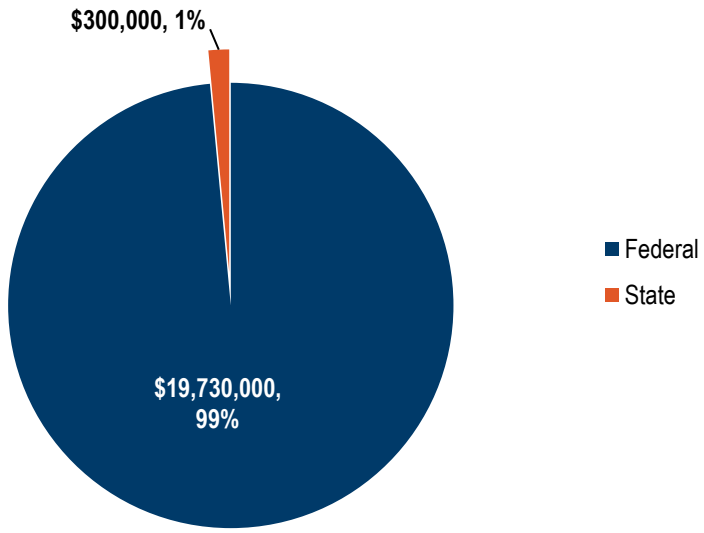
FTA Circular 5010.1D provides guidance on expected life span for bus fleets in safe, working condition.

- Large, heavy-duty transit buses including over-the-road buses (approximately 35'–40', and articulated buses): at least 12 years of service or an accumulation of at least 500,000 miles.
- Small size, heavy-duty transit buses (approximately 30'): at least ten years or an accumulation of at least 350,000 miles.
- Medium-size, medium-duty transit buses (approximately 25'–35'): at least seven years or an accumulation of at least 200,000 miles.
- Medium-size, light-duty transit buses (approximately 25'–35'): at least five years or an accumulation of at least 150,000 miles.
- Other light-duty vehicles used as equipment and in transport of passengers (revenue service) such as regular and specialized vans, sedans, and light-duty buses: at least four years or an accumulation of at least 100,000 miles.

Trends and Outlook

In non-urban areas, the transit system is largely supported through federal funds, as shown in Figure 22. Federal allocations to Montana including rural, urban, and tribal systems were nearly $20 million in 2015.

Figure 22: Montana Federal and State Transit Funding



Source: MDT Grants Bureau 2015; DOWL 2017. Values rounded and approximated for state fiscal year 2015.

Prior to 2015, the state transit funding source of about $300,000 annually was directed from motor vehicle registration fees. In the 2015 Legislative Session, the funding source was changed from vehicle registration fees to rental car fees, and expected to increase to about $750,000 annually starting in 2016. Additionally, by state statute, $75,000 of fuel tax collections is directed to six city or urban transportation districts (Billings, Butte, Great Falls, Helena, Missoula and Dawson County) with a percentage to each allocated by formula.

Aviation

Air transportation services provide a vital role in the state's economy by connecting people for business-related travel, supporting the movement of goods through air freight shipping, and fostering tourism. The state aviation system consists of all commercial and general airports that are open to the public. Aviation assets include airport buildings and related services; runway, taxiway, and parking area pavements; and equipment such as navigational aids.

Governing Framework

The Federal Aviation Administration (FAA) is the regulatory authority overseeing aviation in the United States. The FAA develops and maintains regulations in an effort to promote a safe and efficient air transportation system.

The MDT Aeronautics Division partners with the FAA to assist all public airports in Montana. The division is responsible for activities such as airport inspections, provision of technical assistance, registration of pilots and aircraft, delivery of aviation training and educational programs, and management of air search and rescue operations. The Division promotes safety in aeronautics through appropriate supervision, education, and activities.

The division also promotes aviation and supports infrastructure development and rehabilitation through administration of loan and grant programs to fund aviation related projects. An Aeronautics Board, consisting of members that represent various aspects of the industry, provides advice to MDT on aviation-related topics and determines recipients of loan and grant funds.

The Aeronautics Division, in cooperation with the FAA, facilitates development of State Aviation System Plans (SASPs). The scope of each SASP varies with the changing needs of the system but plans commonly encompass capital improvements planning and pavement condition reports. SASPs are customarily developed to include inventory assessments, trend forecasting, identification of needs, and project prioritization strategies. These SASPs provide big-picture planning, help justify funding, and offer guidance for airport development in Montana.

Inventory

Airports

The Montana aviation system includes 124 public-use airports. The airports are classified according to multiple systems. The FAA classifies airports that are part of the National Plan of Integrated Airport Systems (NPIAS). These are airports that are part of the federal system, are significant to national air transportation, and are eligible to receive federal funding under the Airport Improvement Program (AIP). NPIAS airports are classified into categories including primary and non-primary commercial service airports and general aviation airports. Sixty-three out of the total 124 Montana airports are included in the NPIAS; however, only 13 of these airports are classified as commercial service airports. The remaining 50 NPIAS airports are classified as general aviation airports. In addition, 61 other airports are not included in the NPIAS system.

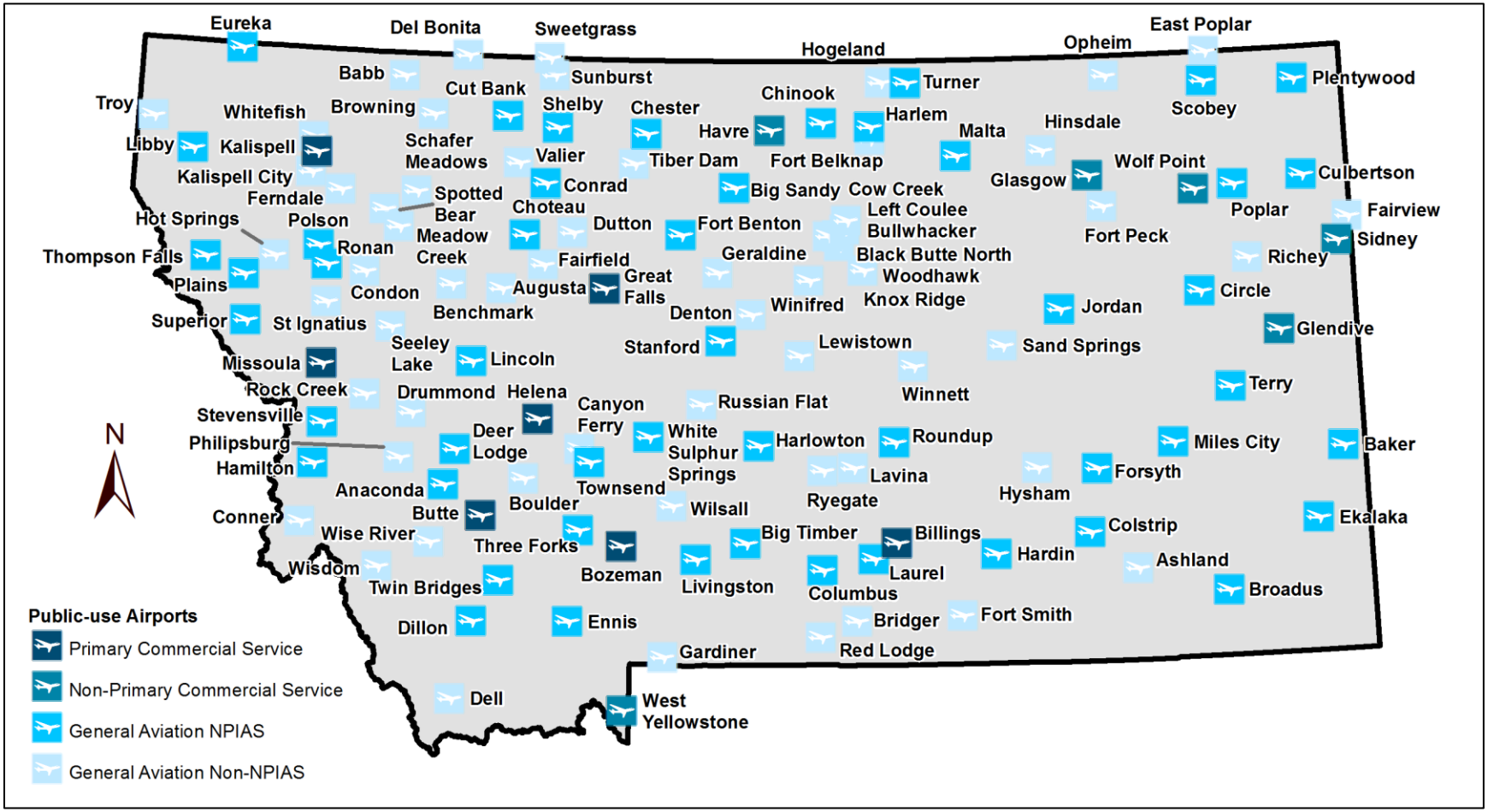
Table 7 lists the designations and role descriptions used to define airports in Montana and the corresponding number of airports within each category. Airport location and role classification are displayed graphically on Figure 23.

Table 7: Airport Roles

Airport Role		Description	Number of Airports
Commercial Service	Primary	Accommodate scheduled major/national or regional/commuter commercial air carrier service; or relieve scheduled air carrier airports of corporate aviation activity.	7
	Non-Primary	Airports which provide a level of scheduled air service to communities that otherwise would have limited access to the nation's air transportation system.	6
General Aviation	NPIAS	Airports without scheduled commercial service that are included in the NPIAS.	50
	Non-NPIAS	Airports that are public use and not in the NPIAS.	61
Total Public-Use Airports			**124**

Source: MDT Airport/Airways Bureau 2015; DOWL 2017.

Figure 23: Airport Locations



Source: MDT Airport/Airways Bureau 2015.

The primary commercial service airports in Montana are located in Billings, Bozeman, Butte, Kalispell, Great Falls, Helena, and Missoula. These airports receive scheduled commercial passenger service and enplane at least 10,000 passengers per year. Seven airports are classified as essential air service (EAS) commercial service airports. EAS airports are located in the communities of Butte, Glasgow, Glendive, Havre, Sidney, West Yellowstone, and Wolf Point. The EAS program assures that smaller communities, that were offered scheduled air service prior to airline deregulation, are still offered a minimal level of scheduled air service. USDOT subsidizes air carriers for EAS communities, which are typically not able to produce adequate demand to result in cost-effective air service.

Source: MDT Airport/Airways Bureau 2015.

The majority of Montana's airports are classified as general aviation airports, serving communities that do not receive scheduled commercial service. Level one general aviation airports are the most developed of the general aviation airports while level four are the least developed. General aviation level designations differentiate among Montana's diverse representation of airports. Pavement type varies among airports between asphalt, concrete, gravel, or turf.

Airspace and Navigational Aids

Aviation assets also include various components of the airspace system that provide navigation, communication, or other informational services to help guide pilots through the air. In 2017, six air traffic control towers operated in Montana including Great Falls, Billings, Bozeman, Helena, Missoula, and Kalispell. Control towers and air traffic controllers direct and regulate aircraft through the controlled airspace surrounding airports and provide information and other support for pilots. Pilots and aircrafts must meet specific certification, communication, and navigation requirements to operate in controlled airspace.

Various types of navigational aids are used at airports in Montana to provide assistance to pilots, particularly in poor weather conditions. Airports with instrument approach capabilities have systems or equipment in place to allow an aircraft to operate under instrument flight conditions. Airports may also possess navigational aids such as beacons or lighting that allow for visual identification of runways. Several airports also have automated weather reporting equipment in place to report weather conditions.

Other Assets and Services

A variety of other assets and services are provided at Montana airports and vary depending on airport type and size. Airport buildings or terminals provide amenities for travelers and pilots such as parking areas, restrooms, food service, and internet. Many airports also contain facilities to store aircraft for overnight or long-term storage. Other airport services may include aircraft fuel service, flight training, fixed base operators, and rental or courtesy car service.

MDT owns, operates, and maintains 16 public use airports, navigation beacons, and 68 air-to-ground radios.

System Adequacy

The 2015 SASP analyzed the adequacy of the airport system in Montana in terms of geographic coverage and how well the system serves its users based on each airport's role. The existing airports in Montana generally provide suitable geographic coverage of the state with over 92 percent of Montana's population within a 30-minute drive of a system airport.

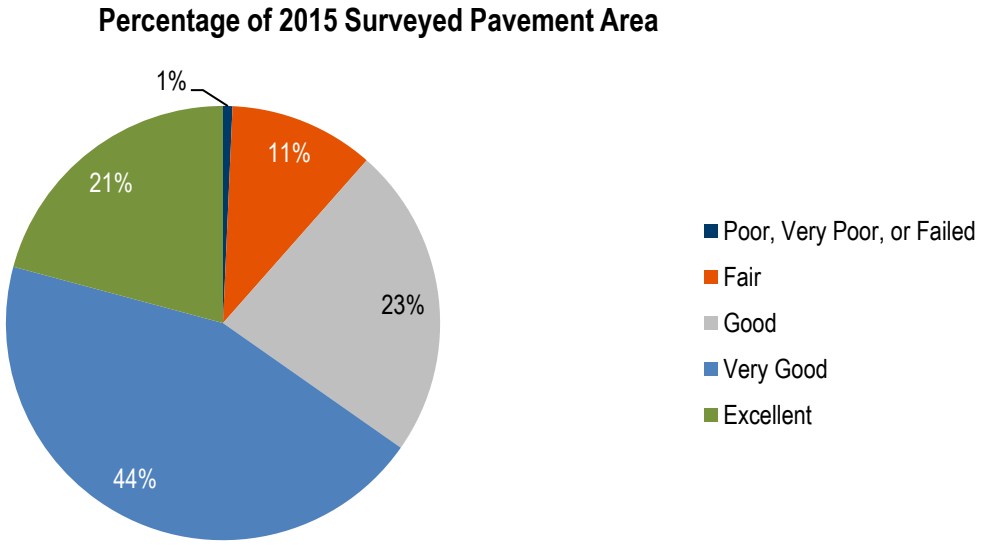
In addition to coverage, each airport was analyzed using facility and service performance benchmarks. The benchmarks were established for each airport role category as a tool for measuring the current performance of the system. Benchmark categories include runway length, runway lighting, taxiway type, instrument approach minimum, fuel sales, automated weather reporting, aircraft parking, and rental cars/courtesy cars.

Condition

The condition of airport infrastructure elements are typically reported in comprehensive airport development master plans which document existing conditions and evaluate alternatives for improvements. Many of Montana's airports have completed master plans or capital improvement plans that identify the airport's most critical needs.

MDT partners with the FAA to develop Pavement Condition Indexes (PCI) to inventory general aviation airport airside pavements and determine maintenance and rehabilitation needs and priorities for paved surfaces. The PCI values correlate to a standard scale for comparing pavement condition and structural integrity. Figure 24 summarizes the pavement condition ratings of airport pavements surveyed in 2015. The figure indicates approximately 88 percent of airside pavements had PCI values representing good, very good, or excellent pavements in 2015. MDT, the FAA, and local airports utilize the PCI ratings and predictions for planning and budgeting of maintenance and rehabilitation efforts relating to airside pavements.

Figure 24: Airside Pavement Condition Ratings



Source: Montana Aviation System Plan Update 2015; DOWL, 2017. Values rounded to the nearest percentage.

Trends and Outlook

The 2015 SASP identified the following recent trends and issues that may have an effect on aviation infrastructure in Montana.

- The future of the EAS program is uncertain due to changes in federal legislation and financial concerns. Removal of EAS designations will most likely have negative economic effects on the corresponding communities.
- Ground-based navigation systems are being phased out and replaced by satellite-based global positioning systems (GPS). Cost-savings may result from the transition to a satellite-based system as ground-based systems are decommissioned.
- Technologies are emerging to allow the use of messaging services to deliver information between the pilot and controller. These technologies have the potential to increase safety through increased precision and more efficient delivery of information.
- Hospital use of Montana's airports is important due to increased distances between communities. Airports greater than fifty miles from a major urban area serve an important role in terms of air ambulance activity.
- The number of general aviation pilots is declining. Increased education and promotion of general aviation may be needed to support aviation in Montana.

WHAT WE HEARD

Stakeholder and public involvement are crucial elements of TranPlanMT. Communication and collaboration with members of the public and transportation partners provide important feedback to help MDT develop goals and strategies for the plan. To understand the needs and priorities of Montana's transportation system from the perspective of daily users, MDT used multiple methods of outreach including a three-month online survey tool, stakeholder workshops and interviews, a project-specific website, and an open comment period running throughout the entire planning process.

MDT Biennial Survey

Every two years, MDT contracts with a third party to conduct a public involvement survey and a stakeholder survey to examine:

- perceptions of the current condition of the transportation network;
- views about possible actions that could improve the transportation network in Montana; and
- opinions about the quality of service MDT provides to its customers.

In 2015, the survey interviewed 1,039 households and published the results on MDT's website (http://www.mdt.mt.gov/publications/docs/surveys/2015_tranplan21_public_involvement.pdf). The long-term nature of the surveys allows MDT to track progress and changes in customer expectations over time. In addition to surveying public opinion, MDT conducts a similar survey of transportation stakeholders to assess perceived transportation needs, improvements, and services in Montana.

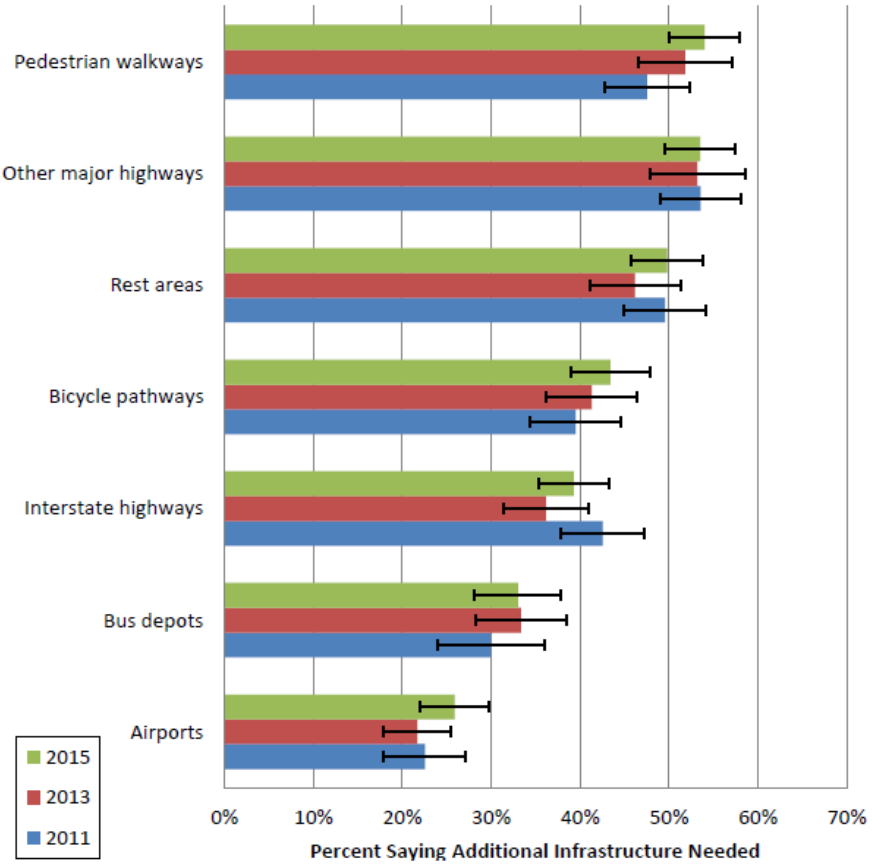
With respect to transportation assets, the biennial survey showed that respondents were generally satisfied with the condition of the transportation system, though they believe pavement condition will become a problem across all districts. Survey respondents would like to see increased pedestrian walkways, bicycle pathways, and rest areas. Figure 25 presents the perceived need for facilities, equipment, or services.

Figure 26 presents respondent recommendations for improvements to the transportation system. Top priorities include:

- maintaining road pavement condition;
- keeping the public informed;
- including wildlife crossings and barriers;
- maintaining roadside vegetation; and
- improving transportation safety.

These priority areas align with the public comments received through the TranPlanMT survey.

Figure 25: Perceived Need for Facilites, Equipment, or Services

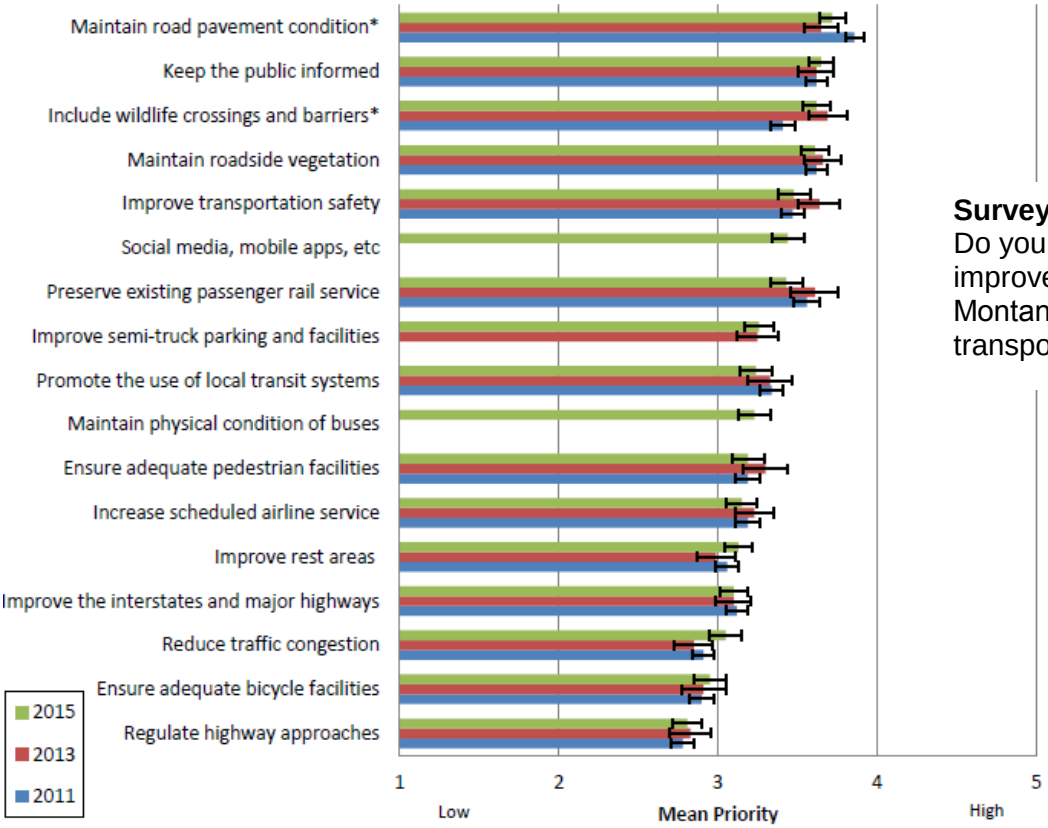


Note: Survey data are ranges. Error bars (⊢⊣) represent the upper and lower bounds of the estimate. Differences are significant when error bars do not overlap and are denoted by *.

Survey Question:
Do you see a need for additional facilities, equipment, or services?

Source: TranPlan 21 Public Involvement Survey Volume 1 2015.

Figure 26: Possible Improvements in the Trans. System and Roadways



Survey Question:
Do you see a need for improvements to Montana's transportation system?

Note: Survey data are ranges. Error bars (⊢⊣) represent the upper and lower bounds of the estimate. Differences are significant when error bars do not overlap and are denoted by *.

Source: TranPlan 21 Public Involvement Survey Volume 1 2015.

Public Comments

MDT received 24 written comments through email and traditional mail and more than 650 individual comments through the online survey tool. Comments relating to transportation assets are grouped and summarized in the following sections.

Roadways

A majority of survey respondents are pleased with the condition and maintenance of Montana's roadways, and they continue to advocate for maintenance strategies. Members of the public recommended continued focus on local partnerships and reliance on local knowledge to enhance improvement projects. Additionally, respondents value Montana's natural environment and relatively uncongested traffic flow, noting they wish to see little impact on either due to construction or maintenance efforts.

Table 8: Public Comment on Roadways

Topic Area	Comment/Suggestion
Roadways	• Focus on safety and maintenance as top priorities. • Maintain high-traffic corridors first and foremost. • Partner with stakeholders and communities to ensure a balance between daily and commercial users. • Place signage that is effective, readable, and cost-effective. • Continue maintenance procedures on a regular basis. • Use road dieting efficiently. • Decrease speed limits across the state. • Keep traffic moving during road construction. • Synchronize traffic signals, intersection signage, and construction plans to ensure less summer delay. • Listen to communities on proposed improvements to ensure effective options are selected. • Engage "smart" practices and technologies to increase efficiency. • Incorporate non-motorized concerns and suggestions more effectively. • Communicate planning horizons more effectively. • Maintain roadways in ways that minimize environmental impacts and support natural wildlife movement. • Continue strong winter maintenance/weather response programs.

Structures

Respondents are generally satisfied with the condition of bridges but would appreciate a clearer, more transparent maintenance plan communicated to the public. They also view structures as a spending priority and suggest using the best possible technology and practices available to keep bridges in working order and replacing them as needed.

Table 9: Public Comment on Structures

Topic Area	Comment/Suggestion
Bridges	• Ensure bridge maintenance decisions are timely, transparent, and appropriate. • Follow best practices and current design standards for bridge maintenance, repair, and replacement. • Investigate new materials and technology to modernize the update process. • Fix identified issues with bridge decks and structures.

Sidewalks/ADA Facilities

Respondents wish to see facilities for non-motorized and disabled users increasingly focused on as planning efforts continue. Comments recognized MDT's current efforts to address the issues they identify (e.g., shoulder widening), but push for more technologically advanced and efficient ways to integrate non-motorized travel.

Table 10: Public Comments on Sidewalks/ADA Facilities

Topic Area	Comment/Suggestion
Sidewalks/ADA Facilities	• Increase focus on the needs and priorities of these communities. • Support public transportation options where relevant improvements aren't feasible • Improve current facility accessibility. • Use shoulder widening, but investigate other improvements for non-motorized travel. • Increase signage and crossing signals. • Balance the needs of motorized and non-motorized users (e.g., in downtown areas). • Improve partnerships with local non-motorized groups and advocates.

Rest Areas

Respondents were highly positive about rest areas in Montana, commenting on their cleanliness, statewide coverage, and amenities. They support increasing the number of rest rooms, especially in urban areas and in corridors with long distances without amenities. Requests included wireless or cellular service to enable communications access (e.g., in an emergency situation) and focus on balancing the needs of commercial drivers (e.g., longer parking stalls, overnight use) with non-commercial travelers (e.g., single stall rooms, family changing bathrooms, pet areas).

Table 11: Public Comments on Rest Areas

Topic Area	Comment/Suggestion
Rest Areas	• Communicate closures more effectively and faster. • Place new rest areas in rural areas to support travelers. • Streamline construction and planning costs. • Balance the needs of individual, family, and commercial drivers in each rest area. • Install wireless internet or cellular service towers in the rest areas.

Stakeholder Feedback

Transportation stakeholders gathered on June 15, 2016, to discuss the long-range transportation planning process and goals and priorities for Montana. Stakeholders also participated in an interactive voting exercise to assess transportation trends in Montana and predict if these trends would increase, decrease, or remain unchanged during the next twenty years.

Trend areas included: driving age population, vehicle ownership, suburban migration, licensing regulations, congestion and time use, non-auto modes, fuel costs, labor force participation, GDP & real income growth, goods & services delivery, telecommuting/teleconferencing, social networking, shared mobility services, autonomous cars, and driverless vehicles.

Following the forecasting exercise, stakeholders were asked to participate in small group discussions in one of six policy areas: Montana's Economy, Montana's Environment, Montana Highway Safety, Preservation and Maintenance, Congestion and Delay Relief, and Transportation Options. For stakeholders unable to attend the workshop, interviews were conducted to provide opportunity for feedback on transportation priorities, goals, and other suggestions or concerns. Stakeholder comments are summarized in Table 12 according to workshop topic areas.

Table 12: Stakeholder Comments on Assets

Topic Area	Comment/Suggestion
Preservation & Maintenance	• Repair potholes in a timely manner. They cause safety concerns, and stakeholders perceive a delay in getting them repaired. • Conduct winter maintenance of roads but assure snow does not pile up on the adjacent sidewalks. • Mow ditches in rural areas more frequently. • Sweep streets in the spring to keep roads clear of debris. Bicyclists often ride in the driving lanes to avoid rock/gravel in the bike lanes/shoulders. • Assure construction projects are completed in a timely manner; construction delays affect traffic and it is difficult to provide enforcement in construction zones when work is not actively taking place. • Provide more clarification to local jurisdictions regarding MDT fund distributions and justification. • Provide additional clarification to the public and stakeholders regarding the P3 process. Maintain and enhance the process while providing better transparency in the decision-making process. • Recognize funding issues faced by tribal, city, and county governments. • Increase coordination with the public and local stakeholders regarding planning of improvements and fund distributions.
Montana Highway Safety	• Convert undivided two-lane facilities to five-lane facilities. • Provide more bike lanes and sidewalks in urban areas. • Conduct winter maintenance (i.e., sand sooner) to prevent crashes. • Add additional lanes to improve safety. • Expand shoulders in rural areas. • Add turn lanes to increase safety. • Expedite project delivery. • Continue to improve cooperative/collaborative efforts with regard to improvements. • Provide more robust safety management.

Topic Area	Comment/Suggestion
Transportation Options	• Examine additional funding sources for non-motorized and transit projects. • Examine funding sources to ensure that highway funds are used for highway projects. • Consider construction of additional infrastructure for transportation options; lack of existing infrastructure limits options. • Consider partnerships with organizations to maintain bike paths. • Construct infrastructure to provide access to disabled users. • Increase/improve data collection efforts regarding walking, biking, and transit use. • Develop tools to understand how future uses will lead to increased demand for transportation options, including watching demographic trends since youth and elderly rely more heavily on non-auto facilities. • Consider shifting mindset in planning projects from moving cars to moving people. The current mindset is pervasive not just at MDT but throughout the state. • Revise current design standards to allow innovative, low-cost solutions. Current design standards for projects, in particular transit, may be excessive. • Explore ways to provide transit in non-traditional formats, like vanpools. Demand-responsive options might be most effective in Montana. • Leverage partners such as schools, cities, and MPOs to create a more robust, connected system, regardless of the provider. • Develop a statewide bike/pedestrian plan.
Congestion and Delay Relief	• Prioritize 1- preservation, 2- mobility, 3- capacity, 4- other/all modes • Shift some level of resources to preservation. • Include context sensitive design (CSD) in more of the policy language. • Utilize a holistic approach to level of service (LOS), including multimodal considerations for operational improvements. • Reference “multimodal” in place of “roadway” when applicable to policy discussion. • Utilize the term “active” transportation in place of “alternative”. • Work with MDT to improve ITS, adaptive signal control, and coordination. • Streamline project development on state routes. A ten-year project delivery may result in projects that are designed for outdated conditions. • Allow flexibility with design standards considering CSD. • Complete patchwork transportation networks/systems. • Share truck traffic/freight considerations data with local groups. • Include maintenance/preservation of multimodal facilities in the Transportation Alternatives program. • Continue emphasis on advanced right-of-way acquisition. • Provide an educational element to MDT’s mission, focusing on communication as a common theme to both the public and local agencies. • Develop an MDT urban design section to focus on these challenges. • Increase revenue base to support all transportation infrastructure.

Source: DOWL 2017.

MOVING MONTANA FORWARD

Goals and Strategies

MDT has developed a set of goals and strategies reflecting public and stakeholder feedback and analysis of available data.

- **Goals** are statements of desired results for the transportation network.
- **Strategies** are methods and business practices to achieve stated goals.

Goals and strategies provide broad policy guidance to inform and direct MDT decision making during the 20-year planning horizon.

- **Safety** is an overarching goal and is applied in nearly every MDT decision making process for all projects and programs.
- MDT makes roadway investment decisions by prioritizing (1) **system preservation and maintenance**, (2) **mobility and economic vitality**, and (3) **accessibility and connectivity**.
- Sensitivity to the **environment** and cost-effective **management** are underlying goals that inform decisions on a broad, department-wide basis.

Goals and strategies relevant to transportation assets are listed below in order of priority. Strategy numbering reflects the complete set of goals and strategies, which can be viewed in their entirety in the *TranPlanMT Plan Summary*.

Safety: Improve safety for all transportation users to achieve Vision Zero: zero fatalities and zero serious injuries.

Strategy S1: Maintain infrastructure condition to provide safe conditions for the traveling public.

Upgrading and maintaining transportation infrastructure to enhance safety is a key component to improving traveler safety. MDT identifies safety issues and prioritizes safety improvements within available funding.

Strategy S2: Continue improvements to the Safety Rest Area Program to provide safe stopping locations for the traveling public.

Traveler safety is a top MDT priority. MDT recognizes rest areas provide important safety functions, allowing drivers to stop, rest, and potentially avoid fatigued, drowsy, or distracted driving and hazardous roadside parking. MDT is committed to providing safe opportunities for resting adjacent to Montana's highways, and MDT encourages travelers to use all rest area services and amenities to provide respite from driving.

System Preservation and Maintenance: Preserve and maintain existing transportation infrastructure.

Strategy SPM1: Employ an asset management approach to monitor infrastructure performance and develop an optimal investment plan ensuring like conditions throughout the state.

MDT is committed to managing transportation assets in a cost effective manner to meet the needs of the traveling public. Using P3 and other asset management methods, MDT regularly collects and assesses inventory, condition, and performance data; identifies needs; and makes fiscally responsible investment decisions to best maintain the transportation system.

Strategy SPM2: Provide the right improvements at the right time to manage infrastructure assets using cost-effective strategies.

In contrast to a "worst first" philosophy, MDT focuses on preventive and rehabilitation efforts to cost-effectively manage existing infrastructure and avoid expensive deferred maintenance. This approach enables prudent use of taxpayer funds by slowing deterioration rates and extending the life of infrastructure assets.

Strategy SPM3: Design new facilities for durability and longer life cycles using state-of-the-art materials and methods.

MDT incorporates innovative solutions to improve the long-term performance of transportation assets. Through its focus on high-quality materials and advanced methods, MDT continually aims to improve system resilience and life span.

Strategy SMP4: Support preservation of the existing rail, transit, and aviation systems in coordination with industry partners.

Rail, transit, and aviation facilities are a critical component of Montana's transportation system. MDT coordinates regularly with transportation partners to identify opportunities and support efforts to preserve existing assets.

Mobility and Economic Vitality: Facilitate the movement of people and goods recognizing the importance of economic vitality.

Strategy MEV1: Maintain a transportation network that supports the economic health of Montana communities.

MDT recognizes the important role of Montana's transportation system in supporting economic growth and diversity. MDT continually monitors the existing transportation system's ability to keep pace with demand. In locations where demand exceeds capacity due to population growth, economic development, and other factors, MDT considers potential improvements to expand or reconfigure system components.

Accessibility and Connectivity: Preserve access to the transportation network and connectivity between modes.

Strategy AC1: Improve pedestrian, public transportation, and other MDT-owned facilities to ensure accessibility to individuals with disabilities.

MDT is leading a focused effort to provide accessible state-owned transportation facilities throughout the state. ADA accessibility is always considered and incorporated on projects involving construction of new facilities and alteration of existing infrastructure. MDT also pursues independent projects exclusively addressing ADA compliance. Through these efforts, MDT is working to eliminate accessibility barriers.

Strategy AC2: Employ an asset management system to monitor and manage public transportation capital assets.

MDT uses an asset management approach to track public transportation assets, prioritize rehabilitation and replacement efforts, and maintain assets. This approach ensures sound, cost-effective investments to provide a consistent level of service for transit passengers.

Strategy AC3: Implement a consistent approach for investment, design, connectivity, and maintenance of pedestrian and bicycle facilities.

MDT is continually improving and refining mechanisms to assure pedestrian, bicycle, and accessibility concerns are consistently addressed in projects. MDT coordinates with local jurisdictions to determine appropriate pedestrian and bicycle investments in consideration of local plans. Factors such as demand, connectivity, land use planning, right-of-way availability, safety issues, maintenance responsibility, and public input are considered and analyzed during the project development process to determine the most appropriate pedestrian and bicycle facilities.

Performance Management

In support of MDT goals and strategies, MDT conducts performance-based planning in several key areas mandated through federal regulations. Performance-based planning is a process focused on data analysis to ensure investment decisions meet established goals.

In January 2017, FHWA issued final rulemaking addressing pavement and bridge condition for the NHS. FTA issued a final rule in July 2016 addressing transit assets. FHWA and FTA have defined the following performance measures for each asset type (Table 13).

Table 13: Performance Management Measures

Asset Type	Performance Measure
Pavement	• Percentage of pavements of the Interstate System in good condition. • Percentage of pavements of the Interstate System in poor condition. • Percentage of pavements of the NHS in good condition. • Percentage of pavements of the NHS in poor condition.
Bridges	• Percentage of NHS bridges in good condition. • Percentage of NHS bridges in poor condition.
Transit	• Percentage of non-revenue support-service and maintenance vehicles that have met or exceeded useful life benchmark (ULB). • Percentage of rolling stock that has met or exceeded its ULB. • Percentage of facilities with condition rating below 3.0 on FTA Transit Economic Requirements Model (TERM) scale.

Source: Final Rule, Assessing Pavement and Bridge Condition for the National Highway Performance Program, FHWA, 23 CFR 490, January 2017; 23 U.S.C. 119, 148, and 150. Final Rule, National Transit Database, Transit Asset Management, 49 CFR 625 and 630, FTA, July 2016; 49 U.S.C. 5326.

The final rules require transportation authorities to establish statewide targets for the condition of pavements on the Interstate System and on the NHS (excluding the Interstate); the condition of bridges on the NHS, including bridges crossing state borders regardless of ownership or maintenance responsibility; and for federally funded public transportation capital assets included in a statewide group transit asset management (TAM) plan.

FHWA will regularly assess progress in achieving defined pavement and bridge targets. Significant progress will be demonstrated if condition is:

- equal to or better than the established target, or
- better than the baseline condition.

If MDT cannot demonstrate significant progress toward achieving its target in two consecutive FHWA assessments, MDT would be required to include a description of actions the state will undertake to achieve all related NHPP targets in its next biennial performance report.

For transit assets included in the statewide group transit asset management (TAM) plan, MDT must submit a consolidated report each year to FTA describing the progress made to meet performance targets. Failure to report may result in ineligibility for federal funding.

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Visit the TranPlanMT website for more information:

http://www.mdt.mt.gov/tranplan

MONTANA MDT DEPARTMENT OF TRANSPORTATION

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