U.S. Department of the Interior

BUREAU OF LAND MANAGEMENT

Transportation Connections 2040

A National Long Range Transportation Plan for the Bureau of Land Management

May 2021

Transportation Connections 2040: National Long Range Transportation Plan for the Bureau of Land Management

A Joint Effort By

National Conservation Lands and Community Partnerships (HQ400)

and

Business Management and Administration (HQ700)

U.S. Department of the Interior

Bureau of Land Management

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Acronyms

21CSC – 21st Century Conservation Service Corps

ACE – Access, Connectivity, Experience

ACHP – Advisory Council on Historic Preservation

Alaska DOT&PF – Alaska Department of Transportation and Public Facilities

AM – Annual Maintenance

BLM – Bureau of Land Management

CP – Collaborative Partnerships

CVTS – Collaborative Visitor Transportation Survey

DART – Disturbance Automated Reference Toolset

DM – Deferred Maintenance

DO – District Office

DOI – Department of the Interior

DOT – Department of Transportation

EMS – Emergency Medical Services

ESA – Endangered Species Act

FAMS – Facility and Asset Management System

FARS – Fatality Analysis Reporting System

FAST – Fixing America's Surface Transportation

FHWA – Federal Highway Administration

FLAP – Federal Lands Access Program

FLECC – Federal Law Enforcement Communication Center

FHWA-FLH – Federal Highway Administration Office of Federal Lands Highway

FLMA – Federal Land Management Agency

FLTP – Federal Lands Transportation Program

FO – Field Office

FWS – Fish and Wildlife Service

GIS – Geographic Information Systems

GPRA – Government Performance Results Act

GQTE – Guidelines for a Quality Trail Experience

GTLF – Ground Transportation Linear Features

HQ – Headquarters

ID – Interdisciplinary (Team)

IMARS – Incident Management Analysis and Reporting System

IMBA – International Mountain Biking Association

LRTP – Long Range Transportation Plan

MAP-21 – Moving Ahead for Progress in the 21st Century

MLR – Management of Land and Resources

MPO - Metropolitan Planning Organization

NBI – National Bridge Inventory

NCH – Natural, Cultural, Historical

NEPA – National Environmental Policy Act

NLRTP – National Long Range Transportation Plan

NOC – National Operations Center

NOHVCC – National Off-Highway Vehicle Conservation Council

OHV – Off-Highway Vehicle

OST – Office of the Secretary

PASER – Pavement Surface Evaluation and Rating

RAR – Route Assessment Review

RMA – Recreation Management Area

RMIS – Recreation Management Information System

RMP – Resource Management Plan

ROD – Record of Decision

RSA – Roadway Safety Audit

SHPO – State Historic Preservation Officer

SLV GO – San Luis Valley Great Outdoors

SO – State Office

TAM – Transportation Asset Management

TAP – Transportation Assistance Program

TM – Transportation Management

TMA – Travel Management Area

TRB – Transportation Research Board

TTM – Travel and Transportation Management

TTMP – Travel and Transportation Management Plan

U.S. – United States

WASHTO – Western Association of State Highway and Transportation Officials

WFLHD – Western Federal Lands Highway Division

Prologue

After two years of planning and analysis, the Bureau of Land Management (BLM) is pleased to provide *Transportation Connections 2040: A National Long Range Transportation Plan* for the BLM. This document is the culmination of a collaborative, interdisciplinary planning process including staff from the BLM's Headquarters Office, State Offices, and Field Offices, as well as the Federal Highway Administration (FHWA) Office of Federal Lands Highway.

Public lands managed by the BLM are recognized as America's Great Outdoors, and a "Backyard to Backcountry" treasure. More than 120 urban centers and thousands of tribal and rural communities are located within 25 miles of BLM-managed public lands.[1] The BLM's transportation system is in many ways an "unsung hero" in supporting the achievement of the agency's mission, providing access to BLM-managed public lands across the country "to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations." The BLM's roads, primitive roads (i.e., roads that are typically used by four-wheel drive or high-clearance vehicles and do not customarily meet any BLM road design standards), trails, and bridges provide connections to BLM-managed lands used for economic development, recreation, and conservation.

Transportation Connections 2040 is the BLM's first National Long Range Transportation Plan. This plan fulfills the long range transportation planning requirements for Federal Land Management agencies in the Fixing America's Surface Transportation (FAST) Act, and it establishes a holistic, strategic vision for the BLM's transportation program. The BLM's ultimate goal is to use this plan to invest its limited transportation funds wisely to benefit its many users and to enhance connections with neighboring communities. This plan includes a set of goals and objectives for the transportation program and a performance-based framework for implementation and monitoring.

This plan supports the Department of the Interior's priorities by providing a strategic approach to managing and developing the BLM's transportation system. Specifically, the BLM aligns with these priorities through the following efforts:

- Provide access to responsible development of renewable energy on public lands and waters;
- Strengthen government-to-government relationships with sovereign Tribal nations through transportation partnerships;
- Make transportation investments that support the creation of jobs and local economic development;
- Support land and water conservation by providing access to public lands for conservation and restoration projects and minimizing resource impacts from transportation systems; and
- Promote equity and environmental justice through partnerships with communities of color, low-income families, rural, and indigenous communities to enhance public lands access and connectivity.

This plan has a variety of audiences. For national, regional, and local BLM staff, *Transportation Connections 2040* communicates the importance of the transportation program to a wide range of BLM programs and identifies actions to help the BLM reach its transportation goals. However, the BLM cannot achieve these goals alone. The BLM's transportation system connects to transportation networks managed by States, Counties, Tribal governments, and municipalities. The BLM leverages funding from the FHWA, state and local grants, and business and non-profit partners to achieve more than it can with its funds alone. Communities throughout the U.S. also support the BLM through collaborative maintenance agreements and volunteer projects to maintain and enhance access to the resources where Americans work and play. As such, this plan is a resource to increase understanding of the BLM's transportation program to support future collaboration.

This plan is meant to be a living document that can and should be updated over time, guiding future BLM investments for the benefit of current and future generations.

1 Bureau of Land Management. 2020. Recreation Programs website. https://www.blm.gov/programs/recreation/recreation-programs

Bureau of Land Management Mission

The Bureau of Land Management's mission is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.

Juan Bautista de Anza National Historic Trail, Arizona

Introduction

Red Rock Canyon National Conservation Area, Nevada

1

1.1 Importance of Transportation for BLM and the Nation

The Bureau of Land Management (BLM) transportation system is essential to fulfilling its multi-use mission of sustaining the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations. The BLM's roads, primitive roads (i.e., roads that are typically used by four-wheel drive or high-clearance vehicles and do not customarily meet any BLM road design standards), and trails provide unique access to recreational opportunities, such as off-highway vehicle (OHV) use, mountain biking, hiking, and other recreational uses. The BLM's transportation system also provides sole access to a large portion of the nation's clean energy and minerals, oil and gas extraction, cattle grazing, and timber harvesting. Because BLM-managed public lands are often interspersed among other landowners, many BLM routes also support everyday public travel purposes, such as commuting routes, postal and school bus routes, and connections to Tribal and rural communities.

The BLM transportation system provides the following benefits:

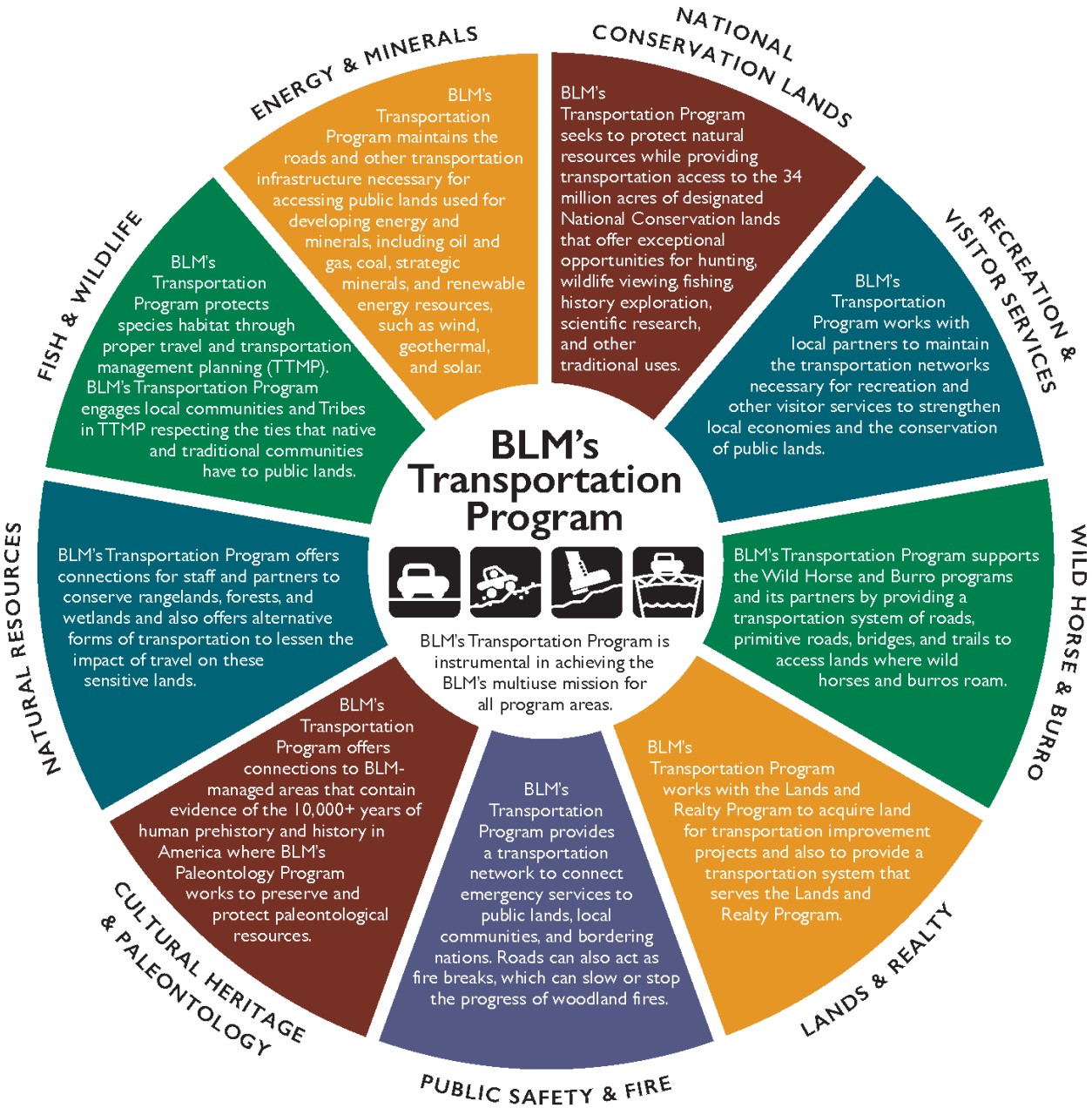
- **Economic Generation:** the public lands managed by the BLM generate significant and quantifiable benefits for the United States (U.S.) by providing clean energy and mineral resources, grazing and timber resources, and more recreational opportunities than lands managed by any other Federal agency. In 2018, the economic output of coal, oil and gas, solid minerals, geothermal, wind, solar, recreation, grazing, and timber on the public lands amounted to $105 billion and supported 471,000 jobs, more than any other Bureau within the Department of the Interior (DOI).[1]
- **Recreation Access:** the BLM transportation system is essential for the public to access its 2,959 recreation sites. In 2018, BLM-managed lands received over 68 million visits. This visitation produced $6.8 billion in economic output related to recreation (camping, picnicking, landscape and wildlife viewing, hiking and backpacking, boating, bicycling, hunting, fishing, and motorized recreation).[2]
- **Disaster Response and Evacuation:** the BLM's roads, primitive roads, bridges, and trails provide critical access for interagency wildfire mitigation activities and response, as well as evacuation routes for the general public.
- **Tribal and Rural Community Connections:** the BLM transportation system often provides important connectivity to State, county, and local routes in tribal and rural communities and supports economic development, access to recreation, and community spaces.

1 Bureau of Land Management. 2019. The BLM: A Sound Investment for America 2019. https://www.blm.gov/sites/blm.gov/files/SoundInvest2019-6pages-FINAL-083019.pdf

2 Ibid.

The ways the BLM's Transportation Program supports each of the BLM's program areas are summarized in Figure 1.

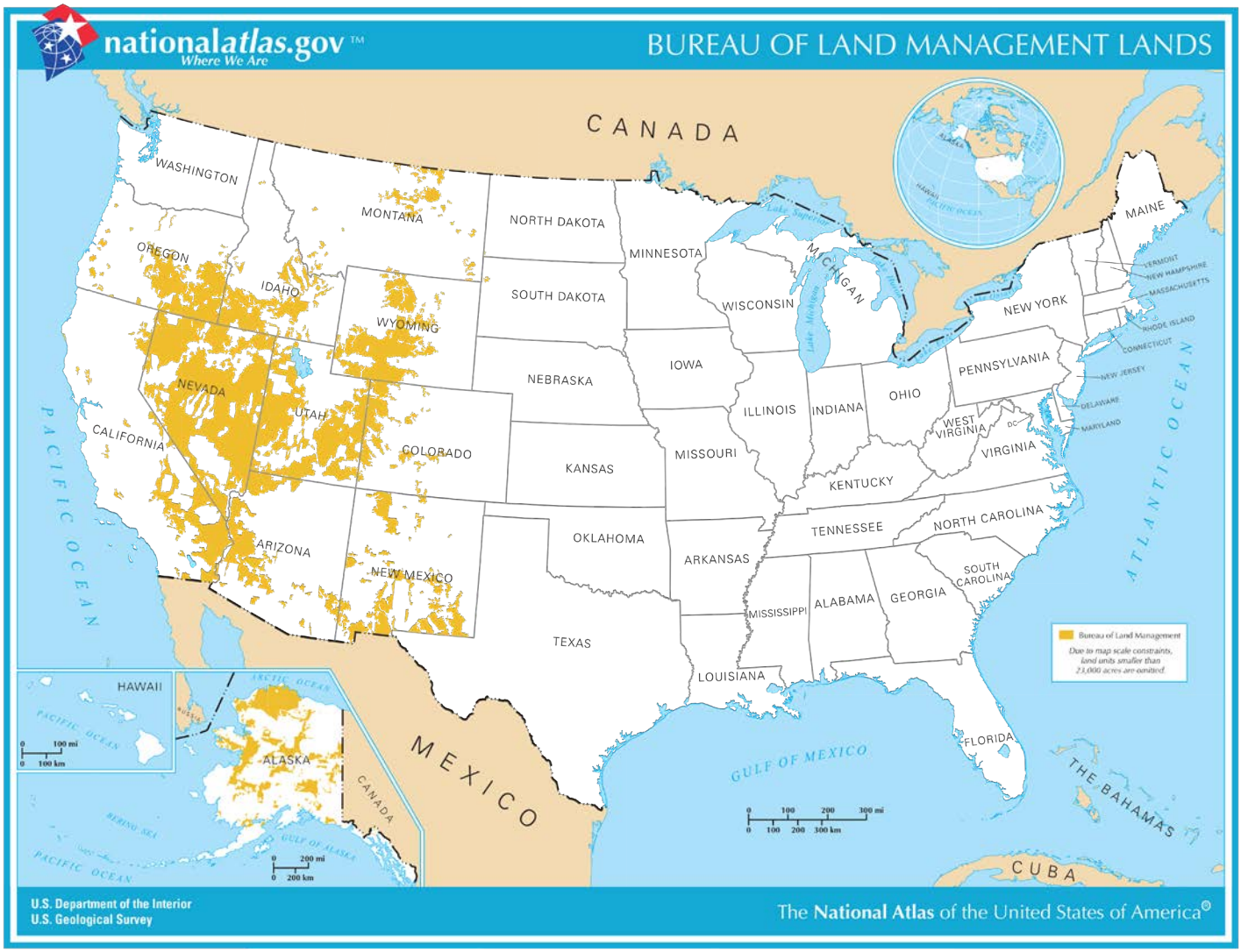
Figure 1. How the BLM's Transportation Program supports other BLM Program Areas



The BLM manages nearly one-eighth of all the land area in the U.S., making the BLM the single largest land holder in the nation (Figure 2). The BLM's transportation system consists of about 90,000 miles of linear transportation features across the U.S., including approximately 45,000 miles of roads, 30,000 miles of primitive roads, 15,000 miles of trails, 915 bridges, and 654 major culverts. The vast network of connections across these lands forms a complex transportation system influenced by many years of changing public uses. With the growing U.S. population, the increase in demand for energy, the growth in recreational activities, and ongoing fire risks, the BLM's transportation system will become even more important over time.

The BLM's transportation system is highly

Figure 2. BLM-managed public lands



connected to the transportation networks of its partners, including those facilities owned and maintained by other Federal Land Management Agencies (FLMAs), State Departments of Transportation (DOTs), county governments, Tribal governments, and private landowners. These linkages include connections to road systems, but also to multimodal transportation networks, including trails and partner-operated transit service. Because of this connectivity, it is important for the BLM to collaborate with a diverse set of partners to coordinate transportation data collection, planning, and asset management to promote seamless transportation for the public across jurisdictions. The DOI *Good Neighbor Authority* supports collaboration by providing an environment and legal means to enable the BLM to work across jurisdictional boundaries in a cooperative manner to solve shared challenges.

1.2 What is *Transportation Connections 2040*?

The purpose of *Transportation Connections 2040* is to provide a National Long Range Transportation Plan (NLRTP) for the BLM with a guiding vision and set of long-term, Bureau-wide goals, objectives, and strategies for the BLM's transportation system and transportation planning program. This NLRTP will inform future transportation decisions over the next 20 years to continue to provide safe, reliable access to BLM-managed public lands, resources, and recreational opportunities. As a national level plan, the intent of the BLM NLRTP is to offer a programmatic framework. It is a living document the BLM will monitor and update periodically to reflect changing conditions. Although the BLM aims to achieve all of the elements in this NLRTP within the 20-year planning horizon, implementation will depend on available BLM staff and financial resources. In addition, as with any planning initiative, unforeseen factors could affect implementation of this NLRTP.

Transportation Connections 2040 supports the Biden Administration's goals, described in *Conserving and Restoring America the Beautiful 2021*.[3]

The BLM NLRTP vision statement is, "Work collaboratively to manage a multi-modal transportation system that supports the equitable access, connectivity, and safety needs of multiple uses while ensuring natural, cultural, and historic resources are maintained for present and future use."

Transportation Connections 2040 is consistent with state-wide and metropolitan transportation planning practices as part of a continuing, comprehensive, and cooperative (3C) transportation planning process. It establishes a framework for implementation and performance monitoring that feeds into future NLRTP updates. The *Transportation Connections 2040* framework includes the following performance-based elements.

- **Goal:** a broad statement that describes a desired end state.
- **Objectives:** specific, measurable statements that support achievement of a goal.
- **Strategies:** specific actions for BLM to make progress towards the NLRTP goals and objectives.
- **Performance Measures:** indicators that BLM can use to assess progress toward a goal.[4]

3 President Biden's Administration, Conserving and Restoring America the Beautiful 2021: https://www.doi.gov/sites/doi.gov/files/report-conserving-and-restoring-america-the-beautiful-2021.pdf

4 Definitions adapted from FHWA, 2013, Performance-Based Planning and Programming Guidebook: https://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/page00.cfm

1.2.1 Plan Scope and Scale

The scope of this plan is the strategic management of the BLM's national transportation program, and the goals, objectives, and strategies in this plan are programmatic. This plan neither selects individual transportation construction or maintenance projects, nor includes any project decisions. As such, this plan does not require analysis under the National Environmental Policy Act (NEPA).[5]

This NLRTP considers the entirety of the BLM's transportation system, including the different types of transportation assets and funding sources used to construct and maintain those assets. Transportation funding sources that support the BLM's transportation planning goals include the BLM's appropriations and U.S. DOT and other partner funds as further discussed in Section 3, Transportation Funding.

In most cases, implementation of the goals, objectives, and strategies in this national-level plan will occur within existing planning, programming, or investment processes. For example, a strategy in this NLRTP may include recommended updates to the BLM's Travel and Transportation Management (TTM) Manual (BLM Manual Section 1626) or TTM Handbook (H-8342).

1.2.2 Plan Audience

This NLRTP has multiple audiences, including BLM staff, BLM partners, and the public. BLM staff at Headquarters (HQ), State Office (SO), District Office (DO), and Field Office (FO) levels can use this plan to guide their transportation decisionmaking. BLM partners – including other Federal agencies, State DOTs, Counties, Tribes, and local governments – can use this plan to identify opportunities to collaborate with the BLM on projects of mutual benefit. The public can also use this plan to better understand the BLM's transportation program and how the BLM's transportation planning process works to support the BLM's mission and provide public access to BLM-managed public lands and resources.

1.2.3 Plan Structure

The BLM NLRTP is organized into the following sections that establish a framework for implementation and performance monitoring for future NLRTP updates.

1. **Introduction**
   The introduction discusses the purpose and background for the BLM NLRTP.

2. **Vision, Goals, and Objectives**
   This section presents the NLRTP's vision, five strategic goal areas, and associated objectives. The BLM developed the goals and objectives through an iterative process of in-person workshops and discussions with BLM leadership and other stakeholders.

   The NLRTP strategic goals are:
   - Access, Connectivity, and Experience
   - Transportation Asset Management
   - Collaborative Partnerships
   - Natural, Cultural, and Historic Resources
   - Safety

3. **Transportation Funding**
   This section describes the general trends in transportation funds that Congress appropriates directly to the BLM, as well as funding provided to the BLM for transportation from the U.S. DOT and other discretionary funding sources. This section also discusses the BLM's transportation funding needs and challenges.

4. **BLM TTMP Process**
   This section summarizes BLM's Travel and Transportation Management Planning (TTMP) process and how it relates to the

5 23 USC 201(c)(1); 23 USC 134(q); 23 USC 135(k)

goals and priorities of BLM's Transportation Program.

5. **Baseline Conditions and Trends**
   This section summarizes baseline conditions for each goal area, documenting the current trends, challenges, and opportunities

6. **Implementation Plan**
   This section includes a list of specific strategies to address the goals and objectives identified in the plan. The strategies are categorized by goal area and prioritized based on discussions with BLM staff and stakeholders. Since this is a national, Bureau-wide plan, the scopes of these strategies are largely either national-level or programmatic.

7. **Monitoring Plan**
   This section includes a summary of performance measures the BLM has identified to measure progress on achieving the five strategic NLRTP goal areas. The monitoring plan specifies data sources and a responsible party for each performance measure.

Throughout the plan are **"Highlights"** that summarize noteworthy practices.

The Plan also includes **"Strategy Links"** that link the NLRTP's strategies to the discussion in the narrative.

The NLRTP's strategies are specific action items that the BLM Transportation Program has identified as important to reaching the NLRTP goals and objectives. All of the NLRTP goals, objectives and strategies are listed in the Implementation Plan section.

1.2.4 Plan Development Process

The NLRTP references findings from recent transportation studies and plans, including the BLM's most recent Five Year TTM Strategy (2018), as well as discussions with BLM HQ, SO, DO, and FO staff; Federal Highway Administration (FHWA) Office of Federal Lands Highway (FLH) staff; and other stakeholders. At the outset of this effort, the BLM convened a Core Team and Advisory Committee made up of BLM HQ, SO, DO, and FO staff as well as representatives from the FHWA-FLH. The Core Team consisted of the key agency representatives and planning partners that actively participated in the NLRTP development. The Advisory Committee provided meaningful input and guidance to the Core Team during the NLRTP development through webinars, teleconferences, and document review.

The BLM NLRTP effort officially kicked off with the Core Team and Advisory Committee on July 10, 2018. The accompanying timeline provides a summary of key activities and milestones during the development of the NLRTP (Figure 3).

Figure 3. BLM NLRTP Development Timeline

BLM NLRTP Timeline (2018 - 2021)

July 10, 2018
Kick-Off (Webinar)
BLM NLRTP kick-off webinar with core team and advisory committee.

July 31-Aug. 2, 2018
Workshop
BLM NLRTP core team workshop in Denver, Colorado to develop a draft set of goals and objectives.

Sept. 11, 2018
Content Review (Webinar)
BLM NLRTP webinar with core team and advisory committee to review the draft goals and objectives.

Fall 2018
Content Development
BLM NLRTP team developed existing conditions and trends reports for each goal area.

Feb. 8, 2019
Content Review (Webinar)
BLM NLRTP webinar with core team and advisory committee to review draft existing conditions and trends reports.

Winter/Spring 2019
Content Development
BLM NLRTP team developed a set of strategies and performance measures.

March 19-21, 2019
Workshop
BLM NLRTP core team workshop in Salt Lake City, Utah to review and refine the draft strategies and performance measures.

May 6, 2019
Content Review (Webinar)
BLM NLRTP webinar with core team and advisory committee to review the draft implementation plan, including the strategies and performance measures.

June 9-12, 2019
Content Review (Stakehold Engagement)
BLM NLRTP team conducted outreach to western state DOTs and other partners regarding the NLRTP during the Western Association of State Highway Transportation Officials (WASHTO) conference.

Summer 2019
Content Development
BLM NLRTP team developed initial draft NLRTP.

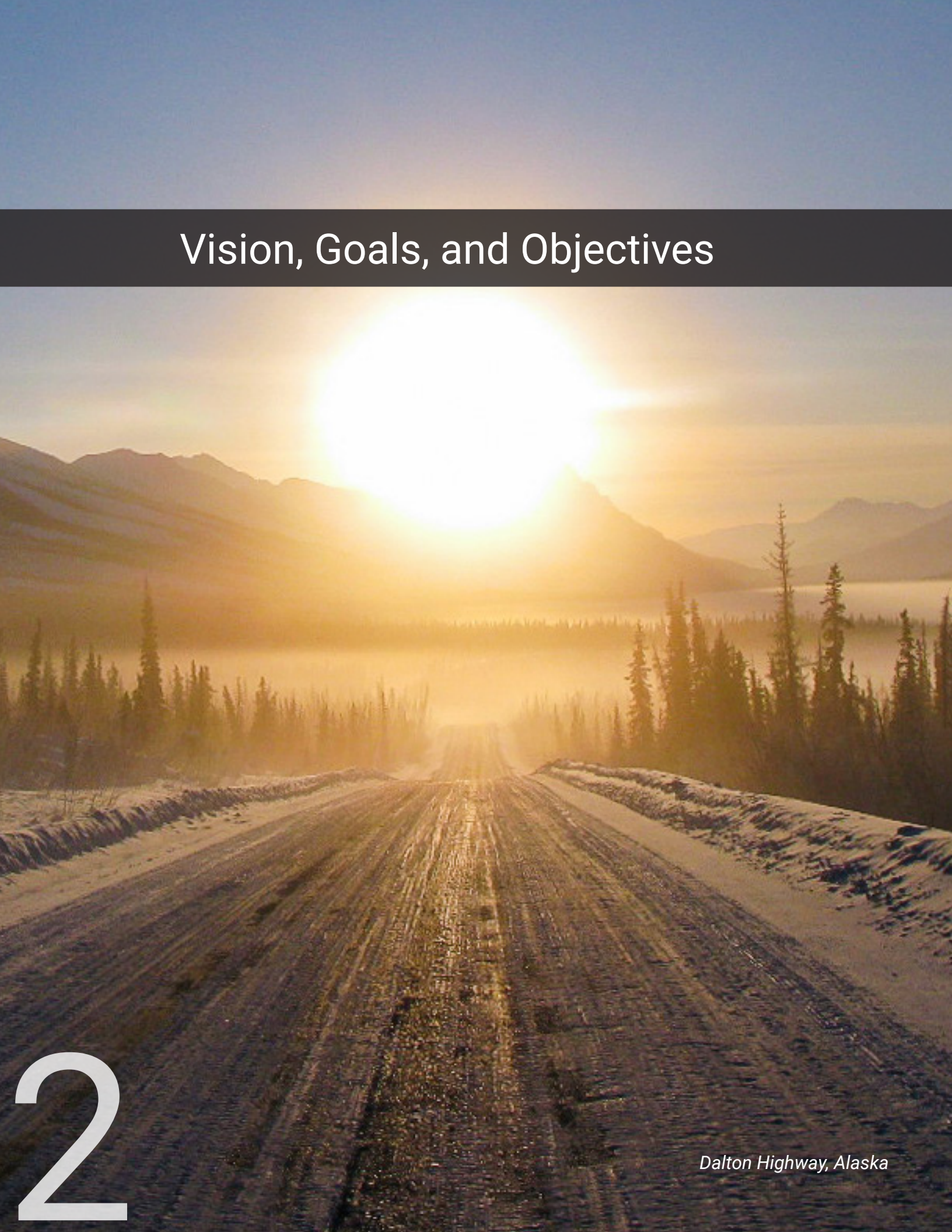
June 28, 2019
Content Review (Meeting)
BLM NLRTP team held a meeting with BLM Leadership to review and solicit feedback on the draft plan focusing on the overall themes, goals, and objectives.

Fall 2019
Content Development
BLM NLRTP team revised the BLM NLRTP.

Winter 2019/2020
Content Review (Stakehold Engagement)
BLM and other external stakeholders reviewed the BLM NLRTP draft.

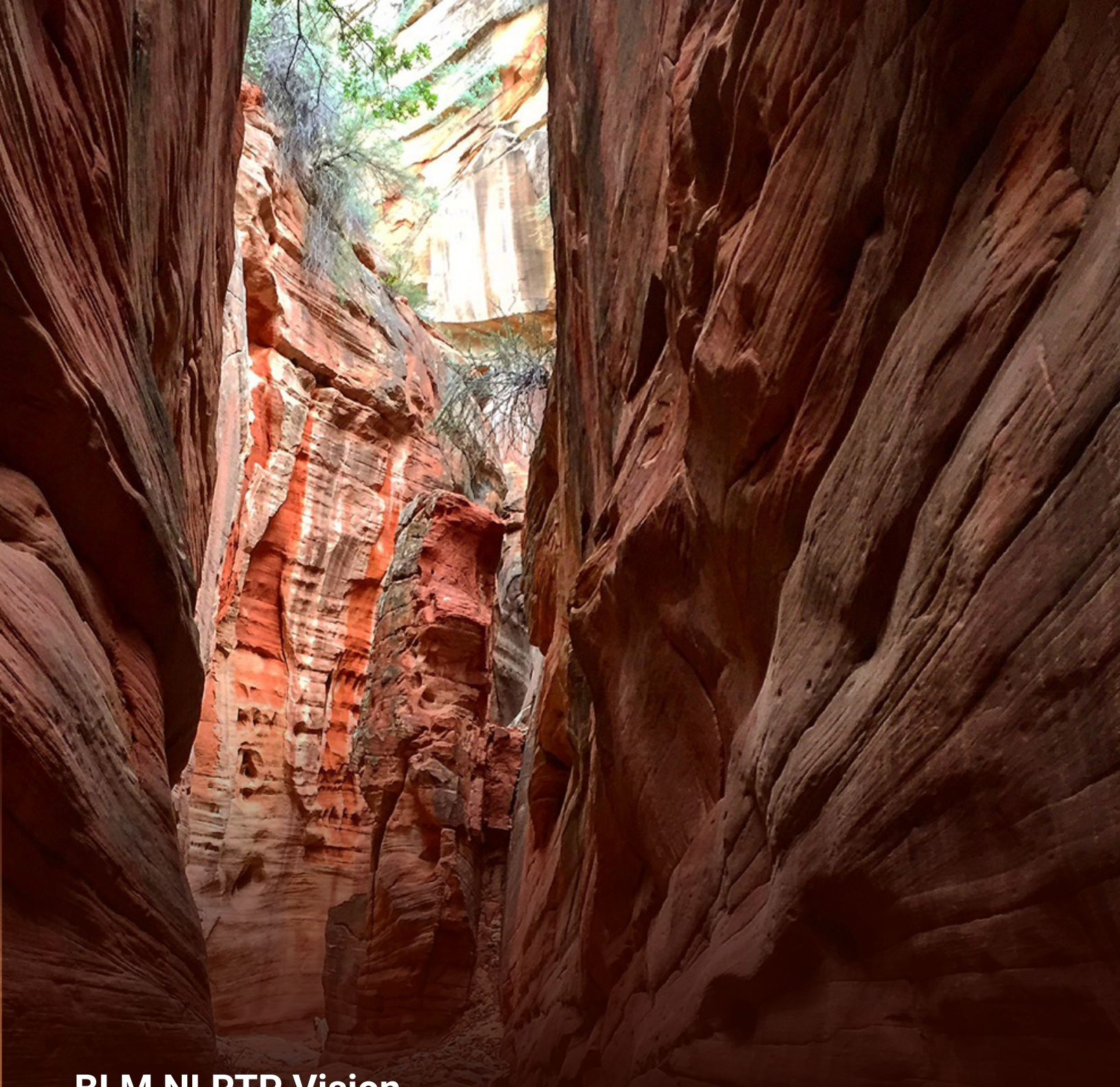
Spring 2021
Plan Complete
BLM NLRTP published.

Vision, Goals, and Objectives



2

Dalton Highway, Alaska



BLM NLRTP Vision

Work collaboratively to manage a multi-modal transportation system that supports the equitable access, connectivity, and safety needs of multiple uses while ensuring natural, cultural, and historic resources are maintained for present and future use.

Merwin Canyon, Utah

Access, Connectivity, and Experience (ACE)

ACE Goal: *Manage the BLM's transportation system to provide seamless public access to support the BLM's multi-use mission.*

- **ACE Objective 1**: Build relationships with BLM's gateway communities and the traveling public to ensure access, connectivity, and recreational experience needs are being met.
- **ACE Objective 2**: Identify linear assets that are part of the BLM transportation system and their connection with the adjacent transportation network.

Transportation Asset Management (TAM)

TAM Goal: *Strategically invest funding to sustainably maintain BLM transportation assets.*

- **TAM Objective 1**: Develop and maintain a comprehensive inventory of BLM-owned transportation assets.
- **TAM Objective 2**: Identify the condition and funding needs associated with BLM transportation assets.
- **TAM Objective 3**: Strategically leverage BLM and partner funding sources to operate and maintain transportation assets based on asset priority and need.
- **TAM Objective 4**: Design, build, and maintain BLM transportation assets to be resilient and protect natural, cultural, and historic resources.

Collaborative Partnerships (CP)

CP Goal: *Develop and maintain collaborative partnerships for a transportation system that connects communities to public lands.*

- **CP Objective 1**: Engage external partners that should be involved in BLM Travel and Transportation Management planning and implementation processes, including Federal, Tribal, State, county, and local stakeholders to support transportation connectivity.
- **CP Objective 2**: Actively participate in external transportation planning and implementation with Federal, Tribal, State, county, and local processes to support the BLM mission.
- **CP Objective 3**: Share and exchange current transportation data with external partners for transportation planning.

Natural, Cultural, and Historical Resources (NCH)

NCH Goal: *Manage the BLM's transportation system to protect resources while providing appropriate access.*

- **NCH Objective 1**: Ensure that natural, cultural, and historical resource inventories are performed efficiently and comprehensively, as critical components of the TTMP process at the land use and implementation planning levels.
- **NCH Objective 2**: Implement TTMP route designations based on available funding and staff resources.

Safety (S)

S Goal: *Provide safe and appropriate multimodal transportation access for all users of BLM-managed lands.*

- **S Objective 1**: Conduct education and outreach for travelers to prepare for safe travel on BLM-managed lands consistent with the purpose of the route.
- **S Objective 2**: Implement TTMP route designations based on available funding and staff resources.
- **S Objective 3**: Support coordinated and rapid emergency response with local first responders and enhance communication of conditions affecting BLM-managed public lands.

Transportation Funding

3

Basin and Range National Monument, Nevada

To support the BLM's transportation system, the Bureau relies upon a variety of funding sources:

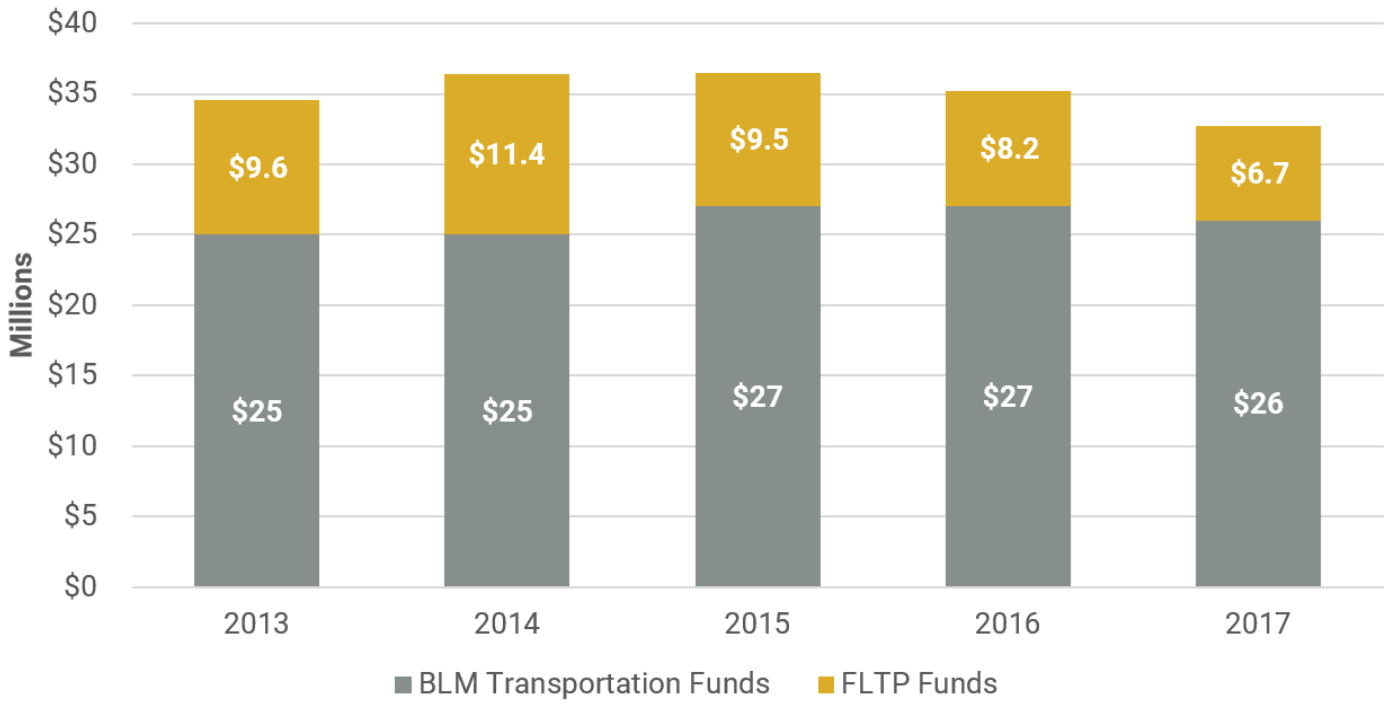
- BLM's congressional appropriations.
- Competitive funding through the FHWA Federal Lands Transportation Program (FLTP).
- Grants and other partnership funding sources, such as the Federal Lands Access Program (FLAP).

BLM's transportation funding needs far exceed current available funding. BLM's annual transportation funding from congressional appropriations and FLTP funding is about $30–$40 million per year (Figure 4). The current funding need for projects that have been deferred for more than one year, or the current deferred maintenance (DM) backlog, is about $3.6 billion.

3.1 BLM Appropriations for Transportation

Each fiscal year, Congress appropriates the BLM annual funding for management of land and resources (MLR) and many other activities, including the BLM's transportation system. The general funding that the BLM uses for transportation provides resources for capital projects, operational expenses, annual and deferred maintenance, and other transportation-related costs. Between fiscal years 2016 and 2018, the BLM expended an average of approximately $26 million appropriated by Congress per year for the BLM transportation system. This funding included approximately $20.5 million per year for roads, $4.1 million per year for trails, and $1.6 million per year for bridges. The following subsections provide additional detail regarding these expenditures.

Figure 4. BLM Appropriation and FLTP Spending, 2013 to 2017



3.1.1 Appropriations for Annual Maintenance and Operational Costs

The BLM's appropriation for annual maintenance and operational costs funds necessary functions for transportation and facilities maintenance. BLM's annual maintenance (AM) spending for the transportation system, which funds annual maintenance and operational costs, is about $20.5 million per year (Table 1). BLM road assets utilize about 80 percent of the annual maintenance and operational costs funding, while trail assets utilize about 15 percent this funding.

Bridge assets utilize the least amount of annual maintenance and operational costs funding. BLM bridge replacement or rehabilitation funding has historically come from the limited amount of BLM deferred maintenance and capital improvements funding, which is described in Table 1.

Table 1. BLM Annual Maintenance (AM) Spending by Transportation Asset, 2016 to 2018

Fiscal Year	AM Bridges	AM Roads	AM Trails	AM Total
2016	$650,000	$16,455,310	$3,320,639	$20,425,949
2017	$965,503	$16,942,752	$3,468,447	$21,376,702
2018	$830,950	$16,266,815	$2,711,346	$19,809,111
Annual Average (2016 to 2018)	**$815,484**	**$16,554,959**	**$3,166,811**	**$20,537,254**

3.1.2 Appropriations for Deferred Maintenance and Capital Improvements

DM and capital improvement funding is used for projects that have been deferred for more than one year. Despite BLM's considerable transportation DM backlog of about $3.6 billion and capital improvement needs, funding for DM has steadily decreased in recent years. Consequently, BLM's transportation-related DM and capital improvements spending has also decreased from $7.2 million in fiscal year (FY) 2016 to $4.6 million in FY 2018 (Table 2). This reduction is due to transportation assets competing for limited DM funding with other assets, such as buildings.

To exacerbate this issue, BLM's bridges are aging and gradually nearing the end of their useful lives. As a result, more bridges are coming due for replacement each year.

Table 2. BLM Deferred Maintenance (DM) and Capital Improvements Spending by Asset, 2016 to 2018

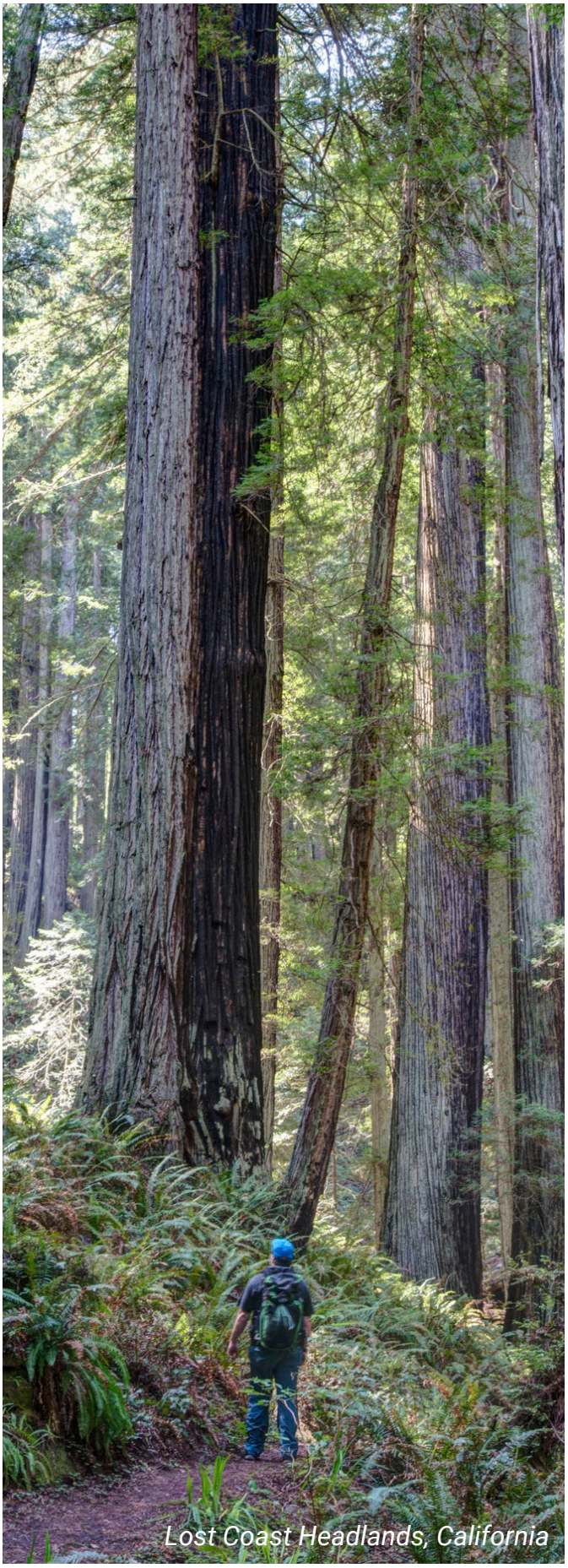
Fiscal Year	DM Bridges	DM Roads	DM Trails	DM Total
2016	$597,229	$5,846,227	$790,540	$7,233,996
2017	$485,727	$3,267,625	$1,433,446	$5,186,798
2018	$1,213,833	$2,771,178	$683,936	$4,668,947
Annual Average (2016 to 2018)	**$765,596**	**$3,961,677**	**$969,307**	**$5,696,580**

3.2 Federal Lands Transportation Program (FLTP)

In 2012, the Moving Ahead for Progress in the 21st Century (MAP-21) Act established the FLTP, which provides funding to improve the transportation infrastructure owned and maintained by FLMAs, including the BLM. The FHWA-FLH distributes FLTP funding to eligible FLMAs. While the National Park Service, U.S. Fish and Wildlife Service, and U.S. Forest Service receive defined annual FLTP funds based on statute, the BLM, U.S. Army Corps of Engineers, Bureau of Reclamation, and other eligible FLMAs compete for limited FLTP funding using a performance management model.

Although over 45,000 miles of BLM-managed roads are potentially eligible for funding under FLTP, the BLM prioritized approximately 1,150 miles of its managed roads as its initial FLTP designated inventory for which it will spend FLTP funds. The BLM thoroughly vetted its inventory to select FLTP roads that provide access to one of the following:

- **Significant Federal Economic Generation:** provide significant employment and economic output through oil and gas, renewable energy, minerals, coal, recreation, grazing, and timber extraction.
- **High-Use Federal Recreation Sites:** premier destinations contained within BLM Special Recreation Management Areas, National Lands Conservation Areas, National Monuments, or destinations where the annual visitation significantly exceeds the intended capacity of the location.



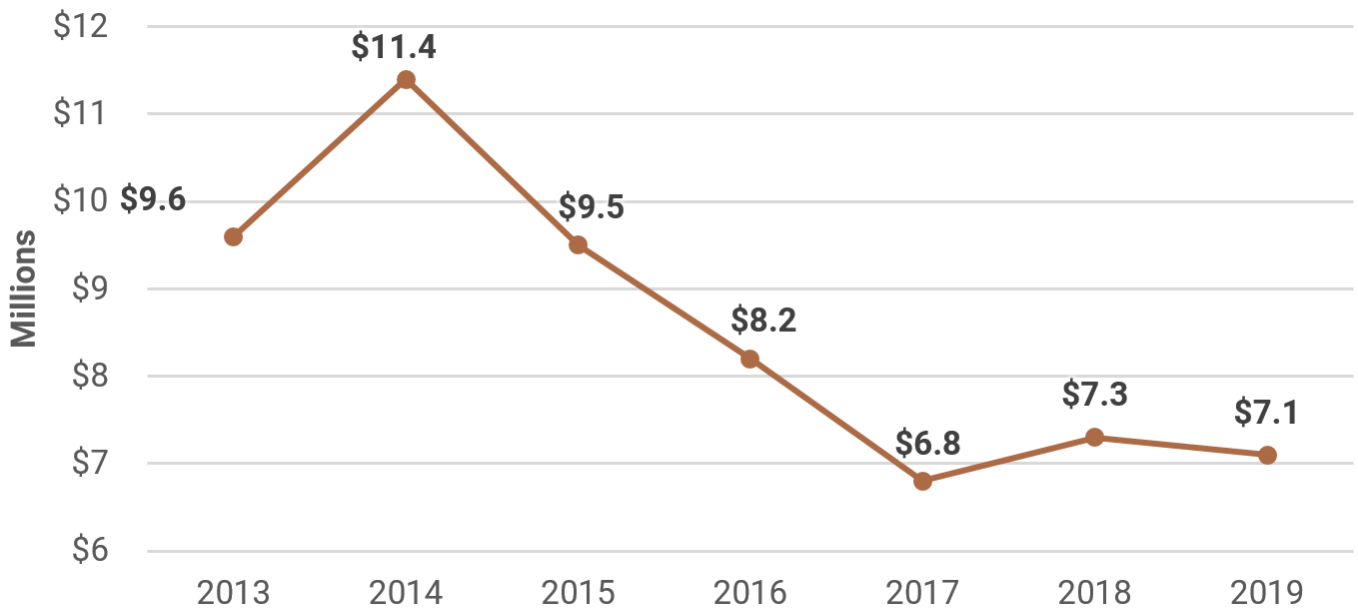
Lost Coast Headlands, California

Between 2013 and 2019, BLM received about $60 million in FLTP funding. FLTP funding allocated to the BLM increased from $9.6 million in 2013 to $11.4 million in 2014, but then decreased each year until 2017 to about $7 million. In 2018 and 2019, the BLM received $7.3 million and $7.1 million, respectively (Figure 5). This overall decline in funding was largely due to the eligibility of additional agencies to receive FLTP funding after passage of the Fixing America's Surface Transportation (FAST) Act in 2015. For BLM, it is difficult to perform long-term transportation planning without consistent FLTP funding levels. The BLM currently has over $200 million of shovel-ready projects on the 1,150 miles of its FLTP designated inventory.

NLRTP Implementation Strategy Links

- Continue to maintain existing project prioritization system for use of Federal Lands Transportation Program (FLTP) funds on BLM roads. **(TAM 3.1)**
- Identify BLM and partner funding sources (e.g., U.S. DOI, U.S. DOT, State, and local funding programs) and their applicability for BLM transportation assets. **(TAM 3.2)**
- Provide a mechanism (e.g., website) for disseminating funding opportunity information to State, District, and Field Offices. **(TAM 3.3)**

Figure 5. BLM FLTP Funding, 2013 to 2019



3.3 Grants and Other Partnership Funding Sources

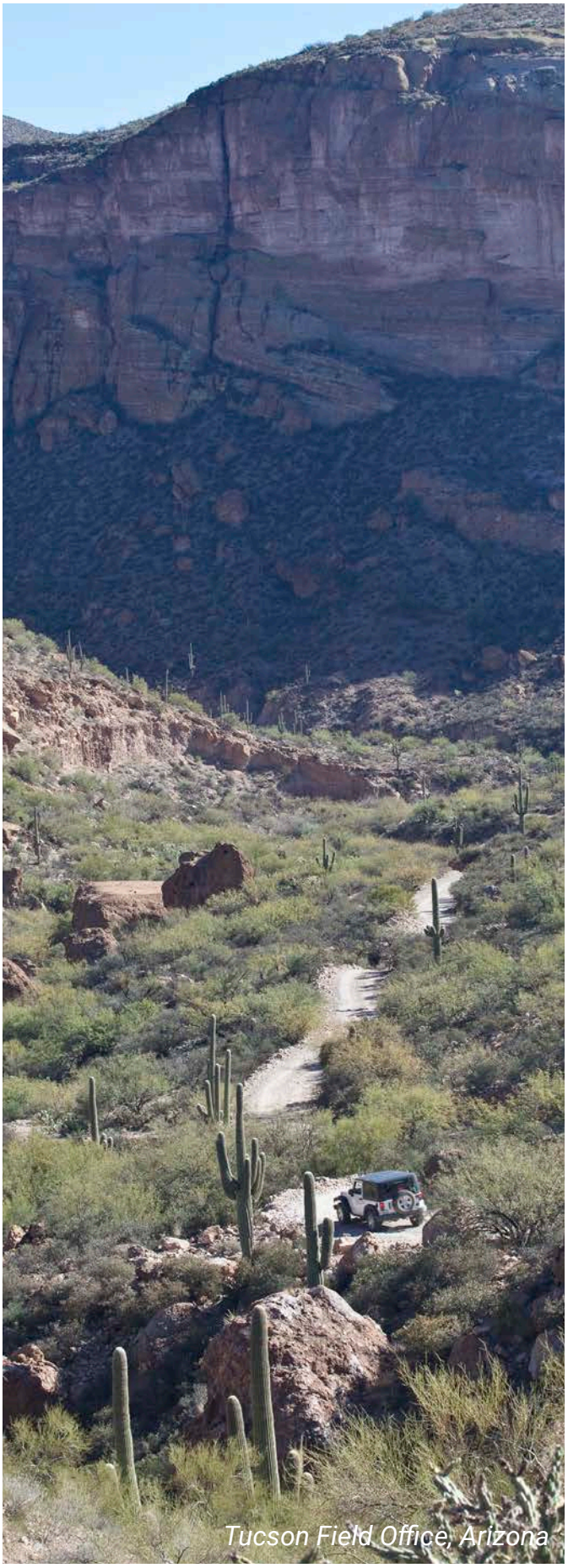
The BLM relies on partnerships for many of its transportation-related funding needs. The U.S. DOT FLAP is one of the most important partnership opportunities for improving access to BLM-managed public lands and is described in the context of funding availability below. FLAP and other partnership opportunities are also discussed further in Section 5.3, Collaborative Partnerships.

3.3.1 Federal Lands Access Program (FLAP)

The FLAP provides funding to non-Federal partners for projects that improve transportation facilities that connect to and access Federal lands. These projects may include roads, bridges, trails, or transit systems that are owned or maintained by State, County, Tribal, or local governments. Non-federally owned land and transportation networks, particularly county roads, provide critical access to BLM-managed public lands. Therefore, FLAP funds are integral for creating seamless connections and improving access to public lands. Since the establishment of the FLAP in 2013, applicants have received over $215 million in FLAP funding for more than 60 projects that access BLM-managed public lands.

NLRTP Implementation Strategy Links

> Conduct outreach and provide up-to-date resources to State, District, and Field Offices on Federal Lands Access Program (FLAP) and BLM access priorities. **(ACE 2.3)**



Tucson Field Office, Arizona

The BLM Travel and Transportation Management Planning Process

4

Las Cienegas National Conservation Area, Arizona

The BLM makes travel and transportation management planning decisions at two distinct levels: land use level plan decisions and implementation level plan decisions. Land use level plan decisions, such as those made within Resource Management Plans (RMPs) provide over-arching management guidance for land areas within a FO or DO planning area. Implementation level plan decisions made within subsequent TTMPs provide management direction for individual routes.

During land use level planning conducted for a RMP, DO and FO staff evaluate land uses and resources and designate land areas as open, closed, or limited to OHVs and consider non-motorized vehicular use, as appropriate:[6]

- Lands designated "open" to OHVs allow travel of all types of vehicle use anywhere and anytime subject only to the BLM's operating regulations and vehicle standards.
- Lands designated "closed" to OHVs prohibit all OHV use, typically protect resources, promote visitor safety, or reduce user conflicts. Motorized vehicles exempt from the OHV definition are not restricted in closed areas.
- Lands designated as "limited" to OHVs offer flexibility in how travel and transportation use is restricted to meet specific public land management objectives. Limited areas are the focus of subsequent implementation level TTMPs, which provide more site specific guidance, including restrictions and allowable uses on specific routes.

BLM FO and DO staff are responsible for developing TTMPs that describe travel management decisions to support a comprehensive approach to managing and administering travel and transportation networks. TTMPs provide the opportunity to designate areas for recreational activities while protecting and conserving other areas. As part of the TTMP development process, BLM FO and DO resource staff coordinate with the public and local partners to evaluate public access to and travel activities on BLM-managed public lands based on natural resource management needs, road and trail design and conditions, and recreation and non-recreation uses of roads and trails.

The TTMP process supports and documents decisions regarding whether and to what

Iditarod National Historic Trail, Alaska

6 OHV area and route designation are guided by the U.S. Code 43 CFR 8340.05 and Code 43 CFR 8342.

extent to maintain, expand, or decommission transportation facilities.[7] The TTMP process is used to:

- Inventory, document, and map existing transportation facilities, routes, and areas;
- Verify routes that require authorizations, such as any clearances or easements needed by the BLM, or rights of-way issued by the BLM;
- Designate BLM-managed routes as Open, Limited or Closed to OHV use;
- Classify designated routes as roads, primitive roads, or trails, specify the modes of travel for each route, and designate maintenance standards; and
- Provide guidance for how new public or permitted routes should be considered, addressed, and evaluated in conformance with the RMP.

NLRTP Implementation Strategy Links

Use the TTMP process to develop a sustainable transportation system in an effort to reduce resource impacts and maintenance needs. **(TAM 4.2)**

Through the TTMP process, clarify ownership, purpose(s), and use(s), and determine if linear travel features serve BLM's multi-use mission. **(ACE 2.1)**

To improve transportation planning, integrate the engineering functions into the TTM Handbook (H-8342), including engineering input during the route designation step of the TTMP process. **(ACE 2.2)**

The TTMP process is meant to be comprehensive, interdisciplinary, collaborative, and outcome-based. At the beginning of the TTMP process, DO and FO staff create an inventory of all existing transportation-related linear features, such as potential roads, primitive roads, and trails using maps, surveys, and satellite imagery. This information is compiled in the BLM's geodatabase. Information on the current authorized uses and characteristics of each route is also collected and verified. Following the inventory and verification process, the TTMPs designate specific transportation routes, identify route management objectives, and establish maintenance intensity for those routes.

Although the TTMP process does not include decisions on non-BLM routes, the BLM recognizes the need to consider connectivity with regional and local travel routes. Therefore, many BLM FOs have taken a more holistic approach to understanding traveler needs in the TTMPs by considering the relationship of BLM and non-BLM routes.

NLRTP Implementation Strategy Links

Identify Federal, Tribal, State, county, and local stakeholders to participate in BLM TTMP processes. Maintain a State Office checklist of stakeholders to consider (e.g., Department of Transportation, Department of Defense). **(CP 1.1)**

Leverage the knowledge and experience of interdisciplinary teams during the TTMP process to designate transportation systems that conserve natural, cultural, and historic resources while providing appropriate access. **(NCH 1.1)**

7 These activities are consistent with BLM laws, regulation, and policy.

TTMPs require specific guidance on signage, enforcement, monitoring, closed route rehabilitation/restoration, and communication of TTMP decisions with public land users (development of public maps, responsible-use education, etc.). Another important component of an implementation plan is the ongoing maintenance of the databases housing the geospatial and tabular information for each route.

BLM's noncontiguous managed lands and routes impact wayfinding in the form of route numbering systems, and SOs have not handled this in a uniform manner. This often requires various route segments on a given roadway to have different route numbers, which can be confusing to the user. Some SOs have handled this standard by numbering routes similarly to the U.S. Interstate System (e.g., Route 3708-BLM, 3708-private, etc.) using linear referencing in GIS. Others have simply emphasized working with partners to ensure that the on-the-ground experience is continuous, using a simple route name for all segments, even if the planning numbers do not match in the BLM's Facility and Asset Management System (FAMS) database. It is important for BLM recreation and engineering staff to work together to ensure consistent route numbering. Since visitors to BLM-managed public lands appreciate consistency and a route numbering system that is implemented at a broader scale, ensuring consistent route numbering will greatly improve visitor experience and safety.

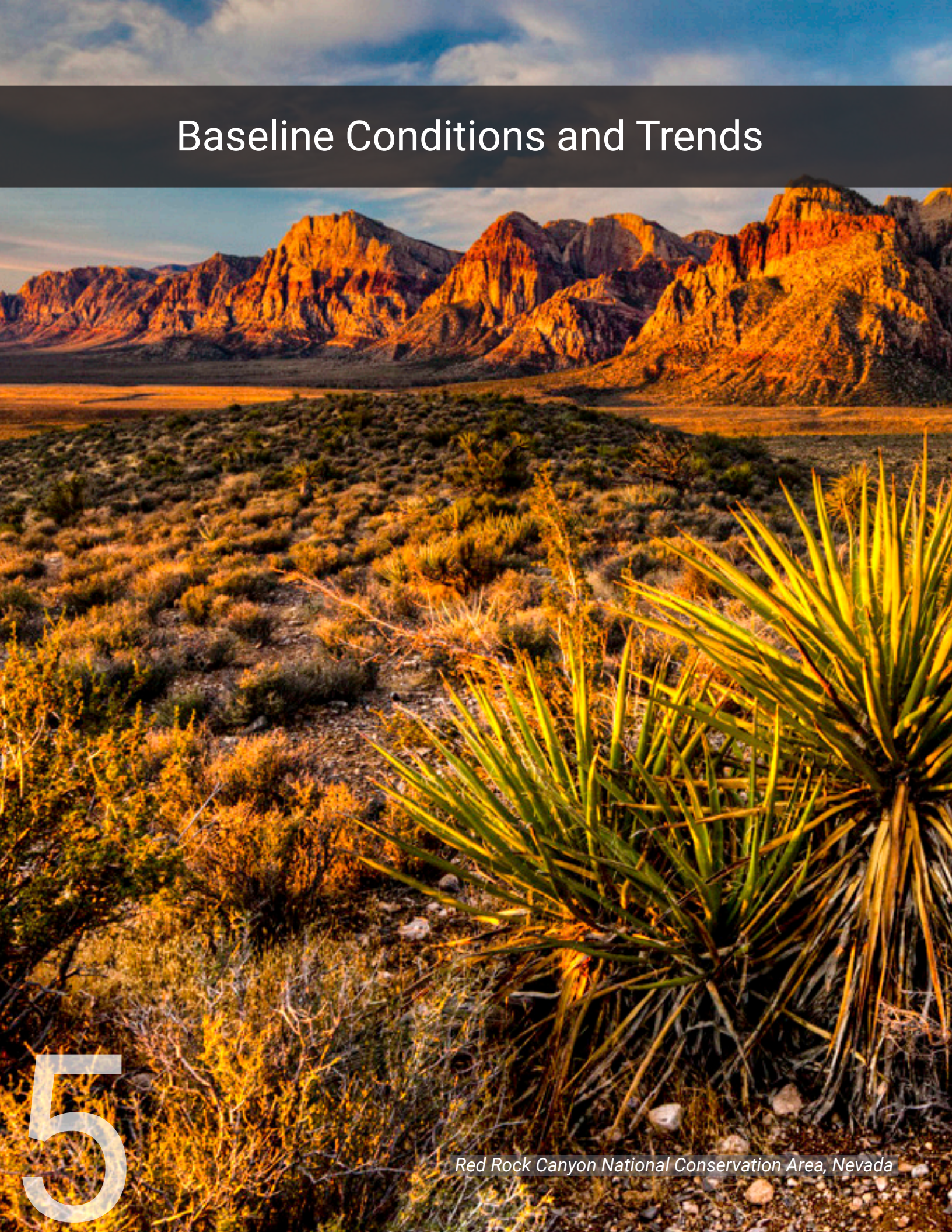
One challenge for the BLM is the absence of a comprehensive funding source for TTMP planning or implementation. Instead, the BLM has to leverage funds from a variety of programs, such as engineering and recreation, and funds dedicated generally to resource management or to special programs (e.g., Greater Sage-Grouse conservation). BLM staff often have to be proactive in identifying funding sources that can support TTMP-related activities based on the particular resource protection needs of a location. Identifying and securing funding for TTMP implementation can require considerable staff time and can extend the timeline for initiating and completing TTMPs. In light of this, BLM offices with staff dedicated to TTMP implementation are often more successful in carrying out their plans.

The narrative in this section was adapted from BLM's 2018 Five-Year Travel and Transportation Management Strategy. The BLM's TTMP process is formally documented and described in more detail in the TTM Manual (Section 1626) and Handbook (H-8342).

NLRTP Implementation Strategy Links

- Keep TTM Manual 1626, Handbook (H-8342), and related training current. **(NCH 1.2)**
- Prioritize implementation of designated routes to address critical resource impacts. **(NCH 2.1)**
- Identify partners and leverage resources to achieve TTMP implementation. **(NCH 2.2)**
- Identify long-term funding and staff resources needed for TTMP implementation. **(NCH 2.3)**

Baseline Conditions and Trends



5

Red Rock Canyon National Conservation Area, Nevada

Pacific Crest National Scenic Trail, California

5.1 Access, Connectivity, & Experience

ACE Goal: Manage the BLM's transportation system to provide seamless public access to support the BLM's multi-use mission.

- **ACE Objective 1:** Build relationships with BLM's gateway communities and the traveling public to ensure access, connectivity, and recreational experience needs are being met.
- **ACE Objective 2:** Identify linear assets that are part of the BLM transportation system and their connections with the adjacent transportation network.

The BLM's visitation data show that visitation to BLM-managed public lands has increased steadily over the past two decades from 52 million visitors in 2001 to over 67 million visitors in 2017 (Figure 6). As the number of recreational visitors to BLM-managed lands increases, other traveler needs must also be balanced. As discussed in the Prologue and Section 1 Introduction, BLM routes are used by a variety of users with different needs.

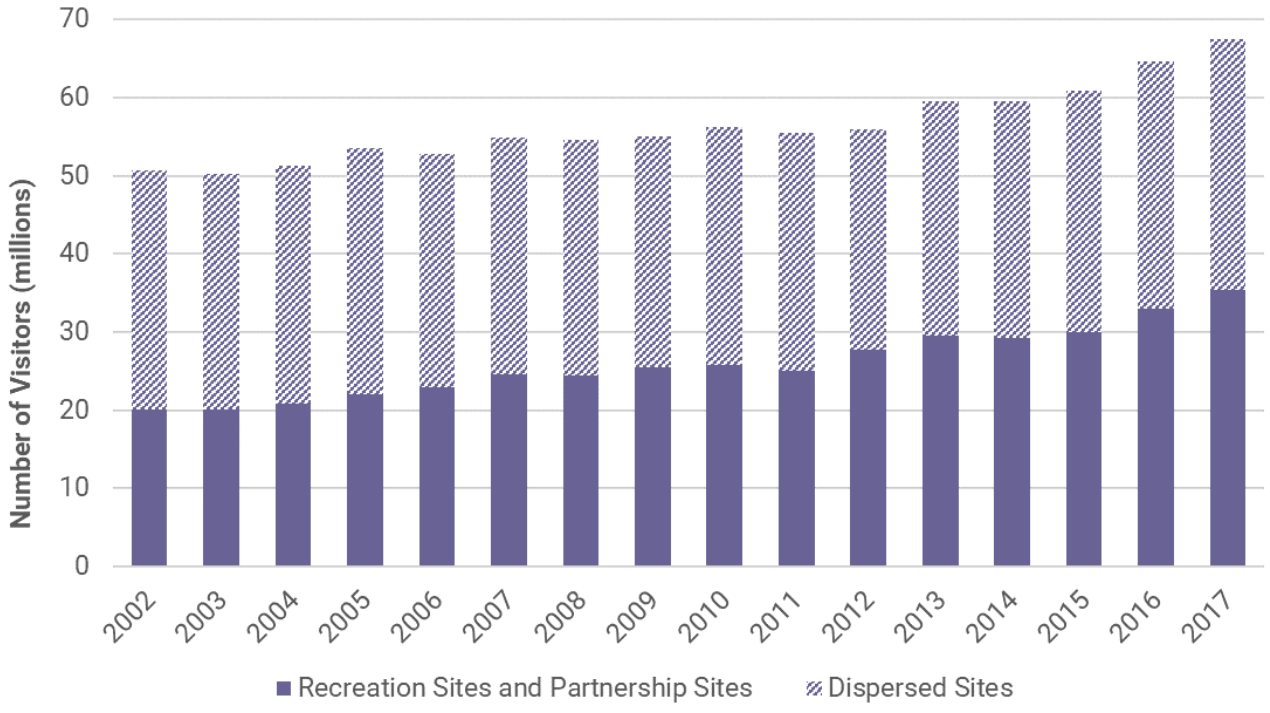
A transportation network's effectiveness can be measured by its access and connectivity: how well travelers move from where they are to where they want to go. Maintaining an interconnected network of transportation assets is critical to ensure BLM facilitates access, connectivity, and experience while achieving the Bureau's priorities for recreation, economic generation, disaster response and evacuation, and tribal and rural community connections as described within the Introduction in Section 1.1.

Roads and trails on BLM-managed lands should not only form connections with other BLM transportation assets, but also with adjacent transportation networks which may be owned and operated by State or local governments or other FLMAs. Due to the noncontiguous nature of BLM-managed lands, BLM's transportation assets have a uniquely complex relationship with regional transportation networks (Figure 7). Without carefully considering regional connectivity, the BLM may not fully realize the access needs of BLM-managed public lands and may also underestimate the variety and intensity of uses on its systems.

NLRTP Implementation Strategy Links

> Refine the BLM's inventory of multimodal access to BLM-managed public lands by identifying traveler/user types, preferred experience settings, and the desired modes of transportation for BLM routes during the TTMP process. **(ACE 1.1)**

Figure 6. BLM Visitation Data for Recreational, Partnership, and Dispersed Sites



(Source: BLM Public Land Statistics for years 2002 through 2017, https://www.blm.gov/about/data/public-land-statistics)

BLM's TTMP process, described more in Section 4, is important to refine the BLM's inventory of multimodal access to BLM-managed public lands by identifying traveler/user types, preferred experience settings, and the desired modes of transportation for BLM routes during the TTMP process.

NLRTP Implementation Strategy Links

Through the TTMP process, clarify ownership, purpose(s), and use(s) and determine if linear travel features serve BLM's multi-use mission. **(ACE 2.1)**

Figure 7. Checkerboard Nature of BLM-Managed Public Lands (Example Location near Crescent Valley and Carlin, Nevada)

The following subsections highlight some of the most important factors related to access, connectivity, and experience:

- Access limitations
- Congestion management
- Access and use data
- Agreements
- Wayfinding
- Related BLM initiatives that improve Nada, and experience

5.1.1 Access Limitations

A common issue for the BLM is restricted access in part due to the nature of BLM's patchwork land ownership pattern (Figure 7). When adjacent land owners restrict public use of the roads on their land, access to BLM-managed lands become restricted. This creates fragmented linear transportation features of access, where parts of the road are open to the public and other parts of the road are closed.

NLRTP Implementation Strategy Links

Highlight success stories related to improving access to BLM-managed public lands. **(ACE 1.2)**

5.1.2 Congestion Management

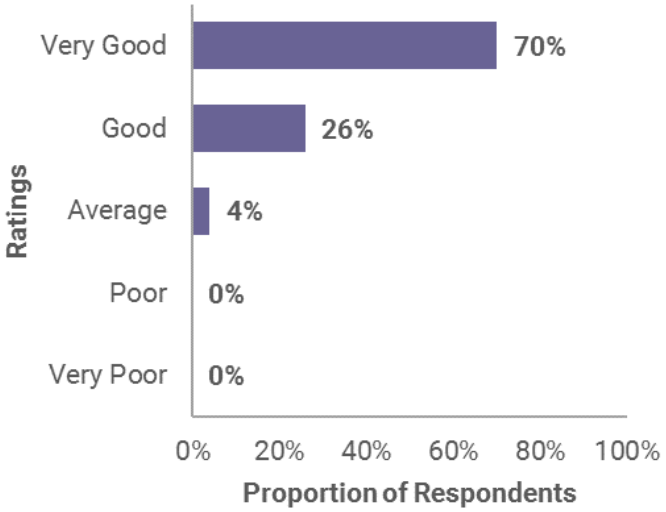
Due to the remoteness of many of BLM-managed lands, roadway congestion is not a particular issue for most BLM-managed lands. However, as both the U.S. population and demand for the types of experiences BLM-managed lands provide increases, congestion at recreation areas presents a growing challenge for the BLM that requires consideration of user access, connectivity, and experience.

5.1.3 Access and Use Data

Data for evaluating how travelers on BLM's transportation system access and use BLM-managed lands is important for improving transportation planning. The BLM uses the Recreation Management Information System (RMIS) database to measure recreational visitation to its various units, but this database does not capture non-recreational visits. RMIS relies on a variety of sources for visitor estimates, including reservations and fees at campground and fee-based recreation sites; road and trail counters where available; visitor surveys; and field staff estimates. RMIS visitation data is typically more accurate for developed recreation sites than it is for dispersed sites.

The most comprehensive survey about BLM visitor experience is the annual Visitor Satisfaction Survey, which is required by the Government Performance Results Act (GPRA) and focuses on BLM developed recreation sites and facilities nation-wide. Of 1,904 respondents at twelve BLM recreation sites in 2018, 96 percent said their experience was "good" or "very good" (Figure 8).[8]

Figure 8. Overall Quality of Experience Reported by BLM Site Visitors in 2018



(Source: Washington State University. 2018. BLM 2018 GPRA Report. http://psu.sesrc.wsu.edu/blm/reports/FY18/blm-GPRA18.pdf)

There are opportunities to improve the BLM's understanding of the types of transportation uses and visitation demand through recreational visitor estimates, traffic volume data, and other sources. Some BLM units have recently deployed traffic counters to measure the level of use for specific route locations. This information helps accurately track the number of visitors in particular areas over time, which can inform staff decisions about recreation management.

NLRTP Implementation Strategy Links

Investigate opportunities to improve the BLM's understanding of the types of transportation uses and visitation demand through recreational visitor estimates, traffic volume data, and other sources. **(ACE 1.3)**

8 Washington State University. 2018. BLM 2018 GPRA Report. http://psu.sesrc.wsu.edu/blm/reports/FY18/blm-GPRA18.pdf.

Alaska Collaborative Visitor Transportation Survey

In addition to the national Visitor Satisfaction Survey, BLM SOs, DOs, and FOs deploy visitor surveys in specific locations to evaluate the success of recreation management objectives or to inform local planning efforts. One notable example is the Alaska Collaborative Visitor Transportation Survey (CVTS), which BLM staff developed in collaboration with other FLMAs, FHWA-FLH, the Alaska Department of Transportation and Public Facilities (Alaska DOT&PF), and the University of Alaska-Fairbanks. Through this survey, the FLMAs created a common set of transportation-related questions for visitors to allow for a State-wide understanding of how visitors access Federal lands as well as their needs and expectations. The survey team designed the questionnaire to be applicable nation-wide as well as in Alaska, and the participants obtained Office of Management and Budget generic clearance to provide a streamlined resource from which other BLM staff can benefit.

5.1.4 Agreements

The BLM can use agreements with adjacent land or road owners to enhance access, connectivity, and experience. These agreements may address maintenance, access, or rights-of-way. For example, BLM may seek easements to protect resources and trails in multi-use areas, and outside groups may agree to assume management responsibility for certain roads or trail segments. Ownership, rights-of-way, easements, and maintenance agreements related to transportation are stored in BLM-managed lands and realty database, LR2000. See the Collaborative Partnerships chapter in Section 5.3.2 for more detail on Agreements.

5.1.5 Wayfinding

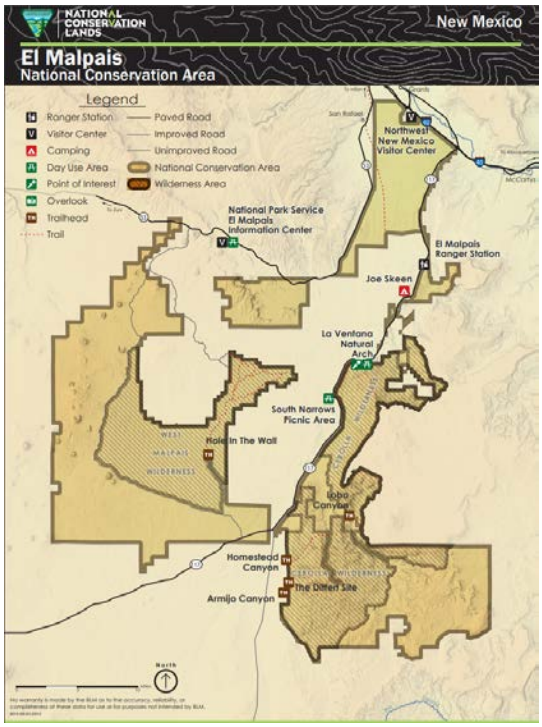
The BLM provides traveler information in the form of maps, signage and wayfinding for travelers to locate their destinations and recognize BLM-managed public lands.

5.1.5.1 Traveler Maps

To help ensure visitors have an enjoyable experience on BLM-managed public lands, BLM produces traveler information maps for the public that locate key facilities and attractions (Figure 9). The BLM historically produced a series of hard copy 1:100,000 maps through its National Operations Center (NOC). Due to the popularity of electronic based maps, many FOs have stopped offering these hard copy maps. Most publication and sharing of route data is currently carried out at the SO-level. The process of creating maps and maintaining the data that inform BLM maps can be expensive and time consuming. The BLM has hired contractors to collect and improve BLM datasets; however, additional funding is needed for a more comprehensive approach.

The BLM works with some web-based and smartphone-based mapping companies to provide digital maps to the public. Some georeferenced PDF maps are provided online by *Avenza* and are compatible with any georeferenced mobile map application. The BLM has also worked with the application *On X Maps* to provide data about roads that are accessible to the public and public land boundaries. *On X Maps* primarily focuses on the needs of hunters, but the information is useful to other recreational users.[9] Having reliable maps available through electronic devices that travelers bring with them to BLM-managed public lands improves visitor experience and safety, but it is also important to maintain non-electronic forms of information since many BLM-managed public lands are in remote areas without cell phone coverage, though an increasing number of maps are now available to download beforehand. In addition, it is important for the BLM to communicate the appropriate expectations that travelers should have when visiting or recreating in different

Figure 9. Georeferenced Map of El Malpais National Conservation Area, New Mexico



(Source: BLM 2016: https://www.blm.gov/sites/blm.gov/files/documents/files/NM_ElMalpais_NM_0.pdf)

9 Bureau of Land Management. 2019. "Georeferenced PDF Maps." https://www.blm.gov/maps/georeferenced-PDFs

areas so they know what they need to prepare in advance of a trip. As the BLM becomes more familiar with using a range of types of visitation and safety data, it will have a greater ability to improve visitor experience and safety.

Maps are an essential part of the traveler experience; however, maps are only as good as the data that support them. The TTMP process provides an important opportunity to update and improve transportation system data for specific TMAs.

NLRTP Implementation Strategy Links

> To enhance visitor safety, provide wayfinding signage, downloadable maps, or kiosks with site-specific travel information where feasible. **(S 1.2)**

5.1.5.2 Signage

The BLM has developed a cohesive look and feel for its signage, which has helped BLM offices across the U.S. implement a consistent message. In 2016, the BLM published a National Sign Handbook 9130-1,[10] which describes the planning processes for developing and implementing signage, as well as design standards and principles. As discussed in Chapter 4, one challenge that the BLM faces is national consistency in route numbering; through implementation of the strategies in this plan, the BLM hopes to provide more cohesive and consistent wayfinding in the future.

5.1.5.3 Trip Planning Information

The BLM currently provides trip planning information for recreational travelers. The BLM is developing a national visitor information program, *Know Before You Go*. This visitor information program will provide information through the BLM national website as well as local information, such as motorized access to sites and trails, through BLM DOs and FOs.[11]

The BLM also works with other agencies to centralize traveler information by posting resources online at Recreation.gov. In addition to the reservation information currently available at Recreation.gov, the participating agencies are working to add geospatial information, including roads, trails, and trailhead amenities. The BLM has also partnered with other agencies to make information about popular cross-jurisdictional routes more easily available to travelers. For example, the BLM integrated its data with the data of other land management agencies to provide more complete information on National Historic and Scenic Trails and some Backcountry Byways. Having access to pre-trip planning information allows travelers to feel more prepared for their trip and thereby improves visitor experience and safety on BLM-managed public lands.

> The BLM does not have a dedicated funding source for signage and wayfinding. Instead, the BLM funds wayfinding using a variety of programs or through external partnerships, Recreational Trails Program funds, or Section 1232 (permits). In addition, BLM may seek grants to improve signage and visual continuity. Some SOs have a sign coordinator to guide signage strategy and consistency.

5.1.5.4 Visitor Information Campaigns

Certain programs are in place at the BLM to promote behaviors that can help improve visitor experience and safety. *Leave No Trace* and *Tread Lightly!* have provided materials for BLM travelers for decades, so many are

10 Bureau of Land Management. 2016. National Sign Handbook. https://www.blm.gov/documents/national-office/handbook-public-room/handbook/national-sign-handbook

11 Bureau of Land Management. 2019. "Know Before You Go." https://www.blm.gov/programs/recreation/know-before-you-go

familiar with them. However, promotion of these campaigns varies across FOs. There is an opportunity for the BLM to be more consistent in dissemination of these stewardship campaigns to create a safer and more consistent visitor experience across BLM units.

The BLM has been successful in communicating to the public that they should keep their vehicles on roads and trails unless they are in a travel management area designated as open for cross-country vehicle travel. In some States, BLM staff localize the message by encouraging people to "use their power responsibly" and stay on specific trails and roads.

In addition to national-level campaigns like *Leave No Trace*, some States have created their own programs. For example, Colorado developed the *Stay the Trail* program to reinforce and highlight responsible OHV use and minimize safety risks and resource damage on public lands. The *Stay the Trail* campaign includes information on where to ride and *Know Before You Go*, which encourages visitors to understand and read about the places they intend on visiting before they actually visit the site. The *Stay the Trail* campaign also highlights stewardship partnerships.[12]

5.1.6 Related BLM Initiatives that Improve Access, Connectivity, and Experience

The BLM aims to be inclusive of the wide range of populations that use the Bureau's lands. For example, many BLM FOs will translate their brochures, maps, and signage into other languages to increase accessibility. At a national-level, there are educational programs translated into multiple languages. This type of expanded outreach is outlined in the BLM's National Recreation Strategy, "Connecting with Communities," which has specific plans related to SO-level efforts.

One of the BLM's new efforts is "Backyard to Backcountry," which aims to promote the ease of accessibility of some BLM-managed public lands to locations where people carry out their day to day lives. This initiative has an inherent tie to the BLM transportation program because visitors rely on BLM and partner transportation networks to provide the connections between BLM-managed public lands and nearby communities.

The BLM has also partnered with the National Off-Highway Vehicle Conservation Council (NOHVCC) to develop the Top Recreation Opportunities Mapping Series, designed to provide and promote a greater awareness of recreational opportunities on BLM-managed public lands.

In many cases, the BLM roads themselves provide a recreational experience. For example, the BLM developed the Back Country Byway program to complement the National Scenic Byways program. As an integral part of the larger Scenic Byway system, these roads show travel enthusiasts some of the best iconic landscapes that the Western States have to offer in a trip off the beaten path.

As new modes of travel emerge, the BLM must also update its policies on use and access. A recent example is the rising popularity of electric bicycles, or e-bikes. In October 2019, the Secretary of the Interior issued Secretary's Order 3376 Increasing Recreational Opportunities through the use of Electric Bikes. In response to the Secretarial Order, a rule making effort to provide updated definitions and direction for management of e-bikes was completed in December of 2020. Following that effort, Information Bulletin 2021-013 was issued to provide internal guidance; and an external webpage was developed to provide up-to-date guidance for the public.

12 Colorado Office of the Bureau of Land Management. 2019. "Stay the Trail." http://www.staythetrail.org/

Saint Anthony Sand Dunes, Idaho

5.2 Transportation Asset Management

TAM Goal: Strategically invest funding to sustainably maintain BLM transportation assets.

- **TAM Objective 1:** Develop and maintain a comprehensive inventory of BLM-owned transportation assets.
- **TAM Objective 2:** Identify the condition and funding needs associated with BLM transportation assets.
- **TAM Objective 3:** Strategically leverage BLM and partner funding sources to operate and maintain transportation assets based on asset priority and need.
- **TAM Objective 4:** Design, build, and maintain BLM transportation assets to be resilient and protect natural, cultural, and historic resources.

BLM's asset management program involves the inventory, condition assessment, and maintenance of facilities integral to implementing the Bureau's core mission. In the context of transportation, asset management focuses on transportation linear features that enable commercial and recreational visitors, as well as administrative personnel, to move across BLM-managed lands. The BLM's broad mandate to manage its land for economic uses, recreational activities, and resource conservation means transportation needs vary widely. From the backcountry paths used by backpackers through wilderness areas to heavily trafficked paved roads and bridges carrying mineral extraction equipment, the BLM must ensure its transportation assets meet user needs. As a part of maintaining its transportation system, the BLM considers the climate resiliency of these assets. The following transportation asset inventory and transportation asset data subsections summarize some of the most important factors for Transportation Asset Management.

NLRTP Implementation Strategy Links

Use BLM design standards, approved partner guidelines, training resources, and best practices to retrofit and maintain transportation assets to reduce long-term maintenance costs, improve climate resiliency, and protect resource function. **(TAM 4.1)**

The BLM recently began creating design guidelines to help DO and FO staff maintain trails to meet the expectations of their users. One example is the Guidelines for a Quality Trail Experience (GQTE), which provides direction on how to create mountain biking trails that closely match the expectations of mountain bikers for their trail experience. The GQTE prioritizes the quality of the trail experience while also ensuring that the design of the trail meets the resource protection needs around the trail.[13]

5.2.1 Transportation Asset Inventory

The BLM categorizes its transportation assets according to formal definitions in the TTM Manual[14] and the BLM's Technical Note 422, "Roads and Trails Terminology."[15] Technical Note 422 defines BLM transportation assets as the roads, primitive roads, and trails that comprise the BLM Transportation System. These assets are inventoried through the TTMP process[16] and are included in the Facility and Asset Management System (FAMS)[17], the BLM's database of record:

13 Bureau of Land Management. 2017. Guidelines for a Quality Trail Experience. https://www.blm.gov/sites/blm.gov/files/Guidelines-for-a-Quality-Trail-Experience-2017.pdf

14 Bureau of Land Management (BLM). September 27, 2016. 1626 – *Travel and Transportation Management Manual (Public)*. https://www.blm.gov/policy/manuals

15 "Transportation System" is defined in Technical Note 422 as "The sum of the BLM's recognized inventory of linear features (roads, primitive roads, and trails) formally recognized and approved as part of the BLM's transportation system." https://www.blm.gov/documents/national-office/blm-library/technical-note/roads-and-trails-terminology

16 Bureau of Land Management (BLM). September 27, 2016. 1626 – *Travel and Transportation Management Manual (Public)*. https://www.blm.gov/policy/manuals

17 Facility and Asset Management System (FAMS): the BLM's database of record for transportation and all other BLM assets. https://www.blm.gov/sites/blm.gov/files/uploads/mediacenter_blmpolicymanual9107.pdf

- **Road**: a linear route declared a road by the owner, managed for use by low-clearance vehicles which have four or more wheels and are maintained for regular and continuous use.[18]
- **Primitive Road**: a linear route managed for use by four-wheel-drive or high-clearance vehicles. These routes do not customarily meet any BLM road design standards. Unless specifically prohibited, primitive roads can also include other uses such as hiking, biking, and horseback riding.[19]
- **Trail**: a linear route managed for human-powered, stock, or off-road vehicle forms of transportation or for historical or heritage values. The BLM does not generally manage trails for use by four-wheel-drive or high-clearance vehicles.[20]

NLRTP Implementation Strategy Links

> Provide appropriate policy (e.g., through the TTM Manual Section 1626 and Handbook (H-8342)), training, and staffing to establish and maintain BLM's transportation asset inventory (including primitive roads and trails) in FAMS and Ground Transportation Linear Feature (GTLF). **(TAM 1.2)**

Table 3 provides a summary of FAMS assets by state. However, the BLM estimates that there are more than 400,000 additional route miles of motorized and non-motorized travel routes (primarily primitive roads and trails) left to survey, inventory, and evaluate for potential inclusion in FAMS.[21] The BLM prioritized approximately 1,122 miles of its roads as its initial inventory for the U.S. DOT FLTP designated inventory as shown in Table 3.

The BLM's 915 bridges provide recreational, commercial, and administrative access to economic generating opportunities. Bridges are critical transportation features for the BLM. Bridges traverse otherwise impassable terrain and vary in type, from single-lane timber bridges and foot bridges for trail access to heavy-duty concrete and steel girder bridges. More than half of the BLM's bridges are part of the National Bridge Inventory (NBI).[22] Of the BLM's 915 bridges, about two-thirds are road bridges and one-third are trail bridges. These bridges provide connectivity throughout the vast BLM-managed landscape and require maintenance to provide safe access.

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18 Bureau of Land Management (BLM). September 27, 2016. 1626 – *Travel and Transportation Management Manual (Public)*. https://www.blm.gov/policy/manuals

19 Ibid.

20 Ibid.

21 Bureau of Land Management. 2017. *5-Year Travel and Transportation Management Strategy (2018-2022)*. https://www.blm.gov/sites/blm.gov/files/documents/files/TTM_5YearStrategy_03132018.pdf

22 NBI is a program administered by the FHWA that sets bridge inspection standards and tracks the condition of bridge infrastructure in the U.S., with the goal of eliminating hazards posed by structural deficiency.

Table 3. Roads and Trails Mileage and Bridge and Culvert Counts from FAMS (2019) by BLM Administrative Region

State	Roads (miles)	FLTP Roads (miles)*	Primitive Roads (miles)	Trails (miles)	Bridges	FLTP Bridges*	Major Culverts	FLTP Culverts*
AK	25	18	5	1,246	16	2	3	3
AZ	965	58	1,071	634	2	1	6	5
CA	2,078	114	2,771	2,302	211	1	33	0
CO	1,724	16	1,896	1,327	22	0	11	0
ID	3,465	7	5,101	3,069	52	1	7	0
MT, ND, SD	1,560	53	2,152	304	39	1	7	1
NM, KS, TX, OK	4,135	79	848	257	4	0	6	1
NV	5,892	118	4,135	684	10	3	5	0
OR, WA	19,162	556	2,398	1,407	490	84	559	67
UT	2,861	57	5,421	2,446	20	0	2	0
WY	2,672	43	1,602	63	41	0	14	0
Total	**44,539**	**1,122**	**27,400**	**13,740**	**907**	**93**	**653**	**77**

**FLTP roads, FLTP bridges, and FLTP culverts are a subset of the roads, bridges, and culverts columns, respectively.*
***The rows in the table may not sum to the column totals due to rounding.*
(Source: FAMS)

5.2.2 Transportation Asset Data: FAMS and GTLF

The BLM currently utilizes two transportation databases that were designed for different purposes:

- FAMS is the BLM's database of record for all assets maintained by the BLM, including those related to transportation.
- GTLF is the BLM's database to inventory transportation linear features as part of the TTMP process.

5.2.2.1 Facility and Asset Management System (FAMS)

The BLM enters transportation assets into FAMS, the database of record, following the TTMP process, which includes route inventory and evaluation phases to identify and categorize transportation features. The TTMP Record of Decision (ROD) finalizes the list of transportation assets for a given travel management area (TMA). Once the ROD is signed, planning and engineering staff enter those features and their associated attributes (asset classification, length, width, surface type, condition, and whether the BLM has maintenance responsibility) into FAMS. See Section 4 for more details on the TTMP process.

In 2018, the BLM began performing road condition assessments based on the University of Wisconsin's Pavement Surface Evaluation and Rating (PASER) method to align with FHWA-FLH methodology and other bureaus within the DOI. The BLM is performing PASER condition assessments on all FLTP roads as well as all aggregate and asphalt surfaced roads, totaling approximately 15,000 miles over a five-year period. The BLM is applying a prototypical PASER condition to the remaining approximately 30,000 miles of natural roads.

The PASER condition assessments provide a comprehensive and representative estimate of BLM road condition and corresponding DM needs. However, there is no current mechanism for identifying funding needs for BLM's primitive roads and trails. Although these assets require much less maintenance than roads and bridges, funding is often still required for these types of assets.

NLRTP Implementation Strategy Links

Continue to perform road condition assessments and store results in FAMS to update funding needs, including Deferred Maintenance. **(TAM 2.1)**

Identify a funding needs mechanism for primitive roads and trails. **(TAM 2.2)**

Investigate opportunities to collect crowd-sourced information on asset condition. **(TAM 2.2)**

5.2.2.2 GTLF Database

The BLM developed the GTLF database in 2015 as a geospatial system for reporting the number of miles of routes open to OHV use. The GTLF has evolved to provide geospatial data for transportation linear assets and meet an expanded set of transportation planning needs. Issued by BLM Memorandum No. 2015-061, the GTLF database is a geospatial dataset of transportation linear features. In addition to roads, primitive roads, and trails, GTLF also includes primitive routes and project-oriented temporary routes. Features include those owned and/or managed by BLM and some States that are maintained by other entities, such as county governments. In addition to storing feature geometry, GTLF data contain other attributes such as surface type, primary observed mode of travel, asset classification and name, OHV designation, and whether the BLM has jurisdiction over the feature.

Transportation Data Synchronization Initiative: Although FAMS and GTLF each have their advantages and disadvantages, a major concern is the inconsistencies between the two databases. Efforts are currently underway to develop a synchronization tool for the FAMS and GTLF data, ensuring consistency between the two databases, geo-enabling FAMS data, and triggering automatic attribute updates in both databases. This will help ensure that all staff use consistent and the most up-to-date transportation features data when making decisions.

NLRTP Implementation Strategy Links

Create a link to allow continuous updates between GTLF and FAMS, and ensure all necessary attributes are included and consistent across the two databases. **(TAM 1.1)**

Gila Box Riparian National Conservation Area, Arizona

5.3 Collaborative Partnerships

CP Goal: Develop and maintain collaborative partnerships for a transportation system that connects communities to public lands.

- **CP Objective 1:** Engage external partners that should be involved in BLM Travel and Transportation Management and implementation processes, including Federal, Tribal, State, county, and local stakeholders to support transportation connectivity.
- **CP Objective 2:** Actively participate in external transportation planning and implementation with Federal, Tribal, State, county, and local processes to support the BLM mission.
- **CP Objective 3:** Share and exchange current transportation data with external partners for transportation planning.

Multi-agency coordination and partnerships are important for management of BLM's transportation system particularly due to the noncontiguous nature of BLM-managed lands as described in Section 5.1. FLMA partnerships with other entities have become even more important because of state and local government budget constraints. The following subsections summarize factors important for collaborative partnerships:

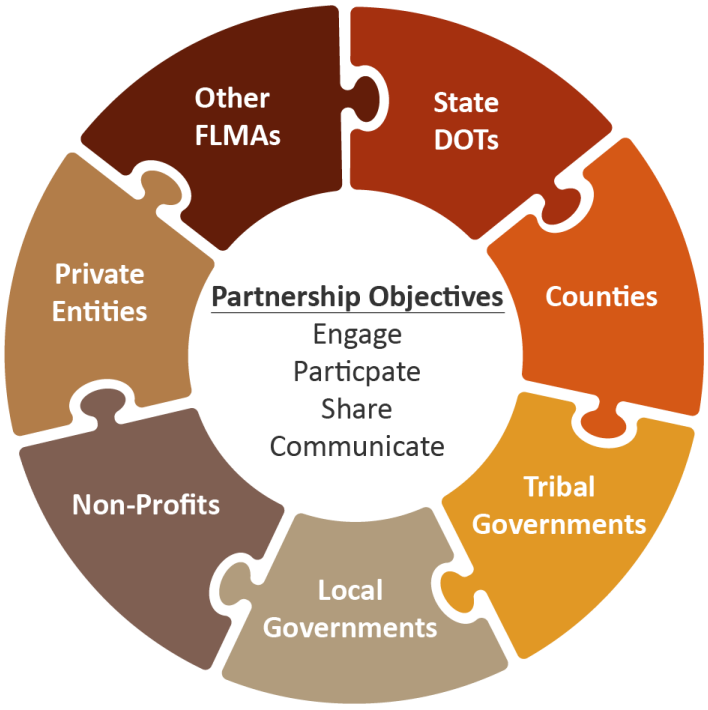
- Partnership Types
- Agreements
- Data Sharing
- Communication and Coordination

5.3.1 Partnership Types

Typical BLM partners include other FLMAs, Tribal governments, State DOTs, counties, local communities, private entities, and nonprofit organizations (Figure 10). BLM internal partnerships are also important for sharing information across program areas as well as collaborating on projects such as TTMPs where contributions from multiple program areas create a more holistic plan.

External partners are important at all levels. State-level partnerships are particularly important for leveraging funding for larger-scale projects and programs. Some of the BLM's key State-level partners are summarized in Table 4. In addition to having strong partnerships with BLM SOs, many of these organizations also have HQ level BLM partnerships. BLM partnerships at the HQ level are more policy based, such as BLM's participation on the Transportation Research Board (TRB) Committee on Transportation Needs of National Parks and Public Lands. BLM DO and FO partnerships are critical for TTMP development of on-the-ground planning and implementation.

Figure 10. Typical External Partnership Objectives and Types



NLRTP Implementation Strategy Links

Promote internal and external understanding of travel and transportation planning and how it supports BLM's mission through up-to-date communications materials and training opportunities. **(CP 1.2)**

Establish and maintain good relationships with external Federal, Tribal, State, county, and local partners to coordinate planning and programming activities; Provide a list of common external partner planning processes and updating BLM contact list to share with external partners. **(CP 2.1)**

Use partnerships to increase and improve access to inaccessible public lands. **(CP 2.2)**

Table 4. Summary of BLM Key Partners Identified by State

State*	Key partners
Alaska	Alaska DOT&PF, other State agencies and FLMAs, Tribal governments.
Arizona	Arizona DOT, Arizona Game and Fish Department, Arizona Off-Highway Vehicle (OHV) Coalition, Arizona State Parks, local governments.
California	California DOT, California Department of Parks and Recreation: OHV Division, Friends of Jawbone, Friends of El Mirage, Friends of Dumont Dunes, American Sand Association, IMBA.
Colorado	Colorado DOT, Colorado Parks and Wildlife, U.S. Forest Service, local communities, Colorado OHV Coalition, Colorado Mountain Club, Bicycle Colorado, IMBA, Volunteers for Outdoor Colorado, Colorado Youth Corps Association, Stay The Trail Education and Stewardship Alliance, Local and State government agencies, Non-Profit Friends Groups.
Idaho	Idaho DOT, county governments, U.S. Forest Service, U.S. Fish and Wildlife Service, Idaho Parks & Recreation Department, Idaho Department of Fish & Game.
Montana/Dakotas	Montana DOT, South Dakota DOT, North Dakota DOT, NOHVCC, Montana Fish, Wildlife and Parks, U.S. Forest Service – Region 1.
Nevada	Nevada DOT, Nevada State OHV Commission, OHV user groups.
New Mexico	New Mexico DOT, New Mexico Department of Game and Fish, New Mexico OHV Alliance, Tribal governments, neighborhood associations, recreation users, NPS.
Oregon/Washington	Oregon DOT, Oregon All-Terrain Vehicle (ATV) Grant Committee, U.S. Forest Service (with which the Oregon BLM shares 1,100 miles of border), Oregon Recreation Trails Program Grant Committee, Association of Oregon Counties, IMBA, Federal Highway Administration (FHWA).
Utah	Utah DOT, Interagency Natural Resources Coordination Council, Utah State Parks, Utah 4 Wheel Drive Association, *Tread Lightly!*
Wyoming	Wyoming DOT, Wyoming State agencies and counties, ranchers, IMBA, Wyoming Recreation Action Team, BLM Wyoming Resource Advisory Council, Cooperators.

**Note that this table is not comprehensive; adapted from: Bureau of Land Management. 2017. 5-Year Travel and Transportation Management Strategy (2018-2022).*
https://www.blm.gov/sites/blm.gov/files/documents/files/TTM_5YearStrategy_03132018.pdf

5.3.1.1 Partnerships with National Organizations

Partnering with national organizations offers consistency in messages and services across the BLM. The BLM has partnerships with several national organizations such as *Tread Lightly!*, *Leave No Trace*, National Off-Highway Vehicle Conservation Council (NOHVCC), 21st Century Conservation Service Corps (21CSC), International Mountain Biking Association (IMBA), and National Environmental Education Foundation. Partnerships may provide funding opportunities for general support or contracting for specific services. Partnerships with these national organizations may occur at the BLM HQ, SO, DO, or FO level.

Campbell Tract Special Recreation Management Area, A Best Practice in State DOT/BLM State Office Partnership: The BLM's Campbell Tract is a 730-acre Special Recreation Management Area located in the middle of Anchorage, Alaska. It provides a 12-mile non-motorized trail system that winds through the woods. The BLM partnered with the Alaska DOT&PF, using FLAP and FLTP funds, to realign the intersection leading to Campbell Tract, which is a state road and the BLM road within the Tract. This project will improve safety and access for motorized and nonmotorized visitors.

Sacramento River, California

Example partnerships with national-level organizations:

- ***Tread Lightly!*:** BLM's partnership with *Tread Lightly!* is an example of a partnership where the BLM provides funding for general support from an outside organization. The message and materials produced by *Tread Lightly!* are used across BLM FOs as tools to communicate the message about reducing impacts to natural areas by staying on trails, avoiding sensitive areas with recreation use, sharing space with other users, and not leaving trash behind.
- ***Leave No Trace*:** For many years, the BLM has supported the principles and programs of *Leave No Trace*, an outdoor ethics program for all levels of public lands users. There are three levels of *Leave No Trace* courses, leading to master educators and trainers who conduct Awareness Workshops, which are designed for the general public to learn, practice and promote *Leave No Trace*.
- **NOHVCC:** While BLM has a relationship with NOHVCC at a national-level, generally partnerships with NOHVCC pertain to specific State plans and are developed at the DO/FO level with a local agreement. For example, NOHVCC is currently helping to develop a motorized recreation action strategy for each State. Through this partnership, the strategies developed for each State will be able to help guide BLM in both future TTMPs and RMPs.
- **21CSC:** 21CSC provides opportunities for returning veterans and young adults to learn new skills while contributing to the overall improvement of public Federal lands. BLM's partnership with 21CSC helps to complete on-the-ground work for various maintenance and improvement projects, including projects for transportation assets, which help to reduce the backlog of maintenance needs in a cost-effective manner.
- **International Mountain Bicycling Association (IMBA):** The BLM collaborated with IMBA and other partners to develop the "Guidelines for a Quality Trail Experience" (GQTE), published in 2017. More than 3.5 million mountain bikers ride the trails that are available on public lands managed by the BLM each year. These guidelines will help improve the design, construction, and management of mountain bike trails all across the country.
- **National Environmental Education Foundation:** The BLM partners with the National Environmental Education Foundation to organize National Public Lands Day and other volunteer events. Many of these events are projects to maintain or improve BLM trails.

5.3.1.2 Local Partnerships

Local partnerships are generally created at the DO/FO levels and occur in three primary ways:

- Local partners/stakeholders participate in BLM planning efforts and trainings to help others gain a better understanding of BLM mission and goals while also obtaining important community feedback that informs better transportation planning decisions.
- BLM participates actively in external partner/stakeholder meetings to engage in their planning efforts and represents BLM interests and mission.
- BLM and local partners work together to implement transportation plans, including conducting trail construction/maintenance, restoration, and improving signage and visitor information.

Example local-level partnerships:

Trail Mix – Grand County, UT: Grand County, UT, coordinates a Trail Mix Committee, which develops and maintains trails in Grand County for non-motorized use. The volunteer committee is composed of various stakeholders such as BLM, U.S. Forest Service, Utah State Parks, county/city council liaisons, and people representing a variety of non-motorized recreational interests such as bicycling, hiking, climbing, skiing, and equestrian activities.

San Luis Valley Great Outdoors (SLV GO) – San Luis Valley, CO: SLV GO is a regional cooperative engaged in providing long-term planning and recreational opportunities over a six-county region. SLV GO produced a trail master plan for the region and toolkits on topics such as hosting recreational events, funding trails, promoting trails, and connecting youth with the outdoors. BLM is an engaged partner in SLV GO's efforts to improve the local economy through recreational tourism and to improve local quality of life by providing recreational opportunities to current residents.

Local Partnerships and the Federal Lands Access Program (FLAP)

As discussed within Section 3.3, the U.S. DOT FLAP supplements State and local resources for roads accessible to the public, trails, transit systems, and other transportation facilities that are not owned or maintained by the Federal government, with an emphasis on high-use recreation sites and economic generators.[23] The BLM transportation system is, in most cases, interconnected with non-Federally owned land and transportation networks; therefore, the FLAP is an important opportunity to create strong connections with local communities and improve access to BLM-managed public lands.

FHWA-FLH represents BLM's interests in the FLAP project selection process. FHWA-FLH meets with BLM and other FLMAs to rank projects that FHWA-FLH takes to the Programming Decisions Committee (PDC) in each State. The PDC ultimately selects FLAP projects based on input from FHWA-FLH, counties, and the respective State DOTs. While FLAP proposals are initiated at the local-level and submitted by local governments, FOs should work with local governments to identify high-priority access projects, develop proposals, and make FLAP recommendations so that projects have the greatest mutual benefit for both BLM and the local community. All FLAP proposals concerning BLM-managed public lands must be signed by a BLM representative to demonstrate BLM's support for the project.

In 2018, there were 58 FLAP projects underway or planned that provide access to BLM-managed public lands. These projects are located in 11 States and take place on facilities owned or maintained by State DOTs, counties, local governments, or Tribal governments. Twelve of the 58 projects that provide access to BLM-managed public lands also provide access to other FLMAs, creating a multi-agency benefit.

5.3.2 Agreements

As discussed in Section 5.1.4, agreements provide a more formalized partnership often between BLM FOs and local entities.

5.3.2.1 Maintenance Agreements

Because many BLM-managed public lands are interspersed with other public and private lands, travel to and through BLM-managed public lands often requires movement on routes managed by other road owners, including State DOTs, counties, local governments, Tribal governments, and private entities. Maintenance agreements can help ensure a seamless travel experience by reducing patchwork projects when right-of-way ownership, for example, varies on a single stretch of public roadway.

Maintenance agreements are generally with a local government, such as a county, where the partner agency maintains roads for BLM and in return BLM makes a payment or maintains some of the partner's roads. It is more effective from a management and cost perspective for one entity to maintain a single roadway. Agreements, however, may not all be solidified and documented on paper. In some cases, legacy agreements have continued over the years; such informal agreements pose challenges for record management and understanding the complete scope of maintenance agreements that exist with the BLM.

23 U.S. DOT, Federal Highway Administration, Office of Federal Lands Highway. Federal Lands Access Program (FLAP). https://flh.fhwa.dot.gov/programs/flap/

Partnering with local communities to fund access improvements

FLAP provides an important opportunity to construct infrastructure improvements, connecting BLM-managed public lands to local communities. One example of a project with strong local support is the 18 Road project that provides access to the North Fruita Special Management Area in western Colorado. This project will widen and improve 18 Road and is the result of a community-driven effort with many partners: the Town of Fruita, a local mountain bike group, and the Grand Valley Trail Alliance. These partners all recognized the value of the work and collaborated to find funding for construction, which is scheduled for 2021-2022.

Figure 11. 18 Mile Road before construction of improvements in Colorado

5.3.2.2 Financial Assistance Agreements

The BLM provides financial assistance agreements to public or private organizations for specific services. Financial assistance agreements can be grants or cooperative agreements that provide opportunities for partner organizations to carry out stewardship projects that achieve land management goals. Examples include agreements with local clubs, counties, Conservation Corps, and others to install signage, maintain trails, remove vegetation, and help restore watersheds.

5.3.3 Data Sharing

As described in Section 5.2.2.2., GTLF data include ground transportation features and improve BLM's transportation planning as well as numerous other BLM programs affected by transportation (e.g., water and air quality, wildlife habitat fragmentation, engineering, realty, cultural resources). GTLF data also support better coordination and collaboration with partner agencies. While GTLF is a national data standard for the BLM, the data are produced and managed within each SO's geographic information system (GIS). Each SO is at a different level with regard to how it uses GIS and GTLF. The goal is for all SOs to transition to the GTLF format so that the data can be used and analyzed at a national level and more effectively shared with external partners.

GTLF data stewards are responsible for data quality control and adherence to GTLF standards. This responsibility involves working closely with GIS staff to monitor progress of the database, facilitating communication between recreation planners and GIS staff, and leveraging funds to provide the staffing needed to update and add data to the GTLF database.

The BLM also benefits from data shared by others. This may include U.S. DOT and State DOT data on roads and trails. Such data can inform the BLM of the location of agencies' transportation assets. Data sharing of existing and proposed transportation system assets between the BLM and partner agencies allows for better planning and identification of opportunities such as places to close transportation network gaps, locations for new connections, and prioritization of improvements of existing transportation system assets.

NLRTP Implementation Strategy Links

Establish business rules for replication of BLM State GIS into GTLF to ensure consistency across the Bureau for sharing GTLF with external partners. **(CP 3.1)**

State GTLF data stewards should continue to coordinate with GIS staff to ensure quality and current data. **(CP 3.2)**

Build partnerships with Federal, State, county, and local partners to identify transportation data sharing opportunities. **(CP 3.1.)**

Example of the benefits of data sharing:

Colorado Trail System Map: The Colorado Trail System Map (https://cts.state.co.us/cotrex/desktop/) is a multi-agency data sharing collaboration where the Colorado Department of Natural Resources and Colorado Parks and Wildlife coordinate data to produce a web map of all the motorized and non-motorized public trails within the State of Colorado. This is a useful resource for including trail planning as a part of the transportation system and also provides public land users with valuable trip planning information. The BLM contributes GTLF data for all approved and open routes.

5.3.4 Communication and Coordination

It is important for communication and coordination to occur both internally and externally for the BLM to meet its transportation system needs as well as those of surrounding communities and partner agencies. DO- and FO-level communication with State DOTs, counties, and other local agencies varies across the BLM. This can include learning about and participating in external stakeholder transportation system planning efforts and representing BLM interests, as well as inviting stakeholders to participate in BLM transportation planning efforts.

5.3.4.1 Communication and Coordination through TTMPs

BLM FOs actively engage partners during the TTMP process through one-on-one meetings, group meetings, field trips, open public meetings, or inviting external partners to attend national TTMP courses. The BLM also often identifies certain agencies and local governments as "Cooperating Agencies" that provide feedback throughout the planning and decisionmaking process. By engaging external agencies and other stakeholders the BLM gains a better understanding of the needs for specific road or trail segments.

5.3.4.2 Telling the BLM's Transportation Story

Communicating the importance of BLM's transportation system in sustaining its mission to BLM staff, partners, Congress, and the public is critical to focus attention and funding toward necessary improvements for the BLM's transportation system. The BLM has begun to communicate this message through a variety of resources, such as the BLM Transportation Brochure, 5-Year Travel and Transportation Management Strategy (2018-2022), externally facing TTMP website and other communication materials such as videos and fact sheets.[24, 25, 26]

The comprehensiveness of the data available on the BLM's transportation system is an important factor to communicate the full story of the BLM's transportation system. Additional efforts such as PASER are helping to add a new depth of information by providing more detailed condition data on roads. One challenge, however, is that FAMS, BLM's database of record for transportation assets, does not capture all transportation assets. This is in part due to the fact that many routes have not yet been inventoried and designated through the TTMP process. Section 5.2.2 within the chapter on Transportation Asset Management provides more details on FAMS and ongoing BLM efforts to improve data collection and management.

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24 Bureau of Land Management. 2018. Bureau of Land Management Transportation Brochure. https://rosap.ntl.bts.gov/view/dot/36057

25 Bureau of Land Management. 2018. 5-Year Travel and Transportation Management Strategy (2018-2022). https://www.blm.gov/sites/blm.gov/files/documents/files/TTM_5YearStrategy_03132018.pdf

26 Bureau of Land Management. 2019. Travel and Transportation. https://www.blm.gov/programs/recreation/recreation-programs/travel-and-transportation

Wolfman Panel, Utah

5.4 Natural, Cultural, & Historic Resources

NCH Goal: Manage the BLM's transportation system to protect resources while providing appropriate access.

- **NCH Objective 1:** Ensure that natural, cultural, and historical resource inventories are performed efficiently and comprehensively, as critical components of the TTMP process at the land use and implementation planning levels.
- **NCH Objective 2:** Implement TTMP route designations based on available funding and staff resources.

Unmanaged transportation infrastructure can have adverse impacts on natural, cultural, and historic resources on BLM-managed lands. For example, without careful planning, roads and trails can fragment wildlife habitats, result in wildlife collisions, disrupt passage of aquatic organisms, reduce watershed quality, and impact historic and cultural sites. Through TTMPs, the BLM works to minimize and mitigate these potential adverse impacts to natural, cultural, and historic resources when making transportation decisions. TTMP implementation is critical for realizing these resource protection benefits by designating areas for recreational opportunities that are separate from protected conservation areas. See Section 4 for more details on the TTMP process.

BLM-managed public lands contain remarkable geologic formations; relatively undisturbed native plant and animal communities; wilderness areas; wild and scenic rivers; historic trails; and an abundance of paleontological, archaeological, and historical sites. These resources are important for their scientific, ecological, cultural, educational, and recreational significance to the nation's natural and cultural heritage.[27]

NLRTP Implementation Strategy Links

Leverage the knowledge and experience of interdisciplinary teams during the TTMP process to designate transportation systems that conserve natural, cultural, and historic resources while providing appropriate access. **(NCH 1.1)**

Keep TTM Manual 1626, Handbook (H-8342), and related training current. **(NCH 1.2)**

Highlight success stories for streamlining the SHPO consultation and Cultural and Historical Resource Inventory process. **(NCH 1.3)**

Prioritize implementation of designated routes to address critical resource impacts. **(NCH 2.1)**

Identify partners and leverage resources to achieve TTMP implementation. **(NCH 2.2)**

Identify long-term funding and staff resources needed for TTMP implementation. **(NCH 2.3)**

The following subsections highlight some of the relationships among BLM's transportation system and natural, cultural, and historic resources.

27 Bureau of Land Management. 2017. Public Lands Statistics. https://www.blm.gov/sites/blm.gov/files/PublicLandStatistics2017.pdf

BLM's strategy to protect the Greater Sage-Grouse habitat

One priority species for wildlife conservation on BLM-managed public lands is the Greater Sage-Grouse (Figure 12). The BLM manages much of the best remaining sagebrush habitat for the Greater Sage-Grouse, on which some 350 other species of plants and wildlife also depend. The BLM is actively improving sagebrush steppe in the West through conifer and invasive species removal, fuel breaks, and habitat protection and restoration. These practices improved nearly 1.5 million acres in 2018. BLM roads and primitive roads have also been found to improve the sagebrush steppe as they serve as fuel breaks for wildland fires.

Transportation planning is an important element of the BLM's strategy to protect Greater Sage-Grouse habitat by keeping public users on designated routes. In some States with Greater Sage-Grouse habitat, such as Wyoming and Montana, the BLM uses density calculation tools to measure the level of habitat disturbance from existing transportation routes. The BLM is in the process of developing a Disturbance Automated Reference Toolset (DART) for use nationally. DART uses a standardized definition of "road" for disturbance calculations which does not include primitive roads or trails.

(Source: BLM 2018: https://www.blm.gov/programs/fish-and-wildlife/sage-grouse)

Figure 12. Strutting Greater Sage-Grouse

(Photo Source: BLM 2018: https://www.flickr.com/photos/mypubliclands)

5.4.1 Natural Resources

As stewards of the nation's largest mass of federal lands, BLM seeks to conserve these resources for multiple uses through conservation for present and future generations. The BLM manages its transportation system to align with identified objectives of areas with special designations. These include designations such as Threatened or Endangered Species habitat, Wilderness Area, Wilderness Study Area (places that have wilderness characteristics and could be designated as Wilderness in the future), Areas of Critical Environmental Concern, Research Natural Areas, and National Conservation Areas.[28] The BLM manages diverse ecosystems as components to the National Wilderness Preservation System, ranging from colorful desert lands to alpine peaks, coastal shores to river ecosystems, and forests to grasslands. There are currently more than 10 million acres of Wilderness Area and more than 11.6 million acres of Wilderness Study Area. The BLM manages habitat for more than 480 wildlife, fish, and plant species listed as threatened or endangered under the Federal Endangered Species Act (ESA), and at least 31 species identified as candidates for listing.[29]

5.4.2 Historic and Cultural Resources

The BLM is a steward for the Federal government's largest and most diverse body of cultural resources.[30] The petroglyphs in Figure 13 are an example of a cultural resource. As of 2017, this included more than 391,240 documented cultural sites.[31] The BLM's stewardship is regulated primarily by two Federal statutes: the National Environmental Policy Act (NEPA) and Section 110 of the National Historic Preservation Act. NEPA requires the BLM to assess the environmental impacts of its projects, including impacts to historic and cultural resources. Section 106 requires the BLM to consider the effect of projects on historic and archaeological resources. To help comply with these statutes, the BLM's cultural resource management program continuously works to locate, evaluate, and inventory cultural resources on public lands under its jurisdiction.[32]

National Scenic and Historic Trails are signature components of the National Trails System, and are protected by the BLM as a part of the National Conservation Lands. The BLM protects nearly 6,000 miles of 18 designated trails in 15 States (Table 5).[33]

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28 Ibid.

29 Bureau of Land Management. 2018. "Threatened and Endangered Species." https://www.blm.gov/programs/fish-and-wildlife/threatened-and-endangered

30 National Trust for Historic Preservation. 2015. "Statement of the National Trust for Historic Preservation." https://docs.house.gov/meetings/AP/AP06/20150318/102895/HHRG-114-AP06-Wstate-SpragueS-20150318.pdf

31 Ibid.

32 Bureau of Land Management. 2017. Public Land Statistics. https://www.blm.gov/sites/blm.gov/files/PublicLandStatistics2017.pdf

33 Bureau of Land Management. 2018. "National Scenic and Historic Trails." https://www.blm.gov/programs/national-conservation-lands/national-scenic-and-historic-trails

Table 5. Number and Miles of National Historic Trails and National Scenic Trails by State

	National Historic Trails		***National Scenic Trails***	
Statew	**Number**	**BLM Miles**	**Number**	**BLM Miles**
Alaska	1	149	0	0
Arizona	2	76	1	46
California	3	423	1	189
Colorado	1	85	1	1
Idaho	4	439	1	13
Maryland	2	4	1	2
Montana	2	347	1	11
Nevada	3	1,147	0	0
New Mexico	2	156	1	192
Oregon	2	24	1	44
Utah	3	583	0	0
Virginia	1	1	1	1
Washington	0	0	1	12
Wyoming	5	1,644	1	172
Totals	**13***	**5,078**	**5***	**683**

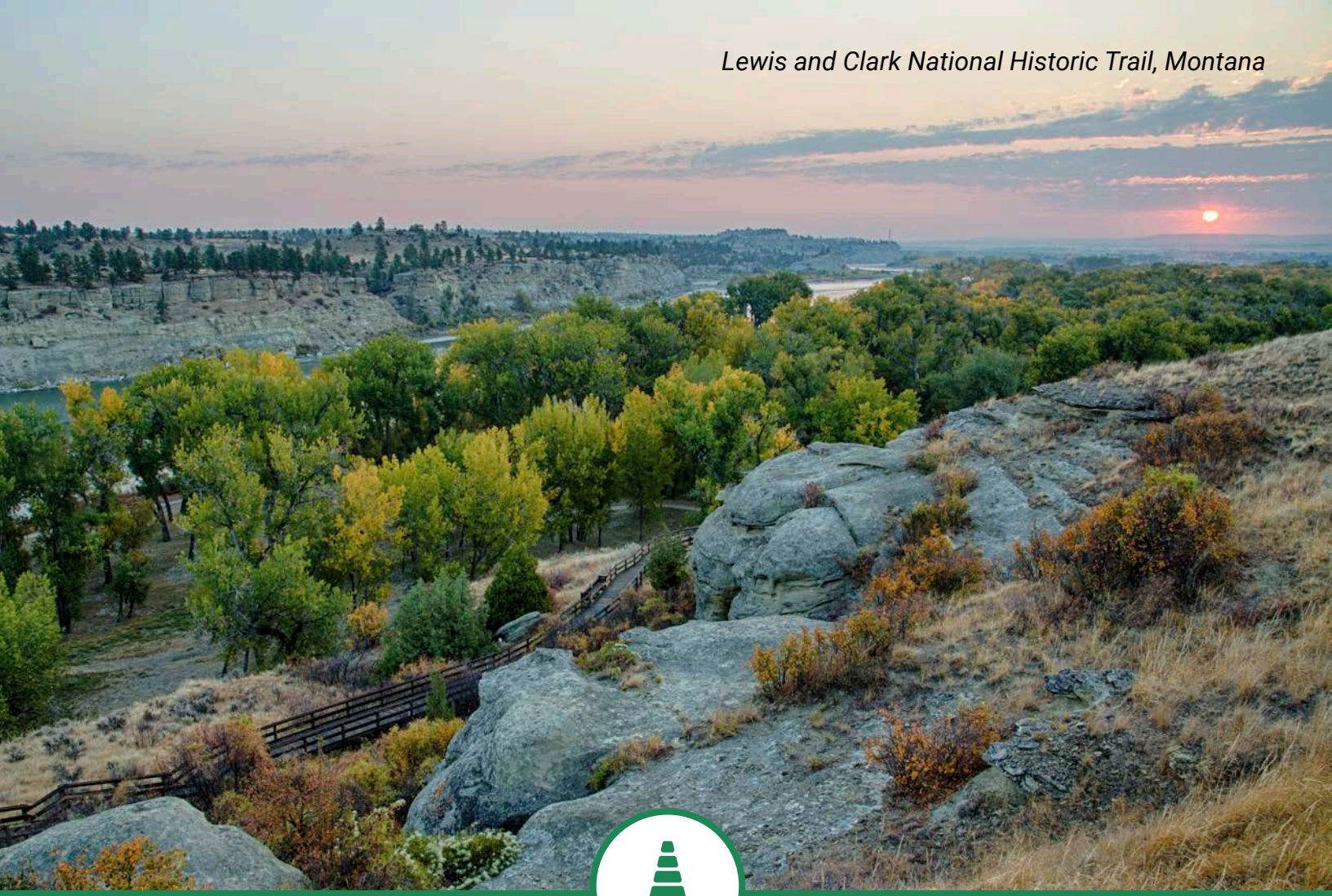
**Trails cross State lines. Each trail is counted only once toward the total tally.*
(Source: BLM 2018 National Conservation Lands Maps and Data: https://www.blm.gov/sites/blm.gov/files/Trails%20Summary%20Table_Q1_2017.pdf)

The BLM recently developed guidance for DOs and FOs on how to consider cultural and historic resources in transportation planning to meet the requirements of their State Historic Preservation Officers (SHPOs) and the Advisory Council on Historic Preservation (ACHP). As a result, DOs and FOs are improving their ability to identify areas with high potential for discovery of historic or cultural resources. This identification saves time and money by allowing the BLM to focus its initial surveying on locations with high potential for historic or cultural resources, rather than surveying the entirety of the planning area. This is especially important because compliance with the requirements of Section 106 is funded through benefiting programs, which can delay TTMPs implementation.

A significant amount of BLM-managed public land has yet to be surveyed, so a lack of data about the location and number of historic and cultural resources should not be presumed to mean there is a lack of resources on BLM-managed public lands. The BLM currently conducts surveys and inventories cultural resources as part of TTMPs and project-level environmental compliance. However, the BLM does not publish cultural resource inventory data. This is to protect sensitive cultural and archaeological sites from looting. The BLM also has protocols in place for data management to protect against this possibility.

Figure 13. Petroglyphs at Nine Mile Canyon, Utah

(Source: BLM 2018: https://www.flickr.com/photos/mypubliclands)



Lewis and Clark National Historic Trail, Montana

5.5 Safety

S Goal: Provide safe and appropriate multimodal transportation access for all users of BLM-managed lands.

- **S Objective 1:** Conduct education and outreach for travelers to prepare for safe travel on BLM-managed public lands consistent with the purpose of the route.
- **S Objective 2:** Implement TTMP route designations based on available funding and staff resources.
- **S Objective 3:** Support coordinated and rapid emergency response with local first responders and enhance communication of conditions affecting BLM-managed public lands.

Transportation safety for the BLM includes safe travel through BLM-managed public lands for a range of administrative, commercial, and recreational uses. On many BLM routes, commercial and recreational users often share routes with larger vehicles, such as freight trucks, which can create opportunities for conflicts. BLM transportation safety also includes unique challenges due to the remoteness and unpaved nature of the BLM's system.

Transportation safety includes consideration of the four E's of safety: Education, Engineering, Enforcement, and Emergency Response. The level of maintenance and surface treatment of each component of the transportation system varies based on a route's purpose. It is important to maintain routes to standards consistent with their purpose and to communicate the route's purpose to travelers in order to ensure the safety of the users. Roads and the transportation network play an important role in providing both ingress and egress for emergency vehicles and for users to evacuate depending on the situation.

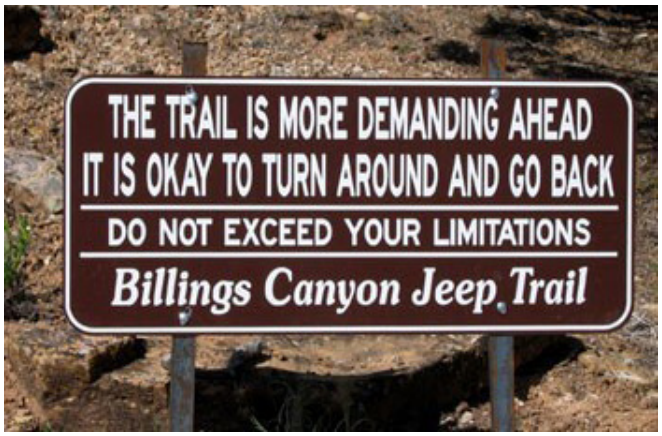
The following subsections summarize some of the important factors for safety:

- Expectations for safety on BLM-managed public lands
- Current BLM efforts related to safety
- Safety data

5.5.1 Expectations for Safety on BLM-Managed Public Lands

One unique challenge for the BLM is how to improve safety within the context of the unique experiences that the BLM provides. Many travelers visit BLM-managed public lands to participate in transportation-related activities with inherent safety risks, such as riding OHVs or mountain biking on natural, unpaved surfaces. For many of these travelers, the remote, minimally developed nature of the landscape, roads, and trails provides the recreational value they seek. This presents a challenge for the BLM to develop and implement design standards that minimize safety hazards but are also appropriate to the designated purpose and use for a given route. Educating travelers on route purpose and condition is a key element to improving safety, by ensuring that users understand the risks associated with their planned travel. The BLM primarily delivers safety education for travelers through on-site signage or handouts in recreational areas notifying travelers of location-specific safety hazards (Figure 14).

Figure 14. BLM Sign at Billings Canyon Jeep Trail in Grand Junction, Colorado



Travelers accustomed to paved roads may not consider the additional hazards of BLM's unpaved or primitive roads. For example, clay roads become impassable when they get wet. The current maps of the BLM road system are an important navigational aid for the numbered road system, but they do not include individual road warnings and safety tips. Additional signage and notations on trip pre-planning resources can improve traveler awareness. More information on wayfinding in the context for visitor experience and safety is provided in Section 5.1.5.

NLRTP Implementation Strategy Links

Educate travelers on the inherent risks associated with traveling on public lands utilizing digital and hard-copy resources. **(S 1.1)**

To enhance visitor safety, provide wayfinding signage, downloadable maps, or kiosks with site-specific travel information where feasible. **(S 1.2)**

5.5.2 Current BLM Efforts Related to Safety

5.5.2.1 FLTP Route Assessment Reviews and Project Prioritization

BLM currently addresses safety on its FLTP routes by performing Route Assessment Reviews (RAR) and prioritizing safety improvements in project selection criteria for DM and FLTP funds. RARs are inspections of FLTP routes performed by a HQ team for FO and DO staff to identify the range of project work for a route. The team categorizes the work as safety improvements, design deficiencies, and DM. The results of the RAR are used to design and evaluate FLTP projects.

Of the $200 million of current shovel ready FLTP projects for which BLM has performed an RAR, approximately 60 percent of the work will include safety improvements and design upgrades. The remaining 40 percent of the work reduces DM. To date, the BLM has performed RARs and identified safety deficiencies on 515 miles, or 46 percent, of the FLTP routes. Because the BLM uses the FHWA-FLH to design and contract FLTP projects, FHWA-FLH engineers will scope projects to verify the safety deficiencies in BLM FLTP roads prior to design.

Safety is the highest weighted criterion that the BLM uses to score and rank upcoming FLTP projects. This priority is important to assure projects that address significant safety deficiencies are funded as soon as possible.[34]

In 2017, BLM HQ staff attended a road safety assessment course sponsored by the U.S. Forest Service to determine how to improve BLM staff's ability to identify safety deficiencies on BLM's FLTP roads. BLM has applied the skills learned at the road safety assessment training to improve BLM assessments when performing RARs.

5.5.2.2 Roadway Safety Audits

In corridors with known safety hazards, the BLM may undertake a Road Safety Audit (RSA). RSAs consider the safety of a road for all potential road users and focuses recommendations on the four Es of safety (Education, Engineering, Enforcement, and Emergency Response) utilizing a multi-disciplinary assessment team. RSAs typically include staff from FHWA-FLH in addition to BLM staff. These audits are more extensive than the safety considerations included in a RAR and are undertaken in particularly critical corridors. To date, the BLM has conducted several RSAs, including Cow Creek Back Country Byway and Nestucca River Back Country Byway, both in Oregon.

NLRTP Implementation Strategy Links

Identify route safety data needs, and identify available route safety data. **(S 2.2)**

Determine how safety data may be used for effective safety analysis, planning, and implementation. **(S 2.3)**

34 BLM. 2018. Bureau of Land Management Federal Lands Transportation Program Investment Strategy, Fiscal Years 2019-2021.

Cow Creek Back Country Byway, Oregon

Cow Creek Back Country Byway is an FLTP road that had safety deficiencies, including tight curves and insufficient sight lines. To address these issues, BLM conducted an RSA with FHWA-FLH's Western Federal Lands (WFL) Division Office. One recommended improvement from the RSA that BLM has implemented is the realignment of a tight radius curve to improve sight distance for roadway travelers and reduce vehicle roadway departures.

Cow Creek Back Country Byway Realignment (see the tree in the middle of the photo for reference)

Before:

After:

5.5.2.3 Design Standards and Review

The BLM uses established design standards and guidance documents to incorporate safety into the design of new infrastructure or improvements to existing transportation assets. BLM Manual Sections 9113 and 9114 and corresponding Handbooks 9113-1 and 9114-1 address road and trail design standards, respectively. These standards apply to all road and trail projects on BLM-managed public lands, whether constructed by BLM, FHWA-FLH, or permittees such as industry users.

While the BLM generally does not build new roads, it does reconstruct or rehabilitate existing roads. Many roads on BLM-managed public lands were initially constructed by industry for access to mineral and timber extraction and other economic activities. As such, they often were not designed for general public use and may require improvements for safety if they become popular routes for recreational travel.

The BLM prioritizes road safety improvements for roads in areas that are experiencing more travel demand than the current facilities can safely handle. Such hot spots generally occur around recreational opportunities and may require formalizing a recreation site with adequate parking and circulation and providing facilities that are separated from active use areas to reduce conflicts between different uses.

NLRTP Implementation Strategy Links

> Use BLM design standards, approved partner guidelines, and best practices to incorporate safety considerations into route design. **(S 2.1)**

5.5.2.4 Emergency Response

In counties with BLM-managed lands, BLM law enforcement staff regularly work with county emergency management and law enforcement personnel. In the event of an emergency, county law enforcement is often first notified. County law enforcement notifies the BLM of emergencies on BLM-managed lands when additional BLM law enforcement or other support is needed.

When BLM law enforcement officers are the first responders to an emergency, they will generally call the Federal Law Enforcement Communication Center (FLECC), and FLECC staff will contact the appropriate local agency to respond. In circumstances where BLM manages only a small amount of land within a county, local law enforcement typically handles the incidents. In some of these cases, the BLM and the local government establish an agreement or contract where the BLM uses recreation fee revenues to reimburse first responder services.

The BLM's road system plays a crucial role in supporting access for emergency response. The BLM's road system GIS data is an important resource for understanding how to access a location in the event of an emergency and how to deploy resources where needed. The BLM has an in-house fire response team, which utilizes these data for fire response emergencies.

As discussed in Section 5.2.2.2, these GTLF data are an important BLM geospatial transportation data source. Each SO maintains its own dataset and submits updates to the national GTLF database on a monthly basis. Increasing the number of roads mapped, including primitive roads, with accurate attributes is important to support first responders and other transportation system users. The digital data are critical because not all roadways have signs in the field.

NLRTP Implementation Strategy Links

> Provide up-to-date mapping and GIS information to expedite emergency response. **(S 3.1)**

> Investigate opportunities to develop a process for real time communications during emergency route closures. **(S 3.2)**

5.5.3 Safety Data

While there is no single source of safety data, the following data sources can provide valuable insight for prioritizing changes and improvements to assets in the BLM transportation system:

- Fatality Analysis Reporting System (FARS), maintained by the National Highway Traffic Safety Administration (NHTSA);
- BLM's Incident Management Analysis and Reporting System (IMARS);
- BLM's Facility Asset Management System (FAMS); and
- FHWA's National Bridge Inventory (NBI).

NLRTP Implementation Strategy Links

Identify route safety data needs, and identify available route safety data. **(S 2.2)**

Determine how safety data may be used for effective safety analysis, planning, and implementation. **(S 2.3)**

5.5.3.1 Fatality Analysis Reporting System (FARS)

FARS is a nation-wide census program run by NHTSA that tracks fatal crashes and data about each crash such as location, time of day, and number of fatalities associated with each crash. States are required to report all fatal vehicle crashes on roads that are accessible to the public, based on law enforcement reporting.

BLM-managed public lands are unique compared to other FLMA lands because they are typically very open and have multiple entrances and exits. In addition, not all roads that traverse BLM-managed public lands are owned and managed by the BLM. FARS data summarized in Table 6 show an average of 200 fatal crashes per year on roadways within BLM boundaries, however, only an average of three fatal crashes per year are on BLM roads. This illustrates that fatal vehicular crashes on BLM roads are rare, and the vast majority of fatal vehicular crashes on BLM-managed public land occur on State, county or local roads. Higher roadway volume on non-BLM roads may contribute to the greater number of fatal crashes, among other factors.

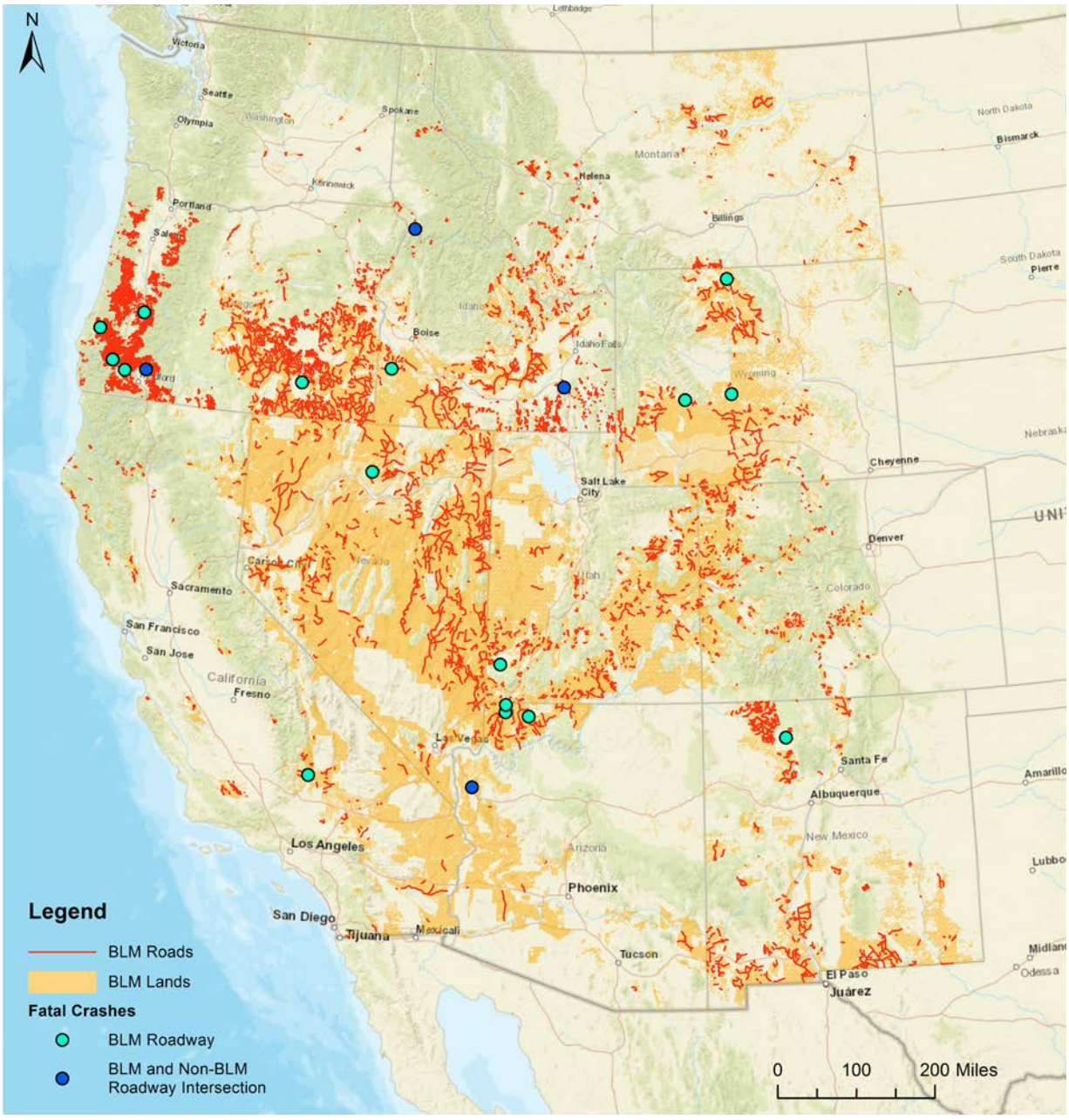
Table 6. FARS Data Summary, 2012 to 2016

Year	U.S. Total Fatal Crashes	Fatal Crashes in BLM Boundaries	Fatal Crashes on BLM Roads*
2016	34,440	243	1
2015	32,540	209	2
2014	30,057	201	6
2013	30,203	183	3
2012	31,007	185	4

**In addition, there was one fatal accident in both 2012 and 2015 and two fatal accidents in 2014 at the intersection of a BLM and non-BLM road.*
(Source: FARS)

The few fatal crashes that occurred on BLM roads between 2012 and 2016 were widely distributed across the Western States and not concentrated in one particular location (Figure 15). The occurrence of a fatal crash does not necessarily signify a roadway is unsafe. There are numerous human factors that impact driver behavior. For example, based on the attributes collected in the FARS dataset, 45 percent of the fatal accidents on BLM roads involved alcohol.

*Figure 15. BLM Fatal Roadway Crashes, 2012 to 2016**



*Alaska omitted from the map. There were no fatal crashes reported on BLM roads in Alaska between 2012 and 2016. (Source: FARS)

5.5.3.2 Incident Management Analysis and Reporting System (IMARS)

Unlike FARS, which only tracks data associated with vehicular crash fatalities nation-wide, IMARS is an internal system specific to the DOI used to track a wider range of incidents by DOI law enforcement. The benefit of IMARS is that it is a centralized dataset of incidents on BLM-managed public lands. One of the challenges of IMARS as a reliable data source for trend analysis on BLM-managed public lands is that when 911 is called for an incident, the State, County, or local Emergency Medical Services (EMS) will respond to the incident as dispatched from the 911 call service. EMS responds to incidents regardless of land jurisdiction. In many cases, local law enforcement does not notify BLM when an incident occurs on BLM-managed public lands, but records the incident within the responding agency's tracking system. If BLM law enforcement is present for an incident to assist the responding agency, then information about the incident will be reported into both IMARS and the responding agency's system. Although motor vehicles are involved in the majority of vehicular incidents reported in IMARS, 38 percent of the reported incidents involve another mode (Table 7; Figure 16). OHVs account for a significant number of incidents as the BLM tends to be more involved in responding to off-roadway incidents such as trail crashes (including OHVs used in motorized recreation) and search and rescue.

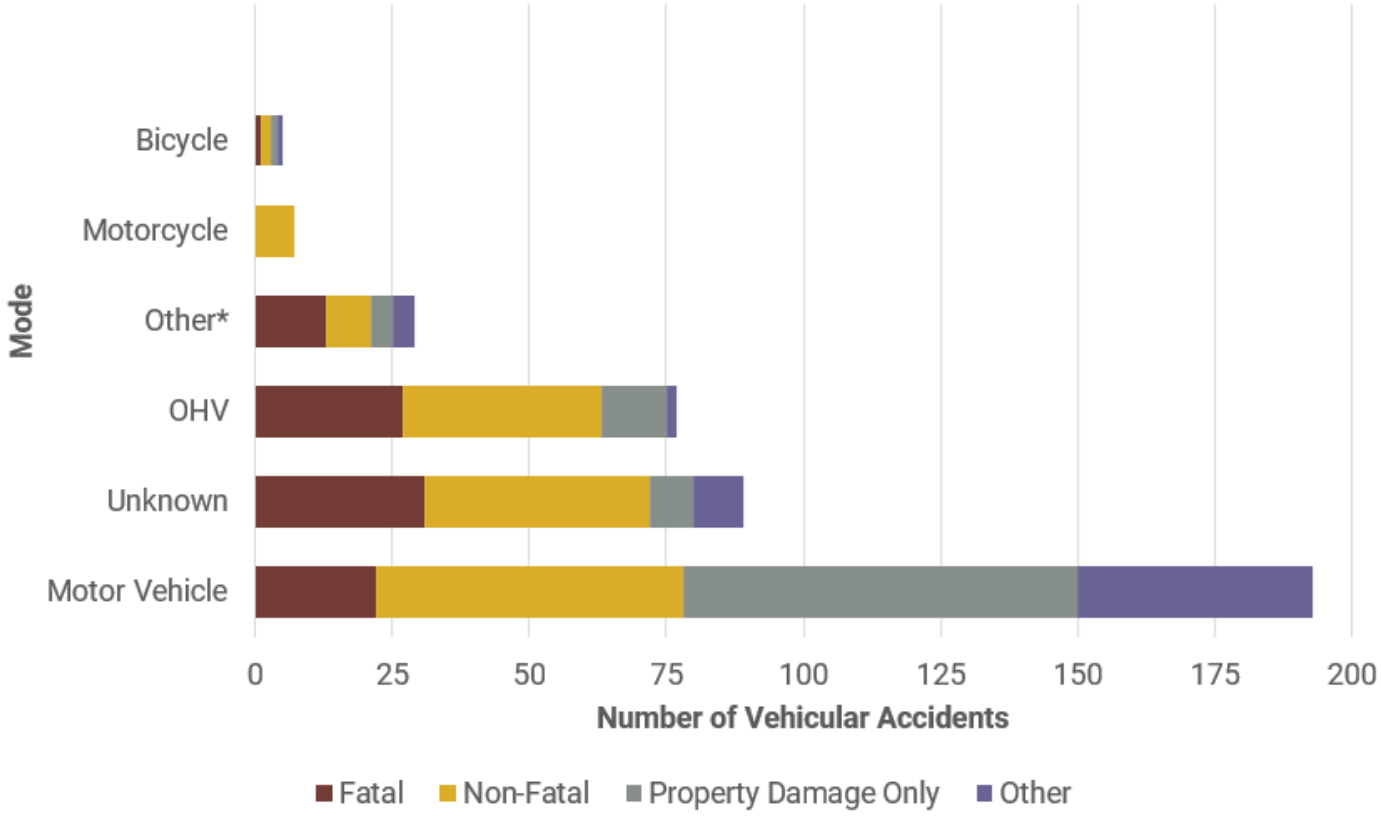
The data reported in IMARS do not capture the complete picture of incidents on BLM-managed public lands and may be skewed in two ways. First, the reported motor vehicle incidents include all incidents involving BLM-owned vehicles, but not all public incidents if another agency responds. As a result, the data may indicate a ratio of incidents involving BLM-operated vehicles to all other incidents that is higher than reality. Second, due to the remoteness of the BLM-managed lands there is likely an under-reporting of crashes not involving fatalities or serious injuries. For example, minor incidents may be handled by the parties involved, and persons with non-life threatening injuries may be transported by someone in their party to a medical facility without formally reporting the incident. As a result, accident types reported in IMARS may skew toward more serious incidents where emergency services are needed at the site of the incident.

Table 7. IMARS Vehicular Accidents by Mode, October 2013 to September 2018

Accident Type	Total	Motor Vehicle	Motorcycle	Bicycle	OHV	Other*	Unknown
Fatal	94	22	0	1	27	13	31
Non-Fatal	150	56	7	2	36	8	41
Property Damage Only	97	72	0	1	12	4	8
Other	59	43	0	1	2	4	9
Total	**400**	**193**	**7**	**5**	**77**	**29**	**89**

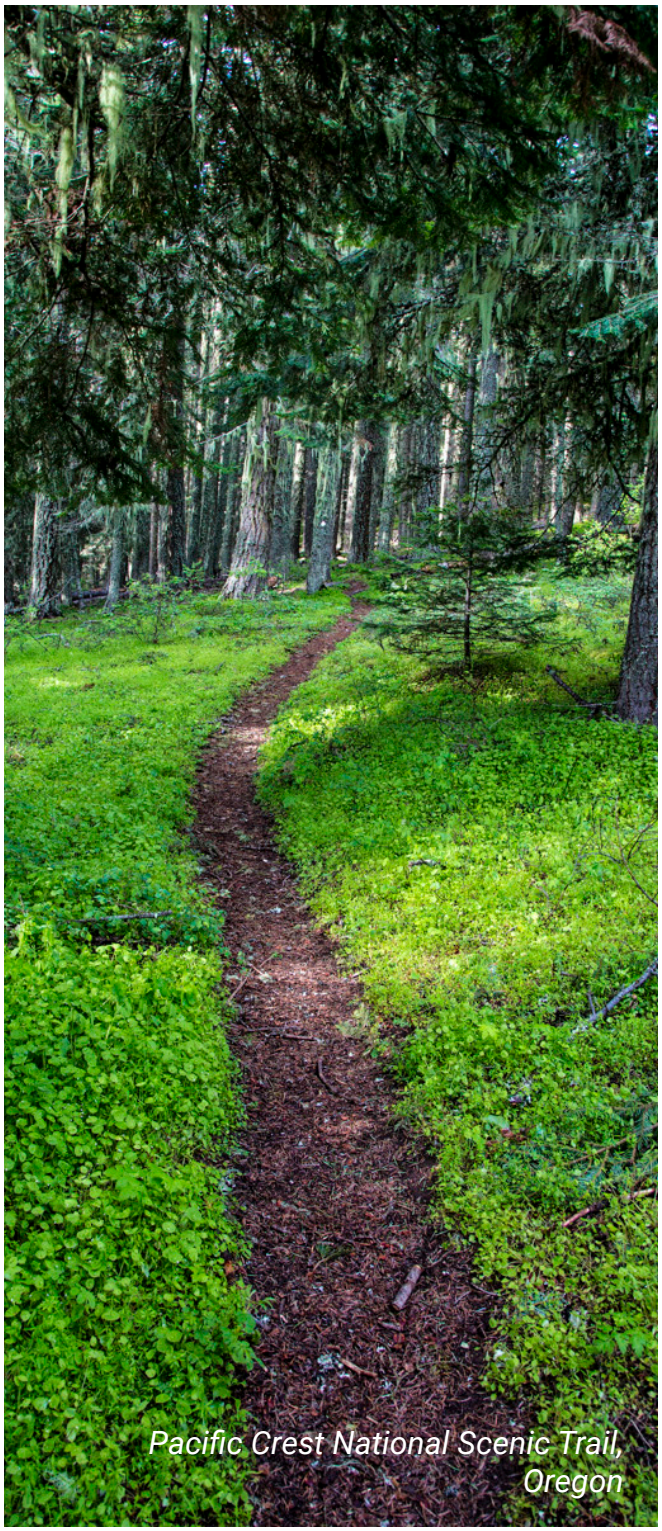
**Includes 14 airplane (8 fatal), 3 helicopter, 2 paraglider (1 fatal), 4 train, and 6 watercraft (4 fatal) incidents.*
(Source: IMARS)

Figure 16. IMARS Vehicular Accidents by Mode, October 2013 to September 2018



To get a more comprehensive picture of safety on BLM roads and public lands, FARS and IMARS data could be supplemented with State-level incident data. Generally, local responding agencies report incidents and statistics up to the State-level. The type of data and level of detail collected by each SO will vary, but when the incident data are available and contain precise locational data (latitude and longitude) a more comprehensive review of incidents and safety trends occurring across BLM-managed public lands can be evaluated. Having comprehensive incident data is important for making decisions about safety improvements and educating the public about BLM's transportation system, its intended uses, and how to best be prepared for their travel experience.

BLM is participating with other DOI agencies to geospatially map FARS data to the FLTP road network of each DOI agency. The current effort geospatially displays FARS incidents from 2009 to 2017 on the FLTP road network in an effort to visualize trends in fatal accidents which can inform safety and policy decisions. Future work may include integration of IMARS and other agency incident data to provide a more comprehensive look at incidents across BLM-managed public lands.



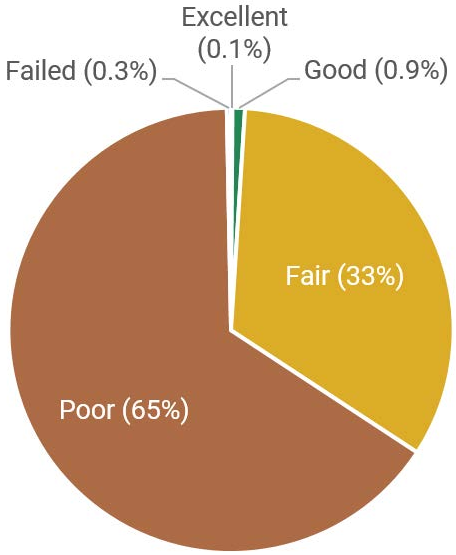
Pacific Crest National Scenic Trail, Oregon

5.5.3.3 Asset Condition

Transportation safety can also be impacted by asset condition. BLM's FAMS is one resource to establish baseline conditions on BLM roads where roads are reported as either good, fair, or poor. The condition of many BLM roads has degraded over time due to insufficient funding to perform annual maintenance. As a result, the majority of BLM roads are currently in poor (65%) or fair (33%) condition (Figure 17). FAMS includes both year-round and seasonal primary roads. However, primitive roads and trails are only partially documented. More information regarding FAMS is provided in the Transportation Asset Management chapter within Section 5.2.2.1.

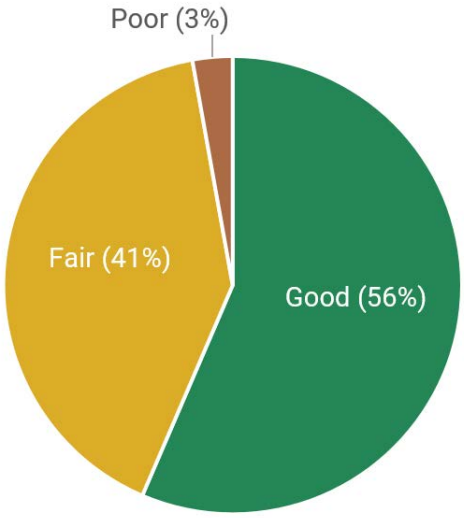
The NBI is a resource that can be used to evaluate BLM bridge condition. The NBI is a national database documenting the condition of all bridges that are more than 20 feet in length and intended for vehicular traffic. With two-thirds of BLM's 915 bridges being road bridges, the NBI is an important resource (Figure 18).

Figure 17. Road Condition Rating as a Percent of Total Mileage



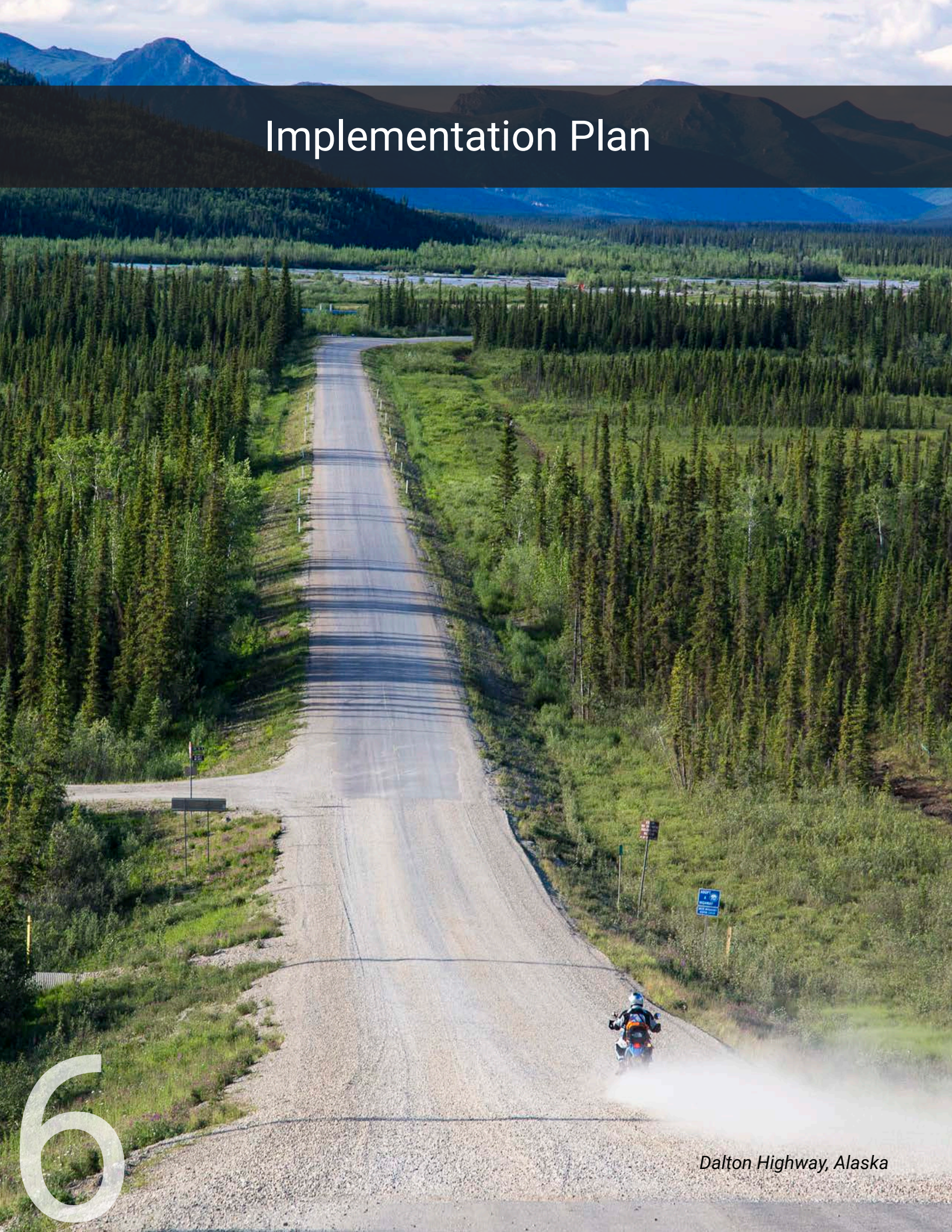
(Source: PASER)

Figure 18. Bridge Condition Rating as a Percent of Total Road Bridges



(Source: NBI, includes 496 bridges)

Implementation Plan

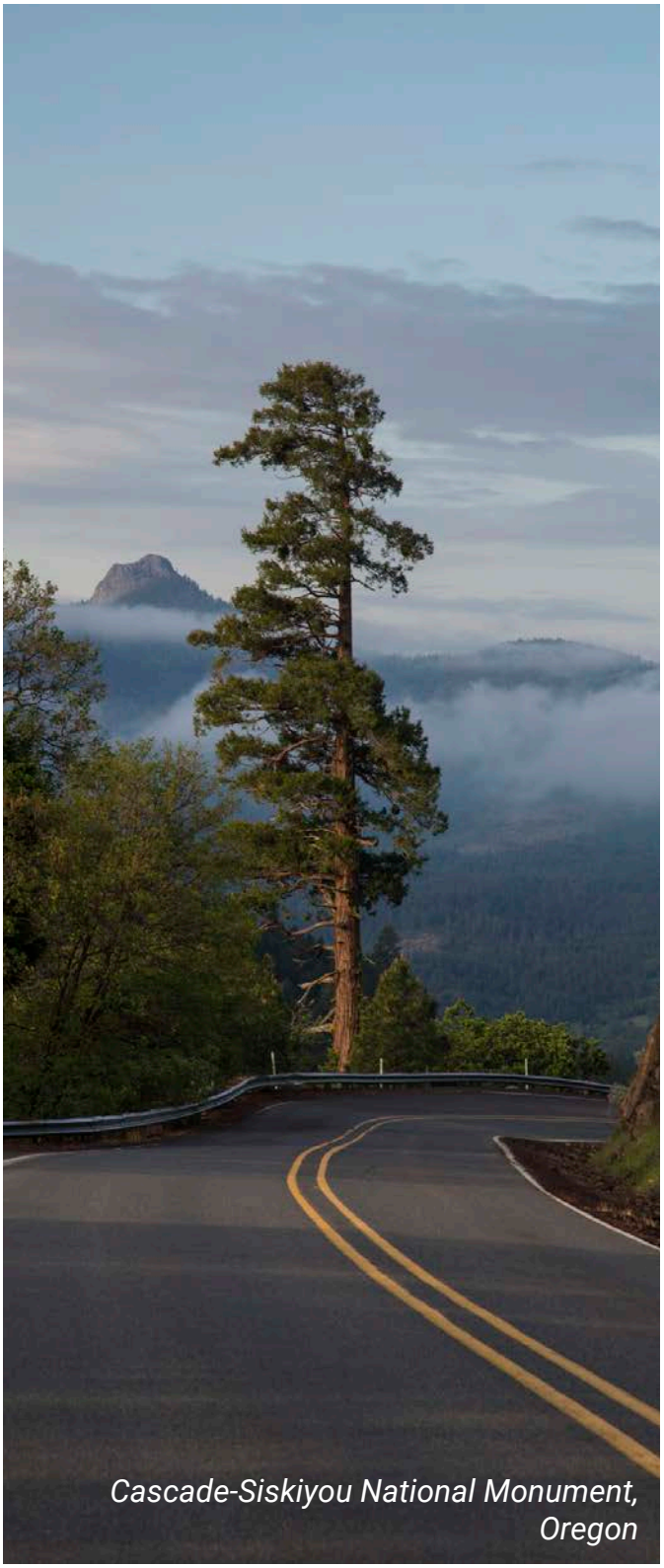


Dalton Highway, Alaska

This first NLRTP, *Transportation Connections 2040*, establishes a strategic framework for implementing transportation investment and monitoring transportation system performance over the next 20 years. BLM staff at HQ, SOs, DOs, and FOs must make transportation investment and maintenance decisions on a regular basis; *Transportation Connections 2040* provides guidance to align their decisions with the national goals and objectives for the BLM's transportation system. Because transportation influences many different programs within the BLM, this NLRTP reflects the input of subject matter experts from across the BLM to define common goals, objectives, strategies, and performance measures.

Transportation Connections 2040 is consistent with state-wide and metropolitan transportation planning practices as part of a continuing, comprehensive, and cooperative (3C) transportation planning process. It establishes a framework for implementation and performance monitoring that feeds into future NLRTP updates. The *Transportation Connections 2040* framework includes the following performance-based elements:

- **Goal:** a broad statement that describes a desired end state.
- **Objectives:** specific, measurable statements that support achievement of a goal.
- **Strategies:** specific actions for BLM to make progress towards the NLRTP goals and objectives.
- **Performance Measures:** indicators that BLM can use to assess progress toward a goal.[35]



Cascade-Siskiyou National Monument, Oregon

35 Definitions adapted from FHWA, 2013, Performance-Based Planning and Programming Guidebook: https://www.fhwa.dot.gov/planning/performance_based_planning/pbpp_guidebook/page00.cfm.

Transportation Connections 2040, including its goals, objectives, strategies, and performance measures, is aspirational in that it will be used to inform future planning priorities and policies. The BLM will achieve the elements of this NLRTP where feasible, based on BLM's staff and financial resources.

In this section, each goal area is broken down into a set of objectives and supporting strategies. Each strategy includes the following characteristics:

- **Status:** the state of the activity, identified as:
  - Existing Activity: a strategy that the BLM is currently wholly performing;
  - Expanded Activity: a strategy that the BLM is currently partially performing, but has aspects that are new; or
  - New Activity: a strategy that the BLM is not yet performing.
- **Responsible Division:** the entity/entities charged with overseeing achievement of the strategy. The first entity is identified as the lead for monitoring progress on the strategy.
- **Implementation Horizon:** the planning timeframe for implementing the strategy, identified as:
  - Short-term: within five years of the publication of this NLRTP;
  - Medium-term: within five to ten years of publication of this NLRTP;
  - Long-term: within ten to twenty years of publication of this NLRTP or
  - Ongoing: the strategy is an existing activity that is expected to continue.

Ojito Wilderness Area, New Mexico

Access, Connectivity, & Experience (ACE)

ACE Goal: Manage the BLM's transportation system to provide seamless public access to support the BLM's multi-use mission.

ACE Objective 1: Build relationships with BLM's gateway communities and the traveling public to ensure access, connectivity, and recreational experience needs are being met.

	Strategy	Status	Responsible Division	Implementation Horizon
ACE 1.1	Refine the BLM's inventory of multimodal access to BLM-managed public lands by identifying traveler/user types, preferred experience settings, and the desired modes of transportation for BLM routes during the TTMP process.	Expanded Activity	Transportation Management (TM)/GIS/ Recreation	Medium-term
ACE 1.2	Highlight success stories related to improving access to BLM-managed public lands.	Expanded Activity	TM	Short-term
ACE 1.3	Investigate opportunities to improve the BLM's understanding of the types of transportation uses and visitation demand through recreational visitor estimates, traffic volume data, and other sources.	Expanded Activity	Recreation	Short-term

ACE Objective 2: Identify linear assets that are part of the BLM transportation system and their connections with the adjacent transportation network.

	Strategy	Status	Responsible Division	Implementation Horizon
ACE 2.1	Through the TTMP process, clarify ownership, purpose(s), and use(s), and determine if linear travel features serve BLM's multi-use mission.	Existing Activity	Travel Management (TM)	Ongoing
ACE 2.2	To improve transportation planning, integrate the engineering functions into the TTM Handbook (H-8342), including engineering input during the route designation step of the TTMP process.	Expanded Activity	TM / Engineering	Short-term
ACE 2.3	Conduct outreach and provide up-to-date resources to State, District, and Field Offices on Federal Lands Access Program (FLAP) and BLM access priorities.	Expanded Activity	Engineering / TM	Medium-term

Transportation Asset Management (TAM)

TAM Goal: Strategically invest funding to sustainably maintain BLM transportation assets.

TAM Objective 1: Develop and maintain a comprehensive inventory of BLM-owned transportation assets.

	Strategy	Status	Responsible Division	Implementation Horizon
TAM 1.1	Create a link to allow continuous updates between GTLF and FAMS, and ensure all necessary attributes are included and consistent across the two databases.	Expanded Activity	TM / Engineering / GIS	Medium-term
TAM 1.2	Provide appropriate policy (e.g., through the TTM Manual Section 1626 and Handbook (H-8342)), training, and staffing to establish and maintain BLM's transportation asset inventory (including primitive roads and trails) in FAMS and GTLF.	Existing Activity	TM / Engineering / GIS	Ongoing

TAM Objective 2: Identify the condition and funding needs associated with BLM transportation assets.

	Strategy	Status	Responsible Division	Implementation Horizon
TAM 2.1	Continue to perform road condition assessments and store results in FAMS to update funding needs, including Deferred Maintenance.	Existing Activity	Engineering	Ongoing
TAM 2.2	Identify a funding needs mechanism for primitive roads and trails.	New Activity	Engineering / TM	Medium-term
TAM 2.3	Investigate opportunities to collect crowd-sourced information on asset condition.	New Activity	TM / Recreation / Engineering	Short-term

TAM Objective 3: Strategically leverage BLM and partner funding sources to operate and maintain transportation assets based on asset priority and need.

	Strategy	Status	Responsible Division	Implementation Horizon
TAM 3.1	Continue to maintain existing project prioritization system for use of Federal Lands Transportation Program (FLTP) funds on BLM roads.	Existing Activity	Engineering	Ongoing
TAM 3.2	Identify BLM and partner funding sources (e.g., U.S. DOI, U.S. DOT, State, and local funding programs) and their applicability for BLM transportation assets.	Expanded Activity	TM / Engineering	Medium-term
TAM 3.3	Provide a mechanism (e.g., website) for disseminating funding opportunity information to State, District and Field Offices.	Expanded Activity	TM / Engineering	Medium-term

TAM Objective 4: Design, build, and maintain BLM transportation assets to be resilient and protect natural, cultural, and historic resources.

	Strategy	Status	Responsible Division	Implementation Horizon
TAM 4.1	Use BLM design standards, approved partner guidelines, training resources, and best practices to retrofit and maintain transportation assets to reduce long-term maintenance costs, improve climate resiliency, and protect resource function.	Expanded Activity	Engineering / TM / Recreation	Medium-term
TAM 4.2	Use the TTMP process to develop a sustainable transportation system in an effort to reduce resource impacts and maintenance needs.	Existing Activity	TM	Ongoing

Collaborative Parnerships (CP)

CP Goal: Develop and maintain collaborative partnerships for a transportation system that connects communities to public lands.

CP Objective 1: Engage external partners that should be involved in BLM Travel and Transportation Management planning and implementation processes, including Federal, Tribal, State, county, and local stakeholders to support transportation connectivity.

	Strategy	Status	Responsible Division	Implementation Horizon
CP 1.1	Identify Federal, Tribal, State, County, and local stakeholders to participate in BLM TTMP processes. Maintain a State Office checklist of stakeholders to consider (e.g., Department of Transportation, Department of Defense).	Existing Activity	TM	Medium-term
CP 1.2	Promote internal and external understanding of travel and transportation planning and how it supports BLM's mission through up-to-date communications materials and training opportunities.	Expanded Activity	TM/ Engineering	Long-term

CP Objective 2: Actively participate in external transportation planning and implementation with Federal, Tribal, State, county, and local processes to support the BLM mission.

	Strategy	Status	Responsible Division	Implementation Horizon
CP 2.1	Establish and maintain good relationships with external Federal, Tribal, State, County and local partners to coordinate planning and programming activities; Provide a list of common external partner planning processes and updating BLM contact list to share with external partners.	Expanded Activity	TM	Medium-term
CP 2.2	Use partnerships to increase and improve access to inaccessible public lands.	Expanded Activity	Realty / GIS / Recreation	Short--term

CP Objective 3: Share and exchange current transportation data with external partners for transportation planning.

	Strategy	Status	Responsible Division	Implementation Horizon
CP 3.1	Establish business rules for replication of BLM State GIS into GTLF to ensure consistency across the Bureau for sharing GTLF with external partners.	New Activity	TM / GIS	Medium-term
CP 3.2	State GTLF data stewards should continue to coordinate with GIS staff to ensure quality and current data.	Existing Activity	TM / GIS	Ongoing
CP 3.3	Build partnerships with Federal, State, County, and local partners to identify transportation data sharing opportunities.	Expanded Activity	TM / Engineering / GIS	Medium-term

Natural, Cultural, & Historical Resources (NCH)

NCH Goal: Manage the BLM's transportation system to protect resources while providing appropriate access.

NCH Objective 1: Ensure that natural, cultural, and historical resource inventories are performed efficiently and comprehensively, as critical components of the TTMP process at the land use and implementation planning levels.

	Strategy	Status	Responsible Division	Implementation Horizon
NCH 1.1	Leverage the knowledge and experience of interdisciplinary teams during the TTMP process to designate transportation systems that conserve natural, cultural, and historic resources while providing appropriate access.	Existing Activity	TM / Natural and Cultural Resource Specialists / Engineering	Ongoing
NCH 1.2	Keep TTM Manual 1626, Handbook (H-8342), and related training current.	Existing Activity	TM	Ongoing
NCH 1.3	Highlight success stories for streamlining the SHPO consultation and Cultural and Historical Resource Inventory process.	New Activity	TM / Natural and Cultural Resource Specialists	Short-term

NCH Objective 2: Implement TTMP route designations based on available funding and staff resources.

	Strategy	Status	Responsible Division	Implementation Horizon
NCH 2.1	Prioritize implementation of designated routes to address critical resource impacts.	Existing Activity	TM	Ongoing
NCH 2.2	Identify partners and leverage resources to achieve TTMP implementation.	Expanded Activity	TM	Medium-term
NCH 2.3	Identify long-term funding and staff resources needed for TTMP implementation.	Expanded Activity	TM	Medium-term

Safety (S)

S Goal: Provide safe and appropriate multimodal transportation access for all users of BLM-managed lands.

S Objective 1: Conduct education and outreach for travelers to prepare for safe travel on BLM-managed public lands consistent with the purpose of the route.

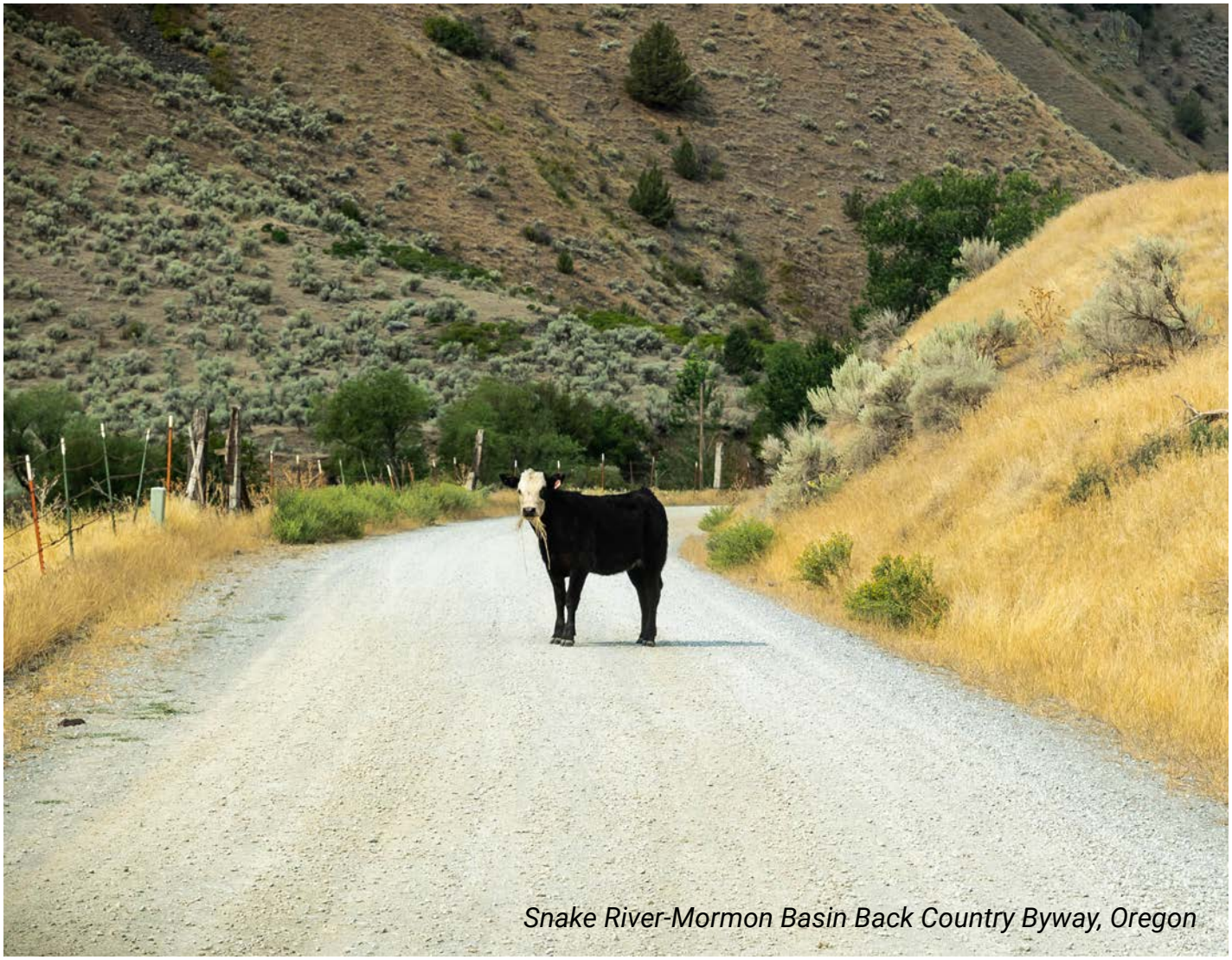
	Strategy	Status	Responsible Division	Implementation Horizon
S 1.1	Educate travelers on the inherent risks associated with traveling on public lands utilizing digital and hard-copy resources.	Existing Activity	Recreation	Ongoing
S 1.2	To enhance visitor safety, provide wayfinding signage, downloadable maps, or kiosks with site-specific travel information where feasible.	Expanded Activity	GIS / Recreation	Medium-term

S Objective 2: Implement TTMP route designations based on available funding and staff resources.

	Strategy	Status	Responsible Division	Implementation Horizon
S 2.1	Use BLM design standards, approved partner guidelines, and best practices to incorporate safety considerations into route design.	Existing Activity	Engineering / Recreation	Ongoing
S 2.2	Identify route safety data needs, and identify available route safety data.	Expanded Activity	GIS / TM	Short-term
S 2.3	Determine how safety data may be used for effective safety analysis, planning, and implementation.	Expanded Activity	Engineering / TM / GIS	Long-term

S Objective 3: Support coordinated and rapid emergency response with local first responders and enhance communication of conditions affecting BLM-managed public lands.

	Strategy	Status	Responsible Division	Implementation Horizon
S 3.1	Provide up-to-date mapping and GIS information to expedite emergency response.	Existing Activity	GIS	Ongoing
S 3.2	Investigate opportunities to develop a process for real time communications during emergency route closures.	Expanded Activity	Recreation / Law Enforcement / Engineering	Short-term



Snake River-Mormon Basin Back Country Byway, Oregon

Monitoring Plan

7

Lewis and Clark National Historic Trail, Montana

Performance measures are useful tools to help staff ascertain the impact of their actions on the transportation system. The performance measures summarized below were established by the BLM NLRTP Core Team and Advisory Committee through an iterative process. The BLM established this set of performance measures to minimize the data collection and monitoring burden while ensuring that progress on achieving the NLRTP goals can be monitored. This set of performance measures will be reviewed and updated as the BLM transportation program matures over time to ensure effective performance monitoring.

Monitoring these measures on a regular basis ensures programmatic consistency and provides BLM transportation program managers with a clearer understanding of the functioning of the transportation system. This information is essential to the program's data-driven decisionmaking processes, which inform how, when, and where the transportation program should focus its activities to address a specific goal area. These processes are also helpful in fulfilling the BLM's commitment to measure and monitor performance of the transportation system over time and provide strategic investments. This section defines the performances measures for each goal area, including the data sources and responsible divisions. The BLM plans to establish baselines and targets for the performance measures as part of the implementation of this NLRTP.

McInnis Canyons National Conservation Area, Colorado

Access, Connectivity, and Experience (ACE)

ACE Goal: Manage the BLM's transportation system to provide seamless public access to support the BLM's multi-use mission.

	Performance Measure	Data Source	Responsible Division
ACE PM1	Number of transportation projects that leverage multiple funding sources.	FHWA FLAP reporting, data call	TM / Recreation / Procurement / Engineering
ACE PM2	Percent of Government Performance and Results Act (GPRA) transportation-related survey results that are above average.	GPRA survey data	Recreation
ACE PM3	Number of completed TTMPs.	TTMP list	TM

Transportation Asset Management (TAM)

TAM Goal: Strategically invest funding to sustainably maintain BLM transportation assets.

	Performance Measure	Data Source	Responsible Division
TAM PM1	Number of FAMS road segments that are included in the GTLF.	GTLF, FAMS	TM
TAM PM2	Total mileage of designated linear transportation assets (roads, primitive roads, and trails) in GTLF.	GTLF	TM
TAM PM3	DM backlog for BLM roads reported in FAMS.	FAMS; Condition assessment (PASER) data	Engineering

Transportation Asset Management (TAM)

TAM Goal: Strategically invest funding to sustainably maintain BLM transportation assets.

	Performance Measure	Data Source	Responsible Division
CP PM1	Number of active, documented transportation agreements with partners.	Procurement Office assistance agreement lists, State Office agreement lists, RMIS	Recreation / State Office Leads / Engineering / Field Managers
CP PM2	Number of completed TTMPs.	TTMP list	TM

Natural, Cultural, and Historical Resources (NCH)

NCH Goal: Manage the BLM's transportation system to protect resources while providing appropriate access.

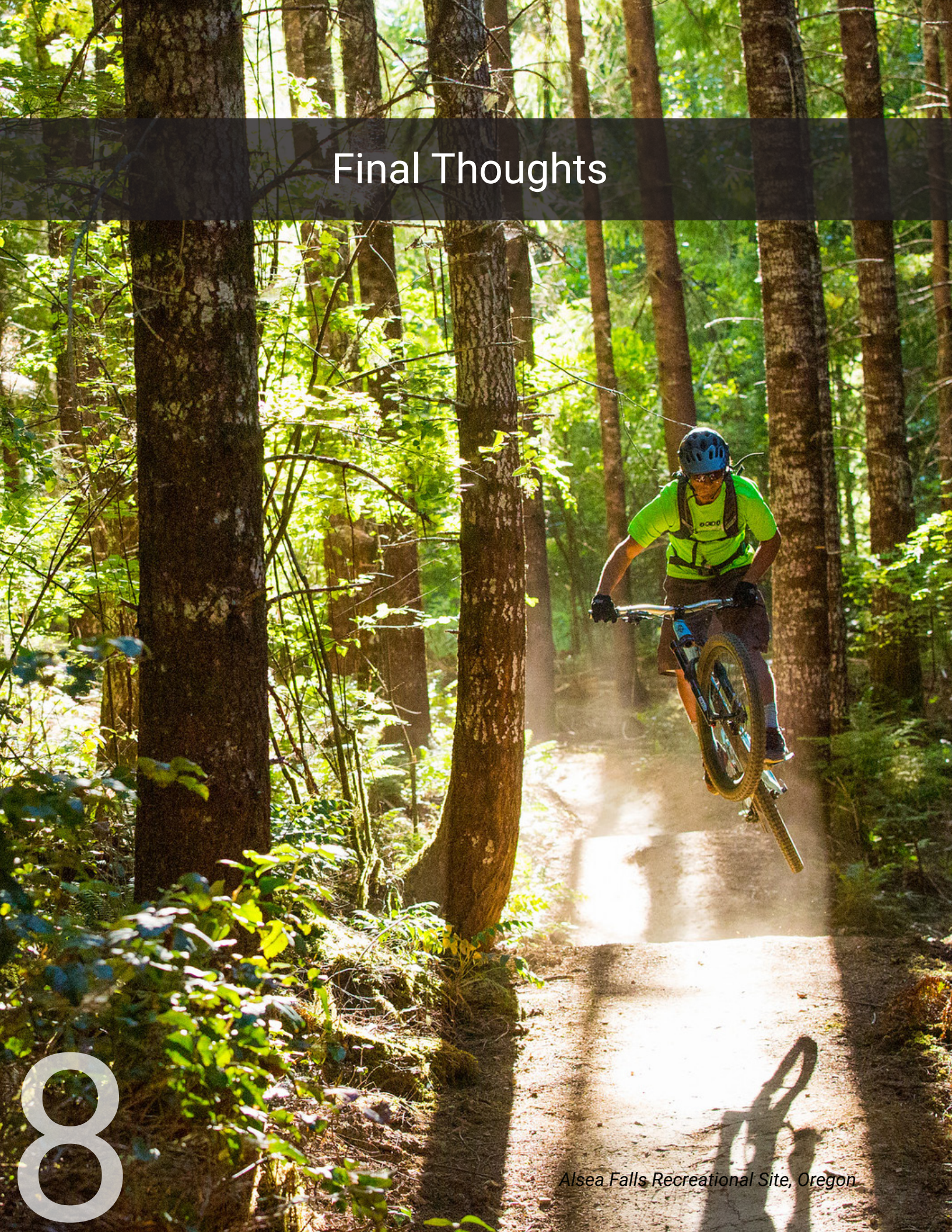
	Performance Measure	Data Source	Responsible Division
NCH PM1	Number of completed TTMPs.	TTMP list	TM

Safety (S)

S Goal: Provide safe and appropriate multimodal transportation access for all users of BLM-managed lands.

	Performance Measure	Data Source	Responsible Division
S PM1	Percentage of BLM Field Offices with maps that include safety information and georeferenced PDF maps that are available online to the public.	Partner group maps / BLM maps	GIS / TM / Recreation
S PM2	Establishing baseline data of transportation-related fatalities on BLM roads.	FARS and other data sources	TM
S PM3	Percentage of structurally deficient bridges.	National Bridge Inventory	Engineering

Final Thoughts



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Alsea Falls Recreational Site, Oregon

Congress tasked the BLM with a mandate to manage public lands for a variety of uses such as energy development, including renewable energy, livestock grazing, recreation, and timber harvesting while ensuring natural, cultural, and historic resources are conserved for present and future use. Achieving this mission is not possible without a transportation system that can effectively and sustainably move people and equipment to and through BLM-managed lands. The routes on these lands are often a complex network of unpaved legacy roads that originated for purposes that have shifted over time, no longer meeting the safety, access or other needs of current users. Portions of these roads are owned and maintained by the BLM while others are owned or maintained by County, State, other government, or private entities. As such, the BLM depends on partnerships to plan and implement transportation improvements and leverage limited funding.

The BLM developed *Transportation Connections 2040*, the BLM's first national long range transportation plan, to be a springboard for collaboration among the BLM transportation program and its partners. The BLM established its national transportation goals, objectives, strategies, and performance measures in this plan to respond to the BLM's unique challenges, needs, and opportunities. Yet many of the actions proposed in this plan are mutually beneficial to the Bureau's partners. For example, each of the BLM's five priority goal areas are aligned with the U.S. DOT's national goals for the Federal-Aid Highway Program (Table 8). Therefore, many of the strategies in this plan are intended to address the same goals that State DOTs, Metropolitan Planning Organizations (MPOs), and others are working toward achieving.

Table 8. Alignment between BLM National Transportation Goals and U.S. DOT National Goals (23 USC 150(b))

Relevant U.S. DOT National Goals	Supporting Transportation Connections 2040 Goals
SAFETY. To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.	Safety: Provide safe and appropriate multimodal transportation access for all users of BLM-managed lands.
INFRASTRUCTURE CONDITION. To maintain the highway infrastructure asset system in a state of good repair.	Transportation Asset Management: Strategically invest funding to sustainably maintain BLM transportation assets.
FREIGHT MOVEMENT AND ECONOMIC VITALITY. To improve the National Highway Freight Network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.	Access, Connectivity and Experience: Manage the BLM's transportation system to provide seamless public access to support the BLM's multi-use mission.
ENVIRONMENTAL SUSTAINABILITY. To enhance the performance of the transportation system while protecting and enhancing the natural environment.	Natural, Cultural, and Historic Resources: Manage the BLM's transportation system to protect resources while providing appropriate access.

In addition, many of the performance measures and strategies that the BLM establishes in this plan help make progress toward the State DOTs' and MPOs' safety and asset condition related performance targets for federally required performance management measures (Table 9). A common theme among the BLM's safety and asset condition related performance measures and strategies is increasing the quality of data to better understand safety and condition of the transportation system. Once these data sets are established and improved, the BLM will be even better positioned to support State DOTs, MPOs, and other partners in achieving goals for the larger transportation network.

Table 9. U.S. DOT National Performance Management Measures supported by BLM's Transportation Connections 2040 Performance Measures and Strategies

Relevant U.S. DOT National Performance Management Measures	Supporting Transportation Connections 2040 Performance Measures and Strategies
National performance management measures for the Highway Safety Improvement Program (23 CFR 490.207): • Number of fatalities; • Rate of fatalities; • Number of serious injuries; • Rate of serious injuries; and, • Number of non-motorized fatalities and non-motorized serious injuries.	**Safety** • S PM2: Establishing baseline data of transportation-related fatalities on BLM roads. • S 1.1: Educate travelers on the inherent risks associated with traveling on public lands utilizing digital and hard-copy resources. • S 1.2: To enhance visitor safety, provide wayfinding signage, downloadable maps, or kiosks with site-specific travel information where feasible. • S 2.1: Use BLM design standards, approved partner guidelines, and best practices to incorporate safety considerations into route design. • S 2.2: Identify route safety data needs, and identify available route safety data. • S 2.3: Determine how safety data may be used for effective safety analysis, planning, and implementation. • S 3.1: Provide up-to-date mapping and GIS information to expedite emergency response. • S 3.3: Investigate opportunities to develop a process for real time communications during emergency route closures.
National performance management measures for assessing pavement condition (23 CFR 490.307) and bridge condition (23 CFR 490.407): • Percentage of pavements of the Interstate System in Good condition; and percentage of pavements of the Interstate System in Poor condition; • Percentage of pavements of the non-Interstate NHS in Good condition; and percentage of pavements of the non-Interstate NHS in Poor condition.	**Transportation Asset Management** • TAM PM2: Total mileage of designated linear transportation assets (roads, primitive roads, and trails) in GTLF. • TAM PM3: DM backlog for BLM roads reported in FAMS. • TAM 1.1: Create a link to allow continuous updates between GTLF and FAMS, and ensure all necessary attributes are included and consistent across the two databases. • TAM 1.2: Provide appropriate policy (e.g., through the TTM Manual Section 1626 and Handbook (H-8342)), training, and staffing to establish and maintain BLM's transportation asset inventory (including primitive roads and trails) in FAMS and GTLF. • TAM 2.1: Continue to perform road condition assessments and store results in FAMS to update funding needs, including Deferred Maintenance.

(*Row continues on next page*)

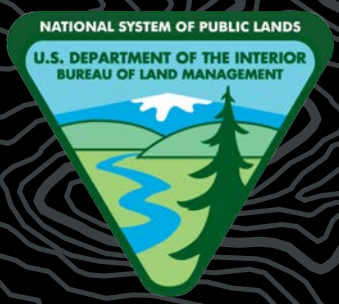
Relevant U.S. DOT National Performance Management Measures	Supporting Transportation Connections 2040 Performance Measures and Strategies
(*Row continued from previous page*) • Percentage of NHS bridges classified as in Good condition; and percentage of NHS bridges classified as in Poor condition.	• TAM 2.2: Identify a funding needs mechanism for primitive roads and trails. • TAM 2.3: Investigate opportunities to collect crowd-sourced information on asset condition. • TAM 4.1: Use BLM design standards, approved partner guidelines, training resources, and best practices to retrofit and maintain transportation assets to reduce long-term maintenance costs, improve climate resiliency, and protect resource function. • TAM 4.2: Use the TTMP process to develop a sustainable transportation system in an effort to reduce resource impacts and maintenance needs. **Safety** • S PM3: Percentage of structurally deficient bridges. • S 2.1: Use BLM design standards, approved partner guidelines, and best practices to incorporate safety considerations into route design. • S 2.2: Identify route safety data needs, and identify available route safety data.

In addition to the direct links between the performance elements of this plan and those required for State DOTs and MPOs, this plan also includes Collaborative Partnerships as one of its five fundamental goals. This goal and associated objectives, strategies, and performance measures are intended to:

- Foster better shared understanding of BLM and partner transportation planning and programming processes.
- Build capacity for transportation improvements through leveraging shared resources.
- Increase connections and the value of BLM-managed lands to communities through better understanding of shared needs.

One of the performance measures for the Collaborative Partnerships goal area is the number of completed TTMPs. Since TTMPs are inherently collaborative in nature and are the BLM's mechanism for engaging with partners on local transportation planning and programming, this metric is a strong indicator of collaboration at the local level.

This plan was titled ***Transportation Connections 2040*** to emphasize that transportation is about making connections to BLM-managed public lands for the wide range of travelers that use those lands for work, enjoyment, or inter-community travel. The BLM's transportation system includes particularly important connectors for many tribal and rural communities throughout the U.S. The BLM hopes that this plan provides the strategic direction to improve these physical connections on the land. This plan also aspires to build and strengthen the virtual connections on which the BLM's transportation program relies, both between program areas within the BLM and with the many local, state, and national partners that allow the BLM to achieve more than it can on its own.


NATIONAL SYSTEM OF PUBLIC LANDS
U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT